State of California
Department of Fish and Wildlife

Memorandum

Date: April 3, 2014

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: Northeastern Pacific White Shark Status Evaluation

The Department of Fish and Wildlife (Department) prepared the attached status evaluation report for receipt by the Fish and Game Commission (Commission) at the upcoming meeting scheduled on April 16, 2014. The Department is providing the status evaluation pursuant to Fish and Game Code § 2074.6, and in connection with the Commission's scheduled consideration and possible action regarding the petition to list the Northeastern Pacific (NEP) population of white shark (*Carcharodon carcharias*) under the California Endangered Species Act (CESA). At a future meeting, the Commission will consider the status evaluation and other relevant information it receives to determine whether there is sufficient information to indicate the petitioned action is warranted (Fish and Game Code §2075.5).

On August 20, 2012, the Commission received a petition to list the NEP population of white shark as threatened or endangered under the California Endangered Species Act by Oceana, Center for Biological Diversity, and Shark Stewards (Petition). On August 27, 2012, pursuant to Fish and Game Code §2073, the Commission transmitted the Petition to the Department for Review. On February 6, 2013 the Department recommended to the Commission that there was sufficient information in the Petition that listing may be warranted. At the same meeting the Commission voted to accept the Petition and initiate a review of the status of the NEP population of white shark. Upon publication of the Commission's notice of determination on March 1, 2013, the NEP population of white shark was designated a candidate species.

Following the Commission's determination, the Department notified affected and interested parties and solicited data and comments on the petitioned action per Fish and Game Code §2074.4 (see also Cal. Code Regs, Title 14 §670.1(f)(2)). Subsequently, the Department commenced its review of the status of the species as required by Fish and Game Code §2074.4.

On December 18, 2013, shortly before the attached status review was circulated for peer review, the Department received supplemental information prepared by Oceana and the Center for Biological Diversity. This supplement provided a non-peer reviewed critical review of the National Marine Fisheries Service (NMFS) Biological Review Team's (BRT) analysis of the NEP white shark population size

and risk of extinction during their evaluation of the population under the federal Endangered Species Act. The supplement raised concerns regarding assumptions, methodologies, and findings in the NMFS report related to current abundance and trends, bycatch mortality and overall risk to the population. Despite the late nature of the submittal, the Department reviewed the supplemental information and, in conjunction with the best available scientific information, concluded that it did not provide new or substantially different information than was provided in the Petition.

The attached status evaluation represents the Department's final written review of the status of the NEP population of white shark. The evaluation and recommendation, in adherence to legal obligations, are based upon the best scientific information available to the Department at the time of preparation. The Department's recommendation is that the petitioned action to list the NEP population of white shark as threatened or endangered is not warranted.

In completing this status evaluation report, the Department benefitted from the input and comment of four peer reviewers from outside the agency (see appendices). The peer reviewers were identified as researchers and experts knowledgeable on white shark and marine apex predator species. Peer reviewers generally expressed support of the Department's assessment and listing recommendation.

The Department acknowledges there is a great deal of uncertainty surrounding abundance estimates for the NEP population of white shark. However, trends from independent data sources, including mark recapture studies, predation rates on marine mammals, and incidental catch rates in commercial fisheries, indicate the population is stable and likely increasing across multiple life stages.

Although the NEP population of white shark is not likely faced with an imminent threat of extinction, the Department has determined that fishery interactions with juveniles is one of the primary risks to white sharks off California. In addition, there are significant gaps in life history and population status for the NEP population, such as the size and distribution of the NEP population and a thorough understanding of reproductive behavior and habitat use. As such, the Department provides management recommendations for increased research and coordination between regulatory agencies, shark researchers, fishery participants, and other interested parties to investigate methods to fill data gaps and reduce the frequency of fisheries interactions and associated mortalities.

Current population abundance

There are currently multiple estimates of the NEP white shark population ranging from as low as 339 sub-adults and adults to greater than 3,000 individuals in the population. All current estimates involve some degree of uncertainty as there are

significant gaps in the knowledge of white shark movements, reproductive biology and mating behaviors. Based on our thorough review of the best available scientific information, the Department believes the estimated abundance of 339 individuals stated in the Petition underestimates the true size of the population.

The estimate of 339 individuals does not accurately reflect the entire NEP population of sharks because the methods utilized to develop the estimate do not account for adults and sub-adults that may aggregate in other, less studied, areas. The Department found it problematic that although the authors of the Guadalupe Island study (one of two studies used to make the estimate of 339) clearly cautioned that their research should not be used to determine absolute abundance until methods can be improved, the Petition used this study to estimate absolute abundance. The population estimate of 3,000 individuals was developed by the NMFS BRT analysis of this population and used expanded data sets and more robust assumptions.

Overexploitation

Documentation of white shark being taken in both commercial and recreational fisheries dates back to the 1800s, with reliable records dating back to the 1980s. In California, the majority of interactions have involved young-of-the-year (YOY) and juveniles with commercial gill net fisheries, primarily nearshore set net gear. Commercial fishing records indicate a peak in white shark take in the mid-1980s in commercial gill net fisheries. Since this peak, commercial gill net effort off California has dropped to a fraction of historical size and the geographic area open to fishing has been dramatically reduced by state and federal regulations.

Predation, Competition, Disease, & Other Factors

White sharks are large apex predators that are not known to have significant vulnerability to disease or environmental pollutants. The Department did not find any scientific information to conclude that predation, competition, disease, or climate change were significant threats to the NEP population of white shark.

Conclusion

In summary, the Department's determination that listing the NEP population of white shark as threatened or endangered under CESA is not warranted is based on scientific evidence that includes:

- Several independent data sources that indicate the NEP population of white shark is increasing;
- Observations from Guadalupe Island as well as other nearshore sites that indicate the NEP population may be expanding its use of adult aggregation

sites;

- Although there is scientific uncertainty about population size and trends for the NEP population of white shark, the best scientific information available to the Department indicates that the population is much greater than the estimate of 339 individuals cited in the Petition;
- White sharks in the NEP benefit from existing take prohibitions and protections through state, federal, and international regulation and current management efforts have greatly reduced the historic risks of exploitation;
- Although incidental take of juveniles in commercial set net gear has been identified as a historic concern, increased regulation and decreased fishing effort has greatly reduced the risk of overexploitation from this specific gear type;
- Important prey resources, such as marine mammal populations, have increased in recent decades and are unlikely to be limiting growth of the white shark population; and,
- Despite high levels of DDT, mercury, and PCBs in the tissue of juvenile whites sharks sampled in the Southern California Bight, there is no significant evidence of adverse health effects, and threats of harm have decreased over time due to major improvements in pollutant regulation and output controls.

Having considered these factors, the Department concludes that the best scientific information available does not indicate that the NEP population of white shark's continued existence is in imminent danger or is threatened by any one or any combination of the following factors found in relevant regulation: present or threatened modification or destruction of habitat, overexploitation, predation, competition, disease, or other natural occurrences or human-related activities. (Cal. Code Regs., Title 14, §670.1 (i)(1)(A)). Therefore, based upon the best scientific information available to the Department, listing the NEP population of white shark as threatened or endangered is not warranted.

If you have any questions or need additional information, please contact Dr. Craig Shuman, Marine Region Manager at 805-568-1231.

Attachments

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STATE OF CALIFORNIA
NATURAL RESOURCES AGENCY
DEPARTMENT OF FISH AND WILDLIFE

REPORT TO THE FISH AND GAME COMMISSION

STATUS REVIEW OF WHITE SHARK (*Carcharodon carcharias*) in CALIFORNIA

CHARLTON H. BONHAM, DIRECTOR
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
April 3, 2014

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Acknowledgements

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List of Acronyms

Acronym	Definition
BRT	Biological Review Team
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CICESE	Centro de Investigación Científica y de Educación Superior de Ensenada (Ensenada Center for Scientific Research and Higher Education)
CITES	Convention of International Trade in Endangered Species
cm	Centimeter
CMS	Conservation of Migratory Species of Wild Animals
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CPFV	Commercial Passenger Fishing Vessel
CPUE	Catch-per-unit-effort
CRFS	California Recreational Fishery Survey
CSULB	California State University, Long Beach
DDT	Dichlorodiphenyltrichloroethane
DGN	Drift gill net
ESA	Endangered Species Act
ft	Feet
GFNMS	Gulf of Farallones National Marine Sanctuary
HMS	Highly Migratory Species
HMS FMP	Highly Migratory Species Fishery Management Plan
HSDFMPA	High Seas Driftnet Fishing Moratorium Protection Act
in	Inch
IUCN	International Union for the Conservation of Nature
m	Meter
MCSI	Marine Conservation Science Institute

MBA	Monterey Bay Aquarium
MBNMS	Monterey Bay National Marine Sanctuary
MOU	Memorandum of Understanding
MRFSS	Marine Recreational Fisheries Statistics Survey
MRPA	California Marine Resource Protection Act of 1990
MSA	Magnuson-Stevens Fishery Conservation and Management Act
mtDNA	Mitochondrial Deoxyribonucleic Acid (DNA)
NEP	Northeastern Pacific
NEPA	National Environmental Policy Act
nm	Nautical mile
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
PacFIN	Pacific Fisheries Information Network
PAT	Pop-up archival transmitting tag
PCB	Polychlorinated biphenyl
PFMC	Pacific Fishery Management Council
Photo-ID	Photo identification
PLCA	Pacific Leatherback Conservation Area
POCTRT	Pacific Offshore Cetacean Take Reduction Team
PSAT	Pop-up satellite archival tag
SARA	Species At Risk Act
SCB	Southern California Bight
SCP	Scientific Collecting Permits
SOFA	Shared Offshore Focal Area
SPOT	Smart Position or Temperature Transmitting Tag
SST	Sea surface temperature
SWFSC	Southwest Fisheries Science Center
TL	Total length (the longest straight-line measurement from the tip of the head to the end of the longest lobe of the tail)
TOPP	Tagging of Pelagic Predators

USGS-WERC	U.S. Geological Survey Western Ecological Research Center
VMS	Vessel Monitoring System
YOY	Young-of-the-year

Report to the Fish and Game Commission

Status Review of White Shark in California

April 3, 2014

Executive Summary

Pursuant to the California Endangered Species Act (CESA), the California Department of Fish and Wildlife (Department) prepared this status review and recommendation to the California Fish and Game Commission (Commission) to inform its decision whether to designate the Northeastern Pacific (NEP) population of white shark (*Carcharodon carcharias*) as an endangered or threatened species under CESA. Data are limited for key life history traits of the species and recent abundance estimates for the NEP population vary by an order of magnitude. The life history data gaps and widely varying abundance estimates make it difficult to characterize the NEP population. However, examination of multiple data sources allowed for an assessment of status and trends of the NEP population that were used to inform the recommendations in this status review.

The white shark belongs to the family Lamnidae. It is a large migratory apex predator that is globally distributed throughout the world's oceans, most commonly found in temperate waters between 54-68°F (12.2-20.0°C). While it is believed to be a mostly solitary animal, individuals congregate in specific areas off most continents. White sharks in the NEP are believed to be geographically isolated and genetically distinct from other global white shark populations. Their known range is limited to areas within the northeastern Pacific Ocean between the Hawaiian Islands and the west coast of North America.

White sharks in the NEP utilize multiple habitats within the extent of their range. Warm coastal waters in the Southern California Bight (SCB) and Mexico are likely nursery areas for young-of-the-year (YOY) and juvenile white sharks. Use of this coastal habitat varies seasonally, which may be due to temperature restrictions or availability of desired prey. The notion that these waters serve as nursery areas is supported by the presence of juvenile white sharks in both commercial and recreational fisheries catch records. These incidents are concentrated throughout the SCB and tagging data from independent research efforts corroborates these findings. As juveniles mature, it is believed they become more tolerant to temperate oceanic conditions, allowing them to expand their range into the cooler waters of northern and central California. However, tagging and movement data for this life stage are very limited. Results from tagging data collected from adult sharks tagged at coastal aggregation sites within the NEP demonstrate a high degree of site fidelity during migrations, especially to sites off central California, Guadalupe Island, Mexico, and the Shared Offshore Foraging Area (SOFA), located between the Hawaiian Islands and the west coast of North America (Domeier & Nasby-Lucas 2012). There is still debate over why white sharks make these offshore migrations, and whether this serves as a period of foraging or mating (Domeier 2012a; Jorgensen et al. 2012a). Consequently the more neutral term "Shared Offshore Focal Area" (SOFA) is used in this review.

Young-of-the-year and juvenile white sharks feed on a wide array of prey abundant in the shallow coastal areas in which they occur. Moving from a diet thought to consist mainly of benthic fishes, rays, and invertebrate species, feeding options expand to include larger prey, such as marine mammals, as they mature.

Despite an incomplete understanding of the NEP white shark's habitat usage throughout its entire life cycle, our knowledge of the population's movements early in life and as adults has greatly advanced over the last 20 years. Current research shows no indication that the present range has been reduced or is restrictive to the population at any life stage. In fact there have been signs of the population expanding their use of specific areas in the described range in the past few decades (Boustany et al. 2002).

Similar to other large apex predators, white sharks mature relatively late, have naturally low abundance, low fecundity, and relatively long life spans. Few offspring are likely to reach maturity, as apex predator populations usually support fewer individuals than species lower on the food chain. This makes white shark populations potentially vulnerable to overexploitation.

The current size of the NEP population is uncertain. Multiple analyses of photo-identification study data have estimated the current population range from 339 sub-adults/adults (Chapple et al. 2011; Sosa-Nishizaki et al. 2012) to greater than 3,000 total individuals estimated by the National Marine Fisheries Service (NMFS) Biological Review Team (BRT) report (Dewar et al. 2013). Uncertainties about key life history characteristics, such as the habitat usage and movements of all age classes, longevity, and reproductive capacity, make population estimates difficult. While there are no historic estimates for comparison, current trends in incidental catch in fisheries and attacks on marine mammals, as well as genetic diversity suggest a stable or increasing population.

Adult white sharks frequent coastal waters seasonally, but appear to spend a large part of their time migrating through open ocean habitats. Young-of-the-year and juveniles spend the majority of their time in coastal areas off southern California and northern Mexico where there is historic overlap with set gill net fisheries. Analysis of California commercial fishery data reveals that the incidents of white shark captured in commercial gill net fisheries have increased steadily since 2005, despite declines in fishing effort. This suggests that juvenile white shark abundance may be increasing within the SCB.

Incidental take of juvenile white sharks in set gill net fisheries is a potential risk factor for this population. However, this risk has been reduced considerably as these fisheries have become more restricted through regulation and declining effort. Based on trends in commercial fisheries and existing regulations, the Department does not consider future impacts of commercial gill net fishing to a be an imminent threat to the continued existence of the NEP population of white sharks in California.

The Department evaluated other factors, such as contaminants and non-point source pollution, recreational fishing, predation, disease, competition, climate change, and availability of prey. Based on the Department's analysis, none of these factors are

considered to be a serious threat to the continued existence of the NEP white shark population.

The Department provides this report to the Commission based upon the best scientific information available pursuant to Fish and Game Code Section 2074.6. The best scientific information available indicates to the Department that the petitioned action is not warranted. Also included in this report is the Department's preliminary identification of habitat that may be essential to the continued existence of the species, and suggestions regarding management activities and other actions that may benefit the species.

Report to the Fish and Game Commission

Status Review of White Shark in California

April 3, 2014

Introduction

This status review addresses the Northeastern Pacific (NEP) population of white shark (*Carcharodon carcharias*), which is the subject of a petition (Petition) submitted to the California Fish and Game Commission (Commission) by Oceana, Center for Biological Diversity, and Shark Stewards in August of 2012 requesting the Commission list the species as endangered or threatened under the California Endangered Species Act (CESA) (Fish and Game Code Section 2050 et seq.). According to the Petition (Shester et al. 2012), the primary threat to the continued existence white sharks in the NEP is overexploitation through incidental take in gill net fisheries, coupled with risk due to low abundance estimates. Other identified concerns included habitat degradation, pollution, historic declines in prey species, and climate change.

Petition History

"The petition to list the NEP population of white shark (*Carcharodon carcharias*) as threatened or endangered under the California Endangered Species Act," was submitted by Oceana, Center for Biological Diversity, and Shark Stewards on August 20, 2012 (Shester et al. 2012). On August 27, 2012, pursuant to Fish and Game Code Section 2073, the Commission transmitted the Petition to the Department for review.

The Department evaluated the sufficiency of the scientific information presented in the Petition pursuant to Fish and Game Code Section 2072.3 and Section 670.1(d)(1), Title 14, California Code of Regulations (California Code of Regulations), using information in the Petition as well as other relevant scientific information available at the time of review. Based on that evaluation, the Department determined that the Petition contained sufficient information to indicate that the petitioned action may be warranted. The Commission made a finding that a full status review was warranted on February 19, 2013, and this action was noticed on March 1, 2013 when the NEP white shark became a candidate species under CESA.

Federal Status Review

In June and August of 2012, WildEarth Guardians and the Petitioners, respectively, sent petitions to NMFS requesting that the NEP population of white shark be listed as endangered or threatened under the federal Endangered Species Act (ESA). In September 2012, NMFS published a 90-day finding (77 FR 59582) announcing that both petitions presented substantial scientific information indicating that the population may warrant listing under the ESA and that the agency would conduct an ESA status review. To aid in this review, a BRT was formed of scientists from the Southwest Fisheries Science Center. Based on the BRT's peer reviewed analysis, NMFS made the finding in July of 2013 that the NEP population of white shark was a distinct population

segment and is not in danger of extinction under ESA criteria, nor likely to become so within the foreseeable future.

Department Status Review

Following the Commission's action to designate the NEP population of white shark as a candidate species pursuant to CESA (Fish and Game Code Section 2074.4), the Department solicited information from the public, the scientific community, and government agencies for relevant information, and conducted a status review of the species in California waters based on the best scientific information available. This report reflects the Department's scientific assessment of the status of the NEP population of white shark to date. The Department primarily relied on published, peer reviewed, scientific papers. The report has also undergone independent peer review by scientists with expertise relevant to the status of the NEP white shark. A list of experts providing scientific peer review of this report, along with input provided to the Department by peer reviewers, is included as appendices to this status review.

On December 18, 2013, the Department received supplemental information prepared by Oceana and the Center for Biological Diversity. This supplement provided a non-peer reviewed critical assessment of the National Marine Fisheries Service (NMFS) Biological Review Team's (BRT) analysis of the NEP white shark population size and risk of extinction during their evaluation of the population under the federal Endangered Species Act. The document raised concerns regarding assumptions, methodologies, and findings in the NMFS report related to current abundance and trends, bycatch mortality, and overall risk to the population. Despite the late nature of the submittal, the Department reviewed the supplemental information and in conjunction with the best available scientific information, concluded that it did not provide new or substantially different information than was provided in the Petition.

Life History

Species Description

White sharks are characterized by a spindle-shaped body and long conical snout. Long gill slits, a large first dorsal fin, small second dorsal fin, and approximately equal lobed caudal fin are indicative of the species. Coloration is generally gray or brownish to blackish on the dorsal surface with a solid white ventral surface. The margin between the dark dorsal and white ventral surfaces is sharply defined and creates a distinct pattern that can be used to identify individuals. Young white sharks (<1.5 m; 4.9 ft) have narrow teeth with cusplets and no coarse serrations. The shape of the teeth change as the shark matures, becoming wider and thicker. Adults have teeth in the upper and lower jaws that are large, flat, triangular, and serrated (Hubbell 1996).

Due to their large size, solitary nature, vast range, and predatory behavior, obtaining life history information on white sharks is challenging. Due to limited data, information on life history characteristics was pooled from research on global white shark populations.

Although the maximum size has not been established, specimens have been reliably measured to 6 m (19.7 ft) or greater total length (measured from the nose to the tip of the upper lobe of the tail [TL]) for females, and 5.5 m (18 ft) TL for males (Cailliet et al. 1985; Ebert 2003; Castro 2012). Due to limited reliable specimens, the maximum size is still debated and likely to change as more specimens and reliable data are collected in the future.

White sharks are oophagous (developing embryos feed on eggs within the mother's uterus) and litters of 2-14 pups have been documented. Parturition is believed to occur in or near the SCB and northern Mexico in late spring and summer.

White shark life stages have been categorized as young-of-the-year (YOY), juvenile, sub-adult, and adult (Bruce and Bradford 2012). Size at birth ranges from 1.2-1.5 m TL (3.9-4.9 ft) and YOY (less than one year) range from 1.2-1.8 m TL (3.9-5.9 ft). Juveniles (approximately one to three years old) range in size from 1.8-3.0 m TL (5.9-9.8 ft), and sub-adults range from 3.0 m TL (9.8 ft) size at maturity, which is reported to be 3.6-3.8 m TL (11.8-12.5 ft) for males and 4.5-5.0 m TL (14.8-16.4 ft) for females (Cailliet et al. 1985; Francis 1996; Wintner and Cliff 1999; Malcolm et al. 2001; Ebert 2003; Martin 2004; Bruce and Bradford 2012).

Juvenile white sharks feed on fish and invertebrates (Klimley 1985). As they grow in size and become sub-adults they begin to forage on marine mammals. Little is known about the period of transition from juvenile to adult including the age these transitions occur, where they go during this time, and when they begin to make inshore/offshore migrations or utilize adult aggregation sites (Domeier 2012a). Some researchers (Klimley 1985; Domeier 2012a) speculate that at approximately three years of age (2.0 m; 6.6 ft) sub-adults begin to range farther from the nursery grounds into colder waters. In this stage they may range widely from Oregon (or farther north) to southern Mexico and the Gulf of California. These theories are supported by the limited information available on this life stage; however, validation through mark-recapture and other studies is needed to have more conclusive information on movement patterns for sub-adults.

As sub-adults mature, researchers believe they adopt the migration patterns of mature adults and begin to utilize aggregation sites. However, it is unclear when they begin or what triggers this change in behavior, but sub-adults of both sexes have been observed at the aggregation sites. Satellite tagging data have shown that adults and some sub-adults of both sexes complete long offshore pelagic migrations of 3-15 months to an area of the Pacific centered between the Hawaiian Islands and Baja California called the Shared Offshore Focal Area (SOFA) (Boustany et al. 2002; Weng et al. 2007; Domeier and Nasby-Lucas 2008; Nasby-Lucas et al. 2009; Jorgensen et al. 2010; Domeier and Nasby-Lucas 2012). The primary purpose for this migration is unclear. Some researchers hypothesize it is primarily for forage (Domeier and Nasby-Lucas 2008), while others believe it is used as a mating area (Kerr et al. 2006; Jorgensen et al. 2010; Carlisle et al. 2012; Kim et al. 2012).

Genetics

The NEP population of white sharks is genetically significant and discrete. Comparing studies of mitochondrial Deoxyribonucleic Acid (mtDNA) haplotype data from white sharks sampled in central California, Japan, New Zealand/Australia, and South Africa reveals that no NEP haplotypes are shared across multiple regions (Jorgensen et al. 2010; Tanaka et al. 2011). These studies support the conclusion that NEP white sharks make up a unique monophyletic clade. The significant differentiation of mtDNA suggests that the populations have been separated for a sufficient amount of time for distinct habitat specific adaptation to have occurred, and that migration between sites is less than one migrant per generation. While the mtDNA data only provide data regarding female gene flow, all the males sampled in central California had haplotypes indicating an NEP origin and many had photographic histories supporting individual fidelity to NEP aggregation sites. Evaluation of multi-locus nuclear DNA data is necessary to determine the discreteness of the population with certainty. However, current data are consistent with a closed population and there is little evidence for alternate patterns of male-mediated gene flow (Pardini et al. 2001; Gubili et al. 2012; Dewar et al. 2013).

Potential confounding factors with the genetic data include: 1) the small sample sizes for most studies, 2) the large number of unique haplotypes among the NEP white sharks sampled, suggesting that diversity is not fully characterized, 3) the use of only maternally inherited markers (mtDNA), and 4) bias associated with the sample collection in time and space (e.g., the NEP study did not include samples from Guadalupe Island or other areas in the NEP range).

Taxonomy

All white sharks worldwide belong to the Order Lamniformes, Family Lamnidae, which includes three genera: *Carcharodon* (white sharks), *Isurus* (mako sharks), and *Lamna* (salmon sharks and porbeagles). The genera all have similar body type and shape, but they can be distinguished by tooth shape, fin position, and proportions (Compagno 2001). The NEP population of white shark is genetically distinct from other populations in different parts of the world, and has been classified as a distinct population segment by the National Marine Fisheries Service (NMFS) under the Endangered Species Act (ESA) (Jorgensen et al. 2010; Tanaka et al. 2011; Gubili et al. 2012; Dewar et al. 2013).

Life Span

Maximum age for large migratory sharks is difficult to estimate. In the NEP, Anderson et al. (2011) made a rough estimate of the maximum age for an individual shark, which was observed annually over 22 years, at a coastal aggregation site. Based on available data, white sharks are estimated to recruit to coastal aggregations at about 3 m TL (9.8 ft) or five years of age. This limited information led to an estimate for this individual shark of 27-30 years-of-age. Recently a vertebral bomb radiocarbon study estimated a maximum age of at least 70 years for Atlantic white sharks (Hamady et al. 2014). Even with significant variability in age estimates and small sample sizes, these studies indicate the white shark is a long lived species.

Reproduction

Individuals of this species mature late (females 14-16 years; males 9-10 years), and have few offspring (Cailliet et al. 1985; Francis 1996). Females breed every two to three years (Francis 1996; Compagno et al. 1997; Domeier 2012a). Although parturition (live birth) has never been observed, it is believed to occur in or near the warm waters of the SCB and northern Mexico in the late spring and summer.

Little is known about the mating habits of white sharks since there have been no verified observations. A few studies have inferred that the aggregation sites in central California and Guadalupe Island, Mexico may be used for mating due to the presence of spermatophores in the claspers of captured males and fresh conspecific bite marks observed on mature females, in addition to foraging (Domeier and Nasby-Lucas 2008, 2012).

An alternate theory proposes that mating does not occur at these sites, but proposes adults migrate to the SOFA for the purpose of mating (Boustany et al. 2002; Weng et al. 2007a). It may seem that temporal and spatial variations in use of the SOFA by males and females observed in tagging studies make this mating hypothesis less likely. However, this pattern is consistent with the mating systems of many migratory species known as lekking, which involves males assembling for competitive displays to attract female mates (Jorgensen et al. 2012a). Through analyses of pop-up archival transmitting (PAT) tagging data, Jorgensen et al. (2012a) used new approaches to explore both hypotheses. They concluded that with the current data limitations both hypotheses are plausible, but there are significant data to support the hypothesis that the SOFA is used for mating through a lek type mating system.

Reproductive success for adult white sharks may depend, in part, on the availability of mates. Some studies reported sex ratios in aggregation areas that were heavily in favor of males, with twice as many males observed as females (Domeier and Nasby-Lucas 2007; Anderson et al. 2011; Chapple et al. 2011; Sosa-Nishizaki et al. 2012). However, approximately thirty percent of white sharks observed in one study were of unknown sex which added uncertainty to the conclusions (Chapple et al. 2011).

It has been observed that males returned every year to aggregation sites, while females seemed to return every 2-3 years. This supports the idea that white shark gestation is between 16 and 18 months (Domeier 2012a). By this theory, females would be available for mating only every other year (Domeier 2012a).

Food Habits

Analysis of stomach contents of YOY and juvenile white sharks off California indicate that smaller white sharks feed on demersal and epipelagic fish, squid, small elasmobranchs, and invertebrates. As they grow in size they begin to forage on marine mammals. This is thought to occur around the age of 3, when they begin to venture out of the nursery areas into cooler water (Klimley 1985).

The most important prey items for larger sharks include pinnipeds (including seals, sea lions, and northern elephant seals [*Mirounga angustirostris*]) and fishes (including other sharks and rays). Sea turtles, larger cephalopods, gastropods, and crustaceans have been found less frequently in the stomach contents of white sharks examined globally. White sharks have also been observed scavenging on large and small cetaceans (Compagno et al. 1997; Curtis et al. 2006; Dicken 2008). Recent isotope analysis of vertebrae suggests that not all sub-adult and adult white sharks shift to marine mammals as their preferred prey. Some may continue to forage at lower trophic levels (Kerr et al. 2006; Carlisle et al. 2012; Kim et al. 2012).

Stomach content analyses and visual observation of feeding has been used to characterize the feeding ecology of white sharks (Klimley 1985; Compagno et al. 1997; Skomal et al. 2012), based on data collected to date from individuals in the coastal waters of the NEP. The feeding ecology of adults during their offshore migrations is still unknown. Results of recent isotope analysis of dermal and muscle tissue indicate low offshore consumption rates, suggesting that it is unlikely foraging is the primary purpose of offshore migrations (Carlisle et al. 2012).

Movements

Data from movement studies suggest adult males migrate from inshore aggregation sites in central California and Guadalupe Island to the SOFA located midway between North America and the Hawaiian Islands. Adult females migrate offshore in a much more diffuse and unpredictable pattern, and are only found passing through the SOFA while males are absent. This sex-specific difference in use of offshore habitat might be due to a difference in prey preference between males and females during the pelagic portions of their migrations (Domeier and Nasby-Lucas 2012), or as part of a lek type mating system (Jorgensen et al. 2012a). Existing movement data suggest that females do not return to the aggregation sites annually and could be considered primarily pelagic. While their migration is much more dispersed and less predictable than males, they have been tracked going back and forth between the eastern edge of the SOFA and the continental shelf of North America (Domeier and Nasby-Lucas 2012).

Some adult NEP individuals, both male and female, make a separate and distinct migration to the Hawaiian Islands (Domeier 2012a). This occurs at the same time as the other offshore migrations, but these animals avoid the SOFA altogether, passing to the north or south. These sharks are potentially targeting small cetacean prey not available in the SOFA, but it is unclear why they would migrate such a great distance when similar prey is available near the continental shelf of North America.

Tagging studies show that white sharks in the NEP exhibit philopatric behaviors and usually return to the same aggregation site where they were tagged (Anderson and Pyle 2003; Domeier and Nasby-Lucas 2008; Jorgensen et al. 2010). This provides strong evidence that the NEP population is demographically isolated from populations near Australia/New Zealand. When returning to the adult aggregation sites (central California and Guadalupe Island), males generally arrive over a period of a few weeks, from late July through early August, while most females return in October. Unlike males that

generally migrate directly between offshore and aggregation sites, pregnant females will migrate to the nearshore waters of the SCB and Baja California, Mexico presumably to give birth before returning to the adult aggregation sites (Domeier 2012a; Domeier and Nasby-Lucas 2013).

It is unclear when sub-adults begin to make inshore/offshore migrations or utilize aggregation sites.

Geographic Range and Distribution

The NEP population of white sharks found in California waters is a demographically-isolated population that shows significant genetic divergence from other global populations in Australia and South Africa (Jorgensen et al. 2010; Gubili et al. 2012). The known range of the NEP population of white shark extends from Mazatlán, Mexico and the Gulf of California north to the Bering Sea; and from the west coast of North America to the Hawaiian Islands (Figure 1). White sharks inhabit both inshore and offshore areas, from the continental shelf to the SOFA between California and Hawaii. The SOFA is a vast area of deep open water habitat that is shared by white sharks from both central California and Guadalupe Island during the offshore phase of their migration.

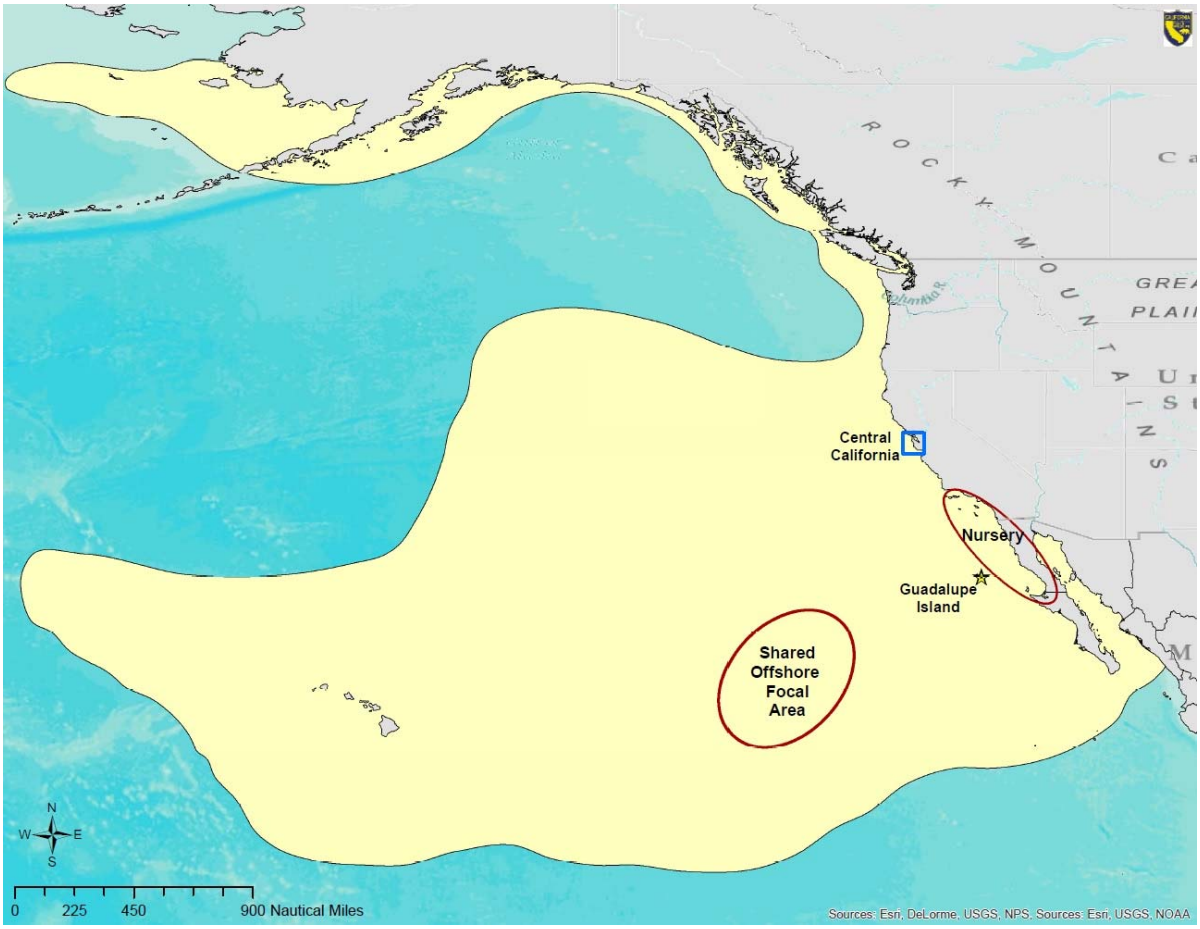

Figure 1. Known range of white shark in the Northeastern Pacific.
Sources: Klimley 1985, Martin 2004, Weng et al. 2007a, Domeier and Nasby-Lucas 2008, Galván-Magaña et al. 2010, Jorgensen et al. 2010, Domeier 2012.

Habitat Essential for Continued Existence of the Species

Based on best available science from mark recapture studies, satellite tagging, and direct observations, critical habitat for NEP white shark varies by life stage. Habitat used by this population includes warm coastal waters in southern California and Mexico, waters surrounding nearshore islands, deeper waters over the continental shelf, and deep offshore pelagic areas.

Young-of-the-year and juvenile white sharks utilize nearshore habitats in southern California and Mexico throughout the year. Warm coastal waters within the California current are likely utilized as nursery areas for YOY and juvenile white sharks. This includes the SCB south to Sebastián Vizcaíno Bay, Mexico. Use of this coastal habitat varies seasonally, which may be associated with temperature or availability of desired prey. The hypothesis that these waters are nursery areas is supported by the presence of juvenile white sharks in the incidental catch of commercial and recreational fisheries throughout this range and tagging data from several independent research efforts (Domeier 2012a; Lyons et al. 2013).

Satellite tagging studies and comparisons with other nursery areas worldwide have shown that YOY and juvenile white sharks restrict their movements to warmer water temperatures, like those that are found in the shallow coastal waters of southern California and northern Mexico (Weng et al. 2007b; Lyons et al. 2013). As white sharks mature, it is believed they become more tolerant of temperate ocean conditions, allowing them to migrate farther north and take advantage of the cool productive waters off the coast of central and northern California (Weng et al. 2007b).

Adult white sharks have an offshore pelagic phase to their migration pattern, and coastal habitat is likely essential for foraging. This is primarily due to the occurrence of large pinniped colonies along the coastal mainland and nearshore islands off California and Mexico. These pinniped colonies may be a primary factor in attracting the presence of adult white sharks at aggregation sites such as the Farallon Islands (San Francisco County) and Año Nuevo (San Mateo County) during late summer and fall. Departure from these aggregation sites has been documented to coincide with the decline in peak abundance of young seals in the late fall (Weng et al. 2007a).

Sub-adult and adult white sharks are found seasonally at known coastal aggregation sites (central California and Guadalupe Island) but make seasonal offshore migrations. Males from both aggregation sites migrate to the same offshore habitat, whereas females distribute more broadly when they leave the coastal aggregations. Breeding females may also be at risk of fatal fisheries interactions in Mexican waters during parturition, as this may occur in nearshore habitat in or adjacent to nursery areas utilized by YOY. This is speculative, as no white shark has been observed giving birth naturally and it is unclear where exactly parturition happens (Dewar et al. 2013; Sosa-Nishizaki et al. 2012).

Current Distribution

While the NEP population of white sharks can range as far north as the Bering Sea, most of the population is distributed along the continental shelf from Oregon to Mexico, and west to Hawaii. How and when the species moves through this area throughout its life gives insight into life history, ecology, and stock structure. Distribution also affects vulnerability of the population to sources of mortality such as fluctuations in prey availability, fatal fisheries interactions, or habitat destruction. Our understanding of the habitat use of NEP white sharks has been advanced over the years from anecdotal sightings and attack information to incidental catch in commercial fisheries to directed studies utilizing electronic tags, photo-ID, and genetics. The growing body of evidence indicates that different life stages utilize separate areas throughout the range based on season.

Young-of-the-Year and Juveniles

Distribution of YOY and juvenile white sharks has been investigated through examination of catch records as well as mark and recapture studies. Commercial fishing

records of incidental catch provide a metric to evaluate patterns in the distribution of YOY and juveniles. The most comprehensive historic review of patterns of NEP white shark distribution based on catch data used records from 1936 to 1984 (Klimley 1985). In this data set, YOY were found in catch records south of Point Conception (with one exception), while juveniles were found over a broader range extending north of Pt. Conception. This distribution of YOY and juveniles led Klimley (1985) to hypothesize that the SCB was a nursery area for white sharks. This theory is supported by a more recent study of fishery interactions in the SCB between 1936 and 2009. Lowe et al. (2012) found a similar spatial and temporal distribution of YOY and juvenile white sharks in the SCB. Catch records can also suggest when parturition or pupping occurs in the area, as YOY first appear in catch records in April, increasing through the summer into fall (Klimley 1985; Domeier 2012a; Lowe et al. 2012; Dewar et al. 2013). Both YOY and juvenile white sharks are caught predominantly in nearshore waters (<50 m depth), and most commonly by entangling net fisheries (e.g., set and drift gill nets) (Klimley 1985; Lowe et al. 2012).

Young-of-the-year and juvenile white sharks have also been incidentally caught on the Pacific side of the Baja California peninsula, Mexico, also in nearshore habitats. Santana-Morales et al. (2012) compiled data from (1) surveys of artisanal-fishing camps, (2) surveys at sites where carcasses are discarded, (3) log books from a commercial drift gill net vessel, and (4) observations onboard a commercial drift gill net vessel, mostly from the northern and central portions of the Baja Peninsula. Between 1999 and 2010, 111 YOY and juvenile white sharks (ranging from 123 to 274 cm [4-9 ft] TL) were reported to have been incidentally caught along the Pacific coast of Baja California. Of these, 60 percent were caught near Sebastián Vizcaíno Bay, and 80 percent were YOY (Santana-Morales et al. 2012). Seasonal patterns of occurrence were similar to those observed in the southern California Bight with a peak in white shark catch in the spring and summer.

Additional catch data are available from the Gulf of California, Mexico. Incidental catch of 14 juveniles has been documented within the Gulf of California between 1981 and 2007. None of these were estimated to be YOY (Galván-Magaña et al. 2010), and to date only one YOY has been documented from the Gulf of California (O. Sosa-Nishizaki, Centro de Investigación Científica y de Educación Superior de Ensenada (CICESE), pers. comm.). The data for the Gulf of California came from: (1) records from local newspapers; (2) white shark sightings made by scientists and reliable divers; and (3) shark parts or photographs examined by the authors (Dewar et al. 2013).

Over the past decade improved technology has allowed for the increased use of sophisticated electronic tags including pop-up satellite archival tags (PSAT) and Smart Position and Temperature (SPOT) tags (Wildlife Computers Redmond, WA). Usually, PSAT tags are attached to the back of the shark, and release after a programmed period of time to transmit data to the satellite. Unlike, SPOT tags which are attached to the dorsal fin and transmit whenever the shark is at the surface. A number of tagging studies have reported findings in agreement with the catch data. Young-of-the-year sharks stayed between Point Conception and Sebastián Vizcaíno Bay, with one 3-year

old juvenile travelling as far north as Point Reyes (Dewar et al. 2004; Weng et al. 2007b; Weng et al. 2012; Lyons et al. 2013).

In summary, YOY and juvenile white sharks are found in the nearshore waters of southern California, the Pacific coast of Baja California, and into the Gulf of California. Young-of-the-year sharks are documented primarily from Point Conception to Sebastián Vizcaíno Bay, which appears to be the key nursery region. Juveniles range both north of Point Conception and south into the Gulf of California. Additional data are needed in the Gulf of California and along the southern Baja California Peninsula to better understand use of these habitats.

Sub-adults and Adults

Researchers have used commercial fishery catch records, photo-ID studies, electronic and satellite tagging data, reports of attacks on humans and marine mammals, strandings, and sightings, to determine the range and historical distribution of sub-adult and adult white sharks in the NEP. Klimley (1985) provides a comprehensive historic review of patterns in sub-adult and adult distribution. Between 1936 and 1984, sub-adults and adults were caught predominantly north of Point Conception with the largest concentration being found off central California from Tomales Point to Monterey Bay, usually in areas with known pinniped rookeries (Klimley 1985). The majority of attacks on humans and pinnipeds also occurred within these same regions of the coast, as well as in river mouths and harbors (McCosker and Lea 1996). Between 1959 and 1984, 14 mature white sharks greater than 460 cm TL (15 ft; 9 female, 2 male, 3 unknown) were reported caught off the coast of California. Klimley (1985) hypothesized that females travelled south of Point Conception to give birth, because a higher percentage of females were in that area. This theory is consistent with his hypothesis that YOY and juveniles utilized the area south of Point Conception as a nursery.

Martin (2004) compiled the most comprehensive view to date of sub-adult and adult white shark movements in the most northern extent of their range. By analyzing 29 documented accounts of sightings, catch, and strandings from 1961 to 2004; Martin found that sub-adults and adults of both sexes utilize the waters off Alaska and British Columbia more than previously realized. Over 86 percent of the accounts were in the summer and fall when water temperatures are warmer. However, it is noted that these observations could be affected by a lack of observers during the colder seasons.

The Northwest Hawaiian Islands appear to represent the western boundary of the range for white shark in the NEP. Currently, white sharks are rarely caught or observed in the Hawaiian Islands. The discovery of white shark teeth in Hawaiian artifacts suggests a historic presence in the islands. There have been 14 confirmed observations of sub-adult and adult white sharks in the islands between 1926 and 2011 (Taylor 1985; Weng and Honebrink 2013). No young-of-the-year or juvenile sharks have been documented in the area, indicating that Hawaii is not likely a nursery ground for white sharks.

Sub-adult and adult white sharks have been documented through sightings and incidental catch from the Gulf of California (Galván-Magaña et al. 2010; Castro 2012).

Adults were most often observed in the Gulf of California from December to May and were less common from June to October.

Prior to the late-1990s there were few sightings of white sharks at Guadalupe Island. The number (or frequency, or both) of white shark sightings increased significantly since that time suggesting an increase in the local abundance and use of the area by the NEP white shark population. By 2003 sightings had increased significantly and a photo-identification study was initiated (Sosa-Nishizaki et al. 2012). This study revealed sex specific increases in annual abundance estimates from approximately 40 in 2001, to over 90 in 2011. Males increased throughout the duration of the study, while the female population only increased for the first several years and stabilized during the latter years of the study (Dewar et al. 2013).

This local population increase at Guadalupe Island may suggest there was an expansion of the core nearshore aggregation sites. Additional range expansion into central California south of Monterey Bay is suggested by an increase in white shark bite marks on pinnipeds and sea otters in the area. Even with increased use of these areas the majority of white shark activity occurred at Guadalupe Island and the central California sites over the last ten years (Dewar et al. 2013).

Sub-adult and adult white sharks, which consistently return to nearshore aggregation areas, can be studied using photo-ID. Individually unique characteristics such as body markings, and dorsal fin shape and coloration allow individuals to be recognized when they return to the aggregation sight during annual or bi-annual migrations (Cailliet 1985). Currently, there are two active photo-ID studies being conducted in the NEP, one in central California (started 1987) and the other in Guadalupe Island (started 2003, data from 2001). These studies provide valuable data and insight into life span, relative regional abundance, demographics, and duration of offshore migrations (Anderson et al. 2011; Chapple et al. 2011; Nasby-Lucas and Domeier 2012).

As with the younger life stages, advances in satellite tagging technology has contributed significantly to our knowledge of sub-adult and adult movements and habitat use. Studies at both Southeast Farallon Island and Guadalupe Island have utilized PSAT and SPOT tags to track the movements of sub-adult and adult white sharks. The PSAT tags can be deployed without handling the shark, but tracks are created using geolocation estimates based on light and sea surface temperature and may have large errors. These tags usually track the animal for less than 12 months. Tracks obtained from SPOT tagged sharks are more accurate and commonly last for over a year, but the animal must be restrained to attach the tag to its dorsal fin (Dewar et al. 2013).

Sharks from both central California and Guadalupe Island were found to travel to the SOFA and then return to the original area where they were tagged. Some sharks even travelled as far as Hawaii before returning to the original sites where they were tagged (Boustany et al. 2002; Weng et al. 2007a; Domeier and Nasby-Lucas 2008; Jorgensen et al. 2010). There is still debate over why the sharks make these offshore migrations and whether this serves as a period of foraging or mating (Domeier 2012a; Jorgensen

et al. 2012a). Consequently the more neutral term "Shared Offshore Focal Area" is used in this review.

Satellite tagging data provide the most detailed information available on when and where individual sharks are moving. These data show different temporal patterns of occupancy at the two aggregation sites. Sharks from central California start their offshore migration between mid-November and the end of March (Weng et al. 2007a), earlier than those at Guadalupe Island, which left between late December and early May (Domeier and Nasby-Lucas 2008). Males return to Guadalupe Island in late July to early August before the females that arrive from mid-September to early October. Satellite tagged males from both sites exhibit a 1-year migration cycle (Weng et al. 2007a; Domeier and Nasby-Lucas 2008), which is consistent with photo-ID observations (Anderson and Pyle 2003; Nasby-Lucas and Domeier 2012). Pop-up satellite archival tags (PSAT) typically only last for less than 12 months; therefore, the semi-annual pattern of occupancy (returning every other year), which is apparent for females in photo-ID data (Anderson and Pyle 2003; Nasby-Lucas and Domeier 2012) cannot be examined using this technology.

Females tagged at Guadalupe Island have been documented using SPOT tags for which deployment durations greater than 2 years are not uncommon. Results confirm that females typically do not return to aggregation sites annually (Domeier and Nasby-Lucas 2012). Mature females remain offshore for around 15 months, which is presumed to be associated with an 18 month gestation cycle (Domeier and Nasby-Lucas 2012). Following 15 months offshore, four females were tracked to the coast and into the Gulf of California between the months of April and August. This time period corresponds with the seasonal presence of YOY, and suggests that these females travelled there to give birth (Domeier and Nasby-Lucas 2013). Three of the four females then returned to Guadalupe Island in late September to early October, after the males would have returned. The fourth tag stopped transmitting once the shark exited the Gulf of California and the individual has not since been observed at Guadalupe Island (Domeier and Nasby-Lucas 2013).

Tracks from both tag types and both aggregation sites provide some insight into the differences in habitat use between males and females in the SOFA. There appears to be sexual segregation, with males from both regions consistently using the relatively confined offshore focal area while females spend less of their pelagic migration in the SOFA and tend to cover a larger area (Jorgensen et al. 2010; Domeier and Nasby-Lucas 2012). This seems to limit the amount of overlap between male and female habitat use during offshore migrations, but the extent and implications remain unclear.

Modern electronic tagging technology and photo-ID studies add more detail and context to previous data, which were primarily incidental catch data and documented sightings or attacks. These techniques provide additional information for temporal and spatial patterns in movements, especially for sharks found at Guadalupe Island, Southeast Farallon Island and Tomales Point. The geographic range of white sharks appears to be bounded by Mexico, Alaska, the coast of North America and the Hawaiian Islands. Young-of-the-year and juvenile white sharks are primarily found in the nearshore

coastal waters from the Gulf of California to central California. As they mature into sub-adults (at about 3 m [10 ft] TL in size); their diet expands to include marine mammals and they begin to travel farther from the warm water nursery grounds. At this approximate size, white sharks also begin large-scale, seasonal offshore migrations that differ for males and females. Most males move to the SOFA in the winter and spring where they remain until the following summer when they return to the nearshore coast, while females, arrive later at the coastal aggregation sites and depart earlier. Females also utilize a broader area for migrations. Females may return the following year or spend approximately 15 months offshore and return to the aggregation site after two years. Females appear to pup off of California or Mexico between April and August.

Species Status, Abundance and Population Trends in California Waters

Abundance Estimates

An estimate of 339 adult and sub-adult white sharks was cited by the Petition as representing the majority of the current NEP population (Shester et al. 2012). This number was derived from two separate, but similar studies conducted at two of the known aggregation sites (Chapple et al. 2011; Sosa-Nishizaki et al. 2012).

Chapple et al. (2011) estimated the abundance of sharks that aggregate near the Farallon Islands and Tomales Point and calculated an estimate of 219 adult and sub-adult white sharks. This was based on photo-identification surveys over three field seasons, and a Bayesian mark-recapture algorithm assuming a closed population. A similar study was performed at Guadalupe Island (Sosa-Nishizaki et al*.* 2012) over a period of nine years, which estimated a total of 120 adult and sub-adult white sharks. The Petition summed the estimates from these two studies to generate an estimate of 339 individuals. Using this value as their basis, the Petition concluded that this population level is dangerously low, below the level necessary for a healthy, discrete population.

This estimate of 339 individuals may not be an accurate population estimate since it does not account for adults and sub-adults that may aggregate in other, less studied, areas. Most notably, white sharks that may congregate in areas such as Año Nuevo (Jorgensen et al*.* 2010) were not included in the estimate. Also this method may under-estimate population size (Sosa-Nishizaki et al. 2012) and may not accurately reflect the entire population of sharks visiting these two locations. The Department notes that Sosa-Nishizaki et al. (2012) cautioned that their research should not be used to determine absolute abundance until methods can be improved, and recommended their work be used as an index of abundance only.

The methods used to calculate the central California population index (Chapple et al. 2011) have also been questioned. The assumption of a closed population for the mark-recapture algorithm has been contested (Domeier 2012b; Dewar et al. 2013) as large sharks have been observed leaving study sites and not returning within a study period

as predicted. It is unlikely that the entirety of sharks that did not return would have died or succumbed to predation or incidental catch in fisheries. Furthermore, previously undescribed sharks have appeared at the study sites during the study period (Domeier et al. 2012). These observations conflict with the closed-population assumptions that individual adults will always return to the site and be counted unless they have died. Domeier (2012a) asserts it is possible that sharks may frequent other sites not yet sampled or remain in movements as yet not fully described. Towner et al. (2013) conducts similar work in South Africa, and has found that human eye identification of dorsal fins to verify identity of individual and recapture sharks, may not be the most effective method. The recognized uncertainty of the assumptions used in mark-recapture studies raises questions to the accuracy of the abundance estimates in central California. The current catalogue of sharks in the Guadalupe Island study also contains at least 29 orphan individuals (only photographs of one side are available) that cannot be added to the analysis until the set is matched or completed.

In addition, current aggregation site estimates may under-represent the sub-adult portion of the population, and existing aggregation site estimates do not include or consider population information for juvenile white sharks (Domeier 2012b). Habitat use and timing of recruitment for sub-adults continues to be a large data gap in life history. Recent acoustic studies in the SCB have only begun to address these questions, and are still years from a conclusive determination (C. Lowe, CSULB pers. comm.).

Issues with inadequate sampling and failure to meet assumptions in use of population estimation models (Domeier 2012b; Sosa-Nishizaki et al. 2012), as well as the larger context of unknown aspects of white shark behavior with respect to distribution and range throughout the life cycle (Domeier 2012a), create uncertainty around currently available estimates of population abundance. Sosa-Nishizaki et al. (2012) note that their modeling effort underestimates the actual population size and that their estimate is lower than the number of known, photo-identified sharks.

The original raw data sets used to make the initial abundance estimates in central California and Guadalupe Island have since been updated. An additional two years of data from Guadalupe Island and gender determinations for previously unknown individuals in central California have resulted in a more complete data set. During the NMFS BRT review, Dewar et al. (2013) reanalyzed these raw data and evaluated them for potential bias in sex ratios, as well as the likelihood of an individual shark having equal probability of capture.

The BRT's demographic analysis of the NEP population suggests that sub-adults and adults do not have an equal probability of documentation in the two study areas and concluded that sub-adults may be underrepresented in the estimates presented in the Petition (Dewar et al. 2013). Factors affecting the probability of a sub-adult being documented may include the use of and type of attractant and the presence of larger sharks. Sub-adults may not yet be feeding exclusively, or at all, on marine mammals, limiting their attraction to mammal shaped decoys or whale blubber. White sharks also seem to exhibit a size-based dominance feeding hierarchy that may result in smaller sharks being driven away from bait by larger animals. This would reduce the

quantification of sub-adult sharks in the study. If not yet seeking mates, sub-adults not yet targeting marine mammals may be absent from the aggregation sites entirely (Chapple et al. 2011; Dewar et al. 2013).

The estimate of female abundance at both sites may be artificially low; the observed female to male sex ratio for mature white sharks was 0.6 at Guadalupe Island and 0.2 at the central California sites. Since the sex ratio of YOY sharks captured in nearshore fisheries is nearly 1:1 and there is no evidence of sex-biased mortality on juvenile female white sharks, it seems unlikely the ratio in the adult population could be this dramatically skewed. If these proportions are in fact accurate, increased female mortality would have to occur throughout the juvenile life stages. However, there is no evidence of sex-biased mortality on juvenile female white sharks. A more plausible cause of this bias could be a greater unavailability of females during photo-ID activities due to their later arrival at the aggregation sites. This delay in arrival may also represent a different use of the sites between sexes and thus decreases females' probability to be near the surface or in the proximity of dive cages. Mature females are presumed to have a gestation cycle of 16-18 months and are not believed to return to aggregation sites every year. These factors, combined with the short span of the central California study (3 years), could have led to a significant underestimation of females (Dewar et al. 2013).

A total adult and sub-adult population estimate of 339 individuals in the NEP would be indicative of a population well below a healthy level; however, evidence suggests this estimate is not accurate. The BRT evaluated an augmented data set and performed an analysis that corrected the calculation of adult female abundance for sex bias. This analysis modeled estimates of both adult and total abundance that take into consideration such factors as life history, fishing mortality, natural mortality, and permanent emigration. Results suggest the NEP population is dramatically larger than the Petition cites, and is in fact quite healthy and robust (Dewar et al. 2013).

The Department concludes that there remain substantive issues in determining NEP white shark abundance. Additional research and analysis that not only includes all age classes, but integrates additional available information to fully assess abundance is necessary. Despite the clear deficiencies in methodology previously described (Sosa-Nishizaki et al. 2012; Domeier 2012b, Domeier and Nasby-Lucas 2013), the current abundance estimates comprise the best available scientific information to date about the minimum adult NEP population size and larger estimates of the population over all life stages. The site-specific estimates from the central California and Guadalupe Island aggregation sites can alternatively be used as indices of abundance for gauging overall population trends (Domeier 2012b), and estimates at other aggregation sites such as Año Nuevo could be conducted in the future to provide a more complete view of the entire NEP population size and distribution. Ultimately, Sosa-Nishizaki et al. (2012) cautioned that "our results, and that of Chapple et al. (2011), indicate that adult White Shark populations in the NEP are small, highlighting the need for continued monitoring and precautionary management."

Species Status

Abundance estimates alone do not give a complete and accurate picture of the health and stability of a population. Other considerations include life history characteristics and the range and distribution of the species.

In general, sharks are k-selected species due to their life history characteristics: age-at-maturity, production of few offspring, and long life expectancy. These populations have a slower potential for population growth and tolerate a lower level of mortality than faster growing populations (r-selected species). In comparison to rates for other types of marine species, sharks fall between those of marine mammals and teleost fish (Hutchings et al. 2012). White sharks in particular reach maturity at a relatively older age, have smaller litter sizes than most sharks, and exhibit a semiannual reproductive cycle. A k-selected life history alone is not a risk factor for species decline, but it does affect the level of removal that a population can sustain and the rate at which it can grow. Comparatively white sharks are estimated to have a higher rate of potential population growth than mako sharks or salmon sharks (Hutchings et al. 2012).

The vast range of the NEP population may allow for a high level of resilience to catastrophic and localized events. The main life stages (YOY/juveniles, sub-adults, adults) are geographically separated most of the time, and even mature adults spend only part of the year in large groups. Additionally, females are present at aggregation sites only every 2-3 years and sub-adults might not initially frequent these sites regularly. Although mature males utilize a smaller area of the SOFA than females, this area is still large and they are widely distributed throughout the region (Domeier and Nasby-Lucas 2012). Finally, the species' longevity may suggest resilience to the loss of a single year class.

Independent Trends

There are no population studies estimating historic levels of the NEP white shark population, but analyses of relatable trends may provide insight into whether the population is increasing, decreasing or stable. These include trends in incidental take in commercial fisheries and marine mammal attacks by adult white sharks.

Data on commercial fisheries interactions provide a useful tool for studying trends in populations, which are difficult to study directly due to their wide range and low density. Young-of-the-year and juvenile white shark interactions with commercial fisheries and catch per unit effort (CPUE) in the nearshore set and drift gill net fisheries (calculated as the reported catch divided by the number of sets per year) can be used to inform trends in population, relative abundance and seasonality.

Catch trends over the past 10 years suggest the juvenile population in the SCB may be increasing. This is supported by a rise in the incidental catch of YOY and juvenile white sharks in gill net fisheries even as effort in these fisheries has declined (Figure 2). Lowe et al. (2012) and Lyons et al. (2013) correlate increases in juvenile white shark fishery interactions with possible increased abundance due to added regulatory protections

primarily enacted in the 1990s, including state and federal prohibitions on take of white shark, and progressively restrictive regulations on gill net gear.

There are indicators that the adult population of white sharks may be increasing as well. The northern elephant seal population has steadily increased at Southeast Farallon Island since they were first seen there in the 1970s (Stewart et al. 1994). White shark attacks on marine mammals at Southeast Farallon Island have been documented since the 1980s, providing a significant time series. An increase in the number of attacks suggests that the white shark population increased as the population of the northern elephant seals at the island increased (Ainley et al. 1985). Based on an increase of pinniped attacks, adjusted for pinniped population growth in the 1970s and 1980s, two 1996 studies concluded that the white shark population at the Southeast Farallon Island had increased (Pyle et al. 1996; Klimley and Anderson 1996).

The increase in white shark attacks on marine mammals is not limited to the Farallon Islands, as they are occurring more often in locations outside of the commonly described aggregation sites. A large population of more than 100,000 California sea lions (*Zalophus californianus*) is located in the northern Channel Islands. This is a significantly larger population than is found off central California. At San Miguel Island, annual surveys of pinniped populations have been conducted for decades, but only in the last couple years has there been evidence of white shark attacks on pinnipeds. Prior to 2010 there were essentially no observed white shark attacks or wounds associated with California sea lions in the northern Channel Islands. This changed in 2011 when there were approximately 136 recorded bite marks, and in 2012 the number rose to over 300. The observation of healed wounds or scars early in the year suggest that attacks may occur year around, but most are observed in June through August (Dewar et al. 2013).

White shark bite marks are also found on central California southern sea otters (*Enhydra lutris nereis*). Over the past five years, researchers at the United States Geological Survey Western Ecological Research Center have documented a dramatic increase in the number of mortalities linked to white shark bites in Monterey Bay, north of Santa Cruz, and in San Luis Obispo County, particularly between Estero Bay and Pismo Beach (M. Harris, CDFW-OSPR pers. comm.). Physical evidence needed to positively identify the species of shark responsible for a trauma is only present in 10 to 20 percent of the recovered carcasses (i.e., where tooth fragments or tooth scrapes on bone are found), but in all identifiable cases, white sharks have been identified as the species responsible for the trauma. There has not been any evidence to indicate that other shark species are also attacking sea otters in these areas.

It is not definitive that the increase in the attacks on sea lions and sea otters is due to an increase in the white shark population. However, instances of attacks have increased in new areas and there has not been a notable decrease in attacks in other locations (Dewar et al. 2013). Therefore, it is reasonable to infer there may be more sharks foraging on marine mammals in addition to sharks moving to different forage areas.

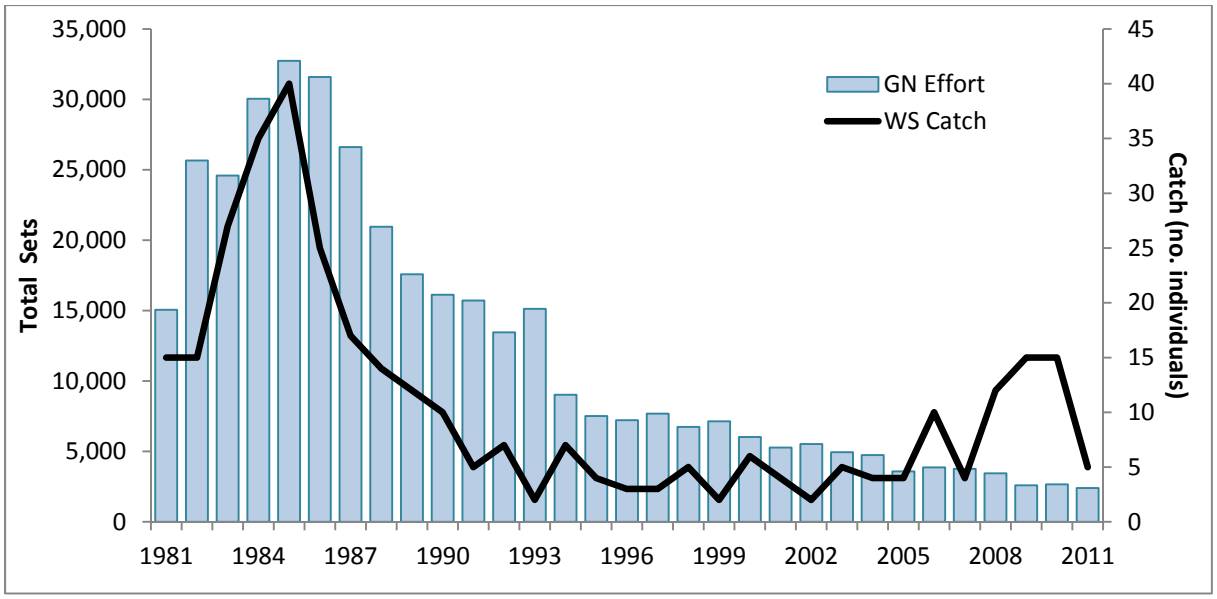

Figure 2. Reported white shark catch in west coast commercial gill net fisheries, 1981-2011.
Source: Department gill net logbook data (sets) and commercial landing receipt data (catch; CFIS).

Factors Affecting Ability to Survive and Reproduce

Environmental Contaminants

White sharks, like other large predators, are particularly vulnerable to accumulation of contaminants. Their high trophic level in the food web, long life spans, and large lipid-rich livers make them susceptible to bioaccumulation of persistent environmental pollutants. A study on trophic structures in pelagic ecosystems concluded that the Cesium-Potassium ratio, shown to be a useful indicator of the biomagnification potential in food webs, increases with an increase in trophic level in pelagic organisms from the NEP (Mearns et al. 1981). Studies have shown that tissue concentrations of dichlorodiphenyltrichloroethane (DDT) and polychlorinated biphenyls (PCB) increase with trophic levels, and that increased tissue concentrations of methyl mercury in an organic form are normally found in higher trophic level organisms (Young et al. 1980). While historically high levels of contaminated runoff have been noted in the past, studies have shown, overall, there has been a 70 percent reduction in contaminant inputs to the SCB coastal waters since the 1970s, despite increased urbanization and population growth (Schiff et al. 2000).

Mull et al. (2012) revealed that white shark tissue samples from the SCB exhibit high levels of PCBs, DDT, and methyl mercury. They also state that little is known about baseline contaminant loads, or the individual and population effects of these contaminants in elasmobranchs. To date high tissue levels of elemental and organic contaminants have not been found to cause deleterious effects in elasmobranchs. Mull et al. (2013) observed higher than expected contaminant levels in 20 YOY white sharks from the SCB. Most of the individuals sampled (80 percent) had liver concentrations of

DDT and PCBs exceeding a model of bioaccumulation based on feeding alone. This indicates a high likelihood that white sharks experience maternal offloading, where the mother passes stored organic contaminants to her offspring. To date, no information regarding toxicity of organochlorines or observations of sub-lethal impacts exists in sharks (Mull et al. 2013).

Marine Debris

Similar to other large marine species, white sharks may be susceptible to ingestion and entanglement by marine debris, especially plastics. Plastics can be transported over long distances and large quantities can accumulate in concentrated areas such as an area termed the Great Pacific Garbage Patch in the North Pacific Gyre (Rios et al. 2010). This persistent concentration of debris is north of Hawaii and partially overlaps the SOFA, where male sharks aggregate during their annual offshore migration. White sharks likely encounter marine debris in their nearshore and offshore habitats, whether through a concentration such as the Great Pacific Garbage Patch or the widespread presence of plastics and other debris in the marine ecosystem. No sharks at the central California aggregation site or in the SCB have been reported to be entangled in marine debris, but their wide range and relatively infrequent human interactions potentially limit observation of this occurrence. Lamnid sharks are capable of evacuating their stomachs, which may reduce vulnerability of ingestion. This has been observed in a longline caught mako shark (Brunnschweiler et al. 2011). Temperature data from a PSAT tag have indicated that the tag was potentially consumed by a lamnid shark, given the warm internal temperatures, and then regurgitated (Kerstetter et al. 2004).

White sharks in Guadalupe Island and Australia have been observed interacting with, and entangled in plastic box strapping. This material causes problems similar to fishing gear entanglement when a smaller animal swims into the plastic circle and the material becomes caught on the pectoral fins and/or gill slits. Then as the animal grows larger in girth the material constricts and cuts into the animal's fins and/or tissue. This can cause lacerations and affect the ability of the animal to swim and turn normally (Taylor 2010).

While there is a need for further research on the effects of environmental contaminants to all life stages of white shark, the Department does not find that contaminants or marine debris currently pose an imminent threat of extinction to the NEP population of white sharks.

Ship Strikes

Strikes by commercial shipping vessels are a potential risk for white sharks. The frequency and severity of ship strikes are not well known, even for marine mammals, due to failures to report collisions, delayed death post impact, inability to locate carcasses after an impact, and the difficulty of determining the actual cause of death.

There is little documentation on the frequency and effects of ship strikes on white sharks. However, an adult white shark from Dyer Island, South Africa was observed struck by a whale watching vessel. The injury was deep, but missed the vertebral

column, making the injury survivable. Although the shark showed signs of decreased body condition 12 months after the strike, the animal did not appear greatly impaired. The decreased body condition was most likely due to the energy cost of healing the injury. When the individual was observed almost 23 months after the strike, it appeared to have normal body conformation. This return to normal body condition, suggests the shark was able to fully recover from the injury (Towner et. al. 2012).

The risk of ship strikes to white sharks in the NEP may be reduced by the recent relocation of shipping lanes adjacent to the Gulf of the Farallones, Channel Islands, and Cordell Banks National Marine Sanctuaries adopted by the International Maritime Organization (Drake 2013; NOAA 2012).

Overexploitation

Incidental take in California commercial fisheries

California's commercial fisheries target a wide array of species, both fish and invertebrate, with numerous gear configurations. While incidental take has been documented in multiple gear types, the majority of white shark interactions occur in the nearshore set gill net fisheries incidental to targeted species. Having peaked in the mid-1980s, California's commercial gill net fisheries have experienced a steady decline and are currently operating at a fraction of their historical high. Along with a decrease in fishing effort, catch records indicate that incidental take of white shark declined until 2005, when a sudden increase in documented cases began. This increase has been attributed to a likely increase in the YOY and juvenile white shark population, as well as an increase in reporting due to incentives from researchers. Although incidental take of YOY white sharks is known to occur, the effects on the population are likely less deleterious than in earlier years.

California gill net fishing can be categorized into four separate fisheries, all having the potential for interaction with white shark: drift net, which is divided into large mesh and small mesh, and set net, which is divided into two fisheries based on target species. Small mesh drift net and set net are considered nearshore fisheries. While often times grouped with the large mesh drift net fishery, the small mesh drift fishery is more similar to the set net in target species and spatial distribution.

Nearshore commercial gill net fisheries account for 81 percent of white shark interactions with fisheries off California (Lowe et al. 2012). A Department examination of both gill net logbook and landing receipt data results in a combined total of 351 records of white shark take in all California fisheries since 1979, as shown in Table 1. The Department analyzed records of white shark catch in all commercial fisheries (Table 1) to augment information from Dewar et al. (2013) (Table 2) that used gill net logbooks to evaluate fishing effort by number of sets.

Gear type is indicated on both logbooks and landing receipts. Before 1996, a general designation for "entangling nets", which includes set and drift gill nets along with trammel nets, was used by the Department. This grouping did not distinguish between

types of entangling nets. While some of the records indicate specific gear type, not all can be differentiated, and take by gear type is therefore somewhat ambiguous. Between 1979 and 1996, when the entangling net designation was phased out, there were 246 instances of white shark taken. Of these, 79 were by set gill net, 59 by drift gill net (both small and large mesh), 13 by trammel net, 67 by general “entangling” nets, and the remaining 28 were other gear types (Table 1).

Since 1996, there have been 105 records of incidental white shark take; 94 by set gill net, 7 by drift gill net, and 4 by other gear types (Table 1). Incidental take in commercial fisheries has included all age classes of white shark. However, between 1991 and 2012, 82 percent of white sharks caught were considered to be young of year (<175 cm TL; 5.7 ft). Sub-adult and adult specimens were primarily taken in the 1980s before implementation of the observer program and the 1994 ban on gill nets in state waters. That same year, the state of California declared white sharks a prohibited species, deterring further directed take.

It is likely that the depth and location of fishing gear largely affects the possibility of YOY white shark interaction. Lyons et al. (2013) hypothesized that YOY and juvenile white sharks prefer shallow, inshore habitat and feed on bottom-dwelling species, where they are more likely to interact with set net gear that is deployed on the ocean floor. The depths at which inshore small mesh and large mesh drift gear are set are likely to minimize interactions.

This idea is further supported by SCB juvenile white shark tagging data. Twenty-four YOY white sharks were fitted with SPOT and PAT tags, tracking data showed that they were equally likely to be found inside and outside of state waters (Lyons et al. 2013). They also indicated that these individuals maintained a similar depth distribution in the water column regardless of bottom depth (greater than or less than 200 m; 656 ft).

Table 1. Records of white shark catch in California commercial fisheries, by gear type, 1979-2012.
Catch numbers in Table 2 represent only those records available in gill net logbook data, whereas Table 1 numbers represent records from all available sources.

Year	Drift GN	Set GN	Entangling Nets	Harpoon/ Spear	Hook & Line	Lampara	Long line	Seine	Trammel	Trawl	Unknown	Total
1979		4							1			5
1980					1				4		1	6
1981	8	7										15
1982	6	5	2				1		1			15
1983	7	14	1		1				3		1	27
1984	4	19	5					1	2		4	35
1985	14	6	18[A]							2		40
1986	6	6	6	2	2				2		1	25
1987	3	4	9	1								17
1988	2	4	5			1	1			1		14
1989		5	6		1							12
1990	2	1	6		1							10
1991	1	1	3									5
1992			6		1							7
1993	1	1										2
1994	2	2			1		1	1				7
1995	3									1		4
1996	1	1								1		3
1997	1	2										3
1998	1	3					1					5
1999	1	1										2
2000		6										6
2001		4										4
2002		2										2
2003		5										5
2004		4										4
2005	1	3										4
2006		10										10
2007		4										4
2008	2	10										12
2009		15										15
2010		15										15
2011		3			1	1						5
2012		6										6
Total	66	173	67	3	9	2	4	2	13	5	7	351

Data Source: CDFW landing receipts, gill net logbooks, MBA white shark research program data.
[A] denotes record indicating 11 white shark taken in one gill net set, but is believed to be an entry error (correct record believed to be one)

Table 2. Gill net fishing effort and white shark catch, as recorded in logbooks from 1981-2011, for three U.S. west coast net fisheries. Approximate corrected estimates of total catch (lgDGN and smDGN = large- and small-mesh drift gill net).

Year	Effort (sets)			Logbook reported catches			Estimated catches (log x 5)			TOTAL
	lgDGN	smDGN	set net	lgDGN	smDGN	set net	lgDGN	smDGN	set net	
1981	5594	477	8982	8	0	6	40	0	30	70
1982	10292	308	15053	6	0	4	30	0	20	50
1983	9883	187	14525	7	0	19	35	0	95	130
1984	9800	155	20093	4	0	24	20	0	120	140
1985	9618	321	22799	27	0	9	135	0	45	180
1986	10392	623	20577	7	0	12	35	0	60	95
1987	8280	461	17876	5	0	7	25	0	35	60
1988	5760	496	14697	3	0	5	15	0	25	40
1989	5620	361	11601	0	0	6	0	0	30	30
1990	4163	372	11593	2	0	3	10	0	15	25
1991	4232	512	10975	1	0	2	5	0	10	15
1992	3736	357	9367	2	1	0	10	5	0	15
1993	5040	504	9586	1	0	1	5	0	5	10
1994	4076	614	4336	1	0	2	5	0	10	15
1995	3373	478	3667	3	0	0	15	0	0	15
1996	3143	500	3571	0	0	1	0	0	5	5
1997	2678	376	4627	1	0	2	5	0	10	15
1998	2652	205	3883	1	0	2	5	0	10	15
1999	2389	260	4495	1	0	1	5	0	5	10
2000	1193	251	4577	0	0	4	0	0	20	20
2001	1410	217	3651	0	0	3	0	0	15	15
2002	1410	252	3861	0	0	2	0	0	10	10
2003	1171	255	3522	0	0	4	0	0	20	20
2004	932	186	3620	0	0	4	0	0	20	20
2005	817	255	2508	1	0	3	5	0	15	20
2006	1409	291	2167	0	1	8	0	5	40	45
2007	1172	276	2318	0	0	3	0	0	15	15
2008	963	311	2174	0	1	8	0	5	40	45
2009	606	232	1756	0	0	8	0	0	40	40
2010	377	285	1998	0	1	11	0	5	55	60
2011	157	255	1985	0	0	1	0	0	5	5

Data Source: Department gill net logbook data (Dewar et al. 2013)

Large mesh drift gill nets

Large mesh drift gill nets are spatially distributed further offshore than the small mesh drift gill nets and set gill nets. This fishery generally targets shark and swordfish, using a mesh size of 35.5 cm (14 in.) or larger. The large mesh drift fishery has historically been the second largest of the three California gill net fisheries, reaching a peak of 10,392 sets in 1986. Effort in this fishery has been in steady decline since the peak, and in 2011, it became the smallest of the three gill net fisheries. In 2011, only 157 sets were

reported, a mere 1.5 percent of its historical high of 10,392 in 1986 and accounting for 6.5 percent of effort (Table 2).

Since 1989, a number of restrictions have been placed on the gill net fisheries, including several temporal and spatial closures that reduce the utilizable area for drift gill nets to a fraction of its historical extent (Figure 3). With this reduction comes decreased effort, and as a result, fewer instances of white shark incidental take. Gill net data have only twelve records of white shark take in large mesh drift nets from 1994-2011 (Table 1).

Small mesh drift gill nets

In the 1980s, the small mesh drift gill net fishery had the lowest number of sets of the three gill net fisheries. At the peak of gill net fishing effort in 1986, the small mesh drift gill net fishery was almost 17 times smaller than large mesh drift net fishery and 33 times smaller than the set net fishery in number of deployed sets. Mainly targeting white seabass with mesh 8.9-15 cm (3.5-6 in.) in size, the fishery was reduced by the California Marine Resource Protection Act of 1990 (MRPA). Enacted in 1994, the MRPA banned inshore gill nets within 5.6 km (3 nm) of the mainland coast, and within 1.9 km (one nm) of offshore southern California islands. Since then, effort in the small mesh drift gill net fishery has declined from a peak of 623 sets in 1986 to approximately 250 sets per year. In 2011, small mesh drift gill nets accounted for only 10.6 percent of total gill net fishing effort. According to gill net logbook data, small mesh drift nets have been responsible for only four records of incidental white shark take since 1981 (Table 2).

Set gill nets

Of California's three gill net fisheries, the set net fishery is by far the largest, accounting for 82.8 percent of gill net fishing effort (in number of sets) in 2011. While still comprising the majority of fishing effort, it had dropped to 8.7 percent of its historical high of 22,799 sets in 1985. The fishery generally targets California halibut and white seabass with mesh 21.6 cm and 16.5 cm (8.5 in. and 6.5 in.) respectively, or larger. Set gill nets are generally deployed in waters less than 50 m (164 ft) deep, restricting effort to shallow coastal waters on the continental shelf. The gill net ban in state waters affected the set net fishery by greatly reducing the area in which these nets could be used, shifting effort to a few limited regions where the continental shelf extends beyond 5.6 km (3 nm). As a result of the reduction in fishable area, effort declined. From 1981 to 1993, gill net logbook data has record of an average of 8.2 white sharks taken per year (98 total) in the set gill net fishery. This dropped to an average of 3.9 sharks per year (67 total) between 1994, when the MRPA ban was established, and 2011 (Table 2). Due to the "entangling net" designation on landing receipts which was used until 1996, calculating the average number of white sharks caught by set versus drift gear is problematic, but represents an additional 5.2 sharks a year taken by entangling nets between 1981 and 1993 (3.8 if [A] error is corrected) (Table 1).

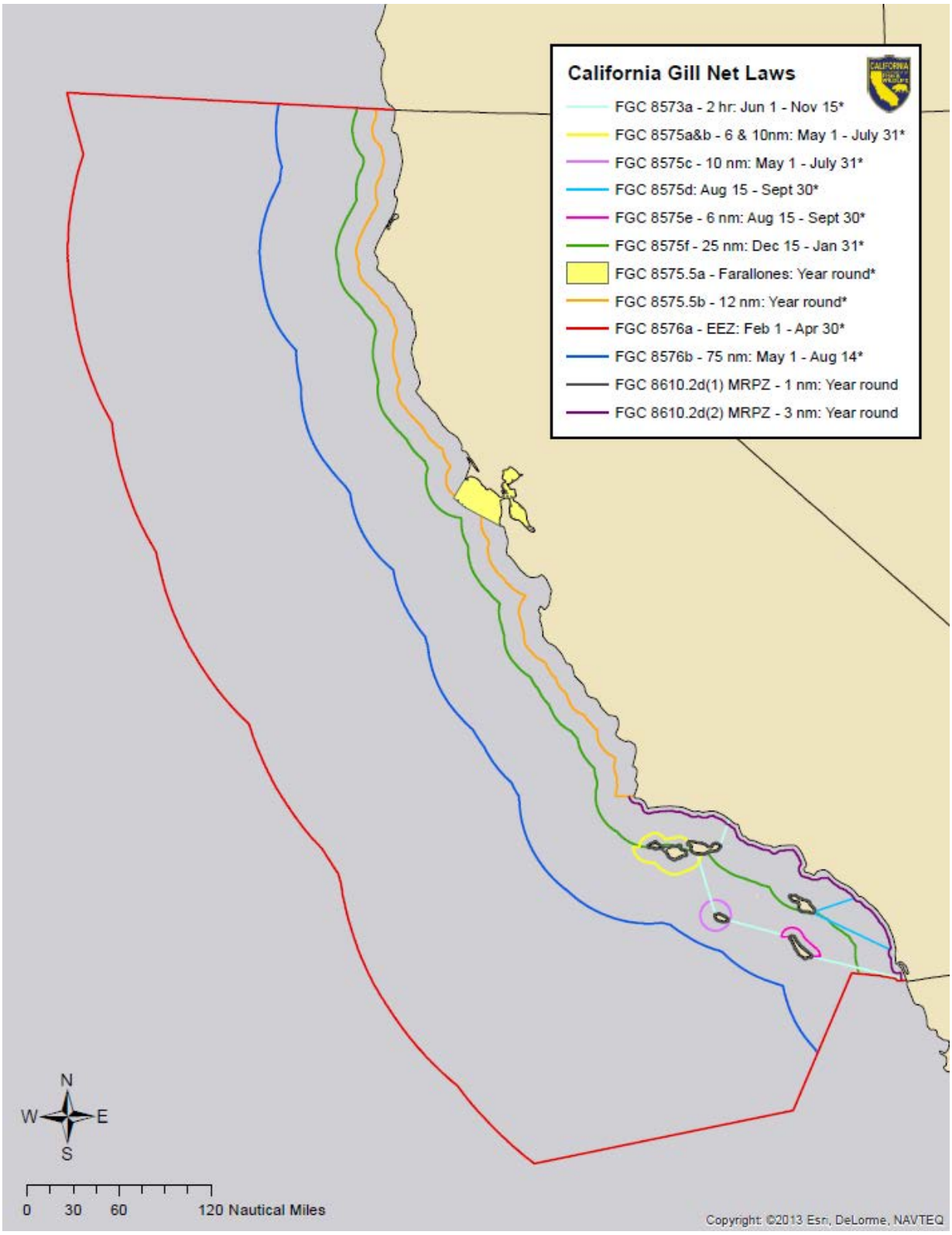

Figure 3. California laws for closure areas of commercial gill net fisheries.
Starred (*) laws only apply to the offshore, large-mesh, shark and swordfish drift gill net fishery. Map does not include federal closure areas.

Fishing effort

In order to determine the frequency of gill net fishing gear and white shark interactions, the gill net fisheries need to be characterized and effort, catch, and incidental take quantified. This information is collected via fisherman reported logbooks and market reported landing receipts, as well as by data collected from at sea observer programs.

Submission of logbooks is required by law (Section 174, Title 14, California Code of Regulations) by every permit holder for all gill net fishing activities or non-activity (both sets with no catch and months where no fishing occurred). From these logs, the Department is able to calculate the number of trips and sets that are completed each season by the fleet, as well as estimate bycatch. Although law requires submission of completed logbooks from all permit holders, examination of records indicates compliance is not 100 percent.

Supplementary to the logbook data, the Department has catch data collected from landing receipts. In 2000, landing receipts indicated that 171 and 119 general gill net and drift gill net permits, respectively, made landings. By 2011, the numbers of issued and active permits had dropped considerably. The Department recorded 114 active general gill net permits in the set net fishery, and 43 active drift gill net permits; a 33 percent and 64 percent decrease, respectively. In 2012, only 32 drift gill net permittees actively fished. This represents an additional 25 percent decrease in participation in a single year.

The decrease in permittees corresponds to a decrease in fishing effort, as opposed to a consolidation of participants. The set net fishery experienced a 64 percent decrease in reported effort, dropping from 3382 trips to 1378 trips between 2000 and 2011. Likewise, drift net effort declined almost 81 percent, dropping from 1444 to 278 trips for the same period (Table 2).

Fishing location is reported to the Department by numerical designation of Department fishing blocks; there are 241 fishing blocks off of California. Lyons et al. (2013) reported that for 2006-2009, 80 percent of the total gill net fishing effort was reported in only nine Department fishing blocks. All nine blocks were considered “high effort”, which was defined in the study as those in which fishing effort exceeded 20 hours/fathom net length (Figure 4).

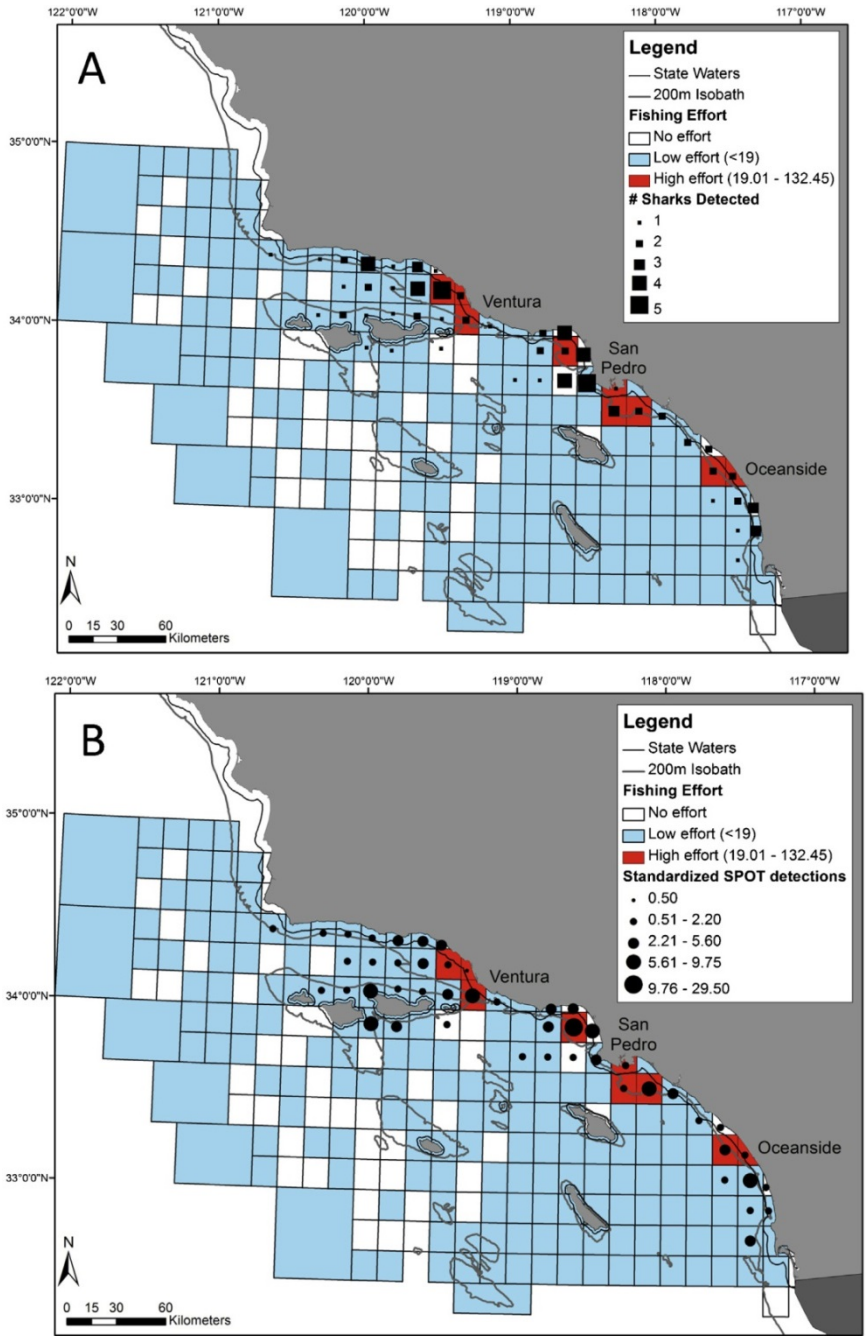

Figure 4. Spatial distribution of set gill net effort and SPOT detections.
A) SPOT tagged sharks (graduated squares) and (B) the standardized number of SPOT detections (graduated circles) relative to high (red) and low (blue) gill net fishing effort blocks (soak h/net length fathom). White shark SPOT detections were standardized to the proportion of individual tagged white sharks detected per block.
Source: Lyons et al. 2013

At sea observer programs represent a valuable source of bycatch information, providing detailed species information from an unbiased, scientifically trained source. Analysis of federal observer data indicates trip coverage of 21 percent from July 1990 to 2008, documenting eight white shark captures (Lowe et al. 2012). These estimates encompass different sectors of the gill net fishery and aggregate all gill net types. Observer coverage reported by the NMFS Southwest Region Observer Program for the 2010 season was 4.7 percent for nearshore large mesh set gill net (targeting California halibut), 12.5 percent for nearshore small mesh set and drift gill net (targeting white sea bass) and 13 percent for offshore large mesh drift gill net (targeting swordfish and thresher shark). Observer coverage in 2011 was 8 percent, 3.3 percent, and 19.5 percent, for nearshore large mesh set gill net, nearshore small mesh set/drift gill net and offshore large mesh drift gill net, respectively.

In 2013, the Pacific Offshore Cetacean Take Reduction Team (POCTRT) initiated emergency regulations on the drift gill net fleet, requiring a vessel monitoring system on all drift gill net fishing vessels, as well as 100 percent observer coverage on all vessels fishing east of the main 2012 m (1.1 nm, 1100 fm) north-south bathymetric contour line (50 Code of Federal Regulations (CFR) 660). This temporary rule increased monitoring and observer coverage considerably in the drift net fisheries during the 2013-14 fishing season until long-term actions can be decided upon.

Lyons et al. (2013) believed that there would be a positive correlation between CPUE of target species and incidental white shark take, expecting to find higher white shark catch where there was high catch of the target species. Instead, white shark catch was higher where catch of the target species was low. These data indicate that the potential interaction between the set gill net fishery and juvenile white sharks in southern California is low, particularly in fishing blocks that have a history of high effort.

White shark catch in the gill net fisheries has dropped substantially from the mid-1980s, along with gill net fishing effort. Despite continued decline in gill net fishing effort, there has been a recent increase in the occurrence of juvenile white shark interactions since 2007. It has been hypothesized there are two causes: 1) there is increased reporting due to the initiation of the Monterey Bay Aquarium research program; and, 2) there is an increase in the population (Dewar et al. 2013). The Department's independent analysis shows trends in both fishing effort and incidental shark take that are similar to what has been reported in scientific literature (Lowe et al. 2012; Lyons et al. 2013; Dewar et al. 2013).

Incidental take in California recreational fisheries

White shark interactions in recreational fisheries have been documented off California. However, such interactions are difficult to accurately quantify. While Commercial Passenger Fishing Vessels (CPFVs or party boats) are required to submit daily logs of all trips, there is no general mandatory reporting requirement for private anglers in recreational fishery. Sampling programs such as the California Recreational Fishery Survey (CRFS) and the former Marine Recreational Fisheries Statistics Survey

(MRFSS) monitor recreational fishing catch and effort. Coverage is based on a random sample and is sampled less frequently for shore based fishing trips.

Similar to commercial gill net logbooks, CPFV logbooks report information such as fishing location and catch, both kept and released. Examination of these records can capture fishing effort that is not documented elsewhere. Department CPFV logbook records indicate that white sharks are occasionally hooked by anglers on CPFVs. For the period from 1980 through 2013, CPFV logs contain seven records of white shark catch (unpublished Department logbook data). This equates to one white shark caught every 4.7 years, with the majority released alive.

California recreational fishery data collected by MRFSS from 1980 through 2003 contained no records of white shark observed, reported as retained, or returned catch for boat- and shore-based fishing trips. Survey data collected by CRFS from 2004 through the present had only one record of white shark reported caught and released by a private boat angler. Sampling of private boats is conducted by sampling at launch ramps. Primary launch ramps, where at least 90 percent of fishing effort and catch of "important management species" has historically occurred, are sampled on 20 percent of fishing days each month.

Sampling effort of man-made structures (piers and jetties) is conducted ten percent of days each month during daylight hours. As a result of this limited coverage, the likelihood of capturing a rare event such as white shark catch is low, and take of white shark has not been observed. Although not documented by CRFS or MRFSS in angler surveys, white sharks are known to occasionally be caught from beaches and public fishing piers. This information is mostly anecdotal as sampling effort on man-made structures such as piers and beaches is limited both spatially and temporally. In recent years, the Department has issued two citations for illegal take of juvenile white sharks off of fishing piers in southern California (R. Hartman, CDFW, pers. comm.). Multiple media sources have reported juvenile white sharks being caught and released alive off southern California piers, particularly off Manhattan Beach Pier, Venice Pier, and Huntington Pier (Los Angeles and Orange counties) in the summers of 2012 and 2013. In 2013, an angler fishing from the beach in north San Diego County landed a juvenile white shark which he reported to have released alive. These recent anecdotal reports may indicate a greater occurrence of interaction with YOY white sharks, as well a greater awareness of interactions as media coverage and interest has increased.

In summary, data collection on white shark take in California's recreational fisheries is limited. Reporting of catch is not required for private anglers, and participation in catch and effort sampling efforts is voluntary. There is minimal information on night fishing for piers and beaches. While the extent of take is largely unknown, it is not thought to be a source of high concern for the NEP population.

Incidental take in Mexican fisheries

Incidental take of white sharks has also been documented in Mexican gill net fisheries. Between 1999 and 2010, 111 YOY and juvenile white sharks were reported as taken

along the Pacific Coast of Baja California, mostly near Sebastián Vizcaíno Bay; 80 percent were YOY (Santana-Morales et al. 2012). Incidental catch peaked seasonally in the spring and summer. White sharks are also caught in the southern portion of Baja California but estimates are poorly documented. There is one estimate of six juveniles caught by three boats fishing out of Isla Magdalena (near Magdalena Bay), which was documented by Investigacion, Educacion, Manejo y Asesoria (H. Peckham, Grupo Tortuguero, pers. comm.).

Studies initiated in 2011 are attempting to better quantify white shark catches using contacts with local distributors who purchase fish from artisanal camps, yet there are concerns with the accuracy of species identification, since only trunks (head and gutted bodies with fins and tails removed) are purchased and no data are collected on size or sex. Species identification is determined by coloration of the body, the fishery source, and according to distributors, lower meat quality, although the accuracy of this method has not been independently validated (O. Santana, CICESE, pers. comm.). Using this method, about 186 white sharks were determined to have been caught in 2011, the majority of which (approximately 170) came from near Sebastián Vizcaíno Bay (O. Sosa-Nishizaki, CICESE, pers. comm.).

In 2012, a new seasonal closure went into effect from June 1-July 31, which prohibited the targeting of all sharks along the Pacific Coast of Mexico. No shark catches were reported during those months; but that value is questionable given the lack of reporting of sharks by the artisanal fisheries. In 2013, the closure was extended through the month of May as well. It is estimated that this seasonal closure will reduce incidental take by 60 percent if implemented and enforced as intended (Dewar et al. 2013). However its current effectiveness is unknown due to recent implementation, lack of catch reporting, and enforcement capacity. In addition, unintended consequences of effort shifts and effects on white shark incidental catch are also unknown (Dewar et al. 2013).

Other incidental white shark catch is reported from the Gulf of California, but is not well quantified. Fourteen juveniles were documented between 1981 and 2007 (Galván-Magaña et al. 2010; O. Sosa-Nishizaki, CICESE, pers. comm.), and other researchers reported sightings and the take of 10 sub-adults and 8 adults between 1964 and 2012 (Galván-Magaña et al. 2010; Castro 2012; M. Domeier, Marine Conservation Science Institute, pers. comm.). Of the 32 documented sharks, only one YOY was documented captured in the northern region (O. Sosa-Nishizaki, CICESE, pers. comm.). This is not unexpected as large females have been observed entering the area, presumably to give birth (Domeier and Nasby-Lucas 2013).

Tagging studies of young white sharks in California demonstrate southern migrations towards Mexican waters. Tagged YOY sharks released in the SCB migrated south along the coast of Baja California to Ensenada and Sebastián Vizcaíno Bay during two months of tracking (Weng et al. 2007b). Released captive YOY and juvenile sharks from the Monterey Bay Aquarium traveled as far south as Cabo San Lucas and into the Gulf of California, during four month's tracking. These tagging studies support the notion that young white sharks caught incidentally in Mexico's fisheries originated in California.

Incidental take in states or countries other than California and Mexico

The documented range of the NEP population of white sharks is spatially vast, stretching far beyond California waters into those of neighboring states and countries. As described above, the southern extent of the range covers broad areas off of Mexico. The western expanse extends past the Hawaiian Island archipelago, and the species has been documented north of California along the coast of Oregon, Washington, and on through Canada into Alaskan waters. The population's occurrence outside of California waters leads to potential interactions and therefore warrants examination.

Incidental take of white shark is documented for several commercial fisheries in the Pacific. In the 1980s and 1990s, there were three main international high seas drift net fisheries whose fishing grounds overlapped the NEP white shark's range—the salmon, flying squid, and tuna and marlin fisheries (also known as the large mesh drift net). This region of overlap represents potential take of NEP individuals.

Young-of-year and juvenile white sharks are thought to be a mainly coastal species, only moving into offshore waters as they mature. This would suggest that only sub-adult and adult specimens would be found in areas utilized by the high seas drift net fisheries. Despite the potential for interaction between NEP white sharks and the high seas fisheries, Bonfíl (1994) concluded that it was unlikely that many large white sharks from the NEP population were likely to have been caught in these fisheries, since sharks typically caught averaged 50 kg. He considered records from observer data unreliable and instead associated them with mako sharks (Bonfíl, Instituto Nacional de la Pesca Progreso, pers. comm.). In 1992 the United Nations banned the use of high seas drift gill nets, and all three of these fisheries were phased out.

Recent tagging studies have shown that sharks from the NEP population frequent waters around the Hawaiian Islands during their migrations; 22 individuals with satellite tags have been tracked from the coast of North America to Hawaii. While occurrences are rare, there have been 13 verified records of white sharks in Hawaii since 1926. Seven of these were landings documented in original catch data or from a captured specimen, all occurring before 1970. Identification of the remaining instances was based on photographs or video footage (Weng and Honebrink 2013).

Observer data from 1997-2008 indicate seven white sharks were caught in the Hawaiian longline fishery. Three of these records indicated the shark was released alive and one record reported it was returned dead. However, species identification were not verifiable and not considered reliable (Dewar et al. 2013), leaving no verified take of white shark in Hawaiian waters or fisheries since the late 1960s.

Examination of Oregon and Washington commercial landing receipt data dating back to 1970 resulted in no records of white shark being taken in either state during this time period. In 2009, a sub-adult white shark, reported by media to be around 3.6 m TL (12 ft), was landed in Depoe Bay, Oregon. A recreational crab fisherman allegedly found it tangled in the line of his crab pot and the shark, believed to be dead, was brought to

shore. Review of recreational survey data also dating back to 1970, revealed this to be the only incident of white shark take (K. Hughes, WDFW, pers. comm.).

In Canada, Pacific white sharks were listed as “Data Deficient” by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). There are only 14 confirmed or probable records of white shark on the Pacific coast in the last 43 years, consisting almost exclusively of strandings on the Queen Charlotte Islands. White sharks are considered rare in much of their range, but particularly so in Canadian waters, which represent the northern fringe of their distribution (COSEWIC 2006).

Alaskan waters are the northern extent of the white sharks’ range (Martin 2004). Although over 200 individuals in the NEP have been tagged (Weng et al. 2007a; Domeier and Nasby-Lucas 2008; Jorgensen et al. 2010; Jorgensen et al. 2012a, 2012b) none has been detected in Alaskan waters (state or federal). Alaska has no fishery related concerns for the species, as there is no documentation of targeted or incidental catch in these waters (D. Vincent-Lang, ADFG, pers. comm.).

Predation

White sharks are apex predators and generally considered to be at the top of the food chain during most life history stages. However, available interaction data show some risk of white shark predation by orcas (*Orcinus orca*) and larger sharks. In addition to large size, even at birth, utilization of shallow nearshore habitat during the first three years of life likely provides some level of protection for YOY and juveniles from large predators (Pyle et al. 1999). Predation is not considered a significant threat to the population.

Disease

All species of sharks may develop disease and cancers, but due to a generalized immune system and other adaptations it is a relatively rare occurrence and has not been well documented or studied in the wild. Recently in Australia, researchers observed one white shark with a large tumor on its jaw (Robbins et al. 2013). To date tumors have not been observed in the NEP population, and disease is not considered a significant threat to the population.

Competition and Prey Availability

Competition for prey, mainly fish for juveniles and pinnipeds for adults, between white sharks and other species in their habitat is likely, but difficult to quantify due to limited data. White sharks are larger, in all life stages, than most of the predators in which they share habitat. This makes it likely that they experience significant competition with other species. They are also able to feed on a range of prey making their population less susceptible to catastrophic decline from the absence of a specific prey species.

Young-of-the-year and juvenile white sharks

Young-of-the-year and juvenile white sharks forage on a range of demersal and epipelagic fish, squid and crustaceans in the nearshore waters of the SCB. Since the 1994 ban on gill nets in state waters, there has been an increase in the abundance of many species preyed upon by YOY and juvenile white sharks including white seabass, leopard (*Triakis semifasciata*) and soupfin sharks (*Galeorhinus galeus*) (Pondella and Allen 2008).

Dewar et al. (2013) evaluated reduced prey resources as a possible threat to YOY and juvenile white sharks in California. They examined the status of 23 fish and invertebrate species that have either been documented in stomach content analyses, or fit in the category of standard prey types (i.e. demersal fish) and are found in the same habitat as young white sharks. Analysis of the 23 species were based on Department semiannual status reports, Pacific Fishery Management Council (PFMC) Stock Assessment and Fishery Evaluation reports, and data from the Ocean Resources Enhancement and Hatchery Program nearshore gill net study. Of the 23 species examined, most have recovered from earlier overfishing or were never overfished (Pondella and Allen 2008). White seabass populations, for example, began to rebound in 1997 (Pondella and Allen 2008) and catch for this species is managed through a fishery management plan by CDFW (CDFW 2013). Similar patterns were seen in both soupfin and leopard shark (Pondella and Allen 2008). For some prey items, such as bat rays (*Myliobatis californica*), there is no available information on stock status. Concerns remain regarding some species, including lingcod (*Ophiodon elongatus*), cabezon (*Scorpaenichthys marmoratus*), green sturgeon (*Acipenser medirostris*), California halibut (*Paralichthys californicus*), Petrale sole (*Eopsetta jordani*), white croaker (*Genyonemus lineatus*) and some runs of Chinook salmon (*Oncorhynchus tshawytscha*). Some of these populations are considered depleted or federally listed as a species of concern.

Subadult and adult white sharks

California pinniped species (northern elephant seals, California sea lions and harbor seals [*Phoca vitulina*]) underwent declines in previous centuries but have since experienced significant population expansions (Bartholomew and Boolootian 1960; Cass 1985; Stewart et al. 1994; Carretta et al. 2011). The local populations for the three primary California pinniped species found at the Farallon Islands have increased in recent decades. According to the following most recent estimates of population size and annual growth rates, each of the three California populations is thriving:

- California sea lions (2011): approximately 297,000 at 5.4 percent/year
- northern elephant seals (2005): approximately 124,000 at 5.9 percent/year
- harbor seals (2011): approximately 30,000 at 3.5 percent/year

These population expansions cannot be directly quantified as there are no historic data on the size of pinniped stocks before hunting. However, populations have increased

dramatically since the Marine Mammal Protection Act prohibited their hunting or harassment in 1972.

Competition for prey, mainly pinnipeds, between transient orcas and adult white sharks in the NEP is speculated, but difficult to quantify due to limited data on orca diet in California. A review of orca and white shark sightings around Southeast Farallon Island in the fall of 1997 suggests possible competitive displacement of white sharks by orcas. During this period, when sightings of orcas increased in the area, sightings of white sharks decreased, in comparison to averages from the seven previous fall seasons (1989-1996). Further study is needed to confirm this relationship (Pyle et al. 1999).

Based on existing scientific information it is unclear whether all adult white sharks depend entirely on pinnipeds. In white sharks' migration offshore to the SOFA they could be feeding on other species, such as squid or swordfish (Domeier and Nasby-Lucas 2008, 2012). Also, new studies analyzing stable isotopes in white shark vertebrae found evidence that some adult white sharks do not depend on pinnipeds at all (Kerr et al. 2006; Carlisle et al. 2012; Kim et al. 2012), and therefore may not utilize or depend on pinniped aggregation sites.

White sharks are generalist feeders and are considered more resilient to the loss of some prey items than a dietary specialist. Given the increase in other species that have overlapping diets (pinnipeds, leopard and soupfin sharks, and giant sea bass [*Stereolepis gigas*]) it is likely that there is currently sufficient prey in the California Current System to support the California population of YOY and juvenile white sharks (Dewar et al. 2013).

Climate Change

Recent models of climate change suggest a potential increase in the availability of suitable habitat for adult white shark, but this remains speculative and limited across the population's life history (Hazen et al. 2012).

Three principal effects of climate change that are occurring or could occur in the white sharks' range in the NEP are: 1) an increase in temperature, or "ocean warming" (Norris et al. 2013; IPCC, 2013a,b); 2) an increase in acidity, or decreased pH, termed "ocean acidification," (Gruber et al. 2012; Norris et al. 2013); and, 3) a decrease in dissolved oxygen levels, or "ocean de-oxygenation" (Bograd et al. 2008; Keeling et al. 2010). Any of these three factors, alone or in concert with one another or other factors, could potentially change NEP white shark habitat characteristics or influence changes in the marine food web and affect the white shark population. Some of these changes could be beneficial to the white shark population, for example, by expanding habitat or enhancing prey availability, or detrimental, by diminishing white shark habitat or prey availability.

With respect to temperature, available evidence indicates that NEP sub-adult and adult white sharks are highly migratory and can range from subtropical to near polar waters; thus, white sharks are tolerant of a wide range of ambient temperatures (Boustany et al.

2002; Nasby-Lucas et al. 2012), and have been documented to swim in water temperatures ranging from 3.4-24° C (38-75° F) (Boustany et al. 2002; Nasby-Lucas and Domeier 2012). It is not known at present to what extent YOY and juvenile white sharks may be affected by systemic temperature changes within “pupping grounds” or juvenile ranges distinct from that of sub-adult and adult sharks.

Modeling performed by Hazen et al. (2012) involved applying a global climate model to examine how changes in sea surface temperature (SST) and chlorophyll *a* influenced species-specific core habitat models for several shark species in the NEP. Habitat modeling outputs, while indicating a decreasing trend in mean core habitat area for sharks as a group, indicated an increase in core habitat area for the white shark. Results indicated a decrease in core habitat for blue (*Prionace glauca*), mako (*Isurus oxyrinchus*) and salmon sharks (*Lamna ditropis*), but an increase of about seven percent in ocean habitat for white shark. Increases in core habitat area were also projected for elephant seals (about 5 percent) and tunas (6-19 percent, dependent on species), while a slight decrease in sea lion habitat (about 0.5 percent) was indicated.

Kim et al. (2012) found that isotope analyses on white shark vertebrae indicated a generalist feeding pattern at the population level with individual specialization evident for some kinds of prey. Across the individuals sampled, there was evidence for consumption of multiple prey types (e.g. seal; sea lion; dolphin; porpoise; tuna and cephalopods). Some individuals, however, showed isotopic evidence of apparent specializations for tunas or cephalopods. Such evidence indicates that the white shark population is capable of eating varied kinds of prey and can also specialize to specific prey species other than marine mammals. While this latter point does not speak to all possibilities of future changes in marine food webs influencing the white shark, there is some indication that white sharks may have capacity to adapt to future food web changes.

While ocean acidification may be a threat to white sharks as well as other marine species, the severity of the effect on the white shark and its habitat is uncertain. Although some studies have documented the negative effects ocean acidification may have on select marine species, further study is needed to evaluate how this will affect white sharks and the NEP ecosystem as a whole (Feely et al. 2008; Gruber et al. 2012).

Finally of concern is the expansion of ocean spaces with lowered dissolved oxygen concentrations which could limit or constrain some species by their tolerance for low-oxygen water (Bograd et al. 2008; Keeling et al. 2010). Low dissolved oxygen zones could have direct or indirect effects on white shark habitat and behavior (Nasby-Lucas et al. 2009; Siebel 2011). Nasby-Lucas et al. (2009) noted that white sharks appeared to be constrained to waters that had a dissolved oxygen concentration higher than 1.5 ml/L and suggested that dissolved oxygen concentration, and not temperature, was the limiting factor in diving behavior of white sharks. They also suggested that such low oxygen conditions may have the effect of concentrating prey to the foraging advantage of the white shark in open ocean areas such as the SOFA.

Climate change is often viewed as one of a set of factors that can result in negative impacts on a species' ability to survive or reproduce. While it can be asserted that changes have occurred, are occurring, and will continue to occur within the dynamic physical, chemical and biological systems of the Pacific Ocean, the manifestation of those dynamics with respect to impacts on the white shark population is not understood. Currently available modeling results, while interesting and seemingly favorable with respect to white shark habitat expansion and prey availability, are not definitive for assessment of listing status.

With respect to other available scientific information, it is known that white sharks are highly migratory and range across large expanses of the NEP. There is evidence indicating that the white sharks are able to deal with wide variations in temperature and dissolved oxygen concentration as well as to consume a variety of squid, fish and marine mammal prey. However, there is not at this time sufficient scientific information to assess the specific potential or actual impacts of ocean warming, acidification or de-oxygenation on the population of white sharks inhabiting the NEP.

Regulatory Status and Existing Management Efforts

White sharks in the NEP are widely protected on the west coast through state, federal, and international efforts directly through general prohibitions specific to this species and indirectly under regulations for all shark species.

State of California Status and Management Efforts

On March 1, 2013, the California Fish and Game Commission designated white shark a candidate species under CESA, which conferred protected status afforded to listed species during the 12 month review process. During the candidacy period, no take for commercial, recreational or scientific purposes is allowed unless specifically authorized by regulation adopted pursuant to Section 2084 of the Fish and Game Code or by permit pursuant to Sections 2081(a) and 2081(b) of the Fish and Game Code.

Previous to candidacy, California enacted protections for white sharks and take of this species was prohibited with exceptions (Table 3). In 1994, white sharks received special protected status in the State of California by the addition of Fish and Game Code Sections 5517 and 8599 and Title 14, Section 28.06 of the California Code of Regulations. Fish and Game Code Section 5517 prohibits the take of white sharks, except by special permit from the Department. Fish and Game Code Section 8599 prohibits commercial take of white sharks except for permitted scientific and educational purposes through a Scientific Collecting Permit (SCP). Fish and Game Code Section 8599 also allows for incidental take by round haul (purse or drum seine) or gill net gear, and any sharks landed live may be sold for scientific or live display purposes, although a permit is required for this purpose. Section 28.06, Title 14, California Code of Regulations, prohibits recreational take of white shark. In 2012, California also implemented a law prohibiting the possession, sale or trade of any shark fins (Fish and

Game Code Section 2021) although there is an exception for taxidermy (Fish and Game Code Section 2021.5). While not specific to white shark, laws restricting the use of gill nets also provide some protection for white shark.

Data on fishery interactions indicate nearshore gill net gear has the most frequent incidental take of white shark off California. The nearshore gill net fishery is regulated using area, gear, seasonal and other management measures, primarily through Fish and Game Code (Table 4, Figure 3). There are three different gear configurations used in the nearshore gill net fishery, which targets primarily California halibut and white seabass in addition to yellowtail (*Seriola lalandi*) and barracuda (*Sphyraena argentea*) as previously referenced. A general gill net permit is required for all three of these nearshore gill net gear configurations (Fish and Game Code Section 8680 et. seq., Section 174, Title 14, California Code of Regulations) and a drift gill net permit is also needed, in addition to a general gill net permit, when using drift gill net gear (Fish and Game Code Section 8561).

Between 1985 and 2000, the nearshore gill net fisheries faced several restrictions, which reduced the allowable fishing area for this gear off California. The first area closure occurred in 1986, with a 45.7 m (25 fm) closure from Franklin Point (San Mateo County) to Waddell Creek (Santa Cruz County), and a 27.4 m (15 fm) closure from Waddell Creek to Yankee Point (Monterey County). During this time, gill nets were also prohibited from Point Sur (Monterey County) to Point Sal (Santa Barbara County) in waters 27.4 m (15 fm) or less. Additional closures were added between 1986 and 1991 (Tables 4 and 5; Figure 3).

In 1994, the Marine Resources Protected Zone was created, which prohibited gill net use within 1 km (1 nm) or 1.3 km (70 fm) bottom depth, whichever is less, around the Channel Islands, and within 5.6 km (3 nm) of the mainland shore south of Point Arguello (Santa Barbara County). There are no seasonal closures for the halibut gill net fishery, while the white seabass gill net fishery is closed annually from March 15 to June 15 (Table 4, Figure 3).

Between 1979 and 2011, there were noticeable trends in white shark catch, which correlated with periods following significant regulation changes. Between 1981 and 2005, the number of sharks caught peaked in 1985 and then decreased as regulations steadily reduced the amount of fishing effort of the nearshore set gill net fishery. Lowe et al. (2012) reports that YOY white shark captures by the gill net fishery follow temporal trends in fishery effort. In 1989 set gill net fishing effort reached its lowest level since 1979. Even with continued restrictions to the gill net fisheries, effort remained relatively stable through the next twenty years.

Table 3. State regulatory history for white shark.

Section	Year	Description
FGC §5517	1993	Makes unlawful to take any white shark except under permits issued pursuant to Section 1002 for scientific or educational purposes.
FGC §8599 a, b, c	1993	a: Unlawful to take an white shark for commercial purposes, except under permits issued pursuant to Section 1002 for scientific or educational purposes.
		b: White sharks may be taken incidentally by commercial fishing operations using set gill nets, drift gill nets, or round haul nets. Pelvic fin must be attached on carcass until after the white shark s brought ashore. If landed alive, may be sold for scientific or live display purposes.
		c: Any white shark killed or injured by any person in self-defense may not be landed.
FGC §8599.3	1993	Department shall cooperate with scientific institutions to facilitate data collection on white sharks taken incidentally by commercial fishing operations.
CCR Title 14 §28.06	1994	Prohibits take in ocean sport fisheries except under a Scientific Collecting Permit.

Table 4. State regulatory history for set and drift nearshore gill net fisheries.

Statute	Year	Description
FGC §8623 c, d	1957, amended 1988	c: 3.5 inch minimum mesh to take yellowtail and barracuda.
		d: Gill nets with 6 inch mesh may be used to take white seabass; however, during the period June 16 to March 14, not more than 20 percent by number of a load of fish may be white seabass 28 inches or more in total length, up to a maximum of 10 white seabass per load, if taken in gill or trammel nets with mesh from 3.5 to 6 inch.
FGC §8664.8a	1989	Gill nets shall not be used in ocean waters between a line extending 245 degrees magnetic from the most westerly point of the west point of the Point Reyes headlands in Marin County and the westerly extension of the California-Oregon boundary.
FGC §8625 a, b, c	1989	a: 8.5 inch minimum mesh required to take California halibut.
		b: Except as provided in subdivision c, not more than 1,500 fathoms of gill net or trammel net shall be fished in combination each day for California halibut from any vessel in ocean waters.
		c: Not more than 1,000 fathoms of gill net or trammel net shall be fished in combination each day for California halibut from any vessel in ocean waters between a line extending due west magnetic from Point Arguello (Santa Barbara County) and a line extending 172 degrees magnetic from Rincon Point (Santa Barbara County) to San Pedro Point at the east end of Santa Cruz Island (Santa Barbara County), then extending southwesterly 188 degrees magnetic from San Pedro Point on Santa Cruz Island.
FGC §8724	1989	Trammel nets must have a mesh size of at least 8.5 inches in Districts 10, 17, 18, and 19.
FGC §8610.2 d(1), d(2), d(3)	1990	Marine Resource Protection Zone (MRPZ) created: d(1): waters less than 70 fathoms or within one mile (whichever is less) around the Channel Islands. d(2): area within 3 nautical miles offshore of the mainland coast and any manmade breakwater between a line extending from Point Arguello to the Mexican border. d(3): waters less than 35 fathoms between a line running 18 degrees from Point Fermin and a line running 270 degrees from the south jetty of Newport harbor.
FGC §8610.3b	1994	Gill net use prohibited in Marine Reserve Protected Zone.
	2000	Emergency closure prohibiting gill/trammel net use in waters 60 fathoms or less between Point Reyes (Marin Co) and Point Arguello (Santa Barbara Co).
CCR Title 14 §104.1	2002	Permanent closure of waters 60 fathoms or less between Point Reyes (Marin Co) and Point Arguello (Santa Barbara Co) to gill or trammel nets.

Table 5. State regulatory history for the offshore drift gill net fishery targeting shark and swordfish.

Statute	Year	Description
FGC §8573a	1982, amended 2007	From 6/1-11/15 shark or swordfish gill nets shall not be in the water two hours after sunrise to two hours before the sunset east of the line from Santa Cruz Island to the California- Mexico border.
FGC §8575 a, b, c, d, e, f	1982	a: 5/1-7/31 within six nautical miles westerly, northerly, and easterly of the shoreline of San Miguel Island between a line extending six nautical miles west magnetically from Point Bennett and a line extending six nautical miles east magnetically from Cardwell Point and within six nautical miles westerly, northerly, and easterly of the shoreline of Santa Rosa Island between a line extending six nautical miles west magnetically from Sandy Point and a line extending six nautical miles east magnetically from Skunk Point.
		Drift gill nets time closures: b: 5/1-7/31 within 10 nautical miles westerly, southerly, and easterly of the shoreline of San Miguel Island between a line extending 10 nautical miles west magnetically from Point Bennett and a line extending 10 nautical miles east magnetically from Cardwell Point and within 10 nautical miles westerly, southerly, and easterly of the shoreline of Santa Rosa Island between a line extending 10 nautical miles west magnetically from Sandy Point and a line extending 10 nautical miles east magnetically from Skunk Point.
		c: 5/1-7/31 within 10 nautical miles radius of the west end of San Nicolas Island.
		d: 8/15-9/30 from Dana Point (Orange County) to Church Rock (Catalina Island) then direct line to Pt. La Jolla, then from mainland shore to Dana Point.
		e: 8/15-9/30 6 nautical miles of the coastline on the northerly and easterly side of San Clemente Island to a line extending six nautical miles east magnetically from Pyramid Head.
		f: 12/15-1/31 ocean waters within 25 nautical miles of the mainland coastline.
FGC §8573 b(1), b(2), b(3), b(4),	1983	b(1): Total maximum length of shark or swordfish gill net shall not exceed 6,000 feet in float line length.
		b(2): Gill net on the reel shall have float lines of adjacent panels tied together. No quick disconnect device may be used unless total maximum length of all gill nets does not exceed 6,000 feet.
		b(3): Spare gill net aboard vessel shall not exceed 250 fathoms (1,500 feet).
		b(4): Torn panel shall be removed from working net before replacement panel is attached to the working net.
FGC §8575.5	1986	DGN fishery was eliminated within 12 nautical miles of the coast north of Point Arguello and in certain areas in the Gulf of Farallones and near the mouth of San Francisco Bay.

Table 5 cont. State regulatory history for the offshore drift gill net fishery targeting shark and swordfish.

Statute	Year	Description
FGC §8576.5	1988	Thresher shark taken with drift gill nets shall not have the pelvic fin severed from the carcass until after the shark is brought ashore.
FGC §8576 a, b	1989	a: Drift gill nets shall not be used to take shark or swordfish from February 1 to April 30, inclusive.
		b: Lengthened 75 nautical miles closure to 5/1-8/14.
PFMC	1990	CA, OR, and WA enact tri-state inter-jurisdictional fishery monitoring plan for threshers.

Permitting in California

Scientific collecting permits

Fish and Game Code Section 1002 authorizes the Department to issue Scientific Collecting Permits (SCPs) for the take and possession of birds, mammals, fish, etc. for scientific, educational, or propagation purposes. Species listed under CESA that are taken under the auspices of Fish and Game Code Section 2081 do not require a SCP.

Section 650(i), Title 14, California Code of Regulations, authorizes the issuance of SCPs for take for bona fide scientific, educational, or propagation purposes. An SCP is good for up to three years and requires submission of an annual Report of Specimens Collected, as specified in Section 650(i), Title 14, California Code of Regulations.

For the last 20 years, researchers have obtained SCPs or Memorandums of Understanding (MOU) to tag white sharks to monitor their movements, to collect biological samples for genetics, to look at contaminant levels, and to temporarily hold juvenile white sharks for display at public aquariums. In 2012, nine SCPs were in force for white shark research; two were inactive and one was an entity permit covering 14 individuals.

CESA take permits

When a species is listed as endangered or threatened under CESA, it becomes protected and take, as defined in Fish and Game Code Section 86, is not allowed except under specific conditions (Fish and Game Code Section 2080). Candidate species are afforded these same protections under CESA (Fish and Game Code Section 2085). Fish and Game Code Section 2081 authorizes the Department to issue permits for take of listed species:

- A 2081(a) permit authorizes take of CESA-listed species for scientific, educational, or management purposes and can be issued to public agencies,

universities, zoological gardens, or scientific or educational institutions. A 2081(a) permit is a MOU that allows take under specified conditions and reporting that allows the Department to monitor activity.

- A 2081(b) permit can be issued for take of CESA-listed species in connection with otherwise lawful activities. This permit requires that impacts to listed species be minimized and fully mitigated, and will not jeopardize the existence of the species. Title 14, Section 783 et. seq., California Code of Regulations, specifies conditions for issuing a 2081(b) incidental take permit, including complying with the California Environmental Quality Act (CEQA).

During the candidacy period in 2013, the Department issued twelve 2081(a) permits and no 2081(b) incidental take permits for the take of white shark. These permits were issued to juvenile and adult white shark researchers, commercial white shark viewing operations that were providing sighting information to the adult white shark researchers, and to several researchers working with species other than white shark operating in areas and with gears known to take white shark.

Status and Management Efforts in Surrounding States

Oregon prohibits take of white shark in recreational fisheries, but there is no specific prohibition for commercial fisheries. In the states of Washington and Alaska, take of white shark is regulated through general take categories for sharks or bottom fish. The state of Hawaii has no specific prohibitions on white shark take, but does prohibit feeding of sharks in state waters. Additionally, Oregon, Washington, and Hawaii have state prohibitions on shark finning, which prohibit possession and sale of shark fins.

Federal Status and Management Efforts

Federal management efforts providing protections for the NEP population of white shark include the West Coast Highly Migratory Species Fishery Management Plan (HMS FMP), National Marine Sanctuaries - West Coast Region, Shark Finning Prohibition Act of 2000, and Shark Finning Conservation Act of 2010. Federal law prohibits trade in all white shark products, as the U.S. recognizes the Convention of International Trade in Endangered Species (CITES) treaty. This is supported by the Lacey Act, which makes it unlawful to import, export, sell, acquire or purchase any fish, animal or plant protected by state or international law, including CITES. The Petition cites cases of illegal fishing and sales of white shark teeth, jaws, and fins for the curio trade worldwide (CITES 2004), but there are no known recorded cases of illegal trade in white shark parts in California (R. Hartman, CDFW, pers. comm.).

Take of white shark is prohibited under the West Coast HMS FMP (50 CFR 660.711). The scope of this prohibition covers all United States vessels that fish for HMS species using authorized gear within the United States Exclusive Economic Zone (370 km, 200 nm) as well as the west coast state territorial waters of California, Oregon, and Washington. Additionally this applies to those vessels fishing the high seas and landing in the States of California, Oregon, and Washington (50 CFR 660.701).

The large mesh drift gill net fishery targeting swordfish and thresher shark is a federally managed fishery under the HMS FMP. Originally managed by the State of California, this fishery came under federal jurisdiction with the adoption of the HMS FMP, and California's protective measures for white shark were incorporated into the federal regulations. Historical catch records indicate incidental take of white shark previously occurred in this fishery, but has been greatly reduced based on logbook records since the 1980s, with only one individual reported since 2000 (Dewar et al. 2013).

This fishery operates under seasonal and area closures that began in 1982. Between 1982 and 1989, several seasonal closures were enacted out to 370 km (200 nm) (Table 5). Closures in 1982 and 1985 were enacted to protect marine mammals. The 1982 closure prohibited drift gill net use within 370km (200 nm) of shore between February 1 and April 30. Regulations enacted in 1986 eliminated the drift gill net fishery for thresher sharks within 22 km (12 nm) of shore north of Point Arguello, in areas around the Farallon Islands and near the mouth of San Francisco Bay. This also shortened the thresher shark season in all other areas to the period from May 1 to May 30. In 1988, federal observers were authorized for deployment on drift gill net vessels, and in 1989 the seasonal closures out to 370km (200 nm) became permanent (Table 5). Collectively these regulations dramatically limited effort and landings of the directed thresher shark fishery, which correlates with reduced incidental take of white shark, as previously discussed.

Other regulatory measures implemented to reduce marine mammal and turtle interactions with gill net gear likely reduced white shark take as well. Measures in the POCTRT, such as required use of extenders, which lower nets in the water to avoid surface swimming animals, may reduce interactions with small white sharks (Dewar et al. 2013). Additionally, two closures meant to protect sea turtles are likely to reduce white shark interactions in the large mesh drift gill net fishery. The Pacific Leatherback Conservation Area (50 CFR 223.206) prohibits use of drift gill net gear off central California from August 15 to November 15. The Pacific Loggerhead Conservation Area for Loggerhead turtles closes the fishery off the coast of southern California from June 1 to August 31 during El Niño events.

Additional federal protections are afforded within National Marine Sanctuaries off California. The Gulf of the Farallones National Marine Sanctuary (GFNMS) and the Monterey Bay National Marine Sanctuary, have prohibitions on attracting white sharks (15 CFR 922.13). Additionally, the GFNMS also prohibits vessels from approaching within 50 m (164 ft) of white sharks within 3.7 km (2 nm) of the islands (15 CFR 922.82). These prohibitions were put in place to manage adventure tourism, filming, and research activities associated with white sharks that have potential to cause disturbance to natural behavior. GFNMS issues permits to allow some activities related to education and research that allow exceptions to prohibitions on a case-by-case basis.

The Shark Finning Prohibition Act of 2000 amended the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and prohibits shark finning within the jurisdiction of the United States (50 CFR 600.1200 et seq.). This Act also prohibits the custody, control, or possession of shark fins aboard a fishing vessel without the carcass

or landing of shark fins without the carcass. The Shark Fin Conservation Act of 2010 strengthens the prohibitions on shark finning under the MSA and under the High Seas Driftnet Fishing Moratorium Protection Act (HSDFMPA). The prohibitions on shark finning under MSA and the HSDFMPA provide some additional protections for white shark.

International Status and Management Efforts

The global status of white shark has been assessed under CITES, the International Union for Conservation on Nature, and the Convention on the Conservation of Migratory Species of Wild Animals. White Shark is classified as an Appendix II species by CITES. Appendix II species are those that are not necessarily threatened with extinction, but could become so without strict regulation to prevent overutilization.

In Mexico, white sharks were declared threatened as of 2001 (DOF 2002) based on a review of available literature and data, however, at that time, this status did not offer any specific protections. Regulations enacted since then do provide more protection for white sharks and other sharks. An Official Norm, published in 2007 (DOF 2007), established responsible shark and ray fishing and prohibited the catch and retention of white shark in any condition. It also prohibited finning unless the carcasses are retained, prohibits future increases in shark fishing effort, and established gear and area restrictions for shark fishing (DOF 2007; Barreira 2007); however, white sharks do continue to be caught and retained in spite of these regulations (Cartamil et al. 2011; Santana-Morales et al. 2012).

Beginning in 2012, the Mexican government established a closed season for shark fishing along the Pacific Coast from June 1-July 31; in 2013, the season was expanded to include the month of May. In addition to fishery regulations, Mexico has established regulations for the tourism industry. Cage diving for the purposes of viewing white sharks is regulated by requiring vessel permits, licenses, limiting the number to six vessels in three locations, and requiring operators to abide by a code of conduct which protects white sharks at Guadalupe Island. The code of conduct prohibits fishing for white sharks, approaching feeding sharks within 50m (164 ft), using attracting decoys, and feeding or touching white sharks, although it allows bait to be used with certain restrictions. A workshop was held in the fall of 2013 to develop a Plan of Action for white shark conservation in Mexico, at which time actions were identified to improve white shark conservation. The Mexican federal government has also published a management program for Guadalupe Island Biological Reserve, which includes the rules for cage diving (O. Sosa-Nishizaki, CICESE, pers. comm.).

To further protect white sharks in Mexican waters, on January 27, 2014, the Mexican government published new rules banning the incidental capture of white shark in commercial fisheries. This new regulation prohibits the landing of any white shark body part, and requires that any caught shark has to be released, whether alive or dead (DOF 2014).

In Canada, Atlantic white sharks were listed as an endangered species in 2006 by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) under the Species At Risk Act (SARA) in 2011 (Environment Canada 2011). Pacific white sharks were listed as "Data Deficient" at the same time, due to their rarity and lack of trend information in both Canadian and adjacent U.S. waters (COSEWIC 2006). They are not currently listed under SARA. There are no Canadian regulations specific to protecting white shark, but there is a prohibition on the retention of any sharks but dogfish (*Squalus acanthias*) in Pacific Coast hook-and-line fisheries (COSEWIC 2006), which likely provides some white shark protection.

At state, federal, and international levels, white sharks on the west coast are protected by a number of measures, including fishery season/area closures, catch prohibitions and international treaties. Existing regulations date back as far as the early-1990s and current management measures are either in place or planned for implementation in the near-term. As NEP white sharks are a vulnerable apex predator, these measures are important in safeguarding them from exploitation and current protections appear sufficient to ensure their continued existence.

Recommendations for Management

The following recommendations were generated by the Department to prioritize conservation, research, regulation and monitoring activities:

- Support research specifically focused on juvenile and sub-adult white shark movements through the SCB, Mexico and other areas within their range.

- Increase coordination with other fisheries agencies to establish continuity in management goals, enforcement, and conformance in regulations. Encourage studies designed to reduce lethal interactions with fishing operations, especially with nearshore gill net fisheries that are more likely to have interactions with YOY and juvenile white sharks. Research should include exploration of gear and method modifications (soak time, etc.) that reduce lethal interactions.

- Increase observer coverage on commercial fishing vessels, especially those participating in the nearshore gill net fisheries.

- Implement regulation of recreational tourism (cage diving, viewing, etc.).

- Implement a public outreach and education program, especially in the shore based sector of the recreational fishery. The program should inform constituents about the presence of YOY and juvenile white sharks in the SCB, and how they can help protect this species through appropriate fishing practices and by avoiding interaction with the species.

- Increase monitoring and enforcement of recreational tourism where interactions with white sharks are high.

- Encourage the expansion of efforts to determine current population and abundance trends. Efforts should include:

    - The continuation of photo-ID studies in Guadalupe Island and central California, including a comparison of the two databases, consideration of alternate methods of identification (e.g., Computer identification via DARWIN; Towner et al. 2013), and expansion of spatial and temporal scope to additional pinniped rookeries and seasons.

    - The expansion of genetic research to include comparison of samples from both aggregation sites and throughout range, and identification of parentage.

    - Support continued life history research of all life stages of white shark. Including migration, habitat use and range, feeding ecology and reproduction.

    - Expand the range and scope of tagging studies to include:

        - Areas outside of the two main aggregation sites,

        - Increased focus on mature females,

        - Increased acoustic tagging of YOY and juvenile white sharks in SCB and Mexican nursery areas,

        - Increased deployment of acoustic sensors from Mexico to Washington.

- Continue current efforts to determine the effects of persistent environmental pollutants, and environmental changes related to climate change, such as ocean acidification, on large shark species and their preferred prey species.

- Encourage research and awareness of less common factors, such as predation and disease, across all life stages.

- Encourage the PFMC to recommend that U.S. delegates to international regulatory bodies and Regional Fisheries Management Organizations support measures to make white sharks a prohibited species. Specifically, the U.S. delegates to entities including the Inter-American Tropical Tuna Commission and the Western Central Pacific Fisheries Commission.

Scientific Determinations Regarding the Status of the White Shark in California

The CESA directs the Department to prepare this report regarding the status of the white shark in California based upon the best scientific information. Key to the Department's related analyses are relevant factors highlighted in regulation. Under the pertinent regulation, a "species shall be listed as endangered or threatened if the Commission determines that its continued existence is in serious danger or is threatened by any one or any combination of the following factors: (1) present or threatened modification or destruction of its habitat; (2) overexploitation; (3) predation; (4) competition; (5) disease; or (6) other natural occurrences or human-related activities." (Section 670.1 (i)(1)(A), Title 14, California Code of Regulations).

Also key from a scientific standpoint are the definitions of endangered and threatened species, respectively, in Fish and Game Code. An endangered species under CESA is one, "which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease." (Fish and Game Code Section 2062). A threatened species under CESA is one "that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts required by [CESA]." (Fish and Game Code Section 2067).

The Department's scientific determinations regarding these factors as informed by and following independent peer review are summarized below.

Present or Threatened Modification or Destruction of Habitat

- White sharks, like other apex predators, can accumulate contaminants over their lifespan. However, high tissue levels of elemental and organic contaminants have not been found to cause deleterious effects in NEP white sharks or elasmobranchs generally.

- Environmental monitoring data have shown that contaminant inputs have greatly been reduced off California through state, local, and federal regulatory efforts, reducing risks from habitat degradation.

- Similar to other large marine species, white sharks may be susceptible to ingestion and entanglement by marine debris, but risks to the population appear to be low. There have been no documented entanglements involving white sharks in the NEP. Additionally, lamnid sharks have the capability of evacuating their stomachs, which may reduce ingestion risks.

- Recent models of climate change suggest a potential increase in the availability of suitable habitat for adult white shark, but this remains speculative and limited across the population's life stages.

- White sharks are highly migratory and range across large expanses of the NEP, and there is evidence indicating that white sharks are able to deal with wide variations in temperature and dissolved oxygen concentration. At this time there is not sufficient scientific information to assess the specific potential or actual impacts of ocean warming, acidification or de-oxygenation on the population of white sharks inhabiting the NEP.

Overexploitation

- White sharks in the NEP are widely protected on the west coast through state, federal and international efforts directly through take prohibitions for this species, as well as through regulation of fisheries and sharks generally that provide protections indirectly.

- White sharks have been a protected species under California law since 1994.

- Nearshore set gill net fisheries account for over 80 percent of documented interactions with white shark off California.

- Interactions are also known to occur in Mexican commercial gill net fisheries. However, prohibitions on take of white shark have become progressively stricter, reducing risk, although limited resources for monitoring and enforcement exist.

- Catch records of incidental white shark take by gill net gear off California declined steadily from 1990 until 2005, indicating gill net area closures implemented during the 1990s were effective in reducing incidental take of juvenile white shark in the nearshore waters of the SCB.

- The recent increase in interactions with gill net gear is likely due to an increase in the population of YOY and juvenile white sharks in the SCB.

Predation

- White sharks are apex predators and generally considered to be at the top of the food chain during most life history stages. However, available interaction data show some white shark predation by orcas and larger sharks. In addition to large size, even at birth, utilization of shallow nearshore habitat during the first three years of life likely provides some level of protection for YOY and juveniles from large predators.

Competition

- Competition for prey, mainly fish for juveniles and pinnipeds for adults, between white sharks and other species in their habitat is not well understood. There may be competition from other large predator species, but there is no indication this poses a significant population risk.

- White sharks are generalist feeders and are considered resilient to changes in prey abundance and distribution. Populations of their prey species are healthy and likely to support predator populations.

Disease

All species of sharks may develop disease; and tumors have recently been documented in single white shark in Australia. However, similar to other shark species, white sharks have a generalized immune system and other adaptations that make disease rare.

Based on the best available scientific information, the Department finds that there is not an imminent risk of extinction due to habitat modification or loss, overexploitation, predation, competition, disease or other natural occurrences or human-related activities.

Summary of Key Findings

The current size of the NEP population is uncertain. While there are no historic estimates for comparison, current trends in incidental catch in fisheries and attacks on marine mammals, as well as genetic diversity suggest a stable or increasing population.

Multiple analyses of photo-identification study data, have estimated the current population size from 339 sub-adults/adults to greater than 3,000 total individuals. Uncertainties about key life history characteristics, such as the habitat usage and movements of all age classes, longevity, and reproductive capacity, make population estimates difficult.

Adult white sharks frequent coastal waters seasonally, but appear to spend a large part of their time migrating through open ocean habitats. Young-of-the-year and juveniles spend the majority of their time in coastal areas off southern California and northern Mexico where there is historic overlap with set gill net fisheries. Analysis of California commercial fishery data reveals that despite declines in fishing effort, the incidents of white shark captured in commercial gill net fisheries have increased steadily since 2005. This suggests that juvenile white shark abundance may be increasing within the SCB.

Incidental take of juvenile white sharks in set gill net fisheries is a potential risk factor for this population. However, this risk has been reduced considerably as these fisheries have become more restricted through regulation and declining effort. Based on trends in commercial fisheries and existing regulations, the Department does not consider future impacts of commercial gill net fishing to a be an imminent threat to the continued existence of the NEP population of white sharks in California.

The Department evaluated other factors, such as contaminants and non-point source pollution, recreational fishing, predation, disease, competition, climate change, and availability of prey. Based on the Department's analysis, none of these factors are considered to be a serious threat to the continued existence of the NEP white shark population.

Based on the best scientific information available to the Department at the time of preparation of this review, the Department concludes the NEP population of white shark is not currently facing or enduring any imminent threat to extinction. Minimizing impacts to individuals could be achieved by managing interactions with commercial and recreational fisheries. Currently California gill net fisheries are heavily regulated and do not appear to be increasing in effort now or in the near future. Interactions should continue to be monitored, but are likely not a threat to the increasing population.

Listing Recommendations

The CESA directs the Department to prepare this report regarding the status of the white shark in California waters based upon the best scientific information available. The CESA also directs the Department based on its analysis to indicate in the status report whether the petitioned action is warranted. (Fish and Game Code Section 207.46; Section 670.1(f), Title 14, California Code of Regulations). The Department includes and makes its recommendation in its status report as submitted to the Commission in an advisory capacity based on the best available science. In consideration of the scientific information contained herein, the Department has determined that the petitioned action is not warranted.

Protections Afforded By Listing

It is the policy of the State to conserve, protect, restore and enhance any endangered or any threatened species and its habitat (Fish and Game Code Section 2052). If listed as an endangered or threatened species, unauthorized “take” of the white shark will be prohibited, making the conservation, protection, and enhancement of the species and its habitat an issue of statewide concern. As noted earlier, Fish and Game Code defines “take” as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, capture, or kill (Fish and Game Code Section 86). Any violation of the take prohibition would be punishable under State law. As to authorized take, the Fish and Game Code provides the Department with related authority under certain circumstances (Fish and Game Code Sections 2081, 2081.1, 2086, 2087, 2835). In general, however, impacts of authorized taking of the white shark as a result of otherwise lawful activities must be minimized and fully mitigated according to State law.

Additional protections of the white shark following listing are also likely with required public agency environmental review under CEQA. This act requires affected public agencies to analyze and disclose project related environmental effects, including potentially significant impacts on endangered, threatened, rare, or special status species. Under CEQA’s “substantive mandate”, for example, state and local agencies in California must avoid or substantially lessen significant environmental effects to the extent feasible. With that mandate and the Department’s regulatory jurisdiction generally, the Department expects related CEQA review will likely result in increased

information regarding the status of the white shark in California waters as a result of, among other things, updated occurrence and abundance information for individual projects. Where significant impacts are identified under CEQA, the Department expects project-specific required avoidance, minimization, and mitigation measures will also benefit the species. State listing, in this respect, and required consultation with the Department during state and local agency environmental law review under CEQA, is also expected to benefit the species in terms of related impacts for individual projects that might otherwise occur absent listing.

Listing the white shark increases the likelihood that the State land and resource management agencies will allocate funds towards protection and recovery actions. However, funding for species recovery and management is limited, and there is a growing list of threatened and endangered species.

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Ŧ Marked references have not been peer reviewed.

Personal Communications

R. Bonfíl, Instituto Nacional de la Pesca Progreso.

M. Domeier, Marine Conservation Science Institute.

M. Harris, California Department of Fish and Wildlife-Office of Spill Prevention and Response.

R. Hartman, California Department of Fish and Wildlife.

K. Hughes, Washington Department of Fish and Wildlife.

C. Lowe, California State University, Long Beach.

H. Peckham, Grupo Tortuguero.

O. Santana, Centro de Investigación Científica y de Educación Superior de Ensenada (CICESE).

O. Sosa-Nishizaki, CICESE.

D. Vincent-Lang, Alaska Department of Fish and Game - Division of Wildlife Conservation.

Appendix A

Notice History

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

Fish and Game Commission

Sonke Mastrup, Executive Director
1416 Ninth Street, Room 1320
Sacramento, CA 95814
(916) 653-4899
(916) 653-5040 Fax
www.fgc.ca.gov

CALIFORNIA FISH AND GAME COMMISSION
NOTICE OF RECEIPT OF PETITION

NOTICE IS HEREBY GIVEN that, pursuant to the provisions of Section 2073.3 of the Fish and Game Code, the California Fish and Game Commission, on August 20, 2012 received a petition from Oceana, Center for Biological Diversity, and Shark Stewards to list the white shark (*Carcharodon carcharias*) as threatened or endangered under the California Endangered Species Act.

White sharks are a pelagic species and are endothermic, allowing them to inhabit cold water and remain active predators of swift and agile prey.

Pursuant to Section 2073 of the Fish and Game Code, on August 27, 2012 the Commission transmitted the petition to the Department of Fish and Game for review pursuant to Section 2073.5 of said code. It is anticipated that the Department's evaluation and recommendation relating to the petition will be received by the Commission at its February, 2013 Commission meeting. Interested parties may contact Paul Hamdorf, Acting Manager, Marine Region, 20 Lower Ragsdale Drive, Suite 100, Monterey, CA 93940, or telephone 562-342-7210 for information on the petition or to submit information to the Department relating to the petitioned species.

August 29, 2012

Fish and Game Commission

Sonke Mastrup
Executive Director

Evaluation of Petition to List White Shark as Listed Species Available

JANUARY 8, 2013 BY CDFW (HTTP://CDFGNEWS.WORDPRESS.COM/AUTHOR/CDFGNEWS/)

The California Department of Fish and Wildlife (CDFW) has released a staff evaluation of a petition to list the Northeast Pacific population of white sharks as a threatened or endangered species under the California Endangered Species Act (CESA).

The evaluation document is available at http://dfg.ca.gov/news/pubnotice/ (http://dfg.ca.gov/news/pubnotice/).

In completing the petition evaluation, CDFW determined there is sufficient scientific information to indicate that the petition action may be warranted, and recommends the petition be accepted and considered by the California Fish and Game Commission.

At its next meeting, the Commission may take action on whether or not to accept the petition and declare the white shark as a candidate for future threatened or endangered species status. If the petition is accepted, this will start a one-year status review before decision on listing is made. The Commission meeting will be held on Feb. 6, 2013, in the Natural Resources Building, First Floor Auditorium, 1416 Ninth Street, Sacramento.

Please check the Commission website www.fgc.ca.gov (http://www.fgc.ca.gov) for more information.

Media Contacts:
Adrianna Shea, CA Fish and Game Commission, (916) 508-5262
Mike Taugher, CDFW Communications Director, (916) 591-0140

FILED UNDER ENDANGERED SPECIES, MARINE, PUBLIC PARTICIPATION, REGULATIONS
TAGGED WITH CALIFORNIA FISH AND GAME COMMISSION, PUBLIC COMMENTS, RARE AND ENDANGERED SPECIES PRESERVATION

Comments are closed.

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

Fish and Game Commission

Sonke Mastrup, Executive Director
1416 Ninth Street, Room 1320
Sacramento, CA 95814
(916) 653-4899
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CALIFORNIA FISH AND GAME COMMISSION
NOTICE OF FINDINGS

White Shark
(*Carcharodon carcharias*)

NOTICE IS HEREBY GIVEN that, pursuant to the provisions of Section 2074.2 of the Fish and Game Code, the California Fish and Game Commission, at its February 6, 2013, meeting in Sacramento, California, accepted for consideration the petition submitted to list the Northeastern Pacific Ocean population of white shark as a threatened or endangered species. Pursuant to subdivision (a)(2) of Section 2074.2 of the Fish and Game Code, the aforementioned species is hereby declared a candidate species as defined by Section 2068 of the Fish and Game Code.

Within one year of the date of publication of this notice of findings, the Department of Fish and Wildlife shall submit a written report, pursuant to Section 2074.6 of the Fish and Game Code, indicating whether the petitioned action is warranted. Copies of the petition, as well as minutes of the February 6, 2013, Commission meeting, are on file and available for public review from Sonke Mastrup, Executive Director, Fish and Game Commission, 1416 Ninth Street, Box 944209, Sacramento, California 94244-2090, phone (916) 653-4899. Written comments or data related to the petitioned action should be directed to the Commission at the aforementioned address.

Fish and Game Commission

February 19, 2013

Sonke Mastrup
Executive Director

New Protections for White Shark Effective March 1

February 27, 2013

Media Contacts:
Traci Larinto, Environmental Scientist, (562) 342-7111
Michelle Horeczko, Environmental Scientist, (562) 342-7198
Mike Taugher, CDFW Communications, (916) 591-0140

White sharks off California's coast will receive additional protection beginning March 1, the date it becomes a candidate species under the California Endangered Species Act (CESA).

In February 2013, the California Fish and Game Commission (FGC) determined that listing white shark as threatened or endangered may be warranted and designated the species as a candidate pursuant CESA. As a candidate species, white sharks will be entitled to the full legal protection afforded to a listed species once notice of the Commission's action is published in the California Regulatory Notice Register, which is scheduled to occur on March 1, 2013.

CESA prohibits the take of listed or candidate species, even if that take is incidental to otherwise lawful activity, unless authorized by permit. As defined in state law, take means "hunt, pursue, catch, capture, or kill or attempt to hunt, pursue, catch, capture, or kill." Anyone who takes a white shark without a permit may be cited for violations of CESA and subject to criminal prosecution.

"While targeted sport and commercial fishing for white shark has been banned in waters off California since the mid-1990s, there were some exceptions that allowed for incidental take and take associated with research activities," said Marci Yaremko, program manager for state and federal marine fisheries at the California Department of Fish and Wildlife (CDFW). "The Department now will consider exceptions only on a case-by-case basis, and will authorize take only under permits issued pursuant to CESA."

Under CESA, research permits may be issued for bona fide scientific research relating to white sharks. An incidental take permit may also be obtained by commercial fishing operations or others whose non-research activities may result in take. Information regarding CESA permitting is available on the Department's website (http://www.dfg.ca.gov/habcon/cesa/).

The Commission received a petition to list the Northeast Pacific population of white shark as either threatened or endangered in August 2012. Now that the species is a candidate, CDFW will conduct an in-depth status review to provide the Commission with information to aid in its decision on whether or not to list the species. The status review is slated for completion by early next year.

More information on white shark and CESA candidacy is available on the Department's white shark information page (www.dfg.ca.gov/marine/whiteshark.asp).

economic and fiscal impact statements, and many other documents in the rulemaking file, have been posted at: http://www.energy.ca.gov/portfolio/documents/index.html.

GENERAL PUBLIC INTEREST

CALIFORNIA FISH AND GAME COMMISSION

NOTICE OF FINDINGS

White Shark
(*Carcharodon carcharias*)

NOTICE IS HEREBY GIVEN that, pursuant to the provisions of Section 2074.2 of the Fish and Game Code, the California Fish and Game Commission, at its February 6, 2013, meeting in Sacramento, California, accepted for consideration the petition submitted to list the Northeastern Pacific Ocean population of white shark as a threatened or endangered species. Pursuant to subdivision (a)(2) of Section 2074.2 of the Fish and Game Code, the aforementioned species is hereby declared a candidate species as defined by Section 2068 of the Fish and Game Code.

Within one year of the date of publication of this notice of findings, the Department of Fish and Wildlife shall submit a written report, pursuant to Section 2074.6 of the Fish and Game Code, indicating whether the petitioned action is warranted. Copies of the petition, as well as minutes of the February 6, 2013, Commission meeting, are on file and available for public review from Sonke Mastrup, Executive Director, Fish and Game Commission, 1416 Ninth Street, Box 944209, Sacramento, California 94244–2090, phone (916) 653–4899. Written comments or data related to the petitioned action should be directed to the Commission at the aforementioned address.

PROPOSITION 65

OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT

SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (PROPOSITION 65)

WITHDRAWAL OF NOTICE OF INTENT TO LIST STYRENE BY THE LABOR CODE MECHANISM

March 1, 2013
[NOTE: This notice was posted on the OEHHA web site on February 15, 2013]

On January 4, 2013, the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA) issued a Notice of Intent to List styrene as a chemical known to the State to cause cancer via the Labor Code mechanism contained in Health and Safety Code section 25249.8(a). OEHHA is withdrawing the Notice at this time.

SUSPENSION OF ACTION REGARDING UNDERGROUND REGULATIONS

OFFICE OF ADMINISTRATIVE LAW
SUSPENSION OF ACTION REGARDING
UNDERGROUND REGULATIONS
(Pursuant to Title 1, section 280, of the California Code of Regulations)

CTU2012–1022–01

On October 21, 2012, the Office of Administrative Law (OAL) received a petition challenging as an underground regulation a memorandum issued by the California Department of Corrections and Rehabilitation, dated April 19, 2005, titled "Priority Endorsements for Camp Placement."

On February 14, 2013, OAL received a certification from the California Department of Corrections and Rehabilitation that it would not issue, use, enforce or attempt to enforce the rule expressed in the memorandum. Pursuant to Title 1, section 280 of the California Code of Regulations, therefore, OAL must suspend all action on this petition.

CDFW Invites Public Comment on White Shark CESA Candidacy

JUNE 19, 2013 BY AHUGHAN (HTTP://CDFGNEWS.WORDPRESS.COM/AUTHOR/AHUGHAN/)

The California Department of Fish and Wildlife (CDFW) is accepting comments on whether the Northeastern Pacific population of white shark should be listed as a threatened or endangered species pursuant to the California Endangered Species Act (CESA).

The white shark (*Carcharodon carcharias)* is a globally distributed species found primarily in temperate seas. They are large apex predators that can be found in a wide variety of environments from the intertidal zone and the continental shelf to deep offshore areas. The Northeastern Pacific white shark population's full range extends from Mexico north to the Bering Sea and west to Hawaii.

The Fish and Game Commission received a petition to list white shark as either threatened or endangered pursuant to CESA in August 2012. The Commission's decision to accept the petition and declare white shark a candidate species took effect March 1, 2013.

CDFW is conducting an in-depth status review to provide the Commission with information to aid in its decision whether to list the species. The status review is slated for completion by March 2014. As part of the status review process, CDFW is soliciting information that will inform CDFW and the Commission on white shark status, including potential habitat destruction or modification, overexploitation, predation, competition, disease or other natural occurrences or human related activities that may affect the status of white shark.

Data and other information may be submitted by mail to this address:

California Department of Fish and Wildlife
Marine Region
Attn: White Shark Status Report
4665 Lampson Avenue, Suite C
Los Alamitos, CA 90720

Comments may also be sent via email to: whiteshark@wildlife.ca.gov

Information on white shark and CDFW's CESA evaluation can be found at:

http://www.dfg.ca.gov/marine/whiteshark.asp#cesa (http://www.dfg.ca.gov/marine/whiteshark.asp#cesa)

Contact:
Michelle Horeczko, Marine Region, (562) 342-7198

Appendix B

Peer Review

Peer Reviewers:

George Burgess
Director, Florida Program for Shark Research

Greg Caillet, Ph.D.
Moss Landing Marine Laboratories

Camilla T. McCandless, Ph.D.
NOAA NMFS Apex Predators Program
Acted as a reviewer under the direction of Dr. Nancy Kohler (Program Director at NOAA NMFS Apex Predators Program).

Oscar Sosa-Nishizaki, Ph.D.
Departamento de Oceanografía Biológica CICESE Carretera

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Marine Region
1933 Cliff Drive, Suite 9
Santa Barbara, CA 93109
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

December 31st, 2013

George Burgess
Shark Research Program Director
University of Florida
280 Dickinson Hall
Museum Road and Nevell Drive.
Gainesville, FL 32611

SUBJECT: NEP WHITE SHARK STATUS REPORT PEER REVIEW

Dear Dr. Burgess,

The California Department of Fish and Wildlife (Department) is preparing a draft report on the status of the North Eastern Pacific population of White Shark (*Carcharodon carcharias*) in response to a petition submitted jointly by the Center for Biological Diversity, Oceana and Shark Stewards to list this species as threatened or endangered pursuant to the California Endangered Species Act. The report, which will make a recommendation to the California Fish and Game Commission (Commission) regarding the listing of this species, will describe the results of our status review and analysis of the best available scientific information. Based on our analysis and review of available information, the Department is leaning toward a recommendation that listing is not warranted. The final recommendation and status review report will be submitted to the Commission before March 1, 2014 after peer review.

The Department is confirming your agreement to participate in peer review of this evaluation report. Your service as a peer reviewer of the draft status review has been requested because of your expertise, publication record, and standing in the scientific community. Your comments and ideas would strengthen the scientific credibility of the report. Peer reviewers will be asked to identify changes or additions to make the draft report more accurate and complete, to discuss whether the conclusions seem logical based on the information provided, and to identify additional sources of information (literature, contacts, etc.) that may be valuable to include in the report.

Peer review comments will be submitted in writing and become public record as an addendum in the final evaluation report that is transmitted to the Commission. Prior to approval by the Director and transmittal to the Commission, the evaluation document is an internal draft and should not be shared with the public.

The Department expects the external peer review will occur over a roughly 4-week period between January 6th and January 30th, 2014. We appreciate that you undoubtedly have a full schedule during this period, but hope that you can find time to participate in this important process. Please contact Michelle Horeczko to respond to this request or to discuss any questions by email at Michelle.Horeczko@wildlife.ca.gov, or by telephone at (562) 342-7198.

Thank you for your consideration of this request.

Sincerely,

Craig Shuman, D. Env.
Regional Manager
Marine Region

ec: California Department of Fish and Wildlife

Michelle Horeczko, Senior Environmental Scientist
Marine Region
Michelle.Horeczko@wildlife.ca.gov

Mandy Lewis, Environmental Scientist
Marine Region
Mandy.Lewis@wildlife.ca.gov

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EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

December 31st, 2013

Gregor Caillet
Professor Emeritus
Moss Landing Marine Laboratory
8272 Moss Landing Road
Moss Landing, CA 95039

SUBJECT: NEP WHITE SHARK STATUS REPORT PEER REVIEW

Dear Dr. Caillet,

The California Department of Fish and Wildlife (Department) is preparing a draft report on the status of the North Eastern Pacific population of White Shark (*Carcharodon carcharias*) in response to a petition submitted jointly by the Center for Biological Diversity, Oceana and Shark Stewards to list this species as threatened or endangered pursuant to the California Endangered Species Act. The report, which will make a recommendation to the California Fish and Game Commission (Commission) regarding the listing of this species, will describe the results of our status review and analysis of the best available scientific information. Based on our analysis and review of available information, the Department is leaning toward a recommendation that listing is not warranted. The final recommendation and status review report will be submitted to the Commission before March 1, 2014 after peer review.

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EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

December 31st, 2013

Nancy Kohler
Program Director, Apex Predator Research
NOAA /NEFSC
28 Tarzell Drive
Narragansett, RI 02882

SUBJECT: NEP WHITE SHARK STATUS REPORT PEER REVIEW

Dear Dr. Kohler,

The California Department of Fish and Wildlife (Department) is preparing a draft report on the status of the North Eastern Pacific population of White Shark (*Carcharodon carcharias*) in response to a petition submitted jointly by the Center for Biological Diversity, Oceana and Shark Stewards to list this species as threatened or endangered pursuant to the California Endangered Species Act. The report, which will make a recommendation to the California Fish and Game Commission (Commission) regarding the listing of this species, will describe the results of our status review and analysis of the best available scientific information. Based on our analysis and review of available information, the Department is leaning toward a recommendation that listing is not warranted. The final recommendation and status review report will be submitted to the Commission before March 1, 2014 after peer review.

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ec: California Department of Fish and Wildlife

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EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

December 31st, 2013

Oscar Sosa-Nishizaki
CICESE
Km 107 Carretera Tijuana-Ensenada
Ensenada, Baja California, MX, CP 22800

SUBJECT: NEP WHITE SHARK STATUS REPORT PEER REVIEW

Dear Dr. Sosa-Nishizaki,

The California Department of Fish and Wildlife (Department) is preparing a draft report on the status of the North Eastern Pacific population of White Shark (*Carcharodon carcharias*) in response to a petition submitted jointly by the Center for Biological Diversity, Oceana and Shark Stewards to list this species as threatened or endangered pursuant to the California Endangered Species Act. The report, which will make a recommendation to the California Fish and Game Commission (Commission) regarding the listing of this species, will describe the results of our status review and analysis of the best available scientific information. Based on our analysis and review of available information, the Department is leaning toward a recommendation that listing is not warranted. The final recommendation and status review report will be submitted to the Commission before March 1, 2014 after peer review.

The Department is confirming your agreement to participate in peer review of this evaluation report. Your service as a peer reviewer of the draft status review has been requested because of your expertise, publication record, and standing in the scientific community. Your comments and ideas would strengthen the scientific credibility of the report. Peer reviewers will be asked to identify changes or additions to make the draft report more accurate and complete, to discuss whether the conclusions seem logical based on the information provided, and to identify additional sources of information (literature, contacts, etc.) that may be valuable to include in the report.

Peer review comments will be submitted in writing and become public record as an addendum in the final evaluation report that is transmitted to the Commission. Prior to approval by the Director and transmittal to the Commission, the evaluation document is an internal draft and should not be shared with the public.

The Department expects the external peer review will occur over a roughly 4-week period between January 6th and January 30th, 2014. We appreciate that you undoubtedly have a full schedule during this period, but hope that you can find time to participate in this important process. Please contact Michelle Horeczko to respond to this request or to discuss any questions by email at Michelle.Horeczko@wildlife.ca.gov, or by telephone at (562) 342-7198.

Thank you for your consideration of this request.

Sincerely,

Craig Shuman, D. Env.
Regional Manager
Marine Region

ec: California Department of Fish and Wildlife

Michelle Horeczko, Senior Environmental Scientist
Marine Region
Michelle.Horeczko@wildlife.ca.gov

Mandy Lewis, Environmental Scientist
Marine Region
Mandy.Lewis@wildlife.ca.gov

From: Burgess,George H,JR <gburgess@flmnh.ufl.edu>
Sent: Monday, February 03, 2014 1:12 PM
To: Lewis, Mandy@Wildlife
Subject: Re: Draft White Shark CESA Evaluation attached for Peer Review. DO NOT DISTRIBUTE

Categories: WhiteShark

Sorry, I have been laid up in hospital and have not be enable to provide a comprehensive evaluation. My first read, however, was that the correct bottom line is there although there are few mistakes of fact.

Please excuse my failure to produce.

Cheers
George

Sent from my iPhone

> On Feb 3, 2014, at 3:03 PM, "Lewis, Mandy@Wildlife" <Mandy.Lewis@wildlife.ca.gov> wrote:
>
> Dear Dr. Burgess,
>
> On January 6, 2014 my supervisor Michelle Horeczko sent you draft CESA evaluation document for white shark for your review in PDF form. In that email review comments were requested by January 31, 2014. I am contacting you today to request any comments you have on the document so they can be incorporated before the document must be submitted for approval.
>
> Thank you for your time working with this document.
>
> Sincerely,
> -Mandy Lewis
>
>
> Mandy Lewis
> Environmental Scientist (Marine Fisheries) CA Dept of Fish & Wildlife-
> Marine Region Ph 562-342-7169 Mandy.Lewis@wildlife.ca.gov
>
> -----Original Message-----
> From: Horeczko, Michelle@Wildlife
> Sent: Monday, January 06, 2014 4:19 PM
> To: Horeczko, Michelle@Wildlife
> Subject: Draft White Shark CESA Evaluation attached for Peer Review.
> DO NOT DISTRIBUTE
>
> Good Afternoon Peer Review Team:
>
> Attached is the draft CESA evaluation document for white shark for your review in PDF form.
> If you have difficulty working from this version and would like to receive a hard copy, please let us know.
>

> As indicated in the letter sent out via email in December, this is an internal document that is not appropriate for public distribution until finalized and transmitted to the Fish and Game Commission after incorporation of peer review feedback.
>
> Peer review comments should be submitted via mail or email in writing, and will be incorporated into the final CESA evaluation in an appendix and become public record. We will need to receive comments no later than January 31st.
>
> Thank you again for providing your time and expertise to this process.
> Please contact me if any questions arise.
>
> Michelle Horeczko
>
>
> Michelle Horeczko
> Senior Environmental Scientist
> HMS CPS Project, Marine Region
> California Department of Fish and Wildlife
> 4665 Lampson Avenue, Suite C
> Los Alamitos, CA 90720
> Phone: 562.342.7198
> Fax: 562.342.7139
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>
>

Moss Landing Marine Laboratories

8272 Moss Landing Road, Moss Landing, CA 95039-9647 USA
Tel: (831) 771-4400 Fax: (831) 632-4403

(http://psrc.mlml.calstate.edu/)

PACIFIC SHARK RESEARCH CENTER

Pacific coast representative of the National Shark Research Consortium

22 January, 2014

Michelle Horeczko
Senior Environmental Scientist
HMS CPS Project, Marine Region
California Department of Fish and Wildlife
4665 Lampson Avenue, Suite C
Los Alamitos, CA 90720

Dear Michelle –

As requested, I have read the Draft Report to the Fish and Game Commission (hereafter called the Commission) titled "STATUS REVIEW OF WHITE SHARK (*Carcharodon carcharias*) in CALIFORNIA."

In the cover letter from Craig Shuman, D. Env. Regional Manager Marine Region, it says [bolded, bracketed categories mine]: " Your comments and ideas would strengthen the scientific credibility of the report. Peer reviewers will be asked to **[1]** identify changes or additions to make the draft report more accurate and complete, **[2]** to discuss whether the conclusions seem logical based on the information provided, and **[3]** to identify additional sources of information (literature, contacts, etc.) that may be valuable to include in the report."

I have done the first and third things ("identify changes or additions" & "identify additional sources of information") **in a draft Word document, using track changes. I have done this because the letter also said** "Peer review comments will be submitted in writing and become public record as an addendum in the final evaluation report that is transmitted to the Commission. Prior to approval by the Director and transmittal to the Commission, the evaluation document is an internal draft and should not be shared with the public."

And, that has already been submitted to CDFW through you. In the Word document, I used track changes to recommend some edits, publications, and other details that would make the version that makes it to the Commission even cleaner.

I have then written the separate, more general review to "discuss whether the conclusions seem logical based on the information provided**" as requested in your 6 January, 2014 email. This review is presented in this letter on official MLML and PSRC letterhead since it is to be included in your submission to the Commission.**

First, I find this white shark status review to be well researched, both in terms of literature cited and in data gathered from CDFW as well as other source. For this reason, I believe CDFG and the California Fish and Game Commission will be able to make a rational decision regarding the petition to list them under CESA (California Endangered Species Act).

Second, there are some updates regarding some recent references that were omitted and some details on papers cited incompletely that I have added to the edited manuscript submitted to CDFW.

The omitted references were:

Ebert, D.A. 2003. Sharks, Rays, and Chimaeras of California. University of California Press, Berkeley, 284 pages.

and

Kerr, L.A., A.H. Andrews, G.M. Cailliet, T.A. Brown, and K.H. Coale. 2006. Investigations of $\Delta^{14}C$, $\delta^{13}C$, and $\delta^{15}N$ in vertebrae of white shark (*Carcharodon carcharias*) from the eastern North Pacific Ocean. Environmental Biology of Fishes. 77: 337-353.

And, the modifications to already-cited references were:

Decide whether Dewar et al. 2013 and NMFS 2013 are the same reference. If so, remove the redundant reference.

Check the date on the citation in the text Jorgensen et al. 2010 with that in the References as Jorgensen et al. 2009. I believe it is the former, not the latter.

Replace “In Press” and “2013” with “2014, 9 (1):108” for Hamady et al.

Make sure that the References always have the date in the same place. That is, instead of directly after the authors, but rather toward the end of the citation. Examples of this can be found in Dewar et al. (2013) and Mull (2013).

Add details of the publication by Lyons et al. as: “147, pp. 370–380.”

Additional, less editorial, comments on the Report are as follows.

Executive Summary

The summary on white shark feeding habits ignored stable isotope information indicating that larger, older white sharks are not all feeding on marine mammals, but rather on invertebrates and bony fishes (see Kerr et al. 2006; Carlisle et al. 2012; and Kim et al 2012).

The citation of the low estimate of population size (319-3,000) does not include a comprehensive evaluation of how those estimates were derived (i.e. a value combined from two papers), nor do they reflect the lower value of 130 cited in Chapple et al. (2011), which was the lower of the confidence intervals stated from their mark-recapture study.

Introduction

Similar comments to the above in paragraph two, in which the citation Shester et al. (2012) is cited as a reference for the low estimate of population size of the white shark off the western United States. This is not a reference from the peer-reviewed literature, simply cites the original papers, and should be viewed conservatively.

Life History

Under "Species Description" the citation of maximum total length ignores a summary in Ebert (2003) and incorrectly cites Castro (2012). In Cailliet et al. (1984), we only cited previously published papers, whereas the other two references cited above documented that the maximum size of the white shark could be between 6.0 m (Castro 2012) and 6.4 m (Ebert 2003). And, this is based on a more recent, and thorough, examination of the evidence in the literature.

Similarly, in the next paragraph, the missing citation of Ebert (2003) diminishes the accuracy of the various sizes at birth, maturity, etc. discussed.

It must be noted, however, that these omissions do not harm the overall evaluation of the literature on the white shark, nor should they influence how the CDFW report is evaluated.

The last paragraph before "Taxonomy" is missing references to Kerr et al. (2006), Carlisle et al. (2012) and Kim et al. (2012), all of which used stable isotope levels in vertebrae as indicators of age-specific diets of white sharks.

Under "Food Habits," the reference to Kim et al. 2012 should be accompanied by reference to Kerr et al. (2006) and Carlisle et al. (2012), as these stable isotope analyses indicate ontogenetic feeding habit shifts that are different than what is normally thought for this species.

Under "Species Status. Abundance and Population Trends in California Waters," the same criticism as above can be made toward the way that the minimum number of white sharks off the west coast of the United States is described (See above under Executive Summary). Fortunately, the two studies (one off the Farallon Islands and Tomales Point (Chapple et al. 2011), and the other off Guadalupe Island, Baja California (Sosa-Nishizaki et al. 2012)) were both described accurately and then combined.

The subsequent discussion in this section about assumptions made in the above mark-recapture studies is very comprehensive and to the point. These studies have serious limitations with the assumptions necessary to use the particular methodology (mark-recapture analysis).

In addition, it is correct to point out that neither study adequately dealt with missing life stages of white sharks in their mark-recapture population size estimations, along with many other problematic assumptions such as probability of capture, sex ratios, sample size, etc.

I agree wholeheartedly with the statement on page 19 that "there remain substantive issues in the methods for determining NEP white shark abundance." It must also be said that it is reasonable for apex predators like white sharks to have relatively low population sizes and should be managed in a precautionary way.

However, there is no evidence that white shark populations in the eastern North Pacific in general, or off the west coast of North America, are in any way diminished or threatened. Indeed, the evidence is that their numbers are increasing (see page 20 and references cited, plus Figure 2). Besides, they are already protected by both state (California) and federal (United States) regulations. These are clearly reported on pages 40-44. In addition, it is my understanding that Mexico has regulations protecting white sharks, even though they may not be adequately enforced.

This Report covers other aspects of potential problems for white sharks in the eastern North Pacific (i.e. Marine Debris, Ship Strikes, Overexploitation, Predation, Disease, Prey Availability, Climate Change) and does not find any striking problems. Indeed, analysis starting on page 37 indicates that prey abundance for white sharks (i.e. pinnipeds and other marine mammals) has been steadily increasing over the past few decades. Thus, there is little evidence that these factors could predict white shark population declines. Rather it would suggest the opposite.

The Recommendations for Management, starting on page 48, are well written and indicate that the California Department of Fish and Wildlife, and the National Marine Fisheries Service, are doing just the right thing to monitor and manage the white shark population along our west coast.

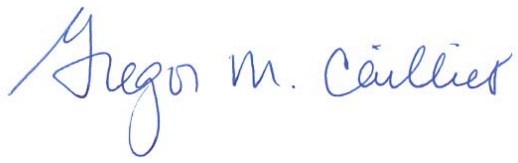
Indeed, on pages 49-51, I predict that CDFW will not find any problems of danger for the white shark population in California. And, this is based upon "the best scientific information."

Finally, I would expect that the "department's scientific determinations" on page 50 should all have "no" as an answer to the questions regarding habitat, over-

exploitation, predation, competition, disease, other natural or human-related activities causing any significant problems with the white shark population.

I would add that the "Summary of Key Findings" should indicate that the petition should be denied, resulting in the conclusion that "the petitioned action is <u>not warranted</u>."

Respectfully submitted,



Gregor M. Cailliet, Ph.D.
Professor Emeritus, Moss Landing Marine Laboratories
California State University system
and
Co-Director, Pacific Shark Research Center

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Fisheries Science Center

February 10, 2014

State of California Natural Resources Agency
Department of Fish and Wildlife, Marine Region
1933 Cliff Drive, Suite 9
Santa Barbara, CA 93109

To whom it may concern,

I have reviewed the "Status Review of White Shark (*Carcharodon carcharias*) in California," prepared by the California Department of Fish and Wildlife. Overall, this document provides a thorough review of the literature and available data pertaining to white sharks in this region, relying heavily on the peer-reviewed, comprehensive status review of the northeastern Pacific (NEP) population of white sharks conducted by the National Marine Fisheries Service. The report's finding that there are no serious, imminent threats to the continued existence of the NEP white shark population in California is appropriate, given the available data. A few additional comments are detailed here:

Introduction (p.4) – Citations are lacking in this section, with respect to genetic diversity, analyses of catch trends, and documentation of catches.

Life History/Life Span (p.7) – "Recently a more accurate study of Atlantic white sharks used vertebral band counts (validated using bomb radio carbon dating) to calculate a maximum age estimate of approximately 70-100 years (Hamady et al. in press)." This statement is misleading as the paper reports on radiocarbon age estimates and not necessarily vertebral band counts (the focus of another paper in prep/review by Natanson and Skomal), and the range of 70-100 was not reported in this manuscript. Perhaps simplify to state something like: "Recently a vertebral bomb radiocarbon study estimated a maximum age of at least 70 years for Atlantic white sharks (Hamady et al. 2014)." Current citation is: Hamady, LL, Natanson LJ, Skomal GB, Thorrold SR (2014) Vertebral Bomb Radiocarbon Suggests Extreme Longevity in White Sharks. PLoS ONE 9(1): e84006. Doi:10.1371/journal.pone.0084006.

Genetics is touched on very briefly in a few areas with no details and limited documentation (Tanaka et al. 2011 not cited anywhere). Given the detail provided to all other topics, perhaps this topic should have its own heading with a little more explanation of why NEP white sharks are genetically distinct from other populations. (Tanaka, S., T. Kitamura, and K. Kofuji. 2011. Age, growth and genetic status of the white shark (*Carcharodon carcharias*) from Kashima-nada, Japan. Marine & Freshwater Research:548-556.)

Table 3 (p.30) – The asterisks in Table 3 are not defined.

My comments above are minor and do not change the finding that there appears to be a low risk of extinction potential for the NEP white shark population.

Please don't hesitate to contact me with any questions you may have.

Sincerely,

Camilla T. McCandless
Research Fisheries Biologist
NOAA NMFS Narragansett Lab
28 Tarzwell Drive
Narragansett, RI 02882
401-782-3272
cami.mccandless@noaa.gov

Centro de Investigación Científica y de Educación Superior de Ensenada

Laboratorio de Ecología Pesquera
Departamento de Oceanografía Biológica

February 7, 2014

Craig Shuman, D. Env.
Regional Manager
Marine Region
California Department of Fish and Wildlife
CDFW

Dear Mr. Shuman,

I express my thanks for considering me as a reviewer of the draft of the report "STATUS REVIEW OF WHITE SHARK (*Carcharodon carcharias*) in CALIFORNIA." In the file of the draft, I include my comments and recommendations; I hope they are useful to you.

Based on the best scientific information available, manly on abundance estimates, incidental catch trends in Southern California Bight, and independent trends, I do not find arguments to support the consideration that the white shark population in the northeastern Pacific (NEP) is in danger now or in the near future. This conclusion is in agreement with the CDFW draft's conclusions and with the recently published report of the National Marine Fisheries Service: "Status Review of the Northeastern Pacific Population of White Sharks (*Carcharodon carcharias*) Under the Endangered Species Act" (Dewar et al. 2013).

One main concern for the white shark population in the NEP is the YOY and juvenile incidental catch by the Mexican artisanal fishery of the west coast of the Baja California peninsula. The establishment of a seasonal fishing ban (May to July) for the shark fisheries in Mexican waters since 2012, and the recent publication of a more specific fishing ban for the white shark incidental catches (January 27, 2014) will diminish the impact of this operations.

At the end of last year, a working group, lead by my lab under contract with the National Commission of Natural Protected Areas, drafted a Plan of Action for the conservation of the white shark in Mexico. Actions related with this plan should start during this year and will expand our knowledge of the species and help management activities for its conservation. All this efforts will enlarge the conservation of the white shark in Mexican waters and benefit its population's present trends in the NEP. All this actions from my country are also considered in my conclusion.

Please receive my best regards, and I will be happy to answer any question related with my review.
Sincerely,

Dr. Oscar Sosa-Nishizaki

Dr. Oscar Sosa-Nishizaki, Laboratorio de Ecología Pesquera, CICESE, Km. 107 Carretera Tijuana-Ensenada; Apdo. Postal 2732;
C. P. 22860, Ensenada, Baja California, México.
TEL.: +52 (646) 175-05-00 Ext. 24267; Fax: +52 (646) 175-05-45; Correo Electrónico: ososa@cicese.mx

USA Postal Address: Fisheries Ecology Laboratory, CICESE, P. O Box 434844, San Diego, CA. 92143-4844, USA.

Appendix C

Public Comment

Summary of Comments Received from the Public

The Department and the Commission received 35,502 pieces of correspondence during the public notice period ending February 1, 2014. Of these:

99.71% (n=35,398) supported listing the NEP white shark population. This total includes five responses from the Petitioners. This total includes four responses that contained multiple signatures from different persons/groups.

00.28% (n=100) opposed listing the NEP white shark population.

00.01% (n=4) did not state support or opposition.

Affiliations of the respondents are summarized below.

99.94% (n=35,481) members of the public without stated affiliation
0.03% (n=9) non-governmental organizations (Petitioners included)
0.02% (n=6) private industry
0.01% (n=3) state and county governments
0.01% (n=2) white shark researchers
0.003% (n=1) public user groups

Respondents are grouped by stance and listed in the order their comments were received.

Support Comments sent to

the Fish & Game Commission

Miyoko Sakashita

Email to Commission dated August 20, 2012
"Petition to List White Shark Under CESA" Attachment: PETITION TO LIST THE WHITE SHARK (CARCHARODON CARCHARIAS) AS THREATENED OR ENDANGERED UNDER THE CALIFORNIA ENDANGERED SPECIES ACT (August 20, 2012) (49 pages)
On behalf of Oceana, Center for Biological Diversity, and Shark Stewards; please find the attached scientific petition seeking protection for the white shark under the California Endangered Species Act. A copy of this petition with supporting scientific materials has also been sent via certified mail. Thank you for your consideration of this matter.
Sincerely,
Miyoko Sakashita

_____

Miyoko Sakashita
Oceans Director | Senior Attorney
Center for Biological Diversity
351 California Street #600
San Francisco, CA 94104
tel. 415-632-5308 | miyoko@biologicaldiversity.org
@endangeredocean | biologicaldiversity.org

Robert E. Rutkowski

Email to Commission dated December 12, 2012
"Save California Great White Sharks From Extinction"
The Pacific coast of California and Baja California, Mexico are home to a unique population of great white sharks (Carcharodon carcharias) that are genetically distinct and isolated from all other great white sharks around the globe. Scientists estimate that only a few hundred adult and sub-adult individual great white sharks remain in this population, meaning the continued existence of great white sharks on the US west coast is at risk. Existing protections are not adequately protecting this species. Juvenile great white sharks continue to be killed as incidental bycatch in US and Mexican commercial fishing gillnets in important nursery areas for these young sharks. Under existing regulations, there are no limits on this bycatch, nor is there sufficient observer coverage in these fisheries. In addition, juvenile great white sharks off of southern California can be caught and killed by recreational fishermen who assume any small shark is edible, when if fact they have some of the highest levels of mercury, DDT, and PCBs found in any shark species worldwide. Our ocean ecosystems need great white sharks. As top ocean predators, great white sharks play a critical top-down role in structuring the marine ecosystem by keeping prey populations like seals and sea lions in check. The

presence of great white sharks ultimately increases species diversity of the overall ecosystem. The North East Pacific Population of great white sharks along the US West Coast requires additional protection as an endangered species because of its low population size and the ongoing threats from human activities. Endangered Species Act listing will be critical to effectively addressing the continued bycatch of great white sharks, while promoting additional scientific research on this dwindling population.
I urge the California Fish and Game Commission to consider protecting this population of great white sharks under the California Endangered Species Act.

Ravi Grover

Email to Commission dated December 13, 2012
"re: white sharks need conservation"
As top ocean predators, great white sharks play a critical top-down role in structuring the marine ecosystem by keeping prey populations like seals and sea lions in check. The presence of great white sharks ultimately increases species diversity of the overall ecosystem. The North East Pacific Population of great white sharks along the US West Coast requires additional protection as an endangered species because of its low population size and the ongoing threats from human activities. Endangered Species Act listing will be critical to effectively addressing the continued bycatch of great white sharks, while promoting additional scientific research on this dwindling population.
Please consider protecting this population of great white sharks under the California Endangered Species Act.

The
NATIONAL HUMANE EDUCATION SOCIETY
Fostering a sentiment of kindness to animals

December 3, 2012

Sonke Mastrup, Executive Director
California Fish and Game Commission
P. O. Box 944209
Sacramento, CA 94244-2090

Dear Director Mastrup,

I am writing on behalf of The National Humane Education Society (NHES) and its nearly 400,000 members, many of whom are California residents, to urge the California Fish and Game Commission to seek protection for the great white sharks off the coast of California.

As a nonprofit organization that promotes the humane treatment of all animals, NHES strongly supports the need to protect endangered and near-endangered species from human predators. With only a few hundred of these animals left, they need to be considered for listing under the Endangered Species Act.

For these reasons, we urge the commission to seek protection for the great white sharks off the coast of California.

We thank you for your attention to this matter and look forward to your continued efforts to protect endangered and threatened species in your state. NHES will also continue to work for animal welfare and responsible and humane communities nationwide.

For the animals,

Ginnie R. Maurer
Humane Educator

NATIONAL OFFICE:
P.O. Box 340
Charles Town, WV 25414-0340
Phone 304/725-0506
Fax 304/725-1523
www.nhes.org

PROGRAM:
SPAY TODAY
P.O. Box 340
Charles Town, WV 25414-0340
Phone 304/728-8330
Fax 304/724-6765
www.spay-today.org

AFFILIATE:
PEACE PLANTATION
ANIMAL SANCTUARY
12752 State Hwy. 206
Walton, NY 13856-2327
Phone 607/865-5759
Fax 607/865-6334
www.ppasny.org

PROGRAM:
BRIGGS ANIMAL
ADOPTION CENTER
P.O. Box 1023
Charles Town, WV 25414-1023
Phone 304/724-6558
Fax 304/724-6765
www.baacs.org

December 17, 2012

California Fish and Game Commission
Attn: Executive Director
P.O. Box 944209
Sacramento, CA 94244-2090

Sharks have been swimming in the world's oceans for more than 400 million years, since before the dinosaurs. While sharks have been able to survive periods of global mass extinctions, they have not evolved to withstand destructive human interactions.

The Pacific coast of California and Baja California, Mexico is home to a unique population of great white sharks that are genetically distinct and isolated from all other great white sharks around the world. With only an estimated few hundred adult and sub-adult individual great white sharks in this population, the survival of great white sharks on the U.S. west coast is at serious risk.

While targeted fishing for great whites is currently prohibited, juvenile great white sharks continue to be unintentionally caught regularly as by-catch by U.S. and Mexican commercial fishing gillnets in important nursery areas for these young sharks. Newborn great whites from this area are regularly killed by commercial fishing gear off Southern California and Baja California in offshore gillnet fisheries targeting halibut, white seabass, and swordfish.

Under existing regulations, there are no limits on this by-catch, nor is there sufficient observer coverage in these fisheries to assess the full extent of by-catch. In addition, juvenile great white sharks off of southern California have some of the highest levels of mercury, DDT, and PCBs found in any shark species worldwide.

Our ocean needs great white sharks. As top ocean predators, great white sharks play a critical top-down role in structuring the marine ecosystem by regulating prey populations of seals and sea lions. The presence of great white sharks ultimately keeps the ocean food web in balance and increases the species diversity of the overall ecosystem.

The west coast population of great white sharks requires additional protection as an endangered species because of its low population size and the ongoing threats from human activities. Their population is of grave concern.

Relative to other fish, white sharks grow slowly, have late maturity, and have low reproductive rates, so each one counts. If they get endangered species status, it will promote more scientific research and make it easier to protect them from threats like nets. Their young are being caught in fishing nets, and recent scientific studies estimate there are only a few hundred adult white sharks in the West Coast population, putting them at risk of extinction.

Endangered Species listing is critical to effectively addressing the continued by-catch of great white sharks and other threats, while promoting additional scientific research.

Please protect great white sharks by listing the west coast population on the Endangered Species List. Sharks reproduce slowly, and if their numbers fall, the entire coastal ecosystem could be in trouble.

Thank you for your help on behalf of a healthy marine environment.

Yours truly,

J. Capozzelli
315 West 90th Street
New York, NY 10024

STATE CAPITOL
P.O. BOX 942849
SACRAMENTO, CA 94249-0115

California Legislature

December 21, 2012

President James Kellogg and
Members of the California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

RE: Support for advancing white sharks to candidate status under the California Endangered Species Act

Dear President Kellogg and Commissioners:

We the undersigned California legislators are concerned over the fate of California's great white sharks. These apex predators are a critical part of California's ocean ecosystem, but they are in a perilous situation. White shark pups are caught as bycatch in Southern California gillnet fisheries. We must take action now to prevent the demise of one of the ocean's most ancient and respected species. We are writing to respectfully request that you advance the white sharks (*Carcharodon carcharias*) to candidacy under the California Endangered Species Act (CESA).

We are worried about the continued existence of our unique Northeastern Pacific population of great white sharks, which includes the white sharks present off the coast of California. The best available science indicates that there are only a few hundred adult and sub-adult individual white sharks left in this population, based on photographic mark-recapture studies at the two main autumn aggregation sites off Central California and Guadalupe Island, Mexico. This population of sharks is genetically distinct and reproductively isolated from all other great white sharks around the world's oceans. The low population number coupled with their low fecundity, slow growth rate, late maturity, and direct mortality caused by human activities presents an inherently high extinction risk.

Although commercial harvest of great white sharks is already prohibited, these sharks are regularly caught as bycatch in set and drift gillnet fisheries, without any limits on their take. Set and drift gillnets — which together target California halibut, white seabass, yellowtail, thresher sharks and swordfish — are responsible for more than 80 percent of the reported young white sharks caught in their nursery grounds off Southern California. Reported bycatch in these fisheries from fishery logbooks has averaged more than 10 sharks per year since the 1980s, and has increased in recent years. However because observer coverage on these vessels is so low, the full extent of this white shark bycatch remains unknown. We are also aware that white shark

bycatch is occurring in similar fisheries in Mexico, and is unlikely to be addressed in the absence of action on this side of the border.

Additionally of concern to us is the high level of contaminates found in young great white sharks off of southern California. These white shark pups have the second highest mercury level on record for any sharks worldwide and PCB and DDT levels in liver tissue that are the highest observed in any shark species reported to date globally. These mercury levels exceed six fold the established thresholds where harmful physiological effects have been documented in other marine fish.

California has been a leader in shark conservation, including the recent passage of legislation banning the trade of shark fins (AB 376), as well as legislation prohibiting the directed take of white sharks in 1993 (AB 522). However, bycatch of white sharks in our fisheries has not been addressed. The California Endangered Species Act will provide a forum for tangible, near-term management changes to provide increased protection for great white sharks. More specifically, CESA listing will provide the basis for:

- increasing onboard observer coverage in gillnet fisheries to more accurately document the amount of white shark bycatch;
- enacting reasonable and precautionary management measures to minimize the bycatch of white sharks, such as time/area closures, gear modifications, and/or hard bycatch limits; and
- garnering additional funding and resources to better understand white shark population trends and threats to promote recovery.

Great white sharks are the ocean's ultimate apex predator maintaining a healthy balance in the ecosystem. If we lose our ocean's top predator, we lose the healthy balance of our ocean ecosystem to the detriment of our fisheries, wildlife, recreational opportunities, and multi-billion dollar coastal economy. This is a risk we cannot afford, especially when we have the ability to take actions to reduce human-caused mortality to white sharks.

The National Marine Fisheries Service (NMFS) announced a positive 90-day finding on a similar federal Endangered Species Act petition for this population of white sharks in September of this year, recognizing the perils to this population and concluding that a full status evaluation is warranted based on the newly available scientific information.

We urge you to advance the Northeastern Pacific population of white sharks to candidacy under the California Endangered Species Act.

Sincerely,

Paul Fong
Assemblymember, 28th A.D.

Tom Ammiano
Assemblymember, 17th A.D.

Bob Blumenfield
Assemblymember, 45th A.D.

Mark Stone
Assemblymember, 29th A.D.

Bob Wieckowski
Assemblymember, 25th A.D.

Das Williams
Assemblymember, 37th A.D.

Fran Pavley
Senator, 27th S.D.

cc: Chuck Bonham, Director, California Department of Fish and Game

Ashley Blacow

Email to Commission dated January 3, 2013
"letter of support re: white shark Endangered Species Act petition" Attachments (72 pages)
Dear President Kellogg and members of the California Fish and Game Commission,
Please find attached a letter on behalf of 886 California residents and thousands of other US residents in support of providing additional protections for the Northeastern Pacific population of white sharks via listing as a state endangered species.
Regards,
Ashley Blacow
Ashley Blacow | Pacific Policy and Communications Coordinator
_____
OCEANA | Protecting the World's Oceans
99 Pacific Street, Suite 155-C | Monterey, CA 93940
T 831-643-9220 | C 831-224-7484 | F 831-643-9268

January 3, 2012

President James Kellogg and
Members of the California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Dear President Kellogg and Commissioners:

Sharks have been swimming in the world's oceans for more than 400 million years, since before the dinosaurs. While sharks have been able to survive periods of global mass extinctions, they have not evolved to withstand destructive human interactions.

The Pacific coast of California and Baja California, Mexico is home to a unique population of great white sharks that are genetically distinct and isolated from all other great white sharks around the world. With only an estimated few hundred adult and sub-adult individual great white sharks in this population, the survival of great white sharks on the U.S. west coast is at serious risk.

While targeted fishing for great whites is currently prohibited, juvenile great white sharks continue to be unintentionally caught regularly as bycatch by U.S. and Mexican commercial fishing gillnets in important nursery areas for these young sharks. Under existing regulations, there are no limits on this bycatch, nor is there sufficient observer coverage in these fisheries to assess the full extent of this bycatch. In addition juvenile great white sharks off of southern California have some of the highest levels of mercury, DDT, and PCBs found in any shark species worldwide.

Our ocean needs great white sharks. As top ocean predators, great white sharks play a critical top-down role in structuring the marine ecosystem by regulating prey populations of seals and sea lions. The presence of great white sharks ultimately keeps the ocean food web in balance and increases the species diversity of the overall ecosystem.

The west coast population of great white sharks requires additional protection as an endangered species because of its low population size and the ongoing threats from human activities. Endangered Species listing will be critical to effectively addressing the continued bycatch of great white sharks and other threats, while promoting additional scientific research on this population of grave concern. We urge you to protect great white sharks by listing the west coast population on the Endangered Species List.

Sincerely,

886 concerned California residents and 3,744 concerned residents and members of the American Armed Forces living outside the state of California.

First Name	Last Name	City	State	Zip Code	First Name	Last Name	City	State	Zip Code
Josh	Thomas	Los Angeles	CA	90014	Shelley	Cerasaro	Redding	CA	96001
Myra		Lemoore	CA	93245	marcia	breslin-cantillana	oakland	CA	94618
Roxanna	De Feo	Palo Alto	CA	94303	Dean	Gomersall	Laguna Beach	CA	92651
Keith		Los Angeles	CA	90064	Nicole	Bessette	San Clemente	CA	92672
Shivanni	Chandra	Fresno	CA	93706	David	Wilson	San Francisco	CA	94107
Shannon	Gallagher	Los Angeles	CA	90036	Ralph	Sanders	Inglewood	CA	90304
Megan	Hockwalt	Rancho Cucamonga	CA	91739	Rachel	Scott	Murrieta	CA	92563
Hilary	Mau	Los Angeles	CA	90038	Joyce	Mitchell	Santa Cruz	CA	95062
arnette	zerbe	Santa Barbara	CA	93108	Linda	Pham	San Francisco	CA	94103
Sara		San Diego	CA	92110	Alan	Goggins	Castro Valley	CA	94546
Lucia	Ferreira	Los Angeles	CA	90035	Sean	McCune	Los Angeles	CA	90025
Jennifer	Zeller	Manhattan Beach	CA	90266	Makani		Venice	CA	90291
Karina	Kravalis	San Diego	CA	92101	Katherine	O'Connor	Los Angeles	CA	90028
Tabitha	W.	Chatsworth	CA	91311	Jerry	Katz	Santa Monica	CA	90404
Jerry	Wayne	Sheman Oaks	CA	91423	Sandra	Levine, MD	San Rafael	CA	94903
Malia	Everette	El Sobrante	CA	94803	Duane	Gee	San Diego	CA	92117
Laura	Herndon	Burbank	CA	91506	Clifford	Stewart	salinas	CA	93901
Julie	Ford`	Huntington Beach	CA	92649	J	Cornette	Santa Clara	CA	95051
Craig	Byrd	Los Angeles	CA	90026	Ian	King	Bulli	CA	90213
Shelley	Ellis	Ridgecrest	CA	93555	Justin		West Hollywood	CA	90046
Paul	Ramos	Solvang	CA	93463	Veronica	Hadsell	Rio Linda	CA	95673
Debra	Cross	Corona del Mar	CA	92625	Patrick	Mullen	san juan bautista	CA	95045
Joan	Pool	Vacaville	CA	95687	Shelley	Brown	Los Angeles	CA	90016
Charles	Calhoun	San Francisco	CA	94115	Catherine	Adachi	Point Richmond	CA	94801
Brian	Walker	Laguna Beach	CA	92651	Monika	Grant	Mission Viejo	CA	92691
Dwayne		Tustin	CA	92780	Carol	Lunn	Sacramento	CA	95825
Holland	Garcia	Carmel	CA	93923	Suzanne	Newman	Orinda	CA	94563
Kim	Stribling	Scotts Valley	CA	95066	Lynn	Autumn	Encinitas	CA	92024
Mardo	Rivera	Monterey Park	CA	91754	Michael	Metz	La jolla	CA	92092
Eve	Norman	Oakland	CA	94612	Ian and Janeane	Moody	Sausalito	CA	94965
Sarah	Hearon	Santa Barbara	CA	93130	Maria	Groschup-Black	Spring Valley	CA	91977
Amanda	Lavictoire	Beverly Hills	CA	90210	Rose	STef	Santa Monica	CA	90403
Alfred	Martinez	Coachella	CA	92236	Anthony	Henner	San Rafael	CA	94901
Jessie	Belfer	Palo Alto	CA	94306	Valerie	Grischy	San Diego	CA	92109
Mary	BethClark	Simi Valley	CA	93065	Randy	McNea	Spring Valley	CA	91977
David	Chamberlain	San Carlos	CA	94070	Kaci		Los Angeles	CA	90065
JENNIFER	PARKER	Los Angeles	CA	90068	Sue	Garrett	Clearlake Oaks	CA	95423
Benjamin	Griffin	Santee	CA	92071	Alexandra	Saunders	Danville	CA	94526
Joe	Mueller	Fairfax	CA	94930	Neil	Campbell	San Diego	CA	92115
Harvey	Brenneise	San Bernardino	CA	92404	Jeanne	Criss	Huntington Beach	CA	92646
Cathy	Crum	Agoura	CA	91301	Robert	Frischmuth	Pacific Grove	CA	93950
Cindy	Bartlett	Middletown	CA	95461	Sharon	Verani	Altadena	CA	91001
Kari	Kashani	Clearlake	CA	95422	Robert	Rippetoe	Rancho Mirage	CA	92270
Craig	Reppe	Fresno	CA	93726	Kimberly	Wright	San Diego	CA	92128
Lorrie	Fyfe	Ontario	CA	91764	Lauren	Green	Manhattan beach	CA	90266
Nadia	Sohaei	Beverly Hills	CA	90212	Jaime	Becker	Berkeley	CA	94702
Travis	Thumm	San Francisco	CA	94102	SEPIDEH	MOHAMMADI	SAN RAMON	CA	94582
Carol	Bretonne	Malibu	CA	90265	Kate	Harper	Citrus Heights	CA	95610

Joseph	Vella	Aptos	CA	95003
Agnes	torteli	San Jose	CA	95111
Pia	Maquilon	West Covina	CA	91792
K	Yang	Woodland	CA	95776
Jeff	Thomas	Palermo	CA	95968
Bettie	Auble	Citrus Heights	CA	95610
Terry	Banister	Westlake Village	CA	91362
Matthew	Valenti	San Francisco	CA	94114
Annika	Miller	Mill Valley	CA	94941
Andrea	Pellicani	Santa Rosa	CA	95401
Kip	Marlow	Carlsbad	CA	92011
Tim	Hayes	El Cajon	CA	92020
David	Heenan	Torrance	CA	90505
Cyndi	Galley	Temecula	CA	92592
Liz	Ryan	Los Angeles	CA	90039
Cleo	Borac	Pacifica	CA	94044
allan	Newlands	Portola Valley	CA	94028
Garth	Murphy	Encinitas	CA	92024
Gay	Currier	Sacramento	CA	95821
Stephanie	Chavarria	West Covina	CA	91792
Vineeta	Mishra	San Francisco	CA	94043
John		Redding	CA	96001
Horace	Gaims	Los Angeles	CA	90036
Raymond	de Milton	Irvine	CA	92612
David	Clayberg	Santa Monica	CA	90403
Kristen	Roberts	Temecula	CA	92591
Brenda	Hinckley	Whittier	CA	90609
Jan	Charvat	Alpine	CA	91901
Richard	Wales	Penryn	CA	95663
Amy	Meyer	Lemon Grove	CA	91945
David	Grimshaw	Martinez	CA	94553
Jasmin	Gerer	Santa Cruz	CA	95060
Lisa	Marxer	Cerritos	CA	90703
Amanda	Boyington	Newbury Park	CA	91320
Mariana	Tudor	Garden Grove	CA	92840
T	McCranie	Irvine	CA	92603
David	Kemnitzer	Oakland	CA	94611
JoAnn	Reed	Vallejo	CA	94591
Joseph	Griffo	Burbank	CA	91505
Brittany	James	North Hollywood	CA	91602
Matt	Thomas	Huntington Beach	CA	92646
Adam	Englund	Encinitas	CA	92024
Dawn	Anderson	Carmel	CA	93922
Kathleen	Masser	Los Angeles	CA	90731
Robert	Groff	Campbell	CA	95008
Pamela	Manahan	Sacramento	CA	95842
Jim	Houghton	Encino	CA	91436
Isabel	Ramirez	Panorama City	CA	91402
Carmen	Buono	San Jose	CA	95123

Tiffany	Polfer	Fresno	CA	93705
Nga	Nguyen	Fullerton	CA	92831
larry	hermann	castro valley	CA	94546
Grant	Foerster	Albany	CA	94706
Barbara	Bush	Los Angeles	CA	90066
James	Domenico	San Francisco	CA	94121
Patricia	Shelton	Sacramento	CA	95814
Lisa	Stempka	San Diego	CA	92111
Chet	Arachy	EL DORADO HILL	CA	95762
Vanessa	RK	Los Angeles	CA	90210
Windy	Holzbach	San Francisco	CA	94142
Rick	Robins	Grass Valley	CA	95949
Carolyn	Dennison	Garden Grove	CA	92840
Scott	Rush	Tahoma	CA	96142
fred	pease	Lake Elsinore	CA	92530
Eileen	Karsten	Palm Desert	CA	92211
Adriana	Aguinaga	Madrid	CA	28029
Candice	Silsby	Yucca valley	CA	92284
Rebecca	Lopez	French Camp	CA	95231
Emily	Malerich	valencia	CA	91355
Nancy	Sidebotham	Oakland	CA	94605
Benjamin	Maat	La Mirada	CA	90638
Thom	Zimerle	Santa Barbara	CA	93105
Scott	hooker	Chico	CA	95926
Carmen	Sosa	Oakland	CA	94619
Russell	Blandino	Burbank	CA	91506
Cindy	Romain	Menlo Park	CA	94025
Steven	Miller	Lakeside	CA	92040
Gary	Jackson	Concord	CA	94518
Lisa	Thompson	los gatos	CA	95032
Sophe	Stine	Van Nuys	CA	91409
Daphne		San Diego	CA	92107
steven	fukuda	San Francisco	CA	94127
Elissa	Horne	North Hollywood	CA	91601
Melinda	Oldham	Mission Hills	CA	91345
Katrina	McFarland	Pebble Beach	CA	93953
Mark	Rudningen	Citrus Heights	CA	95621
Diana	Cho	Tracy	CA	95377
Robert	Painter	Burlingame	CA	94010
Dale	Anania	Berkeley	CA	94702
Amanda	Schwartz	Sherman Oaks	CA	91411
Denise	Greaves	San Jose	CA	95132
Daniel	Lemieux	Yorba Linda	CA	92886
Jack	Weber	El Segundo	CA	90245
Tami	Allen	Westlake Village	CA	91362
Faye	Straus	Lafayette	CA	94549
Arthur	Strauss	Irvine	CA	92603
Kristen	GIrgenti	Long Beach	CA	90808
Mary	Ellett	el cajon	CA	92019

Hollis	Polk	Mill Valley	CA	94942
Ranjit	Sandhu	Los Angeles	CA	90020
Trevolyn	Haines	Chino Hills	CA	91709
Sheri	Jeha	Danville	CA	94506
Eric	Kankaala	San Francisco	CA	94103
Lisa	Quattrochi	Aliso Viejo	CA	92656
Janet	Larson	Potter Valley	CA	95469
Judi	Laing	Los Angeles	CA	90027
Dana	Stewart	La Mesa	CA	91942
megan	Webster	San Diego	CA	92115
Bruce	Cowan	Costa Mesa	CA	92627
Carlos	Grana	San Francisco	CA	94114
Diana	Toutjian	Oakland	CA	94611
Connie	Dahl	Pleasanton	CA	94588
Lisa	Olsen	Oxnard	CA	93035
Nancy	Miller	Santa Maria	CA	93455
Sophia	Nardin	Los Angeles	CA	90039
Tim	Lytsell	Los Osos	CA	93402
Heide	Doss	El Cajon	CA	92019
Carol	Holland	Costa Mesa	CA	92627
Linda	Brandon	Oakland	CA	94611
Nanlouise	Wolfe	Santa Cruz	CA	95060
Ruth	Clifford	San Jose	CA	95126
Janet	Liss	Long Beach	CA	90808
Diana	Schwab	Santa Monica	CA	90403
Valentino	Massimo	Long Beach	CA	90802
Robert	Slater	Huntington Beach	CA	92647
Anaundda	Elijah	San Luis Obispo	CA	93401
Ron		Redondo Beach	CA	90277
Cheryl	Woodrow	Coehill	CA	90210
Janeen	Hoey	Solvang	CA	93463
Maria	Malda	Oceanside	CA	92056
Simon	Kelly	Soquel	CA	95073
richard	ramirez	Fullerton	CA	92831
Barbara	Foster	Simi Valley	CA	93065
Phillip	Gross	Oakland	CA	94609
Jordan	Conneely	Oregon House	CA	95962
Linda	minor	Sant cruz	CA	95060
Loren	Jones	San Francisco	CA	94127
victoria	smith	mountain view	CA	94042
Laurel-Aliza	Swartz	Granada Hills	CA	91344
Elaine	Larson	Petaluma	CA	94954
Brigitte	Robertson	Redding	CA	96001
Rodney	Merrill	Berkeley	CA	94702
Gregg	Oelker	Altadena	CA	91001
Shannin	Resendes	Etobicoke	CA	90211
Damon	Wood	El Cerrito	CA	94530
Deborah	Walden	La Verne	CA	91750
Louise	Snider	San Diego	CA	92124
Roxana	Araujo	Chico	CA	95926
Emil	Reisman	Encino	CA	91436
Elaine		San Francisco	CA	94118
carly	fraizer	orangevale	CA	95662
Janet	Eyre	San Francisco	CA	94118
Benjamin	Short	Felton	CA	95018
Julie	Veitch	Carmel	CA	93923
Reva	Biers	Tarzana	CA	91356
Brianna	Baca	Los Angeles	CA	90042
Julie	Warren	Sausalito	CA	94965
Nicholin	Quackenbush	Simi Valley	CA	93094
John	Khoury	beverly hills	CA	90213
Mariam	Shah-Rais	Los Angeles	CA	90035
James	Fullerton	Scotts Valley	CA	95067
R	Gladish	Oceanside	CA	92054
Patricia	Matejcek	Freedom	CA	95019
Frank	Eichenberg	Santa Barbara	CA	93109
Beth	Wilson	Mountain View	CA	94039
Lars	Johansson	Fresno	CA	93710
Nani	Hegenbart	Felton	CA	95018
Rick	Luttmann	Rohnert Park	CA	94928
Kyle	Bracken	Los Angeles	CA	90066
Hamerling	Santos	Elk Grove	CA	95757
Lauren	Knecht	San Diego	CA	92103
Carol		Brentwood	CA	94513
Betty	Okrent	ventura	CA	93004
Diana	Bohn	Berkeley	CA	94707
David	Lisonbee	West Hollywood	CA	90046
Diane	Smith	Paso Robles	CA	93446
Laurie	Barre	altadena	CA	91001
Susan	Sargis	San Mateo	CA	94401
Diane	Gallagher	Newport Beach	CA	92660
Jennifer		Burbank	CA	91502
Marcia	Bentley	Coronado	CA	92178
Melissa	Thomas	San Rafael	CA	94901
Tarvin	Clark	Arroyo Grande	CA	93420
Nicholas	Hughes	Northampton	CA	11111
Celia	Beatts	Los Altos	CA	94023
Pamela	McCulloch	San Diego	CA	92154
Perry	Eyler	Sacramento	CA	95821
Michael	Gosbee	San Francisco	CA	94109
Clark	Davis	Los Osos	CA	93402
Amanda	Felt	Covina	CA	91722
Kathryn	Shapiro	Lake Forest	CA	92630
Laura	Peck	Indio	CA	92201
Jon	Holstein	San Diego	CA	92107
Elizabeth	Henderson	Sacramento	CA	95835
Jarno	De Bar	Gardena	CA	90249
Kathleen	Jackson	Gilroy	CA	95020

Nancy	Webb	Cayucos	CA	93430
Brent	Mitchell	Carlsbad	CA	92009
Adam	Stretch	Beverly Hills	CA	90210
Carmen	Martinez	Los Angeles	CA	90046
Matthew	Iribarne	San Francisco	CA	94118
Martha	Booz	El Sobrante	CA	94803
Warren	M. Gold	San Francisco	CA	94143
Mi	Hak	San diego	CA	92121
Kevin	Williams	San Bruno	CA	94066
Bob	Mosher	Sonoma	CA	95476
Eric	Layton	Larkspur	CA	94939
Natalie	Reed	carlsbad	CA	92010
Thais	Simundi	CACHOEIRINHA	CA	94950
Bill	Swisher	Valley Center	CA	92082
Sherry	Kritzer	Moss Beach	CA	94038
James	Monroe	Concord	CA	94521
MICHAEL	ANTORIETTO	SAN DIEGO	CA	92122
Jim & Loree	Wellborn	Oceanside	CA	92056
James	Galetti	San Anselmo	CA	94960
george	stanford	San Diego	CA	92122
Mark	DiMaria	Los Angeles	CA	90034
Fredrica	Kanter	Riverside	CA	92501
Dani	Brusius	oak park	CA	91377
Phil	Kaplan	Santa Cruz	CA	95065
Jan	Roberts	Modesto	CA	95356
Robert	Haugsten	Cloverdale	CA	95425
Robyn	Hoffenberg	Aliso Viejo	CA	92656
Jon	Spitz	Laytonville	CA	95454
Steve	Gorman	Lincoln	CA	95648
Julie	Towery	San Luis Obispo	CA	93405
John	Gannon	Los Angeles	CA	90031
Shelley	Drainer	Lucerne Valley	CA	92356
Peter	Corkey	San Francisco	CA	94103
Selena	Hudson	Santa Cruz	CA	95062
marty	benson	Cardiff	CA	92007
Charles	Lofton	San Diego	CA	92111
Cass	Hicks	Bolinas	CA	94924
Paul	Belz	Oakland	CA	94611
Alan	Ross	Mountain View	CA	94041
G	Burton	venice	CA	90291
Robert	Moreno	Placentia	CA	92870
Carol	Hemingway	Santa Barbara	CA	93105
JAYNE	CERNY	Inverness	CA	94937
Daryl	Spafford	Hidden Hills	CA	91302
Elaine	Genasci	San Luis Obispo	CA	93405
Yael	Pardess	Los Angeles	CA	90065
Susanna	Pohto	Oulu	CA	90240
Colleen	Rodger	San Francisco	CA	94114
Susan	caniglia	San Rafael	CA	94901
Chrysanna	Corpus	Rancho Cucamong	CA	91730
simon	firth	Mill Valley	CA	94941
Daniel	Majdali	Torrance	CA	90501
mary	lee	hollister	CA	95023
Andi	Steloff	West Hollywood	CA	90069
Jim	Reynolds	Montague	CA	96064
Candice	Reinhardt	Pasadena	CA	91103
Jesus	Ramirez	Santa Ana	CA	92707
Dan	Obannon	watsonville	CA	95076
Julie	Klabin	Los Angeles	CA	90027
Susan	Hampton	El Cerrito	CA	94530
Roderick	Brown	San Diego	CA	92116
Shannon	Fields	Thousand Oaks	CA	91362
Larry	Bassett	la jolla	CA	92037
Cassandra	Scott	Porterville	CA	93257
Staci	Peters	San Diego	CA	92103
Rosalind	Goodfellow	BURBANK	CA	91506
Pat	Igoe	torrance	CA	90504
Beth	Herndobler	PAsadena	CA	91106
john	khoury	Beverly Hills	CA	90213
Ellen	Markowitz	avalon	CA	90704
Ian	Carlon	San Jose	CA	95116
Andrea	Bustos-Mason	Trinidad	CA	95570
Susan	Lewitt	San Diego	CA	92117
Megan	Peterson	Monrovia	CA	91016
Laurence	Kone	Concord	CA	94518
caroline	force	Vacaville	CA	95687
Marjorie	Krueger	Venice	CA	90291
Rose	Obetz	Camarillo	CA	93010
Don	Meehan	san jose	CA	95124
Peggy	Kincaid	Long Beach	CA	90815
Denise	Long	Sonoma	CA	95476
Rhea	Damon	Calabasas	CA	91302
Marc	Rachmuth	Oxnard	CA	93036
Katina	Zinner	Santa Monica	CA	90403
Carolyn	Mogavero	San Diego	CA	92103
Veroniki	Bohrer-Padavos	Merced	CA	95340
Tom	Capogreco	sacramento	CA	95819
Sabrina	Hogan	Monrovia	CA	91016
Jon	Silver	Portola Valley	CA	94028
BENITA	MICHTA	ANTIOCH	CA	94509
Toni	Heuchan	long beach	CA	90802
Diana	Wilson	Ojai	CA	93023
Michele	Monchatre	Pollock Pines	CA	95726
Kara		Santa Barbara	CA	93109
Katie	Foley	San jose	CA	95123
Kelly	Proctor	sooke	CA	90210
Annette	Ehrlich	Los Angeles	CA	90068
Alfredo	Figueroa	Blythe	CA	92225

Nadine		Laguna Beach	CA	92651
Robin	Mayforth	Pacifica	CA	94044
George	Hague	Moreno Valley	CA	92555
Fanny	Diehl	Lompoc	CA	93436
Marc	Marrie	Studio City	CA	91604
Cheryl	Delvecchio	Loomis	CA	95650
Claudia	Cervantes	Whittier	CA	90604
Cheryl	Oliver	Murrieta	CA	92562
Jane	Robinson	Santa Rosa	CA	95404
Monique	Soares	Watsonville	CA	95076
L.	Perea	Los Angeles	CA	90027
Linda	McDonald	Ukiah	CA	95482
martha	davis	Los Angeles	CA	90066
Gary	Kessler	Los Angeles	CA	90025
Koa	Pickering	San Anselmo	CA	94960
Ron	Dutra	San Francisco	CA	94112
Elizabeth	Babb	Goleta	CA	93117
Jamie	Rosenblood	Los Angeles	CA	90049
Rebel	Kreklow	Fair Oaks	CA	95628
Susan	Antonius	Redondo Beach	CA	90277
alex	ben	venice	CA	90291
Charles	Saylan	marina del rey	CA	90295
Alison	Buckley	san diego	CA	92108
Sara	Melson	Los Angeles	CA	90068
Marilou	Lasam	Walnut	CA	91789
Jon	Blaze	Reseda	CA	91335
Roni	Feldman	los angeles	CA	90031
Lee	Miller	Stockton	CA	95215
Viola	Freeman	santa barbara	CA	93101
Amy	Veloz	Los Angeles	CA	
Denise	Bligh	Cotati	CA	94931
Jamison	Haase	Los Angeles	CA	90042
Lindsay	Hudson	Valley Village	CA	91601
Sharon	Johnson	North Highlands	CA	95660
Branden	Faber	Laguna Beach	CA	92651
Jennie	Ramirez	Montebello	CA	90640
mike	coil	monrovia	CA	91016
Toni	Mar	Berkeley	CA	94720
Barry	Leonardini	San Francisco	CA	94118
Michael	Cornish	Sun Valley	CA	91352
Cyndi	Kahn	Venice	CA	90291
Ruth	Dicks	Mission Viejo,	CA	92691
Randi	Fairbrother	Goleta	CA	93117
Harry	Brass	Berkeley	CA	94706
don	garcia	San Francisco	CA	94121
Taras	Kiceniuk	Santa Paula	CA	93060
Sonia	Alvarez	Laguna Niguel	CA	92677
April & Steve	Kapchinske	San Diego	CA	92115
Gayle	Abbott	Sacramento	CA	95819
Douglas	Blackington	Encinitas	CA	92023
Janice	Valdez	Bonita	CA	91902
Janice		bonita	CA	91902
Ruth	Feldman	Alamo	CA	94507
barbara	Rice	Moraga	CA	94556
Richard	Burke	San Diego	CA	92104
Diana		San Jose	CA	95112
Robin	Sturmthal	Woodland Hills	CA	91364
Torah	Alabidi	Riverside	CA	92507
Herschel	Dosier	San Francisco	CA	94115
Samantha		San jose	CA	95131
Gus	Gomez	San Francisco	CA	94102
Sue	Sisk	Fort Bragg	CA	95437
Persephone	Maywald	Orinda	CA	94563
James	Jackson	Vista	CA	92083
Suzanne	Hargrove	Los Angeles	CA	90046
Kait	Ferrall	Mountain View	CA	94040
Vanessa	Rojo	Baldwin Park	CA	91706
Tom	Gewecke	San Jose	CA	95112
Frank	Gonzalez	Northridge	CA	91326
Kate		redwood city	CA	94062
Anne-Marie	Hahn	Hesperia	CA	92345
Kathy	Thomas	Arroyo Grande	CA	93420
aaron	small	San Francisco	CA	94131
Patricia	Smalling	angels camp	CA	95222
John		Fullerton	CA	92835
Ernest	George	Irvine	CA	92612
Susan	Oldershaw	Oakland	CA	94610
Lydia	Banuelos	Chula Vista	CA	91911
David	Sarricks	Running Springs	CA	92382
Bryan	Le	San Jose	CA	95133
Karen	Jenne	South Pasadena	CA	91030
Roslyn	Johnson	Oakland	CA	94619
Michael	Wagner	San Anselmo	CA	94979
Gynae	Jerner	Turlock	CA	95380
Michael	Davis	Burlingame	CA	94010
Allyson	Ford	Los Angeles	CA	90026
Julie	Costantini	Los Angeles	CA	90068
Geraldine	Donigan	San Diego	CA	92105
Lito	Velasco	Woodland Hills	CA	91367
Lori	Lindburg	San Francisco	CA	94114
Deborah	Brooks	San Francisco	CA	94110
helen	mcallister, phd	clearlake oaks	CA	95423
Eva	Malhotra	Los Angeles	CA	90017
Bella	Jaye	Bloomington	CA	92316
Gary	Skupa	Berkeley	CA	94709
Laura	Marx	San Diego	CA	92129
Lindsey	Bickley	San Clemente	CA	92672
Colin	Purdy	san diego	CA	92167

Ellen	Leaf	Redondo Beach	CA	90277
Jere	Guldin	Los Angeles	CA	90064
Judith	Hoaglund	Santa Rosa	CA	95401
Dean	Frick	San Francisco	CA	94114
Michael	Hemp	Carmel	CA	93922
Jordan	Conneely	Oregon House	CA	95962
Michael	Tonetti	Chico	CA	95973
Mildred	Gordon	Oceanside	CA	92054
Leo	Lucido	sylmar	CA	91342
Susan	Mathison	Los angeles	CA	90039
Ronald	Eby	Marina	CA	93933
Jim	Klug	Aptos	CA	95003
Lori		riverside	CA	92503
Charles	Schmalz	Clearlake Oaks	CA	95423
John	Koenig	Los Angeles	CA	90049
Jeffrey	Clark	Anaheim	CA	92806
Danielle	Vallee	Salinas	CA	93905
Stella	gunther	irvine	CA	92606
Martha and Richard	Galaif	Pacific Palisades	CA	90272
Bonnie	Schindhelm	San Francisco	CA	94131
Karen	Backman	Winnipeg	CA	90222
Karen	Pearlman	San Diego	CA	92119
Sarah	Olson	Forestville	CA	95436
Norma	Sandler	West Hollywood	CA	90069
Emily	Feingold	Concord	CA	94520
David	Stolowitz	San Jose	CA	95112
Lhaage	haage	oakland	CA	94618
Steven	Rosenthal	Santa Barbara	CA	93105
Shannon	Jan	TORRANCE	CA	90503
Judi	Muller	Santa Barbara	CA	93105
Richard	Leighton	San Diego	CA	92116
james	gregory	Chatsworth	CA	91311
Holger	Brix	Altadena	CA	91001
Dustin	Boeger	Davis	CA	95618
Louise	Schwartz	Los Angeles	CA	90077
George	Leddy	West Hollywood	CA	90046
Wally	Wolf	Valley Center	CA	92082
Robin	Lara	Sacramento	CA	95815
Charity	Secord	Half Moon Bay	CA	94019
Laura	Pohl	Aptos	CA	95003
Robert	Harter	San Diego	CA	92121
Eileen	Karzen	Los Angeles	CA	90064
Charles	Sepos	Santa Rosa	CA	95403
Michael	Mills	San Francisco	CA	94115
John	Black	La Habra Heights	CA	90631
Michelle	Ropczycki	Chico	CA	95973
Bill	Leikam	Palo Alto	CA	94306
Gary	Lapid	Mountain View	CA	94043
Ki	Coulson	Los Angeles	CA	90034

William	Bailey	South Lake tahoe	CA	96150
hien	do	san jose	CA	95192
Zaid	Iniguez	San Diego	CA	92126
Barbara	Renton	Berkeley	CA	94707
Sassan	Ebadi	Belmont	CA	94002
Lynn	Kouzel	San Pedro	CA	90731
Terry	Young	San Rafael	CA	94903
Lisa	Franck	San Rafael	CA	94901
Valerie	Jacobs	san francisco	CA	94124
Peter	Bedard	Los Angeles	CA	90042
Naomi	Gilmore	Sacramento	CA	95824
alisa	trout	west hollywood	CA	90069
Victoria	Resurreccion	Bellflower	CA	90706
Jason	Brock	Los Angeles	CA	90045
Sheri	Minix	Descanso	CA	91916
christina	serafica	Glendale	CA	91202
Rhonda	Kess	Burbank	CA	91506
Ramona	Hallstead	Mission Hills	CA	91345
Karen	Descamps	LOmpoc	CA	93436
Thomas	Dannecker	Los Angeles	CA	90029
Elyse	Levy	San Diego	CA	92107
Ronald	Lo Reaux	Hayward	CA	94544
Matthew	Coppola	San Jose	CA	95116
Charlene	Ott	Huntington Beach	CA	92646
Lori	stayton	sherman oaks	CA	91403
Paul	Norup	Crescent City	CA	95531
Lara-Miya	Milrod	San Francisco	CA	94118
Gailen	Moore	Soquel	CA	95073
Ben	Dotson	San Francisco	CA	94121
Angela		Long Beach	CA	90803
Mel		Fallbrook	CA	92028
Josh	Pederson	Santa Cruz	CA	95060
Sandra	Brown	Salinas	CA	93907
Rachel		san francisco	CA	94108
Nicholas	Noloboff	Santa Cruz	CA	95062
Consuelo	Valenzuela	Paradise	CA	95969
Cathy	Sleva	Seal Beach	CA	90740
Georgia	Lynn	Bakersfield	CA	93308
Howard	Hasik	Alameda	CA	94501
Magan	Weid	Lake Isabella	CA	93240
Don	Petersen	Pleasanton	CA	94566
walker	hibben	newport beach	CA	92660
Spencer	Baker	Sacramento	CA	95816
Stephanie	Pease	Murrieta	CA	92562
Melanie	Stacey	lemoor	CA	93245
Clarice	hampel	Foster City	CA	94404
Laura	Hays	Berkeley	CA	94708
zandra	Molina	San Diego	CA	92130
Richard	Theiss	COSTA MESA	CA	92627

John	Griesgraber	Finley	CA	95435
Susan	Wehrle	Richmond	CA	94805
Michael	Edge	Escondido	CA	92025
Bill	Van Iden	San Francisco	CA	94121
Candace	Neff	castro valley	CA	94546
Harriette	Searle	taylorsville	CA	95983
Sarah	Ashley	Altadena	CA	91001
Jo	Green	El Cerrito	CA	94530
Jim	Wright	san diego	CA	92110
Margaret Christine	Robinett	San Jose	CA	95117
Cynthia	Schulz	berkeley	CA	94709
Jenn	Burkhead	San Diego	CA	92115
Vicki	Caplan	van nuys, ca	CA	91401
Justin	Abee	Oakland	CA	94601
Katie	Danza	Studio City	CA	91604
Beth	Olson	Sanger	CA	93657
Gary	Liss	Anaheim	CA	92802
Gary	Bradley	Santa Barbara	CA	93108
Ryan	Nelson	Huntington Beach	CA	92646
Joe	Futterer	Topanga	CA	90290
Marco	Araujo	Encinitas	CA	92024
Thomas	Nass	Pioneer	CA	95666
Emily	Anderson	san francisco	CA	94114
Anne	Firsching	Bamberg	CA	96049
Steven	Brown	Yreka	CA	96097
Gail	McCredie	Aptos	CA	95003
Thomas	Bassett	Walnut Creek	CA	94596
India	Sandek	BBC	CA	92314
JUDITH	BARNETT	Long Beach	CA	90804
Brooke	Battles	Oakland	CA	94618
Terri	Ludtke	RANCHO SANTA MARGARI	CA	92688
Andy	Zamenes	Redwood City	CA	94061
Elizabeth	Jache	Lemon Grove	CA	91945
Susan	Nelson	Rancho Santa Margarita	CA	92688
Alex	Yaron	Palm Springs	CA	92263
Helen	Pacula	Mill Valley	CA	94941
Gregory	Hyatt	Lompoc	CA	93436
Nicholas	Dirks	Los altos	CA	94022
Claire	Phillips	Los Angeles	CA	90026
Arianna	Faurot	santa rosa	CA	95405
Cody	Nern	Olympic Valley	CA	96146
Tanya	Vidmar	Los Angeles	CA	91604
Leonard		Granite Bay	CA	95746
Vivian	Peacock	Hollister	CA	95024
Harlan	Stearn	Santa Monica	CA	90403
Barbara	Rubin	Los Angeles	CA	90025
Christine	Gladish	Sierra Madre	CA	91024
Tom	Davidson	morro bay	CA	93443
Debbie	Barlow	Malibu	CA	90264
Karen	Anderson	Fremont	CA	94536
Elizabeth	STruve	La Jolla	CA	92037
Khoi	Bui	Dublin	CA	94568
carol	duran	Riverside	CA	92506
Andrew	Abate	Ventura	CA	93001
Rafael	Amaya	Daly City	CA	94014
kathleen	ferguson	San Marcos	CA	92078
Kathy	Franks	Blouberstands	CA	74410
Darrell	Rolstone	larkspur	CA	94939
Julie	Ostoich	Sacramento	CA	95826
Carlos	E.	Inglewood	CA	90302
Dominic	Perello	San Luis Obispo	CA	93405
Michael	Filio	San Diego	CA	92117
Jennifer	Stewart	Roseville	CA	95747
Toby-Rachel	Leder	San Diego	CA	92101
Catherine	Keller	Oakland	CA	94618
Daga	Krackowizer	Laguna Beach	CA	92651
Janet	Walton	Concord	CA	94520
Carolee	Hill	Oceanside	CA	92058
Tiffany	Haugen	Santa Monica	CA	90403
Almass		Fremont	CA	94539
Wendy	Gross	Santa Rosa	CA	95404
Cheng-Ting	Ni	Oakland	CA	94612
Erin	Greenwell	Novato	CA	94949
Glenda	Cook	Petaluma	CA	94952
Rochelle	Guardado	Lancaster	CA	93534
Denay	Heddy	EL CAJON	CA	92019
Jeff	Vandenburgh	Huntington Beach	CA	92648
William	McGuffey	Santa Rosa	CA	95409
Bev	Marnewick	Jahannesburg	CA	2001
Maria	Patakas	Desert Hot Springs	CA	92240
Vickie	Hershberger	San Pedro	CA	90731
Laura	Riley	Citrus Heights	CA	95610
Deane	Brockway	Thousand Oaks	CA	91360
Diana	Dring	Corte Madera	CA	94925
Nolan	Turner	San Jose	CA	95123
Marilyn	Lang	Eureka	CA	95501
nicolette	douvris	san francisco	CA	94121
Sofia	Ratcovich	west hollywoood	CA	90046
Ken	Donar	san diego	CA	90210
Teryn	Carlson	cherry valley	CA	92223
Lynnette	Shaw	Fairfax	CA	94930
Kelly	Ellis	Los Angeles	CA	90066
Evelyn	Bonilla	Long Beach	CA	90805
Mary	Rossi	Santee	CA	92071
John	Beaubien	Los Angeles	CA	90046
gilberto	kuhn	w. hollywood	CA	90046
Tamra	Schnitman	Calabasas	CA	91302
Ben	Crabb	Fremont	CA	94536

Theresa	Vernon	Santa Rosa	CA	95404
Ellen	Caldwell	San Anselmo	CA	94960
Maria	Nowicki	San Francisco	CA	94116
Edmund	Wright	Trinidad	CA	95570
Alexandra	Thorwarth	Menifee	CA	92584
Ellen	Hunt	Burbank	CA	91503
Philip	Glaser	Laguna Niguel	CA	92677
Sidney	Scott	carmel	CA	93921
Margaret	Koster	Willits	CA	95490
S	Hansen	San Anselmo	CA	94960
David	Caldwell	San Francisco	CA	94129
Deby	Salcido	Ontario	CA	91764
Alison	Braun	Keeler	CA	93530
Leanne	Yerby	Irvine	CA	92614
Judy	Elbring	Penngrove	CA	94951
Judy	Sachter	Los Angeles	CA	90025
Terri	Harris	camarillo	CA	93010
David	Chisholm	Palmdale	CA	93551
Linda	Nicoletto	Corte madera	CA	94925
Sheila	Desmond	Cameron Park	CA	95682
Nalyne	Lunati	Pleasanton	CA	94566
Heide	Jenkins	Culver city	CA	90230
Anslem	Mason	Berkeley	CA	94710
carla	dimondstein	fort bragg	CA	95437
James & Lynn	Dodson	Burbank	CA	91501
Margaret	Wessels	Aptos	CA	95003
Carol	Kommerstad-Reiche	Montecito	CA	93108
Alec	Naylor	Beverly Hills	CA	90211
Frank	Poppie	Monterey Park	CA	91755
Elyse	Ashton	West Hollywood	CA	90069
Edward	Kehoe	Sebastopol	CA	95472
Maria	Nunes	Redwwod City	CA	94065
Robert	Chirpin	Northridge	CA	91324
marilyn	black	Rancho Mirage	CA	92270
Charlie	Johnson	Cardiff	CA	92007
Ron	Mahood	Hayward	CA	94541
Tisha	Kahl	San Rafael	CA	94903
Chirawat	Chotikasupaseranee	Newhall	CA	91321
Reidun	Carstens	LA	CA	90077
Christine	Aegean	Laguna Beach	CA	92651
Sue	Walden	San Francisco	CA	94109
Adrian	Magana	Fallbrook	CA	92028
Allen	Hill	Palm Springs	CA	92262
Janis	Loveday	GRASS VALLEY	CA	95949
Kendra	Bench	gilroy	CA	95020
Mark	Biskeborn	Venice	CA	90291
Pamela	Magathan	Los Angeles	CA	90068
Chris	Worcester	Truckee	CA	96161
Kurt	Gross	San Diego	CA	92176
Donna	Ansari	Newbury Park	CA	91320
Ben	Cachola	Union City	CA	94587
Donna	Falcone	Playa del Rey	CA	90293
Linda	Lessels	Santa Barbara	CA	93111
Jan	Mulholland	huntington beach	CA	92646
Marta	Zelaya	San Jose	CA	95123
Anne	Barker	San Rafael	CA	94901
Marsha	Rose	Encino	CA	91436
Winnie	Chin	San Francisco	CA	94109
Meghan	Hayes	San Jose	CA	95123
Mary	Flynn	San Francisco	CA	94116
Kelly		San Jose	CA	95120
Christoph	Ruegg	Studio City	CA	91604
Richard	Takagi	Fullerton	CA	92831
Marcella	Raya	Orange	CA	92865
Florence	Dormer	San Diego	CA	92107
matthew	zola	long beach	CA	90802
Eric	Horwitz	Lake Forest	CA	92630
Muffett	Kaufman	Santa Barbara	CA	93103
Heather	Hurtt	Folsom	CA	95630
M	Dillon	Pacific Grove	CA	93950
Shelby	Solomon	Piedmont	CA	94611
Gene W.	Wagg0ner II	Pinon Hills	CA	92372
Shelley	JIang	Berkeley	CA	94709
Forest	Frasieur	Benicia	CA	94510
Rayna	Mare	Huntington Beach	CA	92647
Richard	Chu	San Francisco	CA	94122
Joyce	Bulleri	Stockton	CA	95212
Susan	Phelan	Danville	CA	94526
Laura	Becke	San Francisco	CA	94110
Aileen	Milliman	LONG BEACH	CA	90802
Jo	Wahdan	Roseville	CA	95747
Ann	Mayo	san clemente	CA	92672
Sharma	Gaponoff	Grass Valley	CA	95949
Heather	Rhine	Tiburon	CA	94920
RN	Toni A. Wolfson	Felton	CA	95018
Kathryn	Cooke	Los Gatos	CA	95032
David	Thomas	San Diego	CA	92115
Karen	Spiegel	Burbank	CA	91501
Dea	Maurizi	Santa Rosa	CA	95401
Nicky	Keyes	Willits	CA	95490
Sylvia	Warnotte	Topanga	CA	90290
Stephani		Rialto	CA	92376
Maria	Basaldu	Los Angeles	CA	90065
Maria	Goddard	Fresno	CA	93706
Gregg	Roebuck	Los Angeles	CA	90014
Barbara	Scheinman	Mission Viejo	CA	92691
Lena	Hansen	Monte Nido	CA	91302
Karen	Laffey	Larkspur	CA	94939

janet	Kusnick	los Angeles	CA	90066
Elizabeth	Carvalho	Calabasas	CA	91302
Jean	Andrews	Santa Cruz	CA	95060
Charles	Carroux	Belmont	CA	94002
Linda	Trevillian	Alhambra	CA	91803
Trish	Tuley	Idyllwild	CA	92549
Elizabeth	Zenker	arcata	CA	95521
Jessica	Simms	San Diego	CA	92115
Sandra	Tullis	San Jose	CA	95125
Elizabeth	Cotton	Encinitas	CA	92024
Valerie	Belt	Pacific Palisades	CA	90272
Susan	Allen	Livermore	CA	94551
Virginia	Roberts	El Dorado Hills	CA	95762
David	Cronin	Orinda	CA	94563
Kathy	Keough	Redding	CA	96001
magaly	fernandez	San Francisco	CA	94124
Jennifer	Wroan	Los Angeles	CA	90046
William	Green	Thousand Oaks	CA	91362
Nikki	Clark	Rancho Santa Margarita	CA	92688
Joshua	Ezekiel	Salinas	CA	93901
Grace	Feldmann	Santa Barbara	CA	93105
meleina	mayhew	Los Angeles	CA	90039
Nikki	Black	San Juan Capistrano	CA	92675
WESLEY	HORN	Citrus Heights	CA	95621
Ruth	Browne	Beverly Hills	CA	90210
Regina	Hamilton	Temecula	CA	92591
Dana	Miller	montrose	CA	91021
Jeff	Landau	Westlake Village	CA	91361
Dan	Banner	San Francisco	CA	94121
Gail	Noon	San Pedro	CA	90731
Jeff	Landau	Simi Valley	CA	93065
Monique	Ehsan	Hermosa Beach	CA	90254
Joshua	Hannaleck	Santa Cruz	CA	95062
Robin	Larsen	Berkeley	CA	94704
Jazzmin	Mason-Berry	Los Angeles	CA	90024
Clover	Catskill	Pinole	CA	94564
Jesisca	Oei	La Mesa	CA	91942
Jon	Porter	Rossmoor	CA	90720
Cindy	Arent	Aptos	CA	95003
Barbara	Daniels	Newbury Park	CA	91320
Katherine	Waid	Mendocino	CA	95460
Gerald	Fox	Ladysmith	CA	92102
Antoinette	Calavas	Mendocino	CA	95460
Matt	Lunn	Petaluma	CA	94952
James	Brady	San Francisco	CA	94105
Vince	Brooke	SAN DIEGO	CA	92123
Jacqueline	Haller	Belmont	CA	94002
Gloria	Ellwood	Los Angeles	CA	90046
lauren	Ornelas	Rohnert Park	CA	94928
James	Elliott	Encinitas	CA	92024
Katerina		San Francisco	CA	94110
Brian	Thompson	Playa Del Rey	CA	90293
Alicia	Arlow	Venice	CA	90291
Ingrid	Hejdukova	trnava	CA	91708
Robin	Kallman	San Francisco	CA	94117
Marie-Pierre	Guillot-Friedmann	Suresnes	CA	92150
Quinton	Crawford	Fairfield	CA	94533
angie	emery	Indio	CA	92201
James	Black	Lake Elsinore	CA	92532
Sabine	Falk	San Francisco	CA	94133
Miriam	Iosupovici	IMPERIAL BEACH	CA	91932
Linda	Erhardt	Mariposa	CA	95338
Emily		Monterey Park	CA	91754
Bobak	Daei	Union City	CA	94587
Val	Hongo-whiting	Laguna Niguel	CA	92677
Mel	Randall	Studio City	CA	91604
Anders	Nordlund	Beverly Hills	CA	90210
Chris	Barrand	Mission Viejo	CA	92692
leah	hackenson-Allers	los angeles	CA	90035
Linda	Russell	Santa Rosa	CA	95402
Virginia	Smedberg	Palo Alto	CA	94301
Le	luong	temecula	CA	92592
Marta	Peters	Oakhurst	CA	93644
Gala		Granada Hills	CA	91344
Renee	Nadalin	Carmel	CA	93923
Kris	Sherwood	Santa Monica	CA	90406
Shelby	Flint	Topanga	CA	90290
Daniel	Bauer	San Dimas	CA	91773
Jim	Brown	Los Angeles	CA	90034
Susan	enson	Calexico	CA	92232
Susan	Nicola	Los Angeles	CA	90019
Pamela	Cassidy	Santa Cruz	CA	
Claudio	Cotta	Burbank	CA	91505
Aline	Godon	San Francisco	CA	94110
Paul	Sanchez	Sacramento	CA	95815
Daniel	Ogas	San Diego	CA	92127
Earl	Kuon	Oceanside	CA	92054
Kevin	Kennedy	Camarillo	CA	93012
Robert	Wales	Danville	CA	94526
Michele	Stewart	Vista	CA	92081
Caroline	Salazar	Carmichael	CA	95609
Tina	Oglesby	Shingletown	CA	96088
K	McDonald	San Francisco	CA	94107
Ariadna	Valle	Orange	CA	96457
Phoenix	Vie	Berkeley	CA	94706
Chris	Gilbertsen	Glendora	CA	91740
Amanda	Samuelsen	Acampo	CA	95220
Terry	Kourda	Chula Vista	CA	91913

Matthias	Tilmann	Igo	CA	96047
Taisha	Arnold	Mission Viejo	CA	92692
Richard	Placone	Palo Alto	CA	94306
Raquel	Munoz	northridge	CA	91324
Jaoana	Dean	Buellton	CA	93427
Jacqui	Zink	Truckee	CA	96161
Catherine	Hale-Pillsbury	La Mesa	CA	91941
Klaudia	Englund	Thousand Oaks	CA	91360
Susan	Lynch	Pacific Palisades	CA	90272
Patricia	Holbert	Soquel	CA	95073
June	Alexander	Rohnert Park	CA	94928
MM	Finnan	Sherman Oaks /Van Nuys	CA	91405
Heather	Fadden	Sebastopol	CA	95472
Bruce	Stubbs	Carlsbad	CA	92010
Bertil	Moller	Lemon Grove	CA	91945
Ivan	Dryer	Northridge	CA	91326
Dorothy	Tharsing	Walnut Creek	CA	94597
Jess	Cramp	San Diego	CA	92109
Debbie	Pautsch	San clemente	CA	92672
Diamond	Moebus	Eureka	CA	95501
Michael	Smith	San Francisco	CA	94127
Geraldine	May	Creston	CA	93432
Chris	Prince	San Diego	CA	92124
Wendy	Wittl	santa barbara	CA	93105
Dione	King	San francisco	CA	94114
Richard	Luke	Los Altos Hills	CA	94024
Ed	Escobar	san leandro	CA	94578
Lindsey	Boos	Mountain View	CA	94043
gloria	nelson	San Jose	CA	95129
Carole	Dadurka	San Clemente	CA	92673
Elizabeth	Deloughrey	Los Angeles	CA	90095
Pat		Carmichael	CA	95608
Alfred	Cellier	Rancho Palos Verdes	CA	90275
Shannon	Joyner	Laytonville	CA	95454
leslie	nelson	San Luis Obispo	CA	93405
Dorothy	Hassett	Los Altos	CA	94022
Michelle	Oliver	Dana Point	CA	92629
Michael	Cardoza	Los Angeles	CA	90032
Nada	Ballator	Redwood City	CA	94061
Stefan	Schumacher	san francisco	CA	94105
Nancie	Sailor	los altos	CA	94024
Rebecca		Clovis	CA	93611
Tiffany	Story	Summerland	CA	93067
Kaye	Dodson	Vista	CA	92084
Megan	Saunders	Cazadero	CA	95421
Duncan	Dow	San Francisco	CA	94121
Rose	Goldthwait	San Francisco	CA	94110
Janice	Austin	Temecula	CA	92591
Dr's Gail and Sorel	Reisman	Newport Beach	CA	92663
kim	guerin	Hermosa Beach	CA	90254
Sandra	Gross	Lynwood	CA	90262
Rachelle	Henderson	woodland hills	CA	91367
Rayne	Ivanushka	Big Bear City	CA	92314
Lynn	Spina	Ventura	CA	93001
lindsay	carlisle	San Francisco	CA	94117
Sherra	Franklin	San Francisco	CA	94103
Jillian	Medrano	Rancho Cordova	CA	95670
Fallon	Hall	San Diego	CA	92117
Vince	Argenio	Stockton	CA	95207
Mitchell	Hambley	San Diego	CA	92103
JOHANNES	WATTIMENA	Mentone	CA	92359
Sharon	Rodrigues	Fremont	CA	94539
Chris	Dawes	Chico	CA	95973
Tony	Fuller	Petaluma	CA	94954
Shannon	Campbell	Chico	CA	95926
Ken	Ennis	Bakersfield	CA	93312
Marva Ann	Johnson	Rancho Cucamonç	CA	91730
Spautz		La Crescenta	CA	91214
Carol	De Hart	Paso Robles	CA	93446
Eric	Hu	Los Angeles	CA	90031
Leonard	McKenzie	Mariposa	CA	95338
Allie	Rackerby	riverside	CA	92507
Laurel	Perry	Palo Alto	CA	94306
Elisabeth	Pett	San Diego	CA	92115
Rochelle		Santa Barbara	CA	93101
Robert	Bogart	san diego	CA	92129
Julie		Walnut creek	CA	94549
Ryan	Crawford	Mckinleyville	CA	95519
Juanita	Chavez	San Diego	CA	92120
Jason	Harris	Santa Barbara	CA	93101
Andy	Tomsky	san marcos	CA	92079
Alec	Payne	Malibu	CA	90265
R	Larrison	Riverside	CA	92506
Pamela	Harris	San Diego	CA	92111
Lisa	Kavas	San Marcos	CA	92069
Jazmen	Tejero	chula vista	CA	91913
Cindy	Belleau	Forestville	CA	95436
Florence	Assalit	Monterey	CA	93940
Tedford	Rose	Glendora	CA	91740
Jack	Lunbeck	San Pedro	CA	90731
A	de Ruyter	San Diego	CA	92117
Meara	Mooney	Truckee	CA	96161
Harold	Vanderlaan	Alameda	CA	94501
Tom	Simmons	Santa Barbara	CA	93105
Sharon	Moran	Visalia	CA	93292
Carl	Riccitelli	San Francisco	CA	94116
James	Mello	Arcadia	CA	91006
Virginia	Lee	Half Moon Bay	CA	94019

Karen	Rusiniak	Berkeley	CA	94710
Ecrossenas	Rossenas	muir beach	CA	94965
Nancy	Sykes	Canyon Countary	CA	91351
Edward	Costello	Santa MOnica	CA	90402
Sasha	Taus	Arroyo Grande	CA	93420
Alana	Dill	Aameda	CA	94501
Grace	Tiessen	Pasadena	CA	91103
Anna	Thurman	Simi VAlley	CA	93065
Nick	Shestople	Temecula	CA	92589
Lori	Santos	Chicago	CA	91607
Judith	Goe	San Diego	CA	92102
Shannon	Switzer	Vista	CA	92084
M	Ruge	Sherman Oaks	CA	91403
Donald	DeLany	Laguna Niguel	CA	92677
Paul	McConnell	Encinitas	CA	92024
Paul	Babbini	Santa Rosa	CA	95401
Karen	Cuchet	Cerritos	CA	90703
Ginger	Iglesias	Livermore	CA	94550
christina	Rey	fort bragg	CA	95437
Paul	Fortin	Toronto	CA	93011
Brian	O'Reilly	Los Angeles	CA	90065
Jon	Senour	San Diego	CA	92109
Stephanie	Doyle	Sanger	CA	93657
Rev	King	Cathedra City	CA	92234
Jayson	Yamaguchi	Los Angeles	CA	90012
Kathryn	Day	Berkeley	CA	94704
Holly	Hefele	Pismo Beach	CA	93449
GH	Soto	Alameda	CA	94501
Simone	st. Clare	Martinez	CA	94553
Jenna	Robinson	Beverly Hills	CA	90210
E	Moore	Santa Rosa	CA	95404
Peter	Stranger	Los Angeles	CA	90068
Gordon	Reed	Huntington Beach	CA	92646
Daniel	Helsel	Kelseyville	CA	95451
Ryan	Green	Simi Valley	CA	93065
Nina	Bergman	Los Angeles	CA	90038
Kimberly	Keller	Santee	CA	92071
Jeremy	Shellhase	McKinleyville	CA	95519
Kemal		san francisco	CA	94122
Edward J	Lee	Santa Clara	CA	95051
joseph	logston	bellflower	CA	90706
Tom	Pitman	Burbank	CA	91506
Devyn	Marseilles	Los Alamos	CA	93440
Vivian		San Jose	CA	95132
Diana	Kamibayashi	Venice	CA	90291
Prisca	Gloor	los angeles	CA	90066
Sarah	Mayhew	Davis	CA	95616
Donna	Carr	Encinitas	CA	92024
Elva	Pero	Dana Point	CA	92629

MaryRose	OConnor	Guerneville	CA	95446
Mariuccia	Iaconi	San Francisco	CA	94107
Rosemary		VALLEY VILLAGE	CA	91607
Tracie	Livermore	San Diego	CA	92116
Denise	Vandermeer	Woodland Hills	CA	91367
Lauren	Gaffney	Los Angeles	CA	90025
Kimberly	Murphy	Oceanside	CA	92056
Jane	Jepson	Huntington Beach	CA	92649
lindsey	gore	San Francisco	CA	94118
Terence	Pearce	Venice	CA	90291
Michael	Valdez	Mt. Baldy	CA	91759
Matthew	Danielczyk	Santa Rosa	CA	95404
Andrew	MacLaggan	Napa	CA	94559
Annabelle	Travis	El Sobrante	CA	94803
Erin	Mertlbauer	Newport Beach	CA	92660
carole	shelton	Los Angeles	CA	90035
Ann	Mahoney	Santa Barbara	CA	93103
tiffanie	luong	Los Angeles	CA	90017
Mary	Wells	Middletown	CA	95461
Nancy	Fomenko	Campbell	CA	95008
Joanne	Greenstein	San Francisco	CA	94114
Veronnica		San Dimas	CA	91773
Bonnie	Jorgensen	Redding	CA	96003
James	Kao	Long Beach	CA	90802
Sharon	Stewart	Arnhem	CA	91123
JP	Yurgel	Union City	CA	94546
Patrick	McIntosh	carlsbad	CA	92008
Dan	Sailor	Redwood City	CA	94061
Tammy	DeSanchez	Mission Viejo	CA	92690
ilana	mcallister	Pasadena	CA	91103
Suzanne	Fortner	Arcata	CA	95521
Richard	Kacmar	San Diego	CA	92105
morgan	coffey	santa barbara	CA	93108
Edna	Publicover	San Diego	CA	92104
Ann-Marie	Murphy	San Francisco	CA	94122
Lauri	Dowling	Valley Glen	CA	91405
Kelly	Bain	Monterey Park	CA	91754
Helaina	Takeda	Santa Barbara	CA	93101
Connie	Henifin	Citrus Heights	CA	95610
Douglas	Evans	San Diego	CA	92129
Holland	Elder	Oceanside	CA	92057
Wendy	Williamson	NOVATO	CA	94947
Alanna	Louin	Fresno	CA	93704
Tracy	McPherson	San Diego	CA	
Eric	Gratz	fresno	CA	93720
Lisa	Davis	Lake Forest	CA	92630
Allison	Riemer	Arcata	CA	95521
tanny	klasna	Santa Barbara	CA	93103

Shad	Clark	Oakland	CA	94611
Susan	Stauffer	Fort Bragg	CA	95437
Roger	Vortman	Santa Cruz	CA	95060
R. Merrill	Jones	Pebble Beach	CA	93953
Pam	DeWitt	Angles Camp	CA	95222
Trisha		loomis	CA	95650
Mary	Ridriguez	La Puente	CA	91744
cindi	runyan	Sylmar	CA	91342
Darcy	Skarada	Middletown	CA	95461
Isaiah	Schisler	San Diego	CA	92117
Linda	Dow	Claremont	CA	91711
Mario	Montano	San Jose	CA	95129
Darin	Layman	Oakland	CA	94609
Zach	Tison	Burbank	CA	91502
Scottie	Singer	Hemet	CA	92545
Cheryl	Knecht	Riverside	CA	92506
Karen	Burns	Auburn	CA	95603
Peter	pfeiffer	Altadena	CA	91001
Shirley	Auerbach	Laguna Woods	CA	92637
Linda	Klein	El Segundo	CA	90245
Susan	Larson	Paso Robles	CA	93446
Martin	Lomeli	San Dimas	CA	91773
Robert	Johnson	El Segundo	CA	90245
Alexander	Engel	Studio City	CA	91604
Barbara	Consbruck	Sylmar	CA	91342
Pam	urban	heiligenhaus	CA	42579
Kathleen	Fowler	Alturas	CA	96101
Tom	francis	Santa Monica	CA	90405
John	March	Beverly Hills	CA	90210
Anita	Coolidge	Cardiff	CA	92007
Cynthia	Leeder	San Jose	CA	95124
Ronnie	Rose	San Jose	CA	95117
Jean		EUREKA	CA	95501
Jesse	Croxton	Venice	CA	90291
Bethany	Richardson	San Francisco	CA	94111
Sandra	Melchor	Richmond	CA	94804
ben	Carpenter	oakland	CA	94608
Sivle	Angleton	willow creek	CA	95573
Virginia	La Monica	Newhall	CA	91321
Debbie	Sturt	Pacific Grove	CA	93950
Chris	Halley	irvine	CA	92606
Melinda		west covina	CA	91790
Susan	Thompson	Pacifica	CA	94044
Robin	Shepard	bellflower	CA	90706
Agnieszka	Gocek	Lodz	CA	91496
Stanley		Fresno	CA	93704
Susan	Ryan	Sacramento	CA	95814
Donna	Ross	Huntington Beach	CA	92648
Darlene	Ross	Woodbridge	CA	95258

Ronald	Warren	Glendale	CA	91206
James	Maricondo	San Francisco	CA	94131
Dennis	Smith	Davis	CA	95618
Amanda	Cotylo	South Pasadena	CA	91030
Rachael	Atchison	San Francisco	CA	94112
Heidi	Krautschick	Los Angeles	CA	90034
Leonard	Adame	Fresno	CA	93704
Jim	Berry	Woodland Hills	CA	91367
Greg	Hampton	san diego	CA	92115
Jon	Prasuhn	San Marcos	CA	92078
Sue	DeVries	Albany	CA	94706
Hester	Goedhart	Redwood City	CA	94065
Rose		Van Nuys	CA	91405
Diane	Cohan	Yucca Valley	CA	92284
Lisa	Arnone	Bakersfield	CA	93306
Megan	Adams	Placerville	CA	95667
Susan	Miletich	Point Arena	CA	95468
William	Peer	Altadena	CA	91001
Daniel	Sturman	westlake village	CA	91361
Catherine	Dishion	Santa Barbara	CA	93103
Rosamonde	Cook	Riverside	CA	92507
Stuart	Thomas	san francisco	CA	94117
Diane	Dolden	Oceano	CA	93445
Ana	Valdez	Orange	CA	92868
Theresa	Laura	Redondo Beach	CA	90277
Jo	Bollen	La Quinta	CA	92253
Katie	Blair	mill valley	CA	94941
Karl	Weidel	Redwood City	CA	94062
Heidi	Aubrey	San Diego	CA	92126
Lane	Smith	Daly City	CA	94015
William	Giordano	Santa Barbara	CA	93105
Clarice	Turney	Riverside	CA	92507
Gordon	Beebe	Santa Rosa	CA	95401
Nina	Smith	Studio City	CA	91604
Paige	Adams	El Cajon	CA	92021
Crystal	Sevier	Soulsbyville	CA	95372
Martha	Colburn	EL CERRITO	CA	94530
Jeanne	Kelly	San Pedro	CA	90731
Louise	Eiler	Whittier	CA	90601
Tresa	Black	Lafayette	CA	94549
Diana	Harris	Redding	CA	96002
Alice	Di Natale	Costa Mesa	CA	92627
Anne	Kearns	San Diego	CA	92128
Maria	Barakos	Arleta	CA	91331
Dee	Fremont	Oceanside	CA	92057
Elizabeth	Krohn	Sebastopol	CA	95472
Judy	Cassada	Capitola	CA	95010
Haydee	Matthews	Antioch	CA	94509
Tomislava	Ciglenjak	San Jose	CA	95129

Evan	Shamoon	Los Angeles	CA	90038
David	Beard	EUREKA	CA	95503
B	Erickson	Westlake Village	CA	91361
Jan	Hornby	bishop	CA	93514
Andrea	Kean	Berkeley	CA	94708
Curtis	Keedy	Riverside	CA	92506
Steven	Sugarman	Malibu	CA	90265
Zahir	Aziz	Fremont	CA	94555
Wayne P.	Flottman	Torrance	CA	90504
Connor	Chilcott	Temecula	CA	92592
James	Dawson	Torrance	CA	90504
Amy	Lentine	Buena Park	CA	90621
Colonel	Fong	Los Angeles	CA	90004
Chris	Young	Los Angeles	CA	90046
Julia	Beckley	San DIego	CA	92111
Mario	Lopez	Montebello	CA	90640
Paula	Lancaster	Fresno	CA	93755
Carole	Cole	Santa Barbara	CA	93103
Pat	cameron	Oceanside	CA	92057
colleen	auernig	Folsom	CA	95630
Charlotte	Sonoda	BERKELEY	CA	94709
Donna	Lyons	Los Angeles	CA	90036
Marie-Claire	TAGNATI	COURQUETAINE	CA	77390
luca	montemagni	San Francisco	CA	94116
Annie	Senechal	huntington beach	CA	92648
Jay	sheehi	Oceanside	CA	92057
Ronit	Corry	Santa Barbara	CA	93110
Terry	Andrews	Palos Verdes Peninsula	CA	90274
Mark	Carroll	San Diego	CA	92106
Frank	Huttinger	Pasadena	CA	91105
Felix	Aguilar	Long Beach	CA	90804
Suzanne	Hodges	Sacramento	CA	95819
Ethan	Krenzer	Coto de Caza	CA	92679
Stephen	Manly	Sacramento	CA	95842
Marcela	Vasquez	culver city	CA	90230
Regina	Phillips	Winnetka	CA	91306
Michael	Friedman	El Sobrante	CA	94803
George	Weiss	Sonoma	CA	95476
Jennifer	Lawson	Mill Valley	CA	94941
Kim	Snow	VISTA	CA	92083
Gillian	Ellenby	San Francisco	CA	94103
John	Harris	bay point	CA	94565
Imelda	Chinchilla	Knightsen	CA	94548
Eileen	Francisco	SAN MATEO	CA	94401
Clarissa	Garcia	Burbank	CA	91502
Nydia	Cardona	Lake Elsinore	CA	92532
Rose	Menard	Orange	CA	92868
Jessenia	Rivas	HOLLYWOOD	CA	90028
Andrea	Baker	Sacramento	CA	95828

Tamara	Voyles	Sebastopol	CA	95472
Breanna		San Jose	CA	95111
Stephen		Lompoc	CA	93436
Jim	Turnage	San Diego	CA	92107
Alex	Gallipeau	Redondo Beach	CA	90278
Kerstin	Baierl	Aguanga	CA	92536
Kathryn	McCool	Loomis	CA	95650
Vinaya	Alahan	Guerneville	CA	95446
Tonantzyn	Beltran	San Anselmo	CA	94960
Lotus	Reiko	fort bragg	CA	95437
Heike	Krautschick	Vacaville	CA	95688
Wendy	Larson	Turlock	CA	95380
Mary	Mautino	Imperial Beach	CA	91932
Erin	Lindquist	Studio city	CA	91604
Jeffery	dorer	Los Angeles	CA	90042
Kyle	Gifr	San Francisco	CA	94121
Mike	Fraser	Mty Shasta	CA	96067
Ethel & Michael	Tankenson	Los Angeles	CA	90066
Joseph	Aylward	Los Angeles	CA	90069
David	Williams	West Los Angeles	CA	90064
Jeff	Salvaryn	Redondo Beach	CA	90278
Jaynee	Harpe	Lomita	CA	90717
Mary	Tullock	Rohnert Park	CA	94928
Lauren	Daly	Monterey	CA	93940
Cynthia	Lee	Tustin	CA	92780
Carolyn	Gamiao	LA	CA	90029
Coryl	Dolfin	Mammoth Lakes	CA	93546
Darlene	Wykoff	Chico	CA	95926
Ed	Payne	Mill Valley	CA	94941
Kyle	Locke	moss beach	CA	94038
Mary	Dixon	Royal Oaks	CA	95076
Kristen	Berardi	FRESNO	CA	93704
Michele	Mattingly	La Mesa	CA	91942
Jay	Peterson	Arcata	CA	95521
Mayra	Herrera	North Hollywood	CA	91605
Jean	Lee	San Francisco	CA	94122
Richard		Redwood City	CA	94061
elsa	aguirre	altadena	CA	91001
Timothy	Lippert	Martinez	CA	94553
Jacqueline	Cocker	Santa Clarita	CA	91387
Joshua	Christensen	lakewood	CA	90715
Catherine	Hirsch	Redway	CA	95560
Jessica	Sanchez-Casey	san diego	CA	92128
David	Baker	Newark	CA	94560
Anthony	Sachs	Oakland	CA	94602
Phyllis	Foster	Los Angeles	CA	90046
Toby-Rachel	Leder	San Diego	CA	92101
Abigail		Simi Valley	CA	93065
Gwen	Noda	Culver City	CA	90230

Vincent	Weis	sacramento	CA	95822	Elise	Villemaire	Santa Rosa	CA	95401
Helen	Engledow	Sonora	CA	95370	Andrea	Benassi	Laguna Hills	CA	92653
Madeleine	Henry	San Diego	CA	92110	Verna	Winters	Berkeley	CA	94709
Denise	Zamora	Redlands	CA	92374	Aguilera	Astrid	eggolsheim	CA	91301
Cynthia	Pounds	Sacramento	CA	95819	Michael	parker	colusa	CA	95932
Jason	Davis	Montebello	CA	90640	Terra	Paigne	cerritos	CA	90703
J.	Kerr	Thousand Oaks	CA	91360	Tess	Paigne	cerritos	CA	90703
Kat	zacharski	Long beach	CA	90815	Terry	Paigne	cerritos	CA	90703
Lindsay	Byers	Beverly Hills	CA	90210	Iain	MacAdam	Cambria	CA	93428
Malea	McGuinness	Santa monica	CA	90403	Caralee	Thompson	patterson	CA	95363
Tim	Cain	Woodacre	CA	94973	Lester	Little	BERKELEY	CA	94709
Ann	Prichard	Hayward	CA	94541	Jennifer	Nichols	Inverness	CA	94937
John	Carroll	Elk Grove	CA	95624	Claudia	Pessoa	Belo Horizonte	CA	91170
Didelot	Sylvie	Issy les Moulineaux	CA	92130	Amber	Wheat-Salazar	REDONDO BEACI	CA	90278
Alisa	Arnold	Marina Del Rey	CA	90292	Armen	Carapetian	San Francisco	CA	94110
Amanda	McDermott	Concord	CA	94518	Chris	Alstrand	Poway	CA	92064
Dorothy	Wilkinson	Hollywood	CA	90027	Michelle	Layer	San Francisco	CA	94102
Lowell	Eliason	Cypress	CA	90630	Gordon	Gerbitz	Santa Barbara	CA	93103
Brenda	Haig	Long Beach	CA	90803	Linda	Jacobs	Campbell	CA	95008
Craig		Beverly Hills	CA	90210	Cindy	Yang	Santa Cruz	CA	95062
S	Skolnik	Sumnyvale	CA	94089	Marilyn	Kirby	Carmel Valley	CA	93924
Lori	Dunham	Garden Grove	CA	92844	Rocky	Leplin	Richmond	CA	94804
Dan	Auerbach	Thousand Oaks	CA	91360	Laura	Harvey	Pritchard	CA	93651
Jane	Edwards	La Palma	CA	90623	Brian	Thompson	Grover Beach	CA	93433
Diane	Pearson	San Marcos	CA	92078	ivory	reid	Long Beach	CA	90803
june	barnard	san francisco	CA	94118	Leotis	Foster	Oakland	CA	94621
Rachelle	Caruso	Davis	CA	95618	Kelley	Clare	Tahoe City	CA	96145
					Nancy	Fuller	Los Angeles	CA	90046

Residents of other US states

First Name	Last Name	City	State	Zip Code	First Name	Last Name	City	State	Zip Code
Rick	Wicks	Anchorage	AK	99517	Chris	Schwamb	Medford	NJ	8055
susan	whitefeather	Palmer	AK	99645	Charles	Molway	Laurel Springs	NJ	8021
April	Warwick	Anchorage	AK	99504	Lori Ann	Rodriguez	Wallington	NJ	7057
Donald	Cornelius	Petersburg	AK	99833	Laura	Huntsman	Princeton	NJ	
Evelyn	Seguela	Homer	AK	99603	Jeffrey	Horsch	Monrioe Township	NJ	8831
Kimberly	McConkey	Anchorage	AK	99508	Bernadette	Ramos	JERSEY CITY	NJ	7307
Bill	Sherwonit	Anchorage	AK	99517	Barbara	Curtis	Monroe Twp	NJ	8831
Frank	Gwartney	Anchorage	AK	99509	Ellen	Trufant	Ringwood	NJ	7456
Monika	Szrot	Olkusz	AK	32300	Janet	Bolasci	Rutherford	NJ	7070
Elvira	Paschke	Anchorage	AK	99508	Brian	Plodizyn	Haddonfield	NJ	8033
Dan	LaBrosse	Fairbanks	AK	99712	Ellen	Trufant	Ringwood	NJ	7456
Jennifer	Armstrong	North Pole	AK	99705	Joyce	Allington	Princeton	NJ	8540
Carla	Green	Willow	AK	99688	Eloy	Hernandez	Collingswood	NJ	8108
Kevin	Anderson	Leeds	AK	98765	Joy	Santillo	Jackson	NJ	8527
Annika	Lindkvist	stockholm	AK	11227	Marie	Yuill	Toms River	NJ	8755
Noel	Portelli	Hamrun	AK	356	Alexandra	Melligon	short hills	NJ	7078
Pauline	Strong	juneau	AK	99801	Emilio	Letang	Barcelona	NJ	8012
Ken	Graham	skagway	AK	99840	Elizabeth	Banwell	Howell	NJ	7731
Cynthia	Laramee	soldotna	AK	99669	Colette	Dineen	Rocakway	NJ	7866

Afrodith	Mauropoulou	Clarks point	AK	99569
Robert	Hyer II	Lillian	AL	36549
David	Smith	Spanish Fort	AL	36527
Laurie	summers	Ardmore	AL	35739
Joseph	Scanlan	Pike Road	AL	36064
Gayle	Jansen	Mount Olive	AL	35117
Mary	Cooke-Hite	Madison	AL	35758
Maria	Peteinaraki	heraklion city creta	AL	71305
Belinda	Lang	Birmingham	AL	35204
Sandra	Boyer	Montgomery	AL	36109
Richard	Heckman	Huntsville	AL	35801
Russell	Alcott	Huntsville	AL	35801
William	Shirey	Decatur	AL	35601
Anita	Jensen	Calpe	AL	3710
Frank		Mobile	AL	36612
Anna	Thibodeaux	Vance	AL	35490
Sue	Aitchison-Windeler	auckland	AL	10240
Joan	Lowe	Birmingham	AL	35223
Katie	Benbow	Birmingham	AL	35254
Lisa	Stewart	Birmingham	AL	35222
Shauna	Nicholas	Pelham	AL	35124
Charles	Maples	Danville	AL	35619
Heather	Hood	Calgary	AL	1234
Jacqui	Glyde	EAGLEBY	AL	4207
Lewis	Edwards	Huntsville	AL	35811
JerryLee	Brisendine	Henagar	AL	35978
Nichole	Long	Montgomery	AL	36105
Jennifer	Rowley	Scarborough	AL	11111
David	Harwell	Huntsville	AL	35803
Jeannine	Whitley	Sylacauga	AL	35150
Darcy	Symes	spanish fort	AL	36527
Julie	Gobbell	Cullman	AL	35057
Catherine	Hunt	Birmingham	AL	35235
Theodore	Spachidakis	piraeus	AL	18535
Holly	Brambleby	Abbeville	AL	36310
Sandra	Arapoudis	rhodos	AL	85100
Linda	DeWitt	Auburn	AL	36830
Keitha	Hudson	Blountsville	AL	35031
Mike	Lesley	Birmingam	AL	35206
David	Noble	Tuscaloosa	AL	35401
Teresa	Campos	Coimbra	AL	30300
Chantal	Lamy	Gauteng	AL	21888
Beverly	Gannon	london	AL	11111
Abela		nice	AL	6300
Debbie	Williamson	Mountain Home	AR	72654
Alida	Montero	Little Rock	AR	72206
Daphne	Vestal	NORTH LITTLE ROCK	AR	72114
Sara	Bufford	Searcy	AR	72143
Miller	Williams	Fayetteville	AR	72701
Bruno	Schremmer	Princeton	NJ	8540
Ronald	Sverdlove	Princeton	NJ	8540
Carroll	Arkema	Pompton Lakes	NJ	7442
Diane	Afonso-piza	newark	NJ	7104
Terry	Bentivegna	Old Bridge	NJ	8857
Timothy	Barrow	Lebanon	NJ	8833
Steve	Deats	Mendham	NJ	7945
Mar		barcelona	NJ	8006
Sharon	Ernst	Lawrenceville	NJ	8648
Lynne	Elson	cranbury	NJ	8512
David	Benitez	Woodbridge	NJ	7095
Eileen	Smith	Barnegat	NJ	8005
Mauro	Monia	West New York	NJ	7093
Donna	Ennis	Franklinville	NJ	8322
Randi	Greenberg	Laurence Harbor	NJ	8879
Hugh	Lindsay	west orange	NJ	7052
Kitrina	Lisiewski	Monroe Township	NJ	8831
patty	coates	roselle park	NJ	7204
eugenie	trott	howell	NJ	7731
Nancy	Deubel	Fairfield	NJ	7004
Aimee	Lynn	Piscataway	NJ	
Dave S	Ruegnitz	Lake Hopatcong	NJ	7849
Stephanie	Seymour	Englewood	NJ	7631
Lee	MacKenn	Bloomingdale	NJ	7403
Ralph	Litwin	Mendham	NJ	7945
Susan	Blubaugh	Milford	NJ	8848
Bradley	Dharam	North Bergen	NJ	7047
Barbara	Westergaard	Princeton	NJ	8542
Paul	Dunn	Edison	NJ	8837
Paul	Denko	New Egypt	NJ	8533
Robert	von Zumbusch	Princeton	NJ	8540
Mike	Rafferty	Carlstadt	NJ	7072
Patricia	Felice	Ramsey	NJ	7446
Donald	Beck	AUGUSTA	NJ	7822
Joan	domino	West orange	NJ	7052
Lisa	Bowles-Goldstein	Randolph	NJ	7869
dian	afonso	belleville	NJ	7109
Richard	Frank	Egg Harbor Towns	NJ	8234
Caroline	Bissey	Juliustown	NJ	8042
Jessica	Dolce	summt	NJ	7901
Melissa	Glick	east brunswick	NJ	8816
Ellen	Stanton	Bergenfield	NJ	7621
Laura	Talarn	barcelona	NJ	8014
lisa	daibes	Edgewater	NJ	7020
Bettie	Reina	Milmay	NJ	8340
Maura		North Arlington	NJ	7031
Feryal	Collazo	New Milford	NJ	7646
R	Farkas	piscataway	NJ	8854
Michael	Gonzales	Jersey City	NJ	7305

Cathy	Brownlee	Mountain Home	AR	72653
Miranda	Dixon	Morrilton	AR	72110
Scott	Akridge	Bradford	AR	72020
Deborah	Lucia	CATANZARO	AR	88100
Jan	Lawes	warrnamboll	AR	32800
Martha	Strother	Little Rock	AR	72204
Jennifer	Highfill	Paragould	AR	72450
THERESA	WEBB	NORTH LITTLE ROCK	AR	72116
Ramsey	Sealy	Fayetteville	AR	72703
Robyn	Glisson	Maynard	AR	72444
Roy	Andrews	Hattieville	AR	72063
Heather	D.	Fayetteville	AR	72703
Cynthia	Stratton	Jacksonville	AR	72076
Stacy	Townsend	Arkadelphia	AR	71923
Leland	Stanley	Bella Vista	AR	72714
Donna	Wolz	Paragould	AR	72450
Shirley	Bailey	Hot Springs Village	AR	71909
Glen	Bindrich	Fifty Six	AR	72533
Lizzie	Baggleman	Phoenix	AZ	85028
Paul	Steffen	Tucson	AZ	85718
Cristine	Perkins	Sedona	AZ	86351
Rick	Easton	CORNVILLE	AZ	86325
Bruce	Kramer	Sedona	AZ	86339
Kimberly	Barton	Phoenix	AZ	85082
Marty	Landa	Sedona	AZ	86351
Jack	Cupp	Phoenix	AZ	85032
Steven	Clark	Peoria	AZ	85382
Celina	Enciso	Tucson	AZ	85716
Thomas	Monforte	Tucson	AZ	85743
Terri	Hanshew	Phoenix	AZ	85014
LuMarion	Conklin	Flagstaff	AZ	86004
Tana	Zachreson	Mesa	AZ	85207
Maxx	Patterson	Tempe	AZ	85282
David	Lee	Phoenix	AZ	85033
Limell	Lawson	Tucson	AZ	85719
Elizabeth	Cook	prescott	AZ	86303
Kathy	Krucker	Tucson	AZ	85719
David	Black	Tucson	AZ	85733
Mary	White	tucson	AZ	85719
Dan	Faulkner	Prescott	AZ	86305
Timothy	Wong	Chandler	AZ	85226
Melinda	Merrill	Tucson	AZ	85718
Louise	Baca	Phoenix	AZ	85021
Tom	Ramos	Phoenix	AZ	85018
James	Bergstrom	San Manuel	AZ	85631
Angelo	Filigenzi	Green Valley	AZ	85614
Anuja	Gladish	Tucosn	AZ	85742
Ron	Hubert	Flagstaff	AZ	86001
Alan	Pedolsky	tucson	AZ	85741

Jennifer	Gorgo	Voorhees	NJ	8043
Dorothy	Danner	Englewood	NJ	7631
Jim	Krieger	Fort Lee	NJ	7024
George	Baker	Pittstown	NJ	8867
Angela	B	Mount Laurel	NJ	8054
Maureen	Carson	Edison	NJ	8837
Douglas	Wise	Newark	NJ	7112
Jonathan	Nolde	Metuchen	NJ	8840
angela	canduci	delran	NJ	8075
Michael	Donnini	Margate City	NJ	8402
Nicholas	Conte	Matawan	NJ	7747
John	Lippiello	Morris Plains	NJ	7950
Joanne	Felcetto	maywood	NJ	7607
JoAnne	Ciraolo	Maywood	NJ	7607
Judith	Schleicher	denville	NJ	7834
Craig	Cook	howell	NJ	7731
Joan	Hoffmann	Laurence Harbor	NJ	8879
Patricia	Patterson	Millville	NJ	8332
Margaret	Yelenik	Manalapan	NJ	7726
Stephanie	Falkowski	Voorhees	NJ	8043
Lise	Sayer	North Plainfield	NJ	7060
Julie	Behmer	Hopatcong	NJ	7843
Matthew	Coller	toms river	NJ	8753
Andrea	Mottram	Cedar Knolls	NJ	7927
Penny	Wild-Perkowski	Pequannock	NJ	7440
Mike	Ruderman	Princeton Junction	NJ	8550
Doris	Carey	Cherry Hill	NJ	8003
Donna	Altschuler	Fair Lawn	NJ	7410
Trina	Paulus	montclair	NJ	7042
Melissa	Berger	PRINCETON	NJ	8540
Kim	Swain	Lumberton	NJ	8048
Gaby	Rodriguez	Orange	NJ	7050
John	Lynch	Cherry Hill	NJ	8003
Cherie	Giangrande	Clifton	NJ	7013
GINA		lindenwold	NJ	8021
Sue	Moyer	Robbinsville	NJ	8691
Jodi	gross	See caucus	NJ	7094
Kristel	Moody	Jackson	NJ	8527
Victoria	Campbell	Eatontown	NJ	7724
natalie	belcon	fort lee	NJ	7024
Jim	Nordstrom	Jersey City	NJ	7307
Adella	Menger	Basking Ridge	NJ	7920
Sara	Yuppa	Hillsdale	NJ	7642
Edina	Molnar	Fort Lee	NJ	7024
Claudia	Sagatelian	Hackensack	NJ	7601
Anna	Coleman	Williamstown	NJ	8094
Rosalie	Richter-Goldberg	Lafayette	NJ	7848
Iris	Browne	New Milford	NJ	7646
Catherine	Keim	Morristown	NJ	7960

Martha	Martinez	Phoenix	AZ	85029
Allison	Glaser	Buckeye	AZ	85326
Landis	Kearnon	Tucson	AZ	85701
Brad	Archer	Mesa	AZ	85205
Ruth	Herrera	Tucson	AZ	85711
Richard	Brunsberg	CASA GRANDE	AZ	85122
Kathy	Sweany	Phoenix	AZ	85032
Lawrence	Ellis	Tucson	AZ	85716
Jackie	Bush	Mesa	AZ	85207
Ted	Dallas	Phoenix	AZ	85004
Richard	Skinner	Tucson	AZ	85705
Casey	Smith	Gilbert	AZ	85298
S	Eyde	TUCSON	AZ	85719
Gary	Munroe	Sierra Vista	AZ	85635
Valerie	Retter	Scottsdale	AZ	85258
Darin	Davis	Flagstaff	AZ	86001
Anne-Marie	Neckebroeck	Wetteren	AZ	92300
Janet	Glover	Tucson	AZ	85710
Iris	Beaver	Tucson	AZ	85710
Robert	Watson	mesa	AZ	85202
David	Haynes	Cave Creek	AZ	85331
Holly	Allcock	Phoenix	AZ	85086
Melody	Heart	Sedona	AZ	86340
Susan	Bishop	Sedona	AZ	86336
Kristine	Roche	Phoenix	AZ	85020
Carl	Noggle	Tucson	AZ	85719
Susan	Mueller	Tucson	AZ	85704
ann	stapleton	Scottsdale	AZ	85254
carol	Chai	sedona	AZ	86336
Theresa	Bernhardsen	Kingman	AZ	86401
DENNIS	STARKINS	Phoenix	AZ	85022
Sean		Sun City	AZ	85351
Harriet	Anderson	GILBERT	AZ	85234
Vicky	crampton	Patagonia	AZ	85624
Greg	Kammerer	Tucson	AZ	85735
Kathy	Crist	Sedona	AZ	86336
Tatiana	Marquez	Tucson	AZ	85716
Lyn	Burns	Scottsdale	AZ	85258
Paul	krauss	Phoenix	AZ	85004
Noah	Wilspn	phoenix	AZ	85006
Kyle	Schmierer	Phoenix	AZ	85027
Joan	Price	Scottsdale	AZ	85258
Marika	Witenko	Phoenix	AZ	85006
Pamela	Gylling	Tucson	AZ	85712
Neil	Weiss	Prescott	AZ	86305
Stefani	Ramirez	gilbert	AZ	85234
Roxann	Carmean	Strawberry	AZ	85544
Dieter	Bartels	clarkdale	AZ	86324
Beverly	Barron	Mesa	AZ	85203

Denise	Soto	Hamburg	NJ	7419
desiree	Angus	cape town	NJ	7439
Sophie	Marmier	barcelona	NJ	8002
Eduard	Andreu	Hospitalet	NJ	8901
Monica	Bonualas	Millville	NJ	8332
Julissa	Castro	Any City	NJ	7087
Debra	Berlan	Garfield	NJ	7026
Suzanne	Dragan	aberdeen	NJ	7747
Diane	Dowd	Stanhope	NJ	7874
Shoshana	Osofsky	Bridgeton	NJ	8302
Radosh	Piletich	Jersey City	NJ	7307
Cassie	burns	Marlton	NJ	8053
Carrie	Corboy	Lambertvile	NJ	8530
Carolina	Perez	Gloucester City	NJ	8030
Debi	Chiappini	Millville	NJ	8332
Stephen	Knowlton	Fair Haven	NJ	7704
susan	koshney	belmar	NJ	7719
Nicole	Filicetti	Denville	NJ	7834
Olivia	Manners	Lincoln Park	NJ	7035
Amy	Hart	toms River	NJ	8757
Wayne	Rossignol	Hamilton	NJ	8619
Amanda	Barry	Mahwah	NJ	7430
Miranda	verderame	Brick	NJ	8723
Marsha	Solton	Collingswood	NJ	8108
Steve	Yakoban	englewood	NJ	7631
Martin	Carluccio	Clifton	NJ	7014
Jeanine	Werntz	Collingswood	NJ	8108
Constance		Oakland	NJ	7436
Kevin	Conners	Belleville	NJ	7109
Claudia	Sabine	Mendham	NJ	7945
Diana	Apostolovska	linden	NJ	7036
Irene	Simmons	Hopewell	NJ	8525
Ida	Carideo	Wayside	NJ	7712
Jennifer		wayne	NJ	7470
Cheryl	Koutsoudakis	Eatontown	NJ	7724
Michael	Wexler	Medford	NJ	8055
Shirley	Bensetler	Cresskill	NJ	7626
Kevin	Boyle	Hazlet	NJ	7730
deborah	chiumento	atco	NJ	8004
Ryann	Casey	Lumberton	NJ	8048
E	Cordova	Wayne	NJ	7470
Leo	Doroschenko	West Orange	NJ	7052
Kathy	hart	Succasunna	NJ	7876
Eric	Thivierge	Westampton	NJ	8060
Jane	Davidson	Englewood	NJ	7631
Lauren		Haddon Heights	NJ	8035
Pamela	Lindquist	Bayonne	NJ	7002
Jerry	Castor	Toms River	NJ	8753
Estelle	Prinsloo	Cherry Hill	NJ	8002

Jesse	Stanley	Tucson	AZ	85716
Judson	Wynne	Flagstaff	AZ	86001
Andrew	Mount	Flagstaff	AZ	86001
Hilary	Edmunds	Tucson	AZ	85750
Diane	Plowman	Mesa	AZ	85202
JALEE	FIFER	Glendale	AZ	85308
Judith	Stepan	Cave Creek	AZ	85331
Donna	Yuritic	Scottsdale	AZ	85254
Bob	Segal	Tucson	AZ	85705
kristen	gir	Phoenix	AZ	85051
Sharon	Maxson	Green Valley	AZ	85614
Linda	Ridenour	Apache Junction	AZ	85120
Allen	Holloway	Phoenix	AZ	85044
Tracey	Peterson	Phoenix	AZ	85024
jon	otto	Buckeye	AZ	85396
Kim	Johnson	Maricopa	AZ	85138
Jacques	Mauger	Tucson	AZ	85704
Cherie	Cortez	Maricopa	AZ	85139
Joan	Woods	Surprise	AZ	85388
Sheila	Dunn	Scottsdale	AZ	85259
Carla	Morin	peoria	AZ	85382
Kristen	Allsworth-Rothman	Phoenix	AZ	85022
Jerome	Roth	Tempe	AZ	85281
Angela	Froehlich	Phoenix	AZ	85020
Nancy	Hamadou	Tucson	AZ	85741
susan	north	Tucson	AZ	85712
Larry	Orzechowski	Phoenix	AZ	85032
Sandra	Michael	Scottsdale	AZ	85261
Jayme	Bellenger	Phoenix	AZ	85050
Sl	Smedley	Show Low	AZ	85901
Elizabeth	Stillman	Phoenix	AZ	85029
Christina	Werf	Phoenix	AZ	85016
Susan	Mulcahy	scottsdale	AZ	85251
Thomas	Dow	Glendale	AZ	85308
Michael	Crane	Sierra Vista	AZ	85635
Joel	Barlow	Flagstaff	AZ	86004
James	Lamb	Tucson	AZ	85757
Scott	Sobczak	Kingman	AZ	86401
Cheryl	McGregor	Phoenix	AZ	85007
Edwina	Vogan	Mesa	AZ	85203
Virginia	Rodda	Tempe	AZ	85281
Nancy	Whitley	Scottsdale	AZ	85250
Carol	Korich	Tucson	AZ	85711
Nancy	Whiting	Cave Creek	AZ	85331
Deirdre	Delagera	Cottonwood	AZ	86326
Lance	Blue	Fountain Hills	AZ	85268
SSuzanne	Grandon	Sedona	AZ	86351
Maureen	king	tucon	AZ	85749
Alike	Schroeder	Noonu Atoll	AZ	85634
cheryl	powers	morris plains	NJ	7950
Brian	Gill	Hackettstown	NJ	7840
Richard	Pecha	Lake Hopatcong	NJ	7849
Nicole	Gillespy	MAPLE SHADE	NJ	8052
Joe	String	Rockaway	NJ	7866
Deborah	K	hillsborough	NJ	8844
Val	Abbondandolo	fort lee	NJ	7024
Elsie	Zecchino	Howell	NJ	7731
Emma	Cottone	Hightstown	NJ	8520
Lori	Mangan	Livingston	NJ	7039
PAMela	Neal	Howell	NJ	7731
Edward	Velazquez	Ridgefield Park	NJ	7660
Judy	DeAntonellis	Atco	NJ	8004
Hannah	osborne	basking ridge	NJ	7920
Mark	Stanton	Clementon	NJ	8021
Henry	Frankel	Ventnor	NJ	8406
Sharon	Bulovcsak	Yardville	NJ	8620
Paula	Pais	keyport	NJ	7735
Yesenia	Garcia	NORTH BERGEN	NJ	7047
Marty	Fogel	Montclair	NJ	7043
E	Talamante	Albuquerque	NM	87154
Richard	Beery	Edgewood	NM	87015
Christine	Fouts	Albuquerque	NM	87111
Crystal	wolf	Santa fe	NM	87505
Leigh	Dias	Las Cruces	NM	88005
Adrienne	Ross	Lamy	NM	87540
susan	gallaher	santa fe	NM	87501
Linda	Apton	Belen	NM	87002
Michael	Meade	Santa Fe	NM	87505
Rhea	goodman	santa Fe	NM	87507
Michael	Laine	Bernalillo	NM	87004
Ericha	Courtright	Las Cruces	NM	88011
Judith	Sellars	Santa Fe	NM	87501
Margaret	Weinrod	Los Ranchos	NM	87107
Juliet	Calabi	Santa Fe	NM	87502
Janice	Mulkey	Albuquerque	NM	87111
Joan	Earnshaw	La Plata	NM	87418
Jerrold	Osborn	Albuquerque	NM	87107
Richard	Khanlian	Santa Fe	NM	87505
Ralph	Campbell	Rio Rancho	NM	87144
Steve	Kongs	Albuquerque	NM	87109
Carol	Larroque	Cedar Crest	NM	87008
Chris	Trujillo	Rio Rancho	NM	87124
William	Swinney	Santa Fe	NM	87508
Alice	Dudley	Edgewood	NM	87015
Ellen	Robinson	Albuquerque	NM	87106
Helen		Las Cruces	NM	88005
Crawford	MacCallum	Tijeras	NM	87059
Jen	Wilson	Santa Fe	NM	87506

james-Garrett	Kelley	pearce	AZ	85625
Adrian	Lopez	Tucson	AZ	85711
Phyllis	Turner	Winslow	AZ	86047
David	Erlich	Chandler	AZ	85249
Crystal	Rector	Phoenix	AZ	85014
Rio	Garcia	Gold Canyon	AZ	85118
Roger	Cardillo	Mesa	AZ	85213
Susan	Moran	Saint David	AZ	85630
K	Smith	Tucson	AZ	85745
Ron	Bergman	Flagstaff	AZ	86002
Wendy	Peterson	Phoenix	AZ	85086
Chris	Britt	Gilbert	AZ	85233
Dorothy	Richmond	Tucson	AZ	85719
Les	Switzer	Mesa	AZ	85215
Nathan	Russell	Tempe	AZ	85282
Carmen	Nichols	Chandler	AZ	85225
Nicole	Grimes	PHOENIX	AZ	85086
Nicole	Brown	Gilbert	AZ	85296
John	Borcherding	Chandler	AZ	85249
lisa	kanarish	PEORIA	AZ	85383
L	Brownell	tempe	AZ	85281
Natasha	Douglass	Sedona	AZ	86340
Barbara	Bowman	Mesa	AZ	85205
Lyn	Hart	tucson	AZ	85742
Brooke	Franko	Tucson	AZ	85730
Maria	Gonzales	Litchfield Park	AZ	85340
Barbara	Gerhart	Glendale	AZ	85304
Danielle	Calabrese	Yuma	AZ	85364
Nat	Houghton	Prescott	AZ	86305
Rachael	Calabrese	Scottsdale	AZ	85251
Shirl	Simkins	Flagstaff	AZ	86004
Karen	Perkins	Tucson	AZ	85755
Ray	Cage	Prescott	AZ	86303
Sandra	Riker	Flagstaff	AZ	86004
Mary		hereford	AZ	85615
Paul	Ruffner	Prescott	AZ	86305
Carolyn	DeJonge	Gilbert	AZ	85296
Jake	Turner	Tucson	AZ	85719
Leslie	Faber	Tucson	AZ	85716
Elizabeth	Klinger	boulder	CO	80302
Victoria	Powell	Colorado Springs	CO	80909
Nicole	Brunner	Denver	CO	80205
Albert	Chong	Boulder	CO	80303
Inka	Dance	Colorado Springs	CO	80916
Carrie	Cono	Lafayette	CO	80026
Zita	Wendler	Evergreen	CO	80439
Danielle	Alkire	Thornton	CO	80260
Lydia		Colorado Springs	CO	80909
Cyril	Rigaud	Mont-Joli	CO	80440
Marcella	Wiard	Arroyo Hondo	NM	87513
Joyce	Cousino	Deming	NM	88030
Marlen	Hdz.	Distrito Federal	NM	14438
Farice	Rezabek	Tesuque	NM	87574
Laura	Stewart	RANCHOS DE TA	NM	87557
Susan	Hoffman	Stanley	NM	87056
Guru	Wilson	Alcalde	NM	87511
Roberta	Price	Albuquerque	NM	87110
Kelly	Wells	Albuquerque	NM	87111
Karen	Bernhardt	Albuquerque	NM	87111
Diane	Bloom	Rio Rancho	NM	87144
gigi	gaulin	Santa Fe	NM	87505
jan	macek	los Alamos	NM	87544
Dylan	O'Reilly	Farmington	NM	87401
Patrice	Landreth	Carlsbad	NM	88220
Isaac	Fischer	Santa Fe	NM	87505
Little	Heard	Albuquerque	NM	87107
Ali	Deckoff-Jones	Santa Fe	NM	87508
Cat	Wilson	Albuquerque	NM	87104
Ana	Cohen	Santa Fe	NM	87505
Sandra	Perkins	Tome	NM	87060
Karen		Melbourne	NM	87501
Monika	Laendle	Glorieta	NM	87535
Richard	Welker	Santa Fe	NM	87594
Aleasha	Baker	Albuquerque	NM	87193
Teresa	Hammond	Albuquerque	NM	87109
Jackie	Decker	Albuquerque	NM	87114
Sharee	Christy	Albuquerque	NM	87108
Kate	Skwire	Santa Fe	NM	87507
Ana	R	Abbott	NM	87747
Elizabeth	Bucy	Santa Fe	NM	87505
Jamie	Skinner	Albuquerque	NM	
Nancy	Ness	Los Alamos	NM	87544
Cynthia	French	Albuquerque	NM	87114
Dyan	Merick	Albuquerque	NM	87176
David	Pease	Santa Fe	NM	87505
Laura	Jackson Pottorff	Deming	NM	88030
Lorii	Hernandez	Mexico	NM	3020
Hanks	Saxe	Taos	NM	87571
Chemen	Ochoa	Santa Fe	NM	87508
Diane	Gledhill	Embudo	NM	87531
Kathleen	O'Neill	Las Cruces	NM	88005
Mary	Mendez	Albuquerque	NM	87108
Kortney	Melciorre	Las Vegas	NV	89128
DAVID	SHINDER	Las Vegas	NV	89137
Barry	McLeod	Henderson	NV	89015
SchÃ¼mmer	Sue	ulm	NV	89077
Renee	Lake	Carson City	NV	89701
Silversage	Healthnutrition	Reno	NV	

Daniel	Barad	Colorado Springs	CO	80919
Linda	Bolander	Northglenn	CO	80234
Ruth	Sachnoff	Boulder	CO	80301
Todd	Peterson	Wheat ridge	CO	80214
Tom	Lankering	Basalt	CO	81621
Anita		Littleton	CO	80162
tommy	sandman	Denver	CO	80205
patty	northern	colorado springs	CO	80904
Wynn	Martens	Boulder	CO	80303
Dennis	Maun	Littleton	CO	80124
Nilanjana	Bhattacharjya	Colorado Springs	CO	80903
Wendy	Staats	Boulder	CO	80308
Tricia	Kob	Fort Collins	CO	80526
Janet	Perry	Nederland	CO	80466
Bill	Sitkin	Crestone	CO	81131
Janet	Correll	Fort Collins	CO	80524
Michael	Thomas	Boulder	CO	80305
Todd	Olk	CENTENNIAL	CO	80122
Linda		Lafayette	CO	80026
Jeanne	Tyler	Englewood	CO	80111
Susan	Brown	Evergreen	CO	80437
Carol	DeCrescentis	Evergreen	CO	80439
Adam	Stenftenagel	Boulder	CO	80302
Kristin	Dryden	Westminster	CO	80021
Rakesh	Chandranatha	Golden	CO	80401
Devin	Nordson	Boulder	CO	80301
Ellen	Blackmore	Boulder	CO	80306
Thomas	S	FORT COLLINS	CO	80525
Jenny	Hancey	Pine	CO	80470
Cliff	Shaffran	Boulder	CO	80302
John	Cort	Boulder	CO	80301
Corinna	Santini	Denver	CO	80246
Jim	Beckenhaupt	colo. spgs.	CO	80903
Marie	Casias	Littleton	CO	80128
Karen	Smith	Colorado Springs	CO	80923
Scott	Vickers	Denver	CO	80218
Emma		Denver	CO	80210
Tanya	Glasser	Louisville	CO	80027
cherri	briggs	Steamboat Springs	CO	80477
Terese	Keil	Breckenridge	CO	80424
Cassandra	Moore	Lafayette	CO	80026
Jonathan	Staufer	vail	CO	81657
Ryan	Martens	Boulder	CO	80303
Jerrod	Marshall	Longmont	CO	80504
Gretchen Brooks	Nassar	Fort Collins	CO	80521
Hernan	Masferrer	Denver	CO	80220
Helena	Winston	Denver	CO	80238
Janet	Landwert	Johnstown	CO	80534
Robert	Levitt	ft collins	CO	80525
Tanya	Russell	Las Vegas	NV	89145
Lyric	Courtwright	Reno	NV	89506
Jeff	Weisend	Carson City	NV	89705
Carole	LaRocca	Las Vegas	NV	89122
Jlds	Fewell	Las Vegas	NV	89141
Michelle	Nicoll	Las Vegas	NV	89122
janelle	McBride	Henderson	NV	89044
Gregory	Hoit	Henderson	NV	89012
Margaret	Rebane	Incline Village	NV	89451
Teresa	Vanzeller	Las Vegas	NV	89134
Angela	Hale	Las Vegas	NV	89147
Chan	Griswold	Reno	NV	89521
Richard	Florke	Las Vegas	NV	89108
Ron	Lindquist	Henderson	NV	89052
Sandra	Goettling	Logandale	NV	89021
Anthony	Postman	Reno	NV	89509
Michael	Roberts	Reno	NV	89511
susan	hastings	Reno	NV	89503
Janell	Cooper	Henderson	NV	89014
ana	morris	Las Vegas	NV	89141
Rick	Smith	Las Vegas	NV	89121
Barbara	March	Las Vegas	NV	89121
Sauwah	Tsang	las vegas	NV	89141
Marilyn	Gross	Reno	NV	89502
Alan	Mendez	Reno	NV	89506
Bogdan	Anca	Las Vegas	NV	89122
Kathy	Sugarman	Las Vegas	NV	89113
Sharon	Wyant	Las Vegas	NV	89193
Elaine	Ryan	Reno	NV	89501
Edward	Mrkvicka	LAS VEGAS	NV	89130
Shellie	Haldeman	Reno	NV	89502
Katharine	Sommerfield	Henderson	NV	89014
Rosalind	Murfree	Carson City	NV	89721
Jean	Dieter	Gardnerville	NV	89410
Tina	Matzke	Silver Springs	NV	89429
J	Esposito	Sparks	NV	89434
Charlene	Boydston	Pahrump	NV	89048
Zack	Blumberg	Carson City	NV	89703
Donna	Ipock	Las Vegas	NV	89157
Leticia	Mar	Las Vegas	NV	89117
Jackie	Casano	Pahrump	NV	89060
Elise	Chandler	Las Vegas	NV	89103
Susan	Fong	Las Vegas	NV	89102
Penelope	Carr	Henderson	NV	89074
Joe	Ratliff	Winnemucca	NV	89445
Alva	Williams	Laughlin	NV	89029
Eddie	Otero	Las Vegas	NV	89104
Tannaz	Pourboghrat	Las Vegas	NV	
Tania	Tavcar	Reno	NV	89511

Rhonda	Peters	Lakewood	CO	80228
Paul	Yasinitsky	Englewood	CO	80113
Lee	Liebmann	Woody Creek	CO	81656
Molly	Adams	Fort Collins	CO	80521
Mary Jean	Wamble	Colorado Springs	CO	80919
Briar	Schumacher	colorado springs	CO	80920
Greg	Pickens	Aurora	CO	80012
John	Cornely	Littleton	CO	80127
Debbie	Oberhausen	Brighton	CO	80603
Patricia	Wright	Denver	CO	80220
Sharyn	Dreyer	Denver	CO	80206
Janet	Monell	durango	CO	81301
Sonya	Yeager-Meeks	Bailey	CO	80421
Chris	Story	denver	CO	80207
Charles	Olmsted	Greeley	CO	80634
William	Ferguson	Lakewood	CO	80226
Kathleen	Jefferies	louisville	CO	80027
Peter	Tauer	Aurora	CO	80015
Brenda	Wright	Centennial	CO	80112
Bill	Jenkins	Fort Collins	CO	80524
Susan	Wolinsky	Denver	CO	80203
Bonnie	Long	littleton	CO	80128
Sheila	Chaput	Fort Collins	CO	80526
Wm	Brooks	Lafayette	CO	80026
Vera	Alves	Boulder	CO	80402
Diane	Alpern	Boulder	CO	80303
Mary	Bevington	Lyons	CO	80540
William	Merline	Black Hawk	CO	80422
Andrea	Caballero	Loveland	CO	80538
Brent	Supperstein	Colorado Springs	CO	80909
Scott	Ellenwood	Colorado Springs	CO	80922
Sara	Ashmore	Colorado Springs	CO	80917
Trevor	Ycas	DURANGO	CO	81301
Mary	Meyer	Fort Collins	CO	80521
linda	casner	steamboat springs	CO	80477
Lisa	Maragon	Denver	CO	80206
Jen	Strauss	Commerce City	CO	80022
Barbi	Springer	Evergreen	CO	80439
Brian	Volk	Highlands Ranch	CO	80129
David	Easterling	Aurora	CO	80010
Jennifer	Eisnaugle	Denver	CO	80210
Blu	Wagner	Denver	CO	80228
Janii	Dearmendi	Castle Rock	CO	80108
Catherina	Pressman	Boulder	CO	80304
Mark	Shinkle	loveland	CO	80537
Duane	Webster	Boulder	CO	80303
Kristen	Abrams	Denver	CO	80222
Dawn	Hendry	Littleton	CO	80127
Donna	Bonetti	Boulder	CO	80303

Rose	Saunders	reno	NV	89502
Phyllis	Dunaetz	Gardnerville	NV	89410
jet	erikson	las vegas	NV	89107
Jessica	Riva	North Las Vegas	NV	89031
Phillip	lewis	Las vegas	NV	89104
Faith		Las Vegas	NV	89135
Amanda	Guthrie	Montello	NV	89830
David	Dewenter	Sandy Valley	NV	89019
Sona	Bay	Las Vegas	NV	89122
Rita	Valent	Dayton	NV	89403
Lynne	Colvig	Sparks	NV	89431
Dominique	Price	Reno	NV	89512
Rachel	Kelly	Las Vegas	NV	89118
Mike	Micheli	Port Chester	NY	10573
Orlando	Baez	Staten Island	NY	10310
Garrett	Cain	Mahopac	NY	10541
Michelle	Karell	Brookly	NY	11206
Jeanette	Esca	Smithtown	NY	11787
Cassandra	Clark	Bronx	NY	
Sandra	Herkowitz	Valatie	NY	12184
Alan	Hoffner	Staten Island	NY	10305
Ivette	van Eijkelenburg	Bilthoven	NY	11235
alexandra	bossung	Remsenburg	NY	11960
Candice	Pollard	N Syracuse	NY	13212
Alison	Maher	Brooklyn	NY	11214
John	Laundre	Oswego	NY	13126
rebecca	wagner	palmyra	NY	14522
Fern	Wachtel	New York	NY	10001
Mike	McGowan	New York	NY	10016
Alyce	Benevides	New York	NY	10003
Robert	Nassau	Brooklyn	NY	11217
Edmund	Singleton	Bronx	NY	10472
IvÃ¡n	Zatz-DÃ-az	New York	NY	10025
Lindsay	Hoyt	Boiceville	NY	12412
Katie	Aiken	Tully	NY	13159
nina	Chiofalo	New York	NY	10001
Silvana	Tropea	Forest Hills	NY	11375
Barbara	Woods	New York	NY	10025
Richard	Chiger	Monticello	NY	12701
Diane	Guernsey	New Rochelle	NY	10801
Paul	Blitzblau	Canastota	NY	13032
Colleen	Kane	Amherst	NY	14226
Karen	Petersen	bayport	NY	11705
Julia	Dalton	New York	NY	10024
AnneMarie	Ryan	Cornwall	NY	12518
Jenny		Yonkers	NY	10701
Veronica	Pinto	New York	NY	10013
Gretchen	Gilbert	Brooktondale	NY	14817
carole	sink	New York	NY	10040

Michael	Parsons	Aguilar	CO	81020
Martha	Williamson	Lyons	CO	80540
Douglas	Adler	Colorado Springs	CO	80911
Viktoriia	Tovstolyp	Aurora	CO	80015
Caroline	Eader	Boulder	CO	80302
Leslie	Wingerath	Denver	CO	80247
Albert	Gauna	Trinidad	CO	81082
Kathleen	Jennings	Louisville	CO	80027
Mary	Smith	Thornton	CO	80241
Julieta	Bastida	denver	CO	80219
Sheryle	McNeill	thornton	CO	80260
Carol	Hulse	Strasburg	CO	80136
Kevin	Tong	Lakewood	CO	80401
Michelle	Newmark	Thornton	CO	80241
Ray	Bernhardt	Divide	CO	80814
Lark	Lands	Georgetown	CO	80444
Gordon	Steuck	Denver	CO	80209
Nalani	Dulaney	Colorado Springs	CO	80911
David	Auerbach	Lafayette	CO	80026
Adria	Hendrickson	Denver	CO	80228
Marnie	Bromby	Denver	CO	80227
Georgia	Locker	Fort Collins	CO	80525
Cindy	Massey	Littleton	CO	80120
Jane	Swartley	Boulder	CO	80303
Rose	Womack	Longmont	CO	80503
Cory	Parks	Fort Collins	CO	80525
Jahnavi	Stenflo	Boulder	CO	80304
Kurt		Denver	CO	80207
Ann	Troy	HGHLNDS RANCH	CO	80129
Douglas	Nelson	Broomfield	CO	80020
Norman	Poire	centennial	CO	80122
Paula	Fischer	Parker	CO	80138
Tom	Finneran	Boulder	CO	80306
julie	gulden	arvada	CO	80003
Harry	Corsover	Castle Rock	CO	80108
Jody	Newman	durango	CO	81301
Theresa	hearn	pueblo	CO	81001
Jean	Wall	Denver	CO	80212
Jerry	Boswell	Highlands Rancgh	CO	80126
Janet	Burgess	Colorado Springs	CO	80904
Heather	Williams	Grand Junction	CO	81504
Melissa	Leonnig	Centennial	CO	80121
Clay	Chase	denver	CO	80202
Virginia	Waldron	Pueblo	CO	81003
Karen	Larsen	Littleton	CO	80120
Cynthia	Carver	Erie	CO	80516
James	Miller	Fort Collins	CO	80525
Tina	Hickman	Denver	CO	80229
Claudia	Zwick	AURORA	CO	80014
Deanna	Berman	Ithaca	NY	14850
Karen	Killeen	Sleepy Hollow	NY	10591
Larry	Weingart	New York	NY	10040
Deborah	Badran	New York	NY	10022
Mildred	Huffmire	South Salem	NY	10590
Kendra	Mackenzie	Yonkers	NY	10705
Jimmy	Massey	Richfield Springs	NY	
Irini		brooklyn	NY	11218
Sarah	Peavey	Brooklyn	NY	11222
James	Wrobel	Niagara Falls	NY	14305
Nathan	Rulli	Brooklyn	NY	11232
Elizabeth	Ungar	New York	NY	10025
JD	King	Remsen	NY	13438
Doreen	Tignanelli	Poughkeepsie	NY	12603
Tara	Fish	Binghamton	NY	13901
Rhonda	Lieberman	new york	NY	10002
Kelly	Hushin	Kew Gardens	NY	11418
Brian	Anderson	New York	NY	10011
Mario	Morales	Bronx	NY	10451
Zephrin	lasker	brooklyn	NY	11201
Vitina	Muirhead	Elmont	NY	11003
Erin	McFadzen	Commack	NY	11725
Nupur	Johri	New York	NY	10040
Dona	Wesley	SYR	NY	13207
Tom	Koster	New York	NY	10023
Steve	Wolfert	Hartsdale	NY	10530
C	Wilhelm-Pierson	Delhi	NY	13753
Robert	Manning	Johnsburg	NY	12843
Leila	Martin	New York	NY	10024
Julio	Soto	Brooklyn	NY	11238
anita	randolfi	New York	NY	10009
Shari	Markovich	Bellerose	NY	11426
James	Lear	Brooklyn	NY	11201
Pamela	Inglis	New York	NY	10001
Glenn	Staub	White Plains	NY	10601
Charlie	Bertou	orlando	NY	10701
Joann	Eckstut	Rensselaerville	NY	12147
Elisabeth	Youngclaus	New York	NY	10014
Myrna	Sak	Saratoga Springs	NY	12866
Shirley	Strickland	Mechanicville	NY	12118
Naomi		New York	NY	10007
Kathy	Alter	Munnsville	NY	13409
Kristin	Walsh	Nyack	NY	10960
Kevinrusso		BRONX	NY	10467
Christiane	Pistor	New York	NY	10021
Deb	Padovano	Massena	NY	13662
Adrienne	Neff	New York	NY	10065
Rita	Zielinski	Pine Plains	NY	12567
Patrick	Donovan	Brooklyn	NY	11238

Wayne	Hardaker	Aurora	CO	80011
Herbert	Kress	Highlands Ranch	CO	80126
Tracey	MacDonald	Denver	CO	80237
Lora	Premo	CO SPGS	CO	80901
Tawnee	Livingston	Golden	CO	80401
Tanya	McKown	Pueblo	CO	81008
Teri	Nolion	Denver	CO	80212
Claudia	Bourks	morrison	CO	80465
Bonnie	Mandell-Rice	Broomfield	CO	80020
Austin	McDougal	Boulder	CO	80304
Heidi	Cox	Denver	CO	80204
Claudia	Todd	Colorado Springs	CO	80906
Robyn	Wille	Boulder	CO	80303
barbara	fox	Westminster	CO	80021
Kathy	Vetos	Denver	CO	80211
Joel	Murray	Denver	CO	80210
Tiffany	Schilmann	Erie	CO	80516
Cherry	Miloe	Bayfield	CO	81122
Robert	Cruder	Elizabeth	CO	80107
Abigail	Massey	Denver	CO	80218
Kenny		Denver	CO	80220
Philip	Rowe	Boulder	CO	80305
Rebecca	Lewis	Colorado Springs	CO	80922
Mary		Louisville	CO	80027
Jen	Gray	Loveland	CO	80538
Thomas	Zieber	Gunnison	CO	81230
Katherine	Warren	Fort Garlanf	CO	81133
Pam	Reynolds	Denver	CO	80210
Richard	Creswell	Denver	CO	80227
Alicia	Miller	Glenwood Springs	CO	81601
Christopher	Nall	Colorado Springs	CO	80903
Thomas	Stocker	Arvada	CO	80003
Carol	Sidofsky	Winter Park	CO	80482
Yarrow	S.	Denver	CO	80224
Rachel	Kellum	Brush	CO	80723
Leigh	Kennison	Denver	CO	80222
Kathryn		Englewood	CO	80113
M		highlands ranch	CO	80130
Susan	Granias	Pagosa Springs	CO	81147
Alikina	Iubhar	Fountain	CO	80817
Stephanie	Huntington	Denver	CO	80207
Janet	Holley	Glenwood Springs	CO	81601
Norman	Traum	Boulder	CO	80301
Sue	Peters	Denver	CO	80231
Karen	Anderson	Rollinsville	CO	80474
Elizabeth	Finfgeld	Littleton	CO	80127
Sara	Reese	Cortez	CO	81321
Sylvia	FrÃ¶hlich	Bitterfeld	CT	6749
Kristen		monroe	CT	6468

Benoit	Ayotte	NY	NY	12345
Wayne	Foote	Smithtown	NY	11787
Audrey	Hornick-Becker	Brooklyn	NY	11226
Lee	Wiggins	New York	NY	10022
Haley	Fiege	Brooklyn	NY	11201
Albert	Kopec	Dundee	NY	14837
Elissa Landes	Spagnolo	Syosset	NY	11791
Chris	Weinert	Kenmore	NY	14217
Frederica	Gamble	New York	NY	10003
Lauren	Sica	Bronx	NY	10460
Patricia Carey		Syracuse	NY	13224
David	Rubenstein	Mt. Tremper	NY	12457
Madeline	Giles	Brooklyn	NY	11206
Jan	Hansen	Chestnut Ridge	NY	10977
Sean	Barrett	Bronxville	NY	10708
Christian	Rutledge	Astoria	NY	11105
Liz	Garratt	Buffalo	NY	14222
Andy	Gale	New York	NY	10002
Tammy	Marhis	New York	NY	10011
Priyanka	Sekhar	Markham	NY	14224
frances	schuster	Cornwall	NY	12518
Kelly	Thompson-LaPerle	Latham	NY	12110
Joseph	Solorio	Astoria	NY	11102
Patti	Gardner	Etobicoke	NY	12345
Luxcika	Krishnapillai	New york city	NY	12345
Marc	Hertzman	New York	NY	10027
Bonnie	Dashew	FRANKLIN SQUAI	NY	11010
Michael	Gannon	Yorktown Heights	NY	10598
Beth	Rumsey	East Islip	NY	11730
Lynn	Johnson	Lake George	NY	12845
John	Stratton	New Hartford	NY	13413
Deborah	Hodgson	Perth	NY	12010
Allison	Matos	massapequa	NY	11758
Melissa	Slack	Newburgh	NY	12550
Margaret	Dyer	Ithaca	NY	14850
Jessica	Paxton	Putnam Valley	NY	10579
Aileen	Renner	Staten Island	NY	10306
Oliver	Williams	New York	NY	10024
Amanda	Green	Broolyn	NY	11205
Annie	Bien	Brooklyn	NY	11231
Timothy	Goddard	Castlegregory	NY	12345
Paula	Weld-Cary	Rochester	NY	14618
Tara	Duchyns	Rochester	NY	14626
Jim	Polet	East Northport	NY	11731
Jelena		London	NY	12345
Eva	Abate	Middletown	NY	10940
Samantha	Kroll	Brooklyn	NY	11226
Robert	Anderson	Troy	NY	12180
sanaa	Benjelloun	New York	NY	10028

Jay	Pocius	Ivoryton	CT	6442
Wendy	Zuilkowski	Middletown	CT	6457
Sabrina	Dombrowski	East Haven	CT	6512
George	Shanahan	Norwalk	CT	6851
Carol	Austad	New Britain	CT	6053
Michael	Toto	Redding	CT	6896
Elizabeth	Stephens	Ontario	CT	6615
Melissa	Everett	Enfield	CT	6082
Alex	Quasnitschka	Rocky Hill	CT	6067
Bill	Mcnulty	ENFIELD	CT	6082
David	Blank	Stamford	CT	6906
Katherine	Leek	wilton	CT	6897
Jonathan	Frey	ellington	CT	6029
Kathy	Molloy	Glastonbury	CT	6033
Wanda	Colman	Tariffville	CT	6081
Bernie	Michel	Hartford	CT	6105
James	Eaton	Westport	CT	6880
Jennifer	Minot	Hartford	CT	6028
Charles	Dunn	Fairfield	CT	6824
Eric	Lichtenstein	Greenwich	CT	6831
Kayla	Johnson	New London	CT	6320
Sue	Huybensz	deep river	CT	6417
Danette	HÃ¶rberg	Vence	CT	6140
Cat	Tailer	vernon	CT	6066
Laura	Reul	Norwalk	CT	6850
Douglas	Seltzer	Norwalk	CT	6850
Daniel	kraver	Bethel	CT	6801
pamela	blum	north branford	CT	6471
Christine	Porrello	Southbury	CT	6488
Sandra	Downie	Manchester	CT	6040
Patricia	Hammel	Norwalk	CT	6854
Lynn	Sawyer	Greenwich	CT	6830
David	Longobucco	Madison	CT	6443
Gian	Morresi	Bridgeport	CT	6604
Helen	Wasserman	FAIRFIELD	CT	6825
Hope	Wang	Newington	CT	6111
Linda	De Leon	Fairfield	CT	6825
Dean	LaPrade	Prospect	CT	6712
Benjamin	Martin	Wallingford	CT	6492
Kathleen	Todd	Collinsville	CT	6019
Lynn	Limeburner	Bristol	CT	6010
Beth	Angel	East Hampton	CT	6424
Harold	Meyer	Washington Depot	CT	6794
Benjamin	Getchell	New Milford	CT	6776
Mitchell	Forman	Hamden	CT	6518
Torrance	Hanley	New Haven	CT	6511
Heidi	Tartell	Branford	CT	6405
Vincenzo	Mortolini	gioiella	CT	6061
Brenda	Bessoni	Old Saybrook	CT	6475

Shirley	Horowitz	Floral Park	NY	11004
Christine	Cameron	New Windsor	NY	12553
Barbara	Mintz	New York	NY	10021
theresa	putz	Valley Stream	NY	11580
Julianne	Mason	Brooklyn	NY	11238
Edwin	Rodriguez	LIC	NY	11101
Alexandra	Madigan	Freeville	NY	13068
Martina	Parisi	Yonkers	NY	10710
Raphael	Levavy	Astoria	NY	11105
Candela	Prol	Brooklyn	NY	11216
Louise	Perret	Rye	NY	10580
Susan	Emery	Larchmont	NY	10538
janice	clowe	Rye	NY	10580
Joan	Ewing	New York	NY	10075
Naomi	Zurcher	Brooklyn	NY	11201
Michael	Keudel	Kenmore	NY	14217
Carlotti	Mireille	toulon	NY	83000
Donna	Ksczanowicz	Rochester	NY	14626
Barbara	Levine	South Salem	NY	10590
Julie	Serenson	Yonkers	NY	10704
Anthony	Bradford	Portland	NY	14769
Christine	Curtin-Barnes	NY	NY	10128
julie	swain	ithaca	NY	14850
Judith	Matoff	Rhinebeck	NY	12572
Ethan	Middlebrooks	Sunnyside	NY	11104
judy	visconti	Port Jefferson	NY	11777
Jonathan	Fields	Port Washington	NY	11050
Megan	Wood	Rochester	NY	14618
Todd	Morningstar	Brooklyn	NY	11211
Yerah & Raquel	Gover	Forest Hills	NY	11375
Marilyn	Flynn	Cutchogue	NY	11935
Jon	Lee	New York	NY	10011
Karen	Schectman	Mt. Kisco	NY	10549
Caitlin	Iungerman	Glens Falls	NY	12801
C	Beasley-Baker	Brooklyn	NY	11238
June	Clark	New York	NY	10012
Selena	Kessler	Springwater	NY	14560
Karen	Gilleberg	norwich	NY	10001
Steve	jennick	New Milford	NY	10959
Caleb	Pollack	New York	NY	10025
Robert	Milgrom	Bronx	NY	10463
Michelle		Irvington	NY	10533
Andy	Meigs	norwich	NY	13815
Seth	Marks	Odessa	NY	14869
magnus	sanger	NY	NY	10128
Lurana	McCarron	Saratoga Springs	NY	12866
Lily	Acunzo	Brooklyn	NY	11207
Kathleen	Reynolds	New York	NY	10009
Robert	Sabin	Mill Neck	NY	11765

Sarah	Blumenreich	Ridgefield	CT	6877
Maureen	Heiddtmann	East Hampton	CT	6424
Geoffrey	Frattini	Cheshire	CT	6410
Emma		Enfield	CT	6082
Stephen	Fleitas	Norwalk	CT	6851
Lidia	Baltazar	Sabugal	CT	6320
Shelly	JULIAN	auckland	CT	6040
Bill	Martens	Vernon	CT	6066
Alexander	Chapman	Bridgeport	CT	6604
Elaina	Marcotte	Vernon Rockville	CT	6066
Matthew	Lugauskas	Waterbury	CT	6708
Glenn	Williams	Mystic	CT	6355
Johanna	Vroegop	Auckland	CT	6040
Brooke	Girty	lyme	CT	6371
Bailey	McCann	New Fairfield	CT	6812
M	Gillespie	Madison	CT	6443
Mary	Psarras	Stratford	CT	6614
Chris	Sanders	Manchester	CT	6040
Lucinda	Hannon	Avon	CT	6001
Erik	Alexander	Manchester	CT	6040
Stephanie	Fox	Bloomfield	CT	6002
Maureen	DeNunzio	Norwalk	CT	6854
Michael	KochKetola	middletown	CT	6457
Vanstalle	Myriam	Bertrix	CT	6880
Estelle		Danbury	CT	6810
Wendy	Herbert	North Branford	CT	6471
Cindy	Girgenti	Danbury	CT	6811
tuula	Berke	Clinton	CT	6413
Roberta	Reynolds	Shelton	CT	6484
Masha	Whittemore	Danialson	CT	6239
lorraine	petro	waterbury	CT	6706
Joyce	Joiner	westport	CT	6880
John	Pugzlesi	TOlland	CT	6084
Elisa	Katz	Wallingford	CT	6492
Kelley	Babcock	Southington	CT	6489
Kerry	McGorlick	Pine Meadow	CT	6061
Amy	Wallace	Darien	CT	6820
Cindy	Burke	weston	CT	6883
Francine	Ungaro	Southington	CT	6489
William	Gibson	Ansonia	CT	6401
Evgeniia	Romakhova	Norwalk	CT	6854
Iris	Hotakov	Stamford	CT	6902
Katrina	Cox	Washington	DC	20009
Patrick	Reilly	Washington	DC	20001
Adam	Lewis	Washington	DC	20007
Ricardo	Roman	AGUASCALIENTES	DC	20266
Alycia	Kellman	Washington	DC	20001
Alan	Weiskott	Washington	DC	20036
Jill	Pape	Washington	DC	20009

Barbara	O'Brien	Huntington	NY	11743
Brian	Schiavo	New York	NY	10010
Allison	Waxman	New York	NY	10016
Linda	Adsit	Weedsport	NY	13166
Anthony	Aviles	Forest Hills	NY	11375
Maria-Cristina	Marinescu	yorktown heights	NY	10598
Amersbeek	Amersbeek	Burt	NY	14028
Sherry	Jones	Olean	NY	14760
Susan	Terwilliger	Flushing	NY	11355
Brendan	Nelson	East Atlantic Beacl	NY	11561
Leo	Blackman	Wassaic	NY	12592
shari	falomir	mexico city	NY	14411
Donna	Daniels	getzville	NY	14068
Daniel	Zoladz	Rochester	NY	14612
Carol	Moon	New York	NY	10040
Alan	Wolfer	Long Beach	NY	11561
Paul	Furman	chestnut ridge	NY	10977
Pauline	DeMairo	Jackson Heights	NY	11372
Richard	Nowak	Rocheater	NY	14610
David	Weiss	Brooklyn	NY	11214
Edwin	Philbrook	Latham	NY	12110
mae	chok	Flushing	NY	11354
Bruce	Buck	Monroe	NY	10950
Nancy DuCasse	Yacalis	Plainedge	NY	11756
Elise	Birn	Greenwood Lake	NY	10925
Kelly	Grindstaff	Saratoga Springs	NY	12866
Erica	Sarro	Pleasantville	NY	10570
Yvonne	Imperiale	New York	NY	10022
Jude	E.Newton	Islip Terrace	NY	11752
Antoinette	Zometa	San Salvador	NY	10110
Marsha	Vander Heyden	NYC	NY	10001
Danielle		New York	NY	10069
Pamela	Joy	New York	NY	10009
Janice	Capuani	Orchard Park	NY	14127
Doris	Gahler	New York	NY	10023
Jeanne	Jacobowitz	Craryville	NY	12521
Ashley	Lovell	Nyc	NY	10006
Debra	Durante	New York	NY	10065
Carol	Bernstein	Oyster Bay	NY	11771
Michael	Gerber	Snyder	NY	14226
Lisa	Karp	Brooklyn	NY	11215
Nadia	Mehenni	Brooklyn	NY	11237
Antonia		Castleton	NY	12033
Kelly	Baker	Rochester	NY	14623
Mary	Nostramo	Maspeth	NY	11378
Jacqueline	Henderson	New York	NY	10014
Cal	Mendelsohn	Nanuet	NY	10954
Amanda	Libutti	Staten Island	NY	10310
Larry	Rundle	Glens Falls	NY	12801

Stephanie	Weir	Washington	DC	20002
Harry		Washington	DC	20003
Alexandra	Wyatt	Washington	DC	20009
Martha	Abreu-Arias	Washington	DC	20003
Charles	Winter	Washington	DC	20008
judith	Brody	WASHINGTON	DC	20009
Candice	Wu	Washington	DC	20005
Irene	Riches	Washington	DC	20016
Fann	Harding	Washington	DC	20009
Amy	Reger	Washington	DC	20003
Lucia	Pollock	Washington	DC	20037
Michael	Balitsaris-Fortier	Washington	DC	20016
Kristina	Madarang	Washington	DC	20009
Hattie	Bannowsky	Newark	DE	19711
Jonathan	Owens	Newark	DE	19711
Howard	Cohen	Newark	DE	19702
Sharon	Ruegsegger	Claymont	DE	19703
Megan	McGovern	Newark	DE	19711
Carol	Tavani	Wilmington	DE	
Rae	Campagnola	Newark	DE	19702
Linda	Carter	Felton	DE	19943
Melanie	Salzmann	Adendorf	DE	21365
alvaro	casamadrid	detroit	DE	54070
Kathleen	Eaton	Middletown	DE	19709
margo	haq	Millsboro	DE	19966
Dee	Richards	Millsboro	DE	19966
Jennifer	Sifuentes	Wilmington	DE	19805
Ray	Sukumar	Wilmington	DE	19806
Riesa	Larson	New castle,	DE	19720
Brigitte	Wiedemann	altenmuenster	DE	86450
Geme	Rutter	Wilmington	DE	19802
Dennis	Sirman	Selbyville	DE	19975
Joan	Ward	Camden-Wyoming	DE	19934
Nancy	Geller	Wilmington	DE	19810
Dawn	Sonntag	Ocean View	DE	19970
Jared	Cornelia	Wilmington	DE	19804
Sally	Setaro	New Smyrna Bch.	FL	32168
Lindsay	Jennings	St. Petersburg	FL	33701
Alfred	Jonas	Biscayne Park	FL	33161
BETTY	CARTER	lakeland	FL	33801
Christine	Josselin	Vendays-Montalivet	FL	33930
Michael	Lowe	williston	FL	32696
Robert	Cox	Tampa	FL	33625
Howard	Miller	Spring Hill	FL	34606
Sylvia	Feil	Fort Lauderdale	FL	33315
Alvaro	Gutierrez	miami	FL	33166
Hazel	Blumberg-McKee	Tallahassee	FL	32312
Anthony	Jordan	Palm Beach Gardens	FL	33418
Sara	Phelan	santa rosa beach	FL	32459
Susan	Sheffield	Syracuse	NY	13219
Shannon	Soltysiak	Brooklyn	NY	11222
Alan	Henriksen	Smithtown	NY	11787
Marc	Weber	New City	NY	10956
Kim	Holloway Wozny	Massapequa	NY	11758
Savannah	Castro	New York	NY	10023
Josephine	Koncurat	New York	NY	10014
James	Davis	Bearsville	NY	12409
Anna	Engdahl	Hankins	NY	12741
Diane	Wilson	johnson city	NY	13790
John	Butler	Long Beach	NY	11561
Donna		New York	NY	10075
Aubrey	Lees	New York	NY	10014
JEan	Jung	NYC	NY	10022
Rachel	Seiler	Coram	NY	11727
Kenneth	LaBarca	Tuckahoe	NY	10707
MaryEllen	Cahill	Astoria	NY	11105
Mary	Sager	Endicott	NY	13760
Diane	Hedley	malta	NY	12020
Jill	Robinson	Mississauga	NY	12345
Shari	Peto	Gloversville	NY	12078
Susan	Esposito	Staten Island	NY	10314
Bonnie	Weber	Flanders	NY	11901
Jo-Ann	McGinness	Cortlandt Manor	NY	10567
Jan	DeLuke	Oneida	NY	13421
Linda	Speranza	South Farmingdale	NY	11735
Madeleine	Taylor	New York	NY	10011
Richard	Bernier	St. James	NY	11780
Octavio	Perez	New York	NY	10019
Bradley	Dunker	NEW YORK	NY	10019
tatiana	Stanton	Trumansburg	NY	14886
Tatiana	Trioufanova	New York	NY	10128
Carol	Bartold	Lima	NY	14485
Gia	Battista	Copiague	NY	11726
Ruby	Olmstead	Staten Island	NY	10314
John	Cannatella	New York	NY	10003
Donna	Hanna	Staten Island	NY	10314
dawn	gates	schoharie	NY	12157
David	Schmid	Buffalo	NY	14209
Maureen	Culbert	East Springfield	NY	13333
Ellen	Wolfe	New York	NY	10027
Jenny	Harris	Holsworthy	NY	12345
Barbara	Baxter	Falconer	NY	14733
Marianna	Bellantoni	Staten Island	NY	10306
miguel	formosa	Bronx	NY	10458
Karen	Solomon	SaratogaSprings	NY	12866
Charles	Ruas	New York	NY	10013
Eliette	BOZZOLA	Bouckville	NY	13310
Florence	Falk	New York	NY	10025

Nicole	Hornberger	Miami	FL	33172
Randy	Chapman	Sugarloaf key	FL	33042
Marie	Hammer	Gainesville	FL	32609
Jonathan	Piper	Clearwater	FL	33759
Terry	Bykka	St. Augustine	FL	32086
Cody	Pinti	Melbourne	FL	32940
Vivian	Griffin	Lakeland	FL	33803
Matthew	Borland	Jacksonville	FL	32202
Scott	Ewing	Hudson	FL	34667
Leo		Hiealeah	FL	33010
Marcela	Yepes	Lutz	FL	33558
Marlie	Suarez	Tarpon Springs	FL	34689
Maureen	Eppley	St. Petersburg	FL	33704
Gabriella	Gonzalez	Hialeah	FL	33014
Lois	Swoboda	Apalachicola	FL	32329
Kelly	Thomas	Wellington	FL	33449
Theresa	Springer	DeLand	FL	32724
Ken	Roman	spring hill	FL	34608
ann	greenfield	miami	FL	33176
Daniel	Gil	Windermere	FL	34786
Christine	Telega	Bunnell	FL	32110
Joseefine	Fortier	St Petersburg	FL	33708
Barbara	Tetro	Valrico	FL	33594
Marcla	Green	Cocoa	FL	32926
Susan	Efant	Altoona	FL	32702
Laurie	Fuller	Ft. Lauderdale	FL	33309
Lisa	Phillips	Jacksonville	FL	32210
Nancy	Nodell	Naples	FL	34110
Steve		Safety Harbor	FL	34695
Melissa	Muza	Bristol	FL	32321
Isabel	Esparza	Davie	FL	33331
Colleen	O'Neill	St. Petersburg	FL	33704
Bruce	Marshall	The Villages	FL	32162
Michael	chase	jacksonville	FL	32207
Rachel	Perez	Miami	FL	33125
Leah	Pecoraro-Eddy	Dunedin	FL	34698
Cynthia	Brown	Sebring	FL	33872
Peggy	Goldberg	Citra	FL	32113
Mary	Gross	Belleair	FL	33756
Jeff	Hanna	Nokomis	FL	34275
kent	driskell	Lake Worth	FL	33461
Marian	Quinlan	Apopka	FL	32712
Emily		Miami	FL	33137
Alyssa	Anderson	Tallahassee	FL	32309
Don	Margeson	St. Petersburg	FL	33702
Patricia	Wilson	Lady Lake	FL	32159
Bonnie	Bellin	Palm Coast	FL	32164
Brian	Gillis	MIAMI	FL	33185
Sam		Gulfport	FL	33707

Derek	Southard	Oswego	NY	13126
Jean	Shappit	Tillsonburg	NY	12345
Jacqui	Franklin	Ithaca	NY	14850
Len	Jacobs	Lattingtown	NY	11560
J.	Capozzelli	New York	NY	10024
r	fain	Pw	NY	11050
Susan	Ellis	Red Hook	NY	12571
Patti	Ouderkirk	Astoria	NY	11103
Mimi	Torchin	New York	NY	10025
Lisa	Wolf	Holmes	NY	12531
Loretta	Abramaitis	Saranac Lake	NY	12983
Ann	Brochhagen	Massapequa Park	NY	11762
Barbara	Rogers	Brier Hill	NY	13614
ADAM	ghory	Brooklyn	NY	11206
Paul	Russell	Rosendale	NY	12472
Osvaldo		Bronx	NY	10471
Anthony	Taddeo	New York	NY	10012
Dorota	Kolodzieczyk	Brooklyn	NY	11218
Katie	Greenberg	Bronx	NY	10463
frances	cirabisi	Massapequa Park	NY	11762
Josephine	Loscialo	West Babylon	NY	11704
Leonard	Nalencz	New York	NY	10031
Hayden	Wayne	New York	NY	10024
Joni	Note	Brooklyn	NY	11228
Lin	Segal	suffern	NY	10901
Nelle	McKay	New York	NY	10019
David	Wright	North Tonawanda	NY	14120
judith	Vorreuter	new York	NY	10009
Deborah	Reynolds	St Helier	NY	12345
Molly	Geller	Nanuet	NY	10954
Alex		Dewitt	NY	13214
Loretta	Simonetti	Selden	NY	11784
Lise	Brenner	brooklyn	NY	11211
Marilyn	Graziano	New York	NY	10020
Nelly	Badia	new york	NY	10022
Steve	LeVine	Brooklyn	NY	11218
leah	hardy	new york	NY	10128
john		queens	NY	11105
Michael	Hadj	New york	NY	10013
Kathryn	Barry	SUFFERN	NY	10901
Gab	Herman	New York	NY	10028
Wayne	Johnson	Bk	NY	11201
Benedetta	Palmirani	Vinovo	NY	10048
Jill	Schreier	ny	NY	10025
Connie	Laccone	port washington	NY	11050
Mary	Cordray	Medford	NY	11763
Robert	Banov	Brooklyn	NY	11213
Marion	Lakatos	Croton on Hudson	NY	10520

Jasmine	Thordin	Miami	FL	33181
Robert	Flavell	Pembroke Pines	FL	33026
Sean	warden	coral springs	FL	33065
Janet	Moore	Gainesville	FL	32605
Kathryn	Law	Plantation	FL	33317
zulma	hammond	weston	FL	33327
Candace	McCAFFERY	Gainesville	FL	32611
William	Cummins	Pensacola	FL	32504
Cy	Sugita	Altamonte springs	FL	32714
Beth	Bridges	St. Petersburg	FL	33701
Julius	ophar	Miami	FL	33138
Erik	Scott	Miami	FL	33129
June	Witkowski	Sebastian	FL	32958
Bridget	Snedden	deland	FL	32720
Marilyn	Caplin	Coral Gables	FL	33146
Lynda	Alfson	Orange Park	FL	32073
Cynthia	Guiterrez	West Palm Beach	FL	33415
Lily	Johnson-Ulrich	Coral Gables	FL	33134
Susan	Schenk	Lakeland	FL	33812
Michaela	Fazecas	Oviedo	FL	32765
Savannah	Pica	pensacola beach	FL	32561
Linda	Schrader	Venice	FL	34292
melissa	plante	coconut grove	FL	33133
Susana	Navajas	miami	FL	33175
John	Ennis	hudson	FL	34667
Franky	Arriola	Miami	FL	33137
Barbara-Lee	Lefrancois	Lakeland	FL	33803
Ann	Fonfa	Delray Beach	FL	33446
Vikki	Rosenbaum	Palm Harbor	FL	34684
Simone	Benthien	Clearwater	FL	33756
Andy	Koenig	Jacksonville Beach	FL	32250
Carole	Smith	Brooksville	FL	34604
Carolina	Jones	Miami Beach	FL	33141
Kirsi	Vieri	Tampere	FL	33540
Phyllis	Caridi	Boca Raton	FL	33433
Jeannie	Economos	Orlando	FL	32804
Judith	Robbert	Cantonment	FL	32533
Cynthia	Plockelman	West Palm Beach	FL	33405
Karen	Tennison	Ocala	FL	34482
Rick	G	Tampa	FL	33610
Kiko	Capill	Fort Lauderdale	FL	
Carmen	Plaza	Hollywood	FL	33021
Eric	Rohrig	GAINESVILLE	FL	32605
olga	gary	Miami	FL	33176
Melissa	Duralia	wellington	FL	33414
Theodore	Bahn	Pensacola	FL	32534
Brian	White	Lakewood Ranch	FL	34202
Indra	Vanselow	Davie	FL	33314
M	Flam	Miami	FL	33176

Jill	Freedman	New York	NY	10026
Liana	Walczak	Brooklyn	NY	11213
Ernesto	Nodal	new York	NY	10003
Kim	Kline	Walden	NY	
Lonnie	Harrington	Saint Albans	NY	11412
Richanna	Patrick	Cortland	NY	13045
James	Lynch	Chestertown	NY	12817
David	Bly	Ithaca	NY	14850
Michael	mangino	Valhalla	NY	10595
Giuseppe	Pezzotti	ithaca	NY	14852
Michelle	Dodd	Brewster	NY	10509
Stanley	Greenberg	Brooklyn	NY	11217
James	Mendelsohn	New York	NY	10011
Stephen	Lehner	White Plains	NY	10607
Andrew	Vidich	Riverdale	NY	10463
julie	toth-pokowicz	northport	NY	11768
Bozena	Grossman	Brooklyn	NY	11218
David	Barbour	New York	NY	10003
Patrick	Flynn	Larchmont	NY	10538
Michael	Cleveland	Plattsburgh	NY	12901
Ann	Gower	NY	NY	10034
Lolly	Van Hyning	Willard	NY	14588
Beth	Tarilton	Lisarow	NY	12345
Alexander	Andrasik	Buffalo	NY	14214
Damon	Moore	East Meadow	NY	11554
Bierka	Castellanos	Bronx	NY	10471
Jenna	Summers	Sydney	NY	10022
Mark	Livreri	Middle Village	NY	11379
Margaret	Morton	workington	NY	12345
Irene	Redfield	brooklyn	NY	11201
Aimee	Arceo	East Amherst	NY	14051
Janet	McKee	Staten Island	NY	10301
Peter	Kivic	Fort Covington	NY	12937
Del	Ericson	N Collins	NY	14111
Burt	Schwartz	port jefferson Statio	NY	11776
Willow	Johnson	NY	NY	10029
Nicole	Hertel	Tonawanda	NY	14150
Isaac	Hattem	Larchmont	NY	10538
Stephanie	Forman	New York	NY	10003
Ger	van Berg	Medford	NY	11763
Karla	Kavanaugh	East Chatham	NY	12060
Rachel	Levine	New York	NY	10025
Douglas	Sloan	Chatham	NY	12037
Adrian	de Silva	Coxsackie	NY	12051
Jessica	Nohle	Skaneateles	NY	13152
daniel	gobeo	Middletown	NY	10940
Diane	Graszik	Great Neck	NY	11023
Louis	Sebesta	Binghamton	NY	13905
Valerie		NY	NY	10014

Luke	Fressell	destin	FL	32541
Saundra	Brown	Miami Gardens,	FL	33055
GEisy		Plantation	FL	33324
Emily	Ellis	Davenport	FL	33896
Stephanie	Alvarez	Weston	FL	33326
Charles	Quesada	Pompano Beach	FL	33062
Scott	Finamore	citrus springs	FL	34434
Brock	Grill	West Palm Beach	FL	33401
Ramsey		Tampa	FL	33611
Ed	Rowell	Williston	FL	32696
Judy	Jacobs	Melbourne Beach	FL	32951
Robert	Greenboam	Port Orange	FL	32128
Lisa	Kornse	Key Biscayne	FL	33149
Stephanie	Grinmanis	Melbourne	FL	32935
Heloise	Seailles	Gainesville	FL	32607
Stanley	Swart	Jacksonville	FL	32257
Pamela	Epstein	Ocala	FL	34483
Sandy	Sundquist	Cocoa	FL	32922
Laura	Krause	boca raton	FL	33432
Cecil	Torres-Castro	Tampa	FL	33626
Paul	West	Fort Myers	FL	33908
Deb	Brown	Riverview	FL	33569
Katie	Schwartz	Panama City Beach	FL	32407
Isis	Garcia-Rodriguez	Miami Beach	FL	33141
Richard	Poole	Longwood	FL	32779
Barbara	Cabrera	Miami	FL	33134
Audrey	Lima	Port Charlotte	FL	33952
Maryann	Piccione	Holiday	FL	34690
Joanna	Hardeman	London	FL	33025
Lady	Lamas	Miami	FL	33165
Maureen	Dalton	Hobe Sound	FL	33455
Lucy	Asher	Kissimmee	FL	34759
Kim	Pankow	Wellington	FL	33414
Chi	Yip	Weston	FL	33327
Mary	Caperilla	Deltona	FL	32725
Claudia	Marice	Miami	FL	33193
Jese	Masser	Tampa	FL	33626
Catherine	Kerrigan	LUTZ	FL	33549
Steven	Chatterton	Tampa	FL	33613
Liana	Stanton	Miami	FL	33155
Jenny	Harju	Saint Petersburg	FL	33730
Cheryl	Murray	Kissimmee	FL	34744
Elydrum		Brescia	FL	33149
Jose A.	Rodriguez	Kissimmee	FL	34746
Joan	Hutton	Vero Beach	FL	32967
Rose	Eckert	Jacksonville	FL	32225
Phyllis	Cole	Tarpon Springs	FL	34689
Vicente	Dopico	Miami	FL	33183
Glenna	Powers	fort myers	FL	33907
Brad	Walrod	Kenoza Lake	NY	12750
Johanna	Elias	Brooklyn	NY	11229
Chris	Witting	queens	NY	11419
Chris	Washington	New York	NY	10019
Yvonne	P	Ozone Park	NY	11417
robert	parks	ogdensburg	NY	13669
Joseph	Rosta	Brooklyn	NY	11215
Jeremiah	Belanger	Cobleskill	NY	12043
Joyce	Marthaller	Canandaigua	NY	14424
Colleen	Lucas	Far Rockaway	NY	11691
Maria	Astorga	Flushing	NY	11358
Sadie	Dempsey	Dukinfield	NY	12345
Emanuela	Souza	CAMPINAS	NY	12345
Denisedefrancisco	defrancisco	FARMINGDALE	NY	11735
Roy	Stock	Albany	NY	12205
Karen	Mott	Greenlawn	NY	11740
gabrielle	lamphier	bath	NY	14810
Theresa	Johnson	New York	NY	10024
Susan	Goldman	Huntington	NY	11743
Miriam	Gordon	West Hempstead	NY	11552
Christopher	Pelham	New York	NY	10009
Sara	gennaro	Howard Beach	NY	11414
Jamie	VanHoesen	Cortland	NY	13045
Ponie	Sheehan	Croton On Hudson	NY	10520
Mike	Kelly	Horseheads	NY	14845
Michael	Mitchell	New York	NY	10029
Christopher	Sammond	Cortland	NY	13045
Cliff		new york	NY	10075
Vincent	DiTizio	Staten Island	NY	10312
Julie	Takatsch	Port Jervis	NY	12771
Phyllis	Wagner	Long Beach	NY	11561
Joel	Coon	Cato	NY	13033
Dragana	M	New york	NY	58865
Andre	West	BRONX	NY	10467
norma	gibney	Mount Vernon	NY	10550
Marge	Maloney	tonawanda	NY	14150
Mary	Levitt	New York	NY	10025
Anne	Kobayashi	New York	NY	10003
Richard	Bartley	Brooklyn	NY	11204
Maria	Mastropaolo-Bocle	Brooklyn	NY	11222
Gabrielle	Kayser	Hicksville	NY	11801
Selah	Roberts	New York	NY	10012
Sanaa	Benjelloun	New York	NY	10028
emanuela	levin	Rochester	NY	14610
Silvia	Rennie	New York	NY	10280
Edgar	Roberts	Scarsdale	NY	10583
Bradley	Duprey	Chazy	NY	12921
Thomas	Rochford	New York	NY	11377
Irving	Lee	New York	NY	10002

Dennis	Hewitt	Winter Haven	FL	33880
michele	labrie	Barefoot Bay	FL	32976
Melissa	Gagnon	Fort Lauderdale	FL	33351
		Orlando	FL	32803
John	Jones	New Port Richey	FL	34652
Jhan	Lees	Homosassa	FL	34446
Susan	Hanzel	Celebration	FL	34747
Virenda	Nyberg	Ormond Beach	FL	32174
William	Claiborn	Venice	FL	34285
Brittany	Arroyo	Cocoa	FL	32927
Diane	Smith	St. Petersburg	FL	33713
Courtney	King	Crestview	FL	32536
Paul	Cole	Lake Worth	FL	33460
F	ware	TAMPA	FL	33625
Denise	Pendexter	Delray Beach	FL	33483
Cynthia	Crawford	fort myers	FL	33901
Alicia	Fay	New Smyrna Beach	FL	32168
Boril	Iordanov	Boca Raton	FL	33434
tickie	eaton	Bonita Springs	FL	34134
Wendy	Weldon	Coral Springs	FL	33071
Neil	Marinovich	Sarasota	FL	34238
Patricia	Walker	Melbourne	FL	32935
jackie	grguric	tallahassee	FL	32303
Kathleen	Spinks	Gainesville	FL	32608
Francis	Reining	Marco Island	FL	34145
Al	McClain	Palm Beach Gardens	FL	33418
Bruce	Ground	Orlando	FL	32807
Patsy	Shafchuk	New Port Richey	FL	34654
Marjorie	Zelsdorf	West Palm Beach	FL	33405
George	Skokan	Miami	FL	33155
Rick	Vanhoy	Ft. Lauderdale	FL	33311
William	White	Fort Walton Beach	FL	32548
Linda	Noyes	Key Largo	FL	33037
Ryan	Butts	Marathon	FL	33050
Iralyn	allen	Kissimmee	FL	34746
HEIDI	HEINRICH	ALVA	FL	33920
Teresa	Moreyra	Saint Augustine	FL	32092
Jack	Schuttenberg	ormond beach	FL	32174
Angela	Mitchell	Jacksonville	FL	32246
Mary	Dorfman-Caristia	Nokomis	FL	34275
David	Simms	Lake Worth	FL	33460
Stephanie	Armas	Miami	FL	33175
Carmen	Ortiz	Lake Wallis	FL	33854
Jean		Miami Shores	FL	33150
Michelle	Terriault	Tequesta	FL	33469
Margaret	Campbell	Pensacola	FL	32514
Kacie	Smith	Fleming Island	FL	32003
Michelle	Inere	Pensacola	FL	32507
Norman	Gitzen	lake Worth	FL	33467
Karen	Cobin	Floral Park	NY	11001
Jeff	Freeland	Rochester	NY	14607
Peter	Grassl	New York	NY	10163
Renee	Koenitzer	Stittville	NY	13469
Debra	Arno	Buffalo	NY	14221
robin	bouchard	syracuse	NY	13203
Yvette	Vila	Woodside	NY	11377
john	brattin	new York City	NY	10010
Linda	Dammier	Neversink	NY	12765
Mary	Baumslag	New York	NY	10075
SUSAN	BEDNAR	Mohegan Lake	NY	10547
THERESE	DE BELDER	Brooklyn	NY	11238
Rory	Speer	HORNELL	NY	14843
MsLeslie	Kaplan	Nyc	NY	10036
Walter	Kneibert	West Islip	NY	11795
Patty	Gibbons	Central Islip	NY	11722
Judith	Rhodes	new york	NY	10009
Christine	Carro	New York	NY	10065
hilda	estrada	Bklyn	NY	11210
Gloria	Benedetto	Kirkwood	NY	13795
D	Wyer	Horseheads	NY	14845
Susan	McGowan	brooklyn	NY	11210
Carrie	Rothstein	BROOKLYN	NY	11234
Marie	Ciorciari	Middle Village	NY	11379
ROBERT	RANKINS	Rosedale	NY	11422
Amie	Backner	Briarwood	NY	11435
Angela	Muto	NEW YORK	NY	10012
Ida	Nieves	Woodside	NY	11377
Stephen	Leone	Smithtown	NY	11787
Klee	Hons	Bangkok Thailand	NY	10213
Angela	Muto	New York	NY	10012
Linda	Uhll	Ithaca	NY	14850
Patrick	Oliver	Waterford	NY	12188
Karen	Woodfield	Old Chatham	NY	12136
Marian	Adrian	Albion	NY	14411
Lisa	Jacobs	Wingdale	NY	12594
Horacio	Liedo	Bayside	NY	11360
Allison	Gentile	Brooklyn	NY	11211
Lauren	Bax	Suffern	NY	10901
Sandy	Moon	New York	NY	10003
maria	catalano	PORT CHESTER	NY	10573
Linda	Catlin	Armonk	NY	10504
Dragana	Lisonek	Williston Park	NY	11596
Mira	Jackson	White Plains	NY	10601
yazdie	panthaki	NYC	NY	10001
Lynne	Kelley	Malone	NY	12953
John	K	NY	NY	10470
Debra	Gannon	Valhalla	NY	10595
Robin	Wolff	Rome	NY	13440

Linda	Boone	Royal Palm Beach	FL	33411
Jennifer	Cohen	Weston	FL	33326
Kelly	McMurray	Miami	FL	33165
Michele	Weppner	Boca Raton	FL	33434
Leila		Clackmannanshire	FL	33312
Susan	Rustad	Bonita Springs	FL	34134
Emily	Sagovac	Wellington	FL	33414
Joseph	Placucci	west palm beach	FL	33417
Jeff	Zander	holiday	FL	34691
Elise	Hanley	Boca Grande	FL	33921
Donna	Turiano	West Palm Beach	FL	33406
Canton	Winer	West Palm Beach	FL	33406
dave	o'neill	Leesburg	FL	34788
Steffi	Finnerty	Hernando	FL	34442
James	Jenkins	Ocala	FL	34470
Stacy	Brauner	Lehigh Acres	FL	33974
Joe	Balsamo	Boca Raton	FL	33428
Kim	A	Clermont	FL	34711
William	Bagley	Fort Lauderdale	FL	33312
Heather	Jezorek	Tampa	FL	33604
judy	skole	Boca Raton	FL	33486
Camilla	Spicer	Pt Charlotte	FL	33952
Carol	Ferraro	West Palm Beach	FL	33411
H	Leahy	Oldsmar	FL	34677
PATRICIA	FISHER	JACKSONVILLE	FL	32257
Laura	Ticciati	Sarasota	FL	34231
Dave	Spiegelberg	spring hill	FL	34606
Brenna	Parkins	Fort Lauderdale	FL	33334
Marie	Osmundsen	Bronson	FL	32621
Jeffrey	Bast	Miami beach	FL	33139
Carol	Boyajian	Hialeah	FL	33015
Pat	Philips	Venice	FL	34292
Ruth	Serra	clearwater	FL	33764
Edward	Schwerin	Davie	FL	33314
Robert	Baker	Key West	FL	33040
Tim	Meehle	altamonte springs	FL	32701
huldah	simpson	Tallahassee	FL	32308
J	Blinne	Nokomis	FL	34275
Vanessa	Daru	Santa Giustina	FL	32035
Joan	Joesting	Melbourne	FL	32901
Nicholas	Galante	Tavares	FL	32778
Richard	Hersh	Boca Raton	FL	33431
Louis	Carliner	Masaryktown	FL	34604
Suzie	Emery	Sydney	FL	33122
Lonnie	Nesbitt	Clermont	FL	34714
Dan	Tuttle	Beadenton	FL	34281
Beverly	Golden	Homestead	FL	33031
Dina	Athanassie	Tampa	FL	33694
Will	Sanchez	Hialeah	FL	33016

Karolina	Pyrycz	NYC	NY	10009
Ross	Kugler	NY	NY	10029
Dale	Goldstein	levittown	NY	11756
joan	lenihan	Brooklyn	NY	11209
Lydia	Ross	NEW PALTZ	NY	12561
michael	piscitelli	northport	NY	11768
Mike	Baldasio	Niagara Falls	NY	14301
Michelle	Rosenblatt	Nyc	NY	10001
Laura	DePonte	New York	NY	10023
Clifford	Welcome, Sr.	Brooklyn	NY	11234
Wendy	McDonnell	Bayside	NY	11360
Kathleen	Boddington	New York	NY	10023
Maria	Clair-Howard	Cortlandt Manor	NY	10567
Frank	Quin	Ki12401	NY	12501
Alex	Brownstein	Dix Hills	NY	11746
June	Veloce	Patterson	NY	12563
Marketa	Esaili	Yorktown	NY	10598
Michelle	Cooney	Coram	NY	11727
Michele	Galeotafiore	Brooklyn	NY	11222
Michelle	Rosenthal	Brooklyn	NY	11204
Robert	Phillips	Patchogue	NY	11772
Silkie	Robinson	NYC	NY	10036
Maria	Gregory	west babylon	NY	11704
Susanne	Rash	Williamsville	NY	14221
Brent	Sirois	New York City	NY	11218
Teresa	Roben	Ballston Lake	NY	12019
Claudia	Schaer	New York	NY	10034
Maureen	Ryan	Jamaica	NY	11434
Jeremy	Carpenter	Latham	NY	12110
Sam	Bros	Patchogue	NY	11772
Margaret	Bonn	Buffalo	NY	14226
Christine	Bottaro	Ferndale	NY	12734
Janet	Matthews	Rockville Centre	NY	11570
Ekaterina	Danilova	Brooklyn	NY	11229
Oksana	Wolowacz	brooklyn	NY	11211
Desmond	Root	Bayville	NY	11709
Lorraine	Avallone	Bronx New york	NY	10462
Katie	Sabry	Limassol	NY	10023
Pedro	Perez-Ortiz	New York	NY	10025
Yvette	Kox	Oirschot	NY	12345
Emmy	Hargreaves	NY	NY	48300
Rachel	Miller	Rochester	NY	14620
Joyce	MacNeil	Hamburg	NY	14075
Theresa	Pratt	Manhasset	NY	11030
Debbie	Consales	Discovery	NY	12345
Alicia	Mills	Wyoming	NY	10123
Joseph	Caito	west henrietta	NY	14586
kristen	chen	West Coast	NY	12804
Zinaida	Markina	Moscow	NY	12590

Melanie & Jeff	Strubble	Quincy	FL	32352
vinny	connelly	satellite beach	FL	32937
Jill	Lefkowitz	Hollywood	FL	33021
Hildegard	Benedick	Palm Coast	FL	32137
Scott	Wieteska	Clermont	FL	34714
Leigh	Smith	S Miami	FL	33143
stephen	way	St Pete	FL	33710
Tiffany	Steele	St, Petersburg	FL	33716
Ellen	Gold	Miami Beach	FL	33141
Shirilyn	Gumberg	Hollywood	FL	33020
Angelina	Petrovic	Fort Myers	FL	33919
Eileen	Wyand	CLEARWATER	FL	33764
Francis	Pozzi	Lecanto	FL	34461
Rosamund	Wendt	St Pete Beach	FL	33706
Joyce	Sikes	Holiday	FL	34691
Sonja	Jeffers	Pompano Beach	FL	33060
KP	Feehan	Port Charlotte	FL	33981
Erika	Elmore	Lehigh Acres	FL	33973
Mike	Novotny	Tampa	FL	33606
SANDA	Barton	Tampa	FL	33618
Nicole	Troyan	lake worth	FL	33467
Patrizia	Gestro	Coconut Creek	FL	33073
Edith	Marcus	Venice`	FL	34293
Lesley	Gamble	Gainesville	FL	32601
Laura	Guttridge	Vero Beach	FL	32963
Terri	Taylor	spring hill	FL	34609
Debbie	Hoffman	Merritt Island	FL	32952
Patty	Poock	Hernando	FL	34442
Felicia	Ferrington	Ocala	FL	34477
Richard	Smith	Altamonte Springs	FL	32714
Cheryl	Miller	deerfield beach	FL	33441
Richard	Chesen	Hollywood	FL	33021
Leslie	Simon	Miromar Lakes	FL	33913
Donna	Brand	Saint Petersburg	FL	33704
Mary-Jo	Rubin	PALM BCH GDNS	FL	33412
Carolina	Rozo	Miami Beach	FL	33140
Sharon	Stern	Seminole	FL	33776
Gwenn	Schemer	Wellington	FL	33414
Linda		Daytona Beach	FL	32117
William	Cannon	dunedin	FL	34698
Nancy	Meehan	Santa Rosa Beach	FL	32459
Melissa	Rodriguez	MIAMI	FL	33129
Patricia	Hawkins	Palm Coast	FL	32164
Luz	Ospina	north bay village	FL	33141
C	Tamburry	Fort Lauderdale	FL	33301
Brenda	Cremeans	sarasota	FL	34238
Jean	Latimer	Davie	FL	33324
Vita	Cox	daytona beach	FL	32118
Sam	Sandilla Jr.	Clearwater	FL	33755

Susan	Dexter	London	NY	12345
Jennifer	Harper	Red Hook	NY	12571
Maureen	Hovestadt	Spring Valley	NY	10977
Brian D	Koosed	New York	NY	10010
Debbie	Fleet	Camden	NY	13316
Stephen	Pfaffenbach	Schenectady	NY	12308
Christine	Noguera	Bay Shore	NY	11706
Angelika	Winner	Brooklyn	NY	11205
Jennifer	Singer	New York	NY	10065
Arlene	Miljour	sanborn	NY	14132
Michelle		Pretoria	NY	12345
Cathy	Ellis	West Chazy	NY	12992
Candace	Moore	New York	NY	10028
Meredith	Priestley	BEDFORD	NY	10506
Chris	Asch	New York	NY	10014
Michael		Mineola	NY	11501
Tammy	Douglas	Astoria	NY	11103
Natalia	Griego	new york	NY	10036
George	Dillmann	Ithaca	NY	14850
Serena	Buschi	Tarrytown	NY	10591
Barbara	Necker	Norwich	NY	13815
Claudia	cinardo	Ny	NY	10023
Keith	Van Amburgh	Troy	NY	12180
Zach		Rochester	NY	14610
alena	kastin	brooklyn	NY	11215
Flaviana	Andreis	Torino	NY	10138
Andrea	Strout	Dobbs Ferry	NY	10522
Caryl	Fazio	Merrick	NY	11566
John	Emmanuel	New York	NY	10034
Mary		brooklyn	NY	11218
Irene	Siwik	New York	NY	10009
Janice	Bernard	Scarborough	NY	10510
June	Kasminoff	Old Bethpage	NY	11804
Terri	Cannicott	New York	NY	10029
Sharon	Carey	Astoria	NY	11105
Kerry	Keeny	Medusa	NY	12120
Anna	Williams	Brooklyn	NY	11228
Elizabeth	Mostov	NEW YORK	NY	10024
Cara	Corelli	Troy	NY	12180
Ellin	Feld	Garrison	NY	10524
Suzanne	DuVall	NY	NY	13148
Judith	Lasko	New York	NY	10025
natalie	polizzi	Rochester	NY	14612
Gina	Coviello	Ontario	NY	14519
John	Carollo	KNICKERBOCKEF	NY	10002
Ruth	Strassberg	Shandaken	NY	12480
Trina	Bassoff	Jefferson	NY	12093
Zoraida	Aponte	kingston	NY	12401
Estela	Moreno	Chestnut Ridge	NY	10977

Esther	M.Prexl	Tamarac	FL	33321
Carlos	Quiroga-Lassepas	Tampa	FL	33634
Shannon	Hane	tavares	FL	32778
Merrill	Kramer	clearwater	FL	33763
Pam	Bee	Titusville	FL	32781
Carol	Smerling	Boca Raton	FL	33433
Laurie	Champion	Holiday	FL	34691
Bernadine	Turner	Newberry	FL	32669
David	Davis	Gainesville	FL	32607
Charles	Franklin	Winter Haven	FL	33881
Kallya	Georgiades	Palm Beach Gardens	FL	33410
Meg	Mishler	Fort Lauderdale	FL	33334
Vanessa	Benitez	Cutler Bay	FL	33157
N	W	Delray Beach	FL	33444
Linda	Winner	pensacola	FL	32514
bret	watson	Ellenton	FL	34222
Maureen	Shull	Naples	FL	34110
Geri	Bommarito	Tampa	FL	33612
Ken	Warren	Pinellas Park	FL	33782
Denene	Dobbratz	Coral Springs	FL	33071
Daniel	Fontaine	Orlando	FL	32821
Christy		Summerfield	FL	34491
Leslie	davis	Fort Lauderdale	FL	33304
Melissa	Hendershott	Pensacola	FL	32513
Dr. William	Serra	Orlando	FL	32819
E	Alexander	Miami	FL	33176
Maura	ODonnell	Miami Beach	FL	33140
Christina	Robinson	lehigh	FL	33936
Brig	Leas	rpyal palm beach	FL	33411
Alejandro	Cabal-Cabal	Hallandale Beach	FL	33009
Russell	Riley	Pensacola	FL	32506
Sarah	McKenna	Euclid	FL	33704
Donna	Scheubert	Naples	FL	34112
Janet	Robinson	Boca Raton	FL	33433
suzanne	Valencia	West Melbourne	FL	32904
Cynthia	Talbert	Port Orange	FL	32128
Sam	Rosa	hialeah	FL	33018
Joyce	McDonnell	Kissimmee	FL	34744
Lisa	Shaw	Saint Petersburg	FL	33732
Stephanie	Johnson	Tampa	FL	33613
Peter	P	Jacksonville	FL	32255
Jean	Yedkois	Clearwater	FL	33764
Yvonne	Kupersmit	Loxahatchee	FL	33470
George	Wilder	naples	FL	34102
Jamie	Verity	Oldsmar	FL	34677
adriana	wozniak	Palm Coast	FL	32164
Parvin	Daneshvar	casselberry	FL	32707
Steve	Rosenka	Brooksville	FL	34608
Fr yderyk	Dubienski	Pompano Beach	FL	33068
Rita	Donaghy	New York	NY	10023
Frank	Wagner	Kirkville	NY	13082
MaryAnne	Muller	Brooklyn	NY	11229
Jane		New York	NY	10002
Sheila	Cody	Rhinebeck	NY	12572
Jessica	Sanchez	Woodhaven	NY	11421
Greg	Hoffman	South Salem	NY	10590
Eric	Bitet	Little Neck	NY	11362
Deena	Lebow	New York	NY	10012
Ron	Sonnenberg	Middleport	NY	14105
Dallas		Schenectady	NY	12345
Tracie	Zdeb	Buffalo	NY	
Mark	Scibilia-Carver	Trumansburg	NY	14886
Daniella	Liebling	Brooklyn	NY	11215
Cathy	Lazarewicz	Buffalo	NY	14223
Joslyn	Pine	Sea Cliff	NY	11579
alysia	smith	glens falls	NY	12801
Phoenix	Hawelu-Hills	Buffalo	NY	14210
Jennifer	Schnick	Buffalo	NY	14207
Ruth	Pinsky	Hudson	NY	12534
Denise	Edelson	Woodstock	NY	12498
Karina	Drake	Coram	NY	11727
Annie	Venesky	Brooklyn	NY	11226
Estierkol	Fresco	new york	NY	12345
rhoda	waller	new york	NY	10014
Joel	Meltzer	Port Washington	NY	11050
Shital	Patel	Rego Park	NY	11374
Florence	Powell	Brushton	NY	12916
Christopher	Clay	Beacon	NY	12508
Jeremy	Van Wagenen	Astoria	NY	11106
Laurie	Weisman	New York	NY	10021
Elke	Romer	Farmingville	NY	11738
Drew	Panko	Hartsdale	NY	10530
Rodney	Patterson	Canaan	NY	12029
Danielle	Tran	Schenectady	NY	12345
Nancy	Perkins	new york	NY	10024
Fabienne	Kaufman	Bronx	NY	10471
Dara	Murray	New York	NY	10065
K	Arnone	Brooklyn	NY	11204
Rebecca	Casstevens	Binghamton	NY	13905
Rosa		Hilton	NY	14468
Richard	Tidd	East Greenbush	NY	12061
Helen	Mendoza	Woodstock	NY	12498
Henry	Schwartzman	Corning	NY	14830
Eric	Knox	Honeoye Falls	NY	14472
Lise	Vandal	alma	NY	12345
Colleen	McNamee	Patchogue	NY	11772
Erma	Gluck	Coram	NY	11727
Ruth		Binghamton	NY	13901

Shaffer	Ann	Jacksonville	FL	32205
Pamela	Haun	Cooper City	FL	33328
Myles	McGann	Gainesville	FL	32653
Conroy	Jacob	Oldsmar	FL	34677
Agzack		Pompano Beach	FL	33062
Michael	Rogal	Gainesville	FL	32607
Nicole	Ferris	Marathon	FL	33050
Amy	Reyes	GULF BREEZE	FL	32563
Summer	ankiel	orlando	FL	32811
Gladys	Giraldo	Pensacola	FL	32501
Dana	Kovar	TAMPA	FL	33612
Paul	Herzig	Saint Petersburg	FL	33704
Kathy	Turba	Jacksonville	FL	32216
Steve	Bennett	jacksonville	FL	32250
Mich	Sullivan	Saint Petersburg	FL	33713
Courtney	Edwards	Miami	FL	33185
Carolin	olive	Jacksonvile	FL	32225
Danielle	Phelps	Miami	FL	33172
christopher	kowalski	deltona	FL	32738
Sandra	Berardino	Miami	FL	33144
Susan	Aramayo	Boca Raton	FL	33486
Glenn	Coombe	Staines	FL	33312
Tracy	Ferguson	St. Petersburg	FL	33709
John	Dame	Lake Alfred	FL	33850
Celeste	Shitama	Gainesville	FL	32601
Sandra	rodriguez	Orlando	FL	32827
Terry		Sebastian	FL	32958
Julia	Gordon	west palm beach	FL	33412
Jenny		St. Pete Beach	FL	33706
Alison	Davies	Sarasota	FL	34237
Robert	Morgan	Satellite Beach	FL	32937
Donald	Hendricks	Fort Myers	FL	33919
Laura	Schiess	Sarasota	FL	34233
Alexis	Roman	Saint Petersburg	FL	33703
Julie	Henderson	Tampa	FL	33606
Adriana	Teodoro-Dier	Coral Gables	FL	33134
Luci	Fowler	Graceville	FL	32440
Michael	Katzban	St Petersburg	FL	33716
Maria	Auzas	miami	FL	33129
Veronica	Ramos	orlando	FL	32812
Paul	Heinricher	melbourne beach	FL	32951
T.Marietta	Christon	New Port Richey	FL	34655
Jay	Rozner	FORT LAUDERDALE	FL	33308
Emma	Pearce	Fernandina Beach	FL	32035
Lisa	Washburn	Miami	FL	33125
Renee	Thomas	Winter Park	FL	32792
Frank	Gallart	Hollywood	FL	33021
Amie	Hagar	Melrose	FL	32666
christie	coker	oldsmar	FL	34677

Mara	Rosner	new york	NY	10003
John	Gallagher	Brooklyn	NY	11218
Eileen	Perahia	port washingotn	NY	11050
Anna	Gasner	Brooklyn	NY	11215
Angela	Recker	Webster	NY	14580
Carla	Pontarelli	Pittsford	NY	14534
Richard	Coleman	New Paltz	NY	12561
lisa	clark-kahn	stony point	NY	10980
ruth	CALAMIA	MEDFORD	NY	11763
Susan	Papa	oneida	NY	13421
Mariyam	Mathew	Bardonia	NY	10954
Inge	Bernhardt	Brooklyn	NY	11225
Judith	Susser	B'klyn	NY	11235
Tracy	Nolan	Chappaqua	NY	10514
Jonathan	Peter	Binghamton	NY	13905
Ilenia	Massaroni	Astoria	NY	11105
Sandra	Lakotta	Babylon	NY	11702
Ilene	Cento	Brooklyn	NY	11234
Laura	Christensen	Selden	NY	11784
susanne	linden	E Hills	NY	11576
Sergio	Maldonado	WESTBURY	NY	11590
Janet	Vansickle	Montauk	NY	11954
Joseph	Harnedy	Staten Island	NY	10305
Lisa	McLaughlin	Liverpool	NY	13088
Daniel	Lutzker	Garrison	NY	10524
Miriam	Oldenburg	Bromma	NY	12345
Joyce	Bryant	wilton	NY	12831
Marie	Mandano	Staten Island	NY	10304
Tinne	C	Turnhout	NY	12345
Bryson		NY	NY	10075
Helen	McGrail	staten island	NY	10314
Lillian	Brooking	Woodside	NY	11377
Chris	Hernandez	Rego Park	NY	11374
Eileen	Corbett	Middleburgh	NY	12122
Suzanne	Driscoll	Brooklyn	NY	11215
Jaime	Barnes	Buffalo	NY	14206
Chris	Campbell	Akron	NY	14001
Demi	Fortuna	Stony Brook	NY	11790
Karen	Harper	Staten Island	NY	10314
Leonard	Rappe	Roslyn	NY	11576
Gorge	Politis	brooklyn	NY	11209
Izabela	Cogelja	glemdale	NY	11385
Michael	Ross	Port Jefferson	NY	11777
David	Douglas	East Setauket	NY	11733
John	Compton	Rhinebeck	NY	12572
Jennifer	Radecki	East Amherst	NY	14051
Dennis P.	Rooney	Amenia	NY	12501
Paul	Clay	New York	NY	10003
VM	Campbell	Ithaca	NY	14850

Priscilla		west palm beach	FL	33415
Evonne	Hannaman	Seminole	FL	33772
Tim	Hughes	West Palm Beach	FL	33403
Betty	Wolff	Pensacola	FL	32504
Mark	Stiewing	Oviedo	FL	32765
Linda	Williams	Pompano Beach	FL	33062
John	Goldthwait	St. Augustine Beach	FL	32080
Gina	de	Miami	FL	33186
Shirley	Silva	Miami	FL	33187
Felipe	Soto	Doral	FL	33172
Jennifer	Henderson	Fleming Island	FL	32003
Martha	Carvajal	North Miami Beach	FL	33162
Patricia	Vinson	Lakeland	FL	33812
alicia	del aguila	miami	FL	33183
Andrew	Siva	Casselberry	FL	32707
Brianna	Frachtman	Coral Springs	FL	33076
Sherrill	Wycoff	Jacksonville	FL	32224
Patrick	Owens	panama city	FL	32405
Alan	Fernandez	Miami	FL	33125
Tim	Salt	Philipsburg	FL	33166
Jean	Thompson	Ormond Beach	FL	32174
Johanna	Fletcher	Delray Beach	FL	33445
Bob	Brockhoff	Safety Harbor	FL	34695
Sierra	Kross	Celebration	FL	34747
tara	grimes	orange city	FL	32763
Debra	Forman	palm beach gardens	FL	33410
Leslie	Nelson	Hialeah	FL	33018
stephanie	whisler	orange park	FL	32065
Marcela	Artiles	Miami	FL	33186
Lazzarotti	natacha	beziers	FL	34500
dharma	rama	miami	FL	33166
Harriet	Martinez	avon park	FL	33825
Kam	Chapman	Lake Worth	FL	33467
Daniel	Cavanaugh	Loxahatchee	FL	33470
Magda	Santiago	Davenport	FL	33897
Raemona	Clark	Largo	FL	33778
Taylor	Hanagriff	Brandon	FL	33511
Cynthia	Ferraiuolo	miami beach	FL	33141
Elizabeth	Hudson	Atlanta	GA	30317
Ruben & Dianne	Arvizu	Marietta	GA	30064
Amanda	Langston	Decatur	GA	30032
Kari	Waters	Macon	GA	31210
William	Norman	Atlanta	GA	30324
Margaret	Thrash	Atlanta	GA	30339
Sean	Bailey	Athens	GA	30601
Matt	Campbell	Pine Lake	GA	30072
Sara	Faoro	Conegliano	GA	31015
Clare	Costello	Decatur	GA	30033
Karen	Leasman	Cumming	GA	30040
Louise	Calabro	Bayside	NY	11360
Jane	Kirk	York	NY	80318
Stacie	Claytor	Uniontown	OH	44685
jeffrey	Heinrich	Columbus	OH	43206
Dominique	Provencher	North Royalton	OH	44133
chanta	merritt	dayton	OH	45424
Seneca	Solt	North Olmsted	OH	44070
Dan	Sandman	Chardon	OH	44024
Pia	Alm-Basu	LOVELAND	OH	45140
Diane	Schabitzer	Medina	OH	44256
Christiane	Henker	Gelsenkirchen	OH	45881
Jenny	Hill	Westerville	OH	43081
Jimmy	Arcade	Columbus	OH	43224
Patrick	Jones	West Milton	OH	45383
David	Kersten	Medina	OH	44256
Doug	Klingenberg	Tallmadge	OH	44278
Laura	Dailey	Maineville	OH	45039
Beth	Buist	Bluffton	OH	45817
Sandra	Wagner	Bryan	OH	43506
Mary	Tucker	Mentor On The Lal	OH	44060
Catherine	Scallen	Shaker Heights	OH	44122
Linas	Muliolis	Beachwood	OH	44122
Elizabeth	Evelyn	Cincinnati	OH	45244
Shelly	Hall	LaGrange	OH	44050
deb	wisintainer	NEW PHILA	OH	44663
DrHcg	Sales	Avon	OH	44011
Charlotte	Cook	Cincinnati	OH	45239
Sue	Miller	Cincinnati	OH	45211
Zachary	Jacobs	Woodville	OH	43469
gary	newhart	Kings Mills	OH	45034
Matt	Smith	AKRON	OH	44333
Jamie	Ratajczak	West salem	OH	44287
Helen	Bauman	Hudson	OH	44236
Marlene	Barrett	Maumee	OH	43537
Sunny	Graham	Painesville	OH	44077
Melanie	Walker	springboro	OH	45066
Sharon	Sieger	Willoughby	OH	44094
geoffrey	bachert	volumbus	OH	43202
Susan	Williams	Hartville	OH	44632
Barbara	Fath	Plesant Plain	OH	45162
Jimacia	Levy	Warren	OH	44483
Paul	Rogers	watford	OH	45353
james	swartz	bryan	OH	43506
Debra	Morgan	Swanton	OH	43558
Kathleen	Jennings	Steubenville	OH	43952
Sara	Crosby	Columbus	OH	43202
alexander	savvateev	Scottown	OH	45678
J	Anderson	Columbus	OH	43207
John	Koerner	Beavercreek	OH	45434

Diane	Houston	Savannah	GA	31401
Drew	Kramer	Athens	GA	30606
Rena	Sutton	Woodstock	GA	30188
Aubrey	Burke	Canton	GA	30115
Anna Belle	Illien	Atlanta	GA	30309
Susan	Starling	Marietta	GA	30067
Susan	Drake	Atlanta	GA	30324
Don	Hutcheson	Atlanta	GA	30309
Janet	Katz	Marietta	GA	30068
Regina	Kay	Decatur	GA	30032
siobhan	gilchrist	decatur	GA	30030
Ken	Spence	Columbus	GA	31904
Julie	Ceigler	Duluth	GA	30097
Jane	Palmer	stone mountain	GA	30087
Lynn	Edgar	Decatur	GA	30030
Lucia	DePretto	Norcross	GA	30092
Larry	Arnold	macon	GA	31216
Leah	Canady	Grayson	GA	30017
Carole	Mathews	Smyrna	GA	30082
Colleen	crump	Decatur	GA	30032
Martha	Bohannon	Albany	GA	31707
Beverly	Trottier	Marietta	GA	30064
V	Certain	St. simons island	GA	31522
Krysten	Rose-McCully	Atlanta	GA	30339
Sue	Stoudemire	ATLANTA	GA	30305
Michele	Kay	Savannah	GA	31406
Elizabeth	Rutledge	Mableton	GA	30126
Susan	Welch	Millen	GA	30442
Joel	Jackson	Atlanta	GA	30307
Sidney	Thiessen	Warner Robins	GA	31088
MIchelle	Gregg	Atlanta	GA	30329
Robby	Strozier	Macon	GA	31204
Lydia	Adams	Athens	GA	30606
Clarence	Rosa	atlanta	GA	30345
Brandy	Evett Thomas	Rossville	GA	30741
toby	martin	Acworth	GA	30102
Sabina	Cushing	Savannah	GA	31401
Christine	Lacayo	Marietta	GA	30068
Layla	Holguin-Messner	Decatur	GA	30033
Sarah	Skahan	Jasper	GA	30143
Cindy	Langley	Decatur	GA	30030
Marinangeles	Gutierrez	Atlanta	GA	30312
Lain		Dunwoody	GA	30339
Caroline	Prinzivalli	Atlanta	GA	30340
Phyllis	Free	Atlanta	GA	30345
Charlotte	K	Duluth	GA	30097
Granger	Eltringham	Savannah	GA	31401
Melody	Paris	Atlanta	GA	30316
Glenz	Marilou	roth hambach	GA	57910

Karen	Hart	Akron	OH	44313
Anna	Shaugnesy	Geneva	OH	44041
Al	Blazo	Youngstown	OH	44509
Bridget	Murphy	cincinnati	OH	45202
Adriana	Aguirre	Montreal	OH	45030
Paul	Hopkins	Norwalk	OH	44857
Jennifer	Simpson	Mason	OH	45040
Debra	Reble	Cleveland Hts.	OH	44106
Marlene	Borton	Vandalia	OH	45377
Rochelle	Verchick	cleveland	OH	44113
David	Gurarie	Cleveland	OH	44106
Beverly	Hartman	Lexington	OH	44904
Susan	Lay	Dayton	OH	45410
Ellen	Dryer	Loveland	OH	45140
Julie	Jones	Cuyahoga Falls	OH	44221
ms cynthia	conner	akron	OH	44319
Carrie	Davis	Warren	OH	44483
Robert	Morton	Fremont	OH	43420
Franklin	Piccirillo	Cleveland	OH	44102
John	Rumary	tunbridge wells	OH	66633
Donald	Hyatt	Columbus	OH	43221
Jeffrey	Norwalk	Genoa	OH	43430
Heather	Tessler	Toledo	OH	43614
sandra	tyson	akron	OH	44303
Rebecca	Klasen	Athens	OH	45701
Sharyn	Porter	Worthington	OH	43085
Kschischan	Kschischan	Herne	OH	44625
Dixie	Bowsher	Dayton	OH	45424
Martha	Cocke	Warren	OH	44484
Shoshana	Kaufman	University Heights	OH	44118
Mary	Dustin	Willoughby	OH	44094
Brian	Kuru	Columbus	OH	43202
Scott		Spencer	OH	44275
Sandra	Bilek	Medina	OH	44256
Lynne	Baird	Steubenville	OH	43952
Sue	Elkevizth	Medina	OH	44256
Terri	Pigford	dayton	OH	45417
Tsali	Ticonderoga	Dayton	OH	45404
Sue	Murray	Cincinnati	OH	45202
Jenny	Witt	Oxford	OH	45056
charlene	harmount	Bloomville	OH	44818
Nalana	Kardos	akron	OH	44319
Charlene	Nevans	Moreland Hills	OH	44022
jim	crawford	oregon	OH	43616
Mary	Showers	Elyria	OH	44035
Julia	DeNiro	Wooster	OH	
Susan	Glynn	Kettering	OH	45420
Kevin	Labadie	Stow	OH	44224
Steven	Holland	SHAKER HEIGHT	OH	44118

Muriel	Lindsay	Tybee Island	GA	31328
betty	almand	Avondale Est.	GA	30002
Arthur	Hughes	Marietta	GA	30067
David	Nebel	Sharpsburg	GA	30277
Lindsay	Conklin	Ft benning	GA	31905
Lindsey	Rushing	Statesboro	GA	30461
Devin	Hardin	Lawrenceville	GA	30045
Kelley	harvey	Fort benning	GA	31905
Carmen	Calleja	Alpharetta	GA	30004
Trey	Coursey	Richmond Hill	GA	31324
Wilma	Turner	cumming	GA	30040
Robin	Vincent	cartersville	GA	30120
Patricia	Roberts	Atlanta	GA	30314
Roberta	Cook	Mableton	GA	30126
Jenny	Baker	Valdosta	GA	31602
Kay	Burnette	Dalton	GA	30721
Tiffany	Hsia	Atlanta	GA	30303
Lynne	Chimiklis	Atlanta	GA	30342
Benjamin	Goggins	Tybee Island	GA	31328
William	Brown	Fitzgerald	GA	31750
Andrew	Byczko	atlanta	GA	30312
Carlotta	Harrell	Stockbridge	GA	30281
Lil		Clayton	GA	30525
Laura	DeHaven	Atlanta	GA	30318
Alanna	Watson	Acworth	GA	30102
Narelle	Mynott	Barwick	GA	31720
Daniela	Laudati	Venezia	GA	30135
Gogoci	Ramona-Liana	Timisoara	GA	30058
Debby		Atlanta	GA	30342
robert	ogburn	brunswick	GA	31525
Taylor	St.Clair	Avondale Estates	GA	30002
Mary	Turcotte	acworth	GA	30102
Mike & Joy	Cook	Jasper	GA	30143
Charles	Relyea	Savannah	GA	31406
Robert	Van Winkle	Brunswick	GA	31525
Caroline	Shaw	chattahoochee hills	GA	30268
Amy	Hiley	Fort Valley	GA	31030
Michelle	Gregg	Atlanta	GA	30329
Tony	Hart	DECATUR	GA	30033
becky	sanes	Columbus	GA	31907
Geeta	Singh	duluth	GA	30097
Kate	Dillon	Athens	GA	30605
Judeen	Garza	powder springs	GA	30127
shon	henderson	Decatur	GA	30030
ann	bell	Augusta	GA	30906
Betty	Woods	Lawrenceville	GA	30044
Jamie	Couch	rossville	GA	30741
Katharine Michelle	Haag	Commerce	GA	30529
Linda	Butcher	Suches	GA	30572

Max	Frazier	COLUMBUS	OH	43227
Rachel	Doyle	Ohio City	OH	45874
John	Beamer	Curtice	OH	43412
Melanie	Minnich	lorain	OH	44055
Robin	Lewis	Brunswick	OH	44212
Judy	Schomaker	Worthington	OH	43085
Jeffery	Tucker	Kenton	OH	43326
Lena	Rehberger	Macedonia	OH	44056
Daniel	Morris	Westlake	OH	44145
Eric	schickendantz	Akron	OH	44313
Rodney	Miller	Wooster	OH	44691
William	Walraven	Akron	OH	44313
Ed	sauer	columbus	OH	43214
Linda	Van Brocklyn	Columbus	OH	43219
Mark	Hrusovsky	North Ridgeville	OH	44039
Herbert	larson	Cleveland	OH	44119
Michael	Seager	Mentor	OH	44060
Tracy	Smith	Waverly	OH	45690
ashley	stanbery	Grand Rapids	OH	43522
juliana	fuerst	Beachwood	OH	44122
Robert	Shannon	Newark	OH	43055
August	Armstrong	Lakewood	OH	44107
Ronald	Conn	Lancaster	OH	43130
Abigail	Marker	Cincinnati	OH	45208
Patricia	Piatt	Cincinnati	OH	45230
Sara	Sherman	Columbus	OH	43207
John	Thoma	Dayton	OH	45419
Loretta	Kerns	Cortland	OH	44410
Robin	Hershey	Akron	OH	44301
Kim	Patton	Springboro	OH	45066
Lori	Stoner	Bryan	OH	43506
Gwynyth	Chmara-Huff	Granville	OH	43023
Ed	George	Cleveland	OH	44111
Nancy	Roth	Oberlin	OH	44074
Rhonda	Holt	Miamisburg	OH	45342
Marilyn	Graham	Lakewood	OH	44107
Debra		Canton	OH	44718
Monique	Duphil	Oberlin	OH	44074
R	Waychoff	Bratenahl	OH	44108
Travis	Campbell	Westerville	OH	43081
Gina	Gambino	Dublin	OH	43017
Tiffany	Arnold	Lorain	OH	44053
Steven	Brofman	Beachwood	OH	44122
Jean	Durbin	Cincinnati	OH	45243
Veronica	Sarati	Parma	OH	43022
Kristin	Tamas	Cleveland	OH	44130
Tracy	Johnson	Cincinnati	OH	45242
Ilaria	Osti	Hamilton	OH	45011
Juliane	Gareis	Dortmund	OH	44149

A	Mathews	Milner	GA	30257
Sky	Alexandra	Atlanta	GA	
Penny	Gregorio	Albany	GA	31721
Bill	Rubin	Atlanta	GA	30339
Forrest	Treat	Valdosta	GA	31605
Steven	Ruddell	Kilauea	HI	96754
Kathie	chun	Mililani	HI	96789
fax	sinclair	waikoloa	HI	96738
Alain	Mei	kihei	HI	96753
Jan	Lubin	Honolulu	HI	96816
Cassie	Syme	Kailua Kona	HI	96740
Margaret	Sueoka	Kapaa	HI	96746
Rose	Adare	Keaau	HI	96749
Daniel	Lindsay	Hilo	HI	96720
Alfred	Arney	Honolulu	HI	96816
Mark	Deakos	Lahaina	HI	96761
Clifton	Nunnally	Honolulu	HI	96822
Raymond	Baskerville	Paia	HI	96779
Victor	Holmes	Makawao	HI	96768
Roanne	LeBrun	Pahoa	HI	96778
Robert	Van Wagoner	Haiku	HI	96708
J	Rosa	Honolulu	HI	96822
Tamara	Ticktin	Honolulu	HI	96822
Eve	McGoldrick	Ewa Beach	HI	96706
Denis	Dicks	Kula	HI	96790
Isabelle	Berges	kilauea	HI	96766
Stephanie	Walkeapaa	Haleiwa	HI	96712
christopher	Harrison	waikoloa	HI	96738
shera	allen	honolulu	HI	96816
Terence	Travis	Ewa Beach	HI	96706
Barb	Travis	Ewa Beach	HI	96706
Dave	Kisor	Pahoa	HI	96778
Sherrye	Grotte	KAILUA KONA	HI	96745
Sylvia	Baldwin	Kailua	HI	96734
Debra	Nix	Kihei	HI	96753
John	Nix	Kihei	HI	96753
Ruth	Pahinui	Waimanalo	HI	96795
Torun and David	Almer	Captain Cook	HI	96704
ciro	kamai	Honolulu	HI	96817
Silvia	Rudert	Honolulu	HI	96815
Sarah		basel	HI	96701
Drago	Krakovic	Waipahu	HI	96797
Hiroko	Matsumoto	honolulu	HI	96813
Robin	Simiele	Kurtistown	HI	96760
Elle	Cook	Honolulu	HI	96815
deborah	kelly	pahoa	HI	96778
david	bohn	wahiawa	HI	96786
Derek	Lindes	kaneohe	HI	96744
Lisa	Kelso	Kailua	HI	96734
Daniella	Teodoro-Dier	Cincinnati	OH	45220
Natalie	Means	Medway	OH	45341
Louise	Cohn	Niles	OH	44446
Nancy	Aiken	Warren	OH	44481
Lisa	Dian	Cleveland	OH	44111
Lisa	Agelopoulos	Canton	OH	44721
MARY	BAILEY	southington	OH	44470
Dawn	Stanko	Dublin	OH	43017
Susan	Johnson	Perrysburg	OH	43551
Alayne	Schaefer	Somerville	OH	45064
Marlene	Carpino	Magnolia	OH	44643
Larry	Temin	Loveland	OH	45140
Laurie	Demeter	CONCORD	OH	44077
Kathryn	Henzler	Perrysburg	OH	43551
Kristin	Gabella	Kent	OH	44240
Cynthia	Austing	Columbus	OH	43229
Kristine	Zikmanis	Broadview Heights	OH	44147
Lauren	Sticka	Cincinnati	OH	45242
Peter	Faure	Columbus	OH	43268
Beverly	Weaver	Brunswick	OH	44212
Julie	Norman	Akron	OH	44301
Lynda	Stamm	Hamersville	OH	45130
Chris	Rea	Columbus	OH	43221
MaryAnn	Niedzielski	Toledo	OH	43613
Crystal	Teets	Piqua	OH	45356
Jaime	Blasingim	Toledo	OH	43605
Morgan	Stanley	Reynoldsburg	OH	43068
Annie	Mulcahey	Cincinnati	OH	45230
R	Best	Hebron	OH	43025
Patrice	Faulhammer	Akron	OH	44333
B	Eggleston	Columbus	OH	43232
David	Sheets	cleveland	OH	44135
Carla	Roth	Lakewood	OH	44107
Ellen	Wright	Dayton	OH	45410
W	Sheridan	chillicothe	OH	45601
Rose	Hutchins	Norwalk	OH	44857
Paula	Kennon	Westerville	OH	43081
Susan	Brenneis-Fisher	Youngstown	OH	44512
A.	Woods	Cincinnati	OH	45252
Rocky	Myers	Shawnee	OH	43782
Nicole	Maschke	Cleveland	OH	44102
Paul	Garlock	Columbus	OH	43229
Barbara	Grimm	Broken Arrow	OK	74012
Sally	Hill	Tulsa	OK	74114
Natalie	Smith	Oklahoma City	OK	73159
Mario	Azevedo	Broken Arrow	OK	74012
Sylvie	BermannovÃ¡	Prague	OK	74864
Chris	Dance	Mablethorpe	OK	74080
K	Austin	Tulsa	OK	74105

Leslie	Kornblatt	Puunene	HI	96784
Deborah	Sherman	Haleiwa	HI	96712
Kathy	Schuster	Kapaa	HI	96746
David	Eash	Solon	IA	52333
Danielle	Hopkins	Davenport	IA	52803
Serena	Ruffilli	Florence	IA	50100
Dennis	Thompson	Des Moines	IA	50320
Randy	Ouren	Harlan	IA	51537
John	Zimmerman	Clinton	IA	52732
MJ	House	Coralville	IA	52241
Peter	Feldstein	Oxford	IA	52322
Christine	Blake	Indianola	IA	50125
Anna	Gannon	Des Moins	IA	50317
Nyla	Logsden-Sackett	Iowa City	IA	52245
Renee	Rickerl	Clinton	IA	52732
Patrick	McKay	Iowa City	IA	52240
Auria	Ruiz	MÃ©xico	IA	52045
Margaret	Holmgren	Ames	IA	50010
Elaine	Mahler	Iowa City	IA	52240
Sherry	Toelle	Atlantic	IA	50022
Katharine	Dale	Lisbon	IA	52253
Kait	Ashenfelter	Indianola	IA	50125
Alicia	Lamb	Stuart	IA	50250
Rachel	Schutte	Decorah	IA	52101
Inara	Powers	Cedar Rapids	IA	52402
Caroline	Rojas	Trujillo	IA	51044
Mike	Bailey	Fairfield	IA	52556
Lexi	martin	Davenport	IA	52803
Hillary	Maurer	West Branch	IA	52358
Sue	Sonner	Urbandale	IA	50322
Rhonda	Duncan	Indianola	IA	50125
Linda	Bader	Cedar Rapids	IA	52405
David	McFarland	Urbandale	IA	50323
Michelle	Richard	Walcott	IA	52773
Vicki	Hanson	Parnell	IA	52325
Debbie	Heaton	Marion	IA	52302
Vera	Cousins	Grinnell	IA	50112
Carmel	Benton	Greenfield	IA	50849
Lori	Geiger	Crescent	IA	51526
Susan	Benson-Blaine	Harlan	IA	51537
Chiara	Innocenti	Girone Fiesole Firenze	IA	50061
Susan	Collins	Cedar Rapids	IA	52403
Sylvia	Ethington	Des Moines	IA	50313
Sara	Breschi	Livorno	IA	57100
Vanessa	Piearson	Mason City	IA	50401
Judy	Porter	Des Moines	IA	50322
David	Brame	Tabor	IA	51653
Gay	Mikelson	Iowa City	IA	52246
Amanda	Dake	Mount Vernon	IA	52314
Caitlyn	Shelley	OKC	OK	73170
MaÅ‚gorzata		Szczecin	OK	73110
Jennifer	Swann	Oklahoma City	OK	73120
Susan	Swanson	Jenks	OK	74037
Cheryl	Vaught	Oklahoma City	OK	73118
Mercedes	Lackey	Claremore	OK	74017
Heidi	Reinhardt	Bopfingen	OK	73441
DEBORAH	SMITH	Oklahoma City	OK	73112
Ann	Martin	moore	OK	73170
Bill	Cunningham	Oklahoma City	OK	73132
Virenda	Casey	Bixby	OK	74008
Paula	Wroten	Comanche	OK	73529
Cheryl	Mitchem	Oklahoma City	OK	73162
Darry	Carlstone	Tahlequah	OK	74464
Debe	Judah	Broken Arrow	OK	74012
Jennifer	Jayroe	Edmond	OK	73003
reta	decastro	enid	OK	73701
Bradford	Crain	Portland	OR	97221
Pamela	Statz	Portland	OR	97202
Neil	Shargel	portland	OR	97212
Jody	Rutledge	Portland	OR	97217
Barry	Klein	Eugene	OR	97402
Janice	Sherer	Hood River	OR	97031
Bill	Pierce	Milwaukie	OR	97222
Bryan	Smith	Portland	OR	97266
Jennifer	Welburn	Portland	OR	97202
Brandy	Swan	Milwaukie	OR	97222
Robert	Miller	Portland	OR	97219
Karen	Berdou	Eugene	OR	97403
Henry	Carlile	Portland	OR	97202
Alexis	Laine	Portland	OR	97280
Richard	Glass	Eugene	OR	97402
Sarah	Vito	Eugene	OR	97408
Patrick	Smit	Coos Bay	OR	97420
Brook	Manning	Lake Oswego	OR	97034
Gene	Gossett	Portland	OR	97220
Christian	Burchard	Ashland	OR	97520
Sherry	Britz	Hillsboro	OR	97123
Irene	Willard	Pilot Rock	OR	97868
Dick	Merrill	Bandon	OR	97411
Charlotte	Allen	McMinnville	OR	97128
Lucy	Mead	Vida	OR	97488
amy	Wilhite	Port Orford	OR	97465
Kim	Kahl	Bend	OR	97701
Bernice	Freed	Beaverton	OR	97005
Anne	Gongora	Cornelio Procopio	OR	86300
Michele	DeBacker	Astoria	OR	97103
Barbara	Wright	Eugene	OR	97404
Sarah	Peters	newberg	OR	97132

Symone	Ma	Cedar Falls	IA	50613
Richard	Blandin	Waterloo	IA	50702
Grace	Himmelberger	Boise	ID	83709
Michel	Mowry	Caldwell	ID	83607
Sherry	Elrod	Salmon	ID	83467
Marcy	Flansburg	Eagle	ID	83616
Leena	Maristo	Helsinki	ID	990
Ruth	Bullock	Priest River	ID	83856
Julie	Lafferty	Boise	ID	83713
Michelle	Lenhart	Boise	ID	83704
Barbara	Bird	Lewiston	ID	83501
Linda	Morgan	Caldwell	ID	83607
Kerry	Ritchie-Campbell	Eagle	ID	83616
Nancy	Abdallah	Boise	ID	83716
Tala	Wood	Cocolalla	ID	83813
Elizabeth	Kelly	Moscow	ID	83843
Celeste	Arnold	Boise	ID	83713
Ellen	Powers	Paris	ID	83261
Robin	Powell	Post falls	ID	84855
Lara	Ruffinatto	pinerolo	ID	10064
Pam	Turner	banstead,uk	ID	83648
Shawna	Harbaugh	Jerome	ID	83338
Kathy	Goebel	Sagle	ID	83860
Romina		Milan	ID	20100
Paul	Anthony	Bonners Ferry	ID	83805
Kelli	Pero	Woodridge	IL	60517
Jennifer	Fox	Worth	IL	60482
Lynette	Nieves	Chicago	IL	60659
roberta	lee	Plainfield	IL	60586
Penny	Blubaugh	Chicago	IL	60646
Jane	Alexander	Chicago	IL	60626
Jon	Kula	Chicago	IL	60622
DEAN	PEERMAN	CHICAGO	IL	60660
Tawan	Saykawlard	Chicago	IL	60645
Rob	Kamps	Maastricht	IL	62281
Malcolm	DOW	ChiCAGO	IL	60613
Kristy	Sipe	Dekalb	IL	60115
Monique	Wheeler	Chicago	IL	60660
Randall	Monk	Peoria	IL	61606
Kim	Miller	Downs	IL	61736
Jose	Valle	Chicago	IL	60660
Sergey	Chyburayev	Bnei Brak	IL	51265
Joel	Kramer	FRANKFORT	IL	60423
Janice	Frankel	Chicago	IL	60616
Dale	Boroviak	Lansing	IL	60438
Christine	Pado	Third Lake	IL	60030
Marcia	Gundrum	Chicago	IL	60660
Nehemiah	Hankins	ROCK ISLAND	IL	61201
Sheila	Swanson	Rock City	IL	61070
Lucia	Durand	Corvallis	OR	97330
Carol	Dotson	Cloverdale	OR	97112
John	Donley	Coos Bay	OR	97420
Rebecca	Haas	PORTLAND	OR	97215
Susan	Sheythe	Albany	OR	97321
H	Millard	Salem	OR	97308
Susan	Lilley	Hillsboro	OR	97123
Berklee	Robins	Lake Oswego	OR	97035
Kelly	Hibbert	Roseburg	OR	97470
Margie		Mcminnville	OR	97128
Lori	Dennis	Eugene	OR	97402
Kris	Bennett	Roseburg	OR	97471
Katherine	Gaeta	Falls City	OR	97344
Richard	Holman	CENTRAL POINT	OR	97502
ruth	wilday	Eugene	OR	97402
HM	Sustaita	Eugene	OR	97404
Robin	Weage	Portland	OR	97229
Irene	Brady	Talent	OR	97540
Daniel	Saltz	Salem	OR	97304
Jacquie	Gregor	Portland	OR	97203
Angela	Norse	Salem	OR	97302
Fanan	Gar	Portland	OR	97229
Marta	Boyett	Elmira	OR	97437
Peggy	Hinsman	Eugene	OR	97405
Ashley	Gossman	portland	OR	97213
nicholas	nakadate	portland	OR	97217
Angela	Jensen	Selma	OR	97538
Mark	rainha	Portland	OR	97201
Osalyn	Houser	Albany	OR	97321
Annie	van Domelen	fairview	OR	97024
Hugh	Davis	Oregon City	OR	97045
kiim	stavrum	happy valley	OR	97086
Severian	Fryskesma	Portland	OR	97239
Kerry	Morgan	Waldport	OR	97394
Terry	Hodgin	Veneta	OR	97487
MarilÃº	MartÃ-nez	Lima	OR	52018
John	Trent	Coos Bay	OR	97420
Stephen and Jacqu	Cutler	Yachats	OR	97498
Peter	Shaw	Portland	OR	97217
Dawn	Draper	albany	OR	97321
Dolly	Warden	Talent	OR	97540
Paulianne	Balch-Rancourt	Port Orford	OR	97465
Ann	Tiedeman	Beaverton	OR	97005
Judith	Ponder	Portland	OR	97230
Kara	Ford	Portland	OR	97214
Olivia	Perry	Bend	OR	97701
Melinda	Spencer	Depoe Bay	OR	97341
Virginia	Conley	Springfield	OR	97478
Lisa	Schumacher	Ashland	OR	97520

Erin	Yerges	Champaign	IL	61820
Susan	McFADDEN	Tinley Park	IL	60477
Angela	Marzelli	Palatine	IL	60067
Daniel	Tamburich	Chicago	IL	60608
Deena	Seifer	wheeling	IL	60090
Erini	Shields	Evanston	IL	60202
Barbara	Palmer	Golf	IL	60029
Fonda	Elder	Sullivan	IL	61951
Dawn	Stock	Geneseo	IL	61254
Nancy	Gurny	Skokie	IL	60077
Adam	Smith	Chicago	IL	60625
AG	Hansen	Crestwood	IL	60445
Katie	Abma	Berwyn	IL	60402
Bruce	Gordon	Chicago	IL	60630
james	Hines	Chicago	IL	60630
Jerry	Bresnahan	Lake In The Hills	IL	60156
Jane	Drews	McHenry	IL	60051
Dawn	Suppo	Highlandpark	IL	60035
Marla	Herzog	Warsaw`	IL	62379
Bonnie	Van Stedum	Cicero	IL	60804
mark	gillono	aurora	IL	60503
Rich	Eide	Evanston	IL	60201
Amy	andrews	Chicago	IL	60645
Laura	Long	Chicago	IL	60613
Mary Rita	Luecke	Evanston	IL	60203
peggy	hutchison	Apple River	IL	61001
Susan	Mitchell	Romeoville	IL	60446
Debra	Pumphrey	pekin	IL	61554
Robert	Krueger	Chicago	IL	60626
Gary	LaClair	Scahumburg	IL	60194
Stephen	Nickels	Simpson	IL	62985
Ron	Gary	Chicago	IL	60660
Roger	Gonnering	Schaumburg	IL	60193
Ryan	Whetsel	Chicago	IL	60660
William	Burda	Naperville	IL	60565
Margaret	Nagel	Evanston	IL	60202
Jeannine	Weidner	Rockford	IL	61103
Terri	barnett	Yorkville	IL	60560
Laura	Haldeman	Channahon	IL	60410
Edward	Osowski	Chicago	IL	60606
James	Heller	Chicago	IL	60645
Rebecca	Ruiz	CHICAGO	IL	60641
Jeff	Cox	East Peoria	IL	61611
Peter	Kontos	Aurora	IL	60503
Richard	Winship	Evanston	IL	60202
Margareat	Erickson	Chicago	IL	60657
Paul	Straka	Brookfield	IL	60513
Sharon	haney	la grange park	IL	60526
Alex	Oles	Hinsdale	IL	60521
Patricia	Stenberg	Bend	OR	97707
Beau	Peterson	Portland	OR	97213
Robin	Milam	grants pass	OR	97526
Jason	Karn	Bend	OR	97701
Sarah	Barron	CHARLESTON	OR	97420
Vivian	Sherman	Portland	OR	97217
Krissy		Bend	OR	97701
Derek	V.	Eugene	OR	97402
Robert	Burch	Coquille	OR	97423
David	Taylor	Corvallis	OR	97339
Denise	Smith	Salem	OR	97302
Ron	Berry	Bend	OR	97701
Darrell	Kastin	Ashland	OR	97520
Douglas	Depue	SALEM	OR	97309
Wally	Sykes	Joseph	OR	97846
Nancy	McClelland	Brookings	OR	97415
David	Fitzgibbon	Portland	OR	97213
Margaret	Willis	Portland	OR	97221
Philip	Bryer	Eugene	OR	97405
Susan	Birge	Newport	OR	97365
Deborah	Freeland	Lake Oswego	OR	97034
Robert	Ferl	Ashland	OR	97520
Kathleen	Evergreen	La Grande	OR	97850
Tresa	Horney	Portland	OR	97217
Cherry	Marrone	Medford	OR	97501
Esther	Streisfeld	eugene	OR	97405
Alyssa	Thomas	Bend	OR	97701
Diana	Portwood	Lincoln City	OR	97367
Mary	Englert	Portland	OR	97202
Kiva	Dobson	Hood River	OR	97031
Chris	Frick	portland	OR	97212
Karen	Varney	Talent	OR	97540
Lisa	Champ Paluck	Manzanita	OR	97130
Kristi	Meier	Newberg	OR	97132
Elizabeth	Wood	Corvallis	OR	97333
Garrett	Meigs	Corvallis	OR	97330
Jenn	Brown	Troutdale	OR	97060
Valerie	Lovejoy	williams	OR	97544
Fred	Wellard	Salem	OR	97317
Dorothy	Girard	Bebd	OR	97702
Cheyne	Cumming	Portland	OR	97212
Dorothy	Hanes	Portland	OR	
Ted	Picciotto	Portland	OR	97214
Robin	Bundy	Eugene	OR	97401
Jesus	Ilundain	McMinnville	OR	97128
Mlou	christ	Portland	OR	97223
Seth	McCloud	Portland	OR	97233
Sarah	Teubner	Portland	OR	97212
Zephyr	Moore	beav	OR	97005

Kris	Lee	Harvard	IL	60033
Barbara	Covelli	Tinley Park	IL	60477
Biff	Thiele	Glenview	IL	60025
Jude	Rodriguez	Chicago	IL	60618
Laura	Prendergast	Gurnee	IL	60031
Arlene	Zapata	Skokie	IL	60077
Shirley	Garmon	GLEN ELLYN	IL	60137
Lee	Johnson	Grant Park	IL	60940
KJ	Dowds	Chicago	IL	60625
Earl	Shumaker	Sycamore	IL	60178
Janis	Turek	Chicago	IL	60641
Abigail	Dean	Chicago	IL	60641
Lori	Domich	Elgin	IL	60120
David Turrubiartes	Sarai Martinez	Chicago	IL	60625
Elizabeth	Ogloza	North Barrington	IL	60010
Brian	Waak	Aurora	IL	60505
Rowena	Huser	Rantoul	IL	61866
Bret	Pritchett	South Elgin	IL	60177
Dean	Hill	Chicago	IL	60660
Jeffrey	Sandler	chicago	IL	60618
Janusz	Maka	CHICAGO	IL	60630
Sabrina	Fleming	Plainfield	IL	60585
veronica	murillo	Chicago	IL	60632
Sam	Marconi	Shorewood	IL	60404
Beth	Raynis	Naperville	IL	60565
David	Wend	Arlington Heights	IL	60004
Tess	Hinshaw	Normal	IL	61761
Dorothy	Hynous	Park Ridge	IL	60068
Marsha	Clesceri	Prospect Heights	IL	60070
Adina	Kwas	Chicago	IL	60642
Saul	Aguirre	Chicago	IL	60622
Phil	Young	Woodridge	IL	60517
Judith	Roth	Chicago	IL	60613
Annette	Raatz	Chicago	IL	60618
Karl	Weinrauch	Highwood	IL	60040
Lori	Siensa	Oglesby	IL	61348
Gerardo	Galan	Chicago	IL	60608
Scott	Kampas	Pekin	IL	61554
Susan	Plack	Brimfield	IL	61517
Howard	Stein	Chicago	IL	60615
Janette	Hansen	Chicago	IL	60615
jeffrey	kammes	Harvard	IL	60033
Justin	brinkerhoff	La Grange Park	IL	60526
Travis	Huber	Shelbyville	IL	62565
Peter	Eriksson	Chicago	IL	60625
Dan	Owen	Carbondale	IL	62903
Linda	Shore	Chicago	IL	60630
Linda	Murphy	Chicago	IL	60633
Sandra	Snyder	Perth	IL	61101

j.	whittun	Portland	OR	97218
Zephyr	Moore	beaverton	OR	97005
Kay	Minkler	Brookings	OR	97415
Nicole	Damico	Portland	OR	97206
Danny	Hull	Kfalls	OR	97601
Sharon		Salem	OR	97306
Aurora	Griffin	Irrigon	OR	97844
Jessica	Jones	portland	OR	97219
Juanita	Sanderson	waldport	OR	97394
Russ	Phillips	corvallis	OR	97333
Jennifer	Wanslow	Portland	OR	97215
Kevin	Spelts	Albany	OR	97322
Dan	Spiegle	PORTLAND	OR	97213
Sarai	St Julien	Portland	OR	97222
Monica	Gilman	Estacada	OR	97023
Jamie	Meyer	Portland	OR	97211
Karma	Hurworth	Bend	OR	97701
Shannon	Ansley	Portland	OR	97217
Laura	Weiss	Portland	OR	97214
John	Morris	Florence	OR	97439
Shawn	Purdy	Portland	OR	97202
Kathleen	Preuss	Tigard	OR	97224
Sandra	Schomberg	Corvallis	OR	97330
Joelle	Coudriou	beaverton	OR	97005
sufi	johnson	Wilsonville	OR	97070
kelly	tanguay	Bend	OR	97701
Julia	Walls	Portland	OR	97215
F	Mason	Portland	OR	97221
Victoria	Nautel	Portland	OR	97220
Nancy	O'Fraley	Eugene	OR	97404
Charlotte	Sahnow	Eugene	OR	97408
Robina	Ingram-Rich	Lake Oswego	OR	97034
Michael	Helwig	Gresham	OR	97080
Kathleen	Preuss	Tigard	OR	97224
Jason	Goldenrose	Eugene	OR	97402
karen	DeBraal	Springfield	OR	97477
Keith	Woelbing	Eugene	OR	97405
Kathleen	Taylor	Ashland	OR	97520
Apri	Theod	Milwaukie	OR	97267
Erica	Wright	Portland	OR	97225
William	Morris	Bend	OR	97701
Brad	Lerch	Eugene	OR	97405
J	Roberts	portland	OR	97220
Dorothy	Louis	Corvallis	OR	97333
Mary	Saunders	Portland	OR	97212
Carol	Friendly	Beaverton	OR	97008
Blaine	Simpson	Tualatin	OR	97062
Lisa	Erkert	Eugene	OR	97404
Lorna	Perry	Portland	OR	97206

Siggi	Conroy	Lombard	IL	60148
A	Cook	Bloomingdale	IL	60108
Jonathan	Lavan	Berwyn	IL	60402
Jose Luis	Aguilar Carbajal	Chicago	IL	60609
Hugo	Negron	Bartlett	IL	60103
cheryl	Francis	cobden	IL	62920
Jo-Ann	Ledger	Bolingbrook	IL	60440
Todd	Fletcher	Mundelein	IL	60060
Kevin	Donnelli	Rockford	IL	61114
Michelle	Lenz	Aurora	IL	60502
David	Boettcher	Mokena	IL	60448
Andrew	Sledd	Chicago	IL	60643
Elenita	Hinds	Libertyville	IL	60048
Sarah	Jost	Chicago	IL	60652
Diane	Libman	chicago	IL	60626
Deanna	Hotchner	Barrington	IL	60010
Sean	Burns	Montgomery	IL	60538
Sharon	Wakefield	Geneva	IL	60134
Constance	Van Beek	Homewood	IL	60430
Constance	Van Beek	Homewood	IL	60430
Leslie	Babson	Morris	IL	60450
Margaret	Surmiak	Plainfield	IL	60586
Natasha	Pavlov	Chicago	IL	60626
Beth	Braun	Chicago	IL	60640
Katherine	Aynilian	Libertyville	IL	60048
Pam	Carlson	glen ellyn	IL	60137
Sarah	Sally	Havana	IL	62644
Frank	McCarthy	oak brook	IL	60523
Emily	Flores	Chicago	IL	60601
Patrick	Murphy	Frankfort	IL	60423
Tim	Loos	Schaumburg	IL	60194
Pamela	McCann	Chicago	IL	60657
Misty	Schultheis	Chana	IL	61015
Claudette	Tooley	Paw Paw	IL	61353
Suzette	Castillo	Naperville	IL	60540
Lisa	Barker	Springfield	IL	62703
Dena		Chicago	IL	60618
Jennifer	Meade	Naperville	IL	60540
Carol	Shepard	Cobden	IL	62920
Patrick	Pierce	Mchenry	IL	60050
James	Foley	Chicago	IL	60640
Loretta	Brown	Antioch	IL	60002
Sexangary	Johnson	Belvidere	IL	61008
Megan	Warren	Normal	IL	61761
anna	GARETTO	South Holland	IL	60473
Jeff	Parker	Belleville	IL	62221
Corrie	McTigue	Chicago	IL	60613
Alexander	Benjamin	Chicago	IL	60660
Rehana	Farooqi	Darien	IL	60561

Buddy	Bercu	Portland	OR	97214
Bryce	Kass	Portland	OR	97214
Willow	Savage	Seaside	OR	97138
Marc	Grawunder	Westerkappeln	ot	49492
Penny	Ordway	Ardmore	PA	19003
Lauren	Verruni	Mount Pleasant Mi	PA	17853
Eddie	Jennings	EXTON	PA	19341
Cindy	Walton	Lansdowne	PA	19050
Elizabeth	Solin	haverford	PA	19041
Cathy	Kilanowski	Erie	PA	16504
Keely		pittsburgh	PA	15237
Ashley	Ray	philadelphia	PA	19152
Reza	Daugherty	Havertown	PA	19083
christine	zmuek	Collegeville	PA	19426
Jennifer	Krencs	Whitehall	PA	18052
Brian	Krugle	Arnold	PA	15068
William	Marella	Malvern	PA	19355
		Pittsburgh	PA	15218
Ellen	Fitzpatrick	Phoenixville	PA	19460
Sheryl	Martinetti	Freeport	PA	16229
Kim	Jessum	philadelphia	PA	19103
David	Christiansen	Mechanicsville	PA	18934
Dora	Magovern	PIttsburgh	PA	15206
Colin	McK	Steelton	PA	17113
Carol	Gisselquist	Hershey	PA	17033
Dirk	Bahmann	johannesburg	PA	16851
Irene	Hathout	Marousi	PA	15126
Gabrielle	Hase	Holicong	PA	18928
Jessica	Frisco	Philadelphia	PA	19147
Robert	Gibb	Homestead	PA	15120
Daniel	Reschke	Malvern	PA	19355
Leslie	Patrick	Mifflinburg	PA	17844
Cynthia	Miller	transfer	PA	16154
ruth	kapo	allentown	PA	18109
Barry	Deist	Chambersburg	PA	17201
Donald	Meserole	Wrightsville	PA	17368
Dan	Delduco	Cochranville	PA	19330
Laurie	Mielo	Clarks Summit	PA	18411
Garry	Chick	Port Matilda	PA	16870
Suesie	Hartman	Bowmansville	PA	17507
Ana Laura	Zuniga Gonzalez	Twin Rocks	PA	15960
Cindy	Arblaster	greensburg	PA	15601
Russ	Allen	Jenkintown	PA	19046
Denise	Bruno	Canonsburg	PA	15317
Bj	Novack	Easton	PA	18042
Sara	Phillips	Finleyville	PA	15332
Rev	Cherry	Pittsburgh	PA	15224
Janet	DiPiero	Huntingdon Valley	PA	19006
Leslie	Roessler	Bethlehem	PA	18017

Jerry	Arnolts	lexington	IL	61753
Charles W.	Lynch	Shorewood	IL	60404
susan	hathcock	McHenry	IL	60050
Sandi	Crist	east moline	IL	61244
Maja	Hranisavljevic	Arlington Heights	IL	60004
Danette	Sierzega	Midlothian	IL	60445
Alicia	Smith	Pittsfield	IL	62363
melody	woods	chicago	IL	60660
Joyce	S	East Alton	IL	62024
Susan	Johnson	Northbrook	IL	60062
Sarah	allen	Streator	IL	61364
Shane	Nodurft	Chicago	IL	60641
Carol	McCarthy	Schaumburg	IL	60194
Ben	Andersson	My Hometown	IL	60601
Heidi	Bresilge	Plano	IL	60545
William	linz	Roselle	IL	60172
Victoria	Ebeling	Chicago	IL	60610
Ann	R.	Quincy	IL	62301
Carol	Skowronnek	Streamwood	IL	60107
Cynthia	Buczkowske	Willow Springs	IL	60480
Brenda	Arity	Washington	IL	61571
Karen	Stramaglio	elk grove village	IL	60007
Julie	Peters	Mount Prospect	IL	60056
Jean	White	Bensenville	IL	60106
Chirag	Patel	Chicago	IL	60625
Roseanne	Yerges	Woodridge	IL	60517
Jim	Hatcher	lindenhurat	IL	60046
Rosa	Vogt	Caseyville	IL	62232
Mary	Edwards	Coal Valley	IL	61240
Keith	Hargrove	Glen Carbon	IL	62034
Anna	Bonick	Orland Park	IL	60462
Molly	Schafer	Chicago	IL	60625
Jaclyn	olson	West Dundee	IL	60118
Kathryn	Bradford	Evanston	IL	60202
Suzanne	Zuercher	Chicago	IL	60645
Silvia	Trejo	Chicago	IL	60608
Carole	Spencer	georgetown	IL	61846
Cynthia	Swanson	Lake In The Hills	IL	60156
Carol		Naperville	IL	60565
Corinne	Svalmark	Chicago	IL	60634
Ben	Murray	Edmonton	IL	60934
Jack	Faber	Tel Aviv-Jaffa	IL	61080
Jonathan	Brown	Wood River	IL	62095
Nicole		chicago	IL	60614
John	Hemmer	Hoffman Estates	IL	60192
Todd	Fiducci	Rockford	IL	61108
Michael		Wheaton	IL	60189
Liz	Szabo	mchenry	IL	60051
Michael	Bakunas	Chicago	IL	60634
Sara	Halkett	sellersville	PA	18960
Christian	Cipollini	Jeannette	PA	15644
melissa	miller	BRIARCLIFF	PA	19036
Sigmund	Finman	Canonsburg	PA	15317
Jennifer	Bellano	Glenolden	PA	19036
Michele	Conkel	Pittsburgh	PA	15237
James	Steele	Portland	PA	18351
James	Kelvington	Erie	PA	16506
Tim	Herman	Lewisburg	PA	17837
Harry	Wolfgang	Mount Carmel	PA	17851
Frederick	Blessing	Reading	PA	19606
Denise	Trosky	ALLEGHENY	PA	15212
Byron	Metz	new castle	PA	16102
Laura	Kownacki	Mechanicsburg	PA	17055
Carol	Smallwood	Wallingford	PA	19086
Margaret	Leardi	West Grove	PA	19390
Bernadette	Miller	Reading	PA	19604
George	Stradtman	Elkins Park	PA	19027
Russell	Jackson	Allentown	PA	18102
Margaret	Spinozzi	trappe	PA	19426
Cheryl	Sorrentino	Glassport	PA	15045
Dean	Chia	Devon	PA	19333
Dawn	Steelman	Lancaster	PA	17603
Claudette	Kulkarni	Pittsburgh	PA	15206
Josh	Hantman	phila	PA	19119
Audrey	Moskowitz	Philadelphia	PA	19103
Robyn	Walters	Milford	PA	18337
Michael	McGinley	Philadelphia	PA	19103
Barry	Werber	Pittsburgh	PA	15201
Lewis	Thayer	west chester	PA	19380
Lin	Hammerschmidtj	havertown	PA	19083
Eloise	Laskowski	Halifax	PA	17032
Kathy	Kettlety	Downingtown	PA	19335
Linda	Schmidt	Gibsonia	PA	15044
Pat	Toner	Philadelphia	PA	
Edward		dallastown	PA	17313
Mary	Moore	Philadelphia	PA	19103
Elisabeth	PeÃ±alver	Santa Fe	PA	18320
Mads	Odgaard	Frederiksberg C	PA	19255
D John	Woodcock	West Chester	PA	19382
Norma	Dupire	Pittsburgh	PA	15224
Margaret	Hassett	Philadelphia	PA	19152
James	Marden	Lemont	PA	16851
Debbie	Cieplinski	Reading	PA	19606
Harry	Penn	upper black eddy	PA	18972
Gayle	A'Harrah	Doylestown	PA	18901
BILL	REVIELLO	old forge	PA	18518
T	Hummell	Bethlehem	PA	18020
Vivian	Schatz	Philadelphia	PA	19119

Robert	Pancner	Darien	IL	60561
Pamela	Pluta	Chicago	IL	60639
Vets	Cacorros	Chicago	IL	60601
Zoyla	Scoria	chicago	IL	60601
Henry	Koral	Chicago	IL	60632
James	Hadac	Brookfield	IL	60513
MaryLou	Carroll	chicago,	IL	60660
Fran	Nohling	geneva	IL	60134
George	Mari	Vernon Hills	IL	60061
Judy	Johnsen	Chicago	IL	60625
Linda	Imel	Jerseyville	IL	62052
Suzanne	Mace	Park Ridge	IL	
Jim	Tanner	Northbrook	IL	60062
Barrett	Goldflies	Chicago	IL	60630
Glenn	Knoblock	Joliet	IL	60436
Sarah	Williams	Chicago	IL	60614
Alicia	Svarkonis	Aurora	IL	60504
Jennifer	Vogt	O Fallon	IL	62269
Sarah	Blumenstein	Lake forest	IL	60045
shannon	lusk	bloomington	IL	61701
Linda	Thompson	Oswego	IL	60543
Rhys	macLean	Chicago	IL	60654
Tanya-Kroetz-Aguirre		Chicago	IL	60612
Toni	Apicelli	Chicago	IL	60625
Bonnie	Goins	Aurora	IL	60503
Amber		Greenwood	IN	46142
Linda	Cooley	Indianapolis	IN	46201
Jena	Dennis	lebanon	IN	46052
Julie	North	Indianapolis	IN	46237
Wendy	Little	South Bend	IN	46637
Marcay	Dickens	Goshen	IN	46526
Patti	Guzowski	South Bend	IN	46619
Paula	Auler	Greenfield	IN	46140
Sophia	Stratton	Gary	IN	46403
Sue	Loesch-Fries	West Lafayette	IN	47906
Alana	Bauman	DeMotte	IN	46310
Kirsten	Bunner	Richmond	IN	47374
Anna	Martin	South Bend	IN	46628
Jack	Saylor	South Bend	IN	46614
John V	Vaisvil	Kokomo	IN	46902
Theresa	Belcher	Wilkinson	IN	46186
Judith	Beltz	La Porte	IN	46350
Teresa	Pheral	Paris Crossing	IN	47270
Dawn	Maeder	Brazil	IN	47834
Rotraut	Lippke	Plymouth	IN	46563
Janice	Dollive	Fort Wayne	IN	46814
David	Krueger	Bloomington	IN	47401
Sarah	Wehrwein	Ft. Wayne	IN	46835
Melanie	Lollar	Lafayette	IN	47901
Dina	Rosenblum	Media	PA	19063
Miyako	Zeng	Palmerton	PA	18071
Kristi	Katuran	Philadelphia	PA	19111
Mark	Storch	Downingtown	PA	19335
Richard	Koontz	Burgettstown	PA	15021
Pat	Beaman	Easton	PA	18042
Kelly	Morgan	Philadelphia	PA	19128
Barbara	Simonds	Chadds Ford	PA	19317
Joanne	Tushinski	Nanticoke	PA	18634
Cindy	Tancredi	Shenandoah	PA	17976
Grace	Bergin	Du Bois	PA	15801
Neil	Brown	Allentown	PA	18104
Hollis	Zelinsky	State College	PA	16801
Steve	Hockley	Pittsburgh	PA	15206
Priscilla	Ferrater-Mora	Villanova	PA	19085
Thomas	Faust	Philadelphia	PA	19147
Wayne	Almond	Morrisville	PA	19067
Ellen	Bechtel	Shermans Dale	PA	17090
Barbara	Nardone	Wynnewood	PA	19096
Donald	Stone	Mountain Top	PA	18707
Susan	Shaak	Reading	PA	19606
DANIELLE	Skiendzielewski	PHILADELPHIA	PA	19111
Lauren	Mitchell	Pittsburgh	PA	15237
Graciela	CÃ¡ceres	Buenos Aires	PA	17081
Beth	Lawhead	JOHNSTOWN	PA	15906
Martha	de Frias	Philadelphia	PA	19141
eileen	Goodman	Wyncote	PA	19095
George	Guida	Honesdale	PA	18431
Chris	Zumas	Bethlehem	PA	18017
Lynn	Manheim	Factoryville	PA	18419
Peggy	Kershner	Catawissa	PA	17820
Leonard	Hollinger	New Holland	PA	17557
Mark and Judy	Harvey	Great Bend	PA	18821
Deb	Welter	Malvern	PA	19355
Jay	Erb	Pottstown	PA	19465
Jason	Bardwell	Greencastle	PA	17225
M.Jean	Gavin	Phila.	PA	19111
Faith	Boyer	Seven Valleys	PA	17360
Carter	Rosemond	Malvern	PA	19355
Terry	Elliott	Wysox	PA	18854
Sofia	Karvouna	Saint Benedict	PA	15773
Gina	Gallo	Mrietta	PA	17547
Sarah	Tice	Drexel Hill	PA	19026
Julie	Perco	Bryn Mawr	PA	19010
Stephen	Spry	Quakertown	PA	18951
Tabitha	Vereen	Pittsburgh	PA	15213
Gina	Kellett	Avoca	PA	18641
Catherine	Young	Stroudsburg	PA	18360
Linda	Kilby	PHILADELPHIA	PA	19151

Stefano	Serpico	RIMINI	IN	47921
Sandra	Garner	Noblesville	IN	46062
Chase	Christy	Carmel	IN	46032
Don	Schapker	notre dame	IN	46556
Paul	Smith	Unionville	IN	47468
Connie	Moreno	Merrillville	IN	46410
Sally	Parker	Glastonbury	IN	73412
Jon	Macy	Bloomington	IN	47401
James	Wilson	Monticello	IN	47960
Nancy	Newton	Bloomington	IN	47401
Clement	Cherlin	Columbus	IN	47201
I	Reinumagi	Indianapolis	IN	46202
Erik	Hitchcock	Bloomington	IN	47403
Ashley	Williams	Kokomo	IN	46901
robert	hughes	indianapolis	IN	46227
Shari	WoodruffShariW	Middlebury	IN	46540
Terri	Oak	Scottsburg	IN	47170
Smita	Skrivanek	Indianapolis	IN	46234
Theodore	Yost	Goshen	IN	46528
Christina	Myers	Indianapolis	IN	46219
Beth	Boomershine	Roanoke	IN	46783
Tanya	Wilson	Decatur	IN	46733
Vanessa	Plantz	highand	IN	46322
Barbara	Parker	Linton	IN	47441
Jeremy	Eisenhut	Bluffton	IN	46714
Kelly	slavich	Columbia City	IN	46725
Judy	Everett	Indianapolis	IN	46219
Jill	Bennett	Elwood	IN	46036
Ande	Kobek	INDIANAPOLIS	IN	46230
Virginia	Poston	Evansville	IN	47712
Gloria	Moore	Shelbyville	IN	46176
Hallie	Selig	Huntington	IN	46750
Betsy	Ridge	WHITESTOWN	IN	46075
John	Pierre	Evansville	IN	47720
Dale	La Cognata	Fishers	IN	46038
Jesse	Kirkham	Danville	IN	46122
roz	hall	hebron	IN	46341
Jessica	Johnson	Gary	IN	46408
Sharon	Smith	Evansville	IN	47710
Stanka	Gavrilo	munster	IN	46321
Joyce	Levy	Zionsville	IN	46077
Lynda	Stewart	Avon	IN	46123
Justine	Van Ostran	West Lafayette	IN	47906
Rene	Rezvan	Bloomington	IN	47404
Becky	Graves	Craigville	IN	46731
Ed	Fry	Richmond	IN	47374
Robert	Bruce	Greencastle	IN	46135
Sharon	Teagardin	Indianapolis	IN	46225
Venus	Chaffins	Indianapolis	IN	46237

Judith	Fordham	Coburn	PA	16832
Lisa	Ryder	Kennett Square	PA	19348
Alicia	Mishinski	harrisburg	PA	17112
Lois	Hluhan	Eighty Four	PA	15330
Patricia	Kowal	Arnold	PA	15068
Tina	Herzog	Slatington	PA	18080
Mike	Smith	Shippensburg	PA	17257
Ellen	Smith	Havertown	PA	19083
Scott	Elkins	Huntingdon Valley	PA	19006
W	Stover	Chambersburg	PA	17201
Dawn	Ravaschio	McAdoo	PA	18237
Heather	Koch	Bath	PA	18014
Barbara	Ives	Conshohocken	PA	19428
Julia	Wellman	Hanover	PA	17331
Paul G + Ana M-	Shane	Philadelphia	PA	19144
Colin	Coppola	Chester Springs	PA	19425
Gail	Gillespie	Pittsburgh	PA	15235
James	Vidt	Pittsburgh	PA	15234
Judith	Ryan	Trout Run	PA	17771
Dorothy	Maurer	Blue Bell	PA	19422
Mary	Huhn	Berwyn	PA	19312
Shirley	Madison	New Providence	PA	17560
Linda	Snyder	levittown	PA	19055
Rebecca and Rick	Maxwell	Pottstown	PA	19464
Emily	Todd	Wayne	PA	19087
Sandra	Crowson	Brownsville	PA	15417
Darlene	Zagata	Brownsville	PA	15417
Jason	Driesbaugh	Philadelphia	PA	19147
Marie	GRIFFITH	HUNLOCK CREEK	PA	18621
Leslie	Alexander	Glenside	PA	19038
JoDee	LaCasse	Mount Bethel	PA	18343
Mary	Daub	Williamstown	PA	17098
Boris	Dirnbach	Philadelphia	PA	19151
Janet	Samuel	Philadelphia	PA	19130
Danielle	Josset	west chester	PA	19382
Judy	McAuley	Pittsburgh	PA	15202
Stacey	Macchia	Blakeslee	PA	18610
Sally	Farneth	Yardley	PA	19067
Ann	Millan	Dunmore	PA	18512
Jennifer	Roberts	Breinigsville	PA	18031
Irene	Fisher	Shrewsbury	PA	17361
Debra	Istvanik-Strotman	Monongahela	PA	15063
Rick	Miller	Easton	PA	18045
James	Kaliss	Wyndmoor	PA	19038
Susan	Moore	Gettysburg	PA	17325
Ashley	Keefer	Palmyra	PA	17078
Tammy	Mitchem	York	PA	17406
Jo	Weiss	Radnor	PA	19087
Gabrielle	Weiss	Radnor	PA	19087

Sean	Yates	Liberty	IN	47353
Sean	Griffith	Centerville	IN	47330
Teresa	Koschmeder	Lawrenceburg	IN	47025
Ramon	Tamaran	Bloomingtin	IN	47401
Patricia	Fleetwood	Nashville	IN	47448
Cathy	Geltz	Indianapolis	IN	46220
Adrianna		Middlebury	IN	46540
jackie	johnston	fort wayne	IN	46808
Annette	McMullen	Vincennes	IN	47591
Mariah	Shepherd	Evansville	IN	47714
Kenneth	Towle	Rolling Prairie	IN	46371
Emily	Pollom	Georgetown	IN	47122
April	Allen	Fort Wayne	IN	46805
Megan	Beery	Larwill	IN	46764
Chris	Novak	Indianapolis	IN	46221
Daneyell	McPeak	Warsaw	IN	46580
Joshua	Allen	Kokomo	IN	46901
William	Miller	Gary	IN	46403
Harold	Johnsen	Hammond	IN	46324
Michelle	Bowen	Wichita	KS	67203
Katelyn	Nill	Lenexa	KS	66220
Mary	Ax	Roeland Park	KS	66205
Jeanne	Layport	Topeka	KS	66607
Cheryl	Boyes	Wichita	KS	67207
Jason	Horine	PRAIRIE VILLAGE	KS	66208
Suzanne	Hayes	Overland Park	KS	66209
Martha	Conradt	Leawood	KS	66206
Ty		Topeka	KS	66604
Helen	Woerner	Lyndon	KS	66451
Jeanie	Schiefelbusch	Prairie Village	KS	66208
Frances	Rove	Prairie Village	KS	66208
Mary	Elrod	Kansas City	KS	66109
Kathe	Garbrick	Manhattan	KS	66503
Kimberly	Bedient	Topeka	KS	66608
Dana	Nigro	Overland Park	KS	66202
Kathie	Rasmussen	Lawrence	KS	66046
Georgia	Briery	Norton	KS	67654
Erin	Robertson	Wichita	KS	67203
karla	walters	el dorado	KS	67042
Amy	Billings	Olathe	KS	66061
Ardis	Pierron	Spring Hill	KS	66083
Genie	Borrelli	Assaria	KS	67416
Berl	Oakley	Lawrence	KS	66049
Karen	Martellaro	Lenexa	KS	66215
Nick	Hoppes	Wichita	KS	67203
Kim	Kastilahn	Shawnee	KS	66226
Jeffery	Bednarz	Wells	KS	67467
Lynn	Winchester	Lawrence	KS	66044
Jane	Wemhoener	Columbus	KS	66725
Walter	Berrie	trainer	PA	19061
Kevin	Montanaro	Philadelphia	PA	19149
tom	clark	Abington	PA	19001
CA	Dinsmore	Pittsburgh	PA	15217
Trace	Brumbaugh	Brackenridge	PA	15014
Robin	Daniels	Ambler	PA	19002
Christine	Olick	Dunmore	PA	18510
Irene	Stewart	Savona	PA	18098
Emma	Medina-Castrejon	Aldan	PA	19018
Nancy	Jadis	E. Stroudsburg	PA	18301
Debbie	Clerke	Lititz	PA	17543
Steve	Nicholas	Philadelphia	PA	19150
Michael	Griffin	Morgantown	PA	19543
Valerie	Glauser	Philadelphia	PA	19119
Dan	Sherman	Boyertown	PA	19512
Serena	Schodt	Erie	PA	16507
Patricia	Guthrie	Chalfont	PA	18914
Gary	Kirkpatrick	Bloomsburg	PA	17815
Tom	Vafias	Lancaster	PA	17603
Troy		Bethlehem	PA	18020
Beverly	Ibanez	Tyrone	PA	16686
Susan	Messenger	waterford	PA	16441
Julie		West Chester	PA	19380
H	Stamatacos	greencastle	PA	17225
Dave	Benner	Freeburg	PA	17827
Barry	Pasicznyk	Philadelphia	PA	19130
Cheri	Anderton-Yarnell	franklin	PA	16323
Jeannine	Filia	North Versailles	PA	15137
Danielle	Leon	Saylorsburg	PA	18353
Susan	Yot	Dillsburg	PA	17019
Susan	Small	Green Lane	PA	18054
Joann	Hunter	Vandergrift	PA	15690
Nicole	Naab	Pittsburgh	PA	15213
Michael	Bratsis	Wallingford	PA	19086
S	Das	ft wash	PA	19034
Roger	Horn	Clarion	PA	16214
David	Paup	Fallentimber	PA	16639
JoAnn	Pochciol	Ligonier	PA	15658
Brenda	Marshall	Bloomsburg	PA	17815
Nicolette	Pocius	Factoryville	PA	18419
Kathy	Orloski	Pittsburgh	PA	15239
Katherine	DeAngelis	Philadelphia	PA	19147
Bree	Gregor	Philadelphia	PA	19114
K	Nichols	Levittown	PA	19057
Ali	Haines	nottingham	PA	19108
Catherine	Mishler	Johnstown	PA	15905
Marsha	Hersh	Allentown	PA	18103
Rosemary	Murray	Royersford	PA	19468
brion	vallone	Hellertown	PA	18055

Larry	Morton	Kingman	KS	67068
Adele	Galloway	Winfield	KS	67156
Simone	Fisher	EASTBOROUGH	KS	67206
Terry	Percival	Topeka	KS	66614
Pam	Botts	Lawrence	KS	66044
Kathryn	Parke	Pittsburg	KS	66762
Becky	Anderson	Haysville	KS	67060
Patty	Smith	Overland Park	KS	66207
Barbara	Grinter	Shawnee	KS	66216
Thomas	Parish	Manhattan	KS	66502
William	Fast	Ozawkie	KS	66070
Ronda	Styles	Salina	KS	67401
Cheryl	Grey	Kansas City	KS	66103
N	Spence	Overland Park	KS	66204
Amy	Christensen	Wichita	KS	67215
Saskia	Warren	Louisville	KY	40204
Pamela	Brandt	Simpsonville	KY	40067
Kimberlyn		Lexington	KY	40502
Kathryn	Cosse	Bellevue	KY	41073
Mary	Paolucci	Covington	KY	41011
Brooke	Miller	Louisville	KY	40206
CherylLynn	Cook	Lexington	KY	40511
lynn	cralle	louisville	KY	40222
Glenn	Hinson	Louisville	KY	40206
Tara		Vine Grove	KY	40175
J.B.	Johnson-Allen	Danville	KY	40422
Sherry	Hodskins	Philpot	KY	42366
James	Deep	Lebanon	KY	40033
Sammy	Cranmer	Boston	KY	40107
Emily	Mabee	Henderson	KY	42420
Sabrina	Mengoni	Newtown	KY	34456
Jim	Hickey	Lexington	KY	40517
Danielle	Stidham	Fort Wright	KY	41011
Larry	Hovekamp	Louisville	KY	40218
Raymond	Barry	Lexington	KY	40513
Bonnie	Avery	Louisville	KY	40207
Maddy	Rokosh	Prospect	KY	40059
Rummana	Khawaja	Lexington	KY	40509
Bruce	Phelps	Lexington	KY	40504
Don	Pratt	Lexington	KY	40502
April	Hardin	LEXINGTON	KY	40517
Ant	Kiser	Lexington	KY	40502
Melissa		Edgewood	KY	41017
John	Yeary	Middlesboro	KY	40965
James	Polhemus	Lexington	KY	40508
Mona	Khoury	Beirut	KY	40010
Rebecca	Gay	Louisville	KY	40205
Margaret	Munroe	Louisville	KY	40241
Karen	Pulliam	Frankfort	KY	40601
John	Hogan	erdenheim	PA	19038
Steven	Fordyce	Mertztown	PA	19539
Carolyn	Rentschler	Reading	PA	19607
Eileen	Shupak	Philadelphia	PA	19118
Alexander		Harrisburg	PA	17102
Linda	Groves	Harleysville	PA	19438
Jerry	jeffer	Stroudsburg	PA	18360
James	Knott	Rankin	PA	15104
Marie	Rago	Whitehall	PA	18052
David	Streck	Lancaster	PA	17602
Denise	Horning	Meyersdale	PA	15552
Alice	Schmid-miller	Connoquenessing	PA	16027
Howard	Davison	Mechanicsburg	PA	17050
Alexandra	Beautyman	Flourtown	PA	19031
Michael	Zuckerman	Philadelphia	PA	19104
Kurtis	Ferry	Irvine	PA	16329
juan luis	bores	valencia	PA	15005
Maria	Robles	Pittsbugh	PA	15206
Liz	Taylor	West Newton	PA	15089
Don B	Stewart	Reading	PA	19611
Andrew	Waber	Mary D	PA	17952
Liz	Capuano	Butler	PA	16002
Janelle		Villalba	PR	766
Paul	Cordero	San Juan	PR	936
Gabriela	Valentin	Canovanas	PR	729
Samir		syria	PR	963
Maria	del Cortijo	San Juan	PR	919
Awilda	Molina	Jayuya	PR	664
Jennifer	Caswell	Newport	RI	2840
Mary	Bryson	Lincoln	RI	2865
Brittany	Pereira	Providence	RI	2912
Robert	Garzillo	Providence	RI	2906
Jonny	Rely	Newport	RI	2840
Alycia	Metz	North Kingstown	RI	2852
Marge	Mullen	BARRINGTON	RI	2806
Frances	Carpenter	Providence	RI	2903
Lisa	Maloney	Providence	RI	2906
Christine	Schiller	Foster	RI	2825
Carole		Peace Dale	RI	2883
Daniela	Holmes	Dinslaken	RI	46535
Lynn	Furney	North Scituate	RI	2857
Noel-Anne	Brennan	Peace Dale	RI	2879
Geoff	Giovan	Charlestown	RI	2813
Claudia	Dominguez	Almada	RI	2825
Sandra	Gallagher	providence	RI	2909
Jacqueline	Brum	East Greenwich	RI	2818
David	Menard	Maplevile	RI	2839
Granis	Stewart	Charlestown	RI	2813
Jehnn	Dean	BRISTOL	RI	2809

David	Collins	Louisville	KY	40207
Laura	Plato	Lexington	KY	40511
Lisa	Murphy	Dry Ridge	KY	41035
Anna	Sandlin	Keavy	KY	40737
Peggy	B	Louisville	KY	40272
Erin	Raabe	Alvaton	KY	42122
Janet	McIntosh	Jackson	KY	41339
Taylor		Mount Sterling	KY	40353
David M.	Wimsatt	Louisville	KY	40291
Glen	Merrett	Killarney Vale	KY	2261
Robert	Mitchell	Lexington	KY	40502
Leilani	Wray	Shreveport	LA	71105
Loretta	Brogan	Shreveport	LA	71104
Patricia	Assreuy	Brasilia	LA	70736
Terry	Wilde	Ponchatoula	LA	70454
Shirley	Butler	New Orleans	LA	70118
Mia	Oramous	New Orleans	LA	70118
Frances	Kelley	Shreveport	LA	71104
Eric	Bajon	New Orleans	LA	70124
Chris	Smith	New Orleans	LA	70118
Sandra	Marciante	Gretna	LA	70056
Logen	Pietraroia	Lafitte	LA	70067
Damon	Franke	New Orleans	LA	70115
Matthew	Horney	Mandeville	LA	70471
Vera	Taylor	Baton Rouge	LA	70805
A	Lehmann	New Orleans	LA	70116
Mary	Hughes	Shreveport	LA	71104
Donna	Hyndman	New Orleans	LA	70118
Ryan	Nguyen	Port Allen	LA	70767
Pamela	Shaw	Metairie	LA	70003
John	Sevenair	Jefferson	LA	70121
Penelope	Dane	Baton Rouge	LA	70806
jim	crochet	Schriever	LA	70395
S	Rainey	Terrytown	LA	70056
Peggy	Sherwood	Luling	LA	70070
Derlin	Gerard	Slidell	LA	70458
d	marino	Metairie	LA	70003
valerie	spence	Vidalia	LA	71373
Matthew	Hinton	New Orleans	LA	70123
Sandra	Olson	Gretna	LA	70056
Pearl	DeFreese	Ruston	LA	71270
Andrea		Belle Chasse	LA	70037
Terri	Olson	Bourg	LA	70343
Carrie	Manore	New Orleans	LA	70115
Mike	Doughty	Welshpool	LA	0
Lewis	Ratliff	New Orleans	LA	70127
Rachel	Kling	LEXINGTON	MA	2420
Jorie	Heilman	Lexington	MA	2420
chris	mehl	hyde park	MA	2136
Nancy	Dean	Wakefield	RI	2879
Barbara	Westlake	Barrington	RI	2806
Sherrill	wright	Cranston	RI	2910
Kristina	Fournier	Pawtucket	RI	2860
Christine	Cassidy	Newport	RI	2840
Stephanie	Mason	Middletown	RI	2842
Anna		Johnston	RI	2919
Deborah	Catone	Wakefield	RI	2879
Denise	Melucci	Foster	RI	2825
Sen	manchester	providence	RI	2908
Rebecca	Connors	N Kingstown	RI	2852
Jan	Heald	Melbourne	RI	37960
Sara	Pemberton	Summerville	SC	29485
MF	Kite	Charleston	SC	29464
Abikeyla	Nascimento	SÃ£o Paulo	SC	29915
Carol	Moloney	Reevesville	SC	29471
Marybeth	Vanpelt	Seneca	SC	29678
Alberto	Brando	Walhalla	SC	29691
Jon	Ferraro	Bennettsville	SC	29512
Natasha	jovanovic	belgrade	SC	11000
Adrianna	Aylard	Columbia	SC	29205
Gerrie	Rousseau	Beaufort	SC	29907
Caroline	Donaghy	Beaufort	SC	29902
Ian	Stier	Hilton Head	SC	29926
Christopher	Galton	Myrtle Beach	SC	29588
Alfredo	Temelini	Mount Pleasant	SC	29466
Laura	Blanchette	Aiken	SC	29801
James	Pierson	Charleston	SC	29412
Latrice	Douglas	Rock Hill	SC	29730
Tracy	Nichol	Rock Hill	SC	29730
William	Cross	York	SC	29745
NoÃ«lle	Evans	Charleston	SC	29401
claudia	ferreira	Myrtle Beach	SC	29579
Lynn	Martin	Beaufort	SC	29907
Amanda	Castello	Bettola	SC	29021
Dava	Smith	York	SC	29745
Nancy	Dougherty	MYRTLE BEACH	SC	29587
Fred	Phillips	Mount Pleasant	SC	29464
Chris		central	SC	29630
Mike	Mims	Saint Matthews	SC	29135
Elizabeth	Vogt	Clemson	SC	29631
Robert	McKinnon Junior	Goose Creek	SC	29445
Teresa	Lockey	Laurens	SC	29360
Joan	Brooks	Myrtle Beach	SC	29579
Katie	Durham	greenville	SC	29613
Dana	Sharbrough	Charleston	SC	29407
Crystal	Smith-Connelly	Charleston	SC	29412
William	Adam, Ph.D.	N. Augusta	SC	29841
Sara	Hale	Blythewood	SC	29016

Jennifer	Vallone	medford	MA	2155
Wojciech	Rowinski	Easthampton	MA	1027
steve	notavailable	belmont	MA	2478
Pamela	Themelis	Lowell	MA	1850
Beth	Ross	south hamilton	MA	1982
Christine	Beaudin	Framingham	MA	1705
Ramona	Hart	Gloucester	MA	1930
Lin	Greer	Attleboro	MA	2703
Erin	Haugh	Hampden	MA	1036
Cathy	Coughin	Becket	MA	1223
Philip	Abrams	Lexington	MA	2420
Erica	Mancuso	East Longmeadow	MA	1028
Wendy	Golden	Cambridge	MA	2141
Corinne	Vanbegin	bruxelles	MA	1040
Cecelia	Levin	Boston	MA	2118
Jeffery	Kazukiewicz	Merrimac	MA	1860
Lisa	Townsend	Springfield	MA	1118
Rochelle	Chambless	Chelmsford	MA	1824
Scott	Sharland	Bridgewater	MA	2324
Joanne	Larsen	Lee	MA	1238
Susan	Donnelly	Boston	MA	2111
Cassandra	Zampini	Concord	MA	1742
Deborah	Potter	Newburyport	MA	1950
David	Holbrook	Boston	MA	2116
Kathleen	LePoer	Littleton	MA	1460
Peter	Fried	Brighton	MA	2135
Melissa	Malonson	Lowell	MA	1850
Richard	Lipton	Milton	MA	2186
Warren	Croce	Belmont	MA	2478
Mark	Fulone	Falmouth	MA	2540
Karen	Sadler	Wakefield	MA	1880
Matthew	Higgins	Methuen	MA	1844
Destiny	Page	Somerset	MA	2726
Gena	Reyes	East Boston	MA	2128
Lee Ann	Warner	Leverett	MA	1054
Anne	Nichols	boston	MA	2122
James	Lagomarsino	Hardwick	MA	1037
Janet	Kinahan	Yarmouthport	MA	2675
Pat	Benjamin	New Braintree	MA	1531
Candace	LeBlanc	Sutton	MA	1590
Herb	Patchell	natick	MA	1760
Cynthia	Lawton-Singer	westhampton	MA	1027
Andrea	Doukas	Brookline	MA	2446
Lorr	Dooley	Boston	MA	2125
Steven		Ashley falls	MA	1222
Ken	McKay	Springfield	MA	1104
Sandra	McLellan	Chelmsford	MA	1824
Karen	Sullivan	Lowell	MA	1851
Michael	Patten	Roslindale	MA	2131

Teresa	Nix	Greenville	SC	29607
Shane	Cassidy	Simpsonville	SC	29681
Jean	Whatley	greenwood	SC	29649
Michael	Kittrell	Mount Pleasant	SC	29464
dean	turner	travelers rest	SC	29690
Lydia	Dawes	North Charleston	SC	29405
Ashlee	Nilson	Vermillion	SD	57069
Michael	Chapman	Sioux Falls	SD	57104
Karolina	Bujak	Basel	SD	85695
Delores	Phillips	Jefferson	SD	57038
Claudio	Cajati	rosignano marittim	SD	57016
Pamela	Cibbarelli	Box Elder	SD	57719
Charles	Wirth	Hurley	SD	57036
Nicholette	Anand	Saskatoon	SD	12346
Thomas	Martin	Custer	SD	57730
Douglas	Koss	Box Elder	SD	57719
Gil	Johnson	Treadway	TN	37881
Perry	Chapdelaine	Brentwood	TN	37027
William	Brisolara	Memphis	TN	38111
amanda	irwin	Atoka	TN	38004
Martha	Emeson	Nashville	TN	37205
Tom	Wood	Memphis	TN	38111
Dana	Lowe	Rockvale	TN	37153
Rachel	Parsons	Johnson City	TN	37601
Rhonda	Cook	Nashville	TN	37209
Cheryl	Heinecke	Vonore	TN	37885
Edward	Hubbard	Nashville	TN	37212
Kate	Ionina	Vinnitsa	TN	42223
Mary	Fought	HERMITAGE	TN	37076
Dale	Flake	Jackson	TN	38301
Jo	Watters	Columbia	TN	38401
Janis	Hashe	Chattanooga	TN	37411
Jennie	Young	elizabethton	TN	37643
robert	lower	Memphis	TN	38127
Barbara	Lastovka	Dickson	TN	37055
Aashir	Awan	Nashville	TN	37212
Larry	Olivier	Chattanooga	TN	37405
Laurie	Brooks-Grado	Columbia	TN	38401
michael	splittgerber	knoxville	TN	37916
Marie-Therese	Frank	Vienna	TN	37917
Meghan	Von Colln	Nashville	TN	37216
Tammy	Hill	Memphis	TN	38112
Deborah	Fuson	Knoxville	TN	37919
Sara	Herrera	Blair Atholl, Perths	TN	38107
Lindsey	Gray	Lakeland	TN	38002
Becca	Turner	collierville	TN	38017
Sandra	Cline	Knoxville	TN	37918
Judy	Flanagan	Savannah	TN	38372
Marianne	Gurley	Knoxville	TN	37938

Richard	Hassinger	Newton	MA	2458
Brittany	Noonan	Barre	MA	1005
An	Sokolovska	Cambridge	MA	2238
Angela	Balk	Wellesley	MA	2482
Marcy	Gefter	Wayland	MA	1778
W.	Holup	Spencer	MA	1562
		Arlington	MA	2474
Greg	Schubert	Springfield	MA	1103
David	Walter	Roslindale	MA	2131
Walter	Phillips	Arlington	MA	2474
James	Lohman	Rockport	MA	1966
Lisa	Ruokis	Cambridge	MA	2141
Bisanne	Masoud	Waltham	MA	2451
Stephen	Carlin	south eaqston	MA	2375
Rachael	Hawkes	Amesbury	MA	1913
Michelle	Collar	North Attleboro	MA	2760
Robin	Bray	Edgartown	MA	2539
Igor	Givotovsky	Amesbury	MA	1913
Truus	van Broeke	Billerica	MA	1821
J	Teresko	Harvard	MA	1451
Harvey	Silver	Lexington	MA	2420
Daniele	Martarelli	roma	MA	1588
Lisa	Landsverk	Cambridge	MA	2138
Daniel		Watertown	MA	2472
Barbara	Wyly	Belmont	MA	2478
Laura	Troll	Buzzards Bay	MA	2532
William	Trombetta	Brookline	MA	2446
Brenda	Davies	amherst	MA	1002
Shelley	Hartz	Littleton	MA	1460
Lara	Miletta	Leominster	MA	1453
Susan	Mitchell	Quincy	MA	2171
Michelle	Kofler	South Deerfield	MA	1373
Annette	Bernard	Framingham	MA	1701
Nancy	Tremblay	Brookline	MA	2446
Raphael	wallace	Chelsea	MA	2150
Stacey	Prince	Upton	MA	1568
Kacy	Harnedy	Needham	MA	2494
Kenneth	Bozek	South Hadley	MA	1075
Michael	Gregory	Gloucester	MA	1930
Dea	Butcher	West Yarmouth	MA	2673
richard	edelman	Cambridge	MA	2140
David	Ruderman	Northampton	MA	1060
Marj	Nagle	Peabody	MA	1960
Alexandra	Dane	Ipswich	MA	1938
Nehemiah	Barshlomo	Quincy	MA	2169
Sandra	Green	Worcester	MA	1607
Maureen	McCarthy	Marblehead	MA	1945
ruth	lopriore	Grafton	MA	1519
Christine	Davis	somerville	MA	2145
Mary Nell	Bryan	Nashville	TN	37209
Marie	Moulton	Johnson City	TN	37604
Jennifer	Bilbro	Portland	TN	37148
Gina	Brandt	Murfreesboro	TN	37128
Eleanor	Phillips	Nashville	TN	37212
James	Rea	Brighton	TN	38011
Dorothy	Wessels	Smyrna	TN	37167
Rhonda	Sherry	Eagleville	TN	37060
Susan	Earl	Nashville	TN	37215
averie	kunz	Cordova	TN	38016
Chris	VanDerhoof	Murfreesboro	TN	37128
James	John	Nashville	TN	37218
Shelly	Kent	Nashville	TN	37214
Rachel	Sutton	murfreesboro	TN	37128
Mark	Mckee	Dyersburg	TN	38024
Michael	Larrivee	Memphis	TN	38104
Uriah	Phillips	Johnson City	TN	37601
Sonja	Reinecke	Braunschweig	TN	38104
Patti		lebanon	TN	37087
Lisa	barnes	Ridgely	TN	38080
Terra	Lovelace	franklin	TN	37064
Salli	Seyqour	Maryville	TN	37804
Adrienne	Miriani	Franklin	TN	37064
Sonja	Conatser	Jamestown	TN	38556
		Knoxville	TN	37917
Joanne	Burke	Nashville	TN	37216
Rachel	Avery	Clinton	TN	37716
Dorothy	Poole	Memphis	TN	38111
Sam	Reed	White Bluff	TN	37187
Marjorie	Steakley	Memphis	TN	38118
Claire	Levine	Memphis	TN	38120
Alison	Quinn	Lascassas	TN	37085
Marjorie	Garvey	Johnson City	TN	37601
Steve	Smail	Nashville	TN	37204
Kathryn	Quillen	Jonesborough	TN	37659
Kurt	Emmanuele	chattanooga	TN	37405
Matt	Cutts	greeneville	TN	37743
Al	Edward	Madison	TN	37115
Deborah	Simpkins	memphis	TN	38104
Madalena	Hutcheson	Portland	TN	37148
Alba	Sybesma	nevada	TX	30001
Courtney	Nelon	Fort Worth	TX	76116
Kayla	Leftwich	harlingen	TX	78550
Jessica	Martin	Friscoisd	TX	75035
Ellen	Welsh	IRVING	TX	75061
melissa	walter	Allen	TX	75002
Nida	Ahmed	Sugar Land	TX	77498
Maureen	Woods	Santa Fe	TX	77510
Donna	Noe	Magnolia	TX	77355

Eric	Parker	Boston	MA	2127
Devone	Tucker	Brockton	MA	2301
Thomas	Flittie	Amherst	MA	1002
Karen	Thaw	Boston	MA	2115
Martha	Leahy	winchester	MA	1890
David	Hinckley	Arlington	MA	2474
Brian	Moore	Northboro	MA	1532
sara	elkins	Northampton	MA	1060
Sally	Bermudes	Brewster	MA	2631
Suzanne	Kuffler	Woods Hole	MA	2543
Fred	Schultz	Winchester	MA	1890
Carol	Halberstadt	Newton	MA	2495
Alan	Nishman	Haydenville	MA	1039
Tina	Braga	hudson	MA	1749
Rob	Caplin	Arlington	MA	2474
richard	gilson	West Roxbury	MA	2132
Brian	Dimond	Taunton	MA	2780
Elizabeth	Grube	Haverhill	MA	1835
Jef	Weisel	pepperell	MA	1463
Nariman		Cambridge	MA	2139
Heather	Wells	North Attleboro	MA	2760
Josmanny	Horta	New Bedford	MA	2746
Nancy	Anderson	Pocasset	MA	2559
Peter		Cambridge	MA	2140
Michael	Dalesio	Milford	MA	1757
Patricia	Green	Huntington	MA	1050
Joanne	Mainiero	East Weymouth	MA	2189
Susan	Labandibar	South boston	MA	2127
Karen	Slyman	LUNENBURG	MA	1462
Kathleen	Cunningham	Jamaica Plain	MA	2130
Michele	Burke	Wilmington	MA	1887
theodore	fill	falmouth	MA	2540
Trina	Cysz	Belchertown	MA	1007
Eben	English	West Roxbury	MA	2132
Dennis	Rogers	Hubbardston	MA	1452
John	DeRose	Harvard	MA	1451
Colin	Ovitsky	Pittsfield	MA	1201
Sue	Porpora	Medford	MA	2155
Corinne	Spezeski	Florence	MA	1062
V	Loring	Dartmouth	MA	2747
Yuriy	Trubitsyn	Acton	MA	1720
Karen	Stackow	Belchertown	MA	1007
James	Keats	springfield	MA	1119
Katherine	Wheeler	Somerville	MA	2143
Keith	Marcotte	Boston	MA	2130
Randall	Lloyd	Melorse	MA	2176
Lauren	Stone	Norhfield	MA	1360
Hillary	Koogler	Allston	MA	2134
Paula	Myles	Harwich	MA	2645

Rebecca	Rucker	Houston	TX	77096
Brittnee	Tillery	Killeen	TX	76549
William	Ward	Dallas	TX	75209
Heather	Biernat	Palestine	TX	75803
Betty	Ferrero	Round Rock	TX	78664
Ron	Marshall	Sunnyvale	TX	75182
yadi	montes	Houston	TX	77023
Darlene	Ellison	Mesquite	TX	75149
Holly	Pritchard	Luling	TX	78648
Lee	McKinzey	Grapevine	TX	76051
Naomi Sokol		Addison	TX	75001
Budalur	Thyagarajan	San Antonio	TX	78249
Carol	Shelton	Bedford	TX	76022
Ruth	Stewart	San Antonio	TX	78249
Heather	Carter	Wimberley	TX	78676
Tony	Grubaugh	Haltom City	TX	76111
Susan	Sjolin	Spring	TX	77379
Robert	Mick	Austin	TX	78758
Danilo	Udovicki	Austin	TX	78723
Carl	Lloyd	San Antonio	TX	78227
Lisa	Tremaine	dallas	TX	75220
Rosemary	Wetherold	Austin	TX	78735
Barbara	Richert	Lufkin	TX	75904
Dana	Martin	Austin	TX	78757
Sparrow	Patterson	Burleson	TX	76028
Sandra	Carmean	Irving	TX	75060
Robert	Bills	burnet	TX	78611
Caroline	LaMotta	Austin	TX	78705
Paul	Addington	Austin	TX	78702
Cody	White	Hillsboro	TX	76645
David	Eggleston	Midland	TX	79701
David	Mizener	McAllen	TX	78504
Penina	Horowitz	Austin	TX	78704
Shannon	Bishop	Houston	TX	77095
Lee	Hutchings	Wichita Falls	TX	76301
Katie	Buehler	Katy	TX	77494
Sandra	Sims	Dallas	TX	75230
sherri	botto	The Colony	TX	75056
Jason	rask	Round rock	TX	78681
Dan	Burr	The Woodlands	TX	77380
Lian	Amber	Austin	TX	78704
Kimberly	Gilbertson	austin	TX	78744
Bruce	Grether	Wimberley	TX	78676
Lisa	Hamilton	Schertz	TX	78154
Virginia	Johnston	Ft. Worth	TX	76116
Tara	Smith	San Marcos	TX	78666
Tracy	Callow	Austin	TX	
Don	White	Houston	TX	77096
Mickey	Jones	Lubbock	TX	79413

Nina	Boyer	Mansfield	MA	2048
kathy	fanning	Nortrh Attleboro	MA	2760
Phyllis	Miller	Boston	MA	2115
Charlotte	Sheasby-Coleman	Etoicoke	MA	2647
James	Spofford	Salem	MA	1970
Kellie	Dillon	Pittsfield	MA	1201
Rosemary	Bernier	Norfolk	MA	2056
Anita	Goncalves	Ludlow	MA	1056
Zara	Currimjee	Williamstown	MA	1267
Nancy	Hudson	Hudson	MA	1749
L	Gols	Natick	MA	1760
Aaron	Beer	Natick	MA	1760
Samuel	Sautaux	Fayville	MA	1745
John Michael	Pirulli	Waltham	MA	2451
Heather	Cronin	Foxboro	MA	2035
Lori	Conley	EASTHAMPTON	MA	1027
Lisa	Drolet	Fall River	MA	2721
Susan	Ellis	Berkley	MA	2779
Sarah	Kang	Northampton	MA	1063
Cole	Prediger	Hull	MA	2045
Janelle	Gilstad	Oak bluffs	MA	2557
Mary	Pierron	Needham	MA	2494
Kevin	Ohi	Brighton	MA	2135
Hoa	Truong	Dorchester	MA	2124
Joyce	Lahna	Barre	MA	1005
K	Simmons	Easthampton	MA	1027
NIna	Williams	Wellesley	MA	2481
Kathy	Guttormsen	Pittsfield	MA	1201
Danna	Ziemski	Marriottsville	MD	21104
Frank	Smith	Baltimore	MD	21217
Rob	Hatch	baltimore	MD	21218
Alexis	Polakoff	Bethesda	MD	20817
Jan	Eveler	Frederick	MD	
Neva	Davis	Lanham	MD	20706
Robyn	Moore	Middle River	MD	21220
Elizabeth	Mullen	Baltimore	MD	21211
Christa	Stevenson	Frederick	MD	21701
Richard	Gibbs	Giathersburg	MD	20878
ellen	manion	edgewater	MD	21037
Roxanne	Boyle	Adelphi	MD	20783
Ronald	Carlson	Lanham	MD	20706
Gina	Denn	Greenbelt	MD	20770
David	Beam	baltimore	MD	21230
Dominik	Erne	Leonardtown	MD	20650
Pam	Charshee	Baltimore	MD	21210
Christopher	Nelson	Baltimore	MD	21218
David	Elfin	Bethesda	MD	20817
Sharon	Garlena	Frederick	MD	21702
Georgina	Forester	Montgomery Village	MD	20886
Alexandria	Romo	Austin	TX	78731
Tammy	Beene	Tomball	TX	77375
Robert	Adams	Austin	TX	78720
Roxane	Iglesias	Corpus Christi	TX	78411
John	Snyder	Houston	TX	77004
Bruno	Sarda	Austin	TX	78750
Jerry	Bailey	San Antonio	TX	78240
Louise	Stoehr	Nacogdoches	TX	75965
Susan	Tanos	Carrollton	TX	75007
Tammy	Essex	Fort Worth	TX	76119
Christina	Arredondo	Laredo	TX	78043
Heda	Hahn	Dallas	TX	75230
Stephen	Dear	Corpus Christi	TX	78414
James	Carmean	Irving	TX	75060
Roberto	von Ellenrieder	San Antonio	TX	78230
Vallarie	Enriquez	El Paso	TX	79902
John	Duggan	San Antonio	TX	78244
Maria	Martinez	Austin	TX	78731
Tierra	Chapman	Cedar Park	TX	78613
Norman	Hood	Dallas	TX	75238
Simone	Dail	PFLUGERVILLE	TX	78660
Thomas	Dukes	San Antonio	TX	78209
Teri	Liptak	Tyler	TX	75707
Mary	Stuman	Boerne	TX	78006
Steve	Collins	Lubbock	TX	79407
Leana	Clothes	Wylie	TX	75098
Donald	Frischmann	Fort Worth	TX	76116
Debra	Nugent	Dallas	TX	75223
Chris	Beal	Laredo	TX	78040
Ramah	Briganti	Austin	TX	78741
Julia	Guthrie	AUSTIN	TX	78746
Angela	Minton	Richardson	TX	75081
Ann	Vanderlaan	round rock	TX	78664
Jacqueline	Carter	Carrollton	TX	75007
Catherine	Fletchet	Burleson	TX	76028
Harvey	Hild	Marion	TX	78124
Holly	Riker	Austin	TX	78712
Doussay		Paris	TX	75015
valerie	hermant	paris	TX	75001
Bryan	Goetz	San Antonio	TX	78213
Erika	Schiegg	mesquite	TX	75150
Ron	Fleitman	Highland Village	TX	75077
Patricia	Haverkamp	Gainesville	TX	76240
Marge	Gianelli	El Paso	TX	79936
Eric	Dykes	Houston	TX	77071
Chris	Thompson	Austin	TX	78749
Herman	Rhein	South Padre Island	TX	78597
Robert	Robinson	Fort Worth	TX	76132
Josh	Friedman	Dallas	TX	75219

Claudia	Prather	Middletown	MD	21769
Michelle	Mannering	Frederick	MD	21701
Philip	Gatov	Laplata	MD	20646
Dorothy	Dewell	Catonsville	MD	21228
Patricia	Webster	Silver Spring	MD	20902
Glenn	Stewart	Pasadena	MD	21122
Laura	Liggett	Columbia	MD	21046
Victoria	Lopez	College Park	MD	20742
Margaret	jacobson	baltimore	MD	21229
Maureen	Ercol	Davidsonville	MD	21035
David	Bibo	Laurel	MD	20707
Zoe	Johnson-Ulrich	Frederick	MD	21701
Diane	McCoy	Baltimore	MD	21218
Cheryl	Palmer	Thurmont	MD	21788
Kathleen	Callaghan	Columbia	MD	21044
Susanw	Huppman	reisterstown	MD	21136
Deborah	Patterson	Baltimore	MD	21211
Carrie	Eichelberger	Baltimore	MD	21230
Michael	Sodos	Frederick	MD	21703
Lawrence	Mertaugh	Lexington Park	MD	20653
James	Pope	Columbia	MD	21046
John	Miskelly	baltimore	MD	21212
Jacob	Roberts	Bethesda	MD	20814
Kristin	Cook	Potomac	MD	20854
Juanita	Deans	bethesda	MD	20814
Lyanne	Luna	Waldorf	MD	20603
Jeremiah	Hart	sykesville	MD	21784
Ivan	Socher	Rockville	MD	20851
Joshua	Rettenmayer	Catonsville	MD	21228
Octavia	Salisbury	Phoenix	MD	21131
Shamil	Patel	Chevy Chase	MD	20815
Alexander	Laufer	Silver Spring	MD	20901
Catherine	Raymond	Odenton	MD	21113
Sarah	Parr	Baltimore	MD	21204
Katherine		Germantown	MD	20876
Lisa	Dickie	Columbia	MD	21045
Melissa	Hersh	Columbia	MD	21044
Patricia	Sobel	Laurel	MD	20707
Evelyn	Buff, MPH	Columbia	MD	21044
MaryAnn	Gregory	Westminster	MD	21158
Monia	Casamatta	london	MD	21921
Spring	Ligi	Jefferson	MD	21755
April	Kohles	Annapolis	MD	21403
Eileen	Gersuk-Byrd	SILVER SPRING	MD	20901
German	Archila	Waldorf	MD	20603
Holly	Childs	Rock Hall	MD	21661
Susan	Brody	Fort Washington	MD	20744
stephen	jump	rockville	MD	20853
Mark	Halbig	Columbia	MD	21046
Deborah	Elison	Austin	TX	78702
Anita	Faulkner	Carrollton	TX	75007
Cathy	Bales	College Station	TX	77845
Lance	Shugerman	Austin	TX	78750
Betty	Pearlman	Austin	TX	78744
Robby	Taylor	Denton	TX	76210
Kathryn	Matheny	Farmers Branch	TX	75234
Scott	Lewis	Austin	TX	78754
Inna	Trotsai	Vinnitsa	TX	21000
Hyla	Martin	Houston	TX	77055
Chris	Schulman	Austin	TX	78750
Thomas	Ford	Houston	TX	77070
Casey	Huff	ABILENE	TX	79602
Peter	Diaz	austin	TX	78738
Laura	Gomez	HOUSTON	TX	77087
Libby	Evans	Beaumont	TX	77706
Henry	Payne	Lubbock	TX	79411
Jessica	Sheldon	Wichita Falls	TX	76310
Susan	Purcell	Livingston	TX	77399
Ingrid	Jouette-nagati	Paris	TX	75010
Terry	Rohrbach	Bulverde	TX	78163
Florine	Bowman	Garland	TX	75044
max	smith	South Padre Isle.	TX	78597
Aubrie	Aldridge	Austin	TX	78751
Ron	Young	Weatherford	TX	76088
Robert	Hatfield	Houston	TX	77080
Heather	Schrock	Allen	TX	75002
leslie	uppinghouse	spicewood	TX	78669
S	Press	Houston	TX	77077
Chris	Archer	Fort worth	TX	76137
Estefania	Taboada	PARIS	TX	75009
Wendy	Woodruff-Wezensk	Richardson	TX	75083
Sheila	Montgomery	San Antonio	TX	78210
Thomas	Moore	houston	TX	77084
ROSA	BERNAL	Houston	TX	77051
Brandye	Brown	Dallas	TX	75243
Glenna	Denmann	Georgetown	TX	78633
kevin	faulkner	Dallas	TX	75218
Sophia	Vassilakidis	Houston	TX	77006
Joan	Villa	San Antonio	TX	78230
Mel	Elliott	El Paso	TX	
Estelle	Bravo	Vignely	TX	77450
Angela	Trevino	The Woodlands	TX	77382
Heather	Hollifield	Austin	TX	78748
Margaret	Vela	Missouri City	TX	77459
Stacy	Nietsche	Killeen	TX	76542
Cheryl	Jarveis	Killeen	TX	76543
Leslie	Chapman	San Antonio	TX	78209
mary	grimaldo	garland	TX	75042

Joseph	McGurrin	Stevensville	MD	21666
Mariela	Herrera-GonzÃ¡lez	Silver Spring	MD	20904
Ann	Egerton	Md	MD	21030
Evan	Saulsbury	Olney	MD	20832
John	Flater	Lutherville	MD	21093
Paul	Nahay	Silver Spring	MD	20904
Laurie	Anderson	Timonium	MD	21093
Michael	Roswell	Baltimore	MD	21208
N	Boardman	silver spring	MD	20901
Shannon	Kahle	Gaithersburg	MD	20878
Eugenie	Jenkins	Baltimore	MD	21210
Jeanne	Faust	Abingdon	MD	21009
Douglas	Sedon	buckeystown	MD	21717
adam	eig	Chevy Chase	MD	20815
Tina	Meisenhalder	Cumberland	MD	21502
Francis	Gilbert	Silver Spring	MD	20902
Amanda	Angleberger	Frederick	MD	21701
Anne	Greene	Sandy Spring	MD	20860
Virginia		Elkton	MD	21921
Alex	Siegel	Ocean City	MD	21842
Diane	Bartkovich	Annapolis	MD	21401
elizabeth	ohara	North East	MD	21901
Jennifer	Schaafsma	Annapolis	MD	21409
Bobby	Bauer	wheaton	MD	20902
Kay	Parnes	Frostburg	MD	21532
Nicole	Gorospe	Crownsville	MD	21032
Krista	Baron	Middle River	MD	21220
Cem	Ozkok	crownsville	MD	21032
lisa	jones	olney	MD	20832
Timothy	Benner	Silver Spring	MD	20906
Joyce	Angleberger	Funkstown	MD	21734
Joseph	Amato	Ellicott City	MD	21042
Madeline	Liccione	Annapollis	MD	21403
Patricia	Bianca	Rosedale	MD	21237
Wilmalyn	Puryear	Timonium	MD	21093
Jeremy	Marks	Rockville	MD	20853
Rebecca	Urban	Silver Spring	MD	20906
Irene	Fobe	Brookeville	MD	20833
Desiree	Bullard	Cumberland	MD	21502
Sherry	Smith	Bel Air	MD	21014
Deborah	Griffitts	Baltimore	MD	21230
Candice	Paulus	Severn	MD	21144
Patti	Ruocco	Stevensville	MD	21666
John	Kerr	Nottingham	MD	21236
Christine	Kolberg	OLNEY	MD	20832
James	Conklin	Silver Spring	MD	20910
Catalina	Valverde-ayllon	Silver Spring	MD	20906
Kim	Smith	Baltimore	MD	21227
Helen	Allen-Weldon	Brookline	ME	4616
Donna	Maka	Rockport	TX	78382
Merry	Shrier	Fort Worth	TX	76112
Jessica	Vacek	Sealy	TX	77474
Carpathia	Wales	houston	TX	77009
Mary		austin	TX	78750
Peter	Schaar	dallas	TX	75214
William	Corradini	Keller	TX	76248
Marjorie	Kessler	Katy	TX	77450
Ruth	Roberts	Georgetown	TX	78626
Aradia	Delgado	San Antonio	TX	78219
Mario	Kronk	Sutlema kÃ¼la	TX	79710
Leila	Kalmbach	Austin	TX	78704
Linda	Taylor	Wichita Falls	TX	76308
Lesley	Westbrook	Killeen	TX	76543
Maryrose	Cimino	Dallas	TX	75287
Gloria	Alvarado	san antonio	TX	78216
Angela	Elder	lake jackson	TX	77566
Andreas	Falderbaum	houston	TX	77070
Terree	Flowers	houston	TX	77073
Harmonie	Hefley	Amarillo	TX	79110
Jack	Cooper	Corpus Christi	TX	78411
Pat	Schumacher	Brownsville	TX	78526
Julie	hazard	Austin	TX	78748
Wendy	Dearing	Irving	TX	75039
Bebie	Bonr	Cumby	TX	75433
D	Benson	Fort Worth	TX	76123
Carla	de Brito	Paris	TX	75116
Ruben	Kaim	austin	TX	78745
Carolyn	Vogt	Austin	TX	78748
Marilyn	Best	Spring Branch	TX	78070
Deborah	Sharpe	Haslet	TX	76052
Christine	Hughey	Friendswood	TX	77546
Robert	Long	Austin	TX	78756
Dale	Clark	Austin	TX	78705
Vicki	Montgomery	Pasadena	TX	77506
Russell	Brown	Spring	TX	77379
M'Liss	Willmann	Austin	TX	78759
Ashley		Fort Worth	TX	76137
Judy	Boyko	Lewisville	TX	75077
Linda		West Point	TX	78963
Leanne	Doescher	houston	TX	77036
Sarah	Jumel	Austin	TX	78756
Rita	Rancken	Austin	TX	78757
Lisa	Stanley	Dallas	TX	75246
ceci	lozano	austin	TX	78744
Linda	Lowe	Irving	TX	75060
Charlene	Lee	Temple	TX	76502
RoxAnne	Nobles	Lake Worth	TX	76135
Norell	Mounger	Carrollton	TX	75011

Brittany	Lebel	charlotte	ME	4666
Stephen	Benson	Blue Hill	ME	4614
Faith	Freewomab	Bath	ME	4530
Shirley	Hale	lovell	ME	4051
Lewis	Cisle	Belfast	ME	4915
Ellen	Port-Peitersen	Auburn	ME	4210
Elizabeth	Castro	Winteport	ME	4496
Leona	Fowler	Gardiner	ME	4345
Alan	Morrison	North Yarmouth	ME	4097
Linda	Pankewicz	Raymond	ME	4071
Michael	LIttle	Camden	ME	4843
Dana	McDaniel	Portland	ME	4101
Mike	Murnik	Blue Hill	ME	4614
Lane	Lucas	Blue Hill	ME	4614
Diana	Bowen	S China	ME	4358
Gary	Vencill	Prospect	ME	4981
Michael and Amy	Roberts	Steuben	ME	4680
Priscilla		Seal Cove	ME	4674
Robert	Carmichael	So Portland	ME	4106
Bill & Marilyn	Voorhies	West Tremont	ME	4612
Ann	Breeden	Sullivan	ME	4664
Leslie	Clapp	Blue Hill	ME	4614
Linda	Demers	Montville	ME	4941
Nancy	Daly	Ellsworth	ME	4605
Jocelyne	FAROUAULT	PARIS	ME	75018
Frank	Hample	Somerville	ME	4348
Margaret	dePasquale	Greenwood	ME	4255
George	Erikson	Bridgton	ME	4009
Elinor	Hawke-Szady	Bangor	ME	4401
Daryl	Szady	Bangor	ME	4401
Jette	Andersen	Faxe	ME	4640
Adam	Reid	Alfred	ME	4002
Cora	Whitmore	Bangor	ME	4401
Margaret	Fernald	Orland	ME	4472
Marcey	Lachance	Bailey Island	ME	4003
Mim	Bois	volonne	ME	4290
Grace	Williams	Brisbane	ME	4556
Roger	Leisner	Augusta	ME	4338
Jon	Archerj	gouldsboro	ME	4607
Carl	Ekholm	Cape Elizabeth	ME	4107
Lorraine	Gauthier	Sabattus	ME	4280
Gary	C.	bidderford	ME	4005
William & Judy	Scoble	Camden	ME	4843
Barry	Goldsmith	North Yarmouth	ME	4097
Colene	Flaherty	Steuben	ME	4680
Susan	Estabrook	Norridgewock	ME	4957
Bruce	Henning	falmouth	ME	4105
Lawrence	Fischman	Brunswick	ME	4011
Laurel	Munson	Portland	ME	4103
Misty	Breaux	Austin	TX	78749
MELISSA	GLOVER	SAN ANTONIO	TX	78245
Linda	Harter	Austin	TX	78753
eliza	garcia	Progreso Lakes	TX	78596
Robert	Richey	austin	TX	78736
James	Norton	Austin	TX	78729
Rosa	Silva	El Paso	TX	79928
Melinda	Whitaker	Palacios	TX	77465
Alyssa	Watson	San Antonio	TX	78211
Kathy	Lochner	Livingston	TX	77399
David	Rossi	San Antonio	TX	78210
amber	emmert	BEAUMONT	TX	77706
Scott	Smith	austin	TX	78726
megan	mcknight	austin	TX	78702
Pam	Thomas-Hill	Houston	TX	77045
ART		JOHNSON CITY	TX	78636
Aubin	Moudy	Waco	TX	76708
John	Wamsley	Liberty Hill	TX	78642
V.	Walker	Dallas	TX	75214
Linda	Cortez	El Paso	TX	79903
Izabella	Dabrowski	austin	TX	78758
carmen	coca	heartland	TX	75126
Erika	Ochoa	Dallas	TX	75211
dan	gore	san antonio	TX	78223
Craig	Nazor	Austin	TX	78758
Karine		Paris	TX	75015
Stella	Ward	Austin	TX	78745
Brandon	Morgan	Austin	TX	78745
Doug	Ward	Austin	TX	78745
joseph	sympson	Rockport	TX	78382
Cheryl	Holley	Austin	TX	78723
Graciela	Diaz	Houston	TX	77580
Shelly	Shivers	Richland Hills	TX	76118
Donna	Ferrier-Johnson	Garland	TX	75044
Erin	Gentry	Cleburne	TX	76033
Jenette	Champagne	The Woodlands	TX	77381
Anita	Hunt	Honey Grove	TX	75446
Suzanne	Quiroz	San Antonio	TX	78218
Michael	Goglia	Dallas	TX	75217
Roxie	Richardson	Lumberton	TX	77657
Galina	Moylan	Houston	TX	77077
Sue	Jett	Houston	TX	77074
Leslie	Allsopp	Farmers Branch	TX	75234
Lisa	Brown - Patton	Coppell	TX	75019
Nancy	Patumanoan	Houston	TX	77018
Diane	Nosnik	Addison	TX	75001
Jennie	Rohrer	Alvin	TX	77511
Aaron	Fuller	San Antonio	TX	78256
Lori	Rosas	Corpus Christi	TX	78410

Alexandra	Hughes	cumberland	ME	4021
Christianna	Skoczek	Kittery Point	ME	3905
William	Lohman	Portland	ME	4103
Derek	Stockdale	Bangor	ME	4401
Parker	Gassett	Camden	ME	4843
Thomas	Tripp	Brewer	ME	4412
Pamela	Rollinger	Monhegan	ME	4852
Debra	Rollins	Augusta	ME	4330
Belinda	Frank	North Haven	ME	4853
Betty	Ryder	Greenville	ME	4441
Christine	Teeft	Belgrade	ME	4917
Sara	Campbell	West Rockport	ME	4865
Pat	Bredenberg	Cape Elizabeth	ME	4107
Richard	Esten	Deer Isle	ME	4627
Krisanne	Baker	Waldoboro	ME	4572
Heidi	Vierthaler	Freeport	ME	4032
Ana	Victorio	MEXICO CITY	ME	4040
Deborah	Kreis	Sanford	ME	4073
Yvette	Pratt	South Portland	ME	4106
Katherine	Daigle	Bangor	ME	4401
Hayleigh	Kein	Unity	ME	4988
Mark	Langley	Orono	ME	4469
Joan	Yates	Portland	ME	4102
Pamela	Hadley	HARRISON TWP	MI	48045
Megan	Minton	Temperance	MI	48182
dave	Hiegel	Pleasant Ridge	MI	48069
Pamela	Nordhof	Hamilton	MI	49419
bob	andrews	Novi	MI	48377
chad	gohm	Saginaw	MI	48603
Jenny	Pendergrast	ypsilanti	MI	48197
Lucas	Evans	East Lansing	MI	48823
Denise	Fisher	Bloomingdale	MI	49026
Joanna	Tomacari	Gwinn	MI	49841
Susan	Lott	Ferndale	MI	48220
Judith	chambers	Caro	MI	48723
Kelly	lingenfelser	Ypsilanti	MI	48198
Ben	Tollenaar	Marquette	MI	49855
sasha	etienne	auburn hills	MI	48326
Tyler	shelast	Hancock	MI	49930
Chris	Riley	Manistee	MI	49660
Russ	Adams	Clinton Township	MI	48035
Marcie	Ellsworth	clinton twp	MI	48038
Adam	Williams	Ann Arbor	MI	48108
Mike	Schuur	Kalamazoo	MI	49009
Tom	Huneke	Beverly Hills	MI	48025
Suzy	Richardson	Saugatuck	MI	49453
Breanna		Waterford	MI	48327
Hans	Posselt	Dexter	MI	48130
Donald	Grigg	Houghton Lake	MI	48629
Richard	Montano	Pharr	TX	78577
Cathy	Otstott	Dallas	TX	75116
Donnie	Faulk	Austin	TX	78749
Cathy	Green	Dallas	TX	75235
Jessica		Denton	TX	76201
Sandra	Stofan	Garland	TX	75042
Shirley	Barclay	Red Oak	TX	75154
Tatiana	Moreno	The Woodlands	TX	77384
Tracy	Brown	Dallas	TX	75224
Chris	Kelly	PLANO	TX	75074
Judy	Beeman	Weatherford	TX	76088
Jennifer	Flenniken	Driftwood	TX	78619
Belinda	Compotaro	North Richland Hill	TX	76180
Ellen	Thrasher	Arlington	TX	76017
James	Hendricks	Austin	TX	78756
Alice	Lochman	San Marcos	TX	78666
Catherine	Atkinson	Denton	TX	76205
Carey		Houston	TX	77057
Tara	Shook	Dallas	TX	75243
Pamela	Lanagan	Nacogdoches	TX	75965
Angelica	Ramirez	Chetumal	TX	77039
Starr	Lockwood	Lago Vista	TX	78645
Rhonda	Rivera	watauga	TX	76148
barbara	barban	Spring Branch	TX	78070
Bianca	Rose	Keller	TX	76248
Kathy	Rowell	Austin	TX	78704
Olivia	Obregon	Laredo	TX	78043
deana	williams	Round Rock	TX	78664
Cecelia	Ottenweller	Houston	TX	77007
Mary	Piacenza	Valley View	TX	76272
R	Wyllys	Austin	TX	78703
Cheryl	Ward	Sanger	TX	76266
Elizabeth		Kerrville	TX	78028
Brent	Bray	Pflugerville	TX	78660
Kathryn	Fisher	Kingsland	TX	78639
Jeff	Gammill	Austin	TX	78705
Mary	Glasse	Katy,	TX	77449
Eric	Ramirez	Pasadena	TX	77504
Georgena	Askew	El Paso	TX	79936
E	Davis	Plano	TX	75075
Erin	Livoti	Little Elm	TX	75068
Mary	Bohr	San Antonio	TX	78204
Tim	Creekmore	Baytown	TX	77521
Edmund	Jones	Canyon Lake	TX	78133
Luis	Perez	Houston	TX	77007
Jessica	Marks	Austin	TX	78734
Natalie	Randle	Dallas	TX	75203
Whitney	Covert-Dunbar	Fort Hood	TX	76544
Chamblee	Ferguson	Dallas	TX	75208

Rebecca	Spaulding	Grand Rapids	MI	49503
Bernadine	Hernden	Fraser	MI	48026
John	Yax	Ann Arbor	MI	48108
Donna	Ortyl	Sterling Heights	MI	48314
Nancy	DeLosier	Allen Park	MI	48101
Robin	Alexander	Grass Lake	MI	49240
Brenda	Raus	Adrian	MI	
Courtney	Morgan	Richland	MI	49083
M	Leszczynski	Lapeer	MI	48446
Ann	Kosel	Royal Oak	MI	48073
Valerie	Hays-Crowley	Taylor	MI	48180
ROBERT	SNYDER	CLARKLAKE	MI	49234
James	Langhammer	Royal Oak	MI	48073
Elaine	Tokarski	Troy	MI	48083
Gael	Tryles	holly	MI	48442
roth	Woods	ann arbor	MI	48103
Kristine	Kellar	Ypsilanti	MI	48197
Katy		Melvindale	MI	48122
Sean	Demers	Washington	MI	48094
Lillian	Neumann	Shelby Twp.	MI	48315
Paul	Ciccantell	Kalamazoo	MI	49009
Kim	Streich	Canton	MI	48187
Jeffrey	Wolfson	Ada	MI	49301
Cathy	Ploughman	alden	MI	49612
Janet	Channells	Richlland	MI	49083
Carly	Staunton	Clarkston	MI	48346
Philip	Chamberlain	Lansing	MI	48910
Barry	Horney	Howell	MI	48843
Randy	Gruszczynski	Mount Clemens	MI	48043
Julie	Geisinger	Bloomfield Hills	MI	48304
John	Pauley	Grand Rapids	MI	49508
Bonnie	Carlson	Wyoming	MI	49509
Linda	Pollock	ANN ARBOR	MI	48108
Jenn	Wheeler	Kentwood	MI	49508
Martha	Oleinick	Ann Arbor	MI	48104
Diane	Sevald	Caledonia	MI	49316
Karen	Haggerty	UNION PIER	MI	49129
E.R.	Adams	Dexter	MI	48130
Charlotte	Wolfe	Clinton	MI	49236
Mary	McNally	Flushing	MI	48433
Linda	Moore	Detroit	MI	48224
Sven	Sellin	muskegon	MI	44390
Joan		Novi	MI	48377
Beth	P	Grosse Pte	MI	48236
Tiffani	Duck	CUTLERVILLE	MI	49548
Amy	Frieden	bridgman	MI	49106
Matthew	Finch	Fenton	MI	48430
Emily	Bovee	Rochester Hills	MI	48309
Marsha	Duncan	Hamilton	MI	49419
Suzi	Bahan	Kingwood	TX	77345
Brenda	Arnold	Beaumont	TX	77713
Anton	Carr	El Paso	TX	79902
Leah	Brown	Dumas	TX	79029
Alexia	Strout	Fort Worth	TX	76110
Randall	McWilliams	dallas	TX	75248
Clifton	Jackson	Austin	TX	78741
Patricia	Evans	Grand Prairie	TX	75052
Michael	Barnes	Pflugerville	TX	78660
Jean	McCleneghan	Plano	TX	75023
Eliza	Browning	Salt Lake City	UT	84121
A	Korstanje	Payson	UT	84651
Trish	Empey	Salt Lake City	UT	84115
Amy	Lee	Orem	UT	84057
Wendi	Hicks	Wellington	UT	84542
Jason	Brough	Logan	UT	84322
C	Nigh	Draper	UT	84020
Kathleen	Clark	Salt Lake City	UT	84108
Phil	Triolo	Salt Lake City	UT	84102
Shannon	Saldana	Salt Lake City	UT	
Judy	Anderson	Murray	UT	84107
Robin	Stauffer	Panguitch	UT	84759
James	Thomson	Toronto	UT	11111
Karen	Larsen	Clinton	UT	84015
Cary	Woodland	Ogden	UT	84403
Ginger	Morris	Salt Lake City	UT	84121
Gabrielle	Fernandez	Bountiful	UT	84010
Keven	Johansen	Salt Lake City	UT	84108
Thora	Nielsen	slc	UT	84105
mary	vivit	Sandy	UT	84094
Stuart	McDonald	Salt Lake City	UT	84111
Thora	davis	Slc	UT	84105
Lisa	Maddux	Park City	UT	84098
Assunta	Bacco	Campagna	UT	84022
Diane	Arnal	St.George	UT	84790
Lori	McDonald	Park City	UT	84060
Russell	Wagstaff	Salt Lake City	UT	84109
Josette	Mills	Salt Lake City	UT	84118
Bradley	Hodgin	enterprise	UT	84725
Sally	Bridges	Marysvale	UT	84750
Brett	Corless	West Valley City	UT	84128
Jared	Fuller	Provo	UT	84601
Monica	Hilding	SLC	UT	84102
Darle		Moab	UT	84532
Scott	Ray	Park City	UT	84098
John	Lindblom	Salt Lake City	UT	84109
Jennifer	Farnum	Salt Lake City	UT	84103
Yvonne	Lindsay	orem	UT	84058
Heather	Shead	Ogden	UT	84401

Ashley	McIntyre	Kalamazoo	MI	49004
Elise	Payton	Farmington	MI	48335
Harry	Franklin	Davison	MI	48423
davor	vulic	southfield	MI	48076
Joanne		Rockford	MI	49341
Vickie	Wagner	Three Oaks	MI	49128
Linda	Gillespie	STERLING HTS	MI	48310
Toby	Dolinka	grand rapids	MI	49506
Joan	LaLonde	Howell	MI	48855
Lee	McCarthy	Redford	MI	48239
Scott	Legleitner	flint	MI	48507
Tris	Palmgren	Grosse Pointe Woods	MI	48236
Joanne	Lang	Schoolcraft	MI	49087
William	Gardner	Central Lake	MI	49622
Anne		Redford	MI	48239
sharon	erreger	casnovia	MI	49318
Eileen	Kell	Pontiac	MI	48341
Joy	Richmond	Hamilton	MI	49419
Jean	Norman	Livonia	MI	48154
ralph	rider	Saint Clair Shores	MI	48081
Nicole	Miller	Livonia	MI	48154
Wendy	Shoup	Flint	MI	48507
kathy	mccloskey	Ann Arbor	MI	48103
sk	young	Madison Heights	MI	48071
Thelma	Kew	westland	MI	48186
Leah	Burris	Ann Arbor	MI	48108
Dave	Borkowski	REDFORD	MI	48239
Susann	Balk	Monroe	MI	48161
John	Zielinski	whitmore lake	MI	48189
		Harbor Springs	MI	49740
Sam	Eisenbach	mecosta	MI	49332
Deborah	Gladstone	Clarkston	MI	48348
Martha	Keefe	Ann Arbor	MI	48103
Keeta	Beaubien	Interlochen	MI	49643
Maija	Detroit	Detroit	MI	48224
Arthur & Shirley	Wolfe	Ann Arbor	MI	48104
Joyce	Bartels	East Lansing	MI	48823
Carolyn	Allen	Royal Oak	MI	48067
Jill	Farber-Bramson	West Bloomfield	MI	48322
Paula	Kerreos	Saginaw	MI	48602
Roy	Kaczinski	warren	MI	48091
Karen	McKechnie	Sterling Heights	MI	48310
Darren	Staszak	Chesterfield	MI	48051
Christopher	Smith	Hazel Park	MI	48030
Andrew	Nixon	Ann Arbor	MI	48103
Janis	Ley	Sault Sainte Marie	MI	49783
David	Ferger	Southfield	MI	48034
Jessica	Gunnells	Dearborn Heights	MI	48125
tristen	roberts	dearborn	MI	48120
Teresa	Bollermann	Castle Valley	UT	84532
Don		Salt Lake City	UT	84121
Lacy		sandy	UT	84093
William	Goe	Salt Lake City	UT	84117
Alan	Sumsion	Spanish Fork	UT	84660
Isabelle	Pritchett	Washington Terrac	UT	84405
Johannes	Schmitzer	Garching a.d. Alz	UT	84518
Joan	Peterson	Bluffdale	UT	84065
Marialoreto	Landi	salerno	UT	84084
Sharon	Nasworthy	Layton	UT	84041
Diane	Cobb-Adams	Saint George	UT	84790
Madeline	Palm	Salt Lake City	UT	84102
Kate		Salt Lake City	UT	84121
Alexa	Hamilton	Springville	UT	84663
Vearla	Warner	Salt Lake City	UT	84106
Ellen	Van Bavel	La Laguna	UT	38811
Tracey	Hogan	Park City	UT	84098
Chris	Cannon	Salt Lake City	UT	84120
T	Mullarkey	kanab	UT	84741
Stuart	Whitson	Alexandria	VA	22306
Haley		Blacksburg	VA	24060
Pamela	Findley	Reston	VA	20194
Pauline	Clark	Arlington	VA	22207
Conor	MacDonnell	Cismont	VA	22947
Katharine		Charlottesville	VA	22903
Grace	Vosburg	Richmond	VA	23226
Sandy	Vite	Williamsburg	VA	23185
Eve	Herman	manassas	VA	20109
R	Boehling	Ashland	VA	23005
Patricia	Pei	Falls Church	VA	22042
Joana	Jensen	Hamburg	VA	22305
Diana	Schmidt	Burke	VA	22015
Barbara	Lester	Norfolk	VA	23508
Graham	Joy	Great Falls	VA	22066
Rodgers	Frantz	Alexandria	VA	22309
Cavell	Kopetzky	Charlottesville	VA	22902
Deb		Amherst	VA	24521
Jonathan	Hunt	Free Union	VA	22940
Sean	Craft	Richmond	VA	23222
Vicki	Kirsch	Centreville	VA	20121
Amy	Dellinger	Elkton	VA	22827
Michelle	Casper	Suffolk	VA	23437
Dan		Virginia Beach	VA	23462
C	Garber	Alexandria	VA	22309
Christine	Lofgren	Roanke	VA	24015
Sarah	S	Henrico	VA	23229
George	Phillips	Warrenton	VA	20187
Anne	Usher	Alexandria	VA	22307
Kiera	Allison	Charlottesville	VA	22903

John	Thomachefski	Saint Clair Shores	MI	48080
Alanna	Woolley	Harper Woods	MI	48225
francine	bockelman	Belleville	MI	48111
Christine	Harris	Livonia	MI	48152
g	gerdan	pleasant ridge	MI	48059
richard	blackston	kalamazoo	MI	49008
Ann Marie	Ybarra	Dearborn Heights	MI	48127
Debbi	Williams	milford	MI	48380
Penny	Carr	Lansing	MI	48911
Jill	Sanders	Rochester Hills	MI	48307
Brenda	Kirkpatrick	Shelbyville	MI	49344
Allen	Salyer	Troy	MI	48085
veda	balla	flint	MI	48507
pam	wilbourn	Roseville	MI	48066
Joseph	Kaleel	Oxford	MI	48371
Debra	Klein	Dexter	MI	48130
Anna	LaHaie	Chebiygan	MI	49721
Christine	Lindsey	westland	MI	48186
james	frink	harrison twp.	MI	48045
Virginia	Cook	Gregory	MI	48137
Anne	Iulianelli	Highland	MI	48357
Rick	Osborn	Fairgrove	MI	48733
Erik	Booth	Ironwood	MI	49938
Julie	Acs	South Rockwood	MI	48179
Wendy	Chapin	Grand Rapids	MI	49504
Nicole	Leedy	Caledonia	MI	49316
Claudia	Penedo	Mexico City	MI	6500
James	Grant	Saranac	MI	48881
Lori	Osborne	Spring Lake	MI	49456
Janet	Kalczynski	Dearborn Heights	MI	48127
Dana	Zavadovics	Wayne	MI	48184
Janie	Peters	Saginaw	MI	48602
Michael	Johnson	Harrisville	MI	48740
Karen	Briggs	Harrisville	MI	48740
Lucy	Mills	Shelby Township	MI	48316
Tisha	Wardlow	Comstock Park	MI	49321
Bill	Sparks	Temperance	MI	48182
Mark	Weatherwax	jackson	MI	49203
Pam	Alvesteffer	Fremont	MI	49412
Joni	Mulder	Rockford	MI	49341
Jacob	Abair	Redford	MI	48240
Kathleen	Kitchen	Gaylord	MI	49735
Armeda	Coursen	Millington	MI	48746
Judith	Abel	Harsens Island	MI	48028
Paul	Kerman	Sterling Heights	MI	48310
kathleen	kashat	West Bloomfield	MI	48322
Julie	Gervais	Ferndale	MI	48220
Rm		Hadley	MI	48440
Laura	Schwind	Rochester	MI	48308

karin	gander	Fairfax	VA	22031
mary	mitchell	Norfolk	VA	23518
Jos	Biviano	Richmond	VA	23229
Peter	Cosby	Lynchburg	VA	24503
Justin	Morgan	Chester	VA	23831
CSEP	Mark Sonder	Linden	VA	22642
Tim	Courson	Centreville	VA	20120
Stacey	Remick-Simkins	Fairfax	VA	22031
Donna	Homulos	Hamilton	VA	23692
Nina	Natelson	Annandale	VA	22003
Melinda	Bashen	Reston	VA	20190
Jesse	Stewart	radford	VA	24141
Ronald	Field	Alexandria	VA	22310
Katie	O'Hara	Virginia Beach	VA	23452
Alberto	Parrella	milano	VA	20129
Timothy	O'Brien	Charlottesville	VA	22901
Rene'	Boutin	Windsor	VA	23487
Hilldrup	Hilldrup	Fredericksburg	VA	22408
Frances	Barber	Bland	VA	24315
Carol	Hodgman	Fairfield	VA	24435
Joel	Drembus	Reston	VA	20191
CAROLYN	HAYES	REMINGTON	VA	22734
Elizabeth	Burdash	Earlysville	VA	22936
Ryan	Becklund	Fairfax	VA	22032
Katrina	Kirby	Front Royal	VA	22630
Jill	Goodenow-Prehn	Southriding	VA	20152
Karin	Goodwin	The Plains	VA	20198
Jeanette	Taylor	Arlington	VA	22207
Steven	Vogel	Falls Church	VA	22046
Concetta	Cautela	Providence Forge	VA	23140
Joshua	Cruz	Virginia Beach	VA	23452
Penny	Ross	Vienna	VA	22180
Martin	Baskin	Alexandria	VA	22314
Kelly	Kaiser	Reston	VA	20150
marian	porter	Alexandria	VA	22305
Jamie	McLaulin	Chesapeake	VA	23322
Patty	Donahue	Vienna	VA	22182
Ben	Burrell	Toano	VA	23168
David	Laux	Annandale	VA	22003
Ashley	Rowland	Chantilly	VA	20151
Sheila	Reilly	Manassas	VA	20110
Virginia	Paul	Harrisonburg	VA	22802
Joan	Peaslee	richmond	VA	23227
cristina	sacchi	Catharpin	VA	20143
Elizabeth	Leodler	Fairfax	VA	22031
Charles	Engman	Norfolk	VA	23505
Grace	Kelly	Arlington	VA	22207
Cindy	Chen	richmond	VA	23226
Patricia	Andrews	Virginia Beach	VA	23455

Bob	Brill	Ann Arbor	MI	48103
Michelle	Busch	Ann Arbor	MI	48109
Marjorie	Findley	HIGHLAND	MI	48356
Barbara	McDonald	St. Paul	MN	55130
Neil	Stecker	TAMARACK	MN	55787
Kelsey	Peterson	Saint Paul	MN	55123
Joseph	Culver	Maple Plain	MN	55359
Ted	Redalen	cleveland	MN	56017
Tara	McDonald	Battle Lake	MN	56515
Michelle	Burns	LeSueur	MN	56058
Dorothy	Rowell	MOORHEAD	MN	56560
Paul	Norton	New Hope	MN	55428
Amy	Timmers	White Bear Lake	MN	55110
Natalie	Cooper	Saint Paul	MN	
Frank	Peterson	Waconia	MN	55387
Katryna	Kerr	Shorewood	MN	55331
Thomas	Cole	Hastings	MN	55033
David	Stewart	Hopkins	MN	55305
Jessica	Naithani	Minneapolis	MN	55419
Tami	Newman	Savage	MN	55378
Paula	Lund	Brainerd	MN	56401
Margot	Galt	Saint Paul	MN	55104
Rachel	Ahrndt	Chaska	MN	55318
Nan	Corliss	Bloomington	MN	55437
CARLA	JOHNSON	Inver Grove Heights	MN	55076
Alison		wpg	MN	55566
Karen	Thompson	Clearwater	MN	55320
John	Leinen	Stillwater	MN	55082
Elisa	Logan	Duluth	MN	55803
Char	Butterfield	Albert Lea	MN	56007
Edward	Foreman	Woodbury	MN	55125
Michelle	Walker	Duluth	MN	55807
frank	peralta	HAWICK	MN	56273
Duane	Gustafson	Cook	MN	55723
Geoffrey	Saign	st paul	MN	55116
Jane	Hachfeld	mendota heights	MN	55120
Adrienne	Uitz	Minneapolis	MN	55407
Sue	Wadland	easr sussex	MN	55555
thomas	murphy	stacy	MN	55079
Toni	McNaron	Minneapolis	MN	55408
Stephen	Sudbeck	Waconia	MN	55387
Veronica	Miazga-Zetterberg	Minneapolis	MN	
Gary	Tonkin	Duluth	MN	55803
Kevin	Foley	Afton	MN	55001
curt	klimes	Laporte	MN	56461
Nylene	Headbid	Hinckley	MN	55037
Kathleen	Fink	Edina	MN	55439
Marina	Volodina	Mendota Heights	MN	55120
Richard	Fish	Minneapolis	MN	55417

Cynthia	Longo	Alexandria	VA	22304
Kelsey	Toney	Gladstone	VA	24553
Kristen	Van Tassell	Centreville	VA	20121
Matt	Cormons	Parklsey	VA	23421
Kemosabe	Whitepaws	chesapeake	VA	23324
Kim	Tross	Williamsburg	VA	23185
Kathy	Niell	Hampton	VA	23666
TRUDY	NICKOLS	Marion	VA	24354
Kurt	Stocklmeir	norfolk	VA	23517
Katie	McDougall	richmond	VA	23220
Sue	Kellon	Warrenton	VA	20186
Dawn	Welker	Virgina Beach	VA	23464
Duncan	Porter	Blacksburg	VA	24060
Mary	Ferralli	VirginiaBeach	VA	23452
Natalie	Higgins	Chesapeake	VA	23322
Michael	Johnson	Ruther Glen	VA	22546
Mary	Applegate	Haymarket	VA	20169
Dixie	Dickinson	Virginia Beach	VA	23453
Cheryl	Scher	atlantic	VA	23303
Gregory	Edwards	Arlington	VA	22207
Linda	Keen	Doran	VA	24612
Dina	Duffy	Chantilly	VA	20151
Holly	Lawson	SPEEDWELL	VA	24374
Mike	Clancey	Charlottesville	VA	
Yvonne	Allen	Manassas	VA	20109
Graciela	Mederos	Leon	VA	24008
Gavin	Lawson	Harrisonburg	VA	22801
Ann	Thornton	Danville	VA	24541
Craig	Grube	virginia beach	VA	23451
Jo	Manuele	Norfolk	VA	23502
Ruth	McDermott	WILLIAMSBURG	VA	23188
Elizabeth	Gregory	Staunton	VA	24401
Maria	Kolena	Alexandria	VA	22303
Kate	Goodson	Virginia Beach	VA	23453
jerri	lawrence	Arlington	VA	22207
Jessie	Archer	Newport News	VA	23606
Sherrie	Killough	King George	VA	22485
Leslie	Blair	Alexandria	VA	22315
Karen	Zell	Manassas	VA	20112
Jason	Berry	Arlington	VA	22201
Patti	Krieger	alexandria	VA	22306
Wayne	Berry	Hampton	VA	23666
Susan	Dobson	Brandon	VA	24351
Jeff	Somers	Lynchburg	VA	24503
Kathy	Crews	Richmond	VA	23227
Christy	Talbott	Richmond	VA	23235
Maria	Martins	Entroncamento	VA	23301
Luis	Martins	Entroncamento	VA	23301
Ruth	Trevas	Entroncamento	VA	23301

lisa	bergerud	Saint Paul	MN	55108
Ann	Eastham	Minneapolis	MN	55406
Leanne	Thorsson	Minneapolis	MN	55410
Lori	Udenberg	Apple Valley	MN	55124
Bob	Bartlett	Mounds View	MN	55112
Jessica		Minneapolis	MN	55421
Alicia	Batt	Coon Rapids	MN	55433
Carol	Taylor	Apple Valley	MN	55124
Barbara	Johnson	Badger	MN	56714
Laurie	Hardies	Eagan	MN	55122
Mike	Kaufman	st. paul	MN	55107
Brian	Duren	Saint Paul	MN	55116
Maggie		carver	MN	55315
Dana	Willis-Jick	Red Wing	MN	55066
Janna	Neperud	Inver Grove Heights	MN	55076
Alexandria	chock	little falls	MN	56345
Michelle	Ockman	Minneapolis	MN	55441
ellen	langsetmo	saint luois park	MN	55416
Linda	Rolf	Minneapolis	MN	55403
Bret	Johnson	St. Paul	MN	55106
Melissa	Warfield	Minneapolis	MN	55426
linda	skinaway	Minneapolis	MN	55410
Christeen	Stone	St Paul	MN	55109
Beverly	Adams	Mpls	MN	55404
Judy	Sausen	Richfield	MN	55423
Keiko	Takahashi	Wayzata	MN	55391
Jay		Eagan	MN	55123
Terry	Irish	Minneapolis	MN	55407
Sue	Morem	Mpls	MN	55442
Jeffrey	Smith	Bemidji	MN	56601
Caroline	Collins	Coon Rapids	MN	55448
Vivian & Ken	Hensel	Faribaault	MN	55021
Rosie	Neher	Lauerdale	MN	55113
Dianne	Och	new hope	MN	55428
John	Wilson	Oakdale	MN	55128
Michael	McNeil	Minneapolis	MN	55405
Chiara	Toschi	paganico	MN	55012
Laurie	Duncan	Brooklyn Park	MN	55443
Ann	Laitinen	Rogers	MN	55374
Carolyn	Dreeszen	Edina	MN	55424
Rodd	Ringquist	Forest Lake	MN	55025
Pam	Christopherson	Wabasha	MN	55981
Ann	Beane	Shoreview	MN	55126
Grace	ernster	sartell	MN	56377
Shaunna	McBride	Minneapolis	MN	55406
Lee	Blowers	Waseca	MN	56093
Sandee	simenson	Mpls	MN	55413
Elizabeth	Elliott	Edina	MN	55424
Michael	Hon	Plymouth	MN	55447

Ruth	Oliveira	Entroncamento	VA	23302
L	Power	centreville	VA	20120
Cynthia	Davis	Pulaski	VA	24301
Donna	Gigante	Fredericksburg	VA	22401
Sharon	Posey	McGhaeysville	VA	22840
Kimberley	Martin	Richmond	VA	23233
Sheridan	L.Risley	Springfield	VA	22150
T	Morris	Henrico	VA	23233
Kathy	Watson	Ruckersville	VA	22968
Michelle	Pashko	Haymarket	VA	20169
Tia	Trevallion	Gloucester	VA	23061
Allyson	Kennedy	Richmond	VA	23236
Franklin	Charity	RICHMOND	VA	23221
Ryan	Timm	North Chesterfield	VA	23236
Dave	Potvin	Norfolk	VA	23507
Derek	Gygax	Richmond	VA	23220
Julie	Phalon	manassas	VA	20112
Meg	buck	woodbridge	VA	22801
Merrill	Boone	Arlington	VA	22203
Olivia	Samerdyke	Big Stone Gap	VA	24219
Steve	Garron	Arlington	VA	22206
Deborah	Weinischke	Floyd	VA	24091
Alana	Paul	Richmond	VA	23116
Ryan	Kell	glen allen	VA	23060
Blaine	Blackthorne	Galax	VA	24333
Tara	Giles	Quinton	VA	23141
Christopher	Brown	Arlington	VA	22202
Matea	Leon	Virginia Beach	VA	23464
jodie	derrow	Dayton	VA	22821
Kenneth	Lokke	Arlington	VA	22204
Monischa	Wright	Vinton	VA	24179
Tracey	Pierson	Gate City	VA	24251
Michelle	Munion	Concord	VA	24538
Werner	LInd	Bluefield	VA	24605
Maria	Pavan	Milano Italy	VA	20151
Finhas	Benyam	Arlington	VA	22204
Julie	Frye	Charlottesville	VA	22903
Heather	Mann	Spotsylvania	VA	22553
Laura	Wilson	Norfolk	VA	23513
Tanya	Ramseyer	Norfolk	VA	23508
Kelly	Dungan	Virginia Beach	VA	23451
elaine	broadhead	middleburg	VA	20118
Elizabeth	Oliveira	Rio de Janeiro	VA	22743
Roberto	Oliveira	Rio de Janeiro	VA	22743
Mariana	Oliveira	Rio de Janeiro	VA	22743
Melanie	Redding	Woodbridge	VA	22192
Thomas	Gannon	Montpelier	VA	23192
Anne	Richards	Ashland	VA	23005
Emily	Landers	nokesville	VA	20181

Juliana	Torres	Rio de Janeiro	MN	55021
Marleen	Neus	Zele	MN	11111
Ramona	Kopnick	Sandstone	MN	55072
Karen	Hatlestad	Maplewood	MN	55117
Jay	Wohlert	Festus	MO	63028
Ashley	Kight	Saint Charles	MO	63303
Ryan	Deisner	st. louis	MO	63146
Heather		Kansas City	MO	64129
Jenni	Hamilton	Plattsburg	MO	64477
Nancy	Dickinson	University Ciey	MO	63132
Larry	Rollings	Kansas City	MO	64110
Larry	Trochtenberg	st. louis	MO	63146
Nadine	Cochran	Barnhart	MO	63012
Judy	Wardlow	St. Louis	MO	63141
Keith	Krupinski	Kansas City	MO	64155
Lucy	Church	Kansas City	MO	64151
Douglas	Berg	Saint Louis	MO	63130
Norbert	Habermann	Offenbach	MO	63071
David	Grunwaldt	Lebanon	MO	65536
Lauren	Rapp	St. Louis	MO	63143
Daniela	HÃ¶hn	Hadamar	MO	65589
Skip		fflorissant	MO	63031
Linda	Bishop	El Dorado Springs	MO	64744
lora	yarbrough	Holts Summit	MO	65043
Karyn	Walden-Forrest	Kansas City	MO	64151
Ann	Bennett	Kansas City	MO	64138
SaphiraRain	Rain	Raytown	MO	64133
Kathryn	Holloway	Labadie	MO	63055
Terry	Moody	Joplin	MO	64803
John	Soos	Cuba	MO	65453
Crickett	Bohanan	St Louis	MO	63117
Carrie		St. Louis	MO	63129
Inci	demirsahin	Kansas City	MO	64106
Bill	Acord	St. Louis	MO	63129
William	Robinson	Kansas City	MO	64112
Hannah	Looney	Saint Joespy	MO	64506
Laura	Lamorette	Saint Peters	MO	63376
Jocelyn	Bates	Kansas City	MO	64114
Charlotte	Pisoni	St. Louis	MO	63125
Megan	Harper	Saint Louis	MO	63119
Keith	Herring	Wildwood	MO	63011
Peter	Lane	St. Louis	MO	63139
Bette	Grotegut	plattsburg	MO	64477
Patricia	McHugh	Saint Louis	MO	63130
Cindy	Bushue	Saint Louis	MO	63132
Lynne	Hooper	Hartsburg	MO	65039
Carol	Laciny	Saint Louis	MO	63130
Linda	McMullin	Springfield	MO	65802
Tina	Chaney	Blue Springs	MO	64014
Beverley	Nunnally	Newport News	VA	23601
Quentin	Fischer	Roanoke	VA	24018
Lindsey	Freeman	Chesapeake	VA	23320
John	Lander	Williamsburg	VA	23185
Christine	Murawski	Keokee	VA	24265
Michael	Supan	Norfolk	VA	23518
Waltraud	Usahanun	Wien	VI	12000
David	Borror	South Lake Tahoe	VI	830
Diana	Bain	Bridport	VT	5734
Gillian	Comstock	Lincoln	VT	5443
Janet	Fredericks	Lincoln	VT	5443
Patricia	Guerrero	Bennington	VT	5201
Deborah	Packard	Williston	VT	5495
Aleks	Chernomazov	montpelier	VT	5602
Rick	Klein	Ripton	VT	5766
Christopher	Wilson	North Springfield	VT	5150
Molly	Rutman	St Johnsbury	VT	5819
Gary	Lindorff	Middletown Spring	VT	5757
william		s burlington	VT	5403
Jean	Thompson	Lyndon Center	VT	5850
Sue	Stroud-Speyers	Brandon	VT	5733
Diana	St. Louis	Alburgh	VT	5440
Russell	Se	White River Junctio	VT	5001
Frank	Merewether	Vershire	VT	5079
Craig	Fortier	Williston	VT	5495
Lance	Polya	Jericho	VT	5465
Sidney	Stetson	Northfield	VT	5663
W.	Johnson	WDummerston	VT	5357
Kim	Michaels	mount austin	VT	26500
Katherine	Willcox	adelaide	VT	5159
Laurel	Vincent	Calais	VT	5648
Victorine	Shepard	Brattlebor	VT	5301
Laura	Ellenwood	Montpelier	VT	5602
Jim		Huntington	VT	5462
David	Sobel	East Wallingford	VT	5742
Ana	Bulnes	Colchester	VT	5446
Richard	Martin	Shelburne	VT	5482
JOHN	VOGT	Newport	VT	5855
Jessica	Eisenhauer	Burlington	VT	5401
Marcy	Ryan	Winooski	VT	5404
Robbin	LaRue	starksboro	VT	5487
jennifer	Galick	Bristol	VT	5443
jennifer	Galick	Bristol	VT	5443
Chinmayee	Jog	Hartford	VT	5047
Joseph		Spokane	WA	99258
Jody	Ward	Rochester	WA	98579
Antoinette	Bonsignore	Redmond	WA	98052
Giovanni	Raffaele	Capo d'Orlando	WA	98071
Judy	Friesem	Bainbridge Island	WA	98110

Charles	Rush	Pineville	MO	64856
Eric	White	St. Louis	MO	63114
Monica	Lewandowski	St. Charles	MO	63304
Karen	Manfrede	St. Louis	MO	63124
Michelle	Morgan	St Louis	MO	63109
Sandra	Zastrow	De Soto	MO	63020
Russell	Dam	New Haven	MO	63068
Bob	Stuckmeyer	St. Louis	MO	63129
Claudia	Carroll	Lees Summit	MO	64086
Bergin	Downs	SAINT LOUIS	MO	63104
Gillian	Day	Albany	MO	63301
Kevin	Naff	Springfield	MO	65810
Kevin	Naff	Springfield	MO	65810
Virginia	Jost	Ferguson	MO	63135
Stephanie	Thompson	Columbia	MO	65203
Connie	Williams	Platte City	MO	64079
Donna	Dale	Richmond Heights	MO	63117
Robert	Haslag	Centertown	MO	65023
Lynn and Bud	Hudson	Columbia	MO	65202
Cathy	Pyle	Mountain View	MO	65548
Julianne	Craig	St. Louis	MO	63104
Marilyn	Montgomery	Fenton	MO	63026
Liz	Goss	Saint Louis	MO	63110
Caitlin	Torrence	Saint Louis	MO	63141
Joel	Frey	House Springs	MO	63051
Jan	McMichael	Kirkwood	MO	63122
Chriss	Wood	Springfield	MO	65803
Ann	Clutter	Springfield	MO	65804
Dustyn	Fullerton	Kansas City	MO	64111
Ronna	Sommers	Fordland	MO	65652
Wendye	Kolles	St Louis	MO	63132
Natascha	Gambs	Zwingenberg	MO	64673
Donna	Adams	mo	MO	64111
Pamela	Click	Cuba	MO	65453
Anasa	Lewis	Wentzville	MO	63385
Janet	Curtis	Saint Charles	MO	63303
Mary	Gerlt	Kansas City	MO	64110
Sue	Wilson	st. louis	MO	63139
Susan	Lanigan	St. Louis	MO	63130
Kaylynn	Rampley	St Louis	MO	63146
Jacqueline	Herder	Landgraaf (NL)	MO	63745
AJ	Lenox-Krug	Saint Louis	MO	63130
Lisa	Seidler	Saint Peters	MO	63376
Elane	Swanick	Saint Louis	MO	63129
Thomas	Hardy	Saint Louis	MO	63130
Lora	Steiner	Kansas city	MO	64152
Clara	Hamill	St.Louis	MO	63109
Christopher	Petty	Dixon	MO	65459
James	Arneson	Springfield	MO	65804

Jane	Nicolai	Vancouver	WA	98664
Karen	Silliman	Rainier	WA	98576
Willie	Edwards	Tacoma	WA	98408
Laura	MacGregor	Seattle	WA	98136
Kathleen	Williams	Everett	WA	98208
Jason		Olympia	WA	98506
Julio	Leon	Bellevue	WA	98009
Thomas	Hart	Seattle	WA	98125
Marcia	Monma	Clinton	WA	98236
Kelly	Davis	Everett	WA	98204
Billy	Snook	Vancouver	WA	98685
Kindra	Bandy	Olympia	WA	98501
Gary	Albright	Snohomish	WA	98296
Lee	Buffington	Mercer Island	WA	98040
Jean	Hodgson	Kirkland	WA	98033
James	Cooke	Kennewick	WA	99337
Mary	Mansfield	Langley	WA	98260
Tora		Seattle	WA	98103
Sue	Luzia	Blaine	WA	98230
Kelsey	Langille	Bellingham	WA	98229
Nancy	Bissell	Newcastle	WA	98059
Jason	Graves	Gig Harbor	WA	98335
Sheila	Hara	Medina	WA	98039
Michael	Shook	Vashon	WA	98070
James	McIntosh	Pullman	WA	99163
Byron	Wilkes	Edmonds	WA	98020
L	Jarvis	Chimacum	WA	98325
William	Davison	Everett	WA	98204
Bob	Stoddard	Spokane	WA	99207
Robert	Wilbur	Coupeville	WA	98239
Lee Ann	Greaves	Spokane	WA	99206
Dasha	G	Sammamish	WA	98074
Pearl	Ranstrom	Vashon	WA	98070
Gary	Porter	Edmonds	WA	98026
Debbie	Noyes	Bellevue	WA	98005
Douglas	Marchel	Menton	WA	6500
Liz	Campbell	seattle	WA	98103
Melissa	Monaghan	Belfair	WA	98528
Amanda	Scarberry	Seattle	WA	98112
Christy	Anderson-Crosen	ford	WA	99013
Neccia	Celli	Blaine	WA	98231
HankWSr		Seattle	WA	98117
Judith	Carter	Friday Harbor	WA	98250
Thomas	Odegard	Friday Harbor	WA	98250
Leslie	Ferriel	Vashon	WA	98070
claudia	fernandez	Seattle	WA	98118
Kirk	Francis	langley	WA	98260
Kathleen	Lowney	Issaquah	WA	98029
Louis	Poncz	Redmond	WA	98053

Greg	Yeargain	Ironton	MO	63650
Allison	Acker	Kansas City	MO	64131
Loretta	Frazee	Sunrise Beach	MO	65079
Craig	Austin	St. Louis	MO	63123
Jackie	Welsh-Holder	Fenton	MO	63026
Cristina	Preda	Milan	MP	20097
Jerry	Bangham	Port Gibson	MS	39150
Stacey	Burrow	HERNANDO	MS	38632
Lisa	Dunn	Flowood	MS	39232
Melanie	Wadkins	University	MS	38677
Maryann	Trevillion-Hill	Oxford	MS	38655
Amanda	Finnegan	City of Salford	MS	38749
Patricia	Godri	Carthage	MS	39051
Sally	Hester	Starkville	MS	39759
Glen	Sandberg	Gulfport	MS	39501
Shannon	McNally	Holly Street	MS	38635
Allison	Anderson	Meridian	MS	39305
Neely	Alberson	Starkville	MS	
Lynda	Traylor	Jackson	MS	39209
Tania	Hector	Alder	MT	59710
Pete	Tenney	White Sulphur Springs	MT	59645
Michael	Butz	Billings	MT	59102
Kim	ELockwood	Bozeman	MT	59715
Mateja	Presern	Glasgow	MT	59230
Brian	Jones	Whitefish	MT	59937
Bev	Jackson	Missoula	MT	59802
Mary Jane	Byard	Missoula	MT	59804
Jim	Davis	Billings,	MT	59105
Kate	Wilson	Billings	MT	59105
Gil	Jordan	coram	MT	59913
Jerry	Voss	Missoula	MT	59801
Janelle	Gentry	Kalispell	MT	59901
Jillian	Fiedor	Billings	MT	59101
Lila	Cebulla	Bozeman	MT	59715
Noah	Tempero	absarokee	MT	59001
Janet	Lyon	Missoula	MT	59804
Randolph	Jakes	Lakeside	MT	59922
Joel	Vignere	Lakeside	MT	59922
Jeanette	Copeland	Missoula	MT	59801
Joseph	Schembri	malta	MT	59538
Malu	Malu	popayan	MT	59330
Lisa	Koyama	Bozeman	MT	59715
G	Bishop	Hamilton	MT	59840
Jean	McAllister	Billings	MT	59102
Kay	McPherson	Missoula	MT	59803
Jennifer	Hane	Bozeman	MT	59715
Pamela	Baillio	Big Sky	MT	59716
Kyrie	Smith	Great Falls	MT	59405
Wm	Schultz	whitefish	MT	59937
Xanthe	Denning	Mercer Island	WA	98040
Segue	Fischlin	Seattle	WA	98102
Rebecca	Leuck	Seattle	WA	98126
TERESA	THOMPSON	SEATTLE	WA	98146
Jessica	Powers	Ellensburg	WA	98926
Jack	Scott	Sequim	WA	98382
Sara	Hackenberg	Moses Lake	WA	98837
Gaby	Adam	Seattle	WA	98116
Justin	Roberts	Seattle	WA	98028
Melissa	McCool	Selah	WA	98942
Peggy	Reynolds	Ferndale	WA	98248
Anne	Danford	marblemount	WA	98267
Kelly		longview	WA	98632
Dan	Morris	Seattle	WA	98117
sarah	lennon	Vancouver	WA	98230
Irene	Blomberg	Lopez	WA	98261
Brian	D	Seattle	WA	98122
Shannon	Svensson	Snohomish	WA	98290
Jonthan	Raney	Bellingham	WA	98225
Vanessa	Estes	Issaquah	WA	98029
Dennis	Wilson	Sequim	WA	98382
Vanessa	Richie	Vancouver	WA	98685
Ben	Straub	Sedro Woolley	WA	98284
Mary Jo	Dugaw	Fall City	WA	98024
Patt	Doyle	Forks	WA	98331
Nate	Marino	Bellingham	WA	98226
Mike	Conlan	Redmond	WA	98052
Frederick	Forschler	Oak Harbor	WA	98277
Margaret	Rose	Seattle	WA	98133
Holly	treichler	brush praqirie	WA	98606
Carolyn	Cilek	Twisp	WA	98856
Allen	Sandico	Seattle	WA	98102
Marla	Farren	Shelton	WA	98584
JoTasha	Traylor	Pullman	WA	99163
Frances	Marcolli	Port Orchard	WA	98367
Kate	McClure	Auburn	WA	98001
Danielle	Shook	bellingham	WA	98228
Kevin	Anderson	Omak	WA	98841
Audrey	Richards	seattle	WA	98107
Robert	Ethington	Spokane	WA	99208
Veronique	Smith	South Seattle	WA	98108
Mary	Van De Ven	Des Moines	WA	98198
Sharalyn	Bell	Tacoma	WA	98405
Gloria	Sting	Burien	WA	98166
Matt	Courter	Seattle	WA	98178
Laura		Seattle	WA	98105
Krista	melby	panaway	WA	98387
Gillian	Devine	Burwood	WA	98720
Charles	Fornia	Everett	WA	98204

Karen	Hoth	Kalispell	MT	59901
Mary Ann	Stoffregen	Busby	MT	59016
Natalie	Griffin	Billings	MT	59102
Edie	Schroedel	Fort Shaw	MT	59443
Allison	Breaux	Kitty Hawk	NC	27949
Bruce	Goodwin	Pittsboro	NC	27312
SUSAN	DAMERON	Lincolnton	NC	28092
Rita	Greeson	Fayetteville	NC	28303
Charlie	Wallin	Boone	NC	28607
Devona	Wyant	Lincolnton	NC	28092
		Burlington	NC	27215
Stanley	Black	Chapel Hill	NC	27517
Nancy	O'Dell	MURPHY	NC	28906
Francis	Penkava	Charlotte	NC	28213
Caroline	Wyrosdick	asheville	NC	28801
Patricia	Van Wagner	Southport	NC	28461
John	Bradshaw	Charlotte	NC	28212
Theresa	Rubin	Raleigh	NC	27606
William		Maggie Valley	NC	28751
Lauren	Wood	Mount Airy	NC	27030
Cynthia	Whidby	Knightdale	NC	27545
Nancy	Briggs	Fayetteville	NC	28304
Georgianna	Honeycutt	Godwin	NC	28344
Ernie	Howard	Asheville	NC	28804
Julia	Ruth	Wilmington	NC	28403
Crystal	Groover	Wilmington	NC	28412
Ronken	Lynton	Pittsboro	NC	27312
Sarah	Jagdmann	Apex	NC	27502
Rose	Goode	Lumberton	NC	28358
Dianna	Inscoe/Oakes	Wilmington	NC	28403
Jamie	Showers	Sneads Ferry	NC	28460
Nashira	Steiger	Charlotte	NC	28205
Justin	Cannon	Asheville	NC	28806
Lainie	Covington	Asheville	NC	28806
Alex	Frey	High Point	NC	27265
Wayne	Drum	Gastonia	NC	28056
Zandra	Talbert	Chaoel Hill	NC	27517
David	Stone	Apex	NC	27523
Shelby	Smith	Winston-salem	NC	27101
Eli	Celli	Chapel Hill	NC	27516
Rachel	Niketopoulos	Raleigh	NC	27603
Heywood	Jablowme	Huntersville	NC	28070
Greg	Austin	Wilmington	NC	28403
Lisa	Hollis	Leland	NC	28451
Susie	Edwards	Cary	NC	27513
Bradford	Boll	Chapel Hill	NC	27516
Cynthia	McCray	Charlotte	NC	28212
Barbara	Burkett	Shelby	NC	28152
Patricia	Adams	Waynesville	NC	28786

Susan	Hunt	Camano Island	WA	98282
Nancy	Watson	Sequim	WA	98382
Nancy	Hayden	Spokane	WA	99217
David	Daniels-Lee	Ocean Shores	WA	98569
Kristen	Meston	Woodinville	WA	98077
Christian	Bookter	Goldendale	WA	98620
Shawna	Harrold	Woodinville	WA	98072
Nicole	ketchum	Shoreline	WA	98133
Arieh	Stolar	Kent	WA	98032
Ted	Ebert	Coupeville	WA	98239
Seth	Snapp	Bellingham	WA	98225
Laurie	Werbner	Bellingham	WA	98225
Doug	Peterson	Port Townsend	WA	98368
Jeff	Grant	Seattle	WA	98118
Hilary	Klein	Bainbridge Island	WA	98110
Michael	MacDougall	Nine Mile Falls	WA	99026
Chris	Kotzer	kirkland	WA	98034
Chester	Lusk	Seattle	WA	98109
Lynnsey	Martin	Vancouver	WA	98662
Sarah	Sanford	Bellevue	WA	98007
Gina	Ryhal	Lynnwood	WA	98036
Elisabeth	Perrin	Seattle	WA	98117
Dung	Nguyen	Seattle	WA	98144
John	Walenta	Seattle	WA	98103
Micheal	Bauter	Concrete	WA	98237
Erin	Derrington	Bellevue	WA	98005
Michael	Huber	Orcas	WA	98280
Stephanie	Erickson	Yakima	WA	98908
Ron	MacArthur	port orchard	WA	98366
Michael	Gan	Kennewick	WA	99336
Nancy	evans-jones	Kingston	WA	98346
Paul	de Morsella	Seattle	WA	98119
T	Izeppi	Seattle	WA	98116
AM	Hall	Tacoma	WA	98406
Patricia	Carmichael	Bellevue	WA	98005
Francis	Wood	Seattle	WA	98122
Susan	Patenaude	Newport	WA	99156
Laur		Seattle	WA	98104
Lynn	Graham	Bellingham	WA	98225
Richard	Hernandez	Kirkland	WA	98034
Patrick	Kerwin	GOLDENDALE	WA	98620
Anne	Cross	Port orchard	WA	98366
vijay	gan	Bellevue	WA	98007
Doug	MacNamara	Tacoma	WA	98402
Stephen	Graham	Vashon	WA	98070
Robert		Edmonds	WA	98026
Marilyn	Roberts	Federal Way	WA	98003
Brittany	Jones	Lynnwood	WA	98087
Sue	Stevens	Sammamish	WA	98074

Michael	Smith	Forest City	NC	28043
Ann	Polanski	Wilmington	NC	28405
William	Young	Carrboro	NC	27510
Amanda	Lowe	Denton	NC	27239
Tucker	Bailey	belews creek	NC	27009
IQBAL	aHMAD	durham	NC	27713
Yanara	Cabrelles	Madrid	NC	28224
Patricia	Burgert	Matthews	NC	28105
Wendy	Om	Louisburg	NC	27549
Donese	Preswood	Banner Elk	NC	28604
Betsey	Granda	Chapel Hill	NC	27516
Barbara	Dickinson	Durham	NC	27701
Jayne	Boyer	Durham	NC	27707
Susan	Shephard	Bakersville	NC	28705
Hannelore	Barke	Bremen	NC	28325
deborah	mcguinn	Willow Spring	NC	27592
Misty	Wilbanks	Wilmington	NC	28403
Meghan		Winston-Salem	NC	27106
Bob	High	Charlotte	NC	28213
Morgan	Davis	Raleigh	NC	27609
Melissa	Sprouse	Carthage	NC	28327
Laura	jsingletary	Kill Devil Hills	NC	27948
ED		Aberdeen	NC	28315
Linda	Pannullo	Asheville	NC	28804
Oksana		Vinnitsa	NC	27030
Janice	Hairston	Reidsville	NC	27320
Carol	Pfeiffer	Charlotte	NC	28226
Z	Director	Black Mountain	NC	28711
Nancy	Byrum	Winston-Salem	NC	27107
Nichole	Krist	Raleigh	NC	27609
Mary	Buchanan	Lexington	NC	27292
Cathy	Whitman	Stokesdale	NC	27357
Cheryl	McGraw	Rocky Point	NC	28457
Teresa	Baker	creedmoor	NC	27522
Vicky	Burke	Mills River	NC	28759
Irene	Brown	Newland	NC	28657
Soren	Palmer	Hillsborough	NC	27278
Greg	Tourian	RALEIGH	NC	27613
Carolyn	Hurley	Wilmington	NC	28411
Meghan	Prior	Winston-Salem	NC	27106
Noel	Parenti	Winston-salem	NC	27106
Charles	Thibaut	chapel hill	NC	27516
Bill and Mary	Staton	Charlotte	NC	28226
Sarah	Weil	Pittsboro	NC	27312
Betty	Santos	Canton	NC	28716
Florine	Kreeb	Charlotte	NC	28210
Paul	Turner	Leicester	NC	28748
Sarah	Taylor	Lumberton	NC	28358
Lauren		indian trail	NC	28079

Stephen	Ekholm	Bainbridge Island	WA	98110
Rebecca	Roybal	Mukilteo	WA	98275
Catherine	Chutich	Seattle	WA	98136
Stacy	Hollister	Spokane	WA	99205
Sarah	Bennett	Tacoma	WA	98405
Melody	Lambert-Smith	Tacoma	WA	98401
Nance		Davenport	WA	99122
Jan	Ellis	Gig Harbor	WA	98332
Martin	Rushkarski	Monroe	WA	98272
Mary	Sebek	Seattle	WA	98103
Karen	Renfroe-Gielgens	Kirkland	WA	98034
Melissa	haight	Snohomish	WA	98296
Andria	Herron	BREMERTON	WA	98310
Lynn	Untalan	Seattle	WA	
Rhodila	Allred	Belfair	WA	98528
james	day	seattle	WA	98136
Gregory	Severson	Lynnwood	WA	98087
Kathleen	Bailey	Tukwila	WA	98168
Yvonne	Donnelly	EVERETT	WA	98203
Angela	Kelly	Olympia	WA	98501
Autumn	Grennier	Friday Harbor	WA	98250
Amanda	Davis	BURIEN	WA	98166
Nora	Weaver	Bellingham	WA	98226
Sandra	Gehri-Bergman	Lynnwood	WA	98036
Brenda	Bachman	Seattle	WA	98116
Heidi	Gould	Tenino	WA	98589
Stephanie	Trasoff	Blaine	WA	98230
Elizabeth	Lawrence	Seattle	WA	98125
Marietta	Matthews	Ellensburg	WA	98926
Marietta	Lyon	L'Anse Vata	WA	98807
Ryan	Reid	Olympia	WA	98506
Fay	Payton	Carnation	WA	98014
Karen	Kelly	camano island	WA	98282
Rebecca	Cook	Friday Harbor	WA	98250
Michael	Davis	Seattle	WA	98107
Mike	Bayle	Everett	WA	98208
Mindie	McDonnell	Seattle	WA	98177
Richard	Plancich	Shoreline	WA	98155
Kristi	Hendrickson	Seattle	WA	98144
Ramona	MENISH	Bellingham	WA	98229
Nena	Dunn	Bainbridge Island	WA	98110
Scott	Meixner	Richmond	WA	98021
Caitlyn	Oswell	Olympia	WA	98516
Jean	White	Bellevue	WA	98008
Thelma	Follett	Bellingham	WA	98228
Kari	Krom	Vancouver	WA	98665
Michael	Snow	Bellingham	WA	98225
Cory	McQuerry	Yakima	WA	98902
Kiwibob	Glanzman	Seattle	WA	98115

Shirley	Rodman	Greensboro	NC	27410
Donna	Varner-Sheaves	Wake Forest	NC	27587
Cristina	Moorman	Madrid	NC	28814
Maria	Campano	Durham	NC	27713
Donna	VanOrsdell	SILER CITY	NC	27344
sherril	longano	lenoir	NC	28645
Todd	Patton	Durham	NC	27705
laura	carpenter	charlotte	NC	28277
Kat	Suricata	Fletcher	NC	28732
Denise	Cobb	Raleigh	NC	27616
Janis	Ellison	Connelly Springs	NC	28612
Christina	King	BURLINGTON	NC	27215
Heide	Coppotelli	Cedar Mountain	NC	28718
Susan	Galante	Fuquay Varina	NC	27526
Susan	Savia	Winnabow	NC	28479
Debbie	Burroughs	Edenton	NC	27932
Sarah	Greene	Belmont	NC	28012
Joseph	O'Donnell	wilmington	NC	28403
Jacqueline	Gross	Wilmington	NC	28403
Marcia	Pitroski	Supply	NC	28462
Janet	Tice	Chapel Hill	NC	27516
Liddy	Wilson	Charlotte	NC	28210
madeleine	watt	cashiers	NC	28717
Julie	Booton	Raleigh	NC	27614
Chester	Domanski	waxhaw	NC	28173
jeanette	nicola	Jacksonville	NC	28546
Tina	Elleman	Leland	NC	28451
Shamus	Nilan	otto	NC	28763
Keith	Allen	Cedar Grove	NC	27231
Cindy	Yates	Castle Hayne	NC	28429
Shoshanah	Naiman	CHAPEL HILL	NC	27517
Jeanette	Seidel	Charlotte	NC	28210
Melanie	MacLennan	Asheville	NC	28804
cindy	moore	Wilmington	NC	28401
Cynthia	Weeks	Newport	NC	28570
Thomas	Trescone	Asheville	NC	28803
Dan	Fountain	Cary	NC	27511
Vasu	Kilaru	HILLSBOROUGH	NC	27278
Valarie	Snell	Greensboro	NC	27406
Lucas	Teter	Charlotte	NC	28277
Skye	McDonald	Mooresville	NC	28115
Janice	Alexander	Wilmington	NC	28405
Ann	Pitts	Moyock	NC	27958
Darrell&Carol		Charlotte	NC	28269
April	Bazin	wilmington	NC	28411
michelle	wright	franklinton	NC	27525
Lois and Bill	Buenau	Mooresville	NC	28117
Naomi	Moore	Asheville	NC	28803
Sheron	Crosby	Hendersonville	NC	28792
Rebecca	DeGeorge	Seattle	WA	98144
Christopher	russell	Lacey	WA	98516
Zack	Blomberg	lopez	WA	98261
Amanda	Rudisill	Olympia	WA	98508
Kat	Thomas	Seattle	WA	98104
Sandra	Dubpernell	Coupeville	WA	98239
Rebecca	Ferrell	bellevue	WA	98008
Ingrid	Pechenkov	Seattle	WA	98103
Ed	Bomkamp	Chimacum	WA	98325
george	mccabe	Spokane	WA	99206
Keith	Milligan	Spokane	WA	99202
M	Wahosi	Bremerton	WA	98312
Stephen		lynnwood	WA	98087
Corlyn		North Vancouver	WA	98060
Michele	Henley	Everett	WA	98203
Shelley	Cotrell	Washougal	WA	98671
Lakota	Crystal	Roy	WA	98580
Barbara	Robinson	Spokane	WA	99207
John	Fix	QUINCY	WA	98848
Janice	Vakili	Vancouver	WA	98685
amanda	middleton	Burlington	WA	98233
Shanda	Kruse	Lacey	WA	98503
lola	schiefelbein	Richland	WA	99352
Marcy	Meachum	Snohomish	WA	98290
Sheree	Bala	Seattle	WA	98155
Linda	Nelson	Vancouver	WA	98661
Sarra	Tekola	Seattle	WA	98107
Agustina		Racine	WI	53402
Marta	NidziÅ„ska	Wroclaw	WI	54129
phyllis	mays	Brookfield	WI	53045
marlena	tzakis	West Allis	WI	53214
Rebecca	Osborn	Madison	WI	53704
Laura	Summers	Sheboygan	WI	53083
Jerrilynn	Tzakis	West Allis	WI	53214
Christopher	Downs	Williams Bay	WI	53191
John	Laughlin	River Falls	WI	54022
K	Odell	Madison	WI	53711
Christopher	Rockwood	Wauwatosa	WI	53213
Richard	Scoby	Cross Plains	WI	53528
Kathy	Varese	Cross Plains	WI	53528
Carla	David	marshfield	WI	54449
Allen	Clark	Madison	WI	53711
Aly	Bettinger	Spring Green	WI	53588
Katie	Polzin	grafton	WI	53024
Shay	Sherfinski	Brookfield	WI	53005
Deb	Sands	De Forest	WI	53532
Diane	Giese	Green Bay	WI	54303
James	Jerschefske	Franklin	WI	53132
Joel	Piche'	Franklin	WI	53132

jimmie	hultman	shelby	NC	28150
Sonja	Stahlhut	Durham	NC	27713
Molly	McKinney	Charlotte	NC	28203
Ginger	Sikes	Currituck	NC	27929
Roger	Lentz	Hickory	NC	28602
dana	pajack	Granitefalls	NC	28630
Cynthia	Gross	Kernersville	NC	27284
Giana	Paz	Hendersonville	NC	28791
Christine	Collette	hickory	NC	28601
Karen	Loughmiller	Asheville	NC	28804
		Jackson Springs	NC	27281
Dominic	Anglim	Madrid	NC	28041
Suzanne	Hege	Concord	NC	28027
Brenda	Cumpston	Pittsboro	NC	27312
Joann	Emerson	Belhaven	NC	27810
Katherine	Meyer	Forest City	NC	28043
James	Phelps	HENDERSONVILLE	NC	28791
Margaret	Sederoff	Raleigh	NC	27606
Sarbaga	Falk	Carrboro	NC	27510
Sonia	West	Chapel Hill	NC	27516
christine	o'connell	Cedar Pt	NC	28584
Caleb	Turmel	Greensboro	NC	27403
Donna	Surles	Hazelwood	NC	28738
Jill	O'leary	Southport	NC	28461
Robin	Medley	Greensboro	NC	27406
Paul	McLain	Raleigh	NC	27613
Robert	Bell	Chapel Hill	NC	27516
Julianna	Benefield	CARY	NC	27513
Hunter	Cox	Youngsville	NC	27596
Lisa	Harris	Arden	NC	28704
Alissa	Ray	Burnsville	NC	28714
Mary	Combs	Marion	NC	28752
Terry	Woods	Stokesdale	NC	27357
Sarah	Pearson	Raleigh	NC	27606
Page	Walker	Hertford	NC	27944
CÃ©sar	FernÃ¡ndez	Madrid	NC	28032
Ãngela	de GonzÃ¡lez	Madrid	NC	28032
Francisco	CerviÃ±o	Madrid	NC	28032
CÃ©sar	CerviÃ±o	Madrid	NC	28032
Brenda	Herndon	Charlotte	NC	28269
Niyaso	Cannizzaro	Asheville	NC	28801
Grace	Hepler	Clemmons	NC	27012
Aoife	Duna	Charlotte	NC	28207
Holly	Howell	Wilmington	NC	28401
Arstzn	Byrd	Warrenton	NC	27589
Loren	White	Bismarck	ND	58501
Tim	Anderson	Edgeley	ND	58433
Luke	Ouradnik	Fargo	ND	58103
Chris	Hass	Fargo	ND	58103

Caryl	Terrell	Madison	WI	53717
Susan	Hill	Ripon	WI	54971
Bob	Ramlow	Amherst	WI	54406
At	Bridge	WAUTOMA	WI	54982
Ruth	Johnston	Hales Corners	WI	53130
Andy	Stevens	Eau Claire	WI	54073
Sandy	Porter	MADISON	WI	53714
William	Siebers	Pickerel	WI	54465
Brad	Hahn	St Francis	WI	53235
Lyn	Strangstad	Mineral Point	WI	53565
Kim	Grittner	Madison	WI	53719
Brian	Pierce	Green Bay	WI	54311
Melissa	Anglin	Verona	WI	53593
Lisa	Lind	Pickerel	WI	54465
Laura	Poquette	Milwaukee	WI	53209
Sakari	Lindhen	Kenosha	WI	53143
Elizabeth	Hoch	Brookfield	WI	53005
Don	Gawronski	South Milwaukee	WI	53172
Pauline	McGowan	Plymouth	WI	53073
Ronald	Schroeder	Neosho	WI	53059
Travis	Hunter	Madison	WI	53711
Elizabeth	Kugi	Sinsinawa	WI	53824
Sue	Knaack	Appleton	WI	54915
Maren	Erickson	Milwaukee	WI	53207
Cynthia	Hines	tomah	WI	54660
Bonnie	Gatz-Kagel	Wautoma	WI	54982
Jim	Pech	Madison	WI	53718
Di	Koenig	Muskego	WI	53150
Pia	KASS	BASTENDORF	WI	9350
Andrew	Becker	Madison	WI	53704
Margaret	Wilson	Green Bay	WI	54313
Anita	Malinski	Argyle	WI	53504
Spencer	Walts	Madison	WI	53703
Vicki	Moore	Kenosha	WI	53142
Carole	Klumb	Eagle	WI	53119
Heidi	Endres	Wauwatosa	WI	53222
Laura	Stewart	madison	WI	53704
Agustina		Racine	WI	53402
andrea	Cockerham	Wauwatosa	WI	53213
Courtenay	Teska	Racine	WI	53406
Tracie	Brannan	Milwaukee	WI	53214
Janice	Sorensen	Burlington	WI	53105
George	Lorenz	Waupaca	WI	54981
Robert	DeLucca	Wausau	WI	54401
Harvey	Dym	Madison	WI	53711
Harvey	Dym	Madison	WI	53711
Terri	Bleck	Madison	WI	53711
Monica	O'Brien	Madison	WI	53711
Jane	Nicholson	Manitowish Waters	WI	54545

Katlyn		Omaha	NE	68124
Margaret	Mainelli	Omaha	NE	68106
Tim	Golden	Lincoln	NE	68516
Connie	Henley	Bellevue	NE	68005
Malinda	Plog	Scottsbluff	NE	69361
Randy	Smith	Omaha	NE	68134
Nancy	Shelley	Lincoln	NE	68510
Amanda	Gangwish	Bellevue	NE	68133
Katie		Omaha	NE	68137
Jill	Stauffer	papillion	NE	68133
Vera	Petty	omaha	NE	68107
Renae	McKeon	Kearney	NE	68845
Debra	Watson	ALLIANCE	NE	69301
Ingrid	Sawyer	Omaha	NE	68137
Eugenia		omaha	NE	68134
Allen	Mittan	Omaha	NE	68164
Donna	Matthews	Indianola	NE	69034
Theresa	Hettenbaugh	Lincoln	NE	68516
Becky	Boucher	Lincoln	NE	68516
john	canepa	WARNER	NH	3278
Evie	Hammerman	Jaffrey	NH	3452
Carolyn	Maki	deerfield	NH	3037
Ruth	Meyer	Keene	NH	3431
Janis	Cashman	WOLFEBORO	NH	3894
Robert	Mathews	Deerfield	NH	3037
Donna	Thelander	Dover	NH	3820
Deborah	Bruss	Concord	NH	3301
Norma	Dow	Raymond	NH	3077
Robert	Battersby	Center Conway	NH	3813
Pamela	Cote	gilford	NH	3249
Merryl	Goldman	Alexandria	NH	3222
Carole	arbour	Huddon	NH	3051
Marie	Abbott	Chester	NH	3036
Alethea	Kehas	Bow	NH	3304
Wendy	Palmquist	Plymouth	NH	3264
Betty	Mauser	Manchester	NH	3104
Robert	Goerss	Intervale	NH	3845
lena		warner	NH	3278
Marlene	Chamberlain	Goshen	NH	3752
Patrick	Eggleston	Keene	NH	3431
Virginia	Laplante	Canterbury	NH	3224
Gerry	Coffey	hollis	NH	3049
J	Nadeau	Sanbornton	NH	3269
Marika	Wilde	Barrington	NH	3825
Hank	Ciofrone	Hollis	NH	3049
Amanda	Alley	Claremont	NH	3743
Christine	Gealy	Danbury	NH	3230
Jane	Laberee	Dover	NH	3820
Maria	mercedes	Dunbarton	NH	3046
Victoria	Trinko	Bloomer	WI	54724
Jessica	Foster	Milwaukee	WI	53207
Cynthia	Becker	Green Bay	WI	54313
Annika	Jones	Madison	WI	53704
Kaye	Robbins	Marinette	WI	54143
Norm & Kris	Aaron-Benedum	Cambridge	WI	53523
Virginia	Calden	Madison	WI	53703
Deanna	Atkinson	Twin Lakes	WI	53181
Joshua	Rockley	West Allis	WI	53214
Lisa	Ferstadt	Mequon	WI	53092
Sydney	Cohen	Wausau	WI	54403
Randy	Herman	Madison	WI	53716
David	Carr	Madison	WI	53703
Brian	Wagner	New Berlin	WI	53151
Brett	Lytner	Racine	WI	53406
John	Skophammer	Madison	WI	53718
John	Kraemer	Chippewa Falls,WI	WI	54729
Heather	Gracyalny	Waukesha	WI	53189
Linda	Yost	Oshkosh	WI	54902
James	Reinke	Madison	WI	53704
Nicole	Perow	Milwaukee	WI	53207
Cassandra	Creedy	Madison	WI	53704
Lynn	Ermis	Milwaukee	WI	53224
Vicki	Logemann	West Allis	WI	53214
Deborah	Kmiecik	Wausau	WI	54403
Stuart	Ross	Madison	WI	53704
Scott	Pingel	Neenah	WI	54956
Carol	Steinhart	Madison	WI	53726
Patrick	Burke	Milwaukee	WI	53202
Lorrie	Ogren	Sturtavant	WI	53177
Lisa	Simon	Balsam Lake	WI	54810
Susan	Savage	Madison	WI	53705
Andrea	Snastin	brookfield	WI	53005
Robert	Chapman	Middleton	WI	53562
Jeanne	Huebner	Delavan	WI	53115
Hannah	Hansen	Merrill	WI	54452
Dennis	Willard	Oxford	WI	53952
Jennifer	Micale	Oak Creek	WI	53154
Yvonne	Barker	West Allis	WI	53214
Jodi	Kitts	Madison	WI	53704
Ray	Peters	Wautoma	WI	54982
Sharon	Jenkins	Rhinelander	WI	54501
Karen	Nelson	LaCrosse	WI	54601
Annie	Schefsky	Waubeka	WI	53021
Linda	Bruner	Beloit	WI	53511
Amy	Kokott	Lodi	WI	53555
Rita	Lemkuil	Sheboygan	WI	53081
Ryan	Pakula	Madison	WI	53706
Jean	Gillespie	Prairie du Sac	WI	53578

James	Carley	Keene	NH	3431
Joyce	Coogan	Jaffrey	NH	3452
J	Hodges	Holderness	NH	3245
Carolmae	Encherman	Hanover	NH	3755
Sammia	Panciocco	Salem	NH	3079
Meg	Huckins	Dover	NH	3820
Steven	Robbins	Londonderry	NH	3053
Jean		Portsmouth	NH	3801
Karoline	Hough	Mason	NH	3048
Lauren	Warner	Deering	NH	3244
Mike		nashua	NH	3062
Juan	Cruz	Union City	NJ	
Jeremy		Montclair	NJ	7043
Matthew	Krier	Mount Laurel	NJ	8054
Karen	Schreiber	Marlton	NJ	8053
Dawn	LaTrecchia	Hawthorne	NJ	7506
Betty	Kish	BLOOMFIELD	NJ	7003
Jose	Herrera	Kearny	NJ	7032
Bill	Luedtke	Jamesburg	NJ	8831
Veronika	Olivier	Egg Harbor Township	NJ	8234
Melinda	Mendez	Camden	NJ	8105
Dick	Canty	Bedminster	NJ	7921
Stephanie	Makala	Blairstown	NJ	7825
Michael	paxton	Allenwood	NJ	8720
Yvonne	Albrecht	Zurich	NJ	8041
Maureen	Porcelli	North Bergen	NJ	7047
Nancy	Hassab	Marlton	NJ	8053
Heather	Digan	Fair Lawn	NJ	7410
kim	Hoepfel	clark	NJ	7066
Adele	Irwin	Essex Fells	NJ	7021
Kimberly	Hoepfel	Clark	NJ	7066
Mark	lounds	Milford	NJ	8848
Kathi	Cooley	Burlington	NJ	8016
gigi	litter	bayonne	NJ	7002
Robert	Biro	Asbury Park	NJ	7712
Olga	El	Haddon Heights	NJ	8035
Joanne	Scofield	Hamilton	NJ	8690
David	Thelemaque	West Milford	NJ	7480
C	Ortiz	Hackensack	NJ	7601
Morgan	Clark	South Orange	NJ	7079
Betty	Witsen	Vineland	NJ	8361
Alicia	Slack	Plainfield	NJ	7060
chad	Vega	Jersey city	NJ	7307
Denise		Milwaukee	WI	53207
Rosa	Orsetti	Trieste	WI	34148
Fenix	Rose	Green Lake	WI	54941
Barbara	Eisenberg	Milwaukee	WI	53212
Christina	Mohr	Fairmont	WV	26554
Jamie	Pearson	wellsburg	WV	26070
Farah		kuwait	WV	25441
Michele	Murphy	Ridgeley	WV	26753
Mo	Arris	Berkeley Springs	WV	25411
Virginia	Winston	Martinsburg	WV	25404
Ellen	Shoub	Hurricane	WV	25526
Kelly	Flynn	New Cumberland	WV	26047
Shawn	Wright	Harpers Ferry	WV	25425
Marilyn	King	Smithville	WV	26178
Lynne	Sandy	Charleston	WV	25301
Peter and Dianna	Abbrecht	Shepherdstown	WV	25443
Doraetta	Hesse	Hamlin	WV	25523
Chris		Huntington	WV	25705
Deanna	Lilly	Inwood	WV	25428
Teresa	Faulkiner	Grafton	WV	26354
keith	smith	buckhannon	WV	26201
will	stolzenburg	shepherdstown	WV	25443
Debbie	Williams	Welch	WV	24801
John	Hall	Morgantown	WV	26505
Daniel	Miller	Morgantown	WV	26501
Jared	Van Fossen	Vienna	WV	26105
Carol	Brough	thermopolis	WY	82443
Laurie	Fahrner	Sheridan	WY	82801
Andrew	Carson	Wilson	WY	83014
Berta	Barbosa	MaricÃ¡	WY	22022
Edith	LeÃ³n	Hermosillo	WY	83113
Peter	Beatty	Casper	WY	82604
Jim	Laybourn	Jackson	WY	83002
Roger	Drion	Durham	WY	11111
Damon	Drion	Durham	WY	11111
Anouska	Drion	Durham	WY	11111
Gloria	Fiorini	Lander	WY	82520
Lyneane	Lewis	Johannesburg	WY	2000
Tyfani	Sager	Evanston	WY	82930
Steve	Ford	Casper	WY	82601
Philip	Breytenbach	Kathu	WY	83120
Cockney	Leicesmeth	Cheyenne	WY	82003
Deborah	Richards	Laramie	WY	82070

American Armed Forces

Micol	Arru	Armed Forces Europe	9131
Rosalia	Casals	Armed Forces Europe	8980
Christie		Armed Forces Pacific	96555
Karen	Bryant	Armed Forces Europe	9012

13 January 2013

Dear President James Kellogg and Commissioners,
The California Fish and Game Commission
P.O. Box 944209, Sacramento, CA 94244-2090

I am writing as I support and ask your support for listing of the Northeastern Pacific population of white sharks (Carcharodon carcharias) as endangered or threatened under the California Endangered Species Act.

As top predators, sharks play a very important role in our ocean ecosystem, and are one of the few natural predators of seals and sea lions in California. However, the Northeastern Pacific white shark population is at risk. Population studies show that there are only a couple hundred adult sharks in California, and they are vulnerable to ongoing threats, such as incidental catch, pollution, and other issues. The lower population of white sharks in the Northeastern Pacific will hurt the balance and health of our California ecosystem unless we protect them. Listing the white shark will allow for more public and scientific awareness, which will help to protect them and the benefits white sharks provide.

The strongest threat to the Northeastern Pacific population of white sharks is commercial gillnet fishing, catching up to 25 white sharks annually off Southern California alone.

Listing white sharks as endangered or threatened would serve several benefits; including increased onboard observer coverage in gillnet fisheries, implementation of management measures to minimize white shark bycatch, and promote research to better understand white shark population trends and threats in order to promote recovery. Please take action to list the Northeastern Pacific population of white sharks as threatened or endangered. Thank you for your consideration.

Sincerely,

Sarah Mandel

Sarah Mandel
30738 Passageway Place, Agoura Hills CA 91301

Dana Murray

Email to Commission dated January 22, 2013
"Support for White Shark CESA Listing" Attachments (13 pages)
Attached please find our comments supporting the Commission advancing the Northeastern Pacific population of white sharks (Carcharodon carcharias) as candidate species under the California Endangered Species Act. We also have public petition signers attached at the end of the letter.
Thank you,
Dana Murray
Dana Roeber Murray | Marine & Coastal Scientist
Heal the Bay | 1444 9th Street | Santa Monica, CA 90401
Tel: 310.451.1500 x139 | dmurray@healthebay.org

Geoff Shester

Email to Commission dated January 24, 2013
"support for white shark candidacy status under CESA" Attachments (4 pages)
Please find the attached letter from Oceana, Center for Biological Diversity, and Shark Stewards in support of candidacy status for white sharks under the California Endangered Species Act for inclusion in the Commission's briefing binder for the Feb 6 Commission meeting.
Thank you.
Sincerely,
Geoff Shester
Geoff Shester, Ph.D.
California Program Director, Oceana
831-207-6981

Geoff Shester

Email to Commission dated January 25, 2013
"sign-on letter from 33 groups supporting white shark candidacystatus under CESA" Attachments (4 pages)
In addition to the letter from the petitioners I sent yesterday, please accept the attached sign-on letter from 33 businesses and organizations in support of "candidacy" status for white sharks under the California Endangered Species Act, for inclusion in the briefing binder.
Sincerely,
Geoff Shester
Geoff Shester, Ph.D.
California Program Director, Oceana
831-207-6981

Heal the Bay

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Santa Monica CA 90401

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January 22, 2013

President James Kellogg and
Members of the California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814
Via email: fgc@fgc.ca.gov

RE: Support for advancing Northeastern Pacific population of White Sharks as a Candidate Species under the California Endangered Species Act

Dear President Kellogg and Commissioners:

On behalf of Heal the Bay, a non-profit environmental organization with over 13,000 members dedicated to making Santa Monica Bay and Southern California coastal waters and watersheds safe, healthy, and clean, we are writing to support advancing the Northeastern Pacific population of white sharks (*Carcharodon carcharias*) as candidate species under the California Endangered Species Act (CESA). We urge the California Fish and Game Commission (Commission) to advance the California Department of Fish and Wildlife's recommendation to accept the petition, and conduct a full review of the status of California's white sharks. We believe that listing is warranted because California's small population is vulnerable to depletion and faces ongoing threats.

The best available science indicates that there are only a few hundred adult and sub-adult individual white sharks at known aggregation sites off the central coast of California and Guadalupe Island, Mexico. As a long-lived species that is slow to mature and has low reproductive rates, we believe the Northeastern Pacific population of white sharks is at risk. As a genetically distinct population, their recovery is threatened unless greater conservation measures are implemented. We are concerned that continual decline of white shark numbers in the Northeaster Pacific will have a detrimental impact on the balance and health of the rich California Current ecosystem.

Last year the National Marine Fisheries Service (NMFS) found that listing the Northeastern Pacific white shark under the federal Endangered Species Act may be warranted; thus, if the Commission determines that the white shark petition includes sufficient scientific information to indicate that action may be warranted, this would be consistent with the NMFS. In addition, Northeastern Pacific white sharks would benefit from a full status review under both federal and California endangered species laws.

As apex predators, sharks play an exceedingly vital role in a balanced and healthy ocean ecosystem. White sharks are one of the few natural predators of seals and sea lions in the California Current. The listing process will allow for additional public and scientific discussion, which will ultimately benefit the ability to manage and protect this population and the ecological benefits it provides.

The primary documented threat to the Northeastern Pacific population of white sharks is commercial gillnet fishing. While fishing for white sharks in California is prohibited, there are no limits on white shark bycatch in U.S. fisheries. Juvenile white sharks have been documented to be entangled as bycatch by set and drift gillnet fisheries in their nursery habitats off the coast of California. While these fisheries target California halibut, white seabass, yellowtail, Pacific swordfish, common thresher sharks, and benthic fish, logbook and observer data indicate that their nets can also entangle juvenile white sharks as

bycatch—ranging from 2-25 white sharks annually off Southern California alone. However, there are some concerns that white shark bycatch may be higher due to underreporting and low observer coverage in this fishery. Accurate accounting through 100% observer coverage is necessary for determining the full extent of this bycatch. While fishing for white sharks is prohibited, there are no limits on white shark bycatch in U.S. or Mexican Pacific Coast fisheries.

In addition, recent research shows that Northeastern Pacific white sharks are among the most heavily contaminated shark species. Mercury, PCBs, and DDT levels in juvenile white sharks in the Southern California Bight were found to be six times higher than established thresholds known to cause physiological and reproductive harm in other fish.

Great white sharks have been listed as 'vulnerable' to extinction on the IUCN Red List of Threatened Species, and are protected under the Convention on International Trade in Endangered Species (CITES), but they are in need of protection in California. By the Commission advancing the listing candidacy of the Northeastern Pacific population of white sharks as endangered or threatened under the California Endangered Species Act, it would allow California to promote recovery of the species by:

1. Obtaining more accurate information on the bycatch of white sharks in California fisheries;
2. Enacting reasonable and precautionary management measures to minimize the bycatch of white sharks; and
3. Garnering additional funding and resources to better understand white shark population trends and threats.

In addition to the scientific merits of advancing the Northeastern Pacific population of white sharks as candidate species under the CESA, there is broad public support for such effort. Over the past month Heal the Bay has collected over 848 petition signatures (see attached) in support of such action electronically and by paper petition. Please see the attached petition letter and associated signatures that were collected electronically. We will also be presenting the paper petitions and updated numbers at the next Fish and Game Commission meeting.

Given the importance of this iconic predator off our coast and the threats posed by low population numbers, genetic isolation, contamination, and direct mortality caused by human activities, we support listing the Northeastern Pacific population of white sharks as a candidate species under the California Endangered Species Act, and urge the Commission to advance this petition to a full status review to determine if a threatened or endangered listing is warranted. Thank you for your consideration.

Sincerely,

Sarah Abramson Sikich, MESM
Coastal Resources Director

Dana Roeber Murray, MESM
Marine & Coastal Scientist

cc: Chuck Bonham, Director, California Department of Fish and Game

President James Kellogg and
Members of the California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814
Via email: fgc@fgc.ca.gov

RE: Support for listing White Sharks as Threatened or Endangered under the California Endangered Species Act

Dear President Kellogg and Commissioners:

I am writing to support listing of the Northeastern Pacific population of white sharks (*Carcharodon carcharias*) as endangered or threatened under the California Endangered Species Act.

As top predators, sharks play a very important role in our ocean ecosystem, and are one of the few natural predators of seals and sea lions in California. However, the Northeastern Pacific white shark population, which ranges from Mexico to the Bering Sea, and offshore to Hawaii, is at risk. Population assessments estimate that there are only a few hundred adult sharks in this range, and they are vulnerable to ongoing threats, such as incidental catch, pollution, and other issues.

As a long-lived species with low reproductive rates, the recovery of white sharks is threatened. I am concerned that the continual decline of white sharks in the Northeastern Pacific will have a negative impact on the balance and health of our valuable and unique California Current ecosystem unless greater conservation measures are implemented. Listing the white shark will allow for additional public and scientific discussion, which will benefit the ability to manage and protect their population and the ecological benefits white sharks provide.

The primary documented threat to the Northeastern Pacific population of white sharks is commercial gillnet fishing. While fishing for white sharks is prohibited in the United States, there are no limits on white shark bycatch. Juvenile white sharks are entangled as bycatch by set and drift gillnet fisheries in their nursery habitats off the coast of California. Logbook records and observers indicate that these gillnet fisheries incidentally entangle juvenile white sharks— catching up to 25 white sharks annually off Southern California alone. Furthermore, observer coverage on these boats is low, so bycatch may even be higher.

Listing white sharks as endangered or threatened would serve several benefits; including increased onboard observer coverage in gillnet fisheries, implementation of management measures to minimize white shark bycatch, and promote research to better understand white shark population trends and threats in order to promote recovery. Please take action to list the Northeastern Pacific population of white sharks as threatened or endangered.

Sincerely,

848 Concerned Citizens

(442 California residents, and 406 residents of the U.S. and abroad)

348 ELECTRONIC SIGNATURES FROM CALIFORNIA AS OF 1/22/2013

Bobby Feingold	Los Angeles	California	90401
adam gruen	pacific palisades	California	90272
Agaly DeJesus	Oxnard	California	93036
Aiden Pascucci	Malibu	California	90265
Alan Haggard	San Diego	California	92105-5104
Alden Quartz	Malibu	California	90265
Alena Kaye	Malibu	California	90265
Alex Purves	Santa Monica	California	90405
Alex Woolery	San Rafael	California	94903
Alexandra Jackson	Malibu	California	90265
Alexandra Mathieu	Los Angeles	California	90024
Alexandra Perata	Los Angeles	California	90041
Alexandra Tower	Santa Monica	California	90405
Alisa Arnold	Marina Del Rey	California	90292
alixandra lomas	Redondo Beach	California	90277
Alma Roberts	Los Angeles	California	90034
Alyson Thomas	Sacramento	California	95816
Amanda Gruen	Pacific Palisades	California	90272
Amanda Jones	Santa Monica	California	90401
amanda mcnair	laguna hills	California	92653
Amanda Pardo	Los Angeles	California	90045
Amanda Parzen	Pacific Palisades	California	90272
Amelia Zuckerwise	Stanford	California	94305
Amy Skerkoski	Los Angeles	California	90027
An Verbeeck	Westchester	California	90045
Ana Luisa Ahern	Venice	California	90291
Andrea Lee	Sherman Oaks	California	91423
andrew heilprin	venice	California	90291
Andrew Traglia	Santa Monica	California	90403
Andy Guzman	Los Angeles	California	90057
angela bueser	bellflower	California	90706
anke pilz	redlands	California	92373
Anna Fruge	Torrance	California	90504
Anne Bergman	Sherman Oaks	California	91411
Anne Ohliger	Sacramento	California	95816
Anthony Montapert	Ventura	California	93004
Anthony Solis	Culver City	California	90232
Ari Taublieb	Malibu	California	90265
Arild Warud	Ericeira	California	2655-461
Ashley Arnett	La Crescenta	California	91214
audrey haynes	lodi	California	95240
Barbara Eicker	Mariposa	California	95338
Barbara Nicholls	Culver City	California	92030
Ben Leeds	Los Angeles	California	90034
Beth Knowlton	Burbank	California	91501
betty murphy	long beach	California	90802
Blake Douglas	Long Beach	California	90745
Blanca Perez	Los Angeles	California	90037
Brandon Rojas	Davis	California	95616
Brett Thomsen	Redondo Beach	California	90278
Brie-anna Rojas	North Hollywood	California	91601
Brie-anna Rojas	Davis	California	95616
Brooke Caldwell	Pacific palisades	California	90272
Bryan Murray	Los Angeles	California	90025
Bryan Redfern	La Crescenta-Montrose	California	91214
Caitlin McClure	Los Angeles	California	90034
Candy Nehlsen Hofman	La Mesa	California	91942
Captain Chris Wade	san pedro	California	90731
Carrie Weil	Santa Monica	California	90404
cassandra wright	Burbank	California	91505-1611
Cassie Gardener	Santa Monica	California	90404
Catherine Gallagher	Monrovia	California	91016
Celena Staff	Santa Monica	California	90402
Chandra Comstock	Inglewood	California	90302
Chase Lambert	Malibu	California	90265
Chloe Veronique	Malibu	California	90265
Chris Dawson	Playa Del Rey	California	90293
Chris Falk	Malibu	California	90265
chris nelson	San Rafael	California	94901
Christina Wong	Alameda	California	94501
Christine	Venice	California	90291

Mathieu			
Christine Sur	Davis	California	95616
Christopher Trinh	Lake Forest	California	92630
Cindy Mouw	Long Beach	California	90803
Clara Gharibian	Glendale	California	91202
claudia garcia	ontario	California	91761
Constance Franklin	Los Angeles	California	90026
Cynthia Puga	Los Angeles	California	90022
Daisy Vargas	Los Angeles	California	90022
Dale Anania	Berkeley	California	94702
Dana Murray	Los Angeles	California	90025
Danny Sills	Malibu	California	90265
David Strohm	Santa Monica	California	90403
deanna garcia	los angeles	California	90022
Deb Castellana	Berkeley	California	94804
Deisy Villasenor	Oxnard	California	93033
dennis willis	los angeles	California	90019
Devyn Masterson	Malibu	California	90265
Dominique Cano-Stocco	Coronado	California	92118
Don Mogill	Los Angeles	California	90025
Donald Capes	Los Angeles	California	90731
Donald Wolf	Long Beach	California	90802
Donna Martinez	Chino	California	91710
Donovan Novotny	Malibu	California	90265
Dwight Doyle	san diego	California	92107
Dyer Pettijohn	Malibu	California	90265
Edi Stiles	Los Angeles	California	90048
Edward Rodriguez	los angeles	California	90022
Elana Sitrin	Culver City	California	90230
Eleanor Nett	Santa Monica	California	90401
Elias Pineda	Los Angeles	California	90022
Elise Kamp	Los Angeles	California	90025
Elizabeth Broberg	Sherman Oaks	California	91423
Emily Campbell	Hermosa Beach	California	90254
Emily Goldman	Topanga	California	90290
Eric Nicolai	San Luis Obispo	California	93405
Erik Rosenberg	Topanga	California	90290
Erin O'Reilly	Pasadena	California	91106
Eroni Matanitobua	San Rafael	California	94901
Ethan Matty	Santa Monica	California	90405
Eva Sigismondi	Los Angeles	California	90049
Forrest Shannon	Covina	California	91724
Francisco Diaz	los angeles	California	90022
Fritz Chesnut	Los Angeles	California	90004
Gabriel Adamson	Los Angeles	California	90066
Gabriel Rapoport	Malibu	California	90265
Gabriella Grahek	Malibu	California	90265
Gail Hubbard	Glendale	California	91202
Gale Mead	Sonoma	California	95476
Gehan Elshafei	Los Angeles	California	90066
Geneva Phillips	Northridge	California	91325
georgette baker	Chino Hills	California	91709
Gerald Orcholski	Pasadena	California	91104
gina bryant	calabasas	California	91302
Giusy Adragna	Chico	California	95926
Gloriann Leslie	Los Angeles	California	90018
Grace Van Dien	Malibu	California	90265
Hannah Giroux	Palmdale	California	93551
Harrison Smart	Malibu	California	90265
Heather Alley-Soul Surf Sessions	Los Angeles	California	90278
Heather Doyle	Santa Monica	California	90401
holly digras	Redondo Beach	California	90277
Iveta Sabova	San Luis Obispo	California	93401
Jack Thompson	Topanga	California	90290
James Adams	Yreka	California	96097
James Davidson	Burbank	California	91502
James Gordon	Malibu	California	90265
Jan Egge	Santa Monica	California	90405
Jana Hadous Frazier	Redondo Beach	California	90278
Jana Pratt	Modesto	California	95356
jane drew	Los Angeles	California	90026
Jane Evans	Torrance	California	90505
Janet Davoodzadeh	Santa Monica,	California	90404
Janet Graham	Sherman Oaks	California	91423
Janet Juarez	Los Angeles	California	90063
janice greenberg	berkeley	California	94705

Jarod Wang	Malibu	California	90265
Jason Frankle	Malibu	California	90265
Jazmin Roque	Arleta	California	91331
Jeanne Ayers	Camarillo	California	93012
Jeanne Garcia	San Jose	California	95135
Jeff Landau	Simi Valley	California	93065
jenì©e misraje	Santa Monica	California	90403
Jenna Kennedy	Los Angeles	California	90045
Jenna Segal	Santa Monica	California	90401
Jennifer Herron	El Segundo	California	90245
Jennifer Miller	Simi Valley	California	Simi Valley
Jennifer Pratt	Hollywood	California	90028
Jeron Artest	Santa Monica	California	90404
Jessica De Anda	corona	California	92881
Jessica Gonzalez	Los Angeles	California	90061
Jessica Lukvec	Santa Monica	California	90403
jocelyne lapointe	Terrebonne	California	j6w0b5
John Green	Santa Monica	California	90405
Jordan Alexander	West Hills	California	81307
Jordan Michaelson	Topanga	California	90290
Jose Bacallao	Hermosa Bch	California	90254
joshua schweitz	Alhambra	California	91803
Josi Chow	Los Angeles	California	90046
Judith Vogelsang	Los Angeles	California	90046
Juliann Bebee	Huntington Beach	California	92647
Julie Delapena	Whittier	California	90602
Julie Newsome	Westlake Village	California	91361
Karen Acha	los angeles	California	90022
Karen Acha	Los Angeles	California	90023
Karen Suarez	Monrovia	California	91016
Kate Klevit	Malibu	California	90265
Kate Larsen	San Franciso	California	94131
Katharine Saavedra	Los Angeles	California	90024
Katherine Den Bleyker	Culver City	California	90230
Katherine Lazalde	Los Angeles	California	90022
Katherine Pease	Los Angeles	California	90026
Kathie Kingett	La Habra Heights	California	90631-8057
Kathleen Krasenics	Redondo Beach	California	90278
Kathryn Carmody	Fairfield	California	94534
kelly shea	Long Beach	California	90804
kenneth sanchez	Chino	California	91710
Kevin Sullivan	Simi Valley	California	93063
Khoi Prakasim	Malibu	California	90265
KIm Jenkins	Los Angeles	California	91401
Kirstenen Dale	Truckee	California	96161
Kiwi Lotati	Studio City	California	91604
Kristin Denehy	Sherman Oaks	California	91423
Lacey Glass	Venice	California	90291
Lark Levine	Santa Monica	California	90402
larry mallery	los angeles	California	90066
Laura Rice	North Hills	California	91343
Le Tran	San Jose	California	95122
lea griffin	valley village	California	91607
Leah Davidson	Burbank	California	91502
lem martinez	san juan capo	California	92692
Lenie Ramos	Manhattan Beach	California	90266
Lenise Andrade	San Diego	California	92012
Leslie Julian	Auburn	California	95602
Leslie Seki	Los Angeles	California	90064
Leslie Williams	El Cajon	California	92020-6683
linda wilkin	simi valley	California	93063
Lindsay Barker	Los Angeles	California	90291
Lisa Handschumacher	Redondo Beach	California	90277
Lisa Salazar	Foster City	California	94404
Lissette Rios	Downey	California	90241
LORI CHAPLIN	SAN FRANCISCO	California	94131
Lori Macdonald	Los Angeles	California	90048
Louis Montenegro	Folsom	California	95630
Luis Guardado	los angeles	California	90023
Lynn Wolf	Saugus	California	91350
Lynsey Russell	Lakewood	California	90713
m welker	xxxxxxxxxxx	California	90405
Malina Loeher	Davis	California	95616
Marcella Stevenson	Santa Monica	California	90404

Mardie Schroeder	San Diego	California	92104
MARIANA ACUNA	Los Angeles	California	90026
Marina DeBris	Los Angeles	California	90066
Marina Fernandez	Los Angeles	California	90017
Marion Clark	Santa Monica	California	90404
mark winnik	huntington beach	California	92646
Martha Palacio	Los Angeles	California	90022
Mary Doyle	Burbank	California	91506
Mary Glassanos	San Francisco	California	94103
Mary Proteau	Los Angeles	California	90036
Maurice Buntin	Los Angeles	California	90036
Maya Armstrong	Culver City	California	90230
Melisa Sharpe	los angeles	California	90016
melissa Makous	Los Angeles	California	90036
melody miller	west hills	California	91307
Mercedes Mata	Riverside	California	92506
Meredith McCarthy	Santa monica	California	90404
Micaela Arellano	La Miraa	California	90638
Michael Kellman	Los Angeles	California	90020
Michael Kesterson	Northridge	California	91325
michael king	Venice	California	90291
Michael Strong	Santa Monica	California	90403
Michelle Broberg	Malibu	California	90264-6433
Michelle Fryback	Lomita	California	90717
Milan Vasic	Pasadena	California	91104
Miles Sundher	Malibu	California	90265
Monica Flores	Los Angeles	California	90063
Monica Flores	Los Angeles	California	90063
Nancy Shrodes	Los Angeles	California	90036
Nancy Smith	Santa Monica	California	90401
Naomi Dutch	Ridgecrest	California	93555
Neil Cabana	Santa Monica	California	90403
Nereyda Montano	Seaside	California	93955
Nick Sadrpour	Los Angeles	California	90045
Nicole Novelli	Santa Monica	California	90403
Olivia Thorne	Malibu	California	90265
Pammy Brutzkus	Westlake Village	California	91361
Patricia Oscar	Los Angeles	California	90063
patricia seabourne	Redondo Beach	California	90277
Patricia Spellman	Stevenson Ranch	California	91381
Paula Boubary	Carson	California	90810
Pauline Kennedy	Santa Monica Ca 90402	California	90402
Priscila Burti	Santa Monica	California	90401
Priscila Mendoza	Yucaipa	California	92399
R Yoch	San Francisco	California	94116
Randi Parent	Santa Monica	California	90403
rebecca vitale mandich	palo alto	California	94301
Rebekah Haraczka	Venice	California	90291
Renee Jeska	Torrance	California	90504
Richard Burk	Tucson	California	85703
Richard Garcia	Redondo Beach	California	90278
Rick Vanzini	marina Del Rey	California	90292
Riley Prichard	Malibu	California	90265
Robbie Lauren	Malibu	California	90265
Rory McGonigle	Los Angeles	California	90049
rosanna lynch	apple valley	California	92307
Rosemary Sostarich	Santa Monica	California	90403
Ryan Sass	Redondo Beach	California	90278
Sabrina Whaley	Burbank	California	91505
Saira Gandhi	Camarillo	California	93010
Sam Cohen-Suelter	Malibu	California	90265
Sandra Medrano	los angeles	California	90023
sandro chiavaro	los Angeles	California	90025
Sara R	Orange County	California	94728
Sara Toussieng	Malibu	California	90265
Sara Truedson	Venice	California	90291
Sarah Scott	LA	California	90230
Sarah Shoemaker	Malibu	California	90265
Sasha Gary	Los Angeles	California	90291
Scott Wesson	Malibu	California	90265
SEAN Morey	Los Angeles	California	90034
Sedonna Goeman-Shulsky	Los Angeles	California	90024
shannon stoy	burbank	California	91505

Shannon Shoup	Oxnard	California	93035
Shannon Skaff	Santa Monica	California	90403
Sharon Gettman	Highland	California	92346
Shaun Lauren	Malibu	California	90265
Sheila McSherry	San Pedro	California	90732
sheldon morris	hidden hills	California	91302
Shelley Billik	Encino	California	91436
Shirley Pratt	Burbank	California	91504
Sirena Lao	Culver City	California	90230
Sofi Peterson	Malibu	California	90265
Sonja Phillips	Los Angeles	California	90046
Sophie Mallery	Los Angeles	California	90066
Spencer Campbell	Hermosa Beach	California	90254
stacey paredes	Santa Clarita	California	91350
Stacie Reader	Monrovia	California	91016
Stephen Handal	Malibu	California	90265
Steve Hess	Cornell	California	91301
Steven MacGregor	Agoura Hills	California	91301
Susan Hernandez	commerce	California	90040
Susan Sloan	Los Angeles	California	90064-2679
Susana Espinoza	South Gate	California	90280
Susana Flores	Long Beach	California	90808
Susanah Kassan	Sherman Oaks	California	91403
suzanne ely	santa monica	California	90405
Suze Bujsaim	Mission Viejo	California	92691
Suzette Gordon	Santa Monica	California	90403
Tara Crow	Pacifc Palisades	California	90272
Tara Treiber	Santa Monica	California	90404
terance tashiro	los angeles	California	90045
Thomas Snell	Hayward	California	94541
Thomas Ziegler	Riverside	California	92503
Tiffany Chang	Chino Hills	California	91709
Timothy Dallinger	Los Angeles	California	90025
Todd Snyder	San Francisco	California	94115
Tom Klane	Malibu	California	90265
Toni Musulin	Torrance	California	90501
Tova Handelman	Valley Village	California	91607
Tracey Higa	Marina Del Rey	California	90292
Tracey Thompson	San Francisco	California	94102
Treasure Gutierrez	Los Angeles	California	90057
Tyler Savitsky	Malibu	California	90265
Valentin De Anda	corona	California	92881
Vanessa Alcantar	Los Angeles	California	90034
Vanessa De Anda	Corona	California	92881
Vanessa Paredes	Santa Clarita	California	91350
vicky baines	San Diego	California	92103
Victor Paz	Los Angles	California	90022
Victoria Caro	Los Angeles	California	90045
Virginia Greb	Los Angeles	California	90026
Vivian Fox	Santa Monica	California	90401
Wesley Walker	Yorba Linda	California	92886
Will Feldman	Encino	California	91316
William Schoene	Santa Monica	California	90405
Yasmine Diba	Malibu	California	90265
Zinrry Martin	East Los Angeles	California	90022

Heal the Bay

1444 9th Street
Santa Monica CA 90401

ph 310 451 1550
fax 310 496 1902

info@healthebay.org
www.healthebay.org

368 ELECTRONIC SIGNATURES FROM OUTSIDE CALIFORNIA (US & ABROAD) AS OF 1/22/2013

Margaret Rigsby	Hazel Green	Alabama	35750	United States
Robert Ortiz	Phoenix	Arizona	85008	United States
Elizabeth McCleary-Kiffe	Maricopa	Arizona	85238	United States
James Robertson	Heber Springs	Arkansas	72543	United States
vida fritz	vico-morcote	Armed Forces Pacific	6921	United States
Lydia Leclair	Colorado Springs	Colorado	80909	United States
Edward Laurson	Denver	Colorado	80235	United States
Beate Dietrich	Colorado Springs	Colorado	80907	United States
Derek Thompson	Colorado Springs	Colorado	80923	United States
Caye Sipes	Fountain	Colorado	80817	United States
Marilyn Denehy	Middletown	Connecticut	6457	United States
Maryann Birdsall	Middletown	Connecticut	6457	United States
Daniella Rooslund	Cromwell	Connecticut	6416	United States
Lida Paulat	Borstel	Delaware	25494	United States
Heather Coleman	Washington	District Of Columbia		United States
Patrick Ahern	Washington, DC	District Of Columbia	20010	United States
Cassie Gardener	Washington	District Of Columbia	20002	United States
Laura Saxon	morriston	Florida	32668	United States
KATRINA SHADIX	GENEVA	Florida	32732	United States
Anabella Godoy	Doral	Florida	33178	United States
katia engelhard	Douvres la Delivrande	Florida	14440 fran	United States
ron silver	Atlantic Beach	Florida	32233	United States
Margaret Silver	Atlantic Beach	Florida	32233	United States
staci-lee sherwood	Boca Raton	Florida	33433	United States
Jessica Hoyt	Sunny Isles Beach	Florida	33160	United States
Heather Green	Pace	Florida	32571	United States
Leslie Harris	Apollo Beach	Florida	33572	United States
Claudine Chevriaux	poligny	Florida	39800	United States
antona manuela	vichy	Florida	3200	United States
Anita Nguyen	Lawrenceville	Georgia	30043	United States
Gleason Sweeney	Kingsland	Georgia	31548	United States
Jodi Silver	Atlanta	Georgia	30328	United States
Andrea McCain	Savannah	Georgia	31419	United States
Santina DiCaro	Decatur	Georgia	30032	United States
Sandra Bailey	Makawao	Hawaii	96768	United States
Inna Trotsai	Vinnitsa	Idaho	21037	Ukraine
Jill Hirschi	American Falls	Idaho	83211	United States
Yasiu Kruszynski	Chicago	Illinois	60613-0011	United States
Taryn Chaifetz	Downers Grove	Illinois	60516	United States
v evan	Chicago	Illinois	60660	United States
Soci Bassuk	Chicago	Illinois	60615	United States
Tanya Seidman	Chicago	Illinois	60618	United States
Erik Attaway	New Lenox	Illinois	60451	United States
piera rossi	motta	Illinois	13100	United States
pam irvin	gilman	Illinois	60938	United States
Luis Contreras	Addison	Illinois	60101	United States
Megan Thomas	addison	Illinois	60101	United States
Sami Signorino	Kokomo	Indiana	46902	United States
Clement Cherlin	Columbus	Indiana	47201	United States
Jess Keller	Manilla	Indiana	46150	United States
paul mccarthy	clive	Iowa	50325	United States
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January 24, 2013

President James Kellogg and
Members of the California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

RE: Support for advancing the Northeastern Pacific population of White Sharks to "Candidate" Status under the California Endangered Species Act

Dear President Kellogg and Commissioners:

As the organizations who submitted the original petition to list Northeastern Pacific white sharks (Carcharodon carcharias) under the California Endangered Species Act (CESA), we ask that you advance this species to "candidate" status at your upcoming meeting. Such action would be consistent both with the National Marine Fisheries Service 90-day finding that there is "substantial scientific or commercial information indicating that the petitioned action may be warranted" and the Department of Fish and Wildlife's recommendation to accept the petition and conduct a full review of the status of California's white sharks.

This population meets the criteria for listing because, among other things, it has a dangerously low number of sub-adults and adults (estimated total of 339) and it continues to be caught in Mexican and U.S. commercial fisheries as bycatch, including fisheries managed and authorized by the state of California. Even if the actual population size is two to three times larger than these estimates, or there are additional, yet to be discovered aggregation sites, these levels are far lower than what is expected even for such an apex predator, presenting an unacceptably high risk of extinction. Furthermore, other threats to the white shark such as pollution, habitat degradation, ocean acidification and climate change continue to threaten its ongoing survival. This population is genetically isolated, and if it is extirpated, it is unlikely that the area will be successfully recolonized for thousands of years if ever. We commend the California Department of Fish and Wildlife's evaluation of our petition, and concur with the arguments providing the basis for their recommendation to list this population as a "candidate" species under CESA. At the same time, there remain some key unanswered questions that would benefit from a more thorough status review associated with "candidacy" listing. We also reiterate our support for ultimately listing this population as threatened or endangered.

One of the primary benefits of listing white sharks under CESA is that listing would prompt more active management of the bycatch of white shark pups in state-managed gillnet fisheries. As discussed in our original petition, there is substantial continued bycatch of young of the year and juvenile white sharks in U.S. and Mexican commercial fisheries, particularly by entangling drift and set gillnets. Of particular concern with white shark bycatch is the post-release mortality, which involves the cumulative effects of physical trauma and capture stress (Skomal 2007). In particular, physical trauma in sharks may result from internal damage and bleeding upon damage to cartilage, gills, and internal organs. Fish react to the acute stress of capture, exhaustive exercise and handling with more exaggerated disruptions to their physiology and biochemistry than higher vertebrates. Such stress-related disruptions include lowering of blood pH and increases in blood lactate levels. While many fish may appear alive upon release, the occurrence of post-release mortality in seemingly live sharks is common and widespread. Therefore, until post-release survivorship has been assessed through appropriate forms of tagging and monitoring, it is appropriate to assume nearly 100% mortality for all white sharks caught as bycatch in commercial fisheries. While we recognize that there already exists a prohibition on targeting or landing white sharks, to date there has been no assessment of the

full extent of the bycatch, no assessment of the impacts of the bycatch on the viability of the population, nor any management measures promulgated specifically to reduce white shark bycatch.

We reiterate our concerns with the low levels of observer coverage in the large-mesh drift gillnet fishery, the small-mesh drift gillnet fishery, and the set gillnet fishery. According to NMFS Technical Memo SWFSC 441 (Larese 2009), observer coverage has been sporadic, often at low coverage rates. That technical memo concludes that "to determine the take of rarely discarded species (i.e. species caught a few times a year) would require 100% observer coverage." As observer coverage across fisheries is typically allocated based on management need and priority, we believe that CESA listing would be helpful in garnering additional observer coverage on the fisheries that catch white sharks as bycatch to more adequately assess that threat.

Our petition presents substantial new information that this population meets the criteria for protection under CESA, which would provide new opportunities for managing this bycatch through reasonable and precautionary measures. For example, the maps of reported bycatch provided in Lowe et al. 2012 indicate that there are discrete times and places where white shark bycatch is more frequent. As an example, this information could be used to craft time/area closures on set gillnets at those particular times and places. The benefit of this type of approach is that it could provide a much more cost effective means of reducing the bycatch and give the Commission a wider set of options in addressing this bycatch concern.

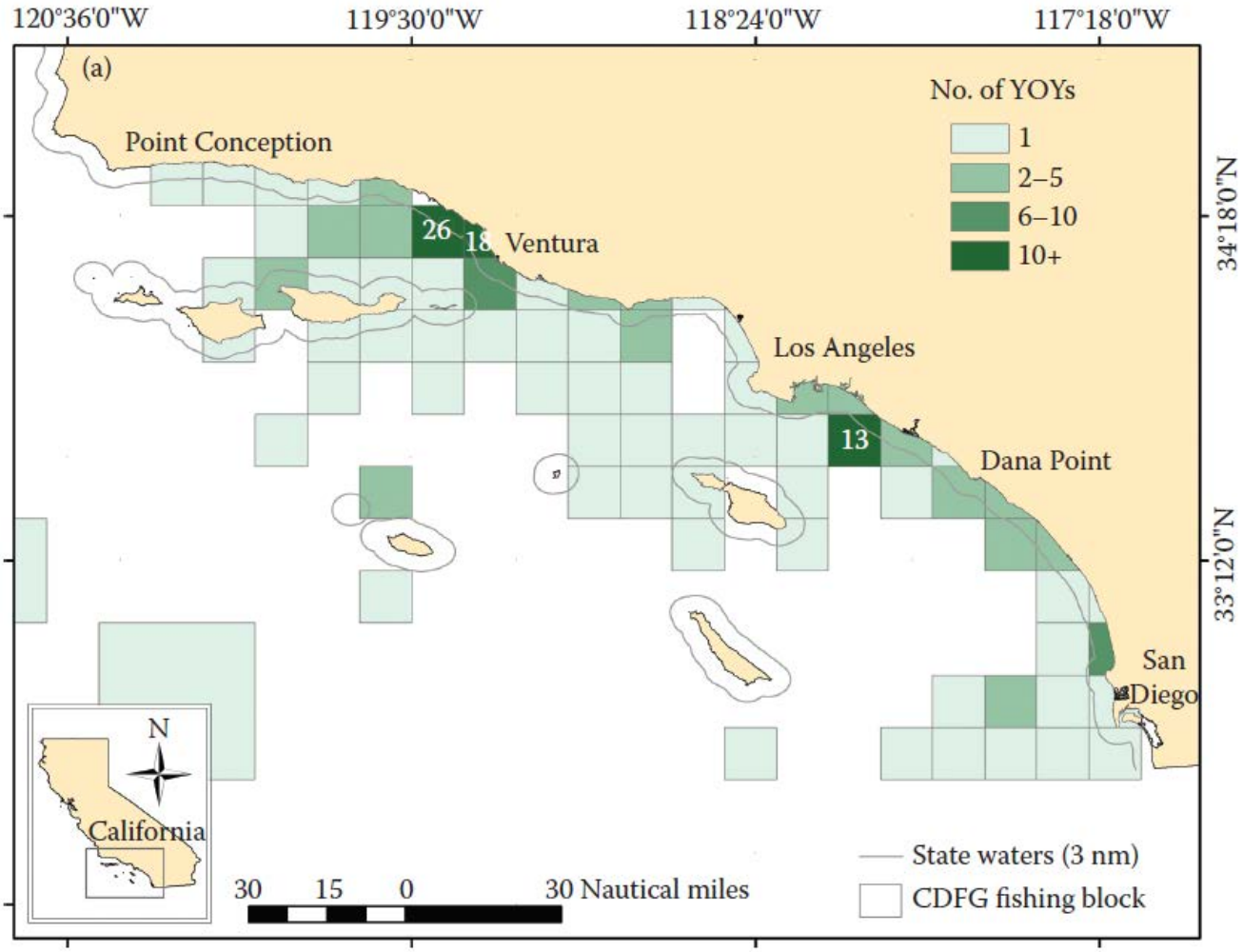

Figure: Spatial distribution of reported Young-of-the-Year (YOY) white shark captures occurring in Southern California, 1935-2009. From Lowe et al. (2012).

The Northeastern Pacific population of white sharks has unique aggregation areas, behaviors, and migration patterns. White sharks are endothermic, allowing them to inhabit cold water and remain active predators of swift and agile prey, while helping explain the reasons for their migration routes, aggregation areas, and nursery sites (Goldman 1997). Recently published data from pop-up archival transmitting tags has revealed four distinctive behavioral clusters among migrating Northeastern Pacific white sharks, including differences in diving behavior with both sexual and seasonal based patterns (Jorgensen et al. 2012). This study confirms behavioral and migration observations of white sharks that make them vulnerable to human-caused threats, including site fidelity, spatial aggregation, and 'patrolling' data near seal rookeries (Goldman and Anderson 1999). Additionally, white sharks play an important and unique role in the California Current ecosystem. A study of 15 individual white sharks from California showed substantial ontogenetic variation and individual dietary variation with sex, size, age, and location (Kim et al. 2012). The diverse diets observed support their classification as generalist predators, consuming an array of low and high trophic level prey items from nearshore and offshore habitats. The significance of this is that white sharks are clearly exerting a powerful influence on the shape and structure of the entire marine food web, directly affecting populations of marine species at multiple trophic levels.

As has been documented for other endangered species, CESA listing would likely garner additional funding and resources for research to better understand white shark population dynamics, behavior, migration patterns, ecological role, and diet, while also more thoroughly understanding and assessing human caused threats to the population. In some ways, the lack of understanding of this species puts them at risk, and acquiring better information will be essential to our efforts to prevent their extinction and promote recovery. Ultimately, protecting California's marine ecosystems from the top down is a critical piece of ecosystem-based management, as envisioned under the Marine Life Management Act, in concert with the protection of the forage base and habitats. Listing white sharks as "Candidate" under CESA not only makes sense because white sharks clearly meet the criteria for CESA listing, but it would enable the Commission and Department to much more actively manage and monitor this ecologically important predator. White sharks exert powerful influence on the structure of California's ocean food web, and play a unique role in maintaining the health of many prey populations at multiple trophic levels by removing sick and unhealthy individuals. This role is simply irreplaceable, and the loss of white sharks would throw our marine ecosystem and associated recreational and commercial fisheries into a state of serious instability with unpredictable consequences.

For the reasons stated above and in our petition to list the Northeastern Pacific population of white shark, we believe that "candidacy" status listing is warranted for this population of white sharks under the California Endangered Species Act. A full status review would be of great benefit to this species and to various fishery management entities, and would in and of itself assist in future conservation and research efforts to protect white sharks and the California Current Ecosystem. We look forward to working with the Commission and the Department of Fish and Wildlife as you conduct a full status review of this imperiled apex predator.

Sincerely,

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Monterey Bay and Channel Islands Sanctuary Foundation

Organisation for Respect and Care of Animals (ORCA)

Sharkprotect e.V.

Shark Research Committee

AfriOceans Conservation Alliance

Monterey Bay Whale Watch Center

Oceanic Allstars

The Global Shark Conservation Initiative

January 25, 2013

President James Kellogg and
Members of the California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

RE: Support for advancing Northeastern Pacific population of White Sharks as a Candidate Species under the California Endangered Species Act

Dear President Kellogg and Commissioners:

On behalf of the undersigned organizations and our members, we are concerned about the future of the Northeastern Pacific population of white sharks (*Carcharodon carcharias*) and support efforts to have this population listed as a candidate species under the California Endangered Species Act (CESA). We urge the Commission to follow the Department of Fish and Wildlife's recommendation to accept the petition and conduct a full review of the status of California's white sharks.

We believe that the Commission should advance the white shark listing petition because current data and information indicate a small population with fewer than 100 breeding females in a species that is slow to mature and reproduce, while state-authorized fisheries continue to pose further threats to the population. If the Commission determines that the petition presented sufficient scientific information to indicate that the petitioned action may be warranted, this would comport with the finding already made by the National Marine Fisheries Service that listing may be warranted under the federal Endangered Species Act. Accordingly, Northeastern Pacific white sharks would benefit from a full status review under both federal and California endangered species laws.

The Northeastern Pacific population of white sharks is extremely small. The best available science indicates that there are only a few hundred adult and sub-adult individual white sharks at their known autumn aggregation sites off the central coast of California and Guadalupe Island, Mexico. The small population number combined with their relatively long-lived life history, slow maturation, and low reproductive rate presents a serious risk of extinction. If we lose this population of genetically distinct white sharks it is likely we lose white sharks off the Pacific coastline forever, having dramatic impact on the balance and health of the rich California Current ecosystem.

The primary documented threat to the Northeastern Pacific population of white sharks is commercial gillnet fishing. White shark pups are entangled as bycatch by set and drift gillnet fisheries in nursery habitats off the coasts of Southern California and Mexico. While these fisheries target California halibut, white seabass, yellowtail, Pacific swordfish, common thresher sharks, and benthic fish, logbook and observer data indicate that their nets regularly entangle juvenile white sharks as bycatch—with voluntarily reported bycatch ranging from 2-25 white sharks annually off Southern California alone. However, bycatch is likely much higher because of low observer coverage and underreporting. The available data does indicate that white shark bycatch rates appear to be higher at certain times and places, offering the potential for effective management to minimize the bycatch in a cost effective manner. Accurate bycatch accounting through 100% observer coverage is necessary for determining the full extent of this bycatch, and CESA listing would be helpful in increasing the priority for placing observers on these gillnet fisheries. While directed fishing for white sharks is prohibited, there are no limits on or management of white shark bycatch in U.S. or Mexican Pacific Coast fisheries. CESA listing would allow the Commission and Department to begin deliberately managing this bycatch for California fisheries, while helping prompt other entities to take similar action.

In addition, new studies show that juvenile Northeastern Pacific white sharks are among the most heavily contaminated with mercury, PCBs, and DDT of any shark species tested to date globally. Young white sharks of the Southern California Bight have mercury concentrations that are six times higher than established thresholds known to cause physiological and reproductive harm in other marine fish. As top ocean predators, white sharks play an exceedingly vital role in a balanced and healthy ocean ecosystem, and are among the only natural predators of seals and sea lions in the California Current. The listing process will allow additional public and scientific dialogue ultimately benefiting our ability to manage and protect this population and the ecological benefits it provides.

Given the importance of this iconic apex predator off our coast and the threats posed by a low population, reproductive isolation, and direct mortality caused by human activities, we support listing the Northeastern Pacific population of white sharks as a candidate species under the California Endangered Species Act, and urge the Commission to advance this petition to a full status review to determine if a threatened or endangered listing is warranted.

Thank you for your consideration.

Sincerely,

Geoff Shester, Ph.D.
California Program Director
Oceana
99 Pacific Street, Suite 155-C
Monterey, CA 93940

David McGuire
Director
Shark Stewards
P. O. Box 617
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Senior Attorney, Oceans Director
Center For Biological Diversity
351 California St., Ste. 600
San Francisco, CA 94104

Nathan Weaver
Oceans Advocate
Environment California
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Sacramento, CA 95814

Chris Hartzell
Monterey Audubon Society
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Carmel, CA 93921

Sean R. Van Sommeran
Executive Director
Pelagic Shark Research Foundation
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Capitola CA, 95010

Jillian Morris
Oceanic Allstars
Milton, New Hampshire/Bimini
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Craig Appel
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Carol Maehr

Taylor Jones
Endangered Species Advocate
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Ralph S. Collier
President
Shark Research Committee
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Chatsworth, CA 91313

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Monterey, CA 93940

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Founder and Executive Director
AfriOceans Conservation Alliance
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South Africa

Veerle Roelandt
The Global Shark Conservation Initiative
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Belgium

Jupp Kerckerinck zur Borg
President
Sharkprotect e.V.

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Anna Weinstein
Audubon California
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Emeryville, CA94608

Liz White
Director
Animal Alliance/Environment Voters of Canada
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Jupp Kerckerinck zur Borg

Conservation Chair
American Cetacean Society Monterey Bay
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Pacific Grove, CA 93950

President
Shark Research Institute
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Princeton, NJ 08540

Martin Raspor
Član Upravnog odbora / Board Member
Organisation for Respect and Care of Animals
Risanska 1/1, Belgrade, Serbia

Steven Shirley
Executive Director
Ocean Research Foundation

Todd Steiner
Executive Director
Turtle Island Restoration Network
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Forest Knolls, CA 94933

Cynthia Wigren
President
Atlantic White Shark Conservancy
9 Cedar Street
Amesbury, MA 01913

Cynthia Walter
Owner
Passionfish Restaurant
701 Lighthouse Ave.
Pacific Grove, CA 93950

Kim Delfino
California Program Director
Defenders of Wildlife
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Sacramento, CA 95814

Jackie Dragon
Senior Oceans Campaigner
Greenpeace
1661 Mission St.
San Francisco, CA 94103

Maris Sidenstecker
Executive Director
Save The Whales
1192 Waring Street
Seaside, CA 93955

Sigrid Lüber
President
OceanCare
Oberdorfstrasse 16
P.O. Box 372
CH-8820 Wädenswil

Jennifer Fearing
California Senior State Director
The Humane Society of the United States
5714 Folsom Blvd #223
Sacramento, CA 95819

James Moskito
Vice President/Expedition Leader
Great White Adventures/Shark Diving International
22568 Mission Blvd. #211
Hayward, CA. 94542

From: Craig Shuman<Craig.Shuman@fgc.ca.gov>
Sent: Friday, January 25, 2013 12:47 PM
To: FGC@fgc.ca.gov
Subject: Fwd: white shark letter
Attachments: WHITESHARK_OPC_12513.PDF

Craig Shuman, D. Env.
Marine Advisor
California Fish & Game Commission
916-215-9694

>>> Valerie Termini < vtermini@scc.ca.gov > 1/25/2013 11:15 AM >>>

Hi Craig,
Attached please find the OPC support letter for the white shark listing.

We should also chat about the February 20th MRC meeting - what kinds of things are you looking for in the meeting? As I mentioned when we chatted last the OPC (staff) are having a priorities meeting Feb 12th that should dove tail nicely for us to say something meaningful at the meeting - but perhaps there are topic areas that FGC is interested in hearing more about?

Let me know if you need anything else from me for the shark stuff.

Thanks,
Valerie

Valerie Termini McCormick
State Coastal Conservancy
Project Manager, Ocean Protection Council
510-286-0319
vtermini@scc.ca.gov
www.opc.ca.gov

CALIFORNIA OCEAN PROTECTION COUNCIL

John Laird, Secretary for Natural Resources, Council Chair
Matt Rodriquez, Secretary for Environmental Protection
John Chiang, State Controller, State Lands Commission Chair
Fran Pavley, State Senator
Toni Atkins, State Assemblymember
Geraldine Knatz, Public Member
Michael Brown, Public Member

January 25, 2013

Jim Kellogg, President
California Fish and Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814

Dear Mr. Kellogg,

As Executive Director of the Ocean Protection Council, I am writing in support of the January 7, 2013 Department of Fish and Wildlife report which reviewed the recent petition to list the Northeast Pacific (NEP) population of the white shark as endangered under the California Endangered Species Act (CESA) by Oceana, Center for Biological Diversity and Shark Stewards.

White sharks enjoy broad interest and concern from the public. Despite their popularity, little is known about their distribution and ecology. Given that white sharks are a highly migratory species, developing a more thorough analysis of the white shark under the CESA is reasonable to help foster a better understanding of the NEP population, migratory patterns, preferred habitats and physiology. Developing this understanding will ultimately make it possible to develop effective policies that protect the white shark in California for years to come.

Supporting the Department in this matter is consistent with previous OPC direction as the white shark may be vulnerable and there is need for continued scientific research to better assess the degree and immediacy of those threats. Thank you for your continued leadership on ocean and coastal issues.

Sincerely,

Catherine Kuhlman
Executive Director, Ocean Protection Council

cc: Charlton H. Bonham, Director, California Department of Fish and Wildlife
Sonke Mastrup, Executive Director, California Fish and Game Commission

Jessica Lambertson

Email to Commission dated January 28, 2013
"Protect Great White Sharks" Attachments: Great White Shark Action_Part1.pdf
To Whom it May Concern:
Please find attached letters from members and supporters of the Center for Biological Diversity urging for endangered species protections for great white sharks.
I will be emailing you the remainder of our our letters shortly to fit the file size requirements.
Thank you,
Jessica Lambertson
Communications Associate
Center for Biological Diversity
P.O. Box 710
Tucson , AZ 85702
(520) 623-5252 x324 (o)
(520) 260-1725 (c)
www.biologicaldiversity.org

Summary of Attachment
34,569 Letters mailed to: California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244, US

I am writing in support of protecting the great white shark as a threatened or endangered species. Sharks are a vital part of the ocean ecosystem, and conserving these top predators is essential to a healthy ocean.

Don't let white sharks get wiped out by fisheries and other threats. To ensure the continued survival of great white sharks in U.S. waters, we need better ocean management and conservation of these mighty sharks and their "critical habitat."

I encourage you to grant northeastern Pacific great white sharks the protections under our wildlife-protection laws they need to continue to survive and thrive.

Thank you.

Alex Vollmer

Email to Commission dated January 28, 2013
"Please Protect the Great White Sharks"

Nancy Hoppe

Email to Commission dated January 28, 2013
"Please Protect the Great White Sharks"

Alexandra Saunders

Email to Commission dated January 28, 2013

"Please Protect the Great White Sharks"

Karen Aquila

Email to Commission dated January 28, 2013

"Please Protect the Great White Sharks"

I am writing in support of protecting the great white shark as a threatened or endangered species. Sharks are a vital part of the ocean ecosystem, and conserving these top predators is essential to a healthy ocean. Don't let white sharks get wiped out by fisheries and other threats. To ensure the continued survival of great white sharks in U.S. waters, we need better ocean management and conservation of these mighty sharks and their habitat. I encourage you to grant northeastern Pacific great white sharks the protections under our wildlife-protection laws they need to continue to survive and thrive. This is critically important for your to protect them.

Christina Mohaddess

Email to Commission dated January 28, 2013

"Please Protect Great White Sharks"

I ask that you renew your commitment to be a steward of the earth and all of its creatures especially those here in California. As you know the rest of the nation watches what we do here in California with great interest.. Please do not let our generation be the one that failed to protect these sharks from extinction. I am writing in support of protecting the great white shark as a threatened or endangered species. Sharks are a vital part of the ocean ecosystem, and conserving these top predators is essential to a healthy ocean. Don't let white sharks get wiped out by fisheries and other threats. To ensure the continued survival of great white sharks in U.S. waters, we need better ocean management and conservation of these mighty sharks and their habitat. I sincerely encourage you to grant northeastern Pacific great white sharks the protections under our wildlife-protection laws they need to continue to survive and thrive.

Else Fergo

Email to Commission dated January 31, 2013

"No Time To Waste: Please Protect Great White Sharks"

I am writing to you from Denmark in support of protecting the great white shark as a threatened or endangered species. Sharks are a vital part of the ocean ecosystem, and conserving these top predators is essential to a healthy ocean. Please don't let white sharks get wiped out by fisheries and other threats. To ensure the continued survival of great white sharks in U.S. waters, we need better ocean management and conservation of these mighty sharks and their habitat. I encourage you to grant northeastern Pacific great white sharks the protections under our wildlife-protection laws they need to continue to survive and thrive.

February 4, 2013

President James Kellogg and
Members of the California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

RE: Support for advancing Northeastern Pacific population of White Sharks as a Candidate Species under the California Endangered Species Act

Dear President Kellogg and Commissioners:

I write to you on behalf of WiLDCOAST and our concern about the future of the Northeastern Pacific population of white sharks (*Carcharodon carcharias*). We support efforts to have this population listed as a candidate species under the California Endangered Species Act (CESA). We urge the Commission to follow the Department of Fish and Wildlife's recommendation to accept the petition and conduct a full review of the status of California's white sharks.

We believe that the Commission should advance the white shark listing petition because current data and information indicate a small population with fewer than 100 breeding females in a species that is slow to mature and reproduce, while state-authorized fisheries continue to pose further threats to the population. If the Commission determines that the petition presented sufficient scientific information to indicate that the petitioned action may be warranted, this would comport with the finding already made by the National Marine Fisheries Service that listing may be warranted under the federal Endangered Species Act. Accordingly, Northeastern Pacific white sharks would benefit from a full status review under both federal and California endangered species laws.

The Northeastern Pacific population of white sharks is extremely small. The best available science indicates that there are only a few hundred adult and sub-adult individual white sharks at their known autumn aggregation sites off the central coast of California and Guadalupe Island, Mexico. The small population number combined with their relatively long-lived life history, slow maturation, and low reproductive rate presents a serious risk of extinction. If we lose this population of genetically distinct white sharks it is likely we lose white sharks off the Pacific coastline forever, having dramatic impact on the balance and health of the rich California Current ecosystem.

The primary documented threat to the Northeastern Pacific population of white sharks is commercial gillnet fishing. White shark pups are entangled as bycatch by set and drift gillnet fisheries in nursery habitats off the coasts of Southern California and Mexico. While these fisheries target California halibut, white seabass, yellowtail, Pacific swordfish, common thresher sharks, and benthic fish, logbook and observer data indicate

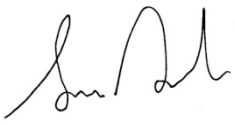
that their nets regularly entangle juvenile white sharks as bycatch—with voluntarily reported bycatch ranging from 2-25 white sharks annually off Southern California alone. However, bycatch is likely much higher because of low observer coverage and underreporting. The available data does indicate that white shark bycatch rates appear to be higher at certain times and places, offering the potential for effective management to minimize the bycatch in a cost effective manner. Accurate bycatch accounting through 100% observer coverage is necessary for determining the full extent of this bycatch, and CESA listing would be helpful in increasing the priority for placing observers on these gillnet fisheries. While directed fishing for white sharks is prohibited, there are no limits on or management of white shark bycatch in U.S. or Mexican Pacific Coast fisheries. CESA listing would allow the Commission and Department to begin deliberately managing this bycatch for California fisheries, while helping prompt other entities to take similar action.

In addition, new studies show that juvenile Northeastern Pacific white sharks are among the most heavily contaminated with mercury, PCBs, and DDT of any shark species tested to date globally. Young white sharks of the Southern California Bight have mercury concentrations that are six times higher than established thresholds known to cause physiological and reproductive harm in other marine fish. As top ocean predators, white sharks play an exceedingly vital role in a balanced and healthy ocean ecosystem, and are among the only natural predators of seals and sea lions in the California Current. The listing process will allow additional public and scientific dialogue ultimately benefiting our ability to manage and protect this population and the ecological benefits it provides.

Given the importance of this iconic apex predator off our coast and the threats posed by a low population, reproductive isolation, and direct mortality caused by human activities, we support listing the Northeastern Pacific population of white sharks as a candidate species under the California Endangered Species Act, and urge the Commission to advance this petition to a full status review to determine if a threatened or endangered listing is warranted.

Thank you for your consideration. I can be reached at 619.423.8665 or sdedina@wildcoast.net.

Sincerely,



Serge Dedina, PhD
Executive Director

coare
The Center for Oceanic Awareness, Research, & Education

05 February 2013

via e-mail (fgc@fgc.ca.gov)

President James Kellogg
California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento CA 95814

Re: Agenda item #13: White Sharks as a Candidate Species under the California Endangered Species Act – **SUPPORT**

Dear President Kellogg and Members of the California Fish and Game Commission:

As you know, COARE is extremely concerned with the health of our oceans. Naturally, we are also concerned about the future of the Northeastern Pacific population of white sharks (*Carcharodon carcharias*) and we heartily support efforts to have this population listed as a candidate species under the California Endangered Species Act (CESA). We urge the Commission to follow the Department of Fish and Wildlife's recommendation to accept the petition and conduct a full review of the status of California's white sharks.

Current data and information indicate a small population with fewer than one hundred (100) breeding females in a species that is slow to mature and reproduce, yet State-authorized fisheries continue to pose further threats to the population. We encourage the Commission to advance this petition, in consistency with the finding already made by the National Marine Fisheries Service that listing may be warranted under the federal Endangered Species Act. Northeastern Pacific white sharks would thus benefit from a full status review under both federal and California endangered species laws.

The Northeastern Pacific population of white sharks is extremely small. The best available science indicates that only a few hundred adult and sub-adult individual white sharks aggregate at known autumn aggregation sites off the central coast of California and Guadalupe Island, Mexico. This small population number combined with their slow maturation, low reproductive rate, and low fecundity presents a serious risk of extinction. If we this population of genetically distinct white sharks, it is likely that we will lose white sharks off the Pacific coastline forever, thus having dramatic impact on the balance and health of the rich California Current ecosystem.

The primary documented threat to the Northeastern Pacific population of white sharks is commercial gillnet fishing. Juvenile white sharks (pups) are entangled as bycatch by both the set and drift gillnet fisheries in nursery habitats off the coasts of Southern California and Mexico. While these fisheries target managed fisheries such as California halibut, white seabass, yellowtail, Pacific swordfish, common thresher sharks, and benthic fish, it is apparent from logbook and observer data that these gillnets regularly entangle juvenile white sharks as bycatch. Voluntarily reported bycatch ranges from two to twenty-five (2–25) white sharks annually off Southern California alone. However, actual bycatch is very likely much higher because of low observer coverage and underreporting.

The available data does indicate that white shark bycatch rates appear to be higher at certain times and places, offering the potential for effective management to minimize this bycatch in a cost effective manner. Accurate bycatch accounting through 100% observer coverage is necessary for determining the full extent of this bycatch, and CESA listing would be helpful in increasing the priority for placing observers on these gillnet fisheries. Although directed fishing for white sharks is specifically prohibited, there are no limits on or management of white shark bycatch in U.S. or Mexican Pacific Coast fisheries. CESA listing would allow the Commission and Department to begin deliberate efforts to manage this bycatch for California fisheries, and may encourage and help prompt other entities to take similar action.

Given the importance of this iconic apex predator off our coast and the threats posed by a low population, reproductive isolation, and direct mortality caused by human activities, we wholeheartedly support listing the Northeastern Pacific population of white sharks as a candidate species under the California Endangered Species Act, and we strongly urge the Commission to advance this petition to a full status review when this matter comes before you at your upcoming meeting.

Sincerely,

Christopher Chin
Executive Director

Brittney Barnes

Email to Commission January 28, 2013
"Please protect Great White Sharks!"

Kathryn Harrold

Email to Commission February 4, 2013
"Please protect Great White Sharks!"
I am writing in support of protecting the great white shark as a threatened or endangered species. Sharks are a vital part of the ocean ecosystem, and conserving these top predators is essential to a healthy ocean. Don't let white sharks get wiped out by fisheries and other threats. To ensure the continued survival of great white sharks in U.S. waters, we need better ocean management and conservation of these mighty sharks and their habitat. I encourage you to grant northeastern Pacific great white sharks the protections.

Katherine Head

Email to Commission dated November 19, 2012
"Protect Great White Sharks"

Adil Mehta

Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Kelly Landreth

Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Rebekah Roberts

Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Piers Strailey

Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Chris Witting

Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Patricia Bates

Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Celina Fiorino

Email to Commission dated January 25, 2013
"Protect Great White Sharks"

E A Hinds

Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Margie Handodk

Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Joe Sant

Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Rich Feit

Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Laura Schwind

Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Anna Tangi

Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Rebecca Zeitz

Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Ester Pérez

Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Lynne Cooper

Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Callen Corrington
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Jennifer DiPerri
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Alexis Montgomery
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Kyle Moughan
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Phyllis Van Leuven
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Joseph Klein
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Julie Sasaoka
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

John Harris
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Toni McCray
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Bruce Mohr
Email to Commission dated January 25, 2013

"Protect Great White Sharks"

Melissa McTague
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Clayton L. Cole
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Cindy Jaske
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Gina Gambino
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Dolores Cohenour
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Paulina Levinzon
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Joan Cummings
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Melanie & Jeff Strubble
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Mrs. Mary C. Nelson
Email to Commission dated January 25, 2013
"Protect Great White Sharks"

Jelica Roland
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Eva Schmelzer

Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Beatriz Perez

Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Ana Novic

Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Doreen Fri

Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Ivan Zepeda

Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Alexandra Meador

Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Deanna Alpert

Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Donna O'Berry

Email to Commission dated January 26, 2013
"Protect Great White Sharks"

E. Talamante

Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Manuel Salvador Jardi

Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Dawn Ryan

Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Sandra Miner
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Nanette Oggiono
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Maria Nowicki
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Gayla Bonner
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Tamara Eis
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Jennifer Rose
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Kathy Keough
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Robin Steudle
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Miriam Evans
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

TRESSA MARIE
Email to Commission dated January 26, 2013

"Protect Great White Sharks"

Mina Kostadinovic
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Shelly Peterson
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Scott C. Walker
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Patrick Russell
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Paula Kennon
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Felipe Miroquesada
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Ellie Meehan
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Eliane Oliveira
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Mandana Alaudini
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Rebecca Phillips-Vasquez
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Maud Eriksson
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Melissa Elbrecht
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Marisol Mejia
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Amanda Collins
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Donl Wilson
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Mario Lungo
Email to Commission dated January 26, 2013
"Protect Great White Sharks"

Michael Royer
Email to Commission dated January 26, 2013
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Pancracio Quispe
Email to Commission dated January 26, 2013
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Angelito Roño
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Carmiña Carrasco
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Bea Wimmer
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Olivia Seynaeve
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James Robertson
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Elena Petrova
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Caspa Ceacas
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Mary Ellen Ford
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S Rothauser

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Ingrid Clemmensen
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Brittney St. Clair
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DH Higgins
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Maximus Conrad

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Carol McRae

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Rachel Clarkeroberts

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Jessica Puk

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Email to Commission dated January 31, 2013
"Protect Great White Sharks"

Sabrina Husmann
Email to Commission dated January 31, 2013
"Protect Great White Sharks"

Stacy Boudreaux
Email to Commission dated January 31, 2013
"Protect Great White Sharks"

Sharon Maxson
Email to Commission dated January 31, 2013

"Protect Great White Sharks"

Aline Hrast

Email to Commission dated January 31, 2013
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Elke Savala

Email to Commission dated January 31, 2013
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Sophie Jacquet

Email to Commission dated January 31, 2013
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Terry Vaccaro

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Jeri Beck

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Mark Hallett

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Donna Milbourne

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Carolyn Anderson

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William Taylor-Suderman

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Liz Piercey

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Gloria Hatrick

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Rocio Luparello

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Geraldine Pritchard

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Anthony P. Vessicchio

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Sue Crawford

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Eric Kraft

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Danuta Radko
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Jason LaBerge
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Gloria Mcnulty
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Luca Rossetto Casel
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Ruth Serra
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Cherie Mcclintock
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Sara De Mari
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Matthew Carpenter
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Charles Jos Biviano
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Frederic Leers
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Eileen Correia
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Andrea O'Grady
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Jennifer Toth
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Dr. Robert Cospito
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Nelson Myers
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Sadira Tash
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Nancy Hosford
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Mark Bennett
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Raymond Nuesch

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Steven Barrett

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Marilyn Gross

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Valerie Crowley

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Daniel Marzani

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Alexandre Pereira

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Harvey Stein
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Mary-Ellen Justice
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Sampson Chan
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Louis Drinkwater
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Paul Whitehouse
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Orchid Ra
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Jann Piper
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Miranda Davies
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Nicole Janik
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Tanya Koester-Radmann
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Patricia Gibson
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Kathryn LeMosy
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Nerma Valentic
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Rhrea Park
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Sunday Leopard
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K C Carney
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Marcia Mitcheltree
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Sarah Wigg
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Shirley Butler

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Debbi Heatherly
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Anita Youabian
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Richard Hurlburt
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John Zaggas
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Stefania Nobile
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Renate Dolin
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Dolores Vinson
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Lisa Faller
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Toni Siegrist
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Jessica Brown
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Jacqueline Poole
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Arlene Patoray

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N Loren

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RAINET LEWIS

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Alicia Marcela Resa

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Suzanne Kirby

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Brian Collins

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Tom Wenzel

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Rita Ray

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Marsha Lewis

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Shannon Murphy

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Bradford Goodwin

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L Cummings

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Laurie Black
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Karen Leifker
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Nicole Soden
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Melissa Taylor
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Sandra DJerf
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Jason Hann
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Llauren Peralta
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Laurie Occhipinti
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Sandra Wilkes
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Rosalia Giannattasio
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Geraldin Fogarty
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Eryn Cook
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Diane Schwarz
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Maureen Lynch
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Jolanta Stern
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Lilly Cervantes
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David Frost
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Barbara E. Fortini
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Aimee Smith
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Liberty Valance
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Shanida Ahmad

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Joe Chwojdak

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Autumn Dream

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Gabriela Andrada

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l Roebuck

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Carmiña Carrasco

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Nicholas Williams

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Eugene Chattelle
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Alunni Ilaria
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Petros Metafas
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Bitschene Christian
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Carolyn Merkel
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Marilyn Schiazzano
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Cheryl Waters
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Veronica Falcon Gomez
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H Krouskup
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Russell De La Mare
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Liron Solomon
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Whitney Waters
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Dan Kuklo

Email to Commission dated February 2, 2013
"Protect Great White Sharks"

Kate Obryan

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Gunda Chase

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Jeanie Harvey

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Lisa Jackson

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Jeanne Pacheco

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Jasmina Cuk

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Don Richardson

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Pam Lynn

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Madeline Graham

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MaryCarol Dart
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Rosa Pastrana Saucedo
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Seth Hodges
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Sun Cho
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Elizabeth Marino
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Jasmine Lyons
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Phillip Leija
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Olivia Tiballi
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Magdalena Biorklund
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Missy Hewitt

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Peggy Wellman

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Carolyn Ormenaj

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Pam Lynn

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Sissy Aron

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Jackie Patterson

Email to Commission dated February 6, 2013
"Protect Great White Sharks"

Kathleen Conroy

Email to Commission dated February 6, 2013
"Protect Great White Sharks"
I am writing in support of protecting the great white shark as a threatened or endangered species. Sharks are a vital part of the ocean ecosystem, and conserving these top predators is essential to a healthy ocean. Don't let white sharks get wiped out by fisheries and other threats. To ensure the continued survival of great white sharks in U.S. waters, we need better ocean management and conservation of these mighty sharks and their habitat. I encourage you to grant northeastern Pacific great white sharks the protections under our wildlife-protection laws they need to continue to survive and thrive.

Joan Hunnicutt

Email to Commission dated February 6, 2013
"Protect Great White Sharks"
As the holder of M.A.s in Marine Biology and Environmental Studies, I am a staunch defender of our wildlife and its habitat, most especially that of the oceans. I am writing in support of protecting the great white shark as a threatened or endangered species. Sharks are a vital part of the ocean ecosystem, and conserving these top predators is

essential to a healthy ocean. Don't let white sharks get wiped out by fisheries and other threats. To ensure the continued survival of great white sharks in U.S. waters, we need better ocean management and conservation of these mighty sharks and their habitat. I encourage you to grant northeastern Pacific great white sharks the protections under our wildlife-protection laws they need to continue to survive and thrive. We do not want to have a case comparable to that of the Passenger Pigeon.

Grace Holden

Email to Commission dated February 6, 2013

"PLEASE --Protect Great White Sharks"

I am writing in support of protecting the great white shark as a threatened or endangered species. Sharks are a vital part of the ocean ecosystem, and conserving these top predators is essential to a healthy ocean. I urge you not to let white sharks be driven to extinction by fisheries and other threats. To support their survival in U.S. waters, we MUST have better ocean management and conservation of these magnificent creatures and their habitat. I ask you to please grant northeastern Pacific great white sharks the protections under our wildlife-protection laws they need in order to survive and thrive.

Oliver (Ollie) Knox

Email to Commission dated October 27, 2013

No Subject

Dear California Fish and Game Commission, Sharks have been swimming in the world's oceans for more than 400 million years, since before the dinosaurs. While sharks have been able to survive periods of global mass extinctions, they have not evolved to withstand destructive human interactions. The Pacific coast of California and Baja California, Mexico is home to a unique population of great white sharks that are genetically distinct and isolated from all other great white sharks around the world. With only an estimated few hundred adult and sub-adult individual great white sharks in this population, the survival of great white sharks on the U.S. west coast is at serious risk. While targeted fishing for great whites is currently prohibited, juvenile great white sharks continue to be unintentionally caught regularly as bycatch by U.S. and Mexican commercial fishing gill-nets in important nursery areas for these young sharks. Under existing regulations, there are no limits on this by-catch, nor is there sufficient observer coverage in these fisheries to assess the full extent of this by-catch. In addition juvenile great white sharks off of southern California have some of the highest levels of mercury, DDT, and PCBs found in any shark species worldwide. Our ocean needs great white sharks. As top ocean predators, great white sharks play a critical top-down role in structuring the marine ecosystem by regulating prey populations of seals and sea lions. The presence of great white sharks ultimately keeps the ocean food web in balance and increases the species diversity of the overall ecosystem. The west coast population of great white sharks requires additional protection as an endangered species because of

its low population size and the ongoing threats from human activities. Endangered Species listing will be critical to effectively addressing the continued by-catch of great white sharks and other threats, while promoting additional scientific research on this population of grave concern. Many supporters of environmental conservation like me urge you to protect great white sharks by listing the west coast population on the Endangered Species List.

May 23, 2013

Mr. Mike Sutton, President (fgc@fgc.ca.gov)
California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Dear President Sutton and members of the Commission:

We appreciate the Department of Fish and Wildlife's commitment to undertaking an extensive population status review of the Northeastern Pacific population of great white sharks *(Carcharodon carcharias)* in response to the February 2013 candidacy determination. New research studies have been published in 2013, since the Endangered Species Act petition was submitted for consideration. We are writing to ensure you are apprised of these new studies which may assist CDFW staff in the status review process.

The four publications are attached to this email and are as follows:

Domeier, M. and Nasby-Lucas, N (2013). Two-year migration of adult female white sharks (*Carcharodon carcharias*) reveals widely separated nursery areas and conservation concerns. Animal Biotelemetry 2013, 1:2.

Mull CG, Lyons K, Blasius ME, Winkler C, O'Sullivan JB, et al. (2013). Evidence of Maternal Offloading of Organic Contaminants in White Sharks (*Carcharodon carcharias*). PLoS ONE 8(4): e62886. doi:10.1371/journal.pone.0062886.

Weng, K. and Honebrink, R. (2013). Occurrence of White Sharks (*Carcharodon carcharias*) in Hawaiian Waters. Journal of Marine Biology. Volume 2013, Article ID 598745, 7 pages. http://dx.doi.org/10.1155/2013/598745.

Semmens J. M, Payne, N. L., Huveneers C. D. , Sims W, and Bruce B. D. (2013). Feeding requirements of white sharks may be higher than originally thought. Scientific Reports 3: 1471 DOI: 10.1038/srep01471.

Sincerely,

Geoff Shester, Ph.D.
Oceana
99 Pacific Street, Suite 155-C
Monterey, CA 93940

Miyoko Sakashita
Center For Biological Diversity
351 California St., Ste. 600
San Francisco, CA 94104

David McGuire
Shark Stewards
2150 Allston Way #460
Berkeley, CA 94704

cc: Sonke Mastrup, Executive Director, California Fish and Game Commission (SMastrup@dfg.ca.gov)

Chuck Bonham, Director, California Department of Fish and Wildlife (Director@wildlife.ca.gov)

Animal Biotelemetry

Two-year migration of adult female white sharks (*Carcharodon carcharias*) reveals widely separated nursery areas and conservation concerns

Domeier and Nasby-Lucas

BioMed Central

Domeier and Nasby-Lucas *Animal Biotelemetry* 2013, **1**:2
http://www.animalbiotelemetry.com/content/1/1/2

Animal Biotelemetry

RESEARCH Open Access

Two-year migration of adult female white sharks (*Carcharodon carcharias*) reveals widely separated nursery areas and conservation concerns

Michael L Domeier* and Nicole Nasby-Lucas

Abstract

Background: Satellite tagging programs have provided detailed information about the migratory patterns of northeastern Pacific white sharks, revealing a seasonal migration between a vast offshore region and coastal aggregation sites. Although adult males undergo annual round-trip migrations, photo-identification programs have noted that sexually mature females may only visit coastal aggregation sites once every 2 years, a behavior that is presumably linked to an estimated 18-month gestation period. The whereabouts of females during their full 2-year migration were previously unknown, because of the limited battery capacity of satellite pop-up tags.

Results: Through the use of satellite-linked radio-telemetry tags with multi-year tracking capability, we describe the 2-year migratory pattern for four mature female white sharks tagged at Guadalupe Island, Mexico. The 2-year migration comprised four phases: 1) an Offshore Gestation Phase (which had an average duration of 15.5 months; 2) a Pupping Phase, which occurred along the Mexican coast between the months of April and August; 3) a Pre-Aggregation Phase (when the females were in transition between the Pupping Phase and Guadalupe Island; and 4) the Guadalupe Island Aggregation Phase, which began when the mature females arrived at Guadalupe Island between late September and early October.

Conclusions: Long-term satellite tracking of mature female white sharks highlighted the connectivity between a single presumed mating site at Guadalupe Island, and two widely separated pupping sites along the Mexican coast. The Offshore Gestation Phase provided evidence that the females remained offshore for up to 16 months during their 2-year migration cycle. The Pupping Phase along the Mexican coast coincided with the seasonal presence of young-of-the-year white sharks along the coast of North America, and with a presumed gestation period of 18 months, this placed mating between October and January, during the period when white sharks are known to be at Guadalupe Island. Tracking data during the time sharks were offshore showed that mature males and females are spatially segregated, except for their concurrent seasonal presence at Guadalupe Island. These discoveries provide important new details about the complete life history of northeastern Pacific white sharks while identifying crucial regions in which young-of-the-year, juveniles and adult females are most vulnerable.

Keywords: White shark, Mating, Pupping, Migration, Baja, Mexico, Pacific, Gestation

Background

The white shark (*Carcharodon carcharias*) is a charismatic, apex predator that routinely migrates thousands of kilometers [1-10], and yet regional population structure exists on a global scale [5,10,11]. Because there are no physical boundaries separating the white-shark populations, behavioral traits that limit mixing may be the mechanism responsible for the observed population structure. One hypothesis, based upon DNA analysis, suggests that females have restricted geographic movement patterns but males are likely far-ranging [11]. Electronic tagging studies have presented seemingly contradictory results, with both sexes found to follow wide-ranging migratory patterns [3-8], with one female tracked across the Indian Ocean [6]. The discovery of male and female seasonal site fidelity among white sharks [2,5,12,13], termed 'philopatry', provided the first evidence of a behavioral trait that could restrict gene flow. It has been suggested that

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new white shark populations are founded by straying individuals, and the tendency for philopatry is what eventually differentiates the new population from the ancestral population [5,11,14,15]. However, philopatry will only lead to unique population structure if the behavior is focused on mating and/or pupping sites. Identifying mating and pupping sites and describing the connectivity between them can be extremely challenging when studying a highly migratory fish of relatively low abundance such as the white shark, but if accomplished, the results would have significant genetic and conservation implications [16,17].

Electronic tagging of adult white sharks in the northeastern Pacific has identified a previously unknown pelagic life-history phase, with sharks spending roughly half of their time in the deep-ocean environment, sometimes traveling as far as the Hawaiian Islands before returning to the continent [3,4]. Despite this pelagic phase, photographic identification (photo-ID) programs have shown white sharks to exhibit strong seasonal philopatry to one of two aggregation sites in the northeastern Pacific [12,13,18]: one off central California, USA, and the other at Guadalupe Island (GI), Mexico. Hundreds of sharks have been tracked from these aggregation sites, but only one individual (a sub-adult female) is known to have visited both sites [9]. Males visit these aggregation sites every year whereas adult females are typically seen every other year [8,12,18,19]. This 2-year migration pattern for females is likely associated with a presumed 18-month gestation cycle [20].

Multi-year tracking of adult female white sharks, combined with other direct and indirect life-history observations, could identify mating and pupping sites for the tracked individuals, as well as the connectivity between these important sites. To date, satellite pop-up tags have been unable to provide data/tracks on white sharks spanning more than 1 year, but the design of a satellite-linked radio-telemetry (SLRT) tag with a multi-year battery capacity, together with the development of methods for the capture, tagging, and release of large adult white sharks, allowed for a new research approach used in this study.

Here we describe a 2-year migratory pattern for mature female white sharks, and document the connectivity between a single presumed mating site at GI and two widely separated pupping sites along the Mexican coast. This discovery is an important addition to our understanding of the life history of the white shark, a species currently listed as 'vulnerable' by the World Conservation Union (IUCN), and which is protected under the Convention on the International Trade in Endangered Wild Flora and Fauna (CITES) [21].

Results and discussion

Four mature female white sharks tagged at GI with SLRT tags (F77 and F98 in 2008; F6 and F100 in 2009; Table 1) provided multi-year tracking data. F6 and F100 completed 2-year round-trip migrations in the first 2-year period after tagging, but F77 was tracked for 3 years to capture a 2-year migration pattern, because she returned to GI the year after tagging, before embarking on a 2-year migration. The tag on F98 ceased transmitting 510 days after tagging, just before her expected return to GI; although her track is incomplete, the migratory pattern was consistent with the other tracked females, and therefore the data from F98 were included in our analyses.

Data from the GI SLRT-tagged sharks, combined with previously published life-history observations, allowed for the synthesis and description of a multi-year migratory pattern for mature, female white sharks. The 2-year migration was found to consist of four phases: 1) an offshore gestation phase (OGP), which began when the females depart GI, and ended when they migrated to coastal regions during the pupping season; 2) a pupping phase (PP), defined as the time the females remained in the coastal waters of Baja California, Mexico, during the known pupping season [8]; 3) a pre-aggregation phase (PAP), when the females were in transition between the PP and GI; and 4) the GI aggregation phase (GIAP). Although the occurrence of each of these phases was seasonal, the timing and duration of each phase varied to some degree between individuals.

Offshore gestation phase

Tagged female white sharks began the OGP by departing GI between 25 Jan and 22 Feb (median departure date 5 February) (Table 1). This phase lasted between 439 and 484 days (mean 465 days). Males also underwent an offshore phase during their 1-year migratory pattern, but it was of much shorter duration (mean 104 days) [4] and focused on a region termed the shared offshore foraging area (SOFA) [4,7], approximately halfway between the coast of Baja California, Mexico, and the Hawaiian Islands. Locations from SLRT-tagged females during the OGP were not focused on the SOFA; instead, the females used a much larger space (Figure 1) bound by a minimum convex polygon (MCP) encompassing 3,383,105 km^2. During the OGP, the SLRT data indicated that tagged females spent only 4.2% of their time within the SOFA core (defined as the 50% density contour of the offshore area utilized by adult males [7]) while the males were present, supporting a previous study which suggested strong sexual segregation for adult white sharks during the offshore phase [7].

The OGP is the longest phase of an adult white shark's migratory pattern (14-16 month duration), meaning mature females spend more time in pelagic habitats than in any other habitat type. Females experience significantly warmer SSTs by remaining offshore, perhaps facilitating optimal growth of developing embryos [7].

Preferred prey for females in offshore waters is unknown. An expedition to the male focal area, the SOFA, found the

Table 1 Tagging and tracking data for tagged GI female white sharks

Shark number[a]	Date tagged	Total length, m	Start offshore	Arrive pupping	Depart pupping	Arrive Guadalupe	Depart Guadalupe
F98	12/9/2008	4.98	1/26/2009	4/10/2010	6/20/2010	NA	–
F77 year 1[b]	12/3/2008	5.08	2/1/2009	–	–	9/11/2009	1/25/2010
F77 year 2	–	–	1/25/2010	5/24/2011	8/4/2011	9/15/2011	12/7/2011
F6	11/19/2009	4.62	2/22/2010	5/30/2011	8/15/2011	10/6/2011	1/8/2012
F100	11/20/2009	4.62	2/15/2010	6/3/2011	7/25/2011	9/19/2011	1/13/2012

[a]Shark number corresponds to number assigned in the Guadalupe Island photographic identification database [12,19].
[b]Shark F77 returned to Guadalupe Island the year following tagging, before beginning a 2-year migration.

presence of three species of spawning squid (*Architeuthis* sp. and *Ommastrephes* sp.) and sperm whales, but no small marine mammals, and very little other epipelagic life [22]. Mature females travel east/west over a much broader area than the males, so it is possible that the preferred offshore prey differs between males and females. White sharks have never been documented to prey on healthy, large cetaceans, and are probably too small to do so; however, it cannot be overlooked that adult white-shark migrations overlap with large cetacean migrations in many parts of the world. Sperm whales and white sharks coincide within the SOFA core [22], white sharks and calving humpback whales coincide in Hawaii [3] and the south Pacific [10], and white sharks coincide with northern right whales off the east coast of the USA [23]. The growing circumstantial evidence that white sharks migrate to regions with relatively high whale density suggests a foraging link; whether the sharks are actively predating or simply scavenging upon the whales (and/or calves) is not known.

The OGP ended when the females migrated to coastal habitats along the Baja California Peninsula.

Pupping phase

Previously published analyses of fisheries data have identified seasonal pulses of young-of-the-year (YOY) white-shark pups, from April through August, within YOY hotspots along the western coast of North America [8,24,25]. The timing of SLRT-tagged females into coastal waters coincided with the identified PP. Our presumed pregnant SLRT-tagged females migrated to coastal waters

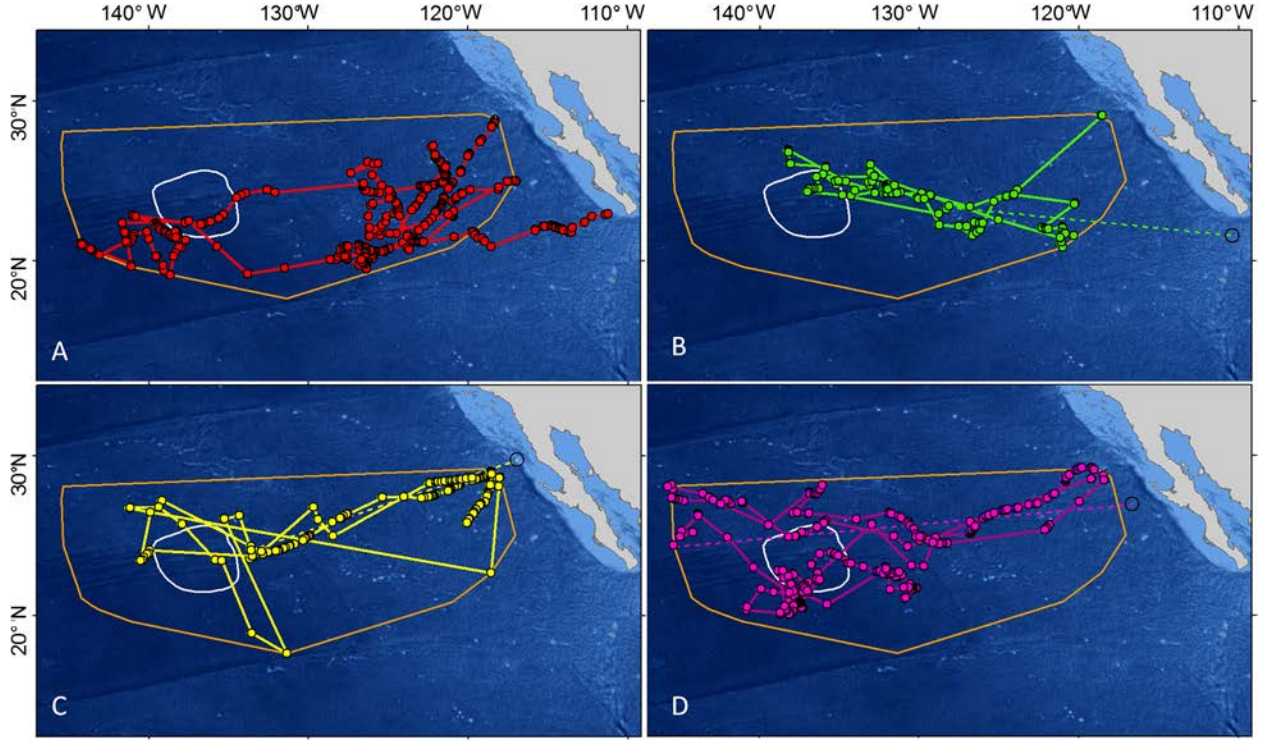

Figure 1 Location data for four satellite-linked radio-telemetry-tagged female white sharks during the Offshore Phase. The large gold contour indicates the MCP for all offshore location points for the four tagged female sharks: (**A**) F98, (**B**) F77, (**C**) F6 and (**D**) F100. The white contour indicates the 50% density contour for adult males while they were offshore [7]. The small black circles indicate the estimated end position of the offshore track as the sharks moved toward the pupping grounds.

between 10 April and 3 June (median 27 May) and departed between 20 June and 15 August (median 30 July) (Table 1). The duration of this PP varied from 52 to 77 days (mean 68 days). The approximately 2-month duration of the PP for tagged female sharks precluded precise identification of the location and timing of parturition, and it is unknown whether pups are born simultaneously or sequentially over a period.

The movement of pregnant females to coastal habitats was not simultaneous, nor restricted to a single nursery region. F77 and F98 migrated into the Sea of Cortez whereas F6 and F100 migrated to the central Pacific coast of Baja California, Mexico (Figure 2). YOY white sharks have not been collected in the Sea of Cortez [25,26], and there was no focal point of activity for F77 and F98, so it is not possible to deduce the exact location of the Sea of Cortez nursery area(s). However, both F6 and F100 remained within a relatively local region, near Sebastián Vizcaíno Bay, Mexico, a known YOY white-shark hotspot [25], suggesting that this coastal Pacific Baja California region is indeed an important pupping and nursery area for white sharks. Future directed sampling may provide more data regarding the nursery region in the Sea of Cortez. Because none of the tagged females traveled to southern California during their 2-year migration, the source of YOY California recruits remains unknown. SLRT tagging of central California females and increasing the sample size of females from GI should help resolve this remaining question.

Pre-aggregation phase

The PAP was the interval between parturition along the coast of Baja California and arrival to GI. Females left the pupping grounds between 20 June and 15 August (median 30 July) (Table 1). The SLRT on F98 ceased transmitting on 27 June 2009, 7 days after she exited the Sea of Cortez, prior to the time when she presumably would have returned to GI. The remaining three tagged females returned to GI between 15 September and 6 October (median return date 19 September), well after the return of the males to GI (average return date 22 July) [4]. The duration of the PAP varied from 42–56 days (mean 50 days) with sharks primarily located in the pelagic regions east and south of GI, but on a few occasions, they came into close proximity to GI for short periods (1 to 3 days) before returning to the open ocean (Figure 3). Photo-ID records confirmed the occasional presence of mature females at GI in early September, with numbers increasing in October and peaking in November [12,18]. It is notable that F77 returned to GI directly from the offshore waters in the first year after tagging (11 September 2009), presumably because mating was not successful in 2008. The SLRT data confirmed the photo-ID observations [18] that individual females may not reproduce every cycle. Females that skip a year between reproductive cycles exhibit a 1-year migration cycle similar to that of mature males, involving a shortened offshore phase (instead of an OGP) immediately followed by an aggregation phase (below) without undergoing the PP or PAP.

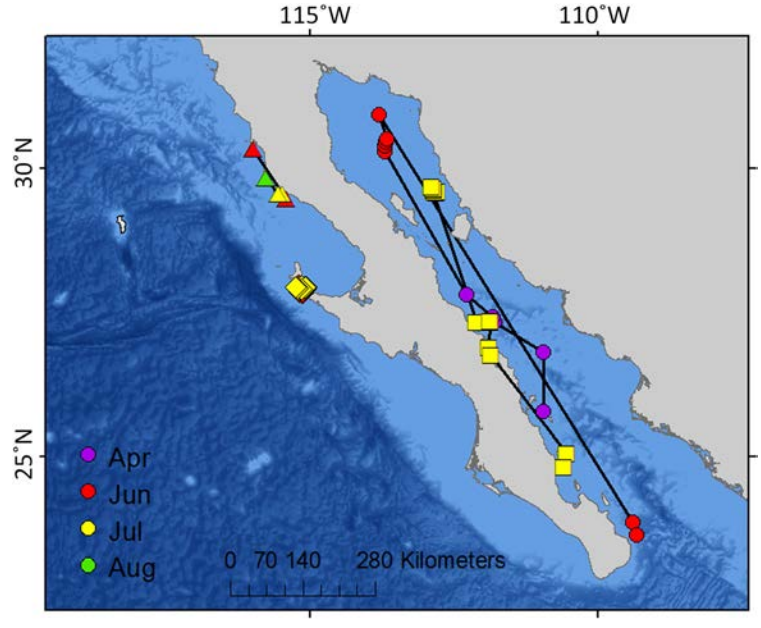

Figure 2 Location data for the four satellite-linked radio-telemetry-tagged female white sharks during the pupping phase. Location data for each shark is indicated by shape (F6 triangle, F77 square, F98 circle, and F100 diamond) and by color for each month.

The purpose of the PAP can only be speculated. The females could benefit from the pinniped populations of GI if they migrated directly to the island from the pupping grounds, but the presence of males may be a deterrent. The migratory behavior of the tagged females during the PAP supports the hypothesis that females actively avoid males until the mating season [7,8]. The PAP may be a period when the females are physiologically preparing to mate again, while avoiding the risks associated with should say inhabiting the same space as adult males.

Guadalupe Island aggregation phase

The GIAP was a period of seasonal residency at GI presumably the time and place of mating [8]. The GI arrival of three tagged females occurred over a relatively narrow temporal window between 11 September and 6 October (Table 1). The percentage of time that SLRT tag transmissions were located within 15 km of GI peaked at close to 100% during the months of October and November (8%, 55%, 98%, 97%, 74%, 52%, and 7%, for August to February, respectively). Conspecific wounds to both male and female white sharks are frequently seen at GI [8,12], confirming that the mating aggregation does involve risk of injury. Male/male aggression certainly occurs, because wounds are seen prior to the arrival of females, but whether the males are defending mating sites or prey resources is unknown.

The GIAP ended when the females departed for the open ocean between 7 December and 25 January (median 23 December) (Table 1), after 83 to 136 days at the island.

Alternative mating hypothesis

Jorgensen *et al.* [27] have proposed an alternative life-history hypothesis that is contradictory to the hypothesis proposed by Domeier [8]. The major difference between these hypotheses pertains to the timing and location of mating. Jorgensen *et al.* [27] speculated that white sharks are mating during their offshore phase, whereas Domeier proposed that mating occurs during seasonal, near-shore, adult aggregations. The hypothesis that white sharks are mating at coastal aggregation sites is supported by a growing body of indirect evidence: 1) the presence of mature females at GI with fresh conspecific bite wounds on the lateral surfaces of their head, pectoral fins, and flanks [8]; 2) the finding of spermatophores in the claspers of males at the GI and central California aggregation sites [8]; 3) a strong spatiotemporal overlap in the distribution of males and females at the GI and central California aggregation sites [7]; 4) strong sexual segregation during the offshore phase [7]; 5) the finding that peak presence of white sharks at GI does not correspond with the seasonal peak abundance of pinnipeds, suggesting that foraging is not the primary motivation for the aggregation [28], and 6) as presented here, a match between the estimated duration of gestation and the time between coastal aggregations and the known pupping season. By contrast, the hypothesis that mating is occurring offshore was not supported by any substantiating evidence, except for the speculative interpretation of diving patterns derived from electronic tags.

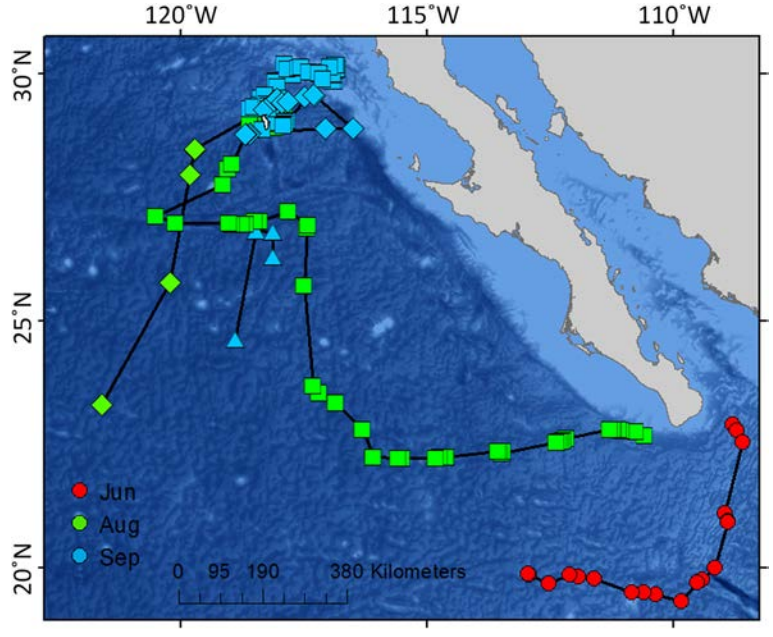

Figure 3 Location data for the four satellite-linked radio-telemetry-tagged female white sharks during the pre-aggregation phase. Location data for each shark is indicated by shape (F6 triangle, F77 square, F98 circle, and F100 diamond) and by color for each month.

The offshore-mating hypothesis is based upon the conjecture that a described vertical-diving pattern (rapid oscillatory diving (ROD)) is a result of a lek-like mating behavior in the core of the SOFA [27]. This interpretation is problematic from several perspectives. Lek-like mating systems involve the gathering of males at a traditional site for the purpose of ritualized courtship display. The males compete for the attention of females, and in turn, the females select a specific male for mating. Although the peak in ROD behavior, and thus presumed offshore mating, occurs during June/July in a period when the distribution of males temporarily constricts, even the constricted offshore space is vast (estimated to be about 64,000 km^2 [7]). Lek-like mating would require the males to be in a very small space to allow females to observe the courtship of several males at once. No electronic-tag data have ever indicated that sharks are densely populating a small, traditional offshore site. Lek-like mating systems have been described for some species of fish [29], but leks have never been seen among elasmobranchs. Females that mate in lek systems select a single male deemed superior to other males, thus the fact that white-shark pups from a single litter tested positive for multiple paternity [14] argues against lek-like mating for this species.

It is challenging to ascribe any behavior to vertical movement data in the absence of visual observations. The seasonal constriction of the SOFA and the ROD-type diving pattern could be due to the pursuit of a seasonally available prey. An expedition to this region during the constriction identified the presence of three species of spawning squid and sperm whales [22], but again, the absence of behavioral observations deems it impractical to assign any cause to the ROD diving pattern. Diving patterns and mating systems aside, there are other strong arguments against the hypothesis that white sharks are mating during the offshore phase of their migratory pattern. First, electronic-tag data indicate that males and females are largely segregated during the offshore period [7], and second, the proposed mating during June/July [27] would equate to December/January pupping (accepting the 18-month gestation estimate [20]). Females arrive at adult aggregation sites approximately in September, and depart in December to end of February. No YOY have been seen at the adult aggregation sites, no obviously pregnant females have been sighted at GI, and pupping is known to occur approximately April through July.

Conservation concerns

The revelation that GI supports two Mexican coastal-nursery areas separated by 1000 to 2000 km gives rise to major conservation implications. In some coastal-shark species, females have been shown to be philopatric to specific nursery regions [30-33]. Longer-term tracking could provide confirmation of such behavior in white sharks, and explain the presence of persistent YOY hotspots [8,24,25,34] and the genetic indication that females do not disperse [11]. Females may be returning to their place of birth to pup; this phenomenon, called 'natal homing,' has been suggested for sharks [35], but not yet documented. The existence of natal homing in white sharks would explain the genetic indication that dispersion of this species is sex-biased. Furthermore, natal homing creates population vulnerability; the removal of females that support a specific pupping region would cause a loss of genetic diversity and the collapse of that nursery.

The return of gravid females to coastal regions where active commercial fisheries take place presents the most vulnerable life-history stage for adult females, a threat confirmed by documented mortalities in the Sea of Cortez in 1996 [26], 2004 [36], and 2012 (reported in popular media: http://www.petethomasoutdoors.com/2012/04/great-white-shark-catches-appear-on-the-rise-sea-of-cortez-.html). The SLRT-tagged shark F98 had been reporting regular position data but ceased sending messages soon after exiting the Sea of Cortez, and she has not been subsequently resighted at GI; fishery-related mortality is a reasonable explanation. The 1-year offshore migratory pattern of adult males exposes them to far less commercial fishery pressure than females, because they rarely stray towards the coast of Mexico.

In addition to the threat to gravid females along the coast, there is also a threat to YOY and juvenile white sharks, which are found along the continental shelf in the near-shore regions. Adult white sharks are capable of breaking through most commercial fishing gear to escape, but YOY and juvenile white sharks do not have the mass and strength to do the same, therefore juveniles represent the most vulnerable stage for this species. Care must be taken to protect both the adult females and juveniles and their nursery habitats.

Conclusion

This is the first long term, continuous tracking study of individual adult female white sharks. Our results not only confirmed a 2-year migratory pattern for adult females, they also provide unifying support for the natural history hypothesis proposed by Domeier [8]. This hypothesis proposed that Guadalupe Island serves as a mating site for adult white sharks, and that this site is visited every year by adult males, but only once every two years by reproductively active females. The migratory pattern described here also supports the previously published estimate of gestation period (18 months [20]); a time that we found adult females to spend entirely in the open ocean. Our tracking has highlighted a previously unknown period of vulnerability for adult females: the period of time they are exposed to coastal fisheries when they migrate to the coast of North America to give birth. Adult males from GI,

however, do not share this period of vulnerability, since they do not travel to the coast of North America once they reach sexual maturity [8].

Although the exact location of parturition cannot be determined from our tracking, it is clear that females that mate at GI support recruitment of YOY to two widely separated nursery areas; one on the Pacific side of the Baja California Peninsula and the other in the Sea of Cortez. If further tracking reveals that females are philopatric to very specific pupping grounds, the preservation of genetic diversity will depend upon the proper management of both the adult females and pups that support specific nursery area.

Methods

Satellite-linked radio-telemetry tagging

Four mature female white sharks were tagged (SPOT5 SLRT tags; SPOT-257A, Inline Finmount, 4 holes, 7 × 7; Wildlife Computers, Redmond WA, USA) at GI, Mexico in 2008 and 2009 (Table 1) as described previously by Domeier and Nasby-Lucas [7]. In summary, sharks were attracted to the research vessel by baiting a custom-made circle hook (Mustad, Gjövik, Norway) with a tuna or salvaged marine-mammal carcass. The baited hook was suspended behind the vessel via a plastic float. Four to six large plastic floats (22 kg flotation each) were evenly spaced along the line to keep the shark near the surface while providing drag. Once a shark was hooked, a smaller boat was used to follow the shark, bring the animal to the surface by shortening the distance between the floats and the shark, and guide the shark onto a large submerged platform that was attached to the larger research vessel. Once on the platform, the shark was hydraulically raised above the waterline. An irrigation hose was immediately placed in the mouth of the shark to flush seawater over the gills, the hook was removed, and a wet towel was placed over the head to protect the eyes and calm the animal. The time taken to capture the four female sharks ranged from 45 to 162 minutes (mean 77 minutes), and tagging time ranged from 14 to 17 minutes (mean 16 minutes). Each shark was measured and sex recorded prior to release. Determination of sexual maturity for female white sharks was based on a total length of at least 4.5 m [37].

SLRT tags were attached to the apex of the shark's first dorsal fin by drilling four small holes through the fin, and securing the tag with plastic bolts. Each time a tagged shark's dorsal fin was out of the water, a wet/dry switch activated the transmitter. Tags were programmed to transmit a maximum of 250 messages per day. If the tag remained out of the water long enough for an Argos satellite to receive four consecutive transmissions, the Doppler-shift-induced frequency change allowed calculation of the tag's location [38] with associated location error. All messages, even those that did not provide location, gave a status message that included the SST recorded at the location of the tagged shark.

Argos position processing

All transmitted location positions were processed using a Kalman filter and reprocessed by Argos with a smoothing algorithm. The Kalman filter [39] computes the platform location and an error estimate, based on the Argos Doppler frequency measurements obtained up to the date of the location. The smoother is based on the Rauch-Tung-Striebel formulae [40], which combines, in a backward-time recursive process, some quantities produced by the Kalman filter. The Rauch-Tung-Striebel smoother computes the location and the error conditioned on all the measurements recorded (that is, past, present, and future available measurements). Location data were further selected with a speed filter between consecutive points, using the maximum estimated sustained speed of 192 km/day [4].

Data analysis

Date of the start and end of the PP were determined either directly by date of location data when available to indicate movement from the OGP to the PP, or by examining SST associated with transmitted status messages, and matching these to moderate resolution imaging spectroradiometer (MODIS) weekly SST data from the National Aeronautics and Space Administration (NASA) Aqua satellite. The date of the end of GIAP was determined by examining the first point away from GI and calculating the date of departure back in time, based on published average speed during travel (77 km/day [4]). All location points during the offshore phase for all four sharks were used to determine a MCP for the region used while offshore. MCP was determined using the minimum bounding geometry tool in ArcGIS. The percentage of location data from August to February within 15 km of GI was calculated by using a frequency of 1 location per day, and using all data from the four tagged female sharks during those months.

Abbreviations

GI: Guadalupe Island, Mexico; GIAP: Guadalupe Island aggregation phase; MCP: Minimum convex polygon; OGP: Offshore gestation phase; photo-ID: Photographic identification; PAP: Pre-aggregation phase; PP: Pupping phase; ROD: Rapid oscillatory diving; SLRT: Satellite-linked radio telemetry; SST: Sea surface temperature; SOFA: Shared offshore foraging area; YOY: young-of-the-year.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

MLD initiated the study, designed the experiments and deployed the electronic tags on the sharks. NN performed data management and analyses, and created the figures. MLD drafted and NN edited the manuscript. Both authors read and approved the final manuscript.

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PLOS ONE

Evidence of Maternal Offloading of Organic Contaminants in White Sharks (*Carcharodon carcharias*)

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Abstract

Organic contaminants were measured in young of the year (YOY) white sharks (*Carcharodon carcharias*) incidentally caught in southern California between 2005 and 2012 (n = 20) and were found to be unexpectedly high considering the young age and dietary preferences of young white sharks, suggesting these levels may be due to exposure *in utero*. To assess the potential contributions of dietary exposure to the observed levels, a five-parameter bioaccumulation model was used to estimate the total loads a newborn shark would potentially accumulate in one year from consuming contaminated prey from southern California. Maximum simulated dietary accumulation of DDTs and PCBs were 25.1 and 4.73 μg/g wet weight (ww) liver, respectively. Observed ΣDDT and ΣPCB concentrations (95±91 μg/g and 16±10 μg/g ww, respectively) in a majority of YOY sharks were substantially higher than the model predictions suggesting an additional source of contaminant exposure beyond foraging. Maternal offloading of organic contaminants during reproduction has been noted in other apex predators, but this is the first evidence of transfer in a matrotrophic shark. While there are signs of white shark population recovery in the eastern Pacific, the long-term physiological and population level consequences of biomagnification and maternal offloading of environmental contaminants in white sharks is unclear.

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Introduction

Marine pollutants, such as persistent organic pollutants (e.g. DDT, PCBs), are a global concern for ecosystems, wildlife, and human health. The majority of pollutants released into the environment ultimately end up in aquatic ecosystems, where they can remain in sediments or be assimilated into food webs and reach potentially harmful levels in higher trophic level organisms or humans [1]. Of particular concern are marine ecosystems adjacent to heavily populated or industrialized areas that have elevated levels of organochlorine contaminants such, as DDT and PCBs [1]. In southern California, an estimated 110 tons of ΣDDT and 11 tons of ΣPCBs remain in marine sediments at historic dumping sites along the Palos Verdes Peninsula, despite prohibition of discharging these organic pollutants in the 1970s [2,3]. The persistently high concentrations of contaminants at the Palos Verdes Peninsula and their ongoing redistribution due to physical perturbation and biological processes pose health concerns for marine organisms utilizing southern California, especially higher trophic level predators [4,5].

Due to their nonpolar nature, DDT and PCBs tend to be taken up by living organisms, and eventually are biomagnified throughout the food web. Marine apex predators are particularly susceptible to accumulating high levels of these contaminants because of their trophic position, longevity, and inability to process and excrete many of these anthropogenic compounds [6,7,8,9]. Elevated levels of DDT and PCBs have been observed in polar bears, *Ursus maritimus* [10,11], pinnipeds [12], and odontocetes [13,14], which are top marine predators in their respective communities. While many sharks provide similar ecosystem functions as other top predators [15] much less is known about the levels and effects of these contaminants on this group. However, the few studies that have been conducted on elasmobranch fishes indicate that they bioaccumulate organic compounds readily due to their higher trophic position, life history characteristics (i.e. slow growth, longevity), and large, lipid rich livers where contaminants can be accumulated [16,17,18,19,20].

White sharks (*Carcharodon carcharias*) share similar ecological roles and reproductive life-history traits with the better-studied marine mammals, in that both nourish offspring through the metabolism of stored maternal lipids (i.e. liver and blubber respectively), which is also the primary site of organic contaminant accumulation. Lipids are mobilized from blubber during milk production in mammals and from the liver during vitellogenesis in sharks, then subsequently passed to offspring during lactation or oophagy (developing embryos feed on sequentially ovulated unfertilized eggs). These pathways provide a mechanism for the passive transfer of bioaccumulated contaminants from mother to offspring during lactation or gestation. This offloading of contaminants to offspring has been well documented in several taxa besides marine

mammals [21,22,23,24], including birds [25,26,27], reptiles [28,29,30], and teleost fishes [31,32,33]. However despite their global distribution, and evidence of bioaccumulation of organochlorines in sharks [34], little attention has been paid to maternal offloading processes. Evidence of maternal transfer of contaminants, specifically detectable levels of ΣDDT, was noted in a single study of Atlantic spiny dogfish (*Squalus acanthias*) [35], a relatively long lived species capable of considerable bioaccumulation. Elevated levels of ∑DDT in the livers of neonatal sharks were attributed to transfer via yolk during embryonic provisioning. However, since Atlantic spiny dogfish are not apex predators, and are lecithotrophic (e.g. the developing embryo is nourished solely by the initial yolk-sac), it may not be indicative of the greatest potential of maternal offloading in sharks. Thus, the dramatic effects of biomagnification of contaminants and subsequent transfer to offspring would be difficult to compare to other well-studied systems such as marine mammals.

White sharks are the most recognizable marine apex predators of temperate and subtropical oceans. Southern California and Baja California, Mexico are known nursery areas for northeastern Pacific white sharks, where young of the year (YOY,<one yr. old) and juvenile sharks occur close to shore during summer and fall [36,37,38,39]. Extremely high levels of DDT and PCBs have been observed in YOY white sharks from southern California [16], which was unexpected considering their young age. Despite the legacy of contamination in southern California, the levels of contaminants observed in these YOY white sharks [16] are not likely to have been achieved by dietary exposure alone, though this has not been directly tested until now. Therefore, maternal offloading may help explain these elevated contaminant concentrations with regards to adult white sharks' high trophic position and oophagous method of matrotrophy [40].

To estimate the potential contribution of maternally derived contaminants to observed levels in YOY white sharks from southern California, we developed a bioaccumulation model to simulate contaminant uptake through diet alone. The model was designed to estimate the maximum possible amount of dietary bioaccumulation in YOY white sharks using contaminant levels of known prey found in southern California. We model bioaccumulation of contaminants from dietary exposure and compare with the results of Mull et al. [16], with additional samples from YOY white sharks to assess the role of maternal offloading in elevated contaminant concentrations. We hypothesized that YOY white sharks would exhibit contaminant loads exceeding those of our model output, indicating that the observed levels cannot be achieved via feeding alone, and that maternal offloading is an important factor explaining the high observed levels of organochlorine contaminants.

Materials and Methods

Sample Collection

Juvenile white sharks are occasionally caught incidentally in several southern California fisheries [39] (Figure 1). Deceased animals were collected and brought back to the CSULB Shark Lab for dissection and tissue collection. Information about sex, total length (TL), weight and date of capture was recorded (Table 1); no animals were killed for the purposes of this study. Sharks were considered YOY if they measured under 175 cm TL [41]. Approximately 20 g of liver was collected from the middle of the left lobe from each shark, wrapped in foil for later organochlorine analyses, and stored in a freezer at −20°C until extractions could take place (n = 20).

Sample analysis. Samples of liver were analyzed for DDT and its metabolites (herein DDT) and PCBs using gas chromatography mass spectrometry (GCMS). Contaminant data for sharks caught between 2005–2009 was obtained from previously published study [16] and sample analysis for sharks caught between 2010–2012 is described below. In both cases, analytical procedures are nearly identical.

Prior to analysis, liver tissue samples were passed through several preparative steps to extract, purify, and concentrate the contaminants from the neutral lipids. Due to equipment accessibility at IIRMES, two extraction methods (microwave and Soxhlet) were employed. Samples prior to 2010 were extracted using a MARS 5 microwave reaction system (CEM Corporation, Matthews, NC) while all samples taken after 2009 underwent Soxhlet extraction. All post-extraction procedures were identical. Despite the difference in extraction method, all batches passed QA/QC criteria (described below), and we are therefore confident these methods are comparable. Prior to extraction all samples were spiked with recovery surrogates to determine the extraction efficiency and retention of compounds through the preparatory process. A 1–2 g subsample of liver was used in both procedures and were extracted with a 3:1 mixture of dichloromethane (DCM):acetone. For all samples, lipid content was determined gravimetrically from split aliquots of the extracts after removing the DCM [42].

After extraction, the remaining extracts were processed using Alumina-B/Silica Gel chromatography by sequential elution with hexane, 30% DCM in n-hexane, and DCM. The samples were then concentrated by rotavap, transferred to an autosampler vial, and internal standards (4,4′-Dibromobiphenyl and 2,2′,5,5′-Tetrabromobiphenyl) were added prior to chemical analysis. Samples were injected onto an Agilent gas chromatograph (GC; 6890N series) equipped with a mass selective detector (MSD; Agilent 5973 inert series) using an autosampler (7683B series, Agilent Technologies, Santa Clara, California, USA). The GC column used was a ZB-5 (J&W Scientific; Santa Clara, California) fused silica capillary (0.25 mm ID×60 m) with 0.25 μm film thickness. The temperature profile of the GC oven was programmed from 45°C to 125°C at 20°C/min, then to 295°C at 2.5°C/min and held for 10 min. Injector and transfer line temperatures were set at 285°C and 300°C, respectively. The source and quadrupole temperatures were set at 230°C and 150°C, respectively. Helium was used as the carrier gas at a flow velocity of 40 cm/sec. The MSD was used in the Electron Ionization (EI) mode and scanned from 45–500 amu at a rate of 1.66 scans/sec. Data was acquired by software in the GCMS system. Total PCB (∑PCB) concentrations was calculated as the sum of 53 individually resolved peaks of PCBs congeners: 3 8,18, 28, 31, 33, 52, 49, 44, 37, 74, 70, 66, 95, 56, 101, 99, 119, 87, 97, 81, 110, 77, 151, 123, 149, 118, 114, 153, 168+132, 105, 105, 141, 138, 158, 126, 187, 183, 128, 167, 174, 177, 156, 180, 169, 170, 201, 189, 195, 194, 206, and 209. Total DDT (∑DDT) was calculated as the sum of 2,4′-DDE, 4,4′-DDE, 2,4′-DDD, 4,4′-DDD, 2,4′-DDT and 4,4′-DDT. Quantification of each target analyte was based on the largest single ion with confirmation from at least two additional ions [43].

Quality Assurance/Quality Control (QA/QC)

For quality assurance and quality control, method blanks (n = 5), duplicates (n = 4), matrix spikes (MS)/matrix spike duplicates (MSD), and standard reference materials (SRMs; n = 4) were processed in parallel with samples. All target analytes in the laboratory blanks were below detectable concentrations. Precision of the method was evaluated by one duplicate analysis of

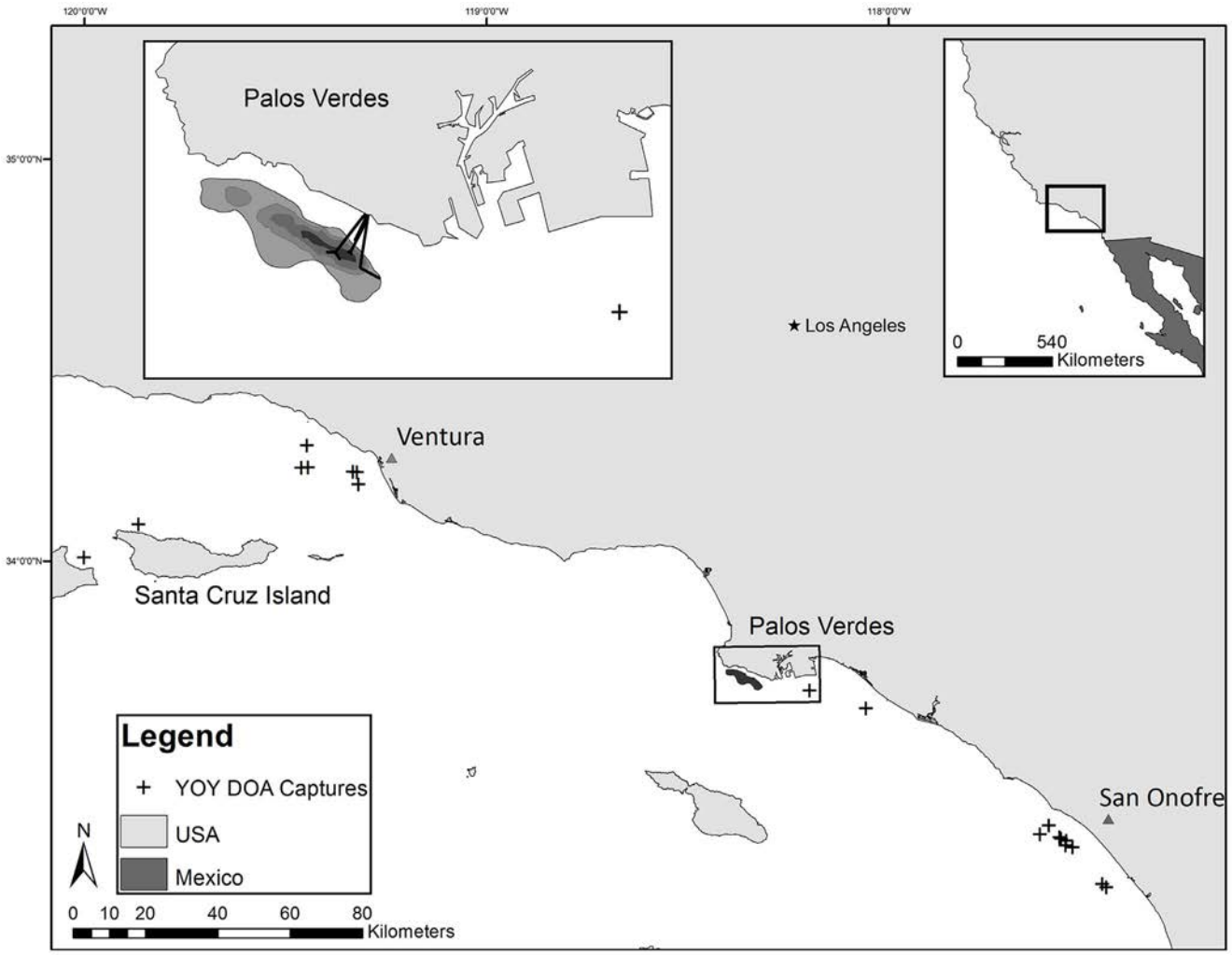

Figure 1. Map of the study area in the Southern California Bight (SCB). Black crosses denote the capture location of each individual used in this study. The shaded area represents the Palos Verdes Shelf Superfund Site where large amounts of DDT and PCBs were discharged with effluent and constitute a large portion of the legacy contaminants in the SCB.
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shark liver per 5 samples analyzed; the relative difference for PCBs and DDT of the four duplicates was within 14% and 9% of each other. A known concentration of the target analytes (160 ng and 250 ng for PCBs and DDT, respectively) was spiked into the sample matrix as a check for matrix effects through the calculation of recoveries. Matrix spike recoveries of the target analytes were within an acceptable range of 70 to 130% (EPA Method 8000), with a relative significant difference (RSD) of <10%. For PCBs, MS/MSD percent recoveries (mean ± SD) were 75±10% and 79±12%, respectively with a RSD of 5%. For DDT, MS/MSD percent recoveries were 71±14% and 77±23%, respectively with a RSD of 6%. Lake Michigan fish tissue SRM (1947; National Institute of Standards and Technology) was within the acceptable percent recovery limit (±30%). Recovery of PCBs and DDT recovery surrogates were 104±12% and 82±12%, respectively. Four recovery surrogates (tetrachloro-m-xylene, TCMX; PCB 30, PCB 112 and PCB 198) were added to each sample prior to extraction to follow analyte recovery. Liver sample recoveries (n = 20; mean ± SD) of TCMX, PCB 30, PCB 112 and PCB 198 were 114±23%, 110±20%, 106±24%, and 78±9%, respectively. Although overall MS/MSD recovery was low, recovery of the most abundant analytes was very high (e.g. 4,4′-DDE which represent 99% of DDT had a recovery of 106.5%). The recovery of abundant analytes in addition to other QA/QC criteria gives us high confidence in the reported values.

Data Analysis

No corrections were made to sample values based on recovery factors because they were all in the acceptable range (70–130%). Values for duplicate samples analyzed were averaged for data summaries and statistical analyses. Values below detection limits were treated as zero values. All organic analyte values for samples were expressed on a wet-weight basis (μg of analyte per g wet weight tissue). All analyses were carried out using Sigmaplot 11.0 (Systat Software Inc., San Jose, CA) and the R statistical package [44].

A potential confounding factor in interpreting tissue contaminant concentrations is the effect of body condition. Poor body condition, characterized by low body mass or low body mass of lipid storage tissues, can artificially increase the concentration of contaminants. In pinnipeds body condition is inversely correlated with contaminant concentrations, especially post-weaning when lipid reserves are heavily relied upon prior to efficient foraging

Table 1. Capture date, total length (TL), percent lipid concentration of the liver and liver concentrations (μg/g, wet weight) for ΣDDT and ΣPCB for the YOY white shark samples.

Capture Date	TL (cm)	Sex	% Lipid	ΣDDT	ΣPCB
27-Jul-10	116	F	59	51.3	10.0
26-Sep-12	130	M	63	287.0	38.2
28-Aug-09	136	M	37	4.2	1.3
16-Oct-08	137	F	75	60.2	17.7
23-Aug-07	140	M	62	37.1	15.0
31-Jul-12	140	F	75	45.6	10.3
7-Aug-05	141	F	65	186.0	28.3
13-Jun-06	143	M	77	18.4	10.5
12-Jul-12	148	F	60	136.2	21.6
9-Aug-08	148	F	79	58.4	13.1
23-Aug-12	150	M	58	110.3	21.6
26-Aug-07	151	M	62	21.9	7.3
4-Aug-09	156	F	62	34.9	14.7
16-Aug-10	156	F	70	177.9	26.7
1-Oct-09	158	F	51	74.5	21.4
13-Jun-10	158	M	38	249.2	24.9
26-Jun-11	160	M	84	276.2	27.6
6-Jul-10	166	F	79	19.4	2.9
17-Aug-08	167	F	78	33.0	10.8
17-Apr-09	175	F	26	26.2	4.7
Mean			63	95.4	16.4
SD			15.5	91.4	9.7

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[45,46]. During the first few weeks of life neonatal sharks rely heavily on lipid reserves in livers [47,48,49]. This reliance on liver reserves during early life could increase organochlorine contaminant concentrations in young sharks as lipids are metabolized but contaminants are not. To ensure that our results were not confounded by this phenomenon we tested for correlations between organochlorine concentrations and body conditions, measured as hepatosomatic index (liver mass:total body mass) and lipid content (%) of livers. Contaminant levels were log10 transformed and checked with Shapiro-Wilk test to ensure normality.

Bioaccumulation Modeling

Bioaccumulation was simulated using a five-parameter model adapted from Connolly and Glaser [4]. The model estimates daily changes in total body concentration by balancing uptake, loss, and growth. Models were run using the R statistical package (R core development team) using the following equation:

$$\frac{d\mathrm{oc}_{shark}}{d\mathrm{t}} = \alpha \mathrm{C} \mathrm{oc}_{prey} - (k+G)\mathrm{oc}_{shark}$$

where oc_{shark} is the concentration of the contaminant in the shark (μg/g (ww)), α is the gross assimilation efficiency (% of ingested mass), C is the prey consumption rate (g(ww)/g(ww)-d), oc_{prey} is the prey contamination level (μg/g(ww)), k is the total contaminant excretion rate (1/d), and G is the growth rate (g(ww)/g(ww)-d). All parameters used in the model can be found in Table 2. The model, incorporated YOY white shark growth rate, daily rationing, absorption efficiency, prey contaminant concentration, and metabolic turnover of contaminants. Consumption rate was based on a 3% of body weight/day derived from captive feeding of YOY white sharks at the Monterey Bay Aquarium, the only approximation for this species [50]. Potential prey contaminant concentrations were obtained from a 2009 health advisory report for southern California fishes [51] to ensure the most up-to-date and potentially most contaminated prey items were used in the model. This model assumes young white sharks are consuming the most heavily contaminated fish prey available in southern California to obtain the maximum levels possible in one year. Metabolic turnover and excretion of contaminants was assumed to be zero in our model to maximize simulated contaminant bioaccumulation. Each iteration of the model simulates accumulation over one day, and the model was run for 365 days to estimate OC bioaccumulation over an entire year. To compare our model levels expressed in total body concentration (μg/g ww total mass) to our observed liver concentrations (μg/g ww liver) a correction factor was used. Sharks sampled had an average hepatosomatic index (HSI) of 12.7±3.1% (n = 12) total body mass. To maximize our simulated concentrations we assumed that 100% of ingested contaminants would fractionate into the liver. Therefore, total values were corrected by multiplying model output by (1 g Total Mass/0.127±0.031 g Liver) to obtain liver concentrations.

Results

Organochlorine contaminants levels found in the liver of YOY white sharks were extremely high in comparison to published records for other sharks, particularly in light of their age [16]. Mean (± SD) ∑DDT and ∑PCBs for YOYs were 95.4±91.4 μg/g ww (wet weight) (Figure 1A) and 16.4±9.7 μg/g ww (Figure 1B)

Table 2. Parameter values used to simulate dietary bioaccumulation over 365 days.

Variable	Parameter	Units	Value	Source
A	Assimilation efficiency	%	80	Wetherbee and Gruber, 1993
C	Prey consumption rate	g(ww*)/g(ww)-d	3	Ezcurra et al. 2012
OC_{prey}	Prey Concentration (whole body)	μg/g(ww); ppm	ΣDDT: 0.609 ΣPCB: 0.113	Klasing et al. 2009
G	Growth rate	g(ww)/g(ww)-d	0.3	Ezcurra et al. 2012
K	Excretion rate	1/d	0	Present study

* = wet weight.

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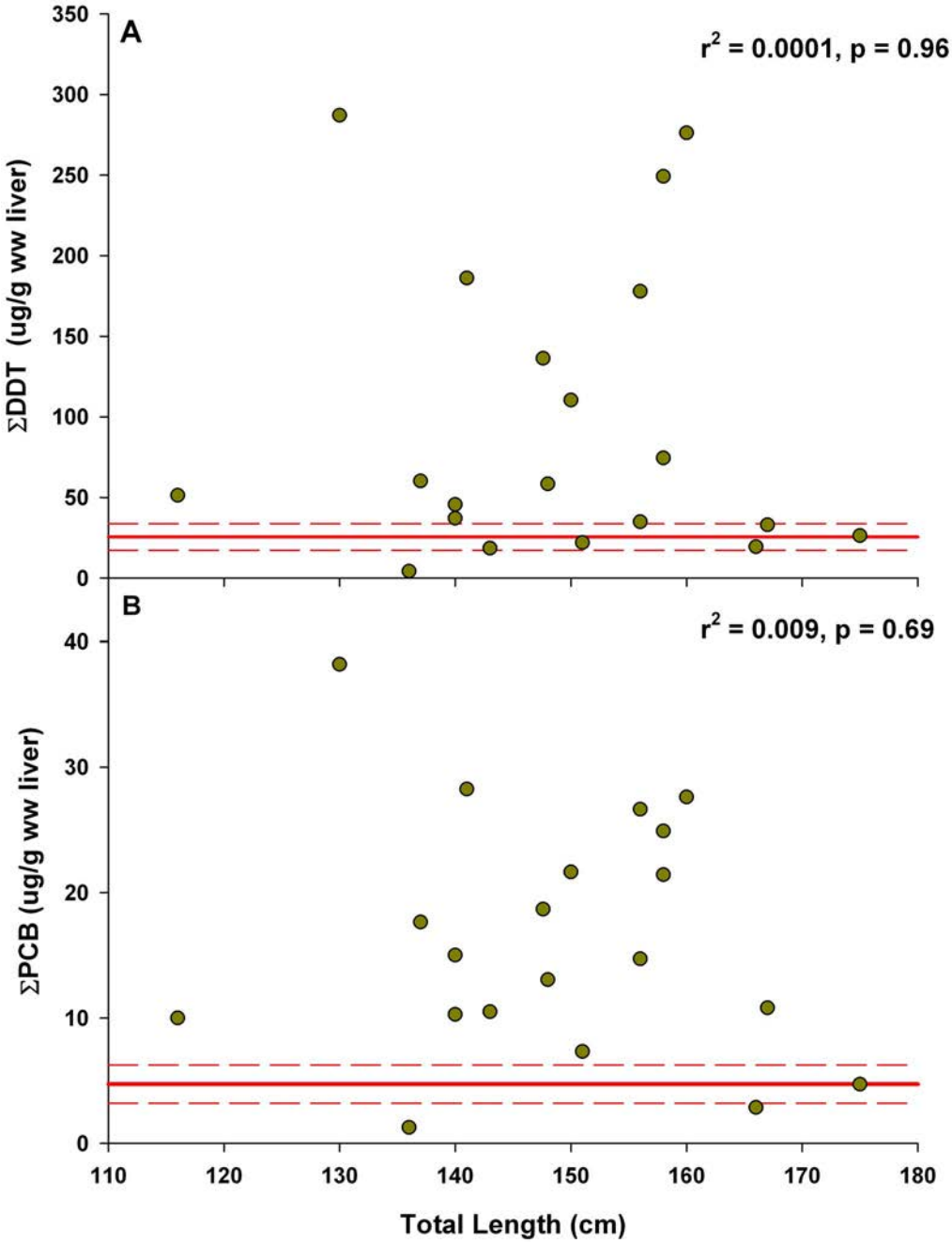

Figure 2. Measured concentration of organochlorine contaminants (μg/g, wet weight) in liver of YOY white sharks across total length (TL, cm), compared with maximum expected dietary accumulation over one year. (A) Dietary accumulation of ΣDDT was estimated to be 25.1±8.23 μg/g (solid and broken reference lines). There was no significant relationship between TL and ΣDDT levels. (B) Dietary accumulation of ΣPCBs was estimated to be 4.73±1.53 μg/g (solid and broken reference lines). There was no significant relationship between TL and ΣPCBs levels.
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(Table 1), respectively. Mean values for all contaminants measured for all YOY white sharks sampled exceeded the maximum simulated levels in the five parameter dietary bioaccumulation model (Figure 2). Running the model for 365 days suggested the potential mean levels that YOY white sharks could attain from dietary exposure are 25.1±8.23 μg/g ∑DDT and 4.73±1.53μg/g ∑PCBs ww in liver (Figure 2). Observed concentrations of both ∑DDT and ∑PCBs in liver of most YOY sharks exceeded maximum model output. ΣDDT concentrations in 16 individuals (80%) exceeded estimated maximum dietary accumulation (Figure 2A), and 17 individuals (85%) exhibited ∑PCBs concentrations exceeding estimated maximum dietary accumulation (Figure 2B). There was no clear relationship between total length and wet weight (μg/g liver weight) (∑DDT: $r^2 = 0.00015$, $p = 0.96$; ∑PCBs: $r^2 = 0.009$, $p = 0.69$) or lipid normalized (μg/g lipid weight) contaminant levels (∑DDT: $r^2 = 0.0014$, $p = 0.87$; ∑PCBs: $r^2 = 0.001$, $p = 0.89$).

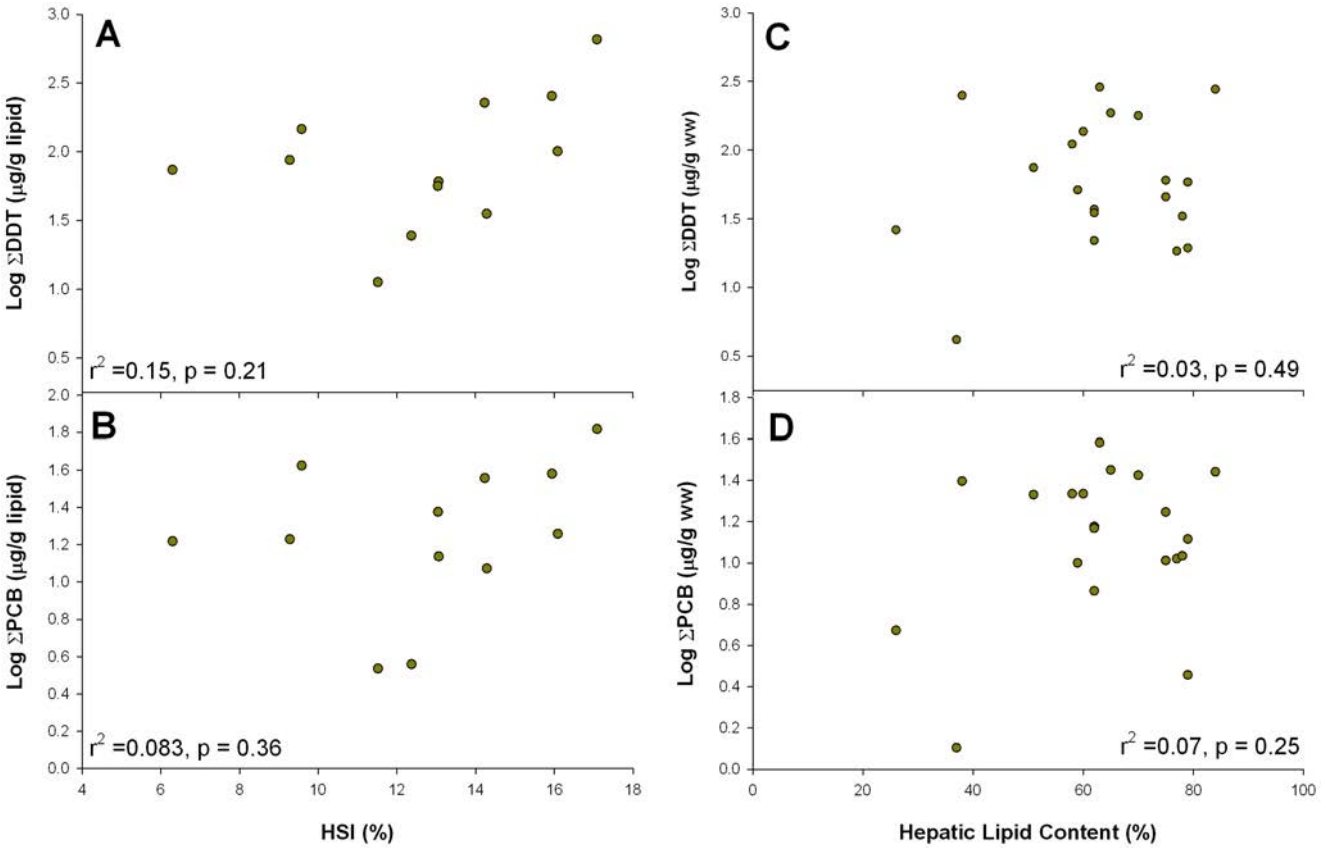

Figure 3. Observed levels of organochlorine contaminants versus metrics of body condition. There was no significant relationship between HSI and ΣDDT (A) or ΣPCBs (B). Hepatic lipid levels were positively related to both ΣDDT (C) and ΣPCBs (D).
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The elevated organochlorine concentrations observed in YOY white sharks did not appear to be an artifact of sampling animals in poor condition (i.e. low HSI or hepatic lipid content). There was no significant relationship between ΣDDT and HSI ($r^2 = 0.15$, $p = 0.21$) (Figure 3A), or ΣPCBs and HSI ($r^2 = 0.08$, $p = 0.36$) (Figure 3B). There was no relationship between hepatic lipid content and $\sum$DDT ($r^2 = 0.03$, $p = 0.49$) (Figure 3C) or $\sum$PCBs ($r^2 = 0.07$, $p = 0.25$) (Figure 3D).

Discussion

Observed organochlorine contaminant levels in YOY white sharks were considerably higher than estimated by modeled dietary accumulation alone, with mean liver concentrations of ΣDDT and ΣPCBs approximately 3-fold higher than modeled levels. While sharks were sampled across the entire YOY size range, several were near size at birth, and likely weeks to months old, yet many had contaminant levels exceeding the model, which was run for an entire year. This indicates that mothers are likely passively transferring organochlorine contaminants to embryos during gestation, since it is unlikely that YOY sharks are acquiring such high levels from diet alone. While there was a large variation in observed liver concentrations, only four sharks fell below the modeled dietary accumulation of ΣDDT, and three below modeled dietary accumulation of ΣPCBs. These findings suggest that some, if not all, young white sharks are exposed to some level of organochlorine contaminants *in utero*, although the magnitude of exposure is highly variable.

High levels of organochlorine contaminants are common in marine apex predators, though the magnitude of tissue concentrations seen in YOY white sharks is surprising given their age, and may be due to the feeding ecology of adults. The levels of ΣDDT and ΣPCBs found in sharks in our study are among the highest ever reported for any elasmobranch, despite other studies focusing predominantly on older adults [16]. Though organochlorine contaminant burdens have been examined in other apex-predatory sharks, white sharks are unique in that adults feed heavily on adult pinnipeds during certain times of year [52,53], while other sharks are predominantly piscivorous. Organochlorine contaminant levels in juvenile orcas (*Orcinus orca*) also vary significantly with adult feeding ecology [54,55]. One year old piscivorous resident orcas had much lower blubber concentrations of ΣDDT and ΣPCBs, than a one year old transient orca calf, whose mother fed on marine mammals [54]. This lone transient calf had blubber concentrations of 240 µg/g ww ΣDDT and 120 µg/g ww ΣPCBs, which was 3 and 8 fold higher than mean ΣDDT and ΣPCBs in YOY sharks from our study, respectively, though three sharks in our study exceeded this ΣDDT level. The elevated levels of organochlorine contaminants seen in the offspring of marine mammal predators compared with fish predators suggests that maternal prey selection can significantly increase the level of contaminant exposure to offspring during lactation.

The degree and magnitude of contaminant offloading in marine mammals has been linked to the reproductive life-history of mothers [12], in particular birth order of offspring [22,23,54,55,56,57]. During their first reproductive event, marine

mammal females will offload a significant portion of the contaminants they have acquired prior to maturity, which represents a potentially large reservoir for late maturing apex predators such as orcas [55]. During subsequent reproductive events the reservoir of contaminants stored in lipid reserves will be lower, thus the magnitude of contaminant offloading will decrease. For example, in northern fur seals (*Callorhinus ursinus*) and several species of cetaceans, the greatest difference in the amount of contaminants passed to offspring is between first-time and older mothers [22,23,55,57,58]. Comparable processes are expected to occur in white sharks given their similarity in life-history characteristics to marine mammals. The individuals observed with relatively high levels of organochlorine contaminants could potentially be the offspring of first-time mothers; however, to directly test this hypothesis we would need to match pups to their mother. The high variability of organochlorine concentrations observed in YOY sharks is likely due to the specific life-history of their mothers, including where females forage geographically and reproductive history. Since observed contaminant concentrations in YOY white sharks were highly variable it suggests that maternal offloading and the processes influencing the magnitude of transfer are important factors related to the level of contaminant exposure sharks will experience as juveniles.

Variability in maternal offloading likely reduces the ability to detect bioaccumulation or growth dilution in young sharks. We saw no significant relationship between ΣDDT and ΣPCBs (wet weight or lipid normalized weight) with total length. While YOY sharks are likely accumulating contaminants feeding in the Southern California Bight, the varying levels of exposure *in utero* and individual growth rates will potentially obscure any trends. Although it is likely that the more heavily chlorinated PCB congeners are accumulated at greater rates, we saw no evidence of accumulation trends across the size range of sharks examined in this study. Future investigations of contaminants in young individuals should focus on the biochemical pathways in which various compounds are transferred between mother and embryo, as modes of maternal supplement during gestation vary among species.

Conclusions

To accurately gauge the potential impacts of organochlorine contaminants released into the marine environment, we must understand how they cycle through ecosystems, and food webs in particular. The life-history traits (e.g. longevity, low fecundity, apex predatory role) of most sharks make them vulnerable to not only overfishing but to bioaccumulation of contaminants and intergenerational transfer. Though improved fisheries management in southern California has decreased the fishing induced mortality rate of young white sharks [39], the effects of exposure to anthropogenic contaminants is unknown and could affect white sharks throughout their lives. While we did not measure bioindicators of pathology in the current study, there is reason for concern about the long-term physiological and population level consequences of contaminants to white sharks, especially at the early life stages. Many organochlorine contaminants have been well documented to have negative impacts on reproduction and development in a variety of organisms [5,59,60,61]. Unfortunately, no information regarding toxicity of organochlorines exists in sharks, and we have not observed any sub-lethal impacts of these levels to date. Continued monitoring as well as investigating the potential sub-lethal impacts of these contaminants on these and other elasmobranchs may be essential in documenting long term population impacts and contaminant remediation strategies in the future.

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Author Contributions

Conceived and designed the experiments: CGM MEB CGL. Performed the experiments: CGM MEB KL. Analyzed the data: CGM MEB KL CGL. Contributed reagents/materials/analysis tools: CGM MEB KL CW JO CGL. Wrote the paper: CGM KL MEB CGL.

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Research Article

Occurrence of White Sharks (*Carcharodon carcharias*) in Hawaiian Waters

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White sharks (*Carcharodon carcharias*) have been known in Hawaii (~158°W, 22°N) since the time of ancient Hawaiians. We compiled sightings and records from 1926 to the present (4 females, 2 males, and 8 unknown sex; 3.3–4.5 m total length) and compared them with satellite tracking records (7 females, 9 males, and 6 unknown; 3.7–5.3 m total length). White sharks have been sighted in Hawaii throughout the year, whereas satellite tracking studies show individuals near the North American coast during fall and offshore during spring for the eastern North Pacific population (northern fall/spring). The mismatch of these datasets could hypothetically be consistent with fall-sighted individuals being sourced from a different population or part of a resident population. However, recently documented multiyear movements of North American sharks revealed that the annual nearshore-offshore pattern does not hold for mature females, which ranged over larger areas and were offshore during the fall. We found that fall white shark sightings in Hawaii are predominantly of females, most likely visitors from the eastern North Pacific population. Misidentification of other species as white sharks frequently occurs by fishers and in the news media, and we suggest methods for discrimination of related species.

1. Introduction

White sharks (*Carcharodon carcharias*) are known to have occurred historically in Hawaii based on Hawaiian knowledge and artefacts predating European contact [1], and their presence continues to be documented by contemporary observations (this study) and electronic tracking [2–5]. This paper aims to provide a definitive record of the presence of white sharks in Hawaiian waters, based on confirmed incidents and satellite tracking data, while eliminating previously reported sightings that cannot be verified. We compared sightings data from Hawaii with satellite tracking data and consider life history hypotheses for the eastern North Pacific, in order to understand the likely origins of sharks that occur in Hawaii.

Observations of white sharks in Hawaii have been rare and brief, but have provided information on the seasonality of occurrence in the Archipelago and some information on sex and size class. On the North American coast, the occurrence of white sharks has been studied via direct observation, photo cataloging, records of attacks on marine mammals and humans, fishery capture records, and satellite and acoustic telemetry. White sharks have been seen at aggregation sites (pinniped colonies) primarily during northern autumn [6], and satellite tracking studies record them moving west from the North American coast in the spring to offshore waters including Hawaii [2–5]. These data suggest that Hawaii white sharks are part of the same population that inhabits the North American west coast. However, sightings in Hawaii across nearly all months of the year conflict with the spring-offshore pattern, raising the possibility of either a resident population or an alternate source of visitors. New data for the seasonal movements of female sharks from North American aggregation sites [7, 8] allow a new interpretation of the Hawaii observation data.

A number of potential reasons for the migration to Hawaii have been suggested, focused on foraging and mating. Taylor [1] suggested that the winter aggregation of humpback whales (*Megaptera novaeangliae*) in Hawaii may provide a food source (via newborns or placentas), and that monk seals (*Monachus schauinslandi*) could provide a year-round food source. Coastal dolphin populations, notably spinner dolphins (*Stenella longirostris*) that aggregate during the day in shallow bays, are another potential food source. Jorgensen et al. [5] suggested foraging on deep scattering layer organisms. Weng et al. [3] and Jorgensen et al. [5] both speculated that since both males and females visit Hawaii, mating may occur in the Archipelago.

Reports of white sharks are frequently made by the news media, generally without adequate verification of species. Since there are a variety of sharks with similar sizes, and a number of species in the family Lamnidae that have similar features, verification based on morphology is important. We provide suggestions on verification and review a recent case that was widely reported, but based on a misidentification.

2. Materials and Methods

Information on the occurrence of white sharks in Hawaii was compiled from sighting and attack records, shark culling program data, remote cameras, submersibles, and published satellite tag records. Sex of sharks was recorded if the ventral surface was observed sufficiently to determine presence/absence of claspers. Length was taken from observer estimates, and in the case of some photographs was determined using laser spacers or stereovideo calculations [9].

We include published records of white sharks that were tracked with satellite tags to the Hawaii region. Three publications focusing on the northern California white shark aggregation reported on a total of 19 white sharks that moved from California to Hawaii [2, 3, 5]. One publication focusing on the Guadalupe, Mexico aggregation reported on three white sharks moving to Hawaii [4]. The months of occurrence of white sharks satellite tracked in Hawaii were determined from these published papers and combined with occurrence data from direct observations.

We considered sightings to be verified where specimens were in hand, photographs providing morphological information existed, evidence such as tooth pattern was analyzed from bites, or scientific observers recorded identifying characters. Where verification was not possible, records were not included in our analyses. Reports by the public of large sharks frequently do not include enough morphological information to make species identifications, even between major groups such as lamnids and carcharhinids.

Where limited information is available, it is important to distinguish between white sharks and other members of the family Lamnidae. In the eastern North Pacific, the salmon shark (*Lamna ditropis*) is commonly misidentified as a white shark, and while at least one specimen has been shown to occur in Hawaii [10], it exhibits a strong tropical submergence and this has not been directly observed or captured. In the Atlantic, the porbeagle shark (*Lamna nasus*) has a similar appearance to the white shark. In the Hawaii region, shortfin mako sharks (*Isurus oxyrinchus*) occur regularly and have been misidentified as white sharks by the public and news media. We use a number of characters noted in the peer-reviewed literature to distinguish the two species. (1) Origin of first dorsal fin relative to the pectorals: in the white shark "first dorsal fin origin is usually over the pectoral inner margins" whereas in the mako "first dorsal fin origin is usually behind the pectoral fin free rear tips" [11]. (2) Snout shape: the mako shark snout is "acutely pointed" whereas the white shark snout is "bluntly conical" [11]. The acuteness of the point on the snout is commonly used by biologists and fishermen to distinguish the two species. Therefore, we propose a new metric to quantify this feature, the ratio of distance from tip to anterior edge of eye versus height at anterior edge of eye. The keys used to distinguish different lamnids utilize tooth morphology or other features typically unavailable from photographs. Since photos typically show the snout, our metric may be useful for identification in other cases.

In addition, the pattern on the flank of white sharks is typically an uneven line between the contrasting white ventral and grey dorsal surfaces (margin between dorsal dark and ventral white surfaces sharply delimited [11]), whereas mako sharks typically have a smooth transition from lighter to darker. The eye is larger relative to the body in the mako shark [11].

3. Results and Discussion

3.1. Records of White Sharks in Hawaii. Thirteen modern records for white shark sightings in Hawaii were verified (See Supplementary Material available online at http://dx.doi.org/10.1155/2013/598745) (Table 1, Figure 1), and 22 individuals were satellite tracked to Hawaii from the coast of North America, reported in published articles [2–5, 7]. White sharks occurred in both the Main and Northwestern Hawaiian Islands [5]. The presence of *Carcharodon carcharias* in Hawaiian waters has been known since the days of precontact Hawaiians, as evidenced by artifacts containing white shark teeth held in the various museums [1]. Contemporary records of white sharks date back to May 1926, when the remains of a man who apparently drowned in waters of Haleiwa, Oahu were recovered 16 days later in the stomach of a large shark landed off Kahuku, Oahu. Of five newspaper articles describing the incident, only one [12] identified the shark as *C. carcharias*. This appears to have been the first time a white shark was mentioned by name in any Hawaiian shark incident account in recent history.

Following the size classification of Bruce and Bradford [13], records of white sharks in Hawaiian waters have involved subadults and adults, ranging in size from 3.3 m (this study) to 5.3 m [5]. Where sex could be determined, males ranged from 3.5 m to 4.9 m and females from 3.3 m to 4.8 m. Juvenile (1.75–3 m) and young of the year (<1.75 m) size classes have not been reported, with the exception of shark 19690308, whose size was estimated from bite marks. Since it is not known what proportion of the shark's jaws resulted in a 24 cm bite width, the length estimate may have a large margin of error. A length of 2.7 m would be at least 0.6 m less than any other reliably measured white shark in Hawaiian waters.

Table 1: White sharks observed in the Hawaiian Archipelago.

Date	Animal ID*	Location	TL (m)	Sex	Basis for identification	Source
May 18, 1926	19260603	Kahuku, Oahu	3.8	U	Captured specimen	[12]
Dec 7, 1959	19591207	Kahuku-Waialee, Oahu	3.5	M	Original catch data	[14]
Mar 6, 1960	19600306	Windward Oahu	3.3	F	Original catch data	[14]
Mar 8, 1961	19610308	1 mile outside Honolulu Harbor	4.1	U	Captive specimen	[1, 15]
Jan 20, 1966	19660120a	Kawaihae Bay, Hawaii		U	Original catch data	[1, 16]
Jan 20, 1966	19660120b	Kawaihae Bay, Hawaii		U	Original catch data	[1, 16]
Mar 8, 1969	19690308	Makaha, Oahu		U	Tooth impressions in surfboard	[17]
May 3, 1969	19690503	Kawaihae Bay, Hawaii		M	Original catch data	[1, 16]
Oct 28, 2002	20021028	Penguin Bank, Molokai		U	Video footage	[18]
Oct 4, 2004	20041004	Makapuu, Oahu	3.9	F	Video footage	[18]
Jan 4, 2005	20050104	Molokini, Maui	Large	U	Photograph	[18], 1
Dec 28, 2005	20051228	Near Haleiwa, Oahu	4.5	F	Video footage	2
Jan 29, 2006	20060129	Mahukona, Hawaii	4.2	F	Photograph	3
May 1, 2011	20110501	Between Molokai and Maui	3.3	U	Video footage	4

* Animal ID is given as date in the format. Detailed descriptions of each individual are in the Supplementary Material available online at http://dx.doi.org/10.1155/2013/598745.
Sources: References [1]Photographs and descriptions by John Chakerain provided to K. Weng, 2012; [2]Jimmy Hall photos provided to K. Weng; [3]Todd Buczyna photographs provided to K. Weng, 2012; [4]Virginia Moriwake and Jeff Drazen, University of Hawaii.

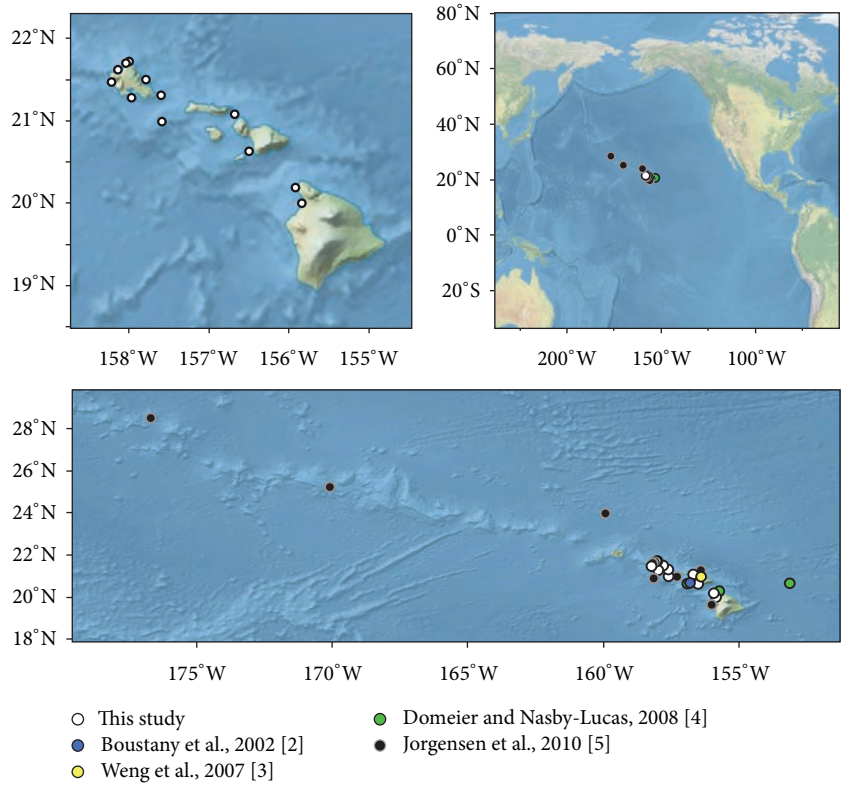

Figure 1: Location of white sharks sighted in Hawaii and reported in published satellite tracking studies.

Domeier [8] reported on a 3.15 m total length subadult male tagged off Guadalupe Island (GI) on December 6, 2007, which departed GI April 20, 2008 and migrated to a point 1100 km due north of Hawaii island. Although the shark did not enter the Hawaiian waters, it did travel through similar latitudes and longitudes.

Observations of white sharks in Hawaii included sightings from vessels and by divers as well as recordings on remote cameras and from submersibles. All records are from daytime periods and range from the surface to 446 m.

The relatively low abundance of white sharks in Hawaiian waters was evidenced by the results of large-scale shark

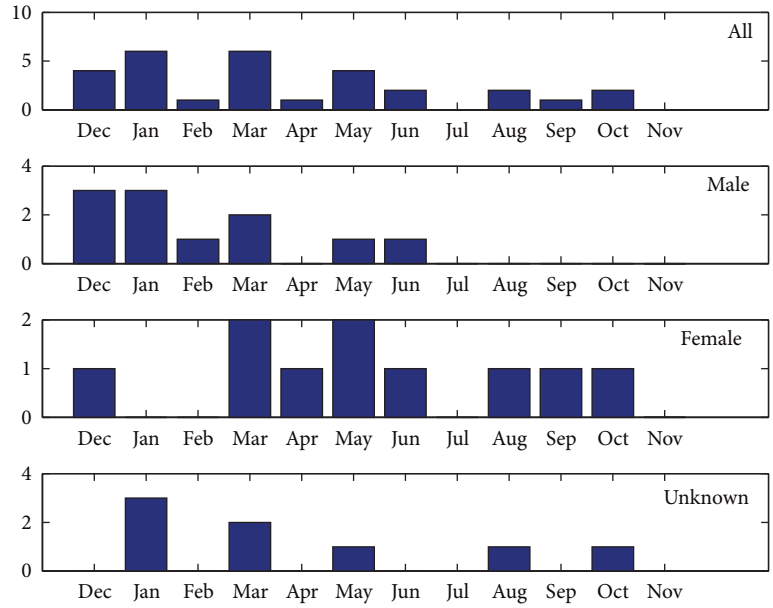

Figure 2: Distribution of white shark occurrences in Hawaii by month based on verified sightings (this study) and published records [2, 3, 5, 7].

culling operations conducted from 1959 to 1969. A total of 697 sharks were caught during the Billy Weaver Shark Research and Control Program (1959-60) [14]. Of those, only two were white sharks. Surprisingly, two white sharks were among 92 sharks caught during a 1966-67 abatement program at Kawaihae Bay, Hawaii island, and a third was caught in the same area in 1969 [1]. However, during the largest shark control effort in Hawaii's history, the 1967–69 Cooperative Shark Research and Control Program, 1,727 sharks were caught, but not a single white shark [19]. No white sharks were caught during three other shark control programs in the 1970s [20].

3.2. Origins of Hawaii White Sharks. White sharks in Hawaii may hypothetically be migrants from populations near North America, Japan, or Australia/New Zealand or a resident population. At present no evidence exists for connectivity between Hawaii and the Australia/New Zealand region, though tracking studies have occurred [13, 21, 22]. Insufficient research has occurred to evaluate connectivity with Asia. Large-scale tracking studies on the North American coast have revealed a high degree of connectivity with Hawaii and showed a seasonal pattern with sharks departing the coast during the northern autumn [2–4]. The lack of juvenile and young-of-the-year size classes and strong seasonal presence of subadult and adult males indicate that a resident Hawaii population is unlikely.

The seasonality of white shark occurrences in Hawaii based on both sightings, fishery records and published records, is shown in Figure 2. White shark occurrences are distributed through all months of the year except November, with a broad peak during northern winter-spring. Males are absent during northern summer-fall, while females occur all year round. The absence of males in the northern fall is consistent with those individuals leaving Hawaii and moving to North American aggregations in the fall-winter. In contrast, female sharks occur in Hawaii throughout the year. The autumn occurrence of white sharks in Hawaii is not consistent with the seasonal pattern identified by early tracking studies [2–5]. However, this seasonal pattern is not the complete story and is part of a more complex migratory system in which females and males have different patterns [7]. Domeier and Nasby-Lucas [7] described migratory patterns of eight adult male and four adult female white sharks tagged with satellite-linked radio transmitters at their northeastern Pacific aggregation sites. Two of the males were tagged at the Southeastern Farallon Island (SEFI), and all other sharks were tagged at Guadalupe Island (GI). Males tagged at SEFI began their offshore migration with a mean departure of November 23, while males tagged at GI departed later, with a mean date of February 7. They all traveled to the same core region of the Shared Offshore Foraging Area (SOFA), then returned to their respective aggregation sites around the same time (mean returns July 30 to SEFI and August 7 to GI). Females began their offshore migration from GI about the same time as the males, with a mean departure date of February 5. However, they roamed a much larger expanse of ocean than the males, between GI and the SOFA's eastern edge. Three of the four females did not return to the adult aggregation area for at least a year after tagging, while one returned after 228 days. The biannual migrations of females described by Domeier [8] potentially put them far offshore of their North American coastal aggregation sites throughout the year, whereas annual migrations by males reflect a higher level of seasonality.

The seasonal differences in male and female white sharks visits to Hawaii are consistent with the life history hypotheses presented in a recent review [8]. Male visits are determined by the offshore migration from the North American coast [2, 3, 5], whereas female visits are poorly correlated with this migration [7]. The variability in seasonality of female visits is likely related to their two-year reproductive cycle in which they do not return to coastal aggregation sites off California

and Mexico on alternate years. During these periods, females occupy a large pelagic habitat. Our results suggest that this large pelagic habitat includes Hawaii. Hawaii may provide a good foraging area with warm water temperatures for female white sharks. Based on the girth of shark 20041004, the observers speculated that it was pregnant [18]. Given the length estimate of 3.9 m, the shark would have been small for a reproductively mature female, assuming an average length at maturity of 4.5 m for females [23]. However, visual length estimates made without lasers, stereovideo, or clear scale references may have considerable error. Females may prefer warmer waters since fetal development would presumably occur faster [7].

3.3. Mating. Male and female white sharks in the Eastern Pacific may have very short periods of overlap during which mating could occur [7]. Male-female overlap at coastal seal colony aggregation sites occurs primarily during December and January, and Domeier [8] suggested that seal colony aggregations are the only locations where mature male and female sharks are in the same place at the same time [8]. Overlap in Hawaii is most likely during the northern spring (Figure 2), and Hawaii may provide clear landmarks that could facilitate interactions between male and female sharks. However, given that sightings have been of single sharks, there is no evidence for mating in the Archipelago. Hawaii receives visits from both Central California as well as Guadalupe Island sharks (more frequently from Central California) [8]; so interactions between these populations are possible in the Archipelago. Overlap offshore appears unlikely, due to the vast size of the SOFA, as well as the fact that it is used primarily by males, with females using a larger and more dispersed area [8].

3.4. Occurrence of Potential Prey in Hawaii. Taylor [1] noted the possibility of white sharks foraging on humpback whales or Hawaiian monk seals. The seasonality of white sharks in Hawaii overlaps with humpback whales, particularly for males (Figure 2), but the seasonal correlation is weak, suggesting that humpbacks are unlikely to be a driver of white shark visitation. The resurgence of the population of Hawaiian monk seals in the Main Hawaiian Islands may provide a slight increase in foraging opportunities for large sharks, though the population is far lower than the population of gray seals off the east coast of the US, where white sharks have returned [24]. The total population of monk seals in the Main Hawaiian Islands is likely to be between 150 and 200 [25], and given the low productivity of a long lived mammal such as this, monk seals represent a very small forage base for white sharks. Small cetaceans are present in Hawaii all year round and may be a food source for white sharks [8].

3.5. Depth Utilization and Foraging. Two papers have noted that white sharks engage in a diel vertical migration while in the Hawaii region; however, the nature of the migration differed, and each paper presented data from a single individual shark. Weng et al. [3] noted a reverse migration, being shallower during day and deeper during night, while Jorgensen et al. [5] noted a normal vertical migration, being shallower at night. Sightings data presented in this paper are from daytime periods, ranging from the surface to 446 m, indicating that white sharks occupy a broad depth range, and are more consistent with the observations of Jorgensen et al. [5]. The reverse diel pattern presented by Weng et al. [3] is unlikely to be representative for white sharks in Hawaii.

The diel behaviors of white sharks are likely to be related to the behaviors of their prey, which may include midtrophic level fishes and squids as well as higher trophic level organisms that prey on them, such as marine mammals and large pelagic fishes. Jorgensen et al. [5] stated that the diel vertical migration of white sharks in Hawaii suggested foraging in the deep scattering layer (DSL) community. The Hawaiian slope environment is home to an assemblage of planktonic and micronektonic organisms that differ from the surrounding pelagic communities, termed the "mesopelagic boundary community" [26]. These organisms undertake a dramatic horizontal and vertical diel migration, moving from deep offshore daytime positions, to shallower nearshore nighttime positions [27]. Spinner dolphins closely follow the horizontal and vertical movements of these boundary community prey organisms [28]. The shallowest and most nearshore position of the boundary community, and associated spinner dolphins, is typically at midnight [29]. Both the Weng and Jorgensen papers provided figures detailing the transition from deep to shallow behavior occurring during crepuscular periods. These patterns are not consistent with a close association with the boundary community that exists near the Hawaiian Islands. The diel movements of the more distant pelagic DSL community are more strongly associated with light, thus making strong vertical movements during crepuscular periods [30]. As such, the patterns observed by Jorgensen et al. may represent white sharks that are further offshore.

3.6. Species Misidentification. In addition to the incidents and sightings listed in Table 1, we found eight other reports of white sharks in Hawaii from 1995 to 2012, but these reports did not contain information allowing species identification. Mako sharks are commonly mistaken for white sharks and there are numerous unverifiable reports of white sharks from Hawaii. A large shark videotaped near Kaena Point, Oahu was misidentified as a white shark by the news media [31] and erroneously re-reported as a white shark by many other news outlets. Our morphometric tests show that the individual was a mako shark, and other experts in shark biology who viewed the video and images agree that the individual was a mako (C. Meyer, G. Cailliet, and D. Ebert, personal communication). The base of the first dorsal fin is behind the trailing rear tip of the pectoral fin (not in line), a character of mako sharks. The ratio of distance tip to eye versus height at eye is approximately 0.6 for mako sharks and 0.8 for white sharks based on Compagno [11]. The Kaena shark had a ratio of 0.61.

4. Conclusions

Hawaiians utilized the teeth of white sharks before the time of European contact. Such individuals could have been migrants

from populations in North America, Asia, Australia/New Zealand, or hypothetically part of a resident population. We compiled sightings records during the past century, combined with analysis of published movement records. These data are consistent with recently published theories on North American white shark life history, with individuals occurring in Hawaii during the northern fall being female. The high variability in white shark behavior in the Archipelago indicates that they are unlikely to be focusing on a small number of prey species or foraging strategies. Since misidentification of putative white sharks is a common problem, we propose a simple method for distinguishing white sharks from closely related species in situations when traditional morphometric data are unavailable.

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Feeding requirements of white sharks may be higher than originally thought

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Quantifying the energy requirements of animals in nature is critical for understanding physiological, behavioural, and ecosystem ecology; however, for difficult-to-study species such as large sharks, prey intake rates are largely unknown. Here, we use metabolic rates derived from swimming speed estimates to suggest that feeding requirements of the world's largest predatory fish, the white shark (*Carcharodon carcharias*), are several times higher than previously proposed. Further, our estimates of feeding frequency identify a clear benefit in seasonal selection of pinniped colonies - a white shark foraging strategy seen across much of their range.

Understanding the energetic requirements of organisms in their natural environment is fundamental to ecosystem ecology, as the energetic benefits and costs associated with their activities will heavily influence life-history strategies and trophic relationships. Inherent difficulties in studying marine predatory behaviour in the wild have hindered our understanding of the energetic requirements and associated trophic relationships of apex predators. In the case of pelagic predatory sharks, approaches that provide energetic data are urgently needed, as many of these species are highly vulnerable to overexploitation[1].

White sharks *Carcharodon carcharias* (Lamnidae) are apex marine predators with a circumglobal distribution. Their longevity, late maturity and low fecundity renders them highly susceptible to overexploitation[2]. The population status of white sharks is poorly known over the species' range due to a lack of robust abundance indicators, given it is protected throughout much of its range and only caught as a fisheries bycatch species or as part of shark control programs[2]. Additionally, despite their protected status, white sharks are still regularly incidentally caught in various fishing gear throughout their range[3,4]. Even at very low levels of anthropogenic mortality, modelled white shark populations have greatly increased doubling times[5], and declines in relative catch rates have been reported in parts of their range, e.g. Refs. 3,6. There is however, conjecture surrounding the magnitude of some of these declines[7–9] and some evidence for slight increases in relative catch rates in the last 10–20 years in parts of their range, e.g. Refs 3,4.

Shifting from a predominantly piscivorous diet to one dominated by marine mammals at approximately 3.4 m in total length[10], large white sharks are regular visitors to seal breeding colonies. For example, the Neptune Islands (South Australia) supports the largest seal colony in Australia, and white sharks are most abundant in the area during winter-spring when weaned New Zealand (NZ) fur seals *Arctocephalus forsteri* are present[11].

Energy requirements of large sharks are poorly documented. The only published study of white shark energetics in the wild estimated the field metabolic rate (MR) of a single individual from telemetered muscle temperature data as the individual moved from cold to warm water[12]. The authors used their MR estimates to suggest a 943 kg white shark could survive on 30 kg of marine mammal blubber for approximately 1.5 months; a widely cited figure that has perpetuated the assumption that large sharks only need to feed every few weeks to maintain net energy gain.

Here, we combine estimates of swimming speeds [Fig. 1] and measurements of standard (resting for an obligate ram-ventilator) MR (SMR) in young-of-the-year (YOY) white sharks[13], with swim-tunnel respirometry data from closely-related shortfin mako sharks *Isurus oxyrinchus* (Lamnidae)[14] to estimate field routine metabolic

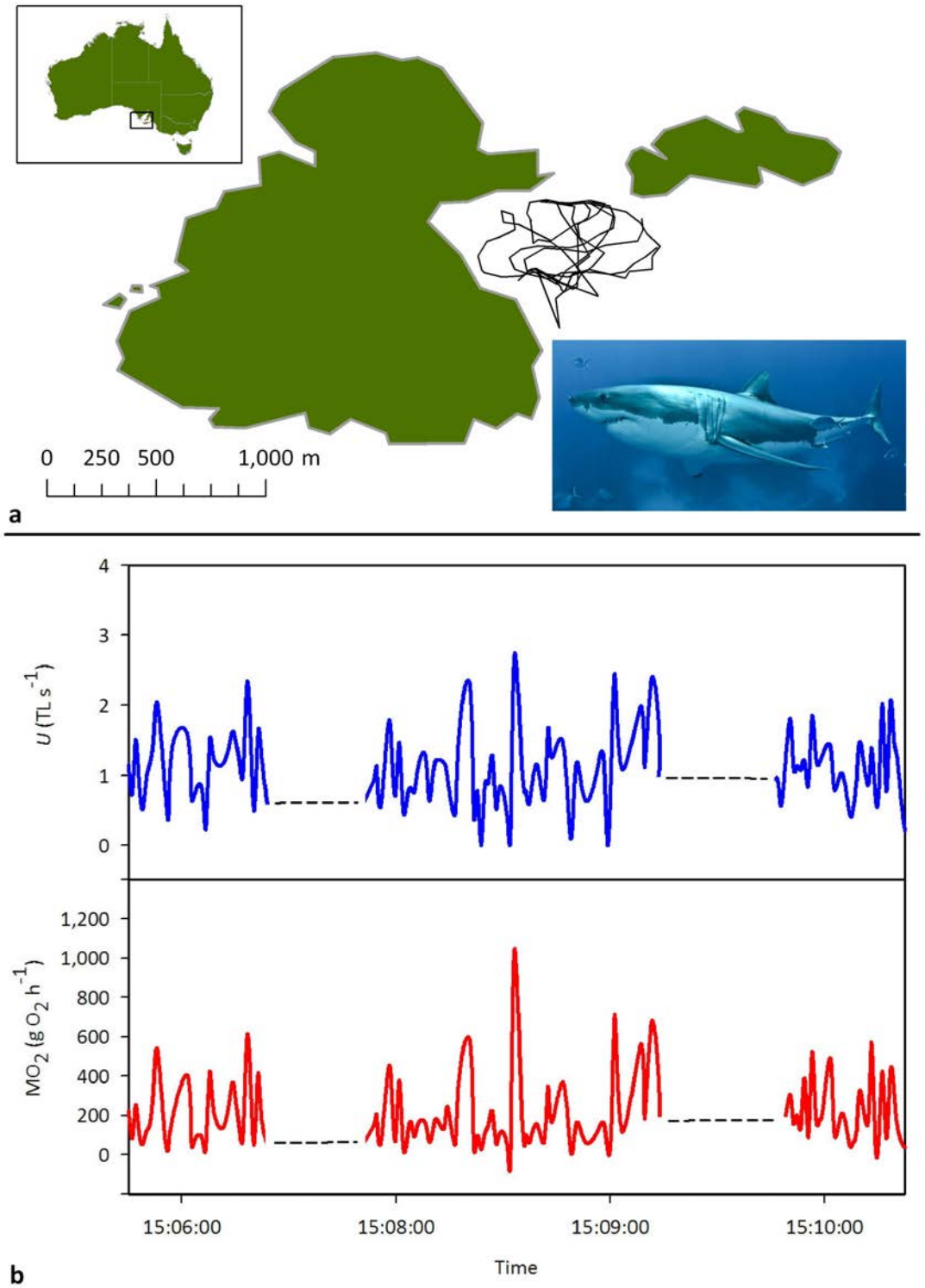

Figure 1 | Movements, swimming speeds and metabolic rates of a white shark. (a) 3.5 h track from a 3.5 m male white shark at the Neptune Islands fur seal colony, Australia, determined by a radio-acoustic positioning system. Inset. a white shark *Carcharodon carcharias* at the Neptune Islands. (b) Swimming speeds (U, TLs^{-1}) were calculated from locations made at ≤5 s intervals in (a) and used to estimate routine metabolic rate (RMR) (MO_2, gO_2h^{-1} as per the figure axis label) (see Materials and Methods for details).

rates (RMR), total daily energy expenditure (TDE), and feeding requirements of white sharks at a NZ fur seal colony at the Neptune Islands, South Australia.

Results

Throughout the entire monitoring period, 9,969 swim speed estimates were obtained across all individuals. The distribution of swimming speeds was strongly positively-skewed, so we calculated median swimming speeds as well as mean estimates. The grand mean swimming speed (n = 12) was estimated as 2.91 ± 0.16 m s^{-1} (U, 0.81 TL s^{-1}), and the median as 2.25 ± 0.14 m s^{-1} (U, 0.62 TL s^{-1}) [Table 1]. From the mean swimming speed, we estimate the field RMR as 723 mg O_2 kg^{-1} h^{-1} or a TDE of 28.2 MJ (daily ration of 1.5–1.9% wet body weight d^{-1}) for 428 kg sharks (the average from our

Table 1 | Summary of white shark metabolic rate (MR) estimates and the implications for prey intake requirements. Body mass for our study and that of Ref. 13 are given as mean ± s.e.m. All other values for our study are means (grand mean ± s.e.m.) and values in parentheses are medians (grand mean ± s.e.m.). Ref. 13 estimated the range of swimming speeds from video recordings of the sharks swimming in a transport tank. Ref. 12 estimated the shark's swim speed by proxy; the tracking ship's course was stated to approximate that of the fish, giving an over-the-ground speed of 3.2 km h^{-1}. Absolute MR and duration of energy balance from 30 kg of blubber was estimated for this study by scaling up to 943 kg using an exponent of 0.79. Ref. 12 used an energy value for blubber of 27.9 MJ kg^{-1}

Study	No. individuals	Body mass (kg)	Swimming speed (m s^{-1})	Estimated mass-specific MR (mg O_2 kg^{-1} h^{-1})	Estimated absolute MR (g O_2 h^{-1})	Duration (days) that shark is in energy balance from 30 kg blubber
Ref. 12	1	943	0.9	60.0	56.6	44.1
Ref. 13	4	29 ± 2	0.58 – 0.81	246.0	55.1	—
This study	12	428 ± 61	2.9 ± 0.2 (2.3 ± 0.1)	723.0 (566.5)	161.8 (126.8)	11.6 (14.8)

study) to maintain energy balance [Fig. 1(b) shows absolute RMR and *U* for a 3.5 m (388 kg) shark]. This equates to the consumption of 0.3 weaned NZ fur seal pups (mean wt. 14.6 kg) d^{-1}, or 1.0 silver seabream (*Chrysophrys auratus*) (mean wt. 4.5 kg) d^{-1}. From the median swimming speed, we would estimate the field RMR as 567 mg O_2 kg^{-1} h^{-1} or a TDE of 22.1 MJ (daily ration of 1.2–1.5% wet body weight d^{-1}). This equates to the consumption of 0.2 weaned NZ fur seal pups d^{-1}, or 0.8 silver seabream d^{-1}.

Discussion

Our estimate of total daily energy expenditure (TDE) suggests white sharks feed far more frequently than previously estimated[12] and does not support the proposal that white sharks could survive at energy balance on 30 kg of marine mammal blubber for 1.5 months (44.1 d). Indeed, the mass-specific MR estimated by Refs. 12 for a 943 kg white shark was more than 12-times lower than our estimate for smaller (428 ± 61 kg, mean ± s.e.m., n = 12) sharks (60 versus 723 mg O_2 kg^{-1} h^{-1}). Given that absolute MR scales with body size with an exponent of ~0.8 for most fish including sharks[15,16], it is unsurprising that our mass-specific MR estimate is higher than that of a much larger animal. However, if the measurements of SMR in ~30 kg sharks[13] and our measurements of MR in 428 kg sharks are scaled upwards using a mass exponent of 0.79 (Ref. 13), there is strong agreement in absolute MR estimated by Refs. 12 and that measured by Refs. 13 (56.6 versus 55.1 g O_2 h^{-1} for 943 kg sharks), whereas our estimate of absolute MR (161.8 g O_2 h^{-1} for 943 kg sharks) is about three times higher. This suggests that, whereas we have estimated metabolic rate in actively swimming animals (RMR), Ref. 12 is likely to have estimated MR approximated by rest (SMR). Our estimated daily ration of 1.5–1.8% wbw d^{-1} is highly comparable to the mean ration (estimated directly from the amount of food eaten) for captive YOY white sharks[17] (1.2% wbw d^{-1}), after scaling for differences in body mass between the YOY and adult white sharks. Furthermore, our daily ration is comparable to that estimated for free-ranging mako sharks[18] (2.3–2.8% wbw d^{-1}), after scaling for differences in body mass between the mako and white sharks.

The new estimate of white shark RMR has implications for assessing the likely feeding frequency of this species. Using our estimate of RMR, 30 kg of blubber (27.9 MJ kg^{-1}) would provide a 943 kg (the weight of the shark examined by Ref. 12) white shark with sufficient energy for approximately 11.6 days, which is about four times less than that calculated by Ref. 12 [Table 1]. The winter–spring water temperature at the Neptune Islands, where we recorded the swimming speeds of white sharks, is 15.35 ± 0.86°C (mean ± s.d.). This is very similar to that recorded by Refs. 12 (14.7–16.7°C) during their measurement of MR, and as such cannot in itself account for the high RMR estimated. However, our RMR estimate takes into account the high levels of activity needed for a white shark to 'patrol' a seal colony (e.g. 2.9 ± 0.2 m s^{-1}, grand mean ± s.e.m, n = 12; 0.81 TL s^{-1}), including burst speeds up to 10 m s^{-1} [~2.85 TL s^{-1} for a 3.5 m shark, Fig. 1(b)]. When a median value of swimming speed is used (2.25 ± 0.14 m s^{-1}, grand mean ± s.e.m, n = 12; 0.62 TL s^{-1}), we get a RMR estimate of 567 mg O_2 kg^{-1} h^{-1} (absolute RMR 67.9 g O_2 h^{-1}), which is comparable to previous estimates of RMR for the related shortfin mako shark[14,19] (absolute RMR 41.2–44.2 g O_2 h^{-1}, scaled upwards to the mean white shark weight for this study (428 kg) using a mass exponent of 0.79). However, after scaling up to 943 kg using an exponent of 0.79, our absolute RMR calculated from the median value of swimming speed (126.8 g O_2 h^{-1}) is still more than two times that for Ref. 12 [Table 1]. Even at this median RMR value, TDE is equivalent to a daily ration of 1.2–1.4% wbw d^{-1} and 30 kg of blubber providing a 943 kg white shark 14.8 days energy, which is about three times less than that calculated by Ref. 12 [Table 1].

Given their high metabolic rates, white sharks may target seal colonies to predate on seasonally abundant and more vulnerable weaned pups[20], rather than adult seals or patchily-distributed fish. Silver seabream is a common teleost prey of Australian white sharks[21], and while the energy density of both prey items are similar (9.4 MJ kg^{-1} and 8.8 MJ Kg^{-1} for weaned seal pups and silver seabream, respectively), the smaller mean size of silver seabream would necessitate at least one (1.0) successful predation event per day to maintain energy balance, compared to less than one (0.3) if targeting weaned seal pups. However, to contribute any energy toward growth and reproduction, they would need to eat more than one silver seabream per day, but would be in positive energy balance if predating on seal pups every third day. Patchily-distributed reef-associated prey such as *C. auratus* have been described as 'less-visitable' for white sharks[22] given the prey's ability to disperse and shelter among complex habitat. Hence, there may be a distinct energetic advantage in targeting one prey item every few days in a predictable (revisitable) habitat such as a seal colony[14], compared to pursuing and capturing more than one prey item every day in a less-visitable patch (i.e. silver seabream aggregation). During the summer–autumn periods when the weaned pups are not present, white sharks are less common at the Neptune Islands, and during these periods sharks have been tracked moving away from the Neptune Islands to areas where large finfish aggregations (including species such as silver seabream) occur[21]. This movement is accompanied by a shift in search pattern from that approximating Brownian motion at the seal colony (predicted behaviour when prey is abundant) to movement well approximated by a specialized random walk known as a Lévy flight, predicted when foraging for sparsely-distributed prey in more open shelf and pelagic environments[22]. This indicates that feeding on finfish aggregations may be more efficient than foraging for adult seals that are less vulnerable to predation than juveniles[20].

Our study suggests that due to high metabolic rates, white sharks need to feed more regularly than has been previously assumed[12,23,24]. Given direct observations of feeding frequency are generally not possible for apex marine predators and that the majority of information available is inferred from behavioural information, field-energetic approaches such as that used in this study may help to answer key ecological questions for a broad suite of such taxa, the populations of which are currently under immense pressure from

human exploitation[25]. As an example, our approach could provide a tool for examining the ecological role of mesopredator release through removal of large sharks, such as white sharks. This is a very topical and contentious area of ecological research where further empirical evidence is needed[26].

Methods

Twelve white sharks *Carcharodon carcharias* (estimated total length (TL) range: 2.8 – 4.5 m, mean ± s.e.m.: 3.6 ± 0.2; estimated wet body weight (wbw) range: 195 – 839 kg, mean ± s.e.m.: 427.5 ± 60.6 kg) were tagged externally with acoustic depth transmitters (model V16P-5H, Vemco, Halifax, Nova Scotia) at the Neptune Islands, Australia between December 2009 and September 2011. Tagging was carried out under South Australian (SA) Department of Environment, Water and Natural Resources permits M25738 and M25738-2, SA Department of Primary Industries and Resources exemption 9902364 and Flinders University Animal Ethics Committee approval E287. The three-dimensional positions (latitude, longitude and depth) of tagged sharks were triangulated for up to 19 d [for example see Fig. 1(a)] using a radio-acoustic positioning system (Vemco, Halifax, Nova Scotia. Model VRAP), which covered 0.052 km^2. Swimming speed ($m\ s^{-1}$) was calculated using consecutive location estimates (≤5 s apart). Above 10 $m\ s^{-1}$, cavitation limits swimming speeds[27]. As such only swimming speeds below 10 $m\ s^{-1}$ were used (~10,000 speeds representing 82% of data) to calculate a grand mean swimming speed ($m\ s^{-1}$) for the 12 sharks. This single value was then converted to U ($TL\ s^{-1}$) using the mean TL.

To estimate field RMR we modified the relationship for oxygen consumption rate (MO_2, $mg\ O_2\ kg^{-1}\ hr^{-1}$) and swim speed ($U$, $TL\ s^{-1}$) determined directly for a shortfin mako shark *Isurus oxyrinchus*[14].

$$\mathrm{Log} \times \mathrm{MO}_2 = 0.58\mathrm{U} + \mathrm{Log} \times (246) \quad (1)$$

where by the Log value in the intercept 246 in Eq (1) represents the standard (equivalent to resting in an obligate ram-ventilator) MR (SMR, $mg\ O_2\ kg^{-1}\ hr^{-1}$) calculated during the transport of captive YOY white sharks[13], the slope 0.58 Eq (1) represents that determined for a shortfin mako shark, and U in Eq (1) is the value calculated from our swim speed estimates ($TL\ s^{-1}$).

Total daily energy expenditure (TDE, MJ) was calculated from field RMR using an oxycalorific coefficient of 13.55 $kJ\ g^{-1}\ O_2$ (Ref. 28). To determine the number of weaned NZ fur seal pups needed to be consumed at this TDE to maintain energy balance and the associated daily ration (% wbw d^{-1}; calculated as per Ref. 18) we used an energy content value (9.4 $MJ\ kg^{-1}$) based on that for closely-related Antarctic fur seal pups (*Arctocephalus gazella*)[29], with a mean weaned NZ fur seal pup weight of 14.6 kg (Ref. 11) and an assimilation value of 73% (Ref. 30). This was also undertaken for a dominant teleost prey of white sharks throughout their Australian range[21], the silver seabream *Chrysophrys auratus* (estimated mean weight 4.5 kg; 8.8 $MJ\ kg^{-1}$; Ref. 31). The number of days 30 kg of whale blubber (27.9 $MJ\ kg^{-1}$) as per Ref. 12 would maintain energy balance at our calculated TDE was also estimated, after scaling up to 943 kg (the weight of the single shark from the study by Ref. 12) using an exponent of 0.79 (Ref. 13).

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Acknowledgements

The authors thank Andrew Fox and Rachel Robbins (Rodney Fox Shark Expeditions/Fox Shark Research Foundation) for significant logistical support, and Paul Rogers, Crystal Beckmann, and all volunteers for assistance with fieldwork. J.M. Ezcurra and J.B. O'Sullivan (Monterey Bay Aquarium) provided data on YOY metabolic rates and Hugh Pederson and Warwick Gillespie (Myriax Eonfusion) provided assistance with estimating shark positions. A. Fox (Rodney Fox Shark Expeditions) provided the shark photograph and J. Hulls (IMAS) produced the track in Figure 1 respectively. Funding was provided by the Winifred Violet Scott Charitable Trust, Neiser Foundation, Wildlife Conservation Fund, Nature Foundation of SA, and Solar Online.

Author contributions

J.M.S. conceived the study; C.H. tagged sharks and set up the tracking system with J.M.S.; J.M.S. and N.L.P. and C.H. proposed and performed the metabolic and spatial analyses, respectively; All authors co-wrote the manuscript.

Additional information

Competing financial interests: The authors declare no competing financial interests.

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July 18, 2013

Jocelyn Heaney
1721 Rodney Dr. #3
Los Angeles, Ca. 90027

California Dept. of Fish and Wildlife
Lampson Avenue, Suite C
Los Alamitos, CA 90720

Dear CDFW Official,

I am writing to urge you to please give California's great white population endangered status. Fishing pressures, pollution, low reproduction rates are only some of the reasons these animals desperately need our protection.

Sharks all over the world are disappearing at alarming rates. Let California be a leader in conservation, a voice of sanity and intelligence in a world bent on its own destruction, a world that does not understand that the future of the ocean is inescapably intertwined with the fate of human beings.

Thank you for your consideration of this crucial matter.

Sincerely,

Jocelyn Heaney

From:	Shester, Geoff <GShester@oceana.org>
Sent:	Thursday, December 19, 2013 12:11 AM
To:	Wildlife DIRECTOR; FGC
Cc:	Sonke Mastrup (smastrup@fgc.ca.gov); miyoko@biologicaldiversity.org
Subject:	supplemental information re: Dept/Commission consideration of white sharks under CESA
Attachments:	NEPwhitesharks CESA 12 18 13.pdf; BRT_report_review_12-18-13oceana-cbd.pdf

Dear Director Bonham and President Sutton,

Attached, please find materials (cover letter and detailed review document) to supplement our August 2012 petition to list the white shark (Carcharodon carcharias) as threatened or endangered under the California Endangered Species Act (CESA). These materials are intended to provide an update and detailed critique of the analysis performed by the National Marine Fisheries Service's (NMFS) Biological Review Team (BRT) and address many of the key questions regarding the decision to list the species under CESA. We request that this information be incorporated into the Department's 12-month evaluation and recommendation to the Commission regarding whether to list white sharks under CESA, and the Commission's subsequent decision on the matter. Please let us know if you have any questions about these materials.

We look forward to further constructive dialogue with you on the State's management of this important apex predator in the California Current Large Marine Ecosystem.

Sincerely,
Geoff Shester and Miyoko Sakashita

Geoff Shester, Ph.D. | **California Program Director**
_____

OCEANA | Protecting the World's Oceans
99 Pacific Street, Suite 155C | Monterey, CA 93940
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Opposition Comments sent to

the Department of Fish & Wildlife and

the Fish & Game Commission

-----Original Message-----
From: James Abraham [mailto:e.james.abraham@gmail.com]
Sent: Thursday, December 12, 2013 9:43 AM
To: Wildlife DIRECTOR
Subject: LA and Great Whites

There have been too many Great White siting near populated beaches.

http://www.sharkresearchcommittee.com/pacific_coast_shark_news.htm

What are you doing to protect human beings?

Have you experimented with the "death smell" chemicals researched by Eric Stroud at Shark Defense Inc?

I personally will begin lobbying to remove protections.

--
James Abraham
310 729 9246

MLS

Dear National Oceanic and Atmospheric Administration ,

Also, California Fish and Game Commission,

I urge you to NOT place the Great White shark on the endangered species list.

The Great White shark is not endangered. The Great White shark is already protected.

Thank you,

Joe Ray

100 Riverside Avenue

Davenport, California

95017

joe@davenportsurfsail.com

California Coalition of Diving Advocates

Conservation-Education-Science-Policy-Stewardship

November 19, 2012

California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Re: Great White Sharks

Dear President Jim Kellogg:

As a member of the California Coalition of Diving Advocates, I urge you and your fellow commissioners to "not" consider the great white sharks as either threatened or endangered, or in some way believe there is a need to consider great white sharks as being listed under the endangered species act. Great white sharks along the California coast are, although may be, in some way a genetically isolated species of great white sharks, are not in any way being threatened or in danger. Currently California law and Federal law prohibit the pursuit and or take of great white sharks, and the current laws prohibiting take of GWS has been so in affect for over three decades. We have provided the best possible protection to these sharks. Furthermore, GWS are not an allowed species of fish to be considered for take by Mexican government laws and Canadian fishery laws as well and further protection is afforded by international law.

Secondly, there is no science data concluding that the great white sharks along the California coast have declined, and in fact, it is highly more likely the populations of great white sharks have increased since over the last three decades due to the protection we have afforded them. Antidotal, in water users such as divers, surfers, kayakers and swimmers as of late have reported more frequent encounters with great white sharks more now than ever before. Sometimes these encounters with great white sharks along the California coast have resulted in death and or serious bodily injury leaving victims of great white sharks attack maimed for life.

Based upon our coalition's research and the criterions needed to establish if an animal or plant is to be considered as endangered does not exist to any extent qualitative definable to be considered to meet the requirements established to list the great white shark as endangered. Consequently the California Coalition of Diving Advocates finds that there is no need to list the great white sharks along the California coast as an endangered species.

Sincerely on behalf of the CCDA and the members,

Mr. Bill Bernard

California Coalition of Diving Advocates
P.O. Box 241
Linden, CA 95236

From: "Goldman, Kenneth J (DFG)" <ken.goldman@alaska.gov> <ken.goldman@alaska.gov>
Sent: Wednesday, January 09, 2013 4:28 PM
To: FGC.FGC@fgc.ca.gov; marci.yaremco@wildlife.ca.gov; steve.ingram@wildlife.ca.gov; Dan.Yparraguirre@wildlife.ca.gov; Paul.Hamdorf@wildlife.ca.gov; Michelle.Horeczko@wildlife.ca.gov; Mandy.Lewis@wildlife.ca.gov
Cc: consuelo@alaska.net
Subject: RE: Consideration of important document not included in CESAPetitionEvaluation Re: White Shark

Dear Michelle,

Thank you for your reply. I would be more than happy to provide further comment on the documents I sent or any other aspects of white shark biology, ecology, population status and/or behavior to assist in the final determination of status under CESA. While I did provide the write-up for the State of Alaska for the Federal ESA process, I am not providing comment here in my official capacity as an employee of the State of Alaska, but as a professional biologist and scientist, so I would greatly appreciate if further email contact be done through my home email (consuelo@alaska.net, which I have cc'd on this email), and I would also be happy to communicate by phone (my contact information is in the email signature below). I appreciate your attention to my original email and look forward to providing any assistance possible to the process.

Cheers,

Ken

Kenneth J. Goldman, Ph.D.
Alaska Department of Fish and Game
Division of Commercial Fisheries
Central Region Groundfish and Shellfish Research Biologist
3298 Douglas Place
Homer, AK 99603
Phone: (907) 235-8191
Cell: (907) 399-1381
Fax: (907) 235-2448
Email: ken.goldman@alaska.gov

From: Michelle Horeczko [Michelle.Horeczko@wildlife.ca.gov]
Sent: Wednesday, January 09, 2013 3:10 PM
To: Goldman, Kenneth J (DFG); FGC; Dan Yparraguirre; Mandy Lewis; marci.yaremco@wildlife.ca.gov; Paul Hamdorf; steve.ingram@wildlife.ca.gov
Subject: Re: Consideration of important document not included in CESA PetitionEvaluation Re: White Shark

Dr. Goldman,

Thank you for your comment and attached documents regarding the Department's evaluation of the Petition to list white shark under CESA.
As we move forward through our evaluation process, may we contact you for clarification or further questions regarding your comment?

Regards,

Michelle Horeczko

Michelle Horeczko

Senior Environmental Scientist

CPS/HMS Project

CDFW Marine Region

4665 Lampson Ave. Suite C

Los Alamitos, CA, 90720

(562) 342-7198

>>> "Goldman, Kenneth J (DFG)" <ken.goldman@alaska.gov> 1/9/2013 12:10 PM >>>

Dear State of California, Department of Fish and Wildlife Officials and colleagues,

I have just completed my reading of your PDF document: The Evaluation of Petition to List the White Shark as a Threatened or Endangered Species. I would like to bring the following to your immediate attention and ask that the two attached documents be included in all further considerations and that they be passed on to the personnel that will be making the final determination.

On page 32: "In its suggestions for future management measures, the Petition relies primarily on a 2003 paper by J. Baum et al. in the journal Science, "Collapse and Conservation of Shark Populations in the Northwest Atlantic", which describes the decline of several large shark species on the east coast and suggests possible action to prevent further decline." There are enormous problems with the data analysis in that paper and a rebuttal to that paper was published in 2005 along with another rebuttal of Baum et al. response. Unfortunately, the petitioners didn't cite the Burgess et al. (2005) rebuttal to this paper, which specifically addressed the problems with the white shark indices. Clearly, anyone examining all facts and data relevant to this process should be made aware of it for their full consideration of the listing.

Thank you for your time and attention to this email request.

Regards,

Ken Goldman

This email represents a professional opinion only. It does not represent an opinion for the State of Alaska, nor the Alaska Department of Fish and Game.

Kenneth J. Goldman, Ph.D.
Alaska Department of Fish and Game
Division of Commercial Fisheries
Central Region Groundfish and Shellfish Research Biologist
3298 Douglas Place
Homer, AK 99603
Phone: (907) 235-8191
Fax: (907) 235-2448
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Is the collapse of shark populations in the Northwest Atlantic Ocean and Gulf of Mexico real?

ABSTRACT

Increasing fishing pressure on sharks stocks over recent decades has resulted in declines of many populations and led to increasing concerns for their conservation. The extent of these declines, however, has been highly variable—the result of the level of fishing, ocean conditions, and the life history of individual species. Two recent articles have described the collapse and possible extirpation of shark populations in the northwest Atlantic Ocean and Gulf of Mexico. Herein, we examine the results of these two papers commenting on the data sets used, comparing them to other available data sets, and critically evaluating the analyses and conclusions. We argue that these conclusions have been overstated because: (1) the analyses were based on a limited number of data sets, (2) the data sets themselves are inadequate to describe the status of all shark populations in the northwest Atlantic Ocean and Gulf of Mexico reported in these studies, (3) available data sets that could produce different conclusions were not utilized, (4) some factors were not taken into account that could have biased the results, (5) there were no alternate hypotheses presented evaluating other causes of the perceived decline, and (6) the authors did not consider any current stock assessments, which in several cases report the status of sharks to be considerably healthier than asserted.

Introduction

Sharks are generally regarded to exhibit slow growth, late maturity, and low reproductive output, making them particularly vulnerable to exploitation (Musick et al. 2000a). Although our knowledge of the demography and population dynamics of sharks has been slow to develop when compared to teleosts and other vertebrates, considerable progress has been made in recent years in the study of demographic rates and population modeling of sharks, which have provided a more accurate picture of the status of some populations (Cortés 2004). For example, Smith et al. (1998) and Cortés (2002a) reported on intrinsic rates of increase using two demographic modeling approaches for 26 and 38 species of sharks, respectively. Age- and sex-structured population dynamics models with probabilistic risk analysis under various harvesting strategies were developed to assess the status of school (*Galeorhinus galeus*) and whiskery (*Furgaleus macki*) sharks off southern Australia (Punt and Walker 1998; Simpfendorfer et al. 2000, respectively). Apostolaki et al. (2002) and Cortés et al. (2002) applied fleet-disaggregated, fully explicit age- and sex-structured population dynamics models to the blacktip shark (*Carcharhinus limbatus*) in the northwestern Atlantic Ocean. These studies have illustrated that the productivity of sharks varies widely, declines in shark populations are not consistent for all species, and in some cases sharks can be sustainably harvested.

In two recent papers, Baum et al. (2003) and Baum and Myers (2004) described the collapse of shark populations in the northwest Atlantic Ocean and Gulf of Mexico, respectively. Baum et al. (2003) concluded that scalloped hammerhead (*Sphyrna lewini*), white (*Carcharodon carcharias*), and thresher (*Alopias* spp.) sharks have declined by over 75%, and tiger sharks (*Galeocerdo cuvier*) and a coastal species group (*Carcharhinus* spp.) have declined by over 60% in the past 15 years in the northwest Atlantic Ocean. Further, Baum and Myers (2004) concluded that oceanic whitetip (*Carcharhinus longimanus*) and silky (*Carcharhinus falciformis*) sharks have declined by over 99%

George H. Burgess
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John A. Musick
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Colin A. Simpfendorfer

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Burgess is director of the Florida Program for Shark Research, Florida Museum of Natural History, University of Florida, Gainesville.

Beerkircher is a research fishery biologist at the Southeast Fisheries Science Center, NOAA/National Marine Fisheries Service, Miami, FL.

Cailliet is a program director at the Pacific Shark Research Center, Moss Landing Marine Laboratories, Moss Landing, CA.

Carlson and Cortés are research fishery biologists at the Southeast Fisheries Science Center, NOAA/National Marine Fisheries Service, Panama City, FL.

Goldman is a fisheries research biologist at the Alaska Department of Fish and Game, Homer.

Grubbs is a research faculty member at the Hawaii Institute of Marine Biology, University of Hawaii, Kaneohe.

Musick is the Acuff professor of marine science at the Shark Research Program, Virginia Institute of Marine Science, Gloucester Point.

Musyl is a senior researcher at the Joint Institute of Marine and Atmospheric Research, University of Hawaii, Honolulu.

Simpfendorfer is a senior scientist at the Center for Shark Research, Mote Marine Laboratory, Sarasota FL. He can be reached at colins@mote.org.

and 90%, respectively, in the Gulf of Mexico since the 1950s. These papers may have had a substantial influence in a number of recent conservation decisions regarding the listing of species under the Convention on International Trade in Endangered Species (CITES) and the World Conservation Union (IUCN) Red List of Endangered Species. For example, the white shark was recently proposed and listed under Appendix II of CITES (CoP13 Doc. 32 Rev1) . One of the factors in the decision to list the white shark was the purported decline in abundance of over 75% in the northwest Atlantic Ocean reported by Baum et al. (2003). Moreover, in June 2004 the oceanic whitetip shark was proposed as "Critically Endangered" under the IUCN Red List of threatened species based primarily on the study of Baum and Myers (2004) in the Gulf of Mexico (R. Cavanagh, World Conservation Union, pers. comm.). We believe Baum et al. (2003) and Baum and Myers (2004) made inferences based on limited data sets that are inappropriate for estimating abundance of many shark species, thus making their conclusions overly pessimistic. These conclusions have alarmed the conservation and scientific community in general, and the public at large, on the status of shark populations. Herein, we identify several potential flaws and omissions in these studies which should have been taken into account in the analyses or discussed as alternate hypotheses.

Estimated population status can be dependent on the data source

In Baum et al. (2003), the analyses and conclusions were based on detailed examination of only one gear type (pelagic longline, which does not adequately sample coastal shark species) out of the more than 20 data sets available for coastal and pelagic sharks (Table 1). The Pelagic Logbook Data Set has advantages in that it has a wide geographic coverage, is a long time series, and has over 200,000 samples. However, sharks constitute bycatch in the pelagic longline fishery, and there are major caveats associated with utilization of the pelagic logbook data. The results for oceanic shark species such as the blue shark (*Prionace glauca*) or shortfin mako (*Isurus oxyrinchus*) may be more credible than those for coastal species, but the results should still be considered preliminary without the full benefit of data from multiple international sources and a complete stock assessment.

One of the major caveats associated with this data set is the occurrence of under-reporting and over-reporting of some shark species, and misidentification of species by commercial fishers. Vietnamese-Americans make up a substantial amount (up to 50%) of the pelagic longline fishing effort, particularly in the Gulf of Mexico. The potential among these fishers to misidentify and misuse generic words such as "white shark" is very high (S. Allen, fisheries observer with the Pelagic Observer Program, National Marine Fisheries Service, Southeast Fisheries Science Center, pers. comm.). For example,

Table 1. A summary of catch series available from previous shark stock assessments. DNR = Department of Natural Resources, NMFS = National Marine Fisheries Service, UF = University of Florida, VIMS = Virginia Institute of Marine Science. Years refers to the time period of the data set, beginning with the oldest. A year followed by a dash denotes an ongoing survey or program. Type refers to whether the index is from a commercial or recreational source, or is fishery independent from a scientific survey. Area indicates the area covered by the survey or fishery. NE = northeast, NW = northwest, SE = southeast, SW = southwest.

Data Set	Years	Type	Area
NMFS SE Bottom Trawl Survey	1972–	Scientific Survey	Gulf of Mexico
NMFS NE Bottom Trawl Survey	1972–	Scientific Survey	NW Atlantic Ocean
VIMS Longline Survey	1974–	Scientific Survey	Mid-NW Atlantic Ocean
JAX (Florida Shark Club)	1974, 1989, 1990	Recreational	East Florida
Crooke Longline	1975–1989	Commercial	NW Florida
Point Salerno	1976–1990	Recreational	East Florida
Japanese Longline Observer Program	1978–1988	Commercial	NW Atlantic Ocean, Gulf of Mexico
Marine Recreational Fisheries Statistics Survey (Early)	1981–1993	Recreational	NW Atlantic Ocean, Gulf of Mexico
South Carolina DNR Longline Survey (Early)	1983, 1994	Scientific Survey	South Carolina
Tampa Bay	1985–1990	Recreational	West Florida
Hudson	1985–1991	Recreational	West Florida
Large Pelagic Survey	1986–	Recreational	Mid-NW Atlantic Ocean
Pelagic Logbook Program	1986–	Commercial	NW Atlantic Ocean, Gulf of Mexico
Brannon	1986–1991	Commercial	Alabama, North Carolina
NC#	1988–1989	Commercial	North Carolina
NMFS NE Longline (Early)	1989, 1991	Scientific Survey	NW Atlantic Ocean
Charterboat Logbook Program	1989–1995	Recreational	North Gulf of Mexico
NMFS Pelagic Observer Program	1992–	Commercial	NW Atlantic Ocean, Gulf of Mexico
NMFS Gillnet Observer Program	1993–1995, 1998-	Commercial	NW Atlantic Ocean
NMFS Panama City Longline Survey	1993–2000	Scientific Survey	NE Gulf of Mexico
UF Commercial Shark Fishery Observer Program	1994–	Commercial	NW Atlantic Ocean, Gulf of Mexico
Marine Recreational Fisheries Statistics Survey (Late)	1994–	Recreational	NW Atlantic Ocean, Gulf of Mexico
South Carolina DNR Longline Survey (Late)	1995–	Scientific Survey	South Carolina
NMFS SE Bottom Longline Survey	1995–	Scientific Survey	NW Atlantic Ocean, Gulf of Mexico
Mote Marine Laboratory Gillnet Survey	1995–	Scientific Survey	East Gulf of Mexico
NMFS Panama City Gillnet Survey	1996–	Scientific Survey	NE Gulf of Mexico
Bottom Longline Logbook Program	1996–	Commercial	NW Atlantic Ocean, Gulf of Mexico
NMFS NE Longline Recent Survey	1996, 1998, 2001	Scientific Survey	NW Atlantic Ocean

Vietnamese-American fishers often call oceanic whitetip shark "white sharks" and they tend to translate the English literally, thus "white shark" may not mean "*Carcharodon carcharias*" to them. Rather, "white shark" means any shark that has large patches of white or is just lighter in color than sharks they more commonly see. In addition, shortfin makos are sometimes called "blue sharks" and any large, brown colored shark is generally a "tiger shark."

While Baum et al. (2003) recognized under-reporting, they should have cross-checked individual observations and trends in species composition over time from the Pelagic Logbook Data Set with the corresponding observations also available through the National Marine Fisheries Service Pelagic Observer Program, which samples the same fishery and randomly selects vessels for observer coverage throughout the year from the same universe of boats that is required to report catch in pelagic logbooks (Cramer et al. 1993). Baum et al. (2003) cited limited comparisons of the two data sets for two years, but provide no supporting documentation in their article or in the supporting material online. In addition, analyses of the observer data to check the reliability of the logbooks would be preferred for all available years as captains in the fleet change and incentives to provide accurate reports also change from year to year. Although coverage represents 3–5% of the total pelagic sets, Baum et al. (2003) should have been alerted by the fact that while 6,087 white sharks were reported in pelagic logbook data, onboard observers did not record a single white shark after 1992 (Beerkircher et al. 2004). In addition, most of the white shark records in the logbook data set were from the tropical Caribbean where the species is known to be rare (Compagno 1984). Conversely, there are no records from northern areas off Nova Scotia and Newfoundland where white sharks are regularly reported from the continental shelf (Compagno 1984). These facts suggest that many, if not most, records of white sharks in the pelagic logbook data set are based on misidentifications and thus this data set cannot provide information on population trends in the species. Lastly, although there was a declining pattern in the "white shark" analyzed by Baum et al. (2003) data, the confidence intervals overlapped among most years thus lessening the strength of their conclusion.

Information within the pelagic logbook data also represents two different time series with a breakpoint around 1993–1994, signaling a change in management practices. The U.S. Atlantic Shark Management Plan (NMFS 1993), came into effect in 1993 and contained new reporting requirements (Karyl Brewster-Geisz, National Marine Fisheries Service, pers. comm.). Prior to 1993, fishers in the directed shark fishery, as well as other longline fishers who targeted tunas (*Thunnus* spp.) or swordfish (*Xiphias gladius*) and took sharks as bycatch, could report shark landings in the pelagic longline logbook. Subsequent to 1993, many fishers switched and began reporting shark catches in the directed shark fishery in a new logbook designed specifically for sharks, and they no longer used the pelagic longline logbook. Some fishers continued to use the pelagic longline logbook but those fishers were not targeting sharks. This change in reporting practices alone could have led to substantial reductions in the estimates of catch rates derived from the pelagic longline logbooks because fishers in the directed shark fishery are more likely to record shark catches than fishers who target swordfish or tunas and therefore consider sharks to be unwanted bycatch (Karyl Brewster-Geisz, pers. comm.).

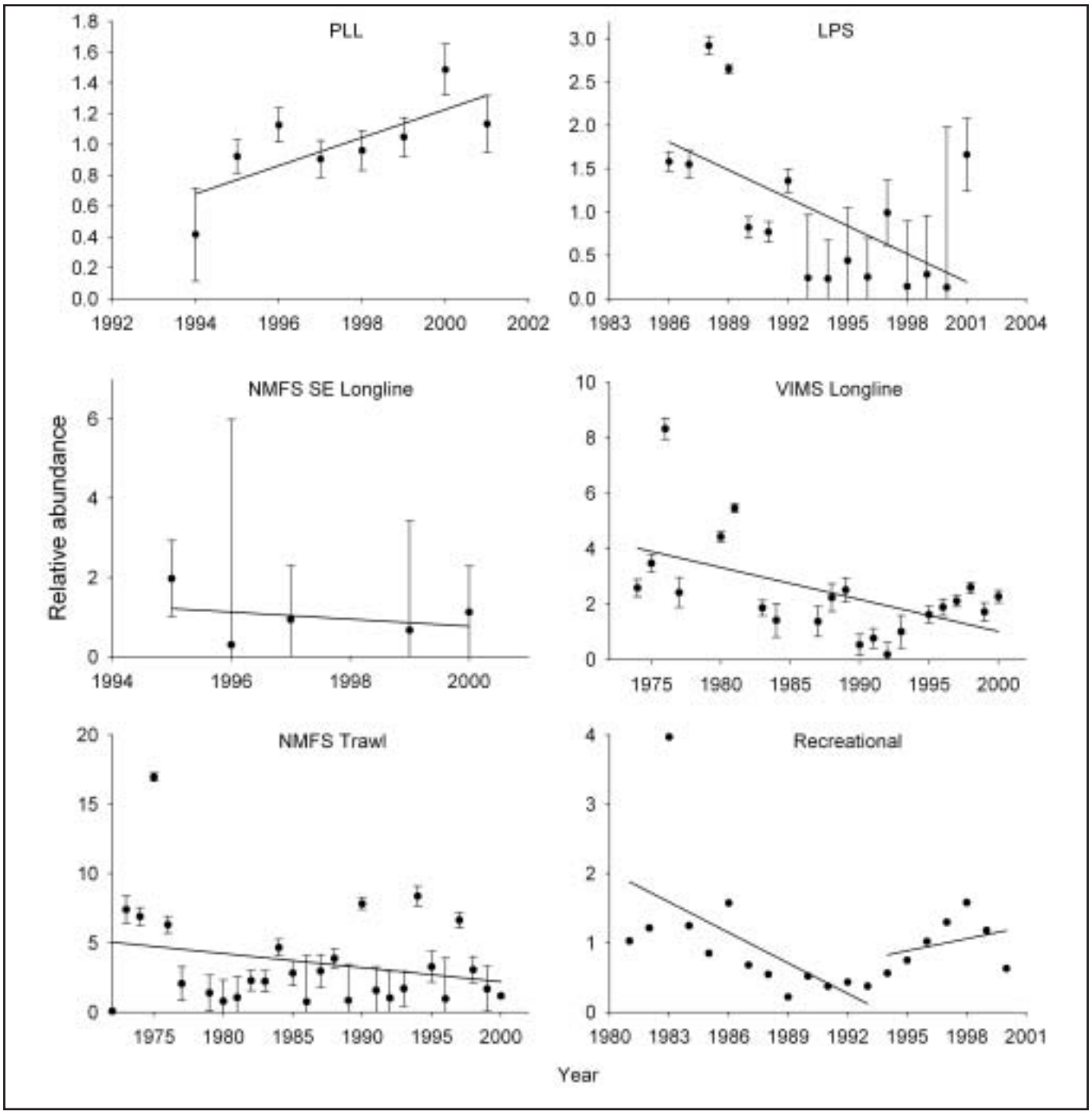
Many species of sharks, such as sandbar (*Carcharhinus plumbeus*) and blacktip are coastal and thus do not occur with a high frequency in the pelagic environment (Compagno 1984) and therefore in this data set. As acknowledged by Baum et al. (2003; supporting online material), coastal sharks were recorded in between <1% and 5.9% of the positive catches of sharks. Thus, the pelagic longline logbook data alone should not be expected to predict the status of coastal shark populations (e.g., sandbar or blacktip) because this data set does not fully sample those populations.

Using indices of relative abundance from a single data series to report percentage declines for a variety of species and species aggregates to infer stock collapse is simplistic, and can be potentially misleading. The absolute numbers of sharks remaining may still be very large if total virgin biomass was very high and because the extent of depletion at the starting point of the time series is unknown. In contrast, recent stock assessments on coastal shark populations from the northwest Atlantic Ocean and Gulf of Mexico conducted by the National Marine Fisheries Service (Cortés 2002b; Cortés et al. 2002) utilized multiple catch-per-unit-effort (CPUE) time series (most of those cited in Table 1, including the pelagic logbook data) and catches (landings and discards) to predict population status. The reliability of each CPUE time series depends on the type (e.g., commercial, recreational, scientific), the generalized linear model and error structure assumed and applied to those data (e.g., Punt et al. 2000), and the relative weight assigned to each series. When incorporating these trends and others into an assessment, several weighting schemes (e.g., the inverse of the coefficient of variation) are considered. Further, all stock assessments for sharks are subjected to sensitivity analyses which examine the implications of considering different data sets, weighting schemes, and other aspects of the assessment.

Different data sets can result in different trends of abundance. As an illustrative example, Figure 1 presents catch rate indices from commercial, recreational, and scientific surveys for the sandbar shark, a species not reported by Baum et al. (2003). Some of these series were previously standardized through a generalized linear model (GLM) approach by various authors (see Brown 2002; Brown and Cramer 2002; Cortés 2002c for details). Although the length of the time series varies, we attempt here to illustrate data series that sample over the entire or large portions of the

R. DEAN GRUBBS

Figure 1. Catch rates of sandbar sharks from several sources. Vertical bars represent 95% confidence intervals. PLL= National Marine Fisheries Service (NMFS) Pelagic Logbook data; LPS=Large Pelagic Survey; NMFS SE Longline= NMFS Southeast Fishery—Independent Longline Survey; VIMS Longline= Virginia Institute for Marine Science Fishery-Independent Longline Survey; NMFS Trawl= NMFS Northeast Bottom Trawl Survey; Recreational= Marine Recreational Fisheries Statistics Survey. Data sources are referenced in Table 2.



range of this species. We avoid reporting percentage changes in population abundance from relative time series (as was done in Baum et al. 2003), but a linear regression of each CPUE series (natural-logarithm transformed) on year shows that of the seven series illustrated, five had negative slopes, of which three were significant, and two had positive slopes, one of which was significant (Table 2). As earlier stated, we contend that no single series should be expected to predict the status of the population when more series are available from multiple sources.

Disregarding factors that may affect catch rates

Baum et al. (2003) relied solely on self-reported data from commercial pelagic longliners. Baum and Myers (2004) compared data collected from a fishery-independent survey in the 1950s with on-board observer data collected on pelagic longline fishing vessels targeting tuna in the 1990s. Although both studies used a variant of

the generalized linear model approach (see review in Maunder and Punt 2004) in an attempt to correct for factors unrelated to abundance such as gear changes, time of year, and area, they did not account for other factors such as regime shifts related to oceanographic conditions (i.e., Klyashtorin 2001), fishing behavior due to tuna and swordfish market conditions, or regulations which may strongly affect shark bycatch patterns (Hilborn and Walters 1992).

As pointed out earlier, pelagic longline fisheries are multi-specific and sharks are rarely targeted. The development of modern pelagic gear and the deployment strategies of fishermen are driven not only by a desire to increase target catches, but also to decrease bycatch, particularly bycatch like sharks that tend to damage the longline gear. Moreover, fishers will compensate for declines in abundance of target species or changes in market through technological improvements, increased knowledge, and rapid shifts into other fishing areas. As pointed out by Hilborn and Walters (1992) and Walters (2004), catch rates can also initially decline much more rapidly than stock abundance due to the behavior of the stock, changes in the size/age of the target species, and by assuming that fishing behavior is similar over all areas and strata sampled.

In particular, the change from wire to monofilament leaders in the Japanese longline fishery in the Gulf of Mexico likely influenced catch rates more than Baum and Myers (2004) acknowledged. Fishers switched from steel leaders in the 1950s to monofilament leaders in the 1980s primarily to increase catch rates of target species (e.g., tuna) and reduce the catch of large sharks through bite-offs of the monofilament leader. Beverly et al. (2003) state that "Using monofilament leaders (not steel) directly onto the hook will allow sharks to bite off the hooks and escape." A bite-off rate for monofilament leaders (6.7 bite-offs per 100 hooks) 5 times higher than for steel leaders (1.4 bite-offs per 100 hooks) has also been noted (Grubbs, personal observation). Despite this information, leader type was not included as a factor in the Baum and Myers (2004) GLM model, but instead they referenced Berkeley and Campos (1988) and Branstetter and Musick (1993) as support for no or little effect of change in leader type on catch rates, when in fact these studies were not conclusive or actually showed the opposite.

Berkeley and Campos (1988) used only 21% steel leaders in 13 of 111 sets and stated that the restricted extent of the study area, limited numbers of sets, and low catch rates typical of pelagic longlining limited statistical precision and restricted their ability to confidently generalize from the results of their study. They also reported many bite-offs with monofilament leaders suggesting that larger sharks may escape. Differential catchability as a result of leader strength was also recently postulated by Beerkircher et al. (2003) for silky sharks caught on monofilament pelagic longline gear.

Branstetter and Musick (1993) also found that in the offshore sampling stratum (>100 m), shark catch was higher on steel leaders than on monofilament, and when the data were pooled into "offshore species" (shortfin makos, and silky, blue, bigeye thresher *Alopias superciliosus*, and bignose sharks *Carcharhinus altimus*) across depth strata, more sharks were caught on steel gear than on monofilament gear by a factor of 2:1. These studies do not provide much evidence of catches being as high or higher with monofilament than with steel leaders for offshore shark species in general, and oceanic whitetip and silky sharks in particular. In fact, they suggest just the opposite. Thus the change from steel gangions used in the 1950s to monofilament gangions used in the 1990s could explain a significant part of the decline reported by Baum and Myers (2004).

Table 2. Slope of the logarithm of abundance indices for sandbar shark by year. NMFS = National Marine Fisheries Service, VIMS = Virginia Institute of Marine Science. Years refers to the time period of the data set, beginning with the oldest. Slopes significantly different from zero are indicated by an asterisk (alpha = 0.05). Type refers to whether the index is from a commercial or recreational source, or is fishery independent from a scientific survey. Area indicates the area covered by the survey or fishery.NW = northwest. GLM standardization indicates whether the index was standardized through a generalized linear model procedure. The details for each survey and GLM procedure can be found in the source.

Data Set	Years	Slope	Area	GLM Standardized	Source
NMFS NE Bottom Trawl Survey	1972–2000	-0.101	NW Atlantic Ocean	Yes	Cortés 2002c
VIMS Longline Survey	1974–2000	-0.115*	Mid-NW Atlantic Ocean	No	Musick et al. 1993; Musick and Conrath 2002
Marine Recreational Fisheries Statistics Survey (Early)	1981–1993	-0.147*	NW Atlantic Ocean, Gulf of Mexico	No	Cortés et al. 2002
Marine Recreational Fisheries Statistics Survey (Late)	1994–2000	0.05	NW Atlantic Ocean, Gulf of Mexico	No	Cortés et al. 2002
Large Pelagic Survey	1986–2001	-0.135*	Mid-NW Atlantic Ocean	Yes	Brown 2002
Pelagic Logbook Program	1994–2001	0.110*	NW Atlantic Ocean, Gulf of Mexico	Yes	Brown and Cramer 2002
NMFS Bottom Longline Survey	1995–2000	-0.089	NW Atlantic Ocean, Gulf of Mexico	Yes	Grace and Henwood 1998; NMFS 2002

Baum and Myers (2004) also dismissed hook size and type as influential factors in their analysis. Hook type and size changed dramatically from a 9/0 J-hook in the 1950s to several types of hooks ranging from circle hooks to J-hooks in sizes 7/0, 8/0, 15/0, and 16/0 in the 1990s. Unfortunately, few controlled experimental studies are available on how variation in hook type in pelagic longline fisheries affects catches of large pelagic species, particularly sharks. Grubbs (unpublished data) performed 9/0 J-hook and 14/0 circle hook comparisons in waters around Chesapeake Bay, Virginia. Based on about 7,000 hooks, catch rates of juvenile sharks were much higher with circle hooks (18.1 to 7.1 sharks per 100 hooks) than with J-hooks. However, for sharks over 100 cm TL (which are primarily caught in the pelagic fishery), the catch rate was 38% higher for J-hooks (3.7 to 2.6 sharks per 100 hooks for sets including at least one shark >100cm). Some preliminary conclusions of experiments (n = 687 sets) conducted in 2001-2002 to reduce sea turtle interactions in pelagic longlines fishing in the Northeast Distant Zone (NED) of the United States suggest that even relatively subtle gear changes can have statistically significant changes in both target catch (swordfish and bigeye tuna *Thunnus obesus*) and bycatch (blue shark and species of sea turtles; Watson et al. 2003). For example, 18/0 circle hooks caught 33% fewer swordfish by weight than a 9/0 J hook.

Although Baum and Myers (2004) considered hook depth in their analysis using estimates from Myers and Ward (unpublished work at http://fish.dal.ca), they did not account for the habitat utilization patterns of the oceanic whitetip and silky shark, two species that showed huge declines in abundance. Most GLM models are designed to statistically remove the spatial and temporal variations in the data set, but generally do not take into account the preferred habitat of the species modeled. However, Hinton and Nakano (1996) applied a habitat-standardized model to blue marlin (*Maikara nigricans*) to incorporate known habitat utilization information into the standardization procedure. Further, Goodyear (2003) created a simulation of longline catch-effort data for blue marlin, varying depth distribution of sets, the propensity of blue marlin to bite moving baits, and the assumed habitat preference of blue marlin, to test the robustness of the habitat model. He concluded that habitat standardizations proved accurate but only when the assumptions regarding habitat choice were correct. Recent data from oceanic whitetip (n = 6, 774 days in aggregate) and silky sharks (n = 4, 409 days in aggregate) equipped with pop-off satellite tags (PSAT) deployed offshore around the Hawaiian Islands indicate that both oceanic whitetip and silky sharks inhabit shallow waters less than 100 meters deep (Musyl, unpublished data). Thus, the shift in average gear depth from 72 m in the 1950s to 110 m in the 1990s in the Baum and Myers (2004) data sets could have significantly impacted the catch rate of oceanic whitetip sharks and silky sharks. For example, the oceanic whitetip sharks tracked in Hawaii spent approximately 40% of their time deeper than the minimum and 20% of their time deeper than the average hook depths in the 1950s data set, respectively. In contrast, oceanic whitetip sharks only spent 2% and 13% of their time deeper than the minimum and average hook depths in the 1990s data set, respectively. Similarly, the silky sharks in Hawaii spent 68% of their time below the minimum and 81% below the average hook depths in the 1950s data set, but only 31% below the minimum and 55% below the average hook depths in the 1990s data set. In light of the information on different gangion material, hook type, and fishing time and depth and their effect on shark CPUE, the declines reported by Baum and Myers (2004) are based on a potentially flawed analysis and are probably exaggerated.

Inconsistent conclusions based on small sample size

The strength of the conclusions drawn in Baum and Myers (2004) is disproportionate to the sample size on which they based them. A total of 170 longline sets in the 1950s was compared with 275 sets made in the 1990s. Of those 275 sets observed from 1995 to 1999, 196 sharks (62 unidentified) were recorded. At those low sample sizes, misidentification problems could have occurred that would only amplify the magnitude of the decreases or increases in each species population status. For example, misidentification is common even among trained scientists, especially for blacktip vs. spinner (*Carcharhinus brevipinna*) shark (Branstetter 1982), and for ridgeback species like silky and dusky (*Carcharhinus obscurus*) sharks (Grace 2001). Dusky sharks often are also misidentified as sandbar sharks (Huish and Benedict 1977). This could account for the increase from 0 to 16 sandbar sharks reported in Baum and Myers (2004).

Baum and Myers (2004) were also inconsistent in the reasoning that led to their conclusions. While they concluded that oceanic whitetip and silky sharks have declined by >90%, they did not suggest population increases in species when catch rates had increased. The authors attempted to rationalize that "catches of new shark species," such as sandbar shark increasing from 0 to 16 sharks, were an "artifact of the increased sample size or depth of sets (e.g., sandbar sharks), although it is also possible that their niche distribution may have expanded offshore to occupy niches left by pelagic sharks that have declined." (Baum and Myers 2004:142). Had they followed the same logic they applied for explaining declines, an increase of sandbar sharks from 0 to 16 would indicate a huge increase in that species' abundance. Further, Baum and Myers (2004) reported a decline in blacktip sharks based on only 6 animals in the 1950s decreasing to zero during 1995–1999. Using several stock assessment methods, Cortés et al. (2002) estimated that the recent biomass of blacktip sharks in the U.S. Atlantic Ocean and Gulf of Mexico was likely to have been reduced by less than

a third with respect to virgin levels and no overfishing was occurring.

Discussion

While we certainly acknowledge that there have been declines in the populations of some species of sharks (Musick et al. 2000a, 2000b; Cortés et al. 2002), we disagree with the magnitude of the changes reported by Baum et al. (2003) and Baum and Myers (2004) and contend that some of their results were based on inadequate data sources and incomplete analyses. For example, in 2002 it was estimated (Cortés et al. 2002) that the status of the large coastal shark complex (i.e., blacktip, sandbar, and hammerhead sharks among others) had improved since the last assessment conducted in 1998 (NMFS 1998). Examination of some of the results of the surplus production models from Cortés et al. (2002) indicates relative CPUE declined by about 58% from 1974 to 2001, 39% from 1986 to 2001, and 19% from 1992 to 2001. In contrast, Baum et al. (2003) reported that abundance of their coastal species group had declined by 61% from 1992 to 2000. For sandbar shark, which they did not examine, resource status has also improved since 1998 and the resource may be near maximum sustainable yield with some overfishing still occurring (Cortés et al. 2002).

For pelagic sharks, Baum et al. (2003) estimated a 60% decline in abundance of blue sharks and a moderate decline in shortfin makos. Simpfendorfer et al. (2002) also found an 80% decline in male blue shark abundance from the northwest Atlantic Ocean from 1977 to 1994, but no significant change in abundance for female sharks. However, Campana et al. (2004) noted that it was difficult to reconcile a net decline of only 9.6% during 1986–2000 for the Atlantic Canada area with the very different overall trend for blue sharks reported in Baum et al. (2003), considering that Atlantic Canada was the area with the greatest number of sharks. Further, the International Committee for the Conservation of Atlantic Tunas (ICCAT) Sub-Committee on Bycatches recently conducted a stock assessment of these two species, and preliminary results for blue sharks indicate that current biomass in both the North and South Atlantic Ocean appears to be above the biomass that can support maximum sustainable yield (Anonymous 2005). Current shortfin mako biomass may be below that producing maximum sustainable yield in the North Atlantic and above maximum sustainable yield in the South Atlantic, but results—especially for this species—were highly conditional on the assumptions made and data available (Anonymous 2005). In addition, the small coastal shark group (i.e., Atlantic sharpnose shark (*Rhizoprionodon terraenovae*), bonnethead (*Sphyrna tiburo*), blacknose shark (*Carcharhinus acronotus*), and finetooth shark (*Carcharhinus isodon*) not examined by Baum et al. (2003), was recently assessed using several stock assessment models and generally found to be healthy (Cortés 2002b; Simpfendorfer and Burgess 2002).

In summary, we believe that many of the conclusions of Baum et al. (2003) and Baum and Myers (2004) and subsequent conclusions drawn by the conservation community are exaggerated based on analysis of limited data sets that do not capture the complete picture of all shark populations documented. The authors did not reference any of the stock assessments conducted for sharks in the northwest Atlantic Ocean and Gulf of Mexico (e.g., Cortés 2002b; Cortés et al. 2002; Simpfendorfer and Burgess 2002), which in several cases reported the status of shark populations to be well above those stated by Baum et al. (2003) and Baum and Myers (2004). By stating that many populations have collapsed and are "at risk of large-scale extirpation" (Baum and Myers 2004:390) these authors have misled the public and scientific community concerning the impacts of longline fisheries and the status of shark populations in the Northwest Atlantic and the Gulf of Mexico. We agree with Baum and Myers (2004) and Baum et al. (2003) that populations of some species of sharks in the northwestern Atlantic and Gulf of Mexico have declined, but we disagree with the magnitude of decline they estimated and with their dire prediction of imminent extinction of some species.

Acknowledgments

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authors' reply

Reply to "Robust estimates of decline for pelagic shark populations in the Northwest Atlantic and Gulf of Mexico"

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Baum et al. (2005) challenge our assertion that their analyses of data sets used in their two papers (Baum et al. 2003; Baum and Myers 2004) are inadequate and do not capture the complete picture of all shark populations documented. They further hypothesize that their estimates are "robust" and their measured decline in shark abundance is therefore real, when in fact for many species, particularly pelagic sharks, their status is subject to further scientific analysis.

The appropriate use of data sets and their subsequent analysis is an important issue. We agree that the pelagic logbook data set is one suitable data source because of its large sample size, wide geographic range, and long temporal coverage. Our main disagreement with the use of these data was their application to coastal sharks (e.g., white shark *Carcharodon carcharias,* blacktip shark *Carcharhinus limbatus,* sandbar shark *Carcharhinus plumbeus,* and hammerhead sharks *Sphyrna* spp., etc.; Burgess et al. 2005). Even so, despite claims that alternate data sources (U.S. observers on Japanese boats, U.S. observers on U.S. boats, Canadian observers on Japanese boats, Canadian observers on Canadian boats) were evaluated by Baum et al. (2003) and deemed not "suitable" and that the pelagic logbook data set was the best to describe populations of pelagic sharks, we contend that other data series for pelagic sharks are just as valid and some show opposite trends in abundance. For example, Nakano and Clarke (2004) found no change in abundance for blue sharks (*Prionace glauca*) from 1971–2003 using logbook data from the Japanese longline fishery. Even with multiple catch rate series (including the U.S. pelagic logbook), information on catch and bycatch, and the application of three stock assessment models (analyses much more robust than those conducted by Baum et al. 2003), the International Commission for the Conservation of Atlantic Tunas Subcommittee on Bycatches stated that stock assessments on blue sharks and shortfin mako sharks (*Isurus oxyrinchus*) should be considered preliminary because results were highly conditional on the assumptions made and data sources available (Anonymous 2005). Their recommendations were to increase monitoring and research investments for sharks and to acquire more and better data before definitive conclusions could be made on their status.

Despite providing some limited evidence to the contrary in Baum et al. (2005), we are still unconvinced that all factors were taken into account in the analysis by Baum and Myers (2004). We still feel that species identification,

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hook type (e.g., "J" hooks in the 1950s are not the same as "J" hooks in the 1990s), the switch in gear to monofilament, and the change in depth from shallow sets in the 1950s to deeper sets in the 1990s influenced their results more than Baum and colleagues acknowledged. Unfortunately, space prevents us from readdressing many of these factors in detail.

We concur with Baum et al. (2005) that one of the critical areas that could have affected catchability of pelagic species, particularly those that are epipelagic (e.g., oceanic whitetip shark *Carcharhinus longimanus*), was the shift in the depth range of the longline gear. Baum and Myers (2004) applied a depth correction method (Ward and Myers 2005) to account for the change in fishing and feel this is more appropriate than any habitat-based standardization. The gear assumptions in Ward and Myers (2005) postulate a sag rate on longlines of 72° while Bigelow et al. (in press) examined sag rates in over 600 time-depth-recorded commercial longline sets and empirically determined a sag rate of 54° for shallow swordfish sets and 64° for tuna sets. Incorrect depth assumptions will of course influence the depth correction method and any subsequent habitat-based standardization model. Further, the appropriateness of applying a correction factor developed in the tropical Pacific Ocean to other ocean basins is also questionable. Catchability at depth indices for species estimated by Ward and Myers (2005) may not be similar in vastly different oceanographic regions, such as applied to the Gulf of Mexico (Baum and Myers 2004). As Burgess et al. (2005) point out, habitat standardizations prove accurate only when the assumptions regarding habitat choice and fishing gear behavior are correct.

Although we do agree that there have been declines in some shark species and a precautionary approach should be adopted, the status of shark populations cannot be based exclusively on examination of abundance trends, especially from limited databases. Our concerns over choices of data sets, their analyses, and conclusions drawn from those abundance trends are not limited to sharks (Walters 2003; Hampton et al. 2005). The status of shark populations must be based on stock assessments which rely on a range of data in addition to catch rates, including catch and bycatch, size and age composition, tagging, and biological data.

Acknowledgments

We thank Keith Bigelow for comments on depth assumptions of longline gear. Opinions expressed herein are of the authors only and do not imply endorsement by any agency associated with the authors.

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Sent: Tuesday, January 29, 2013 12:56 PM
To: FGC.FGC@fgc.ca.gov
Subject: RE: White Shark Listing Petition
Attachments: ATT55479

Raymond A. Hasey
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29 January 2013

California Fish and Game Commission
P.O. Box 944209
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SUMMARY OF RECOMMENDATIONS
I recommend that the petition for CESA listing be declined.

I am writing in regard to the Center for Biological Diversity's petition to list the white shark under the California Endangered Species Act (CESA) because (1) neither the petition nor the staff review assert that listing is necessary to decrease the probability for extinction nor do they (2) discuss if this listing will increase the risk for the extinction of the shark by shifting fishing to waters that are not regulated by California, a risk that I communicated to staff on 10 October 2010.

As scientist familiar with the white shark scientific literature (I have published two minor scientific papers on this species), The Center for Biological Diversity's petition does not meet the criteria for CESA listing because it does not provide the Commission with the evidence that CESA listing will benefit the species. A CESA listing might actually represent a threat to species recovery. CFGC §20501 does not permit a listing when it is unknown if the effect of a listing may increase the probability for a white shark extinction. I do not know if CESA listing will increase or decrease the probability for extinction and so I strongly recommend that the Commission not act until it the Commission reasonably can know if the decision to list this species will adversely affect the probability for white shark recovery.

Legal Sufficiency for CESA Listing
Center for Biological Diversity's petition
. Does CFGC 2050 permit listing if it is unknown if the effect of listing may be to increase the probability for extinction?

Listing this shark under the CESA may or may not benefit the species and listing has the potential to even increase the risk for extinction. I am unable to recommend for or against the listing petition because the information within the petition is inadequate to determine if listing would increase or decrease the probability for extinction.

. A completely unaddressed cumulative effect issue is if a CESA listing will result in the shifting of important fisheries from waters subject to state jurisdiction to waters not so subject?
Economically important fisheries will likely catch as many fish as before the listing but they may shift the fishing to areas outside of California.

"Other species of fish, wildlife, and plants are in danger of or threatened with extinction because their habitats are threatened with destruction, adverse modification, or severe curtailment, or because of overexploitation, disease, predation, or other factors." CFGC 2050 (b)

"A species shall be listed as threatened or endangered if "its continued existence is in serious danger or is threatened by any one or any combination of the following factors: (1) Present or threatened modification or destruction of its habitat; (2) Overexploitation; (3) Predation; (4) Competition; (5) Disease; or (6) Other natural occurrences or human-related activities." Cal. Code Regs. § 670.1 (i)(1)(A)".

The Department's report determines whether the petition, along with other relevant information possessed or received by the agency, contains sufficient information indicating that listing "may be warranted." Fish & Game Code § 2073.5.

Staff Review per Fish & Game Code § 2073.5 The staff review did not meet the requirements of Fish and Game Code Section 2073.5 and Section 670.1 of Title 14 of the California Code of Regulations because the staff review does not determine if the listing would increase or decrease the probability for species extinction. It states incorrectly: "Overall, the Petition presents adequate information that threats exist, and it is reasonable to further infer that these threats could pose immediate and significant impacts to the population. It correctly states: "However, further analysis is needed to evaluate both degree and immediacy of these threats."

The Staff Report incorrectly asserts: "Pursuant to Section 2073.5 of the Fish and Game Code, the Department has evaluated the petition on its face and in relation to other relevant information the Department possesses or received." The Department received my letter 10 October 2012 that asserts that the listing may reduce the probability for extinction but these concerns are not addressed.

PRIMARY THREAT - FISHING
The petition corrects states: "The primary threat to the Northeastern Pacific population of white sharks is commercial fishing. U.S. and Mexican fishing vessels incidentally catch and kill white sharks in unsustainably high numbers. "

. Will CESA listing have any beneficial effect in reducing inadvertent take and what is the estimated reduction?

The petitioners did not meet their legal responsibility under Cal. Code Regs. § 670.1 (i)(1)(A)" to support their petition for a CESA listing.

WILL CESA LISTING INCREASE OR DECREASE THE PROBABILITY FOR EXTINCTION?

The Effect of a CESA Listing on Fishing Pressure California cannot regulate most of the habitat but only regulates a narrow three mile wide portion. Commercially valuable fish will still be taken in Mexican and US waters and merely shifting the harvest to locations where there is a higher probability for a take of juvenile white sharks is likely to increase the probability for extinction. I have no knowledge if a CESA listing will in this way make the extinction of the white shark more likely but this is an important question that should be addressed.

. The key issue not addressed by the petition is if a CESA listing will shift the take to waters of the North Pacific where California is without jurisdiction?

Such a shift may increase rather than decrease the risk for extinction. The probability for this is not addressed so the petition may not be legally sufficient to support the requested listing. Until the petitioner can establish that the effect of a CESA listing would not be reasonably expected to increase the probability for species extinction the Commission may not have the legal authority to take a listing action. Because the petition does not address this risk to the species it should be rejected until it is revised.

Fishing Pressure - Adult White Sharks

Would a CESA listing better protect adult white sharks? The petition does not make a valid scientific case that CESA listing would decrease the probability for species extinction by reducing the take of adult white sharks. The petitioners did not meet their responsibility under Cal. Code Regs. § 670.1 (i)(1)(A)" to support their petition for a CESA listing.

. How many adult white sharks will not be taken if the species has a CESA listing?

. Does the Commission have other options besides the CESA to reduce adults at the very few locations where they are commonly found?

Fishing Pressure - Juvenile White Sharks

. Would a CESA listing better protect juvenile white sharks?

The petition does not make a valid scientific case that CESA listing would decrease the probability for species extinction by reducing the take of juvenile white sharks.

The petition suggests (by my casual interpretation) that the take of perhaps ten juvenile sharks occurs annually. Will a CESA listing increase or reduce this take? Would a CESA listing increase or decrease the take of these juvenile white sharks? The petition does not address this key issue. The petition does not make a valid scientific case that CESA listing would decrease the probability for species extinction. It does make a valid scientific case that the continued take of approximately ten juvenile sharks annually is a threat to species recovery.

. How many juvenile white sharks will not be taken if the species has a CESA listing?

. How many of these ten juvenile sharks are within habitat where the CESA has legal jurisdiction?

I concur with the petitioners that the take of ten juveniles annually increases the probability for extinction and I doubt that there will be any scientific disagreement on this key point. There likely will also be a consensus that perhaps half or more of these ten juveniles are commonly using habitat that is beyond the jurisdiction of the Commission to regulate.

. Does the Commission have other options besides the CESA to reduce juveniles?

What (if any) new conservation measures can be imposed without this listing? There should be no scientific debate that juvenile white sharks require protection in a few key locations and that the Commission should act to do this if you determine that this will not shift the fishery to waters not regulated by California.

Other Threats to White Shark Recovery

CDFG Staff Review

The CDFG Staff Review does not provide the scientific support necessary to support the petition. It does however an excellent summary of the threats and other scientific issues. The staff review does not adequately document if the proposed action, a CESA listing, will increase or decrease the probability for extinction. It does not assert that a CESA listing is necessary for species recovery.

This review states "Threats to Habitat: The Petition cites scientific information regarding the threats to white shark habitat off the coast of California, although these threats may or may not be imminent. The habitat threats listed in the Petition include documented pollutant discharge into the waters of the SCB, reduction in prey species such as pinnipeds and fishes through exploitation, and the acidification of the ocean due to absorption of carbon dioxide from the atmosphere."

It also correctly states: "In conclusion, habitat degradation through pollutant discharge, overexploitation of prey species, and ocean acidification may pose a reasonable threat to habitat necessary for the survival of white sharks. Although these threats exist, the degree and immediacy of threats is uncertain, and further study is needed to assess the level of risk."

Contamination

The petition correctly states: "In addition to the threat of capture in fishing, other threats face white sharks. New data shows that juvenile Northeastern Pacific white sharks are among the most heavily contaminated with mercury, PCBs, and DDT of all shark species tested to date."

The petition correctly states: "New data shows that juvenile Northeastern Pacific white sharks are among the most heavily contaminated with mercury, PCBs, and DDT of all shark species tested to date. Mercury levels in juvenile white sharks greatly exceed levels in all other species of sharks tested in the region and are six times higher than established thresholds known to cause physiological and reproductive harm in other marine fish. Moreover, the cumulative impacts of multiple stressors, including contamination, bycatch, coastal development, pollution, ocean acidification, and climate change, put Northeastern Pacific white sharks at great risk of extinction."

The petition does not describe how a CESA listing would reduce this treat and so it may not be legally sufficient to support listing.

. How will CESA listing manage the threat of mercury, PCBs, and DDT contamination for this species?

Coastal development

The petition does not describe how a CESA listing would reduce this threat and so it may not be legally sufficient to support listing.

. How will CESA listing manage the threat of coastal development for this species?

Pollution

The petition does not describe how a CESA listing would reduce this threat and so it may not be legally sufficient to support listing. The staff review correctly states: "The effects of these increased levels of pollutants on white sharks is unknown at this time, however it is reasonable to conclude that pollutant discharge may have a deleterious effect on white sharks and their prey."

. How will CESA listing manage the threat of mercury, PCBs, and DDT contamination for this species?

Ocean acidification

The petition does not describe how a CESA listing would reduce this threat and so it may not be legally sufficient to support listing. The staff review correctly states: "While studies document the negative effects ocean acidification may have on some marine species, further study is needed to evaluate how this phenomenon has affected and will affect white sharks and the NEP ecosystem as a whole. At this time, the degree and immediacy of this threat is uncertain."

. How will CESA listing manage the threat of ocean acidification for this species?

Climate change

The petition does not describe how a CESA listing would reduce this threat and so it may not be legally sufficient to support listing.

. How will CESA listing manage the threat of climate change for this species?

ACTIONS RECOMMENDED FOR THE CALIFORNIA FISH AND GAME COMMISSION

Recommendation #1

The petition does not adequately support claims that a CESA listing will provide a benefit to the species per CFGC 2050 and it should be rejected. The petition presumes a beneficial effect but does not describe how CESA listing would benefit this species. The petition may not meet the requirements of the CDF Code for this deficiency. I recommend denial.

Recommendation #2

I recommend that the petitioner be asked to provide evidence that CESA listing would not lead to an increased take and probability for extinction by shifting fisheries to waters not regulated.

Recommendation #3
I recommend that any measures other than CESA listing be assessed and utilized to prevent or reduce take.

Recommendation #4
My comments were submitted in October 2012 and were rejected because of the pdf format that they were submitted in. I recommend that the Commission accept pdf formatted comments.

Sincerely,

Raymond A. Hasey

-----Original Message-----
From: FGC [mailto:FGC@fgc.ca.gov]
Sent: Tuesday, January 29, 2013 7:18 AM
To: HASEY, RAYMOND A GS-11 USAF AMC 60 CES/CEAN
Subject: Re: White Shark Listing Petition

Please provide your comments within the text of your e-mail.

Justin Schlaefli

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Ryan Sweeney

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Nicholas DuMong

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Ken Hunrichs

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Jeffrey Miller

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Brandi Easter

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Patrick Gude

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

George Staehling

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

John Weymouth

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Josh Fisher

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Tony Huerta

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Lonnie Nelson

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Jon Falcone

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

David Pierce

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

John Leek

Email to Commission dated January 21, 2013
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Ryan Lawler

Email to Commission dated January 21, 2013
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Kyle Lauren

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Andrew Treweek

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

David Price

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Jay Moneypenny

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Alexander Stover

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Ken Butler

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Kerri Griffith

Email to Commission dated January 21, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Raymond Mcfarlane

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Nick Schilling

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Gianni Battaglia

Email to Commission dated January 22, 2013
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Todd Farquhar

Email to Commission dated January 22, 2013
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Daniel Kennedy

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Byron Quinonez

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Logan McLeod

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Harald Dett

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Aaron Thacker

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Cheshire McIntosh

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Tony Gozzarino

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Richard Shields

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Jonathan Hanks

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Alan Gordon

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Brent Porter

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Cody Annett

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Miles Foellmer

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Dick Hurts

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Brett Berry

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Jeremy Bordofsky

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Al Silebi

Email to Commission dated January 22, 2013

“Petition in opposition to accepting the petition to list the GWS as "threatened"

Jamie Padgett

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Joe Shuster

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Asi Ifrah

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Seth Hartgrave

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Bob Ward

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Dustin Dager

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Jeff Forster

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Shen Meinhold

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Bryan Jessop

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Daniel Heckman

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Aric Curtis

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Elias Hernandez

Email to Commission dated January 22, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Nathan Rosser

Email to Commission dated January 23, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Antonio Yang

Email to Commission dated January 23, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Bakir Silajdzic

Email to Commission dated January 23, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

joseph farlo

Email to Commission dated January 23, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Sean Sheehey

Email to Commission dated January 23, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Jim Russell

Email to Commission dated January 25, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Adam Coca

Email to Commission dated January 25, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Nathan Kahrs

Email to Commission dated January 25, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Kirk Graebe

Email to Commission dated January 25, 2013
“Petition in opposition to accepting the petition to list the GWS as "threatened"

Mitchell Masuda

Email to Commission dated January 25, 2013

“Petition in opposition to accepting the petition to list the GWS as "threatened"

Timothy Babione

Email to Commission dated January 25, 2013

“Petition in opposition to accepting the petition to list the GWS as "threatened"

John Havemann

Email to Commission dated January 25, 2013

“Petition in opposition to accepting the petition to list the GWS as "threatened"

Christian Lund

Email to Commission dated January 25, 2013

“Petition in opposition to accepting the petition to list the GWS as "threatened"

Robert Winn

Email to Commission dated January 25, 2013

“Petition in opposition to accepting the petition to list the GWS as "threatened"

Brent Pass

Email to Commission dated January 25, 2013

“Petition in opposition to accepting the petition to list the GWS as "threatened"

Domenic Belli

Email to Commission dated January 26, 2013

“Petition in opposition to accepting the petition to list the GWS as "threatened"

William Chambers

Email to Commission dated January 28, 2013

“Petition in opposition to accepting the petition to list the GWS as "threatened"

Aaron Coon

Email to Commission dated January 29, 2013

“Petition in opposition to accepting the petition to list the GWS as "threatened"

Chris Delgado

Email to Commission dated January 30, 2013

“Petition in opposition to accepting the petition to list the GWS as "threatened"

Matt Roderick

Email to Commission dated January 30, 2013

“Petition in opposition to accepting the petition to list the GWS as "threatened"

Michael Stewart

Email to Commission dated January 30, 2013

“Petition in opposition to accepting the petition to list the GWS as "threatened"

Joe Scriven

Email to Commission dated January 31, 2013

“Petition in opposition to accepting the petition to list the GWS as "threatened"

As you are aware, Oceana, Center for Biological Diversity, and Shark Stewards jointly submitted a petition to the Fish and Game Commission to list the North Eastern Pacific population of White Shark (Carcharodon carcharias) as threatened or endangered pursuant to the California Endangered Species Act (CESA), Fish and Game Code Section 2050, et seq. We strongly oppose any action to accept or consider such a petition. Additionally, we strongly oppose any such listing for the following reasons: In it's January 2013 report to the Fish and Game Commission, staff reported that "the Department notes that there may be some indirect evidence for an increasing population" of Great White Sharks. The Department also noted, "further analysis is needed to evaluate both degree and immediacy of these threats". Likewise, the Department noted, "existing regulations afford this species protection from fishery exploitation. In California, take and possession of white shark is expressly prohibited by law for those who engage in sport and commercial fishing activities". Therefore, it is clear that there is not sufficient scientific evidence to accept a petition to list the White Shark as "threatened" or "endangered". According to the Department's own evaluation, "Despite recent advances, there are still large gaps in our understanding of the basic life history of white sharks such as age, growth and reproductive biology. Obtaining this knowledge may be slow due to the small population and restrictions imposed by important protections afforded to the species in recent decades." Due to the lack of scientific information as discussed in the Department's report, the uncertain time-frame of obtaining this information, the high level of protection already afforded the Great White Shark by California law and the anecdotal evidence that the population of Great White Sharks is indeed increasing, it is irresponsible to accept a petition to list the white shark at this time. The scientific evidence simply does not support such an action. Therefore, we strongly oppose the acceptance of the petition submitted to the Commission to list the North Eastern Pacific population of White Shark as "threatened" or "endangered". Likewise, based on the evidence of the current scientific research, we strongly oppose any listing of the White Shark under the CESA at this time.

Christopher Lowe

Email to Commission dated January 24, 2013
"petition to list white sharks as threatened or endangered" Attachments (2 pages)
Dear Mr. Mastrup,
I would like to submit these written comments in regards to the upcoming vote on whether to consider a petition to list white sharks as a threatened or endangered species. I hope that these professional opinions will be of value in the Commission making its decision.
Thank you for your consideration.
Respectfully,
Chris Lowe
Christopher G. Lowe, Ph.D.
Professor
Dept. of Biological Sciences
California State University Long Beach
1250 Bellflower Blvd.
Long Beach, CA 90840
office ph 562-985-4918
http://www.csulb.edu/web/labs/sharklab

Charles Winkler

Email to Commission dated February 4, 2013
"Opposition to white shark candidacy" Attachments (2 pages)
Dear Fish and Game Commission:
Please kindly accept and review the attached letter for your consideration on the white shark candidacy.
Charles Winkler
310 920-5905

John Kolski

Email to Commission dated February 6, 2013
"YOU SHOULD THINK ABOUT THIS"
I AM JOHN JOHN KOLSKI A RETIRED SANTA CLARA COUNTY FISH AND GAME COMMISSIONER AND CHAIRMEN. TODAY YOU ARE GOING TO DECIDED ON THE STATUS OF THE GREAT WHITE SHARK. IF YOU MAKE IT A ENDANGERED FISH, YOU WILL MAKE THE SAME MISTAKE YOU MADE SO MANY TIMES BEFORE AND HAVE A OVER POPULATION OF THE FISH JUST LIKE YOU DID WITH THE DEER, THE OTTERS AND THE SO MANY OTHER ANIMALS YOU THOUGHT YOU WERE HELPING, BUT IN FACT YOU ONLY KILLED THEM.

CALIFORNIA STATE UNIVERSITY, LONG BEACH

Christopher Lowe, Ph.D.
Director – CSULB Shark Lab
Department of Biological Sciences, 1250 Bellflower Blvd., Long Beach CA 90840
office (562) 985-4918, fax (562) 985-8878, chris.lowe@csulb.edu

January 24, 2012

Comments for consideration on the petition to list white shark as threatened or endangered species:

I am a Professor of Marine Biology and the Director of the CSULB Shark Lab at California State University Long Beach and have been conducting State and Federally permitted white shark research in California since 2002. In addition, as a professional and published shark scientist who has studied a variety of shark species around the world, including white sharks in California, I would like to take this opportunity to express my personal professional opinion in regards to the petition request and the science behind it.

For the most part, I agree with much of the CDFW's assessment of the population status of white sharks; however, it is my professional opinion, based on the best available scientific data that the petition to list northeast Pacific white sharks as threatened or endangered is not warranted at this time. In fact, I would argue that white sharks represent an excellent example of one of California's greatest conservation success stories. Here are my reasons as to why:

1. Previously published population estimates for the northeastern Pacific white sharks are clearly underestimates for many of the reasons pointed out in the CDFW evaluation and there is a growing concern among many shark scientists as to the accuracy of these data. In addition, there is published evidence indicating that the northeastern Pacific white shark population has been growing over the last 10 years based on increased recruitment of young sharks in southern California and Mexico and climbing sea otter mortality due to shark bites. The likely reasons for this population increase can be attributed to:
    - state and federal protection for white sharks significantly reducing juvenile mortality
    - significant reductions in gillnet fishing effort since the mid 1990s significantly reducing juvenile mortality
    - recovery of many coastal marine fish species and marine mammals as the result of vastly improved fisheries management (white shark prey base)
    - improved water quality
    - overall public concern for marine resources.

It is important to note that while the arguments posed for listing are precautionary, many or all of the cited risks have already been addressed by State or Federal policies or regulations for over 15 years now (e.g., Federal Clean Water Act, Magnuson-Stevens Act, Highly Migratory Species Management Plan, Marine Mammal Protection Act, CA white shark protection legislation, CA nearshore gillnet ban, etc) and have been documented as reasons for successful recovery of numerous marine habitats and populations.

2. While there is evidence of high contaminant loads found in young white sharks, there is no evidence of any physiological impact or population-level impact. In fact, despite the high levels and known deleterious effects of these same contaminants on marine mammals they have not been shown to have

had dramatic effect on pinniped populations, which have been growing at a phenomenal 6% per year over the last 15 years. Since the disposal of these contaminants has been banned for over 40 years now and environmental levels are decreasing, current contaminant loads are likely bearing even a lesser effect on marine populations that those exposed over 20 years ago.

3. While fishery interactions still occur, recent evidence suggests that the post-release survivorship of incidentally caught and released sharks is extremely high (> 95%) (Lyons et al. in prep). Furthermore, new data indicates that the potential for interaction with gillnets is much less than estimated when we examine the movement patterns of tagged and released sharks in proximity to existing fishing activities. The documented high post-release survivorship of sharks previously caught in gillnets suggests that the impact of gillnet fisheries on white shark survivorship are relatively low and can be further reduced with modifications in fishing practices such as shorter net soak times.

Although concern for adequate protection of apex predators, which naturally have relatively low population sizes is prudent, it is my professional opinion that white sharks should not be considered for listing as threatened or endangered at this time. Time and resources spent evaluating the need for listing of white sharks will reduce critical resources and effort that should be allocated to populations in greater risk. Placing species that truly do not require this level of protection only dilutes the value of this protected status listing. In addition, since I am either collaborating with or knowledgeable of all other ongoing research on white sharks in the Pacific, I can say that there will unlikely be any new findings coming out in the next year that will shed more light on this situation than already currently exists. Finally, it is important to note that the review process itself will also potentially impede our ability to gather new information needed to address data gaps due to increase permitting requirements and research restrictions.

Respectfully submitted,

Christopher G. Lowe, Ph.D.

February 4, 2013

President James Kellogg and
Members of the California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Subject: Request to not to advance white shark for listing

Dear President Kellogg and Commissioners:

Since the early 1990's, I've been uniquely involved in responding to calls from Southern California commercial fishermen that infrequently and incidentally catch a juvenile white shark.

Section 8599 of the Fish and Game Code, authorizes gillnet fishermen to take white sharks for research purposes (a copy is attached).

This provision has been the cornerstone of our research. It has allowed myself and research colleagues the opportunity to study these sharks firsthand and obtain much of the data you are presently reviewing. The cooperation of the commercial fishers has been outstanding and involves much of the Southern California fleet. Their help is the reason we have a treasure trove of unique and invaluable DNA samples and scientific information on the species.

Analysis of the data shows that sharks brought to us alive that we have tagged and released show a high likelihood of surviving. 35 sharks incidentally caught sharks have received satellite and/or acoustic tags.

The published population study of adult white sharks, which may have precipitated this petition, is very very preliminary. Work by its authors must continue for a number of years before we have consensus on the actual number of adult white sharks. Genetic studies must also continue to define the population and clear up the many questions that remain. A one year candidacy period will not bring in the answers we need.

We are way too early to make this species a candidate.

There is absolutely no indication that Southern California seasonal young white sharks have diminished in number.

Thank you,

Charles Winkler

Charles Winkler
2131 Vallecito Dr
San Pedro, CA 90732
310 920-5905
doctorwink@cox.net

FISH AND GAME CODE SECTION 8599-8599.4

8599. (a) It is unlawful to take any white shark (Carcharodon carcharias) for commercial purposes, except under permits issued pursuant to Section 1002 for scientific or educational purposes or pursuant to subdivision (b) for scientific or live display purposes.

(b) Notwithstanding subdivision (a), white sharks may be taken incidentally by commercial fishing operations using set gill nets, drift gill nets, or roundhaul nets. White shark taken pursuant to this subdivision shall not have the pelvic fin severed from the carcass until after the white shark is brought ashore. White shark taken pursuant to this subdivision, if landed alive, may be sold for scientific or live display purposes.

(c) Any white shark killed or injured by any person in self-defense may not be landed.

JIM MARTIN
WEST COAST REGIONAL DIRECTOR
THE RECREATIONAL FISHING ALLIANCE
P.O. Box 2420
Fort Bragg, CA 95437

Tuesday, February 5, 2013

Jim Kellogg, President
California Fish and Game Commission
1416 Ninth Street
Sacramento CA 95814-2090

RE: White Shark Listing - OPPOSE

Dear President Kellogg and Commissioners,

We are opposed to the listing of white sharks in California. A picture is worth a thousand words:

Sincerely,

Jim Martin
West Coast Regional Director
The Recreational Fishing Alliance

Richard Terra, **Morro Bay Commercial Fisherman's Organization**

Email to the Commission dated March 5, 2013

"White Shark"

I hate to see the Commission and the Dept. swayed by what Commissioner Rogers stated the truth these certain groups need a cause to get public donations so (Crisis Inventors).they can keep getting paid at the exspense of someone else loosing their job. This White Shark endangerment is a absolute joke. There were almost 900 gill netters 15 years ago now by F&W stats it's 87 permits and most of these are not active. the only reason more have been caught is because there are more of them. The California Sea lion and Elephant Seal populations are above any historical populations records due to the Marine Mammal Protection Act. More food equates to more proliferation of the species that predates them. The last White Shark attack in our area was a nice young man who had a family the year before was a nice young man that was out boogie boarding, his future was cut short. Usually when there is an Attack the scientist report on the news it's because there are more people in the water. The last attack it was finally put out on our local channel it was because there was more food for the White Shark and there are more of them. There are more sightings and attacks than there ever has been. I talked to recreational fishermen that went to Guadalupe Island to fish tuna, they said that when they dropped the anchor it was like the dinner bell was being rung and that 95% of the fish were eaten off their hooks by the White Sharks there, and said they would never go again! this was not the case 15 years ago. (Ask the Captains at Helgren's sportfishng that run the Guadalupe trips). In my personal opinion the marine biologists should put to work spading and neutering the pinoped populations, We don't let our dogs and cats run wild with out of control populations. Why should our ocean that I love and respect be treated any differently. Fining of sharks of course is bad if the meat is not to be used for for consumption. Please do not list the White Shark because you will be fining fishermen and discarding what is left in the same respect We do not target them!! local White Seabass and local Halibut will not be on the menu I don't think you would rather have farmed Talapiah or farmed Salmon at the same price.

Bob Edgren

Email to Commission dated March 5, 2013

"Fw: re great white sharks FOLLOW UP"

The idea of Great Whites being reduced in numbers on the California coast and swimming towards an endangered list...is the most absurd, stupid, idiotic concept I have head since the eco heads saved the three legged mouse and the taupe spotted salamander. I am a third generation Californian, 62 years old. I remember in the 50's a shark attack in SF bay that left a man dead. Since that time, I had never heard of another attack. In middle school 64-66, I became very interested in sharks, and composed a

comprehensive report on sharks. Of course, the Great White was fascinating. I gave much thought to becoming a shark "expert", because the information then was so scarce to come by...pretty much limited to National Geographic. My ambition was to see one in the wild. I made my dad take long fishing trips out of Santa Cruz several times...none ever seen The worldwide fatal recorded attacks at that time by sharks I believe were under 800. What happened between then and now is something else. It took awhile after jaws for changes. Be it more people in the water, more seals, whatever, suddenly we are seeing great whites everywhere, and closed beaches and unfortunately attacks. I listened to some of these BS experts. Most can't even agree on data. Would you like to talk with the real experts? Come with me and I will take you to Bodega Bay, San Francisco, Santa Cruz and Monterey Bay where you can ask some old salt fishermen a simple question. 'Have you noticed any increase in the number of great whites compared to 35 years ago?" Simple question, and they've been around a lot longer than the "experts". Call Jack O'Neill, of O'Neill Surf..ask him, "Have you seen any increase in great white shark activity since 1060/" Simple question yeah? Indeed you may remember the 1971 movie Blue Water White Death. Made by an underwater photographer going through a mid life crisis. So funny they had a hard time funding any at first. (this was pre jaws) Here is the New York Times review starting off with the title...**Blue Water White Death (1971) Screen: Dramatic Pursuit of Elusive Killer Shark**
By VINCENT CANBY Published: May 12, 1971

http://movies.nytimes.com/movie/review?res=9B02E7D81639E43BBC4A52DFB366838A669EDE

I think I read where the experts say there are 350 or so great whites on the coast. I am not sure how they figured the migratory. If that is the case, have half tagged with transmitters to not only study their patterns BUT TO PROTECT PEOPLE!
I would think it would be the governments main objective to protect people. The great white is part of our ecosystem. But it is also a dangerous killer. Should we put the rattlesnake on the ESL? Or the Portuguese Man of War? How about bubonic plaque or rabies..these are part of our eco system! Where are the green heads to protect these? Here are some links by some other "experts" questioning this eco group pushing for great white sharks. http://www.grindtv.com/surf/blog/51221/scientists+tag+2000-pound+great+white+shark+near+florida+surf+spot/

http://curiosity.discovery.com/question/numbers-great-white-shark-increasing

http://latimesblogs.latimes.com/outposts/2009/03/great-white-sha.html

I believe any action taken to protect the great white is absurd. However if such a course is taken, I think these eco heads should tag their 350 great whites...connect the signals to local swim areas, that would trigger a siren. Similar to Australia. I believe anything short of putting people in harms way without some protection is malfaesance and open to some major lawsuits.

Bob Edgren

Email to Commission dated March 6, 2013
"Fw: Thousands of sharks spotted - Great Whites not endangered"
No...not Great Whites...but something the shark "experts" were caught b surprise

Mike Hunt

Email to Commission dated January 30, 2013
"Petition in opposition to accepting the petition to list the GWS as threatened"

Marie Hunrichs

Email to Commission dated February 7, 2013
"Petition in opposition to accepting the petition to list the GWS as threatened"

John Zyphur

Email to Commission dated February 8, 2013
"Petition in opposition to accepting the petition to list the GWS as threatened"

Justin Key

Email to Commission dated February 11, 2013
"Petition in opposition to accepting the petition to list the GWS as threatened"

Dave Caban

Email to Commission dated March 6, 2013
"Petition in opposition to accepting the petition to list the GWS as threatened"

Jack Millard

Email to Commission dated March 6, 2013
"Petition in opposition to accepting the petition to list the GWS as threatened"

Kyle Greenwood

Email to Commission dated March 8, 2013
"Petition in opposition to accepting the petition to list the GWS as threatened"

Brian Benson

Email to Commission dated March 9, 2013
"Petition in opposition to accepting the petition to list the GWS as threatened"

Paula Bitetti

Email to Commission dated March 9, 2013

“Petition in opposition to accepting the petition to list the GWS as threatened"

Brenden Whalen

Email to Commission dated April 4, 2013

“Petition in opposition to accepting the petition to list the GWS as threatened"

As you are aware, Oceana, Center for Biological Diversity, and Shark Stewards jointly submitted a petition to the Fish and Game Commission to list the North Eastern Pacific population of White Shark (Carcharodon carcharias) as threatened or endangered pursuant to the California Endangered Species Act (CESA), Fish and Game Code Section 2050, et seq. We strongly oppose any action to accept or consider such a petition. Additionally, we strongly oppose any such listing for the following reasons:

In it's January 2013 report to the Fish and Game Commission, staff reported that "the Department notes that there may be some indirect evidence for an increasing population" of Great White Sharks. The Department also noted, "further analysis is needed to evaluate both degree and immediacy of these threats". Likewise, the Department noted, "existing regulations afford this species protection from fishery exploitation. In California, take and possession of white shark is expressly prohibited by law for those who engage in sport and commercial fishing activities". Therefore, it is clear that there is not sufficient scientific evidence to accept a petition to list the White Shark as "threatened" or "endangered". According to the Department's own evaluation, "Despite recent advances, there are still large gaps in our understanding of the basic life history of white sharks such as age, growth and reproductive biology. Obtaining this knowledge may be slow due to the small population and restrictions imposed by important protections afforded to the species in recent decades." Due to the lack of scientific information as discussed in the Department's report, the uncertain time-frame of obtaining this information, the high level of protection already afforded the Great White Shark by California law and the anecdotal evidence that the population of Great White Sharks is indeed increasing, it is irresponsible to accept a petition to list the white shark at this time. The scientific evidence simply does not support such an action. Therefore, we strongly oppose the acceptance of the petition submitted to the Commission to list the North Eastern Pacific population of White Shark as "threatened" or "endangered". Likewise, based on the evidence of the current scientific research, we strongly oppose any listing of the White Shark under the CESA at this time.

Neutral/Informative Comments sent to the Commission

Kelly Zhou, TakePart
Email to Commission dated February 6, 2013
"Great white sharks - PRESS REQUEST"

My name is Kelly and I'm a writer for TakePart.com, an editorial website oriented toward cause-related issues. I'm writing a story regarding the possibility that great white sharks will be listed as an endangered species in California and would like to speak to someone from the Commission. If you could call or email me back today, I would really appreciate it (my deadline is tonight). My cell is 650-833-9751.

Adrianna Shea, O'Neill Sea Odyssey
Email to Commission dated February 14, 2013
"Need some comments/background on Great white shark decision"

I write a column on ocean matters every other week for the Santa Cruz Sentinel and for Media News paper online. Do you have a press release or briefing on the decision to study endangered species status for Great whites? Thank you!

Divya Abhat, The Wildlife Professional (magazine)
Email to Commission dated February 15, 2013
"News Brief on Great White Sharks"

I'm the Managing Editor of The Wildlife Society's member magazine, The Wildlife Professional. I've written a news brief on the recent vote to list great white sharks and would appreciate it if you could check it for accuracy. The news brief well appear in the upcoming issue of the magazine.

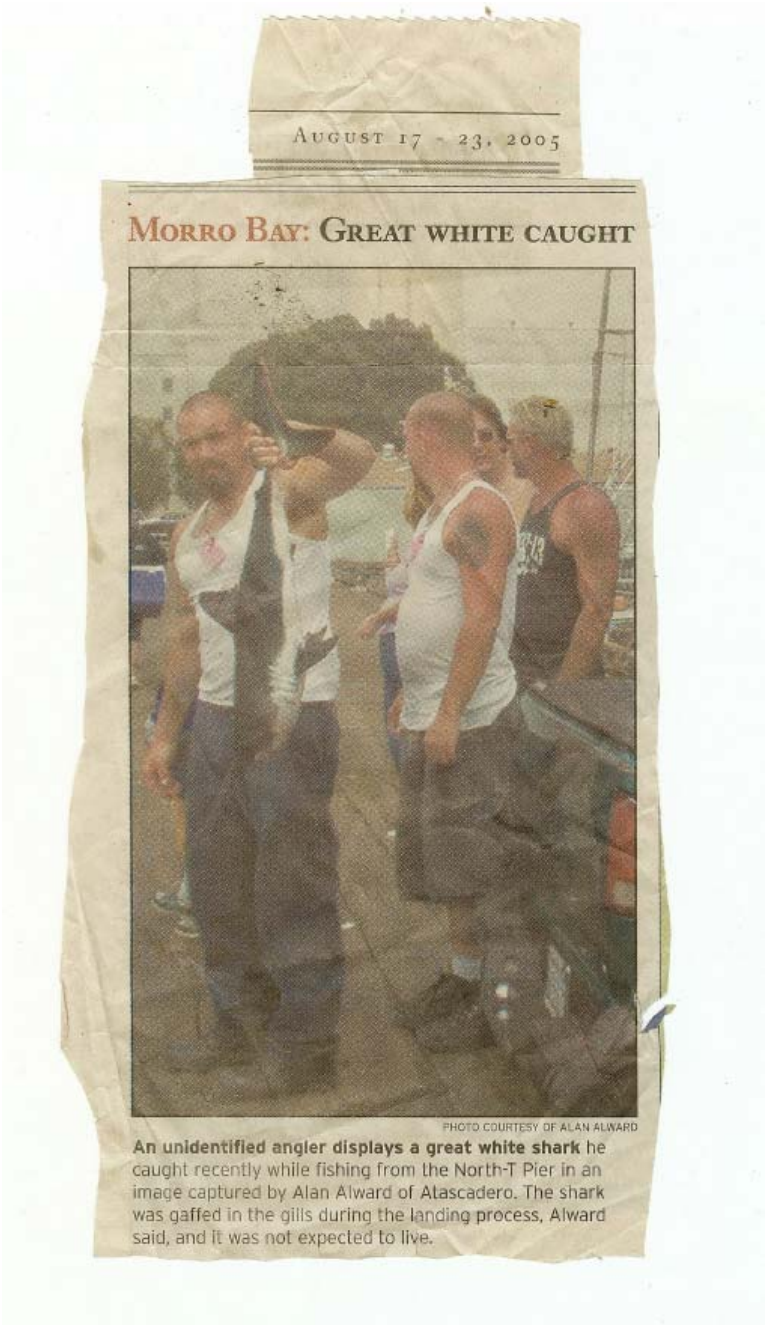
I'm on deadline and look forward to hearing from you as soon as possible.
California—The California Fish and Game Commission has voted to consider listing the great white shark (*Carcharodon carcharias*) under the Endangered Species Act. The decision came as a result of a petition filed by three environmental groups—Oceania, Sea Stewards, and the Center for Biological Diversity—that called for protection of the species.

Although the 4-0 vote in Sacramento resulted in an immediate state protection, the department will conduct a yearlong inventory to determine if the species warrants protection before making a final decision in 2014. Although targeting and selling great white sharks is banned, there are no limits on the number of incidental catches. Recent studies show that approximately 350 great whites remain in the waters off Marin County Coast and Baja Mexico. *Source: California Fish and Game Commission*

Steve Rebuck

Email to Commission dated January 31, 2013
"Baby Great White" Attachments (1 page)

For your information: Baby Great White caught off municipal pier at Morro Bay.
Steve Rebuck
San Luis Obispo



August 17 - 23, 2005

Morro Bay: Great white caught

PHOTO COURTESY OF ALAN ALWARD

An unidentified angler displays a great white shark he caught recently while fishing from the North-T Pier in an image captured by Alan Alward of Atascadero. The shark was gaffed in the gills during the landing process, Alward said, and it was not expected to live.