

# **Impacts to Natural Resources From the Point Reyes Tarball Incidents, 1997-1998**

## **Final Report of Natural Resource Damage Initiation**



## ***SEABIRD INJURIES FROM THE 1997-1998 POINT REYES TARBALL INCIDENTS***

### **Prepared By:**

**Humboldt State University  
R.G. Ford Consulting Company  
National Park Service  
U.S. Fish and Wildlife Service  
California Department of Fish and Game  
National Oceanic and Atmospheric Administration**



# **SEABIRD INJURIES FROM THE 1997-1998 POINT REYES TARBALL INCIDENTS**

**Harry R. Carter and Richard T. Golightly**

## **Editors**

Department of Wildlife  
Humboldt State University  
Arcata, California 95521

**Cooperative Agreement No: 1443-CA-8530-99-003**

Department of the Interior/National Park Service  
and  
Humboldt State University Foundation

## **With Contributions by Staff From:**

Humboldt State University  
R.G. Ford Consulting Company  
Gulf of the Farallones National Marine Sanctuary  
California Department of Fish and Game  
U.S. Fish and Wildlife Service  
Oiled Wildlife Care Network  
Point Reyes National Seashore  
Farallones Marine Sanctuary Association  
U.S. Geological Survey

**FINAL REPORT  
July 2003**

Suggested Citation: Carter, H.R. and R.T. Golightly, editors. 2003. Seabird injuries from the 1997-1998 Point Reyes Tarball Incidents. Unpublished report, Humboldt State University, Department of Wildlife, Arcata, California. 215 pp.

## Contributors

Allen, Sarah G., National Park Service, Point Reyes National Seashore, Point Reyes, California 94956

Capitolo, Phillip J., Humboldt State University, Department of Wildlife, Arcata, California 95521

Carter, Harry R., Humboldt State University, Department of Wildlife, Arcata, California 95521

Ford, R. Glenn, R.G. Ford Consulting Company, 2735 N.E. Weidler Street, Portland, Oregon 97232

Golightly, Richard T., Humboldt State University, Department of Wildlife, Arcata, California 95521

Hampton, Steve, California Department of Fish and Game, Office of Spill Prevention and Response, P.O. Box 944209, Sacramento, California 94244

Haas, James, U.S. Fish and Wildlife Service, 2800 Cottage Way, Room 2605, Sacramento, California 95825

Himes Boor, Gina K., R.G. Ford Consulting Company, 2735 N.E. Weidler Street, Portland, Oregon 97232

Mazet, Jonna A. K., University of California, School of Veterinary Medicine, Wildlife Health Center, One Shields Avenue, Davis, California 95616

Mortensen, Joseph, Farallones Marine Sanctuary Association, Fort Mason, Building 201, San Francisco, California 94123

Nevins, Hannah R., Humboldt State University, Department of Wildlife, Arcata, California 95521. Current address: Moss Landing Marine Laboratories, 8272 Moss Landing Road, Moss Landing, California 95093

Parker, Michael W., U.S. Fish and Wildlife Service, San Francisco Bay National Wildlife Refuge Complex, P.O. Box 524, Newark, California 94560

Roletto, Jan, National Oceanic and Atmospheric Administration, Gulf of the Farallones Marine Sanctuary, Fort Mason, Building 201, San Francisco, California 94123

Yee, Julie L., U.S. Geological Survey, Western Ecological Research Center, 7801 Folsom Boulevard, Suite 101, Sacramento, California 95826

## Acknowledgments

This report was prepared with funds from the U.S. Oil Spill Liability Trust Fund, created through the 1990 Oil Pollution Act. Funding was provided to Humboldt State University (HSU) from the National Park Service (S. Allen, R. Dawson, C. Swaford) and to R.G. Ford Consulting Company (G. Ford, G. Himes Boor) from the U.S. Fish and Wildlife Service (USFWS; J. Haas). Much cooperative support was provided by: U.S. Coast Guard (National Pollution Funds Center); Gulf of the Farallones National Marine Sanctuary (GFNMS; J. Roletto, L. Grella, E. Ueber); Oiled Wildlife Care Network (OWCN; University of California Davis, Wildlife Health Center; J. Mazet, S. Newman), California Department of Fish and Game (CDFG; S. Hampton, P. Kelly, J. Tarpley, J. Yamamoto), USFWS (M. Parker, J. Buffa, M. Kolar); U.S. Geological Survey (J. Yee, D. Orthmeyer); Farallones Marine Sanctuary Association (J. Mortenson, M. Brown); and HSU (H. Carter, R. Golightly, P. Capitolo, B. Clueit, R. Okey, H. Nevins, E. Craig, J. Hamby).

Live and dead birds were recovered from beaches by many individuals from many agencies and organizations (see Appendix C for collector where known or stated). Summaries of data on live and dead seabirds recovered from beaches were provided by the Point Reyes National Seashore and OWCN. Key field personnel for bird collections were S. Allen, J. Ames, C. Clumpner, D. Cooper, R. Dmytryk, A. Frank, L. Grella, J. Haas, J. Hall, J. Hardwick, M. Harris, J. Holcomb, D. Howard, R. Imai, S. McCallister, S. Newman, D. Press, A. Transou, J. Tarpley, T. Williamson, and M. Ziccardi.

Dead seabird carcasses were stored for several years in a large evidence freezer at the CDFG Marine Wildlife Veterinary Care and Research Center (Santa Cruz, California), under the supervision of D. Jessup. Examinations of thawed carcasses also were conducted at this center, facilitated by D. Jessup and M. Miller. HSU carcass examinations were conducted by L. Algee, J. Adams, D. Adams, S. Allen, K. Andrews, P. Capitolo, H. Carter, M. Chapla, G. Cunningham, A. Den Besten, C. Hamilton, H. Harris, J. Harvey, J. Hawkes, L. Henkel, M. Murphy, H. Nevins, K. Neuman, S. Oates, H. Steed, and G. Veldink.

Standardized data on beached seabirds collected by the Beach Watch Program in 1996-2000 were provided by GFNMS (H. Flett, L. Grella, J. Hall, J. Mortenson, D. Osorio, J. Roletto, and M. Van Tolksdorf).

Wind data for the trajectory model were obtained from the National Data Buoy Center, administered by the National Weather Service (National Oceanic and Atmospheric Administration, NOAA). Hydrographic data used in the modeling were obtained from GEODAS, a dataset compiled by the National Geophysical Data Center (NOAA). Modeling support and products were provided by the NOAA Office of Response and Restoration, HAZMAT (G. Watabayashi, M. Hodges, J. Galt).

Aerial photographic surveys of Common Murre colonies in 1996-2000 were conducted mainly by the Common Murre Restoration Project, with oversight by the *Apex Houston* Trustee Council (D. Welsh, J. Takekawa, J. Buffa, D. Lollock, P. Kelly, E. Ueber). Aircraft and skilled pilots were provided by CDFG Air Services, Sacramento, California (L. Heitz, R. VanBenthuyssen, B. Morgan, and B. Cole). In 1998, supplemental flights were conducted by Ecoscan Resources,

Freedom, California (B. VanWagenen). Aerial survey permits (GFNMS/MBNMS-03-96) were provided by NOAA (J. Roletto, S. Kathey, H. Golde). Aerial photography was assisted by J. Boyce, P. Capitolo, H. Carter, G. Collins, E. Craig, H. Gellerman, C. Hamilton, G. McChesney, W. McIver, E. McLaren, D. Nothhelfer, M. Ortwerth, M. Parker, N. Rojek, S. Schubel, V. Slowik, and R. Young.

Information on Brown Pelicans, Marbled Murrelets, and Western Snowy Plovers was provided by D. Anderson, E. Burkett, P. Capitolo, F. Gress, D. Jaques, and G. Page.

HSU report preparation was managed by B. Clueit, with assistance from R. Okey.

The cover photo was provided by S. Hampton.

## Table of Contents

Preface.....	vi
Executive Summary .....	vii
Chapter 1. Spill event and response .....	1
Chapter 2. Observations of oil and injury .....	7
Chapter 3. Estimated total number of beached birds .....	11
Chapter 4. Trajectory backcast .....	29
Chapter 5. Population impacts to Common Murres at the Drake's Bay Colony Complex, California.....	43
Literature Cited .....	69
Appendix A. Listing of scientific names .....	79
Appendix B. Chapter 5 appendices.....	81
Appendix C. Master PRTI bird database for birds recovered.....	93
Appendix D. Summary of birds recovered by region, found status, and period.....	213
Appendix E. Summary of Brown Pelicans recovered .....	215

## Preface

Between November 1997 and March 1998, national media focused on the large numbers of dead or dying oiled seabirds on beaches in Point Reyes National Seashore and elsewhere in central California during a series of tarball oil spill incidents from unknown sources. Agency responses to these oiling events were hampered by the lack of a known responsible party, stormy winter weather conditions, and incomplete response plans. Multiple waves of oiled seabirds reached shore during a four-month period and, at times, threatened to overwhelm personnel and resources. In spite of these challenges, detailed information on the numbers of beached seabirds was gathered by Point Reyes National Seashore, Gulf of the Farallones National Marine Sanctuary, California's Oiled Wildlife Care Network, California Department of Fish and Game, and U.S. Fish and Wildlife Service.

In March 1998, the National Park Service, National Oceanic and Atmospheric Administration, U.S. Fish and Wildlife Service, and California Department of Fish and Game requested funds from the U.S. Coast Guard (U.S. Oil Spill Liability Trust) to commission efforts by Humboldt State University (contracted through the National Park Service) and R.G. Ford Consulting Company (contracted through the U.S. Fish and Wildlife Service) to conduct a preliminary seabird injury assessment, in conjunction with federal and state agency personnel. Data on beached seabirds were collated by Humboldt State University, Farallones Marine Sanctuary Association, and Gulf of the Farallones National Marine Sanctuary. Using beached bird and other data, R.G. Ford Consulting Company applied a beached bird model and conducted oil spill trajectory analyses to estimate the total numbers of seabirds affected, investigate potential source areas of oiling, and examine annual seabird beaching patterns and weather conditions. Humboldt State University and U.S. Fish and Wildlife Service (San Francisco Bay National Wildlife Refuge Complex) also studied colony attendance and reproductive success of Common Murres within the Point Reyes National Seashore in 1998 to help assess potential population impacts related to extensive mortality of this locally-breeding species.

In 2002, continuing investigations of mystery oiling by the U.S. Coast Guard and California Department of Fish and Game led to the discovery of oil leaking from the vessel *S.S. Jacob Luckenbach* which sank in the Gulf of the Farallones in 1953. Oil chemistry analyses matched oil samples from birds collected during the Point Reyes Tarball Incidents with oil samples from the sunken vessel. Armed with knowledge of the source of oil, R.G. Ford Consulting Company refined oil spill trajectory analyses to further investigate patterns of oiling and beached birds during the Point Reyes Tarball Incidents.

Major contributions by many agencies, organizations, and individuals to this preliminary assessment are recognized through chapter authorship and affiliation. This document has been edited mainly for consistency, format, and accuracy, without changing the intent of the lead chapter authors. This document serves as the final product of the Natural Resource Damage Assessment Initiation Request for the "Mystery Tarball Incident" (FPN 118006) approved by the National Pollution Funds Center of the U.S. Coast Guard.

Harry R. Carter and Richard T. Golightly  
July 2003



## Executive Summary

The estimated total number of seabirds (18,291) killed during the 1997-1998 Point Reyes Tarball Incidents (PRTI) was the largest reported for any oiling event in central California in the last two decades. Oil trajectory analyses and bird beaching patterns were consistent with oil leaking from the sunken vessel *S.S. Jacob Luckenbach* and 95% of oiled feather samples matched those from the sunken vessel. Large numbers (2,959) of individual birds were recovered on searched beaches: 2,577 were dead when found or died in captivity, while 382 underwent cleaning and captive care before release. Such high numbers of beached birds reflected a series of tarball incidents during a four-month period that spread over a large coastal area with high densities of wintering seabirds and were not related to unusual weather patterns that might have increased carcass deposition on beaches. Predominant species recovered were Common Murres (1,858), with moderate numbers of Northern Fulmars (335), Western Grebes (191), Surf Scoters (90), Brandt's Cormorants (60), and Pacific Loons (54). Smaller numbers of threatened and endangered Marbled Murrelets (3) and Brown Pelicans (21), as well as several other species, also were recovered. A beached bird model was used to estimate total mortality from beached bird data, after accounting for factors causing undercounting of beached birds (i.e., searcher efficiency, scavenging, and unsearched beaches), at-sea loss due to carcass sinking for offshore species only, and background mortality. Estimates of total mortality, excluding released birds, were calculated for Common Murres (9,094), Marbled Murrelet (122), Brown Pelican (123), other nearshore species (2,334), and other offshore species (6,618).

PRTI mortality of Common Murres was the highest ever reported for any spill event in central California. Impacts to the relatively small Drake's Bay Colony Complex within the Point Reyes National Seashore were well documented. In 1993-1997, this complex had been recovering at a rate of 11.7% per annum from massive decline during the 1980s from other mortalities. In 1999-2000, complex size was 13% lower and complex growth had stalled. El Niño conditions caused colony abandonments and reproductive failure in 1998 but probably contributed little to the reduced complex size in 1999-2000. Recovery of this complex has been slowed by the negative impact of the PRTI.



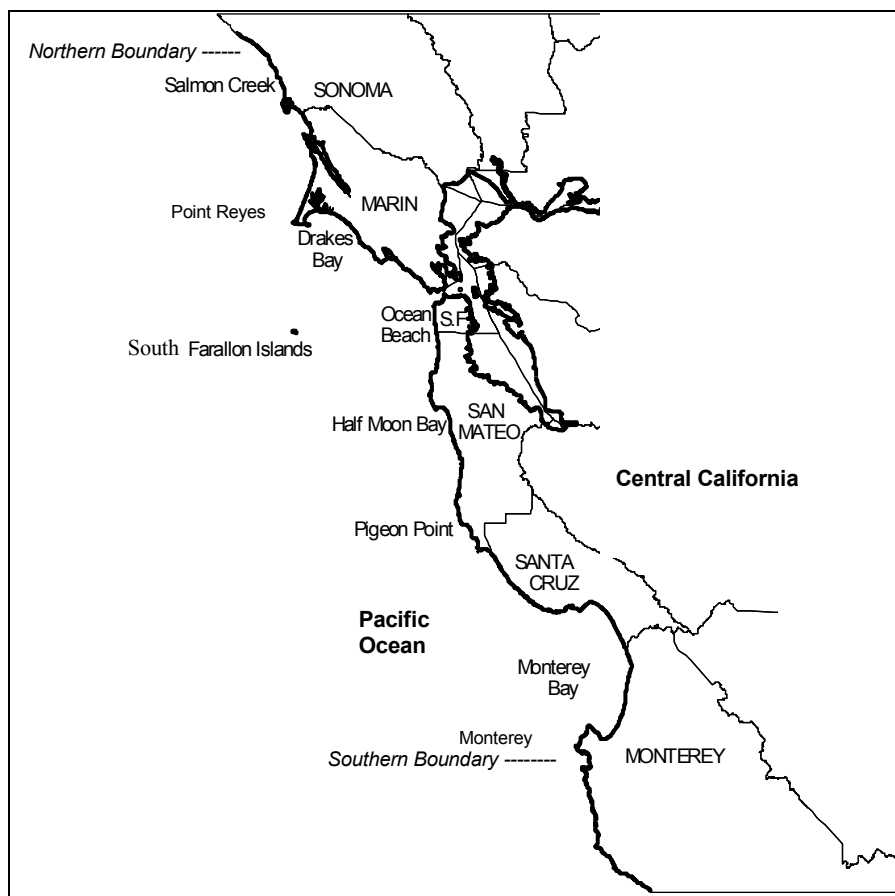
## Chapter 1: Spill Event and Response

S. Hampton, S. G. Allen, J. Haas and J. Roletto

### Spill Overview

On 16 November 1997, tarballs and oiled seabirds began washing ashore on beaches of Point Reyes National Seashore in Marin County, California. Oiling continued, punctuated by periods of non-oiling, into March 1998. While most oiled birds and tarballs were found in the vicinity of Point Reyes National Seashore, some were recovered from as far north as Goat Rock in Sonoma County and as far south as Point Lobos State Reserve in Monterey County (Figure 1-1). No vessel reported an offshore oil spill during this period, no major accident was identified, and no responsible party was found. The spill (or spills) represented one of the most extensive “mystery spills” documented in California, which is now referred to as the “Point Reyes Tarball Incidents” (PRTI).

**Figure 1-1.** Extent of coastal areas of central California where oiled birds were found during the Point Reyes Tarball Incidents.



The majority of the oil sampled during the PRTI has since been traced to the *S.S. Jacob Luckenbach*, a vessel that sank in the Gulf of the Farallones on 14 July 1953. This vessel, which was loaded with 457,000 gallons ( $1.73 \times 10^6$  l) of bunker fuel, sank in 180 feet (55 m) of water approximately 17 miles (27 km) west-southwest of San Francisco. The responsible party associated with that shipwreck no longer exists.

In the event of spills with no responsible party, the U.S. Oil Pollution Act (1990) established the Oil Spill Liability Trust Fund (OSLTF) that is managed by the U.S. Coast Guard (USCG; National Pollution Funds Center; NPFC). Natural resource trustee agencies may make claims to the NPFC for funds for natural resource damage assessment (NRDA) and ultimately for the funds necessary to implement compensatory restoration projects.

In March – July 1998, the U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA), and California Department of Fish and Game (CDFG), together with the National Park Service (NPS) acting as the Federal Lead Administrative Trustee (FLAT), developed a preliminary assessment plan and requested \$333,145.62 from the NPFC to begin NRDA. On 3 August 1998, the request was granted. The Trustees have used the funds to conduct several studies aimed to better determine the nature and extent of natural resource injuries. This report provides the results of those studies and details the injuries caused by the PRTI.

Injury assessment studies have included:

- a review of all recovered birds during the PRTI;
- a review of historical baseline data of beached birds from the area;
- an examination of weather and sea conditions and oil observations (including oil fingerprinting) that helped determine the likely original location of the oil;
- an analysis of all relevant factors to estimate the total bird kill; and
- an analysis of population impacts on certain Common Murre colonies.

The Trustees focused on documenting population impacts to Common Murres (Carter et al. 2003) because that species accounted for the majority (1,858, or 63%) of recovered birds. While response crews recovered 21 Brown Pelicans and 3 Marbled Murrelets, and observed 22 oiled live Western Snowy Plovers, population-level assessment studies of threatened or endangered species were not conducted. Estimates of the total mortality to all species were produced (Himes Boor et al. 2003).

The PRTI coincided with several large winter storms. While average wind speed at the San Francisco buoy (NOAA Buoy 46026; 37.75° N 122.82° W), located approximately 20.5 miles (33 km) offshore in the Gulf of the Farallones, ranges from 11.3 to 14.8 knots (5.8 – 7.6 m/s) from November through February, wind speeds in excess of 25 knots (13 m/s) were recorded on 26 different days during the PRTI period. High waves and heavy rains were also associated with these storms. These storms hampered response efforts to search for oil on the open sea.

## Resources at Risk

Point Reyes and surrounding areas are rich in natural resources. The Point Reyes National Seashore was established in 1962 to protect both natural and cultural resources. The adjacent Gulf of the Farallones, Cordell Bank and Monterey Bay National Marine Sanctuaries were established in 1981, 1989, and 1992, respectively, to protect thousands of seabirds, marine mammals, fish, and other wildlife off the central California coast. Twenty-eight miles (45 km) out from the Golden Gate, the Farallon National Wildlife Refuge, which encompasses South and North Farallon Islands, was established in 1909 and expanded in 1969 to protect one of the largest assemblages of seabirds and marine mammals on the Pacific coast of North America. North and south of Point Reyes National Seashore, most islands and rocks are protected within the California Islands National Monument. In addition, numerous other federal, state, and local parks stretch along the coastline of central California with a rich or unique array of natural resources, including Golden Gate National Recreation Area, Tomales Bay and Mount Tamalpais State Parks, Duxbury Reef and Fitzgerald Marine Reserves, Año Nuevo State Reserve, and 10 state beaches. In 1988, this region was included in the “Golden Gate UNESCO Man and the Biosphere Reserve” by the United Nations.

The Point Reyes area occurs within the center of the California Current Upwelling Ecosystem, one of only five coastal boundary upwelling ecosystems in the world and the only one in North America. Such upwelling systems are extremely productive, supporting large fish and crustacean populations. A number of unique estuarine environments also occur at Tomales Bay, Drakes Estero, Rodeo Lagoon, Estero de Limantour, and Abbott’s Lagoon. Coastal terrestrial ecosystems are equally significant, diverse, and rare, with a high degree of endemism, including diverse plant communities such as active coastal fore dunes, coastal terrace prairie, and northern coastal salt marsh.

Over 30 federal or state listed threatened and endangered animal and plant species occur within the coastal zone of Point Reyes National Seashore or Golden Gate National Recreation Area (Table 1-1). More than a third of the world’s cetacean species occur off San Francisco Bay and Point Reyes. In particular, large numbers of Gray Whales migrate close to shore and forage in coastal waters. Blue and Humpback Whales also are abundant and seen annually. A number of significant haul-out and pupping areas are used by four species of pinnipeds, including 20% of the state mainland population of Harbor Seals and one of only four mainland breeding areas worldwide for Northern Elephant Seals (Allen 1988, Allen et al. 1989, Sydeman and Allen 1999). Northern Fur Seals have recently begun to recolonize the South Farallon Islands after prior local extirpation. Other marine mammals inhabit or transit the waters off central California, some listed as endangered or threatened, and all of which are protected under authority of the Marine Mammal Protection Act, including the Southern Sea Otter, Steller Sea Lion, and Guadalupe Fur Seal.

The American Bird Conservancy recognized the Point Reyes National Seashore area as one of 100 Globally Important Bird Areas in the world for bird diversity (Freeman 2001). Populations of breeding seabirds at the Farallon Islands and Point Reyes National Seashore are among the most abundant of western North America, south of British Columbia (Sowls et al. 1980, Carter et al. 1992). Located along the Pacific flyway, the region has a high number of resident and

migratory birds. Over 480 species have been documented at Point Reyes National Seashore, and 246 were categorized as rare in 2000. Over 180 species (~40%) are associated with marine or estuarine ecosystems. Three federal and state listed seabird species occur in the area (i.e., Brown

**Table 1-1.** Federal and/or state threatened and endangered species within Point Reyes National Seashore and Golden Gate National Recreation Area.

<b>Common Name</b>	<b>Federal<sup>1</sup></b>	<b>State<sup>2</sup></b>
<b>Invertebrates</b>		
Myrtle's Silverspot <sup>3</sup>	FE	
Freshwater Shrimp	FE	SE
<b>Fishes</b>		
Green Sturgeon <sup>3</sup>	SC	
Pacific Lamprey <sup>3</sup>	SC	
Coho Salmon	FT	
Chinook Salmon <sup>4</sup>	FE/FT	SE
Steelhead Trout	FT	
Tidewater Goby	FE	
<b>Amphibians</b>		
California Red-legged Frog	FT	
<b>Reptiles</b>		
Loggerhead Sea Turtle	FT	
Green Sea Turtle	FT	
Leatherback Sea Turtle	FE	
<b>Birds</b>		
Short-tailed Albatross <sup>3</sup>	FE	SE
Brown Pelican	FE	SE
Bald Eagle	FT	SE
American Peregrine Falcon	FD	SE
Western Snowy Plover	FT	
California Least Tern	FE	SE
Marbled Murrelet	FT	SE
California Black Rail		ST
California Clapper Rail	FE	SE
<b>Mammals</b>		
Salt Marsh Harvest Mouse <sup>4</sup>	FE	SE
Stellar (Northern) Sea Lion	FT	
Guadalupe Fur Seal <sup>3</sup>	FT	ST
Southern Sea Otter	FT	
Blue Whale	FE	
Humpback Whale	FE	
California Gray Whale	FD	
<b>Plants</b>		
Sonoma Alopecurus <sup>3</sup>	FE	
Beach Layia <sup>3</sup>	FE	SE
Pt. Reyes Meadowfoam <sup>3</sup>		SE
Tidestrom's Lupine <sup>3</sup>	FE	SE

<sup>1</sup>Federal listing status: FE, federally endangered; FT, federally threatened; FD, federally de-listed

<sup>2</sup>State listing status: SE, state endangered; ST, state threatened

<sup>3</sup>Found in Point Reyes National Seashore only

<sup>4</sup>Found in Golden Gate National Recreation Area only

Pelican, Marbled Murrelet, and Short-tailed Albatross). The Western Snowy Plover, a federally listed shorebird, also breeds and overwinters on several Point Reyes National Seashore beaches.

About 8 species of fish and crustaceans have state or federal protection, including Freshwater Shrimp, Coho Salmon and Steelhead Trout. Numerous sport and commercial fisheries occur in the area. One of the largest and oldest commercial oyster operations in the state occurs in Drakes Estero. Four endangered plant species and an endangered butterfly are located in the coastal dunes of Point Reyes National Seashore.

## **Response Effort**

On 16 November 1997, USCG, NPS, NOAA, USFWS, and CDFG established an Incident Command Center using the Unified Command framework established for oil spill response when large numbers of oiled birds were first observed on beaches (Table 1-2). Outside support was also received from Oiled Wildlife Care Network (OWCN), Farallones Marine Sanctuary Association (FMSA), Point Reyes Bird Observatory (PRBO), and many volunteers from the public. Response actions focused collection of live and dead oiled birds on beaches from Salmon Creek in Sonoma County to Ocean Beach in San Francisco County. Point Reyes National Seashore beaches were searched twice a day in November. On 16-18 November, a significant number of tarballs also were collected from Drakes and Limantour Beaches. On 22 November, six days after the initial discovery of oiled birds, birds with fresh oil were encountered, suggesting a separate or continuing spill event. As numbers of oiled birds reduced, the Incident Command Center was closed on 26 November, although oiled birds continued to beach in smaller numbers in December.

On 17 January 1998, large numbers of oiled birds again appeared at Point Reyes National Seashore, and more tarballs washed up at Drakes and Limantour Beaches. Point Reyes National Seashore beaches were again searched twice daily for oiled birds. Throughout the PRTI, the survey area expanded, particularly to the south, as oiled birds began to appear on beaches in San Mateo, Santa Cruz and Monterey Counties. The Incident Command Center at Point Reyes National Seashore closed on 25 January, but beach surveys by agencies and OWCN continued. On 17 February, a final extensive survey was conducted of all beaches in the PRTI area, and on 20 February, the official search effort was ended. However, small numbers of oiled birds were recovered up to 5 March.

On about 30% of beach surveys, typical ground searches by foot used a zigzag pattern to cover all areas of the beach, noting the beginning and end location of the search area, to calculate a level of search effort. All live and dead seabirds were noted, including live oiled birds not captured, and all carcasses were removed regardless of level of oiling or state of decomposition. On Gulf of the Farallones National Marine Sanctuary (GFNMS) Beach Watch beaches, unoiled carcasses were marked but not removed. For about 70% of beach surveys, other survey techniques were used, including ad hoc searches of beaches via straight line transect (i.e., noting and collecting oiled birds from all terrain vehicles; ATVs), and two boat surveys. Many of these additional surveys did not account for distance or time traveled, and search effort data were unavailable.

Searches were conducted by personnel from USCG, NOAA, FMSA, USFWS, CDFG, OWCN, Point Reyes National Seashore, and PRBO. Structured and ad hoc searches were conducted throughout the spill period from November through March. Response data reflected all search efforts that were documented, as well as baseline monitoring surveys through the GFNMS Beach Watch program.

**Table 1-2.** Chronology of response and assessment efforts related to the Point Reyes Tarball Incidents.

November 1997	First report of oiled birds and tarballs from Drakes Bay at Point Reyes National Seashore. Incident Command Center established to handle cleanup and response.
February 1998	Most cleanup and response efforts ceased. GFNMS Beach Watch baseline surveys continued to find tarballs in following months.
March 1998	NPS, NOAA, USFWS and CDFG formed a Trustee Working Group for the purposes of NRDA.
July 1998	Trustees requested \$333,145.62 from NPFC for the initiation of NRDA.
August 1998	NPFC approved the expenditure of \$333,145.62 for NRDA initiation.
September 1998 - July 2003	Trustees and contractors engaged in various injury determination and NRDA tasks.
November 2001 - March 2002	A similar mystery tarball incident, referred to as the "San Mateo Mystery Spill", occurred in the same general area. During the investigation, the sunken vessel <i>S.S. Jacob Luckenbach</i> was identified as the source of most of the oil, as well as PRTI oil.
July 2003	Trustees and contractors issued this report, which provided a preliminary description and quantification of injuries to seabirds from the PRTI.



## Chapter 2: Observations of Oil and Injury

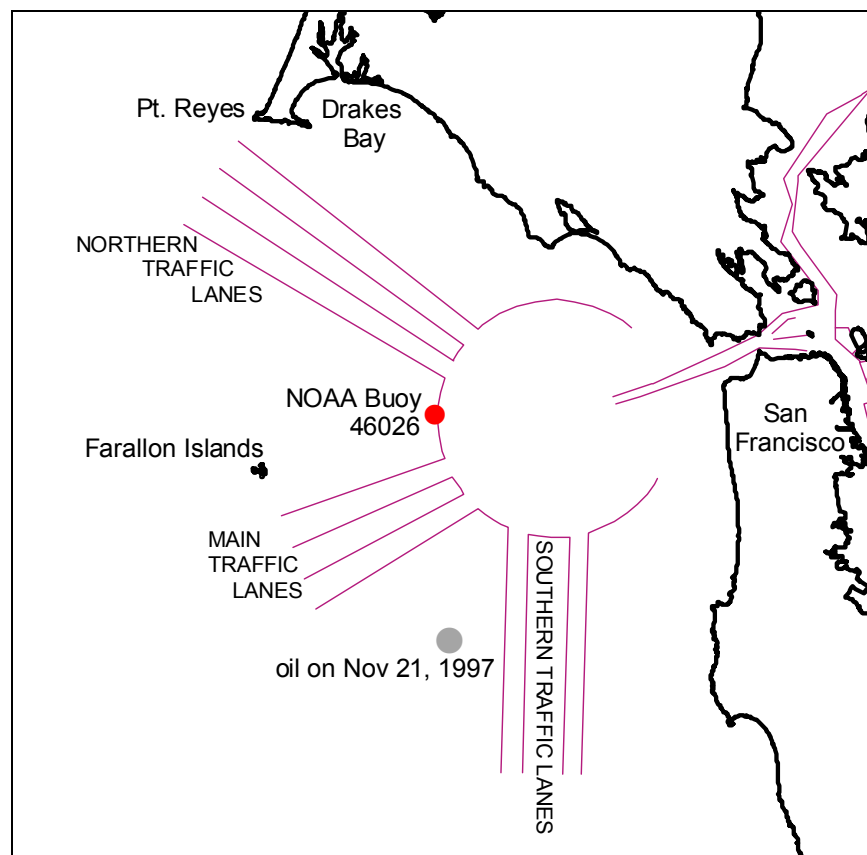
S. Hampton, S. G. Allen, J. Haas and J. Roletto

### Observations of Oil at Sea

Because of stormy conditions throughout the Point Reyes Tarball Incidents (PRTI), reconnaissance efforts were limited and there was only a single observation of oil at sea on 21 November 1997, five days after large numbers of oiled birds and tarballs began beaching. A U.S. Coast Guard (USCG) overflight recorded a slick approximately one mile (1.6 km) in diameter at 37° 33.6' N 122° 47.9' W, approximately 14 miles (22.5 km) southeast of the Farallon Islands and between the Main and Southern Traffic Lanes approaching the entrance to San Francisco Bay (Figure 2-1). This slick was approximately 9 miles (14.5 km) due south of the *S.S. Jacob Luckenbach* wreck. Three oil samples were collected at this location on 21 November and were later determined to match the oil in that vessel (see discussion below).

Because of the scarcity of visual observations of oil at sea, Trustee agencies examined two sets of Synthetic Aperture Radar (SAR) data collected by civilian satellites to gather additional information about both the scope and the source of the spilled oil. SAR “images”,

**Figure 2-1.** Location of oil observed at sea off the central California coast on 21 November 1997 at the beginning of the Point Reyes Tarball Incidents.



acquired by both aircraft and satellites, have been used in Norway, Sweden, Canada, Singapore, and other nations to observe oil spills. In some other instances, thin streams of oil have been observed trailing from vessels.

Oil spilled into the ocean often floats at the surface, damping small wind-driven ripples. This smooth, oily water is less reflective (darker) at typical radar wavelengths. Under optimal conditions, a spaceborne SAR image will show an oil slick as a clearly-delineated dark area. Because radars transmit and receive their own cloud-penetrating microwave radiation, SAR images may be acquired at any time of day or night under all weather conditions. Furthermore, spaceborne SAR images cover large areas at high resolution (e.g., 600 km x 200 km with 30 m pixels). These imaging characteristics make SAR a potentially valuable tool for spill detection. Working against this capability is the limiting factor of surface wind speed. In very low wind conditions, oil may be indistinguishable from calm water. In high winds, water may become too rough to detect oil. Best wind conditions are between 5.8 to 19.4 knots (3 and 10 m/s) depending on the type of oil.

Because only two SAR satellites were available during the PRTI, the Trustees had very few “images” of the spill area during the spill period (Table 2-1). Because many oiled birds were collected around 24 January and 2 February and an oil slick was observed on 21 November, one to seven days prior to these events were considered to be the most important periods to analyze. Within these periods, we chose to analyze 18 November and 13 January images. Unfortunately, no oil was detected in either image.

**Table 2-1.** Five available SAR images of Gulf of the Farallones area during the Point Reyes Tarball Incidents.

Date	Time <sup>1</sup>	Windspeed (m/s)	Satellite
18 November	18:50	6.8	ERS-2
20 December	18:50	9.3	ERS-2
23 December	18:50	5.3	ERS-2
10 January	14:07	6.9	RADARSAT
13 January	2:05	9.6	RADARSAT

<sup>1</sup>Coordinated Universal Time

## Chemistry Analysis

Because oil might have emanated from a moving vessel, a natural seep, or the 1984 sunken vessel *T/V Puerto Rican*, the California Department of Fish and Game (CDFG) Petroleum Chemistry Lab analyzed 59 tarball and oiled feather samples. None of the samples matched the *T/V Puerto Rican* or Alaska North Slope crude oil.

Of 59 tarball or oiled feather samples, 43 matched each other and were determined to be relatively fresh (lightly to moderately weathered) bunker fuel or crude oil and were not consistent with seep oil. Because 25 samples collected between 16 November and 26 December 1997, and 18 collected between 17 January and 17 February 1998 were weathered to a similar

degree, these samples appeared to be from at least two separate releases. The November-December 1997 samples were collected from locations ranging from Drakes Beach to Monterey, including three at-sea samples collected from 21 November (Figure 2-1). January-February 1998 samples were collected from Salmon Creek to Monterey Bay. During the 2001-2002 San Mateo Mystery Spill, PRTI oil samples ( $n = 59$ ) were compared to oil samples from the San Mateo Mystery Spill, 43 of which were determined to be consistent with oil samples from the *S.S. Jacob Luckenbach*.

Four additional samples were different from the 43 samples described above, but matched each other, and were consistent with having come from a common source along with a Wilmington Crude Oil sample from the Huntway Refinery in southern California. All four samples were collected in January 1998 between Limantour Beach in Marin County and Pigeon Point in San Mateo County. Two pairs of other samples also differed from all other samples but matched each other. We could not identify their source. Seven other samples did not match each other or any other sample. Finally, one of the 59 samples did not have petroleum hydrocarbons.

The vast majority (95%) of oiled feather samples ( $n = 37$ ) matched oil from the *S.S. Jacob Luckenbach* (Table 2-2). In contrast, only 29% of tarball samples ( $n = 17$ ) matched that vessel (Table 2-3). Tarballs remained on the beaches far longer than oiled birds, and many tarballs may have pre-dated the PRTI. Because tarballs may be covered with sand for long periods of time and later become exposed, or may be refloated and later beach, it is difficult to determine when oil associated with tarballs was released. Because oiled birds largely disappear from beaches within days of stranding, feather samples are more reliable as an indicator of the timing of an oil release than tarballs. However, some carcasses also can remain on beaches for extended periods of time.

**Table 2-2.** Oiled feather samples collected during the Point Reyes Tarball Incidents.

County	Dates for Matches <sup>1</sup>	Match to <i>Luckenbach</i>
Sonoma	24 Jan; 3 Feb	100% ( $n = 2$ )
Marin	14, 16, 17, Nov ; 24, 25 Jan; 2, 5 Feb	86.7% ( $n = 15$ )
San Francisco/San Mateo	18, 22 Nov; 2, 5, 26 Dec; 17, 19, 24 Jan; 4 Feb	100% ( $n = 12$ )
Santa Cruz	17 Nov; 8, 16 Dec	100% ( $n = 4$ )
Monterey	5, 24 Dec; 17 Feb	100% ( $n = 4$ )

<sup>1</sup>Includes only collection dates for samples that matched the *S.S. Jacob Luckenbach*.

Oiled beached birds were concentrated in Marin County (primarily the Point Reyes National Seashore) and southern Sonoma County but moderate numbers spread south to northern Monterey County (Appendix D). The two oiled feather samples from Common Murres that did not match were collected on 16 November in Marin County. Other samples from this date and area matched the *S.S. Jacob Luckenbach*. Those two samples not only differed from that vessel, but also differed from each other, suggesting that some level of chronic oil pollution, perhaps from illegal discharges, also was present before the PRTI began. Three dead oiled birds were

noted by the Gulf of the Farallones National Marine Sanctuary (GFNMS) Beach Watch Program prior to 16 November: a) a Heermann's Gull and a Clark's Grebe on 8 November on Thornton Beach South (San Francisco County); and b) a Common Murre on 11 November on Drakes Beach East (Marin County). Six dead oiled birds that were old and dried also were recovered shortly after 16 November but had likely died beforehand: a) an unidentified gull and a Red Phalarope on 18 November on Limantour Beach (Marin County); b) a Northern Fulmar and a Western or Clark's Grebe on 19 November on Limantour Beach; and c) a Northern Fulmar and an unidentified waterbird on 20 November on Drakes Beach East.

**Table 2-3.** Tarball samples collected during the Point Reyes Tarball Incidents.

County	Dates for Matches <sup>1</sup>	Match to <i>Luckenbach</i>
Marin	16, 17 Nov; 18 Jan	50% (n = 10)
San Francisco/San Mateo	None	0% (n = 3)
Monterey	None	0% (n = 4)

<sup>1</sup>Includes only collection dates for samples that matched the *S.S. Jacob Luckenbach*.

Tarballs that did not match *S.S. Jacob Luckenbach* oil were collected over a wide variety of dates, including three in Marin County on 16 and 17 November. Non-matching tarballs were determined to come from a wide variety of sources and some level of chronic oil pollution was again suggested.

### Recovered and Non-recovered Birds

Between 1 November 1997 and 6 March 1998, 2,959 birds were recovered on searched beaches (Himes Boor et al. 2003; Appendix D; Table 2-4). Approximately 71% were visibly oiled. Of non-visibly oiled birds, many were likely victims of oiling as well, although some also reflected natural mortality and death from other anthropogenic causes. There are several reasons why oil may not be visible (e.g., scavenging, dark plumage, thin oil sheen, preening). The Common Murre was the predominant species recovered, accounting for 63% of the total. In addition to those recovered, a number of live birds were observed oiled but were not later recovered, including 22 Western Snowy Plovers, at least 2 Brown Pelicans (S. Allen, personal communication), and numerous gulls.

**Table 2-4.** Species composition of beached birds recovered during the Point Reyes Tarball Incidents.

Species	n	Percent
Common Murre	1,868	63
Northern Fulmar	335	11
Western/Clark's Grebes	191	7
Surf Scoter	90	3
Brandt's Cormorant	60	2
Pacific Loon	54	2
Other (<50 recovered per species)	371	13
<b>Total</b>	<b>2,959</b>	<b>100</b>

## **Chapter 3: Estimated Total Number of Beached Birds**

G. K. Himes Boor, R. G. Ford, J. Roletto, J. Mortensen, J. A. K. Mazet, S. G. Allen, H. R. Carter, R. T. Golightly, P. J. Capitolo, and H. R. Nevins

### **Introduction**

In oil spills, significant numbers of birds are never recovered during spill-response beach searches, even when a major effort is made to recover as many dead and injured birds as possible (Ford et al. 1987, 1996; Page et al. 1990; Piatt and Ford 1996; Carter, in press; Carter et al., in press). Failure to recover birds results from carcasses sinking before coming ashore, carcasses washing back out to sea after beaching, segments of the shoreline that are not searched, searchers missing carcasses that are present, removal of carcasses by scavengers, and other factors.

Because of the often large discrepancy between the total number of birds killed and the number recovered on beaches, the Beached Bird Model (Ford et al. 1987, Page et al. 1990) was developed as a tool for extrapolating backwards from the number recovered to the estimated number beached by correcting for factors causing undercounting on shorelines. To account for carcasses that do not reach shore, a Carcass Trajectory Model also can be used to back extrapolate from those beached to estimated numbers of birds lost at sea (Ford et al. 1987, Page et al. 1990).

In this chapter, we derived estimates of total numbers of seabirds killed by the Point Reyes Tarball Incidents (PRTI) and compared this mortality with pre- and post-PRTI years. For the PRTI, a variation of the Beached Bird Model was used to estimate total mortality from the number of birds recovered using: search effort expended to find beached birds, estimated efficiency of beach searchers, and estimated rate of removal by scavengers. Once the model had estimated numbers of birds on searched beaches, additional correction factors were applied to the model output to account for carcasses on unsearched beaches, carcasses that sank at sea, background mortality and survival of live birds that were rehabilitated and released.

### **Data Sources**

#### *Incident-Response Records*

Response personnel from multiple state and federal agencies, as well as private citizens, searched for dead and injured birds during the PRTI (Hampton et al. 2003a). Dead birds were collected and brought to Point Reyes National Seashore and other collection centers to be catalogued. On certain beaches, Gulf of the Farallones National Marine Sanctuary (GFNMS) Beach Watch personnel recorded the presence of dead non-oiled birds, but marked carcasses and left them in place. Live injured birds that could be captured were handled by California's Oiled Wildlife Care Network (OWCN) where attempts were made to clean, rehabilitate, and release them. OWCN also collected many dead birds. All dead birds (when first found or after dying in captivity) were frozen and retained as evidence in a California Department of Fish and Game (CDFG) freezer under chain of custody protocols.

Much work was needed to develop databases with appropriate information for modeling PRTI impacts on seabirds. Handwritten Point Reyes National Seashore and OWCN intake summaries

were incomplete and focused mainly on collection date, collection location, and species identification. In fall 1999, Humboldt State University (HSU) personnel thawed and re-examined all carcasses stored in boxes marked as related to the PRTI in the CDFG freezer. With this process, we essentially reconstructed most information needed for modeling by: a) gathering and confirming all available information retained with the carcass for collection date, collection location, and species identification; and b) describing oiling, scavenging and decomposition using standard protocols. Each bird was assigned a HSU carcass number. HSU organized all available information for each numbered carcass on handwritten forms. A few changes to species identification (< 25 birds) occurred during this process, usually related to refinement of heavily-scavenged carcasses (e.g., Scoter sp. to Surf Scoter).

Handwritten data for freezer birds were entered into an electronic “PRTI freezer database” by the Farallones Marine Sanctuary Association (FMSA). Original collection locations for each freezer bird found dead were translated into GFNMS Beach Watch segments by FMSA where possible. FMSA excluded 33 freezer birds from other oiling events and with dates outside the 11 November 1997 to 28 February 1998 period: 12 were from other known spill events in other years; 16 were from days and months that corresponded with the PRTI but incorrect years that may have reflected data recording errors; and 5 were birds recovered on 1 March 1998. One carcass recovered on 11 November 1997 (i.e., before 16 November 1997 when large numbers were first recovered) was found in the freezer.

GFNMS and FMSA entered all Beach Watch data from 1 November 1997 to 28 February 1998 for sample beaches between Salmon Creek, Sonoma County, and Point Año Nuevo, San Mateo County, into an electronic “Beach Watch database”.

To prevent double-counting, HSU also collated, cross-checked, and entered OWCN and freezer data for live PRTI birds into an electronic “PRTI rehabilitation database”. OWCN intake records were cross-checked with HSU freezer carcass numbers through intake number or band color and number. Through this process, we were able to obtain collection date, collection location, oiling status, and oiling extent for most live birds that had died and been frozen because this information was not recorded on these carcasses (or was poorly recorded) and oiling could not be determined directly during freezer examinations for the portion of carcasses that had been cleaned before death in captivity. Original collection locations were not entered into this database. FMSA was responsible for the overall collation and preparation of the master electronic database. HSU provided FMSA with a summary of information from OWCN records, including collection location information on handwritten data sheets along with a list of various efforts needed for cross-checking rehabilitated and freezer data before data entry. The rehabilitation database also included: a) birds that had been rehabilitated and released (including 11 birds that died after release, 7 birds that were recaptured after release and later re-released, 1 bird that died after re-release, and 3 birds that probably were released but data were incomplete); and b) 94 birds reported as died in OWCN intake records but initially not found in the freezer. In fall 2001, 94 non-examined PRTI carcasses were discovered by CDFG staff during a freezer reorganization. Thawed carcasses were examined by HSU, 57 were tracked to specific entries in the rehabilitation database, and 37 other carcasses appeared to match the remaining 37 non-tracked birds in the rehabilitation database. No additional information was found through this process and all 94 birds were left in the rehabilitation database.

FMSA combined freezer, Beach Watch, and rehab databases into a “Master PRTI Bird Database” for 2,956 birds recovered during the PRTI from 1 November to 28 February 1998. This master database was sent to R.G. Ford Consulting Company for modeling analyses used in this chapter.

During final proofing of this report, HSU discovered several errors in the master database, as follows:

- Handwritten original collection locations (based on OWCN intake records) for most live birds were not entered into the master database. In freezer data used instead, locations for birds originally found alive but died in captivity were mainly missing, and some incorrect location data also were included. No collection location data were included for live birds that were rehabilitated and released. Without locations, beach segment numbers were not assigned for these birds.
- Original collection location data for many found dead birds in the freezer were incorrectly transcribed from handwritten summaries.
- Original location data for found-dead freezer birds were not cross-checked with Point Reyes National Seashore intake records. This oversight likely did not greatly affect locations in the master database because detailed location data for most of these birds were recorded on carcass packaging. However, we were not able to confirm if any non-OWCN found-dead birds were not deposited in the CDFG freezer.
- Original or corrected collection dates for many live birds that died and were frozen were not accurately transferred into the master database. Raw freezer data dates (often incomplete, died date only, or missing) were used instead of dates determined through cross-referenced OWCN intake data provided in the rehabilitation database. This problem did not apply to live birds that were rehabilitated and released because only OWCN data existed for these birds in the rehab database.
- Birds were categorized as acquired live, dead, or unknown (“found status”) and whether they were visibly oiled, non-visibly oiled, or oiling could not be determined (“oiling status”) (Appendix C). Found and oiling status for freezer birds were not refined through cross-checking handwritten freezer data with handwritten forms summarizing OWCN intake records. During last-minute proofing, we noted that 60 birds with found status unknown could be in fact assigned to found live ( $n = 31$ ) and found dead ( $n = 29$ ), using bands or carcass packaging information. Oiling status for 5 birds also could be corrected from unknown to non-visibly oiled. We were not able to correct unknown found status for birds noted as “dead-on-arrival” in freezer data or OWCN intake records.
- Large numbers of birds ( $n = 165$ ) were included in the master database and analyses for Regions 1-7 for the 16 November 1997 to 28 February 1998 PRTI period which could or should have been excluded: birds recovered from 1-15 November 1997 ( $n = 112$ ); birds recovered slightly north of Region 1, in San Francisco Bay, at the South Farallon Islands,

and at inland locations (n = 28); birds recovered far outside the PRTI zone (n = 12); birds with incorrect unknown dates that actually were recovered in March 1998 (n = 7); birds from other spills in other years (n = 3); double-entered freezer/rehabilitation birds (n = 2); and double-entered freezer/Beach Watch birds (n = 1).

- Large numbers of birds (n = 258) were recovered in Regions 8 and 9 and 256 were included in analyses for Regions 1-7 because collection location was not entered in the master database before analyses and unknown locations were incorrectly assumed to refer to Regions 1-7.
- Small numbers of birds (n = 8) were excluded from the master database and analyses for Regions 1-7 for the 16 November 1997 to 28 February 1998 PRTI period which could or should have been included: accidental omission (n = 1); exclusion due to incorrect dates in freezer records (n = 2); and exclusion due to incorrect 1 March 1998 collection dates in freezer records that actually were unknown dates (n = 5).
- Three live birds recovered between 1 and 6 March 1998 that were rehabilitated and released had been excluded from the master database.
- Given large numbers of birds recovered in Regions 8 and 9 with low apparent search effort, the lack of mortality estimated for these regions may have led to underestimation of overall PRTI mortality.

After last-minute discussions of these problems, we adjusted the master bird database to include corrected data for 2,959 birds recovered in Regions 1-9 and nearby adjacent areas from 1 November 1997 to 6 March 1998 but we excluded all non-PRTI birds (Appendix C). Although total numbers and species of recovered birds did not change much, many aspects of data associated with their recovery did change. In Table 3-1 and throughout the report, we have used a revised summary of recovered birds from this revised appendix. In Appendix D, we also provided a summary of birds recovered by region, found status, and time period to better describe data included in the revised Appendix C. However, due to insufficient time and resources, analyses were not redone with corrected data for Chapters 3 or 4. At this time, it is not clear if reanalyses would arrive at substantially different estimates of numbers of birds killed or would change any related conclusions.

A total of 2,959 birds were recovered between 1 November 1997 and 6 March 1998 between Goat Rock, Sonoma County, and Point Lobos, Monterey County (Table 3-1). Live birds accounted for 33% (n = 967) of the total: 382 birds were cleaned, rehabilitated and released, while 585 died or were euthanized in captivity. Of 2,870 birds where we could assess whether or not they were visibly oiled, 71% were oiled. An additional 89 birds had unknown oiling status (Table 3-1). Small numbers (8 birds) showed signs of having died of an obvious physical injury other than oil, such as fishing line or a broken wing. The remaining 837 birds were not visibly oiled.

Common Murres made up 98% of the alcids and 63% (1,858) of the total number of birds recovered. Northern Fulmars, the second most common species recovered, were found in much



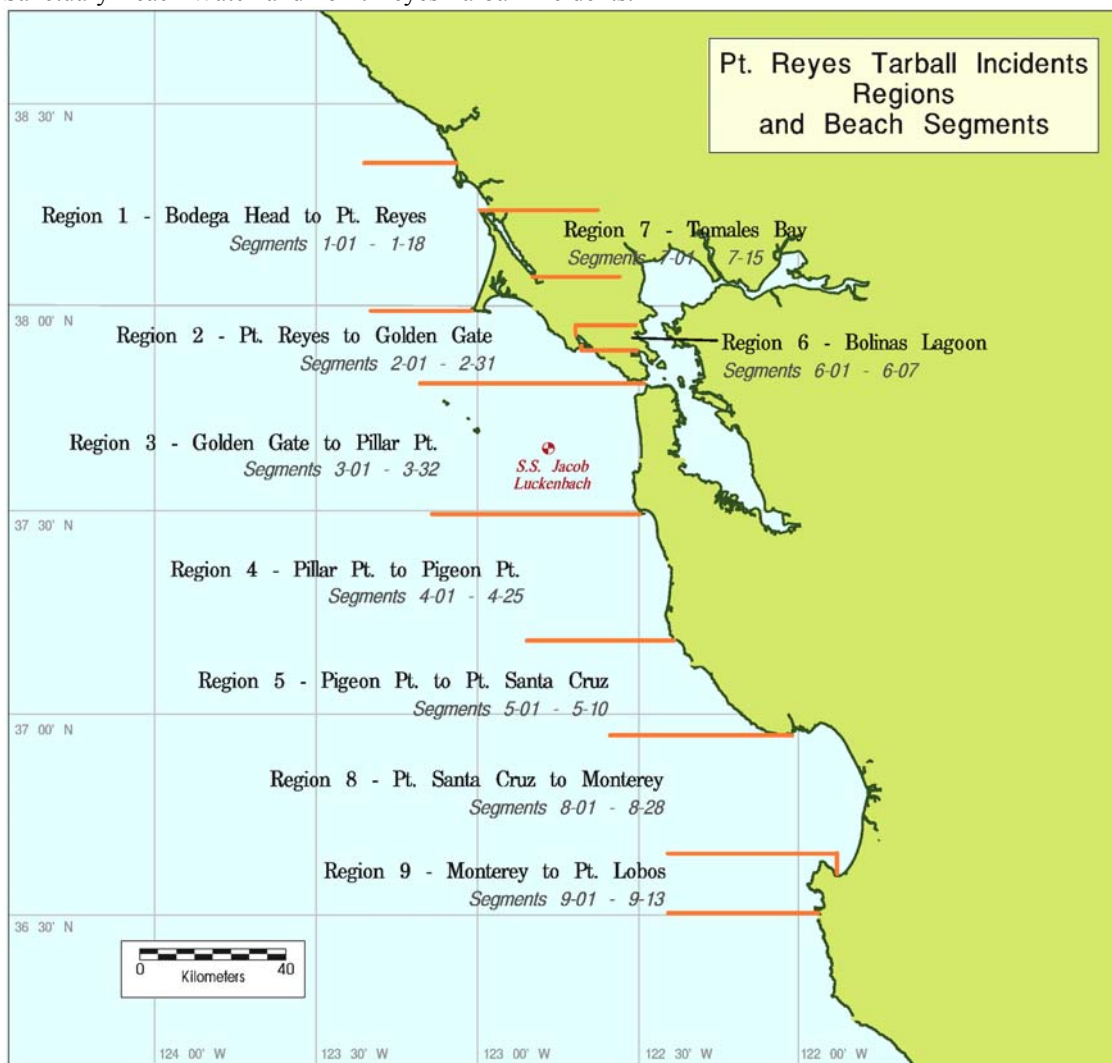
**Table 3-1.** Total number and oiling status of birds recovered during the Point Reyes Tarball Incidents.

Species Group	Species	Oiled	Not Visibly Oiled	Unknown Oiling	Other	Total
<b>Alcidae</b>						
	Cassin's Auklet	12	8	3		23
	Rhinoceros Auklet	6	1			7
	Pigeon Guillemot		2	1		3
	Common Murre	1,667	154	36	1	1,858
	Ancient Murrelet	2	4			6
	Marbled Murrelet	2	1			3
	Horned Puffin		1			1
	Unidentified Alcid	1				1
	<b>Subtotal</b>	<b>1,690</b>	<b>171</b>	<b>40</b>	<b>1</b>	<b>1,902</b>
<b>Rallidae</b>						
	American Coot		4			4
	<b>Subtotal</b>		<b>4</b>			<b>4</b>
<b>Procellariidae &amp; Hydrobatidae</b>						
	Northern Fulmar	68	260	7		335
	Leach's Storm-Petrel			1		1
	Black-vented Shearwater	3				3
	Pink-footed Shearwater	1				1
	Short-tailed Shearwater	1	2			3
	Sooty Shearwater	3	4			7
	Unidentified Shearwater	3				3
	<b>Subtotal</b>	<b>79</b>	<b>266</b>	<b>8</b>		<b>353</b>
<b>Laridae</b>						
	Black-legged Kittiwake	7	5			12
	Bonaparte's Gull	1				1
	California Gull		4	1		5
	Glaucous Gull		2			2
	Glaucous-winged Gull		8			8
	Heermann's Gull	13	2			15
	Herring Gull	1	3			4
	Mew Gull	1				1
	Ring-billed Gull		2			2
	Unidentified Gull	1	7	3		11
	Western Gull	8	24	2	4	38
	<b>Subtotal</b>	<b>32</b>	<b>57</b>	<b>6</b>	<b>4</b>	<b>99</b>
<b>Passeriformes</b>						
	Bushtit	2	1			3
	Rock Dove		3			3
	<b>Subtotal</b>	<b>2</b>	<b>4</b>			<b>6</b>
Species Group	Species	Oiled	Not Visibly Oiled	Unknown Oiling	Other	Total
<b>Gaviidae &amp; Podicepsidae</b>						
	Common Loon	6	7	1		14
	Pacific Loon	35	19			54
	Red-throated Loon	7	4			11
	Unidentified Loon	1	1			2
	Clark's Grebe	3	6			9
	Eared Grebe	8	5			13
	Horned Grebe	3	12	1		16
	Pied-billed Grebe	1	2			3
	Red-necked Grebe	2	1			3
	Unidentified Grebe	2	10			12
	Unid Grebe (West. or Clark's)	12	23	5		40
	Western Grebe	90	46	6		142
	<b>Subtotal</b>	<b>170</b>	<b>136</b>	<b>13</b>		<b>319</b>
<b>Pelecanidae &amp; Phalacrocoracidae</b>						
	Brown Pelican	9	8	2	2	21
	Brandt's Cormorant	3	51	6		60
	Double-crested Cormorant		1	2		3
	Pelagic Cormorant		11	1		12
	Unidentified Cormorant	1	1			2
	<b>Subtotal</b>	<b>13</b>	<b>72</b>	<b>11</b>	<b>2</b>	<b>98</b>
<b>Charadriidae</b>						
	Red Phalarope	24	10		1	35
	Red-necked Phalarope		1			1
	<b>Subtotal</b>	<b>24</b>	<b>11</b>		<b>1</b>	<b>36</b>
<b>Unidentified Birds</b>						
	Unidentified Water Birds	7	7	1		15
	<b>Subtotal</b>	<b>7</b>	<b>7</b>	<b>1</b>		<b>15</b>
<b>Anatidae</b>						
	Brant		1			1
	Bufflehead		5			5
	Ruddy Duck		1			1
	Unidentified Duck	1		1		2
	Greater Scaup		1			1
	Black Scoter		1			1
	Surf Scoter	5	77	8		90
	Unidentified Scoter	1	3			4
	White-winged Scoter	1	20	1		22
	<b>Subtotal</b>	<b>8</b>	<b>109</b>	<b>10</b>		<b>127</b>
<b>Grand Total</b>		<b>2,025</b>	<b>837</b>	<b>89</b>	<b>8</b>	<b>2,959</b>

lower numbers, numbering only 335. A total of 191 Western or Clark's Grebes were recovered. No other single species numbered more than 100, although three species numbered greater than 50: 90 Surf Scoters, 60 Brandt's Cormorants, and 54 Pacific Loons. Smaller numbers of two endangered or threatened species were also recovered: 21 Brown Pelicans (Appendix E) and 3 Marbled Murrelets (Appendix C).

Standard beach segments established prior to the PRTI for the Central California Oil Spill Contingency Plan and GFNMS Beach Watch program were monitored before, during, and after the PRTI (Carter and Page 1989, Roletto 2000). Beach segments were grouped into regions representing generally comparable portions of coastline (Figure 3-1). When possible, dead birds were assigned to beach segments based on collection location. Likewise, search effort was categorized based on the beach segment where dead birds were recovered. However, the extent

**Figure 3-1.** Beach segments and regions used in data analyses for Gulf of the Farallones National Marine Sanctuary Beach Watch and Point Reyes Tarball Incidents.



of coverage of beach segments where live birds were recovered was not recorded. Of 2,959 birds recorded, only 1,362 birds could be associated an estimated 955 km of beach searched. The Beached Bird Model used these 1,362 birds with associated effort to extrapolate for the total number of beached birds they represented, then applied the average extrapolation factor to those birds without search effort data.

#### *Non-Incident Year Records*

Birds recovered and associated search effort data for non-incident years were derived from GFNMS Beach Watch records from 1993 through 1999. Only data from November through February were examined for comparison with PRTI data. Each GFNMS Beach Watch beach segment was surveyed every 2 to 4 weeks. During each survey, surveyors recorded the locations and states of each bird carcass found within the segment, as well as presence and level of oiling. Each beached bird was marked by clipping the toe or wing and was left on the beach. Oiled feather samples were collected and submitted to the CDFG Office of Spill Prevention and Response (OSPR) for analysis. Because each survey was well documented, search effort expended along each segment was known for all birds recorded during non-incident years.

GFNMS Beach Watch surveys in 1997-1998 during the PRTI were compared with the other non-incident years (Table 3-2). These numbers did not include data from many additional surveys conducted during the PRTI by both GFNMS Beach Watch surveyors and other agency personnel and did not reflect the total number of birds recovered or total search effort. In addition, live oiled birds were removed from beaches during the PRTI but much less so during other years. In October-November 1996, numbers of dead birds were affected by the *Cape Mohican* oil spill, and in 1998-1999 by the *Command* oil spill in August 1998 (Ford 2002; Carter, in press).

**Table 3-2.** Numbers of dead beached birds recorded each winter (November – February) during Gulf of the Farallones National Marine Sanctuary Beach Watch surveys from 1993 to 1999.

Winter	Dead Beached Birds	Km Surveyed	Mean Dead Birds per km
1993-94	102	170.9	0.60
1994-95	124	257.3	0.48
1995-96	331	368.9	0.90
1996-97	406	475.7	0.85
1997-98	865	444.8	1.94
1998-99	264	363.6	0.73
Non-PRTI winters <sup>1</sup>	1,227	1,636.4	0.75

<sup>1</sup>Excludes 1997-98.

An average of 0.75 dead birds per km were recovered on studied beach segments in the winters between 1993-1994 and 1998-1999, excluding the PRTI winter of 1997-1998. Although these non-incident years did not truly represent “natural” mortality, this value represented the best available estimate of background mortality from natural and anthropogenic sources in the PRTI area. This rate was used as a correction factor applied to the Beached Bird Model mortality

estimate for the PRTI year to account for background winter bird mortality from sources other than the PRTI.

### *Searcher Efficiency Rate*

Oil spill response personnel and beached bird surveyors often fail to detect a portion of the beached carcasses when searching a beach segment (Page et al. 1982). The Beached Bird Model corrected for the probability that a carcass would be missed one or more times during beach searches. Data for estimating the efficiency of searchers in locating carcasses during an oil spill was derived from a study carried out as part of an assessment of the impacts of the 1997 *M/V Kure*/Humboldt Bay oil spill (Ford and Ward 2000). Bird carcasses were randomly placed along several different types of beaches. Experienced searchers walked each stretch of beach at a pace typical of a spill-response search. Recovery rates (i.e., number of carcasses found divided by number of carcasses placed) were calculated for each searcher in each habitat. Recovery rates differed significantly ( $P < 0.005$ ) between small (Cassin's Auklet or Red Phalarope size) and large carcasses, and among the three habitats studied (marsh, rocky beach, and sandy beach) when small and large carcasses were examined separately. Sandy beaches were the most difficult habitat for searchers and only 7.8% of small carcasses and 41.7% of large carcasses were located among the relatively abundant wrack of these beaches. Based on GFNMS Beach Watch search segment classifications for Regions 1-7 (Carter and Page 1989), no search segments with marsh habitat and only one with rocky beach habitat were searched during the PRTI response or in non-incident years. We applied a searcher efficiency correction factor based only on sandy beach habitat to the PRTI and non-incident years.

Not all carcasses on a stretch of similar habitat beach had the same likelihood of being found. Some were in areas with abundant wrack while others were in relatively clear, flat sections of beach. The fact that one searcher did not locate a carcass did not necessarily mean a second observer would not locate that carcass on a subsequent search. Recovery rates alone did not account for these issues. As a result, the Beached Bird Model did not use recovery rates as input parameters but instead used "findability" based on the likelihood that a given carcass would be found along a stretch of beach. For example, each carcass in the searcher efficiency study had the potential to be found up to 4 times. Out of 10 small carcasses set out along the sandy beach, 60% were not found by any of the 4 searchers (Table 3-3).

**Table 3-3.** Percentage (and number) of small- and large-bodied carcasses found in four searches of sandy beach habitat (Ford and Ward 2000).

Times Found	Carcass Size	
	Small	Large
0	60.0% (n = 6)	27.3% (n = 9)
1	30.0% (n = 3)	24.2% (n = 8)
2	10.0% (n = 1)	15.2% (n = 5)
3	0% (n = 0)	21.2% (n = 7)
4	0% (n = 0)	12.1% (n = 4)

### *Scavenging Rate*

Carcasses may be rapidly removed by either mammalian or avian scavengers, greatly reducing the likelihood that a bird carcass will be recovered. The rate of removal is dependent upon a

combination of factors including carcass size, shoreline structure, habitat, and local predator populations. Carcass persistence rates for seabirds vary from 45% to 84% per day (summary in Burger and Fry 1993).

Scavenging rates used in the Beached Bird Model for the PRTI were derived from two studies, one conducted near Waldport, Oregon in March 2000 (Ford and Ward 2000) and another near Humboldt Bay, California in November 1998 (Ford and Ward 1999a). The Humboldt study had an outer coast component and an inner bay component. For this analysis, only data from the outer coast portion of the study were used. We assumed that these studies were reasonably representative of the circumstances prevailing during the PRTI. Beaches in the Point Reyes National Seashore area appear to have relatively high scavenging rates due to a large population of Common Ravens (Kelly et al. 2002; J. Roletto, unpublished data). Scavenging studies conducted earlier on Point Reyes National Seashore beaches (Page et al. 1982) were not used for several reasons.

**Table 3-4.** Average carcass persistence rates (days to disappearance) found during the Waldport and Humboldt scavenging studies and combined (Ford and Ward 1999a, 2000).

<b>Carcass Size</b>	<b>Waldport</b>	<b>Humboldt</b>	<b>Combined</b>
All	4.78	2.88	3.83
Large-bodied	5.32	4.03	4.68
Small-bodied	3.70	1.17	2.44

Both studies found that small carcasses disappeared more rapidly than large carcasses. Small carcasses in the Waldport study persisted on the beach in a partially or completely unscavenged state for an average of 3.7 days. Large carcasses persisted 5.3 days on average. Carcasses on outer coast beaches in the Humboldt study disappeared more rapidly than those in the Waldport study, with small and large carcasses persisting an average of 1.17 days and 4.03 days, respectively (Table 3-4). The Beached Bird Model uses persistence values, or the percentage of birds remaining partially or completely unscavenged on the beach each day, as input parameters to account for scavenging. During studies, each test carcass was checked each day for 6 days to determine the level of scavenging. If the carcass was gone completely or if only a few feathers remained, it was recorded as being removed. In the Humboldt study, approximately 7% of large carcasses and 67% of small carcasses had been removed by Day 1 of the study. In other words, 93% of large and 33% of small carcasses persisted on the beach 24 hours after being set out. In the Waldport study, large and small carcasses had persistence values of 97% and 64% on Day 1, respectively. Since beach surveys during the PRTI tended to occur at longer intervals than 6 days, persistence values for Day 1 through Day 6 in each study were used to calculate the expected values for Day 7 through Day 30. A single exponential non-linear regression was performed separately for large and small carcasses using values from both studies for each day. The resulting equation was used to calculate average carcass persistence values through Day 30 for the PRTI (Figure 3-2, Table 3-4, Table 3-5).

*Unsearched Beaches*

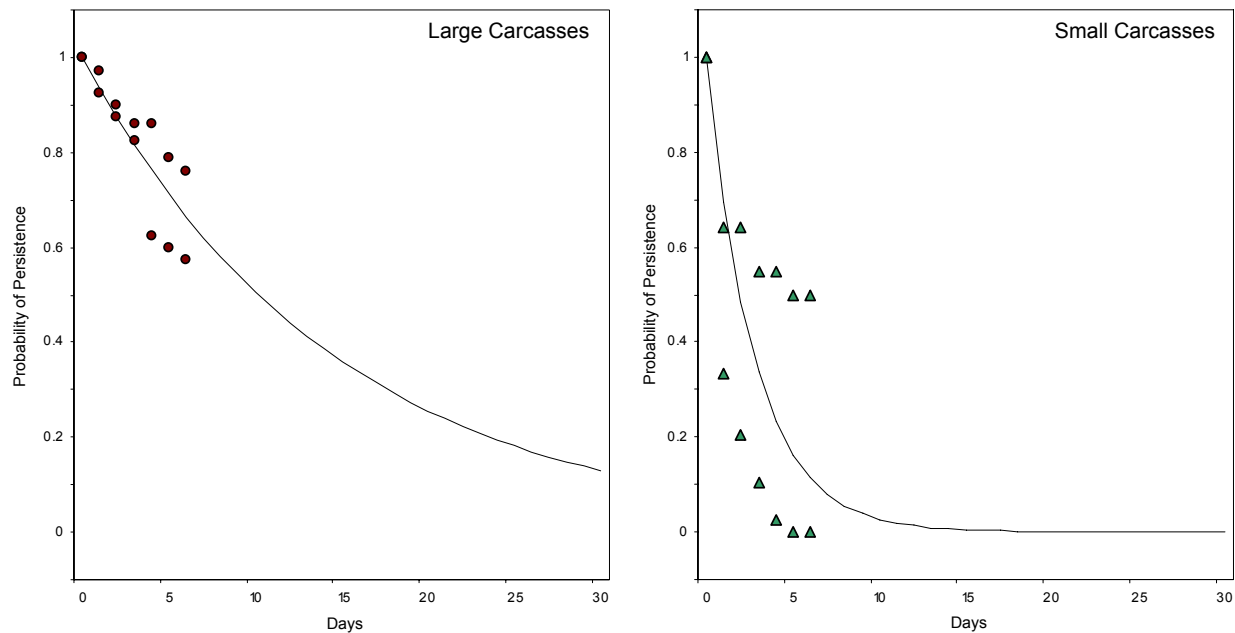
A significant proportion of the shoreline within the PRTI study area either could not be reached by searchers or was never visited during the incident. In Regions 1-7 (see Figure 3-1), only about 46.6% of the coastline was ever searched (Table 3-6). Because very little of Regions 8 and 9 were searched with known search effort, they were excluded from analyses. Bird deposition undoubtedly occurred in the unsearched areas, but how much was unknown. By assuming that deposition occurred in the unsearched areas within Regions 1-7 at a rate comparable to adjacent searched areas, we estimated the total number of birds missed in those areas using a simple ratio. Given that 46.6% of Regions 1-7 was searched and that the estimated number of birds beached in this area was  $b$ , then the total number of beached birds on all beaches,  $B$ , was calculated as follows:

$$B = b/0.466 = 2.146*b$$

**Table 3-5.** Estimated persistence values for large and small carcasses, based on the non-linear regression of data from Waldport and Humboldt scavenging studies (Ford and Ward 1999a, 2000).

Day	Waldport		Humboldt		Regression Estimate	
	Large	Small	Large	Small	Large	Small
Day 0	1.000	1.000	1.000	1.000	1.000	1.000
Day 1	0.970	0.640	0.925	0.333	0.934	0.696
Day 2	0.900	0.640	0.875	0.205	0.873	0.484
Day 3	0.860	0.550	0.825	0.103	0.815	0.337
Day 4	0.860	0.550	0.625	0.026	0.762	0.234
Day 5	0.790	0.500	0.600	0.000	0.711	0.163
Day 6	0.760	0.500	0.575	0.000	0.665	0.113
Day 7	-	-	-	-	0.621	0.079
Day 8	-	-	-	-	0.580	0.055
Day 9	-	-	-	-	0.542	0.038
Day 10	-	-	-	-	0.506	0.027
Day 11	-	-	-	-	0.473	0.018
Day 12	-	-	-	-	0.442	0.013
Day 13	-	-	-	-	0.413	0.009
Day 14	-	-	-	-	0.385	0.006
Day 15	-	-	-	-	0.360	0.004
Day 16	-	-	-	-	0.336	0.003
Day 17	-	-	-	-	0.314	0.002
Day 18	-	-	-	-	0.294	0.001
Day 19	-	-	-	-	0.274	0.001
Day 20	-	-	-	-	0.256	0.001
Day 21	-	-	-	-	0.239	0.000
Day 22	-	-	-	-	0.224	0.000
Day 23	-	-	-	-	0.209	0.000
Day 24	-	-	-	-	0.195	0.000
Day 25	-	-	-	-	0.182	0.000
Day 26	-	-	-	-	0.170	0.000
Day 27	-	-	-	-	0.159	0.000
Day 28	-	-	-	-	0.149	0.000
Day 29	-	-	-	-	0.139	0.000
Day 30	-	-	-	-	0.130	0.000

**Figure 3-2.** Single exponential non-linear regressions of persistence values for small and large carcasses (Ford and Ward 1999a, 2000).



**Table 3-6.** Proportion of searched and unsearched coastlines within regions during the Point Reyes Tarball Incidents.

Coastal Region	Km Searched	Km Unsearched	Proportion Searched
Region 1	32.5	20.3	0.616
Region 2	35.7	33.4	0.517
Region 3	24.6	17.8	0.580
Region 4	14.5	26.6	0.353
Region 5	10.1	10.1	0.500
Region 6	5.1	5.7	0.472
Region 7	10.9	38.9	0.219
<b>Totals</b>	<b>133.4</b>	<b>152.8</b>	<b>0.466</b>

**Table 3-7.** Probability of landfall for simulated trajectories released from the site of the *S.S. Jacob Luckenbach* during the Point Reyes Tarball Incidents.

Month	Probability of Landfall
November 1997	0.800
December 1997	0.457
January 1998	0.710
February 1998	0.964
<b>Average</b>	<b>0.733</b>

### *At-Sea Loss*

Some of the carcasses of birds killed far from shore during the PRTI were not expected to make landfall. During some time intervals, oil and birds would have floated for extended periods of time before reaching shorelines or would have been swept out to sea and never reached shore. To account for this, a computer trajectory simulation was conducted which tracked the path of “elements” released from the site of the *S.S. Jacob Luckenbach* at regular intervals throughout the PRTI time frame (Table 3-7). These elements represented oil and/or oiled birds transported on the water surface, based on concurrent winds and currents (Ford and Himes Boor 2003). Since dead birds seldom float for more than about two weeks before becoming waterlogged and sinking (Ford et al. 1996), a two-week cutoff on trajectory simulations was used. Trajectories that did not make landfall within two weeks were assumed to indicate bird mortality that would not have resulted in bird beachings.

### **Beached Bird Model Methods**

Several versions of the Beached Bird Model (Ford et al. 1987) have been used to evaluate bird injuries in a number of major spill incidents (Dobbin et al. 1986; Page et al. 1990; Ford et al. 1991a,b, 1996, 2001, 2002). The model uses the numbers of recovered live and dead birds to estimate total numbers of beached birds, accounting for non-recovered carcasses due to scavenging and failure of searchers to locate beached birds. Estimates of the magnitude of these factors of attrition are based on empirical studies designed to emulate the circumstances of a winter spill incident (Ford and Ward 1999a, 2000).

The Beached Bird Model used for the PRTI made the following assumptions:

- Live birds that were injured so severely that they could be captured by OWCN personnel would have died if left on the beach.
- If a segment of beach was not searched for more than one day, the daily deposition rate was the same for each intervening day.
- Scavenging was equally likely at any time over a 24-hour period.
- Dead and live birds were equally likely to arrive at any time over a 24-hour period.
- Searchers were equally likely to arrive at any time over a 24-hour period. (Note: this is a simplifying assumption that has little effect on model results.)
- Once beached, a carcass remained in approximately the same position so that the likelihood that it would be found on a given pass by searchers remained constant.
- Beached birds lacking location or search effort data had the same likelihood of being found as the average of all birds with known locations with associated search effort.



- Carcasses were assumed to not be buried by people or to have stayed long enough on beaches to be buried by sand between beach searches.

The model examines each beach segment separately. Starting with the date of a given search, it solves for the number of birds that must have been deposited since the previous search of that segment in order to result in the number of birds that were actually recovered.

#### *Model Overview*

Consider a segment of beach which was searched on Day  $a$  and again on Day  $b$ . Let  $C$  be the number of carcasses recovered on that beach on Day  $b$ . These carcasses can be separated into two categories, those deposited prior to Day  $a$  but not recovered on the Day  $a$  search, and those deposited on or subsequent to Day  $a$  (for convenience, we assume that the search takes place at the beginning of a given day). If the number of recovered carcasses deposited from Day 1 to Day  $a-1$  is denoted as  $O$ , and the number of recovered carcasses deposited from Day  $a$  to Day  $b-1$  is denoted as  $N$ , then:

$$(1) \quad C = N + O$$

and

$$(2) \quad N = C - O$$

The purpose of the model is to compute  $N$ , the number of recovered carcasses that were deposited over the interval between the two searches. In the following sections, we derive the methodology for computing  $O$  and  $C$  in order to estimate  $N$ . By calculating  $N$  for each interval between searches, an estimate of the total number of carcasses deposited on a given segment of beach can be built up through summation.

#### *Effect of Searcher Efficiency*

On each day that a carcass is present on a beach segment, it has a probability of being located and removed by searchers. If  $L$  is the likelihood that a carcass will be found and removed, then  $(1-L)$  is the likelihood that it will not be found. Let  $E_k$  be a variable that assumes the value 1 if a segment was searched on Day  $k$  and 0 if it was not. Then the likelihood that a carcass will not be found from Day  $k$  to Day  $k+1$  (i.e., through Day  $k$ ) is:

$$(3) \quad 1 - E_k \cdot L$$

Equation (3) assumes the value  $(1-L)$  if the segment was searched on Day  $k$ , and 1 if it was not.

Let  $R_{k+1}$  be the probability that a carcass is not found between searches on Day  $k+1$  and Day  $b$ . Then  $R_k$ , the likelihood that a carcass will not be found from Day  $k$  to Day  $b$ , is:

$$(4) \quad R_k = R_{k+1} \cdot (1 - E_k L)$$

The values of  $R$  for all  $k$  from 1 to  $b$  can be computed iteratively by successively calculating  $R_k$  starting with  $k = b-1$  and proceeding backwards to  $k = 1$ .

Assuming that a carcass was not removed by scavengers, the probability that it will be found on Day  $b$  is the product of the probability that it was not found prior to Day  $b$  and the probability that it was found on Day  $b$ . Let  $P_k$  be the probability that a carcass deposited on Day  $k$  will be found on Day  $b$ . Then  $P_k$  is the product of the probability that the carcass will persist until Day  $b$  when the segment was searched ( $R_{b-1}$ ), the probability that it would be found during a search of the entire segment ( $L$ ), and the variable indicating whether or not the segment was searched ( $E_b$ ):

$$(5) \quad P_k = R_{b-1} \cdot L \cdot E_b$$

In the Humboldt study, different searchers repeatedly attempted to locate the same set of carcasses distributed randomly along a beach, and individual carcasses were found to vary in terms of the likelihood that they would be found (Ford and Ward 2000). For example, a large carcass deposited in the middle of a narrow sandy beach with small amounts of wrack would probably be located by any searcher along that stretch of beach. Alternatively, a small carcass deposited in heavy wrack on a wide beach might be missed repeatedly. We therefore divided all carcasses into different categories based on the likelihood that they would be found. Equation (5) can be adjusted for carcasses with a range of different values of  $L$ . Let there be  $m$  different "findability" categories, where  $F_j$  is the proportion of carcasses falling into Category  $j$ ,  $L_j$  is the probability that a passing searcher will find a carcass in Category  $j$ , and  $R_{b-1}$  is computed separately for each findability category so that it is denoted  $R_{j,b-1}$ . Then, equation (5) becomes:

$$(6) \quad P_k = \sum_{j=1}^m F_j \cdot R_{j,b-1} \cdot L_j \cdot E_b = E_b \cdot \sum_{j=1}^m F_j \cdot L_j \cdot R_{j,b-1}$$

### *Effects of Scavenging*

The activities of scavengers are also an important factor in determining whether a carcass will be recovered or not. Based on equation (6),  $P_k$  is the probability that a carcass deposited on Day  $k$  will not have been found by searchers prior to Day  $k$  and is found on Day  $k$ . Let  $S_k$  be the likelihood that a carcass will not be scavenged from the time of deposition on Day  $k$  to the time of search on Day  $b$ . Let  $D_k$  be the number of carcasses that were deposited on Day  $k$ . If it is assumed that the processes of scavenging and search are independent, then  $O$ , the number of carcasses recovered on Day  $b$  that were deposited prior to the previous search on Day  $a$ , can be estimated as follows:

$$(7) \quad O = \sum_{k=1}^{a-1} P_k \cdot S_k \cdot D_k$$

Similarly,  $N$ , the number of carcasses recovered on Day  $b$  that were deposited after the previous search on Day  $a$  would be:

$$(8) \quad N = \sum_{k=a}^{b-1} P_k \cdot S_k \cdot D_k$$

#### *Estimation of Number of Carcasses Deposited*

If the number of carcasses deposited on each day between searches (i.e., between Days  $a$  to  $b-1$ ), is assumed to be equal, then  $D_k$  becomes a constant,  $D$ , and:

$$(9) \quad D = N / \sum_{k=a}^{b-1} P_k \cdot S_k$$

Since  $O$  and  $C$  are known,  $N$  can be substituted from equation (2), yielding:

$$(10) \quad D = (C - O) / \sum_{k=a}^{b-1} P_k \cdot S_k$$

This procedure was repeated for each beach segment for all days on which searches were made, providing an overall estimate of the total number of carcasses deposited on a given beach segment. In the case of carcasses for which the collection date or location (with associated search effort) was not recorded, we used an average correction factor to estimate how many birds each carcass represented. The average correction factor was estimated as the ratio of the sum of  $D$  for all days and coastal segments to the number of carcasses deposited at known dates and locations (with associated search effort).

Three empirical parameters used in these computations are: 1) the proportion of birds in findability class  $j$  ( $F_j$ ); 2) the probability of locating, during a single search, a carcass in findability class  $j$  ( $L_j$ ); and 3) the probability that a beached carcass would be removed by scavengers by Day  $k$ , ( $S_k$ ). Since the likelihood that a carcass would be found or removed by scavengers is dependent on body size, separate calculations were carried out for large and small carcasses. Small carcasses are defined as the size of Cassin's Auklets, Red Phalaropes, or smaller. During the PRTI, small carcasses were considered to include the following species: Cassin's Auklet, Marbled Murrelet, Ancient Murrelet, Leach's Storm-Petrel, Red-necked Phalarope, and Red Phalarope.

#### *Model Parameters*

Estimation of the number of birds that were beached but not recovered were based on the following parameter values:

- Number of birds recovered (C) on a given day and beach segment. For the PRTI, these data were taken from the 1 November 1997 to 28 February 1998 version of the master database of recovered birds (see data sources), with adjustment for live birds with locations but without search effort. For non-incident years, data were taken from GFNMS Beach Watch records.
- Proportion of a given segment searched (E) on a given day. These data were compiled from various records of beach searches for dead birds conducted during the PRTI. Search effort for most live birds was not recorded. Non-incident year data were compiled from GFNMS Beach Watch records with known search effort.
- The probability ( $S_k$ ) that a beached carcass would not be removed by scavengers by Day  $k$ . For large carcasses,  $S_k$  was estimated with the following  $k$  values:  $k_1 = 0.934$ ,  $k_2 = 0.873$ ,  $k_3 = 0.815$ ,  $k_4 = 0.762$ ,  $k_5 = 0.711$ ,  $k_6 = 0.665$ ,  $k_7 = 0.621$ ,  $k_8 = 0.580$ ,  $k_9 = 0.542$ ,  $k_{10} = 0.506$ ,  $k_{11} = 0.473$ ,  $k_{12} = 0.442$ ,  $k_{13} = 0.413$ ,  $k_{14} = 0.385$ ,  $k_{15} = 0.360$ ,  $k_{16} = 0.336$ ,  $k_{17} = 0.314$ ,  $k_{18} = 0.294$ ,  $k_{19} = 0.274$ ,  $k_{20} = 0.256$ ,  $k_{21} = 0.239$ ,  $k_{22} = 0.224$ ,  $k_{23} = 0.209$ ,  $k_{24} = 0.195$ ,  $k_{25} = 0.182$ ,  $k_{26} = 0.170$ ,  $k_{27} = 0.159$ ,  $k_{28} = 0.149$ ,  $k_{29} = 0.139$ ,  $k_{30} = 0.130$ , and  $k_{>30} = 0.130$ . For small carcasses,  $S_k$  was estimated with the following  $k$  values:  $k_1 = 0.696$ ,  $k_2 = 0.484$ ,  $k_3 = 0.337$ ,  $k_4 = 0.234$ ,  $k_5 = 0.163$ ,  $k_6 = 0.113$ ,  $k_7 = 0.079$ ,  $k_8 = 0.055$ ,  $k_9 = 0.038$ ,  $k_{10} = 0.027$ ,  $k_{11} = 0.018$ ,  $k_{12} = 0.013$ ,  $k_{13} = 0.009$ ,  $k_{14} = 0.006$ ,  $k_{15} = 0.004$ ,  $k_{16} = 0.003$ ,  $k_{17} = 0.002$ ,  $k_{18} = 0.001$ ,  $k_{19} = 0.001$ ,  $k_{20} = 0.001$ ,  $k_{21} = 0.000$ , and  $k_{>21} = 0.000$ .
- Classes of "findability," the probability that a searcher would find a carcass while searching a beach ( $L_j$ ). Using data from the Humboldt study, findability categories of 0%, 25%, 50%, 75%, and 100% corresponded to a carcass being found 0, 1, 2, 3, or 4 times on 4 separate searches, respectively.
- The proportion of birds ( $F_j$ ) falling into a given findability category. For large carcasses,  $F_j$  was estimated with the following  $j$  values:  $j_1 = 0.273$ ,  $j_2 = 0.242$ ,  $j_3 = 0.152$ ,  $j_4 = 0.212$ , and  $j_5 = 0.121$ . For small carcasses,  $F_j$  was estimated with the following  $j$  values:  $j_1 = 0.600$ ,  $j_2 = 0.300$ ,  $j_3 = 0.100$ ,  $j_4 = 0.000$ , and  $j_5 = 0.000$ .

## Results

### *Beached Bird Model*

The Beached Bird Model was used to estimate total mortality resulting from the PRTI. For each Common Murre that was found dead or subsequently died, the model estimated that approximately 2.2 birds were actually beached. In other words, while a total of 1,858 Common Murres were recovered, the Beached Bird Model estimated that 4,170 were actually killed and deposited on searched beaches (Table 3-8). For Brown Pelicans, the ratio of beached birds to 21 birds recovered was roughly 3.7:1, indicating that approximately 78 Brown Pelicans were killed during the PRTI and deposited on searched beaches. The model extrapolated from 1,005 other large carcasses recovered to a total of 2,774 birds that were actually killed and beached (2.8:1). The 6 land birds (Bushtit and Rock Doves) recovered during the PRTI were excluded from model calculations and further analyses. Because small carcasses are much more likely to be

removed by scavengers and are less likely to be located by searchers, the estimated ratio of beached to recovered birds is much higher (25.1:1). Excluding Marbled Murrelets, a total of 66 small carcasses were recovered, corresponding to about 1,655 that were actually beached. Using the overall correction factor of 25.1:1 for small carcasses, the 3 Marbled Murrelets collected corresponded to approximately 75 Marbled Murrelets deposited on searched beaches.

#### *Additional Correction Factors*

The Beached Bird Model does not account for carcasses beached along sections of coastline that were not searched or for carcasses that never beached but sank at sea. Two correction factors were calculated and applied to Beached Bird Model estimates to account for these birds. Since only about 46.6% of the coastline within Regions 1-7 was searched, we assumed that total bird mortality was 2.145 times greater than that estimated by the Beached Bird Model. Applying this correction factor, we estimated that an additional 4,779 Common Murres, 89 Brown Pelicans, 3,179 other large birds, 86 Marbled Murrelets, and 1,897 other small birds would have beached on unsearched beaches (Table 3-8). Based on trajectory simulations launched from the site of the *S.S. Jacob Luckenbach*, only 73.3% of the birds floating at sea would have beached. Applying this correction to estimated numbers of birds on searched and unsearched beaches, we calculated that an additional 3,257 Common Murres, 1,039 other large offshore species, and 1,293 small offshore species would have sunk at sea before reaching shore (Table 3-8). Correction for at-sea loss was only applied to birds that spend the majority of their time in offshore waters, and not to near-shore species such as Marbled Murrelets, Brown Pelicans, and other large near-shore species (waterfowl, loons and grebes, coots, and cormorants).

#### *Background Mortality*

Using Beach Watch data from other winters, we calculated an average background bird mortality of 0.75 birds per km of beach searched. By subtracting this beaching rate from the observed beaching rate for each segment of beach searched, we estimated that 24.16% of the mortality during the PRTI resulted from background mortality, corresponding to 2,949 Common Murres, 40 Brown Pelicans, 1,690 other large species, 39 Marbled Murrelets and 1,171 other small species. These birds were subtracted from the total beached on searched and unsearched beaches (Table 3-8).

#### *Survival After Release*

We assumed that birds recovered alive by searchers would have died if they had remained on the beach. Therefore, all dead and live birds recovered were used in the Beached Bird Model. Rehabilitated birds surviving after release were then subtracted from the total beached. However, the survival rate of rehabilitated and released seabirds is subject to considerable uncertainty. Different studies have yielded a wide range of results, with estimates ranging from 0% to 100% survival for several months after release (Anderson et al. 1996; Sharp 1996, 2000; Golightly et al. 2002; Mazet et al. 2002; S. Newman, unpublished data). Using the mid-point of this range, we subtracted 50% of birds released after rehabilitation for those that may have survived. This adjustment was most important for Common Murres where 1.7% of the total beached (after corrections) were considered to have survived. For other groups, <1% of totals beached survived (Table 3-8).

*Final PRTI Bird Mortality Estimates*

Preliminary final estimates of mortality attributed to PRTI mortality are presented in Table 3-8, including: 9,094 Common Murres; 123 Brown Pelicans; 122 Marbled Murrelets; 3,672 small offshore species (Cassin's Auklet, Ancient Murrelet, Leach's Storm-Petrel, Red Phalarope, and Red-necked Phalarope); 2,946 large offshore species (Rhinoceros Auklet, Pigeon Guillemot, Horned Puffin, unidentified alcid, Northern Fulmar, all shearwaters, all gulls); and 2,334 large nearshore species (American Coot, all loons, all grebes, all cormorants, Brant, all ducks, unidentified waterbirds). Total mortality was estimated to be 18,291 birds. Carter et al. (2003) further discuss population impacts to Common Murres related to PRTI mortality.

**Table 3-8.** Preliminary final estimates of seabird mortality from the Point Reyes Tarball Incidents.

Modeling Steps and Estimates	Large Birds				Small Birds			TOTAL
	Common Murres	Brown Pelicans	Other Nearshore Species	Other Offshore Species	Marbled Murrelets	Offshore Species	Land Birds	
Birds Recovered	1,858	21	542	463	3	66	6	2,959
Beached in Searched Areas	4,170	78	1,444	1,330	75	1,655	-	8,752
Beached in Unsearched Areas	4,779	89	1,655	1,524	86	1,897	-	10,030
Total Estimated Beached	8,949	167	3,099	2,854	161	3,552	-	18,782
Lost at Sea	3,257	0 <sup>1</sup>	0 <sup>1</sup>	1,039	0 <sup>1</sup>	1,293	-	5,589
Total Estimated Dead	12,206	167	3,099	3,893	161	4,845	-	24,371
Reductions								
Background Mortality	2,949	40	749	941	39	1,171	-	5,889
Survived After Rehabilitation & Release <sup>2</sup>	163	4	16	6	0	2	-	191
<b>Total Estimated PRTI Mortality</b>	<b>9,094</b>	<b>123</b>	<b>2,334</b>	<b>2,946</b>	<b>122</b>	<b>3,672</b>	<b>-</b>	<b>18,291</b>

<sup>1</sup> At-sea loss correction factor not applied to near shore species.<sup>2</sup> Assuming a 50% survival rate after rehabilitation and release.

## Chapter 4: Trajectory Backcast

R. G. Ford and G. K. Himes Boor

### Introduction

We used a trajectory analysis to determine how weather and oceanographic forces affected the movement of oil during winters from 1993 through 1998. The purpose of this analysis was to try to determine whether the elevated beached bird deposition rate during the Point Reyes Tarball Incidents (PRTI) in the winter of 1997-1998 was related to unusual weather patterns, or if the elevated deposition rate was the signature of a unique oil spill incident. In other words, did birds die at about the same rate each winter in the Gulf of the Farallones, but some years they were more likely to be beached, or was actual mortality much higher during the winter of 1997-1998? As part of this analysis, we also estimated the proportion of the birds that were killed or injured during the winter of 1997-1998 that would not have been recovered because trajectories of the carcasses were directed away from the coastline.

### Trajectory Model

Two different oil spill trajectory models were used in this analysis: the National Oceanic and Atmospheric Administration (NOAA) Hazardous Materials Response Division (HAZMAT) model GNOME (General NOAA Oil Modeling Environment), and R.G. Ford Consulting Company's Oil Spill Risk Model (OSRISK). GNOME model analyses were carried out by HAZMAT personnel as part of the response to the *S.S. Jacob Luckenbach* (hereafter "*Luckenbach*") spill during December 2001. We collaborated on these simulations, providing appropriate times and locations of bird beachings and analyzing model results in an attempt to locate the source of the spill. We used OSRISK for other simulations of the PRTI and for other winters from November 1993 through January 1999.

OSRISK is a special purpose Geographic Information System (GIS) that can utilize output from a variety of hydrodynamic and wind models to drive an oil spill simulation and to analyze the resultant scenarios. For this study, it was configured to behave similarly to GNOME, using a current vector field generated by the same hydrodynamic programs (SAC and DAC – explained below) and using the same wind buoy data provided by the National Weather Service (NWS). OSRISK was originally developed under contract to the California State Lands Commission in 1992, and has been used to determine potential impacts resulting from renewal of the lease for the Unocal terminal in Carquinez Straits (CGI 1993), the lease renewal of the Chevron Long Wharf facility at Point Richmond (Ford and Ward 1999b), and for other sites around San Francisco Bay. It has also been set up for the California and Oregon coasts, and was used as the basis for estimating the risk of tanker transport between San Francisco Bay and Seattle (CGI 1993), the risk of tanker spills to the Southern Sea Otter (Ford 1994), and for hindcasting the impacts of the *M/V New Carissa* oil spill in Oregon (Ford et al. 2001).

For purposes of oil spill trajectory modeling, it is generally assumed that the movement of the oil can be approximated as the vector sum of the surface current plus some fraction of the wind speed (e.g., Torgrimson 1984). For this analysis, an oil spill is represented as a point moving

with the surface current plus 3% of wind speed in the downwind direction. The value of 3% is widely used as a general approximation of the fraction of wind speed imparted to surface oil and is used by HAZMAT as a default value. The model computed position of the simulated spill at one-hour intervals for up to two weeks, or until the spill trajectory intersected the coastline. Movements of spilled oil and dead birds tend to be similar (Ford et al. 1996, Wiese and Jones 2001). We assumed that resultant trajectories represented the movement of both birds and oil. A two-week cutoff was used because dead birds seldom float for more than about two weeks before becoming waterlogged and sinking (Ford et al. 1996).

#### *Wind Data*

We used data collected by NOAA Buoy 46026 to provide wind input for the OSRISK model. Although there are meteorological buoys at Bodega Bay, off San Francisco, and at Half Moon Bay, only San Francisco Buoy 46026 (37.75° N 122.82° W) was recording consistently during the period from 1993 to 1998. Fortunately, Buoy 46026 provides results that are generally representative of the entire Gulf of the Farallones region (M. Hodges, HAZMAT, personal communication). Archived wind records report wind speed and direction averaged over one-hour intervals. Wind records from November through February for 1993 through 1999 (excluding January and February 1993 and November and December 1999) were downloaded from the NOAA National Data Buoy Center website.

#### *Current Data*

Currents in the Gulf of the Farallones are complex and can change rapidly under certain wind conditions. Although oil spill movement in this area is often wind dominated, currents are locally intense, especially in the vicinities of the continental shelf edge and central gulf. We used a current model written by J. Galt (NOAA HAZMAT, retired) to simulate surface currents in the area. This model takes into account the effect of wind velocity and direction, and at each time step generates a surface current field that is consistent with the winds over the previous twelve hours. Although tidal flux through the Golden Gate (i.e., into and out of San Francisco Bay) is significant, we assumed that the net surface flux over a single tidal cycle is small for purposes of this model.

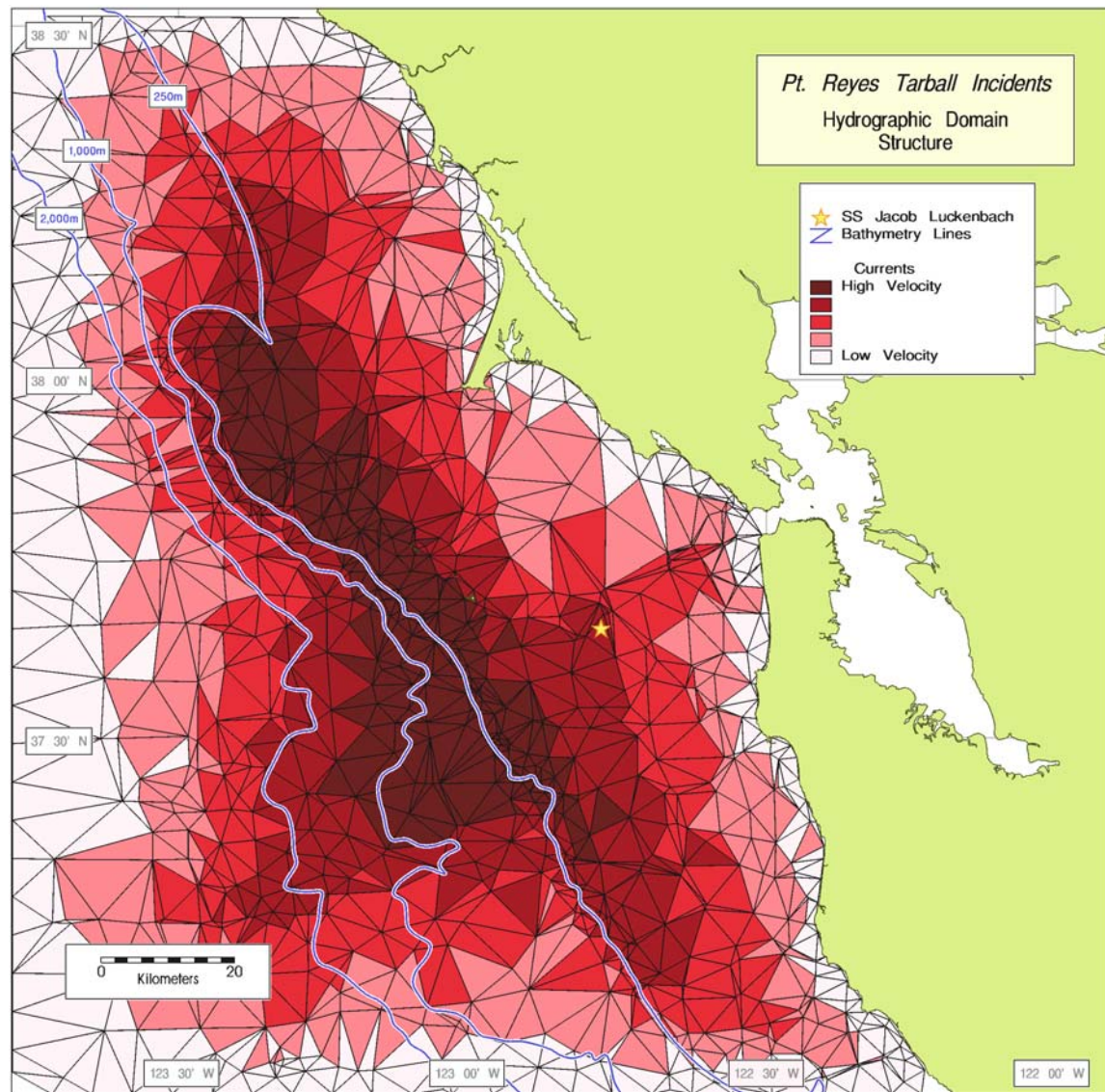
Surface flow estimates were based on the results of two HAZMAT circulation models: Streamline Analysis of Currents (SAC); and Diagnostic Analysis of Currents (DAC). SAC was used to generate a surface current field for the shelf break and deep portion of the PRTI area; DAC was used to generate a surface current field over the shelf. Both of these models require bathymetric data as an input, most of which were available using GEODAS (a compendium of hydrographic survey data published by the National Geophysical Data Center). Areas where depth data were sparse or missing were filled in using hand digitized points obtained from archive files developed by HAZMAT. Bathymetric soundings were used to develop a 2,086 element triangular mesh representing the three-dimensional structure of the study area (Figure 4-1).

Flow over the continental slope and deeper portions of the study area are part of the California Current regime. SAC was used to simulate the direction and relative magnitude of these flows at the ocean surface. The resulting pattern was then scaled to typical values available from historical data and past trajectory studies carried out during spill events. This component of the



regional current regime is very persistent, and the flow was assumed to be constant in magnitude and pattern for trajectory analyses in this study.

**Figure 4-1.** Finite element mesh used in the hydrographic simulation. Color indicates relative intensity of currents (magnitude rather than direction) within each triangular element. Current velocities range from approximately 0-2 knots.



The shelf circulation for the Gulf of the Farallones is more complex than farther offshore. DAC was used to simulate the direction and relative magnitude of these flows at the ocean surface. In this area, seasonal winds play an important role and change average direction of the flow from down-coast (north to south) during the upwelling period to up-coast (south to north) during the Davidson current period. This change in direction is related to the along-shore component of the wind stress. Wind stress causes cross-shelf transport to pile up water against the coast during Davidson current periods, and pull it away from the coast during upwelling periods. DAC solves

for a dynamic balance between surface flow and pressure gradient across the shelf. The model is constrained by the geophysical domain represented by the 2,086 elements represented in Figure 4-1.

The results from the DAC model were used to create two seasonally representative current patterns, one giving generally up-coast flow and the other giving generally down-coast flow. Each of these was scaled to historical data.

Although the concepts of upwelling and Davidson current periods are useful generalizations, currents strengthen and weaken on a daily basis at any time of year, sometimes completely reversing from the seasonal norm. While there are many reasons for these anomalies, storms explained a great deal of the day to day variability in current strength and direction. Storms with persistent winds for the better part of a day or longer can actually modify the seasonal flows across the shelf and alter the bathystrophic balance used to set up the DAC model for these flows. This type of variability is incorporated into the simulation by taking a running average of the long-shore component of the wind, and using that as a switch that toggles between flow field characteristics of the upwelling Davidson Current period.

## Methodology

Oil spill trajectory simulations were conducted in order to:

- characterize annual variation in the likelihood of beaching from various locations within the Gulf of the Farallones
- determine the quantitative relationship between bird beachings and weather, and in particular if the increased frequency of bird beachings during the PRTI in the winter of 1997-1998 was weather related
- estimate the proportion of birds potentially killed by oil released from the *Luckenbach* that would have eventually made landfall as compared to the proportion that would have sunk at sea
- determine if the location of the wreck of the *Luckenbach* is consistent with the pattern of bird beachings observed during the PRTI

### *Annual Variation in the Likelihood of Beaching*

We defined a 10' latitude/longitude grid (1.85 km north/south by 1.47 km) extending from 37.10° N 122.30° W to 38.20° N 123.30° W. At each node on the grid and on each day from 1 November to 31 January, we launched a simulated spill at 01:00 hours PST. Each spill was simulated as a single dimensionless particle that was used to represent both oil particles released at the grid node and birds that were killed or injured along its path. Particles were tracked either until they intersected the coastline or until two weeks after their release. For each node, we estimated the probability of shoreline contact between Point Reyes and Pigeon Point as the number of trajectories that intersected the shoreline divided by the total number of trajectories

released. We used these values to generate geographically registered contour plots of likelihood of shoreline contact (Figures 4-2 through 4-7) for each winter from 1993-1994 to 1998-1999.

Based on these trajectory simulations, the probability that a simulated oil particle launched from any of the nodes would intersect the shoreline was taken as a measure of the probability of bird beaching for a given month and year. We then regressed the bird beaching rate, calculated from Gulf of the Farallones National Marine Sanctuary (GFNMS) Beach Watch surveys (Himes Boor et al. 2003) on the probability of beaching for each given month and year in order to determine the extent to which bird beachings are determined by annual variation in weather patterns.

#### *Proportion of Birds That Sank*

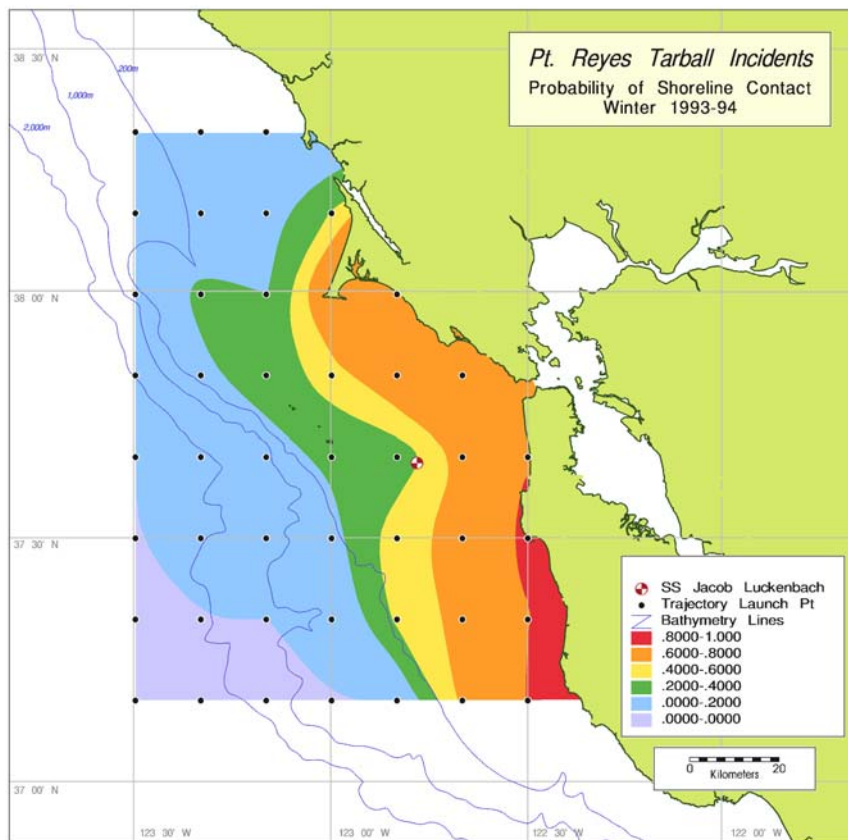
Using the site of the wreck of the *Luckenbach* as the spill origin for each month from November through January, we launched a simulated spill at 01:00 PST on each day of the month. As with the preceding analysis, the probability that a simulated oil particle would intersect the shoreline was taken as a measure of the probability of bird beaching if oil had come from the site of the *Luckenbach*. Trajectories that did not intersect the shoreline within a two-week interval are assumed to represent the trajectories of birds that would have been lost at sea.

#### *Was the Location of the Wreck of the Luckenbach Consistent With the Pattern of Bird Beachings Observed During the Winter of 1997-1998?*

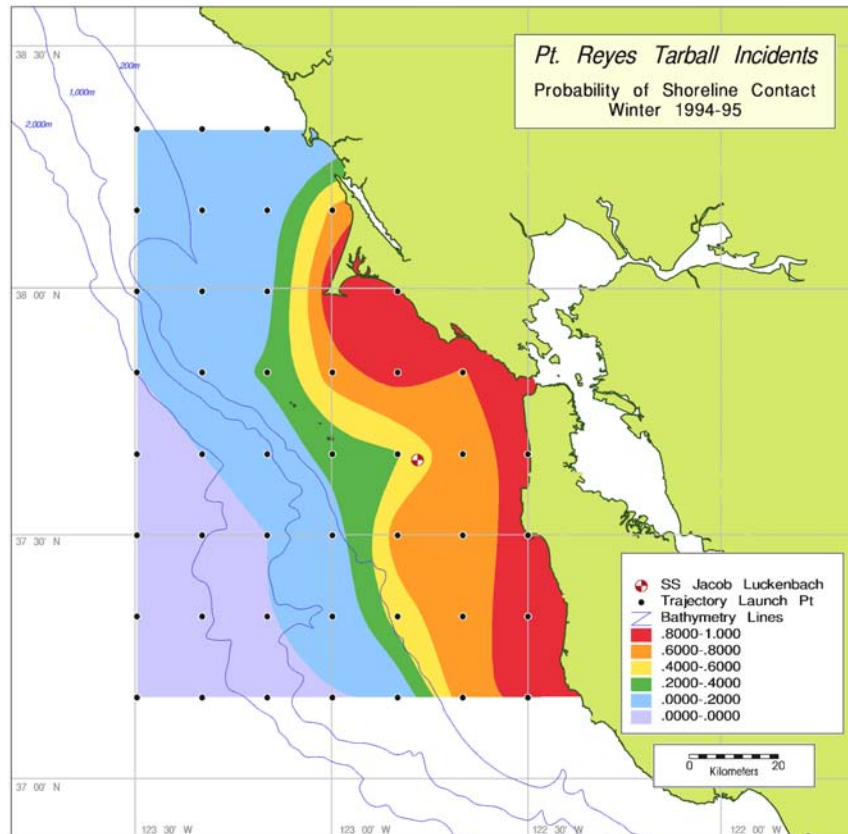
Records of bird beachings from the PRTI winter of 1997-1998 were analyzed to select a set of bird beaching incidents where bird deposition was geographically concentrated, relatively high, and consistent over a 48-hour period. Table 4-1 lists the 12 selected beaching incidents which met these criteria and spanned the PRTI time period and area.

**Table 4-1.** Beaching incidents used as launch points in the backcasts of beached birds in an attempt to determine the location of the spill source for the Point Reyes Tarball Incidents.

Beginning Date	End Date	General Location	Northern Beach Extent	Southern Beach Extent
01/22/98	01/23/98	Doran Beach	38.304°N 123.054°W	38.308°N 123.024°W
01/18/98	01/19/98	Pt. Reyes Beach	38.171°N 122.956°W	38.113°N 122.964°W
12/06/97	12/08/97	Pt. Reyes Beach	38.117°N 122.962°W	38.078°N 122.979°W
01/21/98	01/22/98	Pt. Reyes Beach	38.082°N 122.978°W	38.044°N 122.994°W
11/19/97	11/20/97	Drakes Bay	38.025°N 122.964°W	38.031°N 122.939°W
01/19/98	01/20/98	Limantour Beach	38.028°N 122.934°W	38.025°N 122.889°W
01/24/98	01/25/98	Limantour Beach	38.028°N 122.934°W	38.025°N 122.889°W
11/19/97	11/20/97	Limantour Beach	38.024°N 122.887°W	38.013°N 122.854°W
02/11/98	02/12/98	Pillar Pt.	37.495°N 122.503°W	37.493°N 122.495°W
02/13/98	02/14/98	Pillar Pt.	37.495°N 122.503°W	37.493°N 122.495°W
01/19/98	01/20/98	Tunitas Creek Beach	37.363°N 122.407°W	37.352°N 122.399°W
11/10/97	11/11/97	Gazos Creek Beach	37.177°N 122.374°W	37.150°N 122.362°W

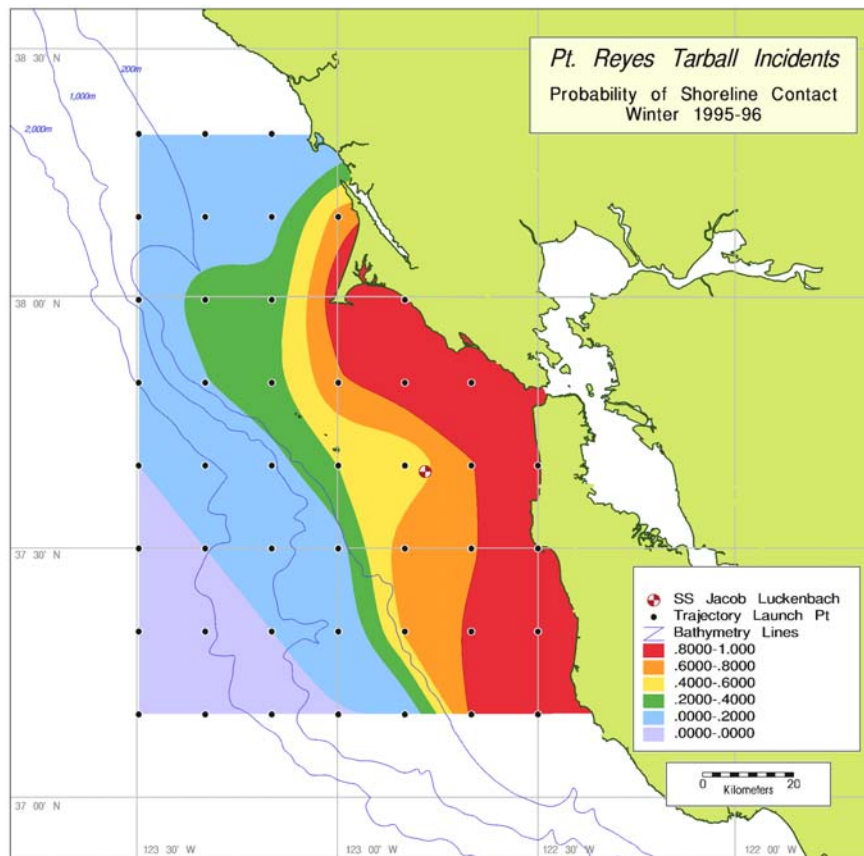
**Figure 4-2.**

The probability that a spill initiated from various at-sea nodes in the winter of 1993-1994 would contact the Point Reyes Tarball Incidents area shoreline. Red indicates a high probability of shoreline contact given a spill within that area, and blue and violet, a low probability.

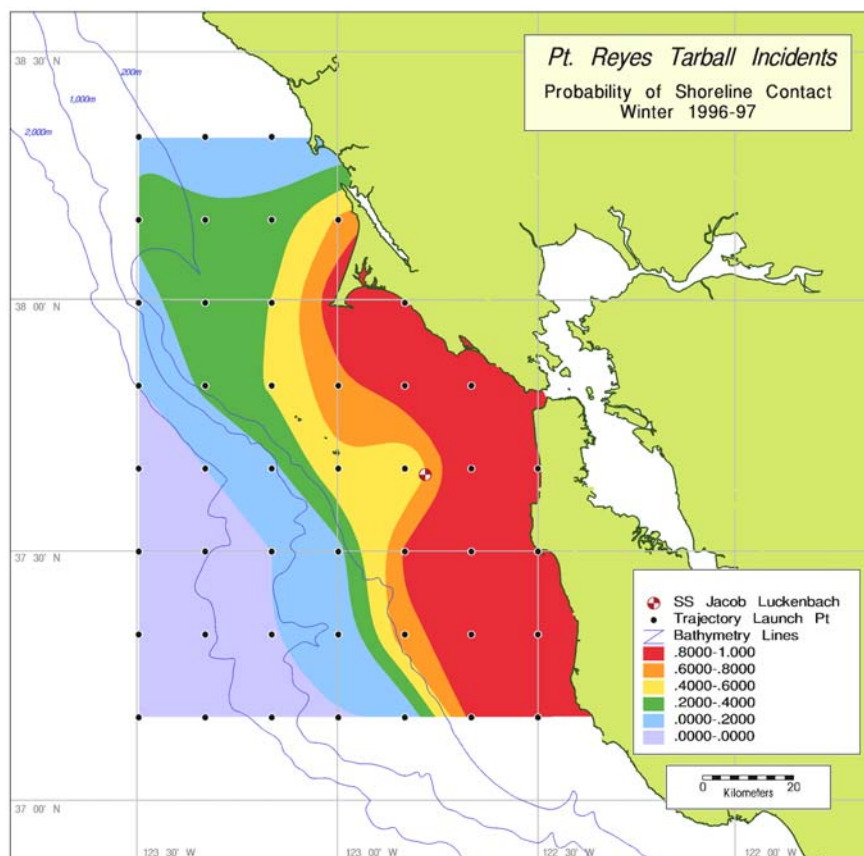
**Figure 4-3.**

The probability that a spill initiated from various at-sea nodes in the winter of 1994-1995 would contact the Point Reyes Tarball Incidents area shoreline. Red indicates a high probability of shoreline contact given a spill within that area, and blue and violet, a low probability.

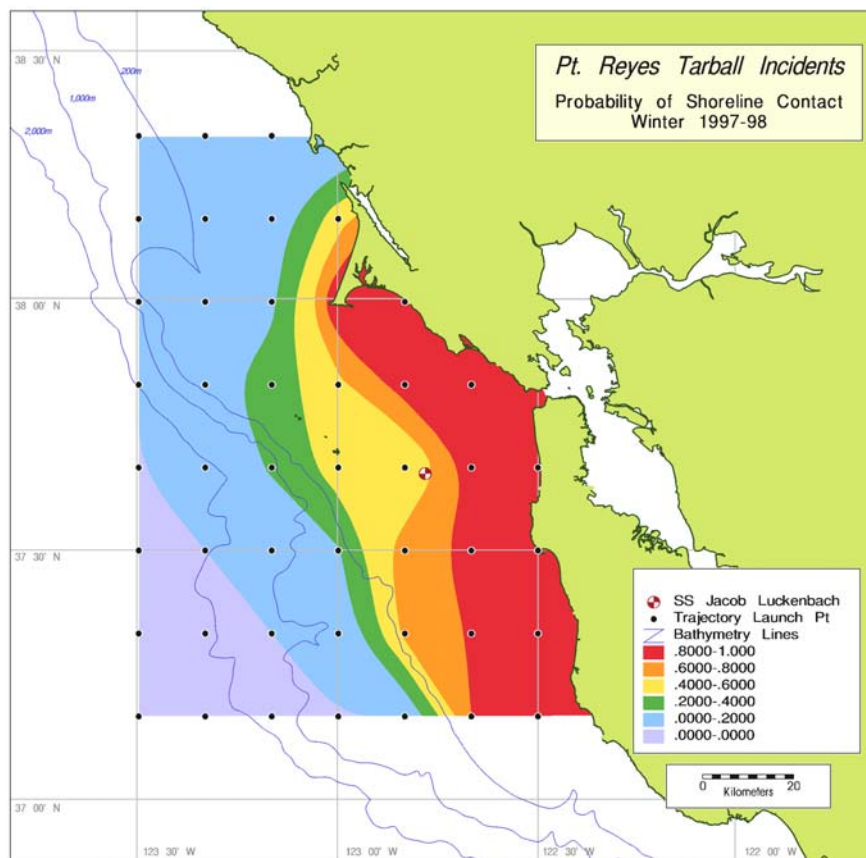


**Figure 4-4.**

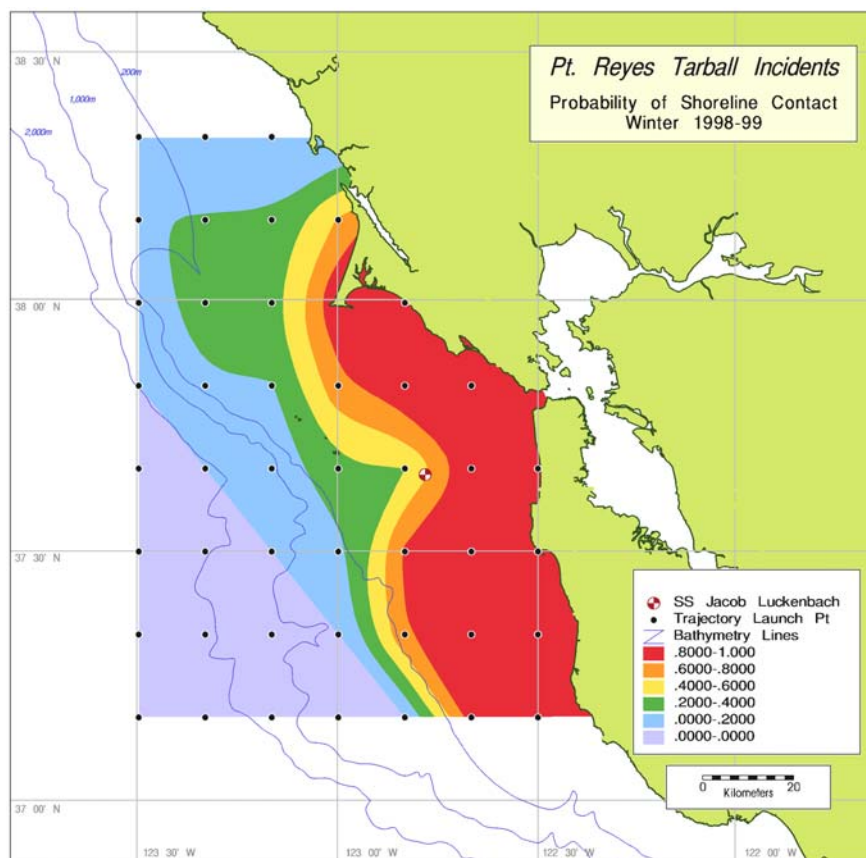
The probability that a spill initiated from various at-sea nodes in the winter of 1995-1996 would contact the Point Reyes Tarball Incidents area shoreline. Red indicates a high probability of shoreline contact given a spill within that area, and blue and violet, a low probability.

**Figure 4-5.**

The probability that a spill initiated from various at-sea nodes in the winter of 1996-1997 would contact the Point Reyes Tarball Incidents area. Red indicates a high probability of shoreline contact given a spill within that area, and blue and violet, a low probability.

**Figure 4-6.**

The probability that a spill initiated from various at-sea nodes in the winter of 1997-1998 would contact the Point Reyes Tarball Incidents area shoreline. Red indicates a high probability of shoreline contact given a spill within that area, and blue and violet, a low probability.

**Figure 4-7.**

The probability that a spill initiated from various at-sea nodes in the winter of 1998-1999 would contact the Point Reyes Tarball Incidents area shoreline. Red indicates a high probability of shoreline contact given a spill within that area, and blue and violet, a low probability.

For each incident (Table 4-1), the HAZMAT spill model was used to backcast from time and location of arrival of beached birds. For this purpose we ran the trajectory model in reverse, using the time and place of the beaching for the origin of an oil spill. As noted in Himes Boor et al. (2003), some problems were found in the database which affected the birds available to conduct this analysis, and cautions presented also apply to this backcast analysis. Simulated oil particles were launched from each location throughout the 48-hour interval and over the entire length of the beach segment. The resultant "reverse trajectory" was then mapped onto a 1 nautical mile grid of the Gulf of the Farallones. Initially, each 1 nautical mile grid cell was scored, based on the number of simulated oil particles from all hindcasts which passed through the cell. However, we found that a clearer picture emerged if we scored each cell based on whether any given hindcast, regardless of the number of simulated oil particles, passed through that cell. Each cell was then scored as 1 if the trajectory passed through it, or 0 if it did not. Assuming that birds and oil move in a similar fashion, each grid cell with a score of 1 was a potential source of the oil that caused that particular bird beaching incident. By running many such reverse trajectories from a range of locations, we hoped to determine if there was an area where the trajectories converged. Such an area would be a candidate for the source of the oil that caused the PRTI. By adding the 0 or 1 grid cells from each trajectory run, we built up a convergence grid in which the grid cells with the highest values represented the area through which the largest numbers of reverse trajectories had passed.

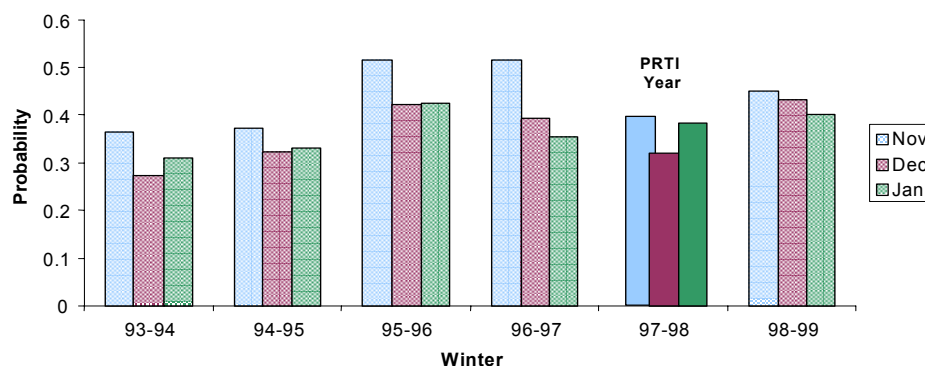
One difficulty with this methodology was that if multiple reverse trajectories were launched from nearby sites, the waters adjacent to these sites would all have high convergence values simply because of clustering of sources. While areas near launch points might in fact be candidate areas, we suspected that the real candidate was further offshore and wished to discount convergence resulting from the placement of sites. We therefore created a null-model grid in which reverse trajectories were launched from each beaching site. Rather than moving with winds and currents, these trajectories simply turned at a random angle at each model time step. We then subtracted the null-model grid from the convergence grid in an attempt to refine the area of offshore convergence.

## Results

### *Annual Variation in the Likelihood of Beaching*

Contours of likelihood were generated for a bird (or spilled oil) originating or passing through a certain position at sea would eventually make landfall within the area between Point Reyes and Pigeon Point (Figures 4-2 through 4-7). As expected, the probability of shoreline contact in all winters generally increased with proximity to land, and tended to be lower north of Point Reyes. Contours of probability tended to bend landward east of the South Farallon Islands because of locally strong cross shelf currents that moved in a westerly direction. Some between-year variation existed in the likelihood of beaching. The winters of 1993-1994 and 1994-1995 had the least likelihood of beaching, and the winters of 1995-1996, 1996-1997, and 1998-1999 had the greatest likelihood of beaching. The winter of 1997-1998, the year of the PRTI, was intermediate between these extremes (Figure 4-8).

**Figure 4-8.** The probability that trajectories originating from any of the nodes would make landfall within the Point Reyes Tarball Incidents area, by month and year.



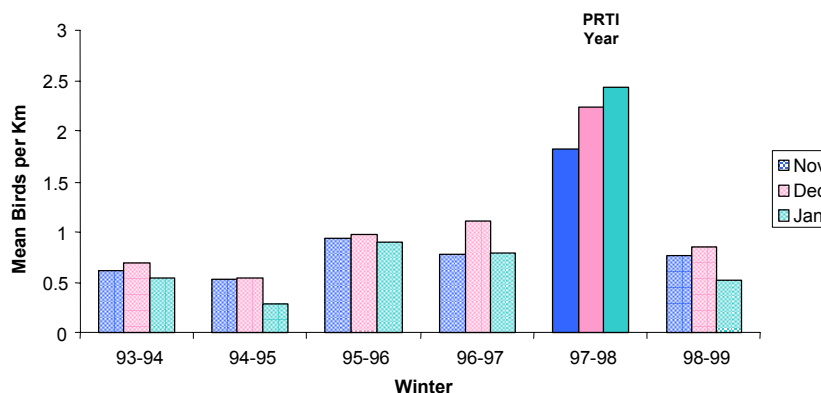
We regressed the number of beached birds recovered by GFNMS Beach Watch surveyors within a given month on the probability that trajectories launched from anywhere within the study area during that month would make landfall. February was excluded from the analysis because many February trajectories continued into March, and the weather database for the model did not include March. The regression was significant if all winters from 1993-1994 through 1998-1999 with the exclusion of the PRTI winter of 1997-1998. If bird deposition is measured as the total number of birds deposited each month (the raw recovery rate), the relationship is significant at  $P = 0.015$  ( $n = 15$ ,  $r = 0.615$ ). If bird deposition is measured as the number of birds recovered per kilometer searched, the relationship is significant at  $P = 0.048$  ( $n = 15$ ,  $r = 0.518$ ).

When the PRTI winter of 1997-1998 was included, the relationship was not significant. The lack of significance indicated that relative to other winters, the number of beached birds during the PRTI was greater than would be expected given the weather patterns. If the number of birds beached by month (raw recovery rate) is regressed against the probability that trajectories launched only from site of the *Luckenbach* would make landfall, the regression is significant at  $P = 0.05$  ( $n = 15$ ,  $r = 0.263$ ). If bird deposition is measured as the number of birds recovered per kilometer searched, the relationship is not significant ( $P = 0.160$ ,  $n = 15$ ,  $r = 0.382$ ).

The fact that the rate at which birds are beached is related to weather patterns in all except the PRTI year does not mean that *Luckenbach* oil was not responsible for part of the mortality during winters other than 1997-1998. But if *Luckenbach* oil was a source of mortality during other years, it seems to have affected comparable numbers of birds each year. The winter of 1997-1998 represents an event that was atypical of all other years analyzed in this study because of the greatly elevated bird deposition rate despite weather patterns that were not unusual compared to other years (Figure 4-9).



**Figure 4-9.** Mean number of beached birds recorded per km searched during Gulf of the Farallones National Marine Sanctuary Beach Watch surveys during winter months from November 1993 to January 1999.



#### *Proportion of Birds that Sank*

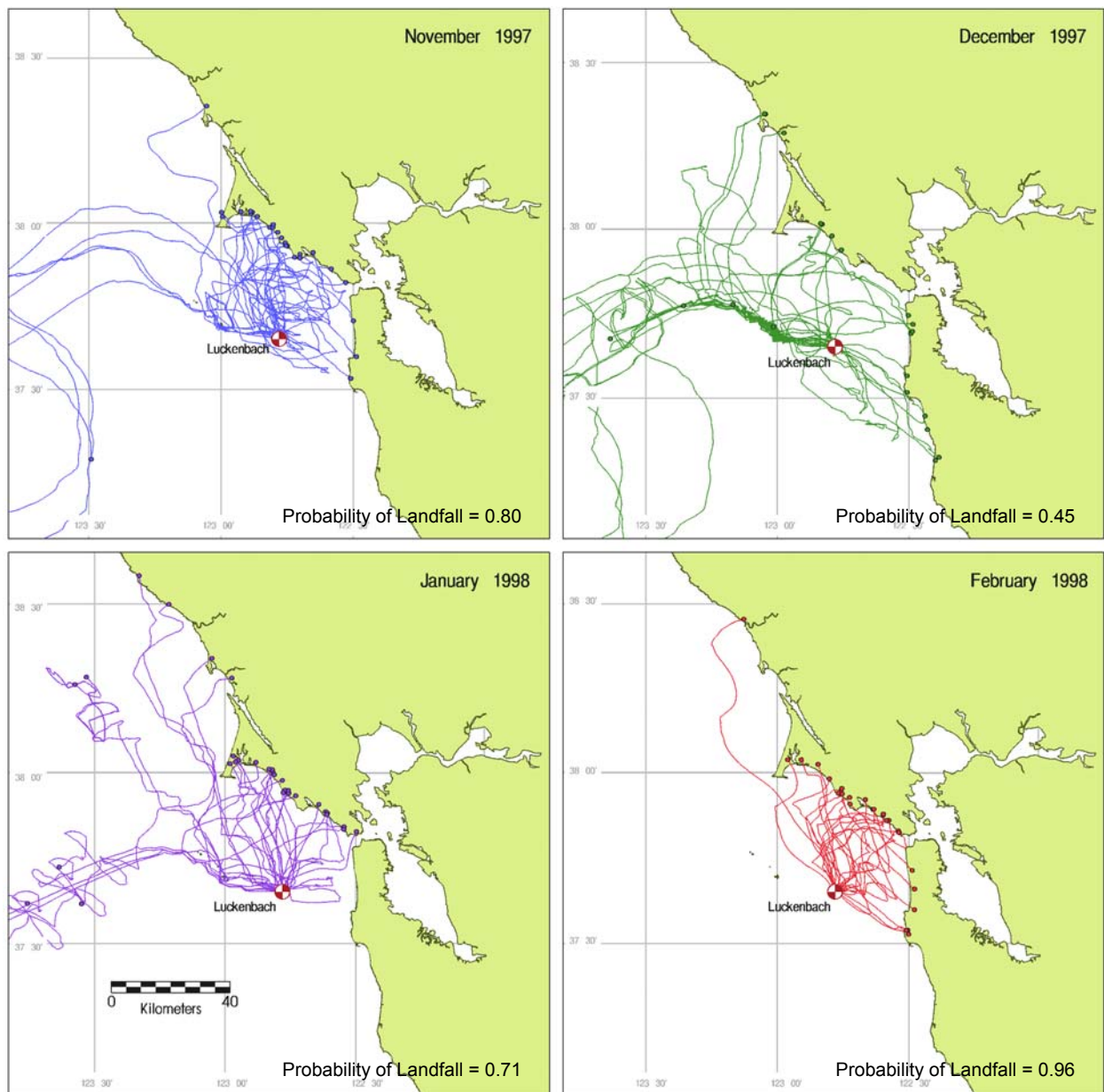
During November 1997, trajectory simulations originating at the site of the *Luckenbach* were directed landward and toward the northern portion of the Gulf of the Farallones (Figure 4-10). During December 1997, trajectories were directed more seaward and south of the Golden Gate. January 1998 represented a combination of these two patterns. We estimated that the probability that an oil spill trajectory originating at the site of the *Luckenbach* would make landfall was 0.80, 0.45, 0.71, and 0.96 for November, December, January, and February, respectively. These estimates suggested that the number of birds beached during the course of the winter represented only about three-fourths of the birds that were affected, with the remainder being directed out to sea.

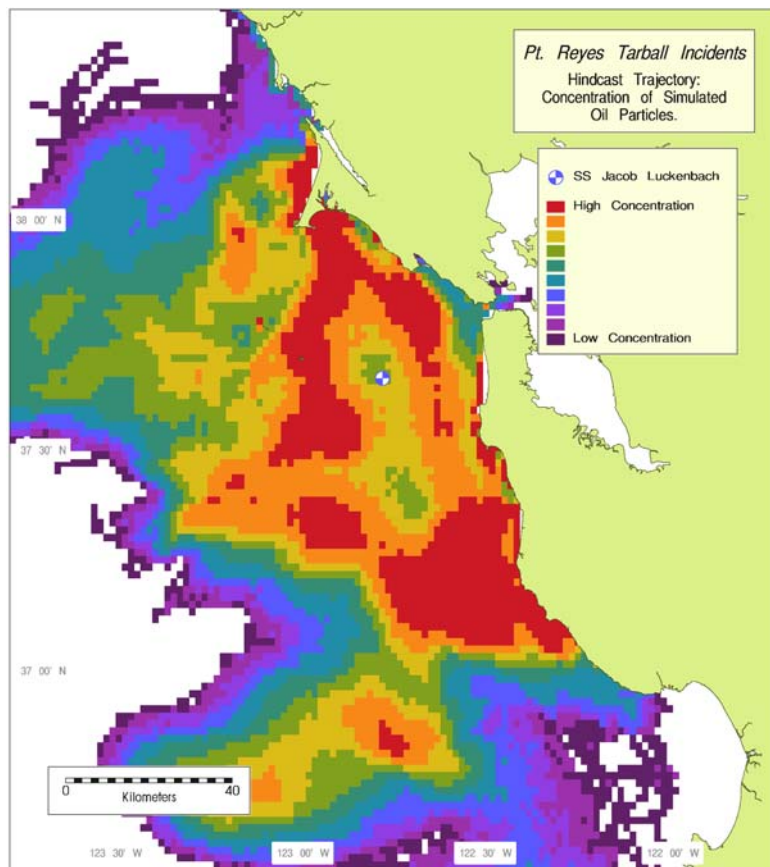
#### *Location of the Luckenbach Wreck and Pattern of Bird Beachings in the Winter of 1997-1998*

Reverse trajectory analyses showed combined trajectories for all model simulations in which the value of each grid cell is the sum of the number of simulated oil particles in each cell at each time step (Figure 4-11). This representation was simplified by summing each cell based on the number of trajectories which passed through the cell, regardless of the number of simulated spill particles. The resultant pattern was then further focused by subtracting the null-model grid from this new grid (Figure 4-12). Two regions emerged as possible source areas: a northerly area near the site of the *Luckenbach*; and a southerly area seaward of San Mateo County. The correspondence of the northerly source area with the site of the *Luckenbach* was very good and consistent with chemistry analyses (Hampton et al. 2003b). The use of the null-model grid as a technique for locating spill sources, however, is still an unverified technique.

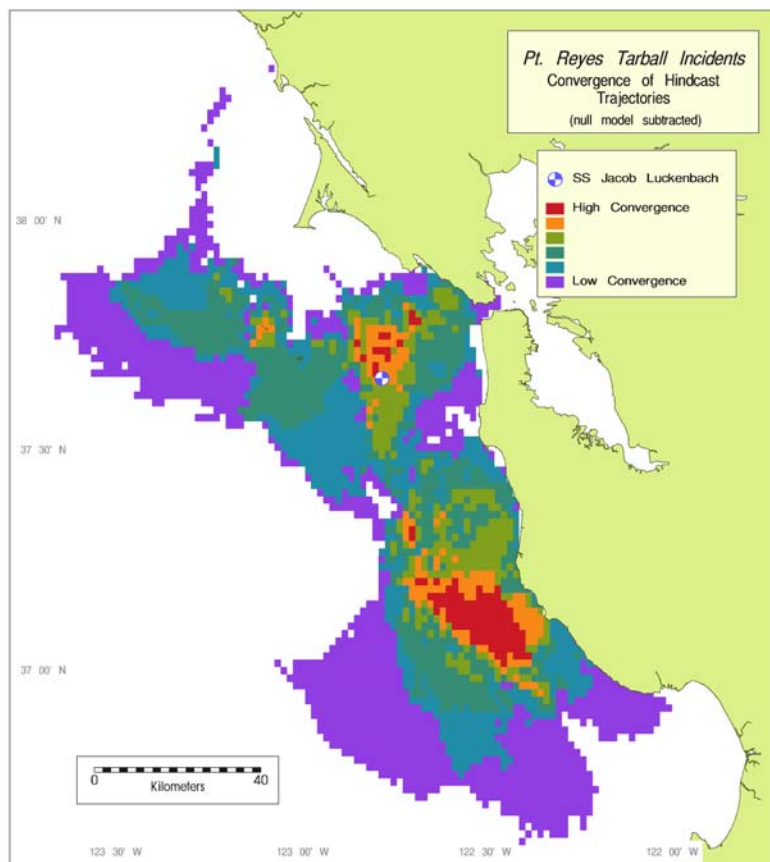
The dynamics of reverse trajectories appeared to be different for bird beachings in the southern compared to the northern portion of the PRTI area and these portions were analyzed separately (Figures 4-13 and 4-14). For northern beaching sites, the location of the *Luckenbach* was again highly consistent with the pattern of bird beachings. Southern beaching sites pointed to another source area south of the *Luckenbach*, consistent with several southern beachings after periods of westerly or southwesterly winds. These conditions would not have moved oil south from the *Luckenbach*. It is possible that oil from the *Luckenbach* was entrained in some way in this area and acted as a chronic source.

**Figure 4-10.** Trajectory simulations launched from the site of the *Luckenbach* each day from November 1997 through February 1998. Each trajectory was run for 14 days or until it encountered land.

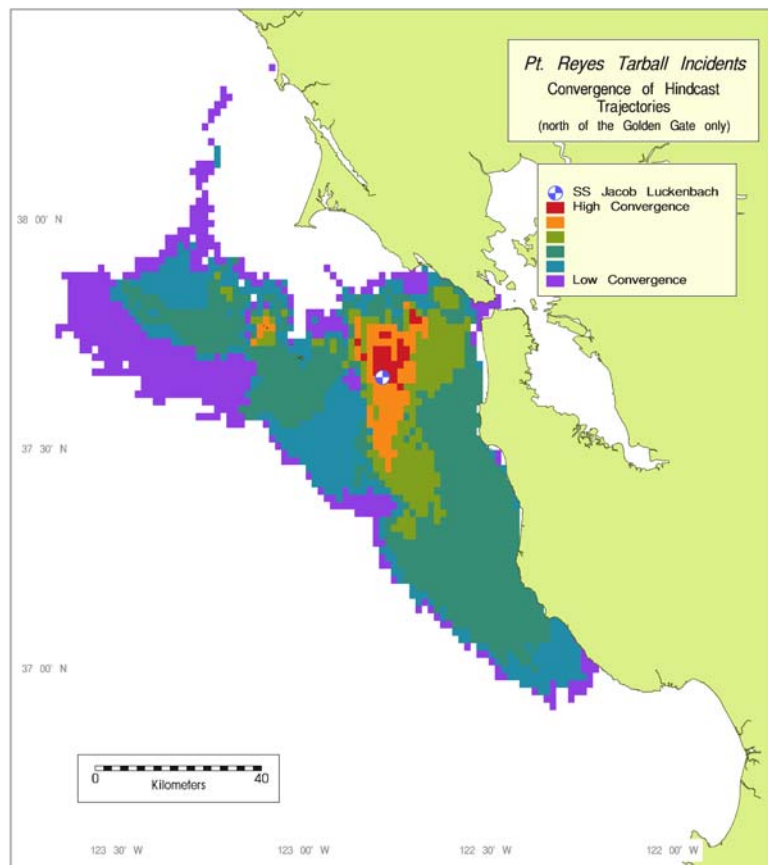




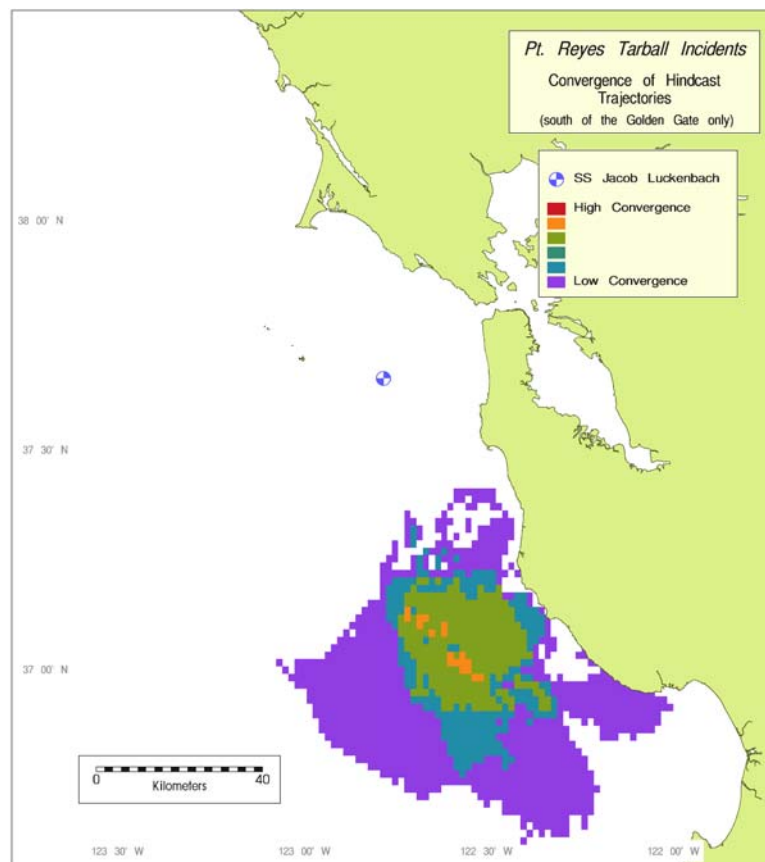
**Figure 4-11.** Results of multiple reverse trajectory runs based on bird beachings during the winter of 1997-1998, with red and orange colors denoting areas through which many simulated oil particles passed, and blue and purple denoting areas through which few particles passed.



**Figure 4-12.** Results of multiple reverse trajectory runs based on bird beachings during the winter of 1997-1998, with each cell value based on the number of hindcasts that passed through the cell. The null-model grid has also been subtracted from each cell in order to minimize convergence resulting from adjacent bird beachings.



**Figure 4-13.** Results of multiple reverse trajectory runs, based on bird beachings north of the Golden Gate only for winter 1997-1998. The null-model grid has been subtracted as in Figure 4-12.



**Figure 4-14.** Results of multiple reverse trajectory runs, based on bird beachings south of the Golden Gate only for winter 1997-1998. The null-model grid has been subtracted as in Figure 4-12.

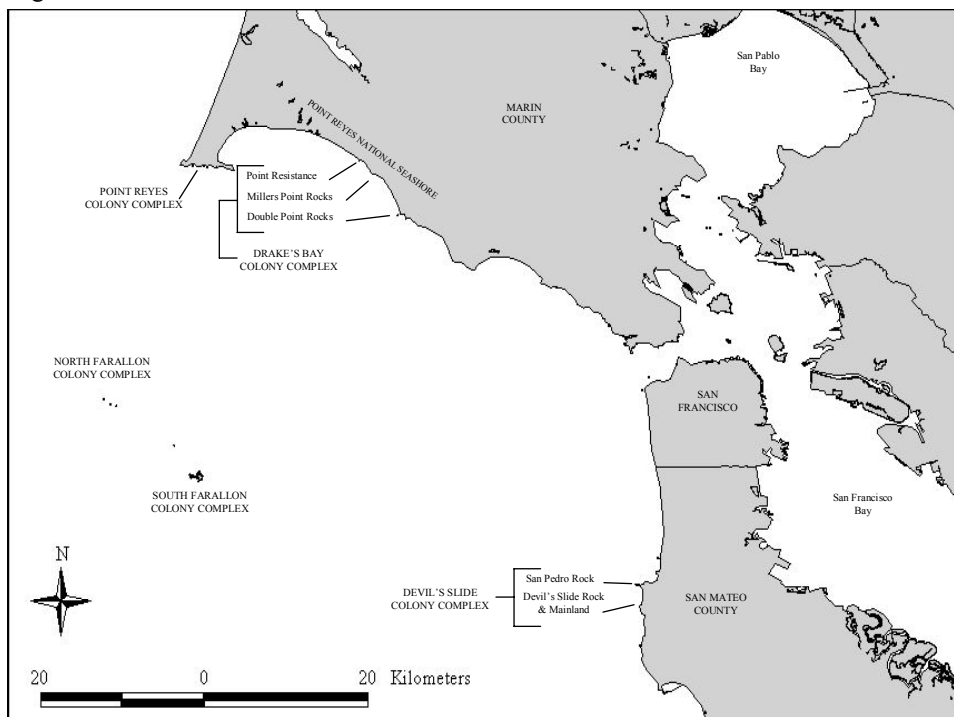
## Chapter 5: Population Impacts to Common Murres at the Drake's Bay Colony Complex, California

H. R. Carter, P. J. Capitolo, M. W. Parker, R. T. Golightly and J. L. Yee

### Introduction

During the Point Reyes Tarball Incidents (PRTI), 1,858 Common Murres were found on searched beaches in central California and 9,094 murres were estimated to have been killed after accounting for searcher efficiency, scavenging, unsearched shorelines, loss of carcasses at sea, background mortality, and survival after release of rehabilitated birds (Himes Boor et al. 2003; Hampton et al., in press). Common Murres are abundant and largely resident in central California throughout the year and currently breed at nine active colonies within six colony complexes (Carter et al. 2001). Since large numbers of murres from more northern populations are not known to occur in central California in winter (Manuwal and Carter 2001), oiled murres during the PRTI are considered to belong to the central California population. Most murres were found on beaches in the northern Gulf of the Farallones region near the location of the sunken vessel *S.S. Jacob Luckenbach*, the source of PRTI oil. Since murres are resident and attend colonies during winter in this population, oiled murres likely originated from five nearby colony complexes in the Gulf of the Farallones (Point Reyes, Drake's Bay [also known as Points Resistance-Double], North Farallon Islands, South Farallon Islands, and Devil's Slide; see Figure 5-1).

**Figure 5-1.** Common Murre colony complexes in the Gulf of the Farallones region of central California.



Trustee agencies were concerned that relative impacts from PRTI murre mortality may be greater at the two smaller complexes at Drake's Bay and Devil's Slide. This concern arose from earlier experience during the 1986 *Apex Houston* oil spill when murre mortality from the oil spill contributed to the loss of breeding murres within the small Devil's Slide complex and near extirpation of breeding murres at the Millers Point Rocks colony within the Drake's Bay complex (Page et al. 1990; Takekawa et al. 1990; Piatt et al. 1991; Swartzman and Carter 1991; Carter et al. 2001, in press). In 1996-1997, small numbers of breeding murres had been re-established at the Devil's Slide complex using social attraction techniques (Parker et al. 1997, 1998). Continuing restoration and monitoring efforts at the Devil's Slide complex and other monitoring efforts at the South Farallon Islands, Point Reyes, North Farallon Islands, and Castle-Hurricane colony complexes were considered sufficient for assessing large-scale PRTI impacts at these colonies. However, additional efforts were necessary to better assess impacts at the small Drake's Bay colony complex where monitoring was limited to annual surveys. Trustee agencies further considered that examination of murre attendance patterns and productivity at the Drake's Bay colony complex in 1998 was needed to assess both oil spill and El Niño impacts in 1998. Severe El Niño conditions were evident in winter 1997-1998 (Lynn et al. 1998) and expected to affect murre attendance and productivity at colonies in 1998, based on murre responses at central California colonies during earlier severe El Niños (Ainley et al. 1988, Ainley and Boekelheide 1990, Boekelheide et al. 1990, Takekawa et al. 1990, Sydeman et al. 1997, Carter et al. 2001). In 1998, we examined murre attendance patterns and productivity at the Drake's Bay colony complex, using aerial photographic surveys. To best describe pre-spill complex condition and to help separate effects of the 1998 El Niño, we further examined all available baseline data in the 1979-2000 period. We also examined attendance patterns of Brandt's Cormorants, Brown Pelicans and other species for comparison to murres and to examine inter-specific associations and interactions.

## Methods

### *Baseline Data*

Since 1979, whole-colony counts of Common Murres (hereafter "murres") attending colonies during the breeding season have been obtained in central California using aerial photographic surveys. These counts have been used for estimating colony and population sizes, or examining colony and population trends (Sowls et al. 1980; Briggs et al. 1983a; Takekawa et al. 1990; Carter et al. 1992, 1995a, 1996, 2000, 2001; McChesney et al. 1998, 1999). All three colonies (i.e., Point Resistance, Millers Point Rocks, and Double Point Rocks) within the Drake's Bay colony complex (DBCC) have been examined with these surveys. Each of these colonies also has two distinct subcolonies: Point Resistance ("Rock" and "Mainland" subcolonies); Millers Point Rocks ("North Rock" and "South Rock" subcolonies); and Double Point Rocks ("Stormy Stack" and "South Rock" subcolonies). Surveys have occurred in most years from 1979-2000, except 1983, 1984, 1991, and 1992. In 1985-1995, single standardized annual surveys were conducted between 10:00 and 14:00 h (PDT) during the "census period" (i.e., 22 May and 15 June). At this time of season (i.e., after most or all eggs were laid and before chicks had departed from the colony) and this time of day, murre numbers are least variable (Takekawa et al. 1990). In 1996-2000, 3-5 standardized surveys were conducted per year during the census period, except in 1999 when only one survey was conducted due to weather problems (Parker et al. 1997, 1998, 1999, 2000, 2001). In 1979-1982, surveys were conducted on varying dates,



mostly in early May or July and we selected murre counts that best represented the census period. From 1979-1996, colonies were photographed through the side windows of the aircraft. Since 1997, colonies have been photographed from a port in the floor of the aircraft. From 1985-2000, murres on photographs were counted in a standardized fashion where birds and nests were counted individually. In 1979-1982, murres on photographs were counted using several techniques, including individual counts and counting groups of tens or hundreds (Sowls et al. 1980; Briggs et al. 1983a).

Since 1985, numbers of breeding and roosting Brandt's Cormorants (i.e., nest and bird counts) and roosting Brown Pelicans (i.e., bird counts) also were counted in aerial photographs (Carter et al. 2000). Most counts of Brandt's Cormorants (hereafter "cormorants" except where Pelagic Cormorants are noted) and Brown Pelicans (hereafter "pelicans") in 1979-1982 were incomplete or derived from ground and boat counts (Sowls et al. 1980, unpublished survey archive; Briggs et al. 1983a,b).

We considered that count methodologies of murres, cormorants, and pelicans from photographs in 1979-2000 generally allowed comparable assessments at DBCC colonies, given that almost all areas of these colonies were visible and photographed on each survey using similar photographic survey methods. However, standardization of aerial photography methods, timing of surveys, and photograph counting techniques has led to greater comparability of murre counts since 1985.

#### *1998 Surveys*

In 1998, standardized aerial photographs of DBCC colonies were taken on 16 surveys between 7 May through 26 August (see Appendix B-1). Photographs were not taken on two other surveys due to fog. Five surveys occurred during the census period between 22 May and 15 June. All possible murre breeding areas were photographed at the 6 DBCC subcolonies on each survey. Point Resistance Mainland and Double Point South Rock were inspected for murres on all surveys but were not regular breeding areas and were not always photographed. Although intended to be weekly, aerial photographic surveys were conducted between 1 and 16 days apart, due to fog and aircraft availability limitations. Twelve surveys were flown in a twin-engine Partenavia P68, with colonies photographed from an open port in the floor of the aircraft by 1 or 2 photographers using 35-mm cameras fitted with 300-mm lens. Overviews of the colonies also were photographed with 50 mm or 75-210 mm lenses. Six surveys were flown in a single-engine Cessna 182 with photographs taken through the open side window, by one photographer. Surveys were flown at altitudes between 155-215 m elevation.

One of us (P. Capitolo) counted all photographs, using standardized techniques. Due to the small size of DBCC subcolonies, we considered that one experienced counter was sufficient for accurate and consistent counts at these colonies. Different subareas of each of four subcolonies with breeding murres also were demarcated to more closely examine attendance patterns in each subarea at each rock. Subareas were defined primarily by physical barriers (e.g., walls, ledges, boulders, etc.) separating groups of murres that could be readily identified in aerial photographs:

1) Point Resistance Rock was divided into four subareas (see maps in Appendices B-2, B-3): Area A was the largest subarea and gradually sloped west to the ocean; Area B was the east end of the rock and separated from area A by a small wall; Area C consisted of narrow ledge on the

north side with obscuring overhangs from certain angles and shadows; and Area D was slightly below Areas B and C on the north side.

2) Millers Point North Rock was divided into four subareas (see maps in Appendices B-4, B-5): Areas A, B and C were located on the narrow top of the rock from west to east; and Area D was a low shelf on the northeast side of the rock and included small amounts of narrow ledge habitat above the shelf and below Areas B and C.

3) Millers Point South Rock was divided into six subareas (see maps in Appendices B-6, B-7): Areas A, B and D formed the perimeter of the top of the rock; Area C was located on top center of the rock and was elevated 1-2 m above Areas A, B and D; Area E was a gently-sloping shelf at the east end of the rock, approximately 7 m below the top areas; and Area F was a semicircular area on the top of the rock under a ledge overhanging from Area C.

4) Stormy Stack was divided into three subareas (see maps in Appendices B-8, B-9): Area A was a broad surface which sloped gradually southwest to the ocean; Area B consisted of narrow ledge habitat on the vertical wall separating Areas A and C, and broader ledges which wrapped around the northeast side of the rock; and Area C was the flat peak, approximately 7 m above the base of Area B.

For comparison, we also re-examined 1997 aerial photograph counting sheets, used the same subarea boundaries to subdivide each rock, and determined separate counts for each subarea. Areas attended by murres and pelicans at Point Resistance Mainland and Double Point South Rock are shown in Appendices B-10 and B-11.

#### *1998 Productivity*

In 1998, we searched late-season aerial photographs for large “fledgling-sized” murre chicks, as a general measure of productivity or breeding success. We defined chicks as appearing to be less than one half adult size and/or in juvenal plumage. Since this technique had not been verified in previous studies, we surveyed certain murre breeding areas at Point Reyes and Devil’s Slide colony complexes in late July 1998 for comparison to similar surveys at DBCC. At these locations, murres were being monitored from mainland vantage points and counts of large chicks were possible from the ground for comparison to counts from aerial photographs.

#### *1999-2000 Surveys*

In 1999, only one aerial photographic survey of DBCC colonies was conducted during the census period on 3 June. One additional survey was conducted on 28 June (i.e., after the census period but before chicks departed from the colony) to determine if large chicks were evident in aerial photographs in 1999 when successful breeding had occurred. In 2000, five aerial photographic surveys of DBCC colonies were conducted in the census period. All 1999-2000 aerial photographs were assessed using the same procedure as in 1998.

#### *Data Summaries and Analyses*

Six approaches were used to examine attendance patterns and changes in numbers of murres, cormorants, and pelicans at the DBCC. We examined: 1) bird counts of murres within each subarea at each of four subcolonies with breeding murres in 1997-2000; 2) bird counts for



murres, cormorants, and pelicans (plus nest counts for cormorants) in 1996-2000 for each subcolony, colony, and the total complex; 3) seasonal trends in 1998 for murres, cormorants, and pelicans; 4) annual trends from 1979-2000 for murres, cormorants, and pelicans; 5) actual and relative percent change between mean and high murre counts within the census period in the 1996-2000 period; and 6) regression analyses of murre count data between 1985-2000.

We also examined both actual and relative percent change in murre counts between years during the 1996-2000 period. Actual percent change was calculated as the difference between values in two years divided by the value for the earlier year, multiplied by 100. Relative percent change was calculated as the difference between values in two years divided by the mean value for the 1979-2000 study period (7,836) multiplied by 100. Several factors affect the degree of actual change observed, especially population size at the start of the period when change is measured, as well as population size and reproduction that occurred up to 6 years earlier due to delayed maturity and subadult colony attendance in murres (Harris et al. 1994, Halley et al. 1995). Relative change is less affected by sequential changes in population size and allows for better comparisons of the degree of change (i.e., increases or decreases) between sequential periods of time.

We further examined both mean and high murre counts within the census period when determining actual and relative percent change in the 1996-2000 period. Comparing single or mean counts is an effective way of determining change between most years, when numbers of murres attending colonies during the census period does not vary to a great extent. However, in certain years (e.g., during severe El Niño years) when murre attendance varies greatly at colonies, mean and high counts can differ greatly. Thus, the additional comparison of high counts confirmed the apparent degree of change during severe El Niño conditions.

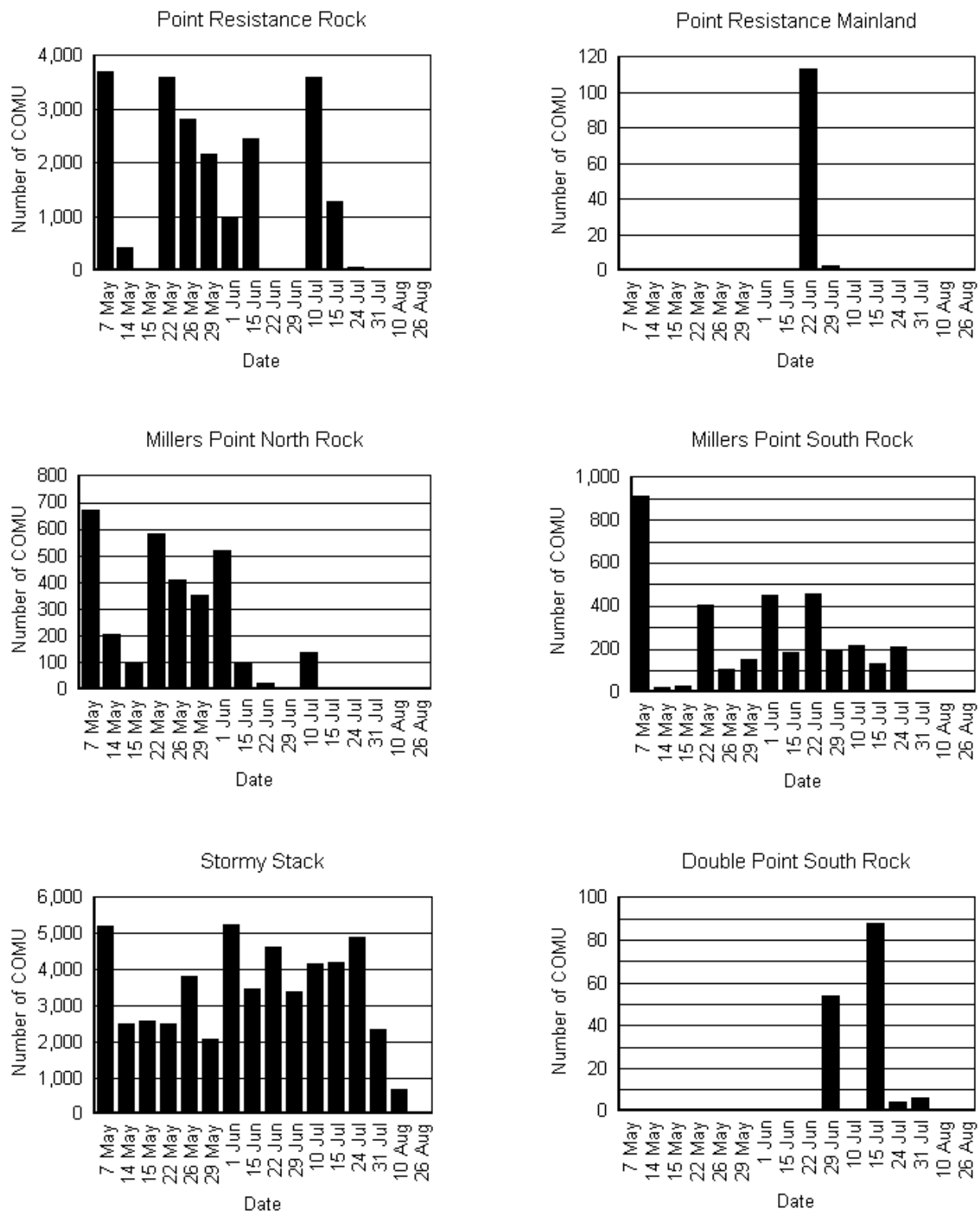
## Results

### *Subcolony Attendance Patterns and Productivity, 1998-2000*

#### ▪ Point Resistance Rock

*1998:* A mean of 2,411 murres (range = 997-3,607, n = 5 surveys) attended the subcolony during the census period. Numbers were lower than in 1997 but the same subareas were attended (Appendix B-3). A small portion of attending murres probably laid eggs, but few could have hatched eggs prior to complete abandonment by 22 June and no chicks fledged (Figure 5-2). Delayed and reduced egg laying may have occurred after 15 May, although no eggs were seen in aerial photographs. Following high attendance on 7 May, only 19 murres (mostly standing) were present on 15 May. On 22 May, attendance was high but then declined over the next ten days when many murres were observed in incubating postures and egg laying may have begun. On 1 June, attendance was reduced and less than a few hundred eggs may have remained. Attendance was higher on 15 June but complete abandonment followed by 22 June. Based on a 32-day average incubation period (Boekelheide et al. 1990), few if any murres hatched eggs. After abandonment, variable numbers of murres

**Figure 5-2.** Numbers of Common Murres attending six subcolonies within the Drake's Bay Colony Complex in May-August 1998.



continued attendance from 29 June to 24 July. This subcolony had the second largest numbers of murres at the DBCC, and contributed extensively to overall DBCC attendance patterns in 1998 (Figure 5-3).

Three cormorant nests were noted on 15 June, but only one nest produced observable chicks (Figure 5-4). At least one chick was seen in this nest on 24 and 31 July, but we could not determine if any chicks fledged. Large cormorant roosts also were seen on 15 July and 10 August. Roosting pelicans were often present, at times within murre breeding areas (Figure 5-5). After moderate roosting numbers on 7 May, pelicans were absent or in low numbers until 22 June when an influx of nearly 200 roosting pelicans coincided with complete abandonment by murres. Afterwards, pelicans were present on each survey. Small numbers of Western Gulls were present on most surveys, but they did not nest. Roosting Heermann's Gulls were first seen on 15 June, reaching a high count of 73 birds on 26 August. Small numbers (<10) of California Sea Lions also hauled out on several 1998 surveys, but did not enter murre breeding areas.

*1999:* On 3 June, 3,175 murres were counted. Numbers were lower than in 1997 but higher than the 1998 mean. The same subareas were used as in 1997-1998, but lower numbers occurred in Areas A and B than in 1997 (Appendix B-3). Higher numbers of murres attended on 28 June than on 3 June. Thirty-one murre chicks were counted on 28 June. No cormorants nested. Three pelicans were noted on 28 June.

*2000:* A mean of 3,251 murres (range = 2,926-3,521, n = 5 surveys) attended the subcolony during the census period. The mean was lower than in 1997, higher than in 1998, and similar to the 1999 value (Appendix B-3). The same subareas were used as in 1997-1999. Small numbers of roosting pelicans were present on all surveys. No cormorants nested. Two Common Ravens were seen at the edge of the murre colony on 14 June.

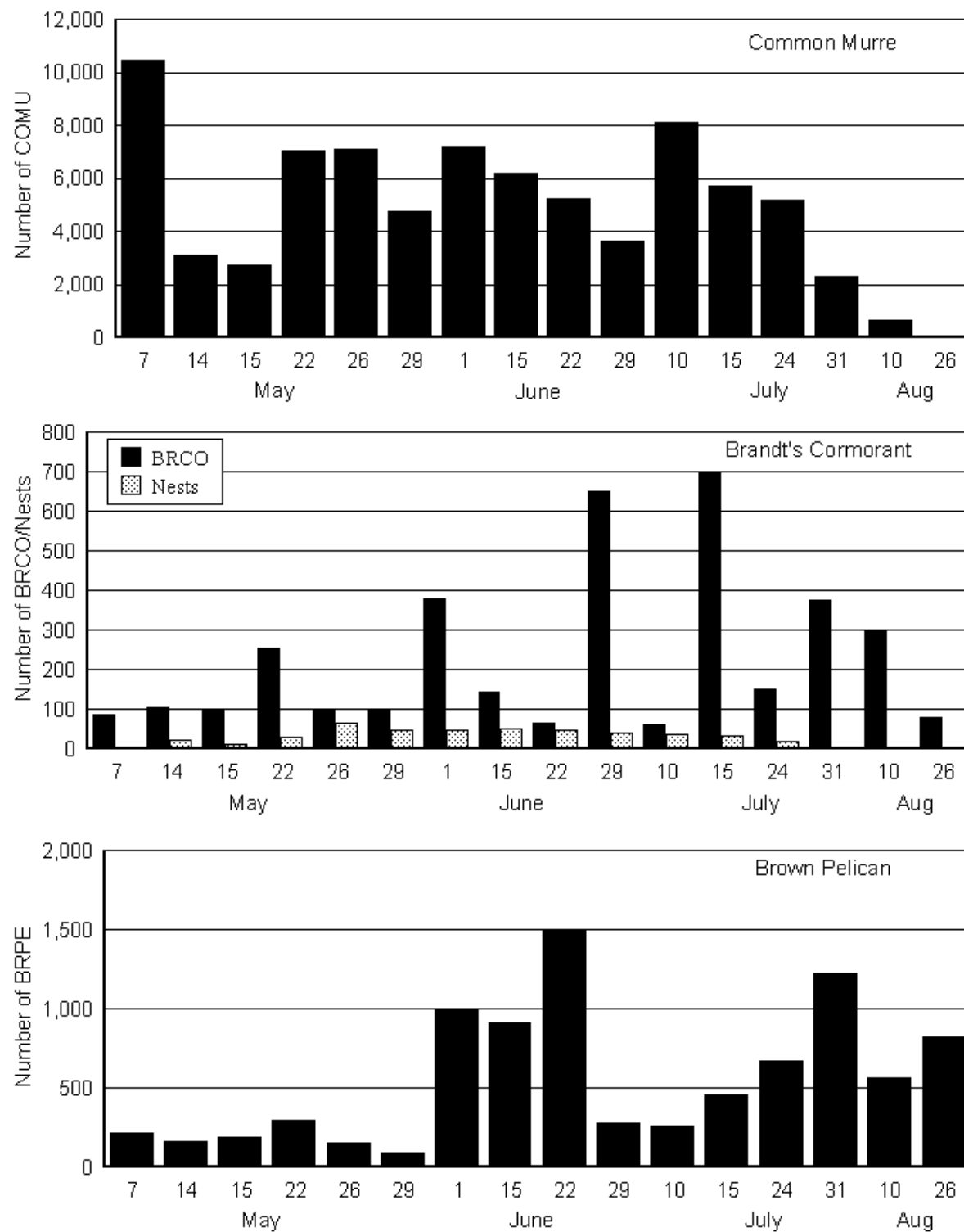
- Point Resistance Mainland

*1998:* No murres were noted during five surveys during the census period. On 22 and 29 June, 113 and 3 murres, respectively, were seen attending this mainland point (Figure 5-2). Birds were standing, suggesting that no egg laying occurred. These observations coincided with the complete abandonment of nearby Point Resistance Rock between 15-22 June (see above). Small roosts of cormorants were seen on several surveys. Numbers of pelicans increased on 22 June, were lower through 10 August, and peaked on 26 August (Figure 5-5). Rough pelican counts were obtained on 7 May, 24 July, and 31 July, using overview photographs only. Roosting Heermann's Gulls were first seen on 22 June, with a high count of 33 birds on 10 August.

*1999:* No murres and 53 roosting pelicans were noted on 3 June. Eight Western Gull nests also were noted.

*2000:* No murres were noted during five surveys during the census period. One Black Oystercatcher was seen.

**Figure 5-3.** Whole-complex counts of Common Murres, Brandt's Cormorants, and Brown Pelicans at the Drake's Bay Colony Complex in May-August 1998.



- Millers Point North Rock

*1998:* A mean of 393 murres (range = 97-585, n = 5 surveys) attended the subcolony during the census period. Numbers were lower than in 1997, but the same subareas were attended (Appendix B-5). Low attendance occurred on 14-15 May, followed by higher regular attendance of the same subareas from 22 May to 1 June (Figure 5-2). Delayed and reduced egg laying might have occurred during the latter period, but few if any murres attended long enough to hatch eggs and no chicks fledged. Following high early attendance on 7 May, attendance was lower on 14-15 May, with most birds in standing postures. On 22 May, a flying Common Raven held a bluish-colored object (possibly a murre egg) in its bill, suggesting that murre egg laying had begun. Attendance was dramatically lower on 15 and 22 June. Due to the short period of regular attendance, only very small numbers of murres laid eggs. All murres had abandoned by 29 June. Murres were seen once more on 10 July, when 141 birds attended. One Pelagic Cormorant nest with chicks was seen on 15 July. Roosting pelicans were present only on 15 and 22 June, coinciding with murre abandonment (Figures 5-2, 5-5). Three Western Gull nests were present, but none successfully fledged chicks.

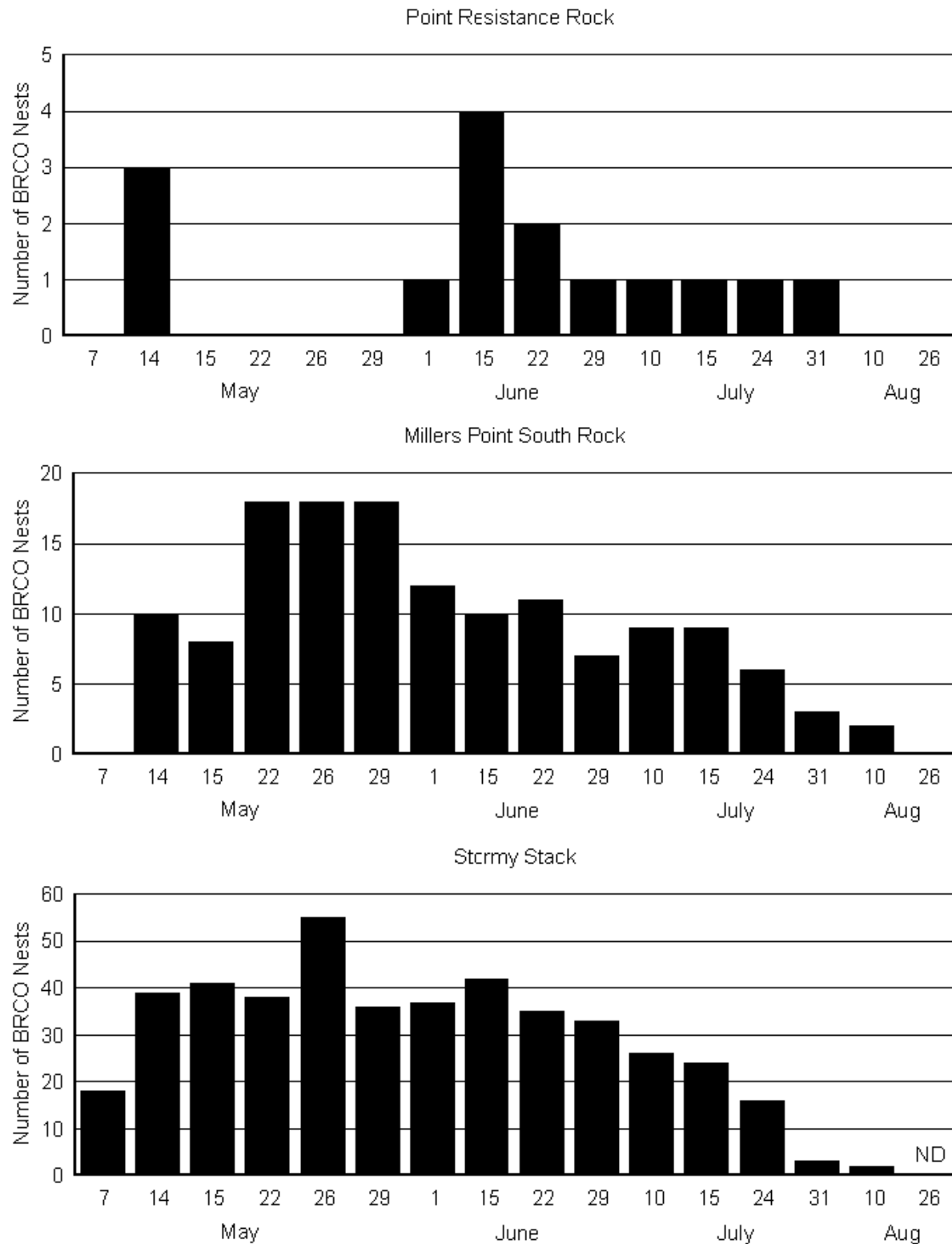
*1999:* On 3 June, 472 murres were counted, similar to 1997 and higher than 1998. The same subareas were used as in 1997-1998, except for Subarea D which was empty (Appendix B-5). Seven murre chicks were noted on 28 June. Cormorants nested in 1999 (n = 56 nests on 3 June). Five Pelagic Cormorant nests and one Western Gull nest were noted.

*2000:* A mean of 382 murres (range = 312-436, n = 5 surveys) attended the subcolony during the census period. Numbers of murres in 2000 were similar to those in 1997-1999. Subarea D was little used (only one murre seen), as in 1999. Subarea C was slightly reduced from 1997-1999 levels (Appendix B-5). Cormorants nested (18 nests on 7, 9, and 14 June). Two Pelagic Cormorant and four Western Gull nests were noted.

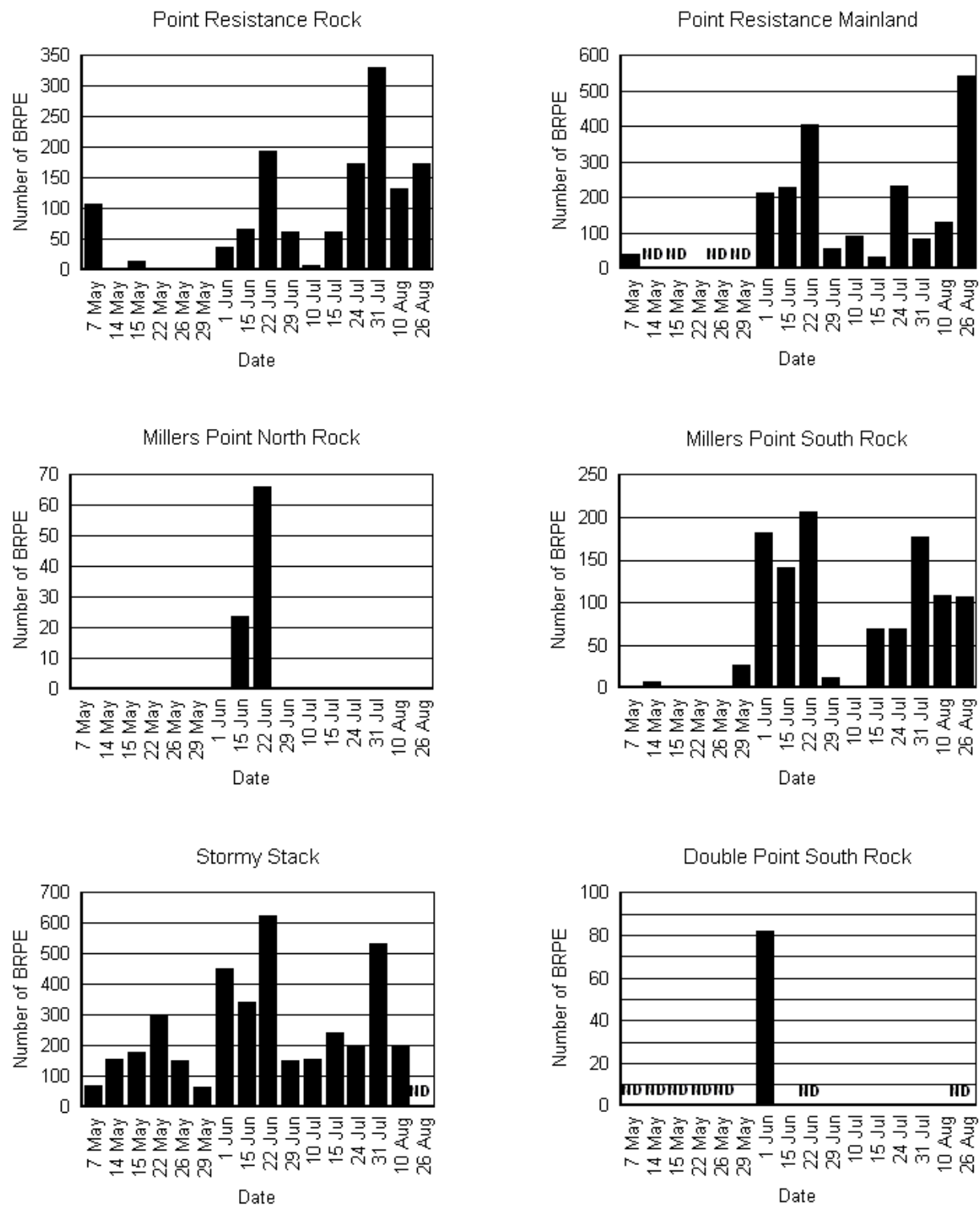
- Millers Point South Rock

*1998:* A mean of 260 murres (range = 105-453, n = 5 surveys) attended the subcolony during the census period. Numbers were lower than in 1997. Subareas attended were similar to 1997, except: a) Area E was used extensively in late June-July 1998 but not in 1997; and b) Area F was not used in 1998 but had been attended sporadically in 1997 (Appendix B-7). Murres were present on every survey from 7 May through 31 July, but few if any eggs were laid and no chicks fledged (Figure 5-2). Following high early attendance on 7 May, only 25-26 murres were present on 14-15 May. Attendance was higher but erratic in late May and early June, with nearly all murres standing and egg laying unlikely. From 15 June through 24 July, murres consistently attended Area E, among seven cormorant nests. It is unlikely that murres laid eggs here due to new use of this subarea and late timing of attendance, but eggs may have been laid and abandoned as noted at some newly-attended areas at Point Reyes (M. Parker, unpublished data). In 1998, cormorants built a minimum of 18 nests in

**Figure 5-4.** Numbers of Brandt's Cormorant nests at three subcolonies within the Drake's Bay Colony Complex in May-August 1998. ND = no data.



**Figure 5-5.** Numbers of Brown Pelicans at six subcolonies within the Drake's Bay Colony Complex in May-August 1998.  
ND = no data.



two areas and at least six nests produced chicks (Figure 5-4). Pelicans were most abundant in June, but numbers dropped off in late June and pelicans were absent on 10 July (Figure 5-5). Afterwards, moderate numbers were present through August. Pelicans roosted on top of the rock and few were seen in late July on the east shelf, where murre attendance was most consistent. Western Gulls attended five nests in incubating postures, but only one nest with one chick was seen in mid July. Pigeon Guillemots were seen on the rock on 1 June and 24 July.

*1999:* On 3 June, 620 murres were counted. Numbers were lower than 1997 and higher than the 1998 mean. Subareas used were similar to 1997-1998, except: a) Area D was empty, perhaps because cormorants did not nest in this area in 1999; and b) Area F was attended (Appendix B-7). Slightly higher attendance occurred on 3 June than on 28 June. One murre chick was noted on 28 June. Cormorants nested ( $n = 23$  nests on 3 June). Two roosting pelicans were noted on 3 June.

*2000:* A mean of 588 murres (range = 373–710,  $n = 5$  surveys) attended the subcolony during the census period. Numbers were lower than 1997, higher than the 1998 mean and similar to 1999. Subareas used were similar to 1997-1999, except: a) murres inconsistently attended Area D among nesting cormorants as in 1997-1998, but not 1999; and b) Area E was not used as in 1997, unlike 1998-1999 (Appendix B-7). Seven Pelagic Cormorant and four Western Gull nests were noted. Two Black Oystercatchers were seen at a probable nest site.

- Stormy Stack

*1998:* A mean of 3,415 murres (range = 2,071–5,237,  $n = 5$  surveys) attended the subcolony during the census period. Mean total numbers were lower than in 1997 (Appendix B-9). The four highest counts (range = 4,637–5,237 murres) were similar to 1997, but only one of these counts occurred within the census period (i.e., 5,237 on 1 June). Subareas used were similar to 1997. Moderate numbers of murres exhibited regular attendance from 7 May through 10 August, indicative of an extended breeding effort (Figure 5-2). Large “fledgling-sized” murre chicks were seen in late July and early August, although overall production of fledglings was low. As at other subcolonies, high early attendance occurred on 7 May, before egg laying had begun. Attendance dropped after 24 July, with only 682 murres present on 10 August. One chick was seen on 24 July and 13 chicks were counted on both 31 July and 10 August. Based on the 32-day average incubation period and 24-day average colony chick-rearing period (Boekelheide et al. 1990), egg-laying dates for large non-brooded chicks were back-calculated to early and mid June. This subcolony had the largest numbers of murres at the DBCC, and contributed extensively to overall DBCC attendance patterns in 1998 (Figure 5-3).

To better assess our ability to discern large murre chicks at Stormy Stack in aerial photographs, we conducted aerial photographic surveys of three specific subcolonies at the Point Reyes Colony Complex on 31 July for comparison to ground counts: 1) at Boulder Rock, 1,334 murres and 3 large chicks were counted from an aerial photograph (13:20-13:36 h) versus 14 chicks (i.e., chick ages were not known) from a simultaneous mainland count; 2) at Flattop, 893 murres and 3 large chicks were counted from an aerial photograph (13:20-



13:36 h) versus 14 chicks (i.e., two chicks were 7-12 days old and 12 chicks were 13+ days old) from a mainland count later in the day (18:40-20:20 h); and 3) at Middle Rock, 551 murres and one chick were counted from an aerial photograph (13:20-13:36 h) versus 3 chicks (i.e., one was 7-12 days old and two chicks were 13+ days old) from a mainland count later in the day (18:40-20:20 h). While numbers of large chicks noted in aerial photographs were lower than mainland counts, large chicks at least were noted at all three subcolonies.

To better assess our inability to discern small to medium chicks being brooded or closely attended by adults, we also conducted an aerial photographic survey at Devil's Slide Rock on 24 July to compare to ground counts (M. Parker, unpublished data). A total of 73 murres and no large chicks were counted in an aerial photograph (12:50 h). In fact, three chicks were present but were being brooded by adults and could not be seen in the aerial photograph, despite their known locations. Minimum chick ages were 10, 12 and 17 days (M. Parker, unpublished data).

A minimum of 49 cormorant nests were built, with chicks observed in a minimum of 22 nests (Figure 5-4). Nest building had begun by 7 May, peaked in late May, and chicks were first seen on 22 June. Large cormorant roosts also were seen. Roosting pelicans were present on all surveys, with peaks on 22 June and 31 July (Figure 5-5). Pelicans roosted along the periphery of the rock, outside murre areas. Western Gulls attended three nests in incubating postures, but no chicks were seen. Heermann's Gulls were first seen on 15 June, with a high count of 60 birds on 10 August. No nesting seabirds or murres were noted on the small low-lying roost rock, located just north of Stormy Stack. Over 100 roosting pelicans were counted on the roost rock on two different surveys. California Sea Lions were hauled out during all surveys from May through July 1998, with about 20-40 sea lions on the edges of Areas A and B. The high count (>60) occurred on 1 June. On 29 May, about 37 sea lions were noted hauled out in the middle of Area A, which corresponded with low attendance by murres in Area A and on Stormy Stack overall on this date (Figure 5-2).

*1999:* On 3 June, 5,163 murres were counted. Total numbers were similar to 1997 but greater than 1998. The same subareas were attended as in 1997-1998, but numbers in Area C increased in 1999, after the late-season influx in 1998 (Appendix B-9). Higher numbers of murres attended on 28 June than on 3 June. Seven murre chicks were noted on 28 June. Cormorants nested in similar numbers as 1998 ( $n = 59$  nests on 3 June). Large numbers of roosting pelicans were noted. Six Western Gull nests were seen. One Black Oystercatcher was noted on 28 June.

*2000:* A mean of 5,307 murres (range = 4,412–6,021,  $n = 5$  surveys) attended the subcolony during the census period. Numbers were similar to 1997 and 1999, but greater than 1998. The same subareas were used as in 1999, with continued increase in numbers in Area C (Appendix B-9). Murre numbers and areas attended were similar on all five surveys and were similar to 1999. Cormorants nested in similar numbers to 1998-1999 ( $n = 50$  nests on 7 and 9 June) and large numbers roosted on 6 and 9 June. Small numbers of pelicans were present on all surveys, with a high count on 6 June. Twelve Western Gull nests and one Black Oystercatcher were seen. Small numbers of pelicans and cormorants roosted on the north roost rock. One possible Western Gull nest also was noted on the roost rock.

- Double Point South Rock

*1998:* No murre attendance was noted during five surveys in the census period. Small numbers of murres (range = 4–88 birds) attended this rock sporadically from late June through July, standing among roosting cormorants (Figure 5-2). Pelicans and Heermann's Gulls also roosted here, although no pelicans were present when murres were noted.

*1999:* No photographs were taken and no notes recorded. It is likely that no murres were present on the single survey during the census period.

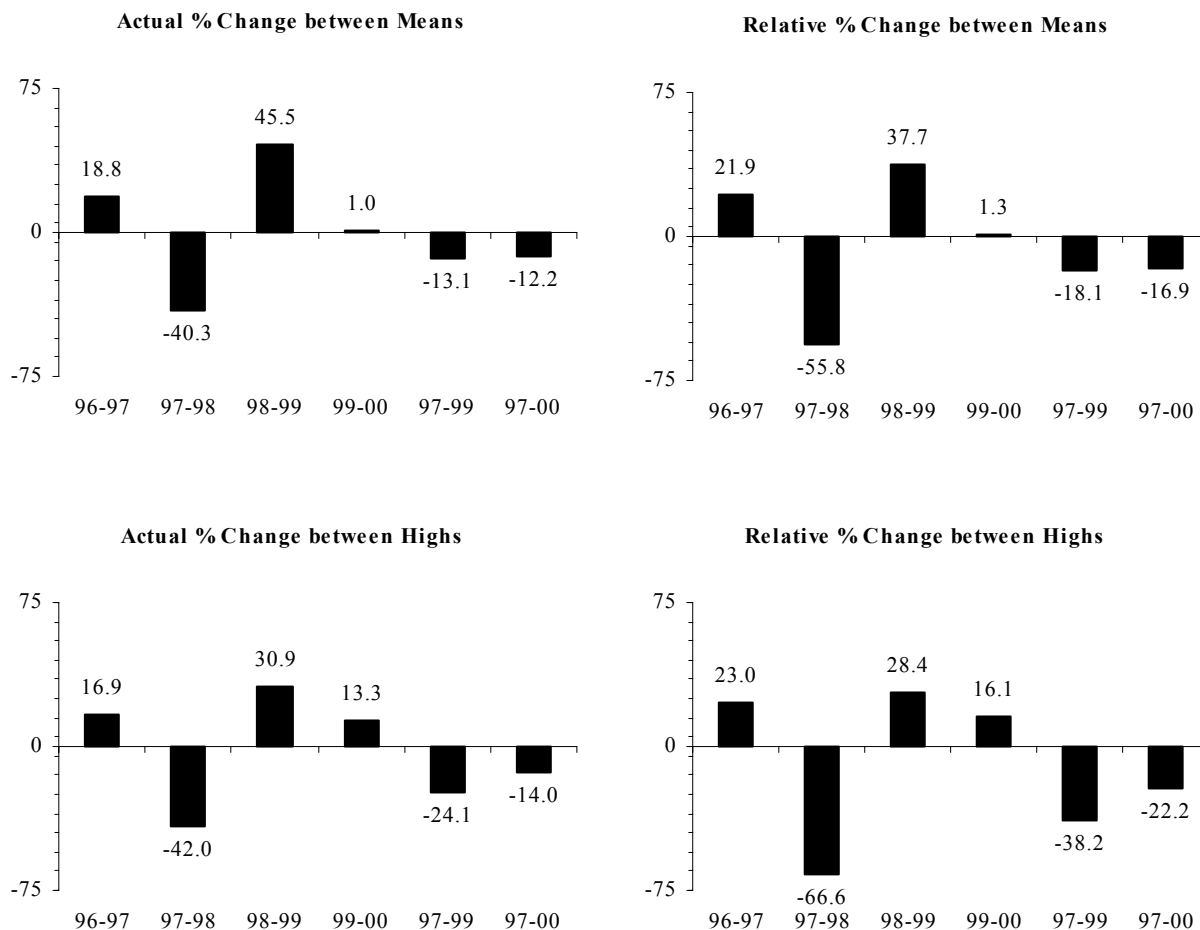
*2000:* One murre was present among 30 roosting cormorants on 9 June. This bird was not noted during surveys but was visible in the aerial photograph upon later inspection. None were seen on four other surveys during the census period.

*Whole-Complex Changes in Population Size, 1997-2000*

In 1998, whole-complex counts for the DBCC averaged 6,480 birds, 40% or 56% lower than the 1997 mean using actual or relative percent change calculations, respectively (Figure 5-6). The 1998 high count (7,206) was 42% or 67% lower than the 1997 high count. In 1999, 9,430 birds were recorded on the single available survey, 13% lower than the 1997 mean and 24% lower than the 1997 high count. The 1999 single value was 46% or 38% higher than the 1998 mean value and 31% or 28% higher than the 1998 high count, using actual or relative percent change calculations respectively (Figure 5-6). Differences in the degree of change (i.e., +38-46% versus +28-31%) also illustrated that comparing the 1999 value with the 1998 mean could misrepresent true change due to reduced and variable attendance in 1998. Use of actual percent change between sequential annual means gave the false impression of dramatic decline in 1998, followed by rapid and complete recovery in 1999. Instead, lower mean numbers in 1998 most likely reflected lower average numbers of surviving murres attending the colony in 1998, compared with 1999. In other words, some murres or "absentees" apparently stayed away from colonies during the census period in 1998 but would have attended colonies under usual conditions.

In 2000, counts averaged 9,528 birds (range = 8,023–10,688; n = 5 surveys), 12% lower than the 1997 mean. The 2000 high count was 14% lower than in 1997 (Figure 5-6). The best sense of the sequence of events of population change from 1997 to 2000 can be gained by considering relative mean changes which showed a 56% decline between 1997 and 1998, a 38% increase between 1998 and 1999, and a 1% increase from 1999 to 2000 (Figure 5-6). Overall, a 17% relative decline occurred from 1997 to 2000, with decline occurring primarily between 1997 and 1998. This relative degree of decline was lower than actual change (42%) noted between high counts in 1997 and 1998. Partial absenteeism of surviving murres in 1998 accounted for a portion of the lower 1998 numbers compared to 1999-2000, but murres missing between 1997 and 1998 and little or no growth after 1998 accounted for most of the remainder.

**Figure 5-6.** Percent changes in numbers of Common Murres at the Drake's Bay Colony Complex, 1996-2000. Actual and relative percent changes were determined between mean counts and high counts (see text).

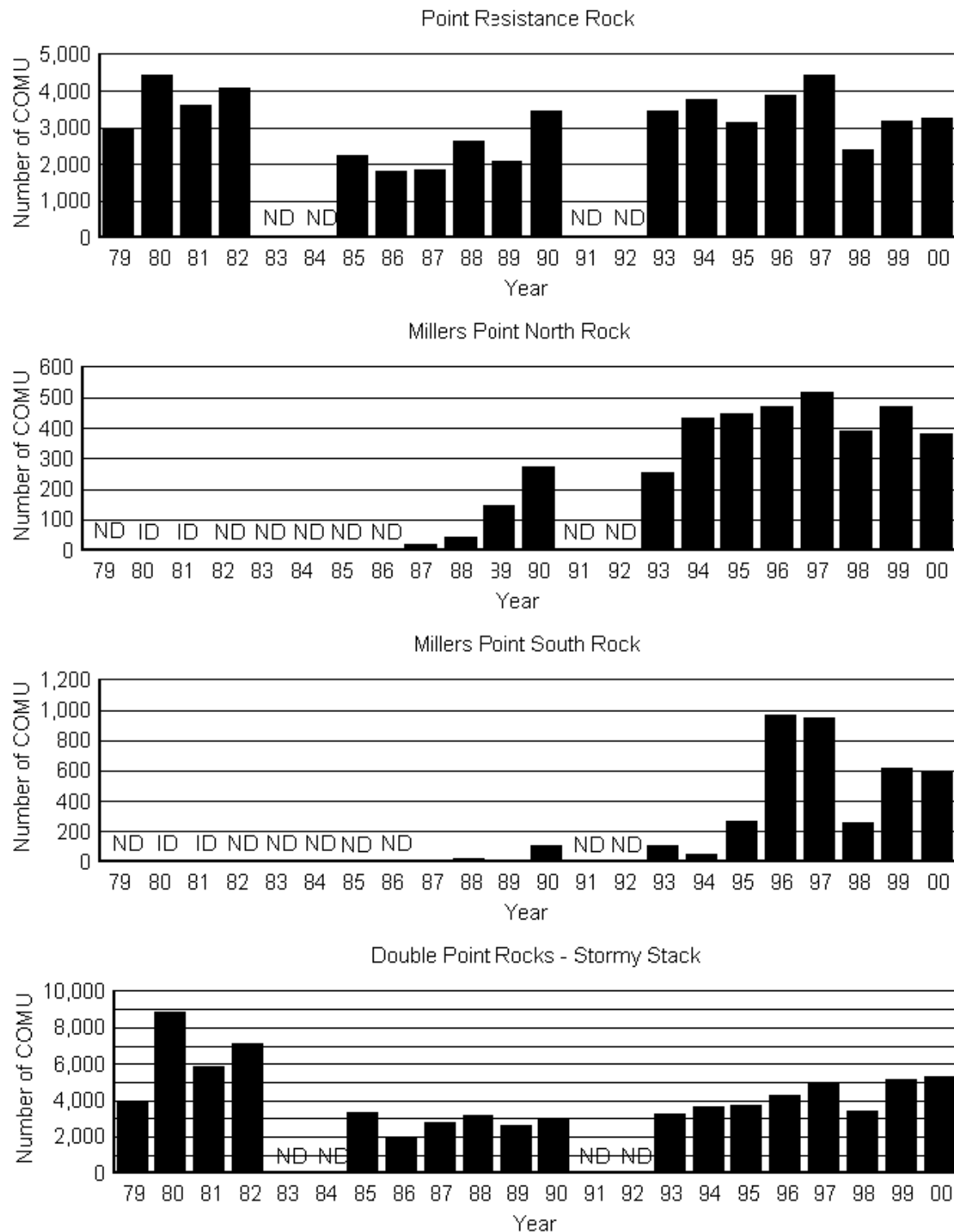


## Discussion

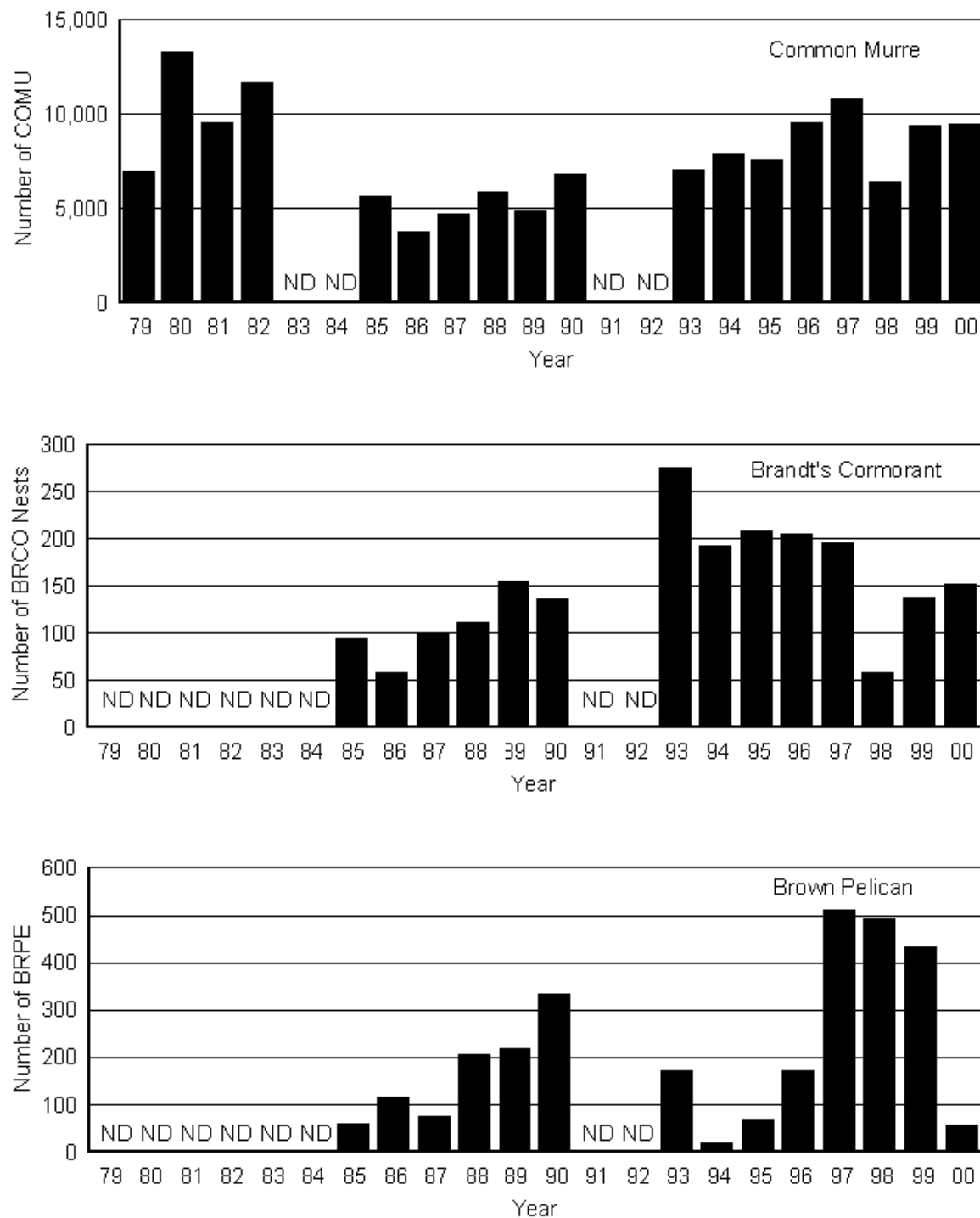
### *Population Condition Prior to the PRTI*

In 1979-1982, the DBCC averaged 10,291 birds, but annual counts ranged widely between 7,015 and 13,353 birds (Figures 5-7, 5-8). Such wide variation in counts likely reflected either inconsistent counting methods and survey dates or colony impacts from anthropogenic factors (Takekawa et al. 1990; McChesney et al. 1998, 1999; Carter et al. 2001). Most other colony complexes in central California either showed little change during this period or increased, although the Castle-Hurricane complex declined likely due to gill-net mortality (Boekelheide et al. 1990; McChesney et al. 1998, 1999; Carter et al. 2001). In 1983-1984, no aerial surveys were conducted but ground monitoring at the South Farallon Islands indicated a dramatic reduction in murre numbers that also likely occurred at the DBCC. Given this timing of decline, differences between numbers in the 1979-1982 period may have indicated that: a) the population was larger in 1978 than in 1979, was undergoing impacts between 1979-1982, and collapsed in 1983-1984; or b) that the population was growing rapidly in 1978-1980, underwent impacts that were visible as a decline by 1981-1982, and collapsed in 1983-1984.

**Figure 5-7.** Colony counts of Common Murres within the Drake's Bay Colony Complex, 1979-2000. Prior to 1996, single counts are presented, whereas from 1996-2000, means of counts during the 22 May-15 June period are presented. ND = no data; ID = incomplete data.



**Figure 5-8.** Annual whole-complex counts of Common Murres, Brandt's Cormorants and Brown Pelicans at the Drake's Bay Colony Complex, 1979-2000. Prior to 1996, only single counts are presented, whereas from 1996-2000, means of counts from the 22 May-15 June period are presented. ND = no data.

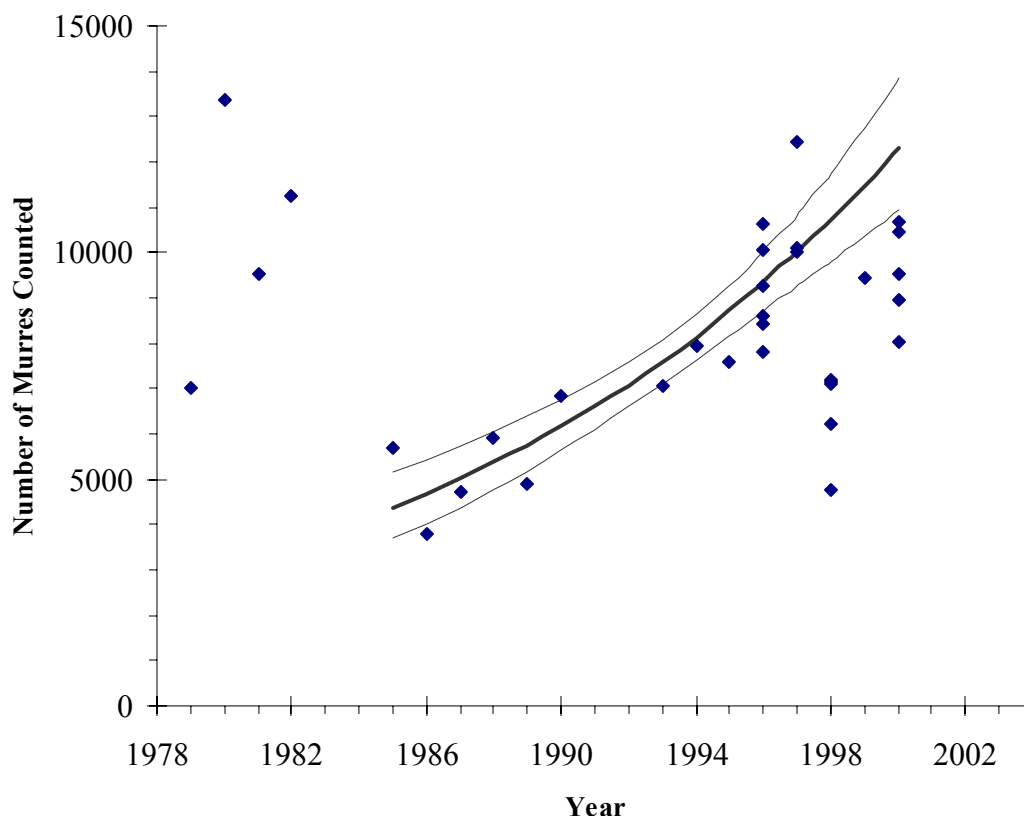


By 1985-1986, much lower numbers were evident at the DBCC. In 1986, only 3,810 birds were counted, 63% lower than the 1979-1982 mean and 71% below the 1980 high count (13,353). This massive decline coincided with similar declines at other colonies in central California, due mainly to mortality from gill-net fishing and oil spills in 1979-1986. Between 70,000-75,000 murre were killed in gill nets in central California in 1979-1987 (before gill-net fishing was drastically reduced in 1987), and 8,000-12,000 murre were killed in the 1984 *Puerto Rican* and 1986 *Apex Houston* oil spills (Ford 1985; PRBO 1985; Ford et al. 1987; Page et al. 1990; Takekawa et al. 1990; Wild 1990; Shuford 1993; Siskin et al. 1993; Carter et al. 1995a, 2001, in press). Highest levels of gill-net mortality occurred in 1983 when about 30,000 birds were killed in gill nets and at least 500 murre were oiled during a poorly-documented oil spill off Marin County (Takekawa et al. 1990, Wild 1990, Carter 1997). Erosion of a small section of Stormy Stack between 1982-1985 resulted in a small loss of breeding habitat, but likely did not affect murre numbers (Takekawa et al. 1990).

DBCC murre numbers stopped declining but remained relatively low from 1987-1990, partly due to low recruitment related to mortality of subadults in 1979-1987 and low productivity in 1983-1984 related to the 1982-1983 El Niño event (Ainley and Boekelheide 1990, Takekawa et al. 1990). However, population increase from 1993-1997 (11.7% per annum [95% CI range 5.3–18.4]) was clearly evident at the DBCC. Increase during this period also was noted at other colony complexes (Carter et al. 1996, 2001; Sydeman et al. 1997; McChesney et al. 1998, 1999). Overall, DBCC increased at a rate of 7.2% per annum (95% CI range 5.4–9.0) from 1985 to 1997 (Figure 5-9).

The end of population decline and beginning of recovery probably occurred in response mainly to reduced anthropogenic impacts in central California from 1987-1997, although an increase in nesting cormorants also may have facilitated murre increase at the DBCC (Figure 5-8). Regardless of this increase, significant mortality events still occurred in central California between 1990-1997: 1) a poorly documented oil spill in February 1990 resulted in at least 600 and perhaps several thousands of oiled murre; 2) tarball events in December 1992-April 1993 resulted in at least hundreds of oiled murre; 3) natural die offs in 1995 and 1997-1998 from red tide or domoic acid events resulted in deaths of at least several hundreds of murre; 4) mortality during the January 1996 *Cape Mohican* oil spill killed at least hundreds of murre; 5) gill-net fishing in Monterey Bay and farther south killed 7,964 murre in 1990-1994 and 5,918-13,060 murre in 1995-1998; and 6) chronic oil pollution (including the above events and others) was estimated to add mortality of 1.7% for adults and 7.7% for juveniles beyond natural mortality (Carter 1996, 1997, in press; Nur et al. 1997; Roletto et al. 1998, 1999, 2000; Julian and Beeson 1998; Forney et al. 2001; G. Ford, personal communication; P. Kelly, personal communication; J. Roletto, personal communication). In addition, a small section of breeding habitat at Millers Point North Rock was lost through erosion between 1995 and 1996. Many of these impacts occurred in the southern Gulf of the Farallones or Monterey Bay and it is unclear to what extent, if any, murre from DBCC colonies occur in these areas during fall or winter. Winter attendance at the Point Reyes colony complex (and possibly the DBCC) occurs extensively from December to April, and as early as October, with murre foraging closer to these colonies at this time (Carter et al. 2001; M. Parker, unpublished data). During the 1987-1997 period, numbers of murre at DBCC and Point Reyes colony complexes increased

**Figure 5-9.** Trends in whole-colony counts for the Drake's Bay Colony Complex in Central California, 1979-2000. The Poisson regression line for 1985-1997 (extrapolated to 2000) is indicated with a solid line with 95% confidence bands.



(McChesney et al. 1998, Carter et al. 2001), suggesting relatively low long-term impacts from these mortality events.

In 1997, whole-complex counts in the census period averaged 10,850 birds (range = 10,036-12,426;  $n = 3$  counts), similar to the 1979-1982 mean and indicating substantial recovery from decline. However, the population appeared to be growing steadily in 1993-1997, whereas numbers varied substantially between 1979-1982 and may have been affected by anthropogenic factors. Thus, the 1980 peak value (13,353 birds) could be a less biased estimate for baseline population size at the DBCC prior to potential impacts in the early 1980s. The 1997 mean and high count were 19% and 7% below this value, respectively.

#### *Effects of PRTI Mortality*

Mortality from the PRTI would be expected to have seriously impacted the DBCC, if murres from this complex were killed in sufficient numbers to reduce population size, reduce reproductive output, and/or reduce future population growth. A total of 9,094 murres were estimated to have been killed by the PRTI mainly in the Gulf of the Farallones area (Himes Boor et al. 2003) and probably were comprised of birds from five local murre colony complexes that

contain over 95% of the overall murre breeding population in central California (Carter et al. 1992, 2001; Manuwal and Carter 2001). Only one banded murre from the South Farallon Islands (green color band over metal band #M00530 on left leg; green color band over blue color band on right leg) was recovered and died on 7 February 1998 (Appendix C; Bird No. 1312). Reduced population size and cessation of population growth at DBCC after the PRTI indicated potential serious population level effects at this colony complex. Similar population changes were not noted after the PRTI at the Point Reyes, South Farallon, North Farallon, and Devil's Slide colony complexes where murre numbers increased from 1997-2000 (Parker et al. 2001; M. Parker, unpublished data). Detection of possible PRTI effects on breeding success at the DBCC and other colony complexes in 1998 was not possible due to the co-occurring effects of severe El Niño conditions. Breeding success at other complexes returned to normal in 1999-2000 (Parker et al. 2000, 2001; W. Sydeman, personal communication) and we suspect that breeding success also returned to normal at the DBCC in 1999-2000. While PRTI impacts also likely occurred at other colony complexes, they were not easily discernible from examining changes in numbers with aerial photographic surveys or monitoring plots of breeding sites.

While murres from all five colony complexes in the Gulf of the Farallones probably were killed by the PRTI, not all murres from these complexes would be expected to occur in the vicinity of the PRTI between November 1997 and January 1998. Substantial numbers of murres from these colonies are known to move into Monterey Bay in late summer and fall, and low to moderate at-sea densities of murres occur in the Gulf of the Farallones, north and west of Point Reyes, and Monterey Bay in fall and winter (Ford 1985, PRBO 1985, Ainley and Boekelheide 1990, Croll 1990, Page et al. 1990, Briggs et al. 1983a, Allen 1994, Ainley et al. 1996, Manuwal and Carter 2001). Age classes or sexes of murres were not differentially killed out of proportion to their expected occurrence in the total population, suggesting that winter dispersal did not differ extensively between ages and sexes (Nevins and Carter, in press). However, murres from the DBCC and Point Reyes colony complex may forage more extensively in waters near and north of Point Reyes during the breeding and non-breeding seasons, especially in warm water years (Ainley et al. 1990, Shuford 1993, Manuwal and Carter 2001). Ocean warming began to occur in late summer 1997 and extended through 1998 (Lynn et al. 1998) which may have affected foraging areas for DBCC murres prior to and during the PRTI event. Many murres from the larger offshore colonies (i.e., North and South Farallon colony complexes) appear to move to coastal areas in the Gulf of the Farallones and Monterey Bay in late summer and fall (Manuwal and Carter 2001). Higher use of foraging areas in the northern Gulf of the Farallones area by DBCC birds in late fall and winter 1997-1998 could have led to higher relative impacts from PRTI mortality at this colony complex but we were not able to establish such use of different foraging areas with available information.

In the absence of additional information to better evaluate possible differential mortality between colonies within the population, we assumed that PRTI mortality was spread among the four largest colony complexes in the northern Gulf of the Farallones in proportion to their respective population sizes. To roughly determine these proportions, we used available data before the PRTI from 1993-1995 (Carter et al. 2001) to calculate relative proportions attending the South Farallon complex (46%), North Farallon complex (26%), Point Reyes complex (19%), and DBCC (9%). Applying these proportions to the estimated 9,094 murres killed, about 4,200, 2,400, 1,700, and 800 murres may have originated from the South Farallon, North Farallon, Point



Reyes, and DBCC colony complexes, respectively. Given the rough nature of these estimates, the small relative proportion estimated for the DBCC, and possible greater mortality of DBCC birds, we considered that mortality of DBCC murres could have been 50% less or 100% more than 800 murres (i.e., 400-1,600) for the purposes of further consideration of potential impacts.

The rough estimated range of mortality of 400-1,600 murres at the DBCC corresponded to about 1.3-8.0% (midpoint 4.7%) of an estimated range of the total DBCC population size (20,100-30,900 murres) in 1997. To obtain a maximal estimate of 30,900 DBCC murres in 1997, we added: a) 18,120 breeding adults (10,850 mean 1997 whole-complex count  $\times$  1.67  $k$  average correction factor determined at the South Farallon Islands; Takekawa et al. 1990, Sydeman et al. 1997, Carter et al. 2001); b) 6,704 juveniles (0.74 chicks fledged/breeding pair in 1997 at the Point Reyes complex [Parker et al. 1998] with no subsequent mortality [9,060 breeding pairs in 1997  $\times$  0.74 = 6,704]); and c) 6,040 subadults (subadults may comprise about 25% of the non-juvenile population based on population modeling [Swartzman and Carter 1991; 18,120/0.75 - 18,120 = 6,040]. To obtain a minimal estimate of 20,100 murres in 1997, we added: a) 18,120 breeding adults; b) no juveniles (if 100% mortality occurred before the PRTI occurred); and c) 2,013 subadults (if subadults comprised only 10% of the non-juvenile population; 18,120/0.9 - 18,120 = 2,013).

The stalling of DBCC population growth after 1997 indicated that the loss of murres from PRTI mortality had additional long-term effects beyond a short-term reduction in population size. If the DBCC population had continued to follow the regression line (1985-1997 rate of 7.2% per annum), the projected 2000 value (12,769) would have equalled or exceeded the 1997 high count (12,426) and come within 5% of the 1980 peak value (13,353). By subtracting the 1998 high count (7,206) from the 1997 high count (12,426), we derived 5,220 missing murres. By taking the projected 2000 DBCC count (12,769) and subtracting the mean 2000 count (9,528), we derived a total of 3,241 missing murres. Similarly, subtracting the 1999 count (9,430) resulted in 3,339 missing murres. Thus, murres missing by 1999-2000 could be accounted for entirely by those missing between 1997 and 1998. If so, relatively large impacts from PRTI mortality could have exceeded the range of 400-1,600 murres killed.

These approaches of considering the potential effects of PRTI mortality on DBCC population size after 1997 did not account for additional impacts to future population size and growth (i.e., lost future reproduction; reduced reproductive success; and cumulative effects with other factors). Specific modeling of PRTI impacts on the DBCC population could attempt to better integrate some additional effects on this population and project recovery time, but such modeling is limited by available information on PRTI impacts, murre demography, and other potential impacts.

#### *Effects of the 1998 El Niño*

Severe El Niño conditions preceding and during the breeding season in 1998 (Lynn et al. 1998, Hayward et al. 1999) were expected to affect the availability and distribution of prey resources for murres, based on available information on diet, foraging patterns, and at-sea distribution (Ainley et al. 1990, 1996; Boekelheide et al. 1990; Croll 1990). During severe El Niños, adults attend colonies to a lower and more variable extent due to a combination of lower breeding effort, delayed breeding, and high levels of abandonment of active breeding sites (Ainley et al.

1988, Boekelheide et al. 1990, Takekawa et al. 1990, Harris and Wanless 1995, Sydeman et al. 1997). Fewer subadults likely attend colonies or recruit into the breeding population under poor conditions (Halley et al. 1995). Impacts to other breeding seabird species, predators, and marine mammals also can impact murres during El Niños (Spear 1993). Chick and juvenile survival after departing from the colony is often low due to poor feeding conditions or inclement weather (Bayer et al. 1991, Manuwal and Carter 2001). El Niño effects on colony attendance and breeding success of murres were not expected to extend into the breeding seasons after El Niño, when more usual attendance patterns and breeding success of murres and other species typically resume. El Niño effects should not alone result in movements of murres within or between colonies, due to high colony and site fidelity (Harris et al. 1996a,b).

In 1998, relatively high murre attendance occurred at all four DBCC subcolonies in early May, prior to egg laying (Figures 5-2, 5-3). Variable attendance followed during the census period. Almost complete abandonment occurred before possible hatching at Point Resistance Rock and Millers Point North Rock, with sporadic subsequent attendance in July. Variable attendance continued at Millers Point South Rock until late July but no large chicks (indicative of hatching and possible fledging) were noted. The lack of observed chicks, associated with reduced and variable attendance, strongly suggested a complete lack of productivity at these three subcolonies in 1998. Consistent attendance occurred only at Stormy Stack, where some large chicks were observed in August, indicative of delayed breeding and some late fledging. Other nearshore and offshore colony complexes in central California also experienced low productivity in 1998 (Parker et al. 1999; W. Sydeman, personal communication). Without baseline data on numbers of large chicks in late-season aerial photographs in other years, we could not determine to what degree productivity was reduced at Stormy Stack in 1998. However, 46 chicks were seen at all four DBCC subcolonies on 28 June 1999, 3-4 times greater than the maximum observed in 1998. Low productivity at DBCC in 1998 will lead to low future recruitment of the 1998 year class mainly in 2001-2004. However, given low survival to breeding age in murres, low future recruitment of one year class may not greatly affect future numbers of murres attending the DBCC.

Elevated El Niño-related mortality of adults could not be demonstrated with available data during the winter of 1997-1998. Himes Boor et al. (2003) estimated that 2,949 murres died from background mortality (including natural and anthropogenic mortality) during the PRTI period. Roletto et al. (1998, 1999) reported elevated encounter rates of beached murres in central California between September 1997 and September 1998 but ages of dead birds were not examined and non-visibly oiled birds during the PRTI event also may have been killed by oil (Hampton et al. 2003b, Himes Boor et al. 2003). While juvenile murres can exhibit higher mortality rates during fall-winter or during El Niño conditions (Stenzel et al. 1988, Bayer et al. 1991), older murres have not been previously shown to have higher mortality rates during severe El Niño conditions. Age-class proportions of PRTI carcasses examined were consistent with expected proportions in the population, suggesting low winter dispersal that did not differ between age classes (Nevins and Carter, in press).

Little change in breeding areas used in 1997-2000 were evident within colonies at the DBCC, except at Millers Point South Rock. In July 1998, murres appeared to shift from the top of the rock to the lower east shelf (Area E; see Appendix B-6). This shift may have been affected by

disturbance from large numbers of roosting pelicans or attraction to another small group of cormorant nests in Area E. Pelicans roosted on top of the rock when their numbers surged in mid June. Cormorants did not nest in Area E in 1999 or 2000 and only eight murres were seen there in 1999 and none in 2000. Some murres attending Area E in July also might have moved from other nearby colonies that had been abandoned or were disturbed. Murres also attended Point Resistance Mainland and Double Point South Rock in June and July 1998. Point Resistance Mainland was used historically as a breeding area in 1935-1936, although the degree of past breeding has not well established (Grinnell and Miller 1944, Carter et al. 2001). Breeding has not been previously documented at Double Point South Rock, although birds did attend this rock on 20 June 1995 (Carter et al. 2000). Attendance of these locations in late-season 1998 may represent movements related to abandonment of subcolonies, disturbance by pelicans, and attraction to cormorants. At Double Point South Rock in 1995, 1998 and 2000, attending murres occurred within groups of roosting cormorants. Most past surveys occurred during the census period and could not detect late-season use of these locations.

Increased murre attendance in Area C at Stormy Stack in July 1998 may have reflected: 1) movements of murres from other parts of Stormy Stack, due to sea lion or other disturbances; or 2) movements of some adults and/or subadults from other abandoned subcolonies. Murres had largely abandoned all other subcolonies by early July, and might have been attracted to Stormy Stack by continued murre attendance and breeding. Numbers at Stormy Stack in 1998 were similar on several dates between early May and late July, suggesting that heightened use of Area C might not involve birds from other subcolonies. In any case, mean numbers of murres attending Area C and Stormy Stack overall increased substantially in 1999-2000 (1,576-1,795) compared to 1997-1998 mean numbers (605-752) (Appendix B-9), whereas mean numbers at other subcolonies declined (Figure 5-7). Late-season attendance in 1998 seemed linked to this subsequent increase. Due to high colony and site fidelity, permanent movements of adult and subadult murres from the three other subcolonies to Stormy Stack would not be expected, simply due to colony abandonment due to El Niño conditions in the previous year. However, in concert with mortality from the PRTI and other factors, such movements may have been favored by individual adults to breed or find new mates within higher breeding densities of surviving murres at Stormy Stack (Birkhead 1977, 1978). In the early 1980s, Stormy Stack also was attended by the largest numbers of murres and has the largest amount of suitable breeding habitat of all DBCC subcolonies. When numbers of murres declined to low levels in 1982-1988, murres nearly disappeared from Millers Point North and South rocks which have much less breeding habitat and lower murre numbers (Carter et al. 2001, in press). Shifting of birds between subcolonies also has been noted at the Castle-Hurricane colony complex and between colonies in Washington, in response to population declines (Parrish 1995, McChesney et al. 1999, Carter et al. 2001).

#### *Effects of Other Factors*

Brandt's Cormorants: Nesting cormorants may have assisted the extended breeding effort by murres at Stormy Stack in 1998. Although numbers of nesting cormorants at DBCC were much lower in 1998 than in 1993-1997 (Figure 5-8), most (70%; n = 70 nests) were at Stormy Stack (Figure 5-4) where several managed to hatch chicks (45%; n = 49 nests). Substantial murre attendance in early May was associated with nesting cormorants. Although many pelicans roosted at Stormy Stack, pelicans did not appear to roost in murre breeding areas, probably due

to greater availability of bare rock habitat and some deterrence by nesting cormorants. Except for 1998, numbers of nesting cormorants at the DBCC were higher in 1993-2000 than in 1985-1990 (Figure 5-8). In 1999-2000, numbers of nests were slightly lower than in 1993-1997, possibly due to heightened mortality and/or movements of cormorants to other colonies in response to severe El Niño conditions (Boekelheide and Ainley 1989, Carter et al. 1995b).

**Brown Pelicans:** Numbers of pelicans roosting at DBCC peaked in mid-June 1998 (Figures 5-3, 5-4), much earlier than peak counts in California in most other years (Briggs et al. 1983a,b; Jaques 1994; Carter et al. 2000). Early arrival of pelicans in April and May in central California from colony areas in Baja California, Mexico, and southern California often occurs in El Niño years following nest abandonment (Jaques et al. 1996). In 1998, extensive nest abandonment was noted (D. Anderson, personal communication) and early arrival explains the higher numbers found roosting at the DBCC during the murre breeding season in 1998, compared to 1985-1996 (Figure 5-8). At Point Resistance Rock and Millers Point North Rock, large numbers of mainly adults in mid June within murre breeding areas likely contributed to murre abandonment. Egg predation by Common Ravens also may have been enhanced by pelican disturbances in 1998, or ravens may have merely salvaged abandoned eggs (Spear 1993, Thayer et al. 1999). Numbers of roosting pelicans during the murre census period at the DBCC were much higher in 1997-1999 than in 1985-1996, and 2000 (Figure 5-8). In 1999, pelicans nested earlier than normal in Baja California, Mexico, partly in response to La Niña conditions (Schwing et al. 1997; Lynn et al. 1998; Hayward et al. 1999; D. Anderson, personal communication). We suspect that high numbers of roosting pelicans in 1997 and 1999 also reflected early northward dispersal but no apparent impacts to breeding murres were noted because pelicans roosted around the periphery of murre breeding areas. General inspection of 1997 and 1999 aerial photographs also indicated that mainly adults roosted at DBCC in these years. Adults typically form a higher percentage of pelicans seen in central and northern California, than in southern California (Briggs et al. 1983b, Capitolo et al. 2003).

**Sea Lions:** In 1998, California Sea Lions had little effect on DBCC murres, except for Area A at Stormy Stack. Given increasing sea lion populations in central California (Sydeman and Allen 1999), disturbances could increase at Stormy Stack and Point Resistance Rock but not at Millers Point North and South Rocks where steep sides prevent sea-lion access to murre breeding areas. High numbers of hauled-out sea lions caused murre colony disturbance at Point Reyes in 1998 and 2003 (M. Parker, unpublished data; S. Allen, unpublished data).

**Human Disturbance of Breeding Colonies:** No human disturbances were evident at the DBCC in 1998-2000, during aerial photographic surveys. Close approach of DBCC rocks by fishing boats has been noted mainly in June-July (M. Parker, unpublished data), and has resulted in flushing of murres from Stormy Stack (S. Allen, personal communication). Murres at Stormy Stack and Point Resistance Rock are susceptible to boat disturbances because nesting habitats occur low near the water. Millers Point North and South rocks are taller and steep-sided, possibly less susceptible to boat disturbances. All murre breeding areas at DBCC are vulnerable to disturbance from low-flying aircraft. Aircraft disturbance may have contributed to variable numbers of murres in 1979-1982, although few low-flying aircraft (<1,000 feet) have been noted in recent years at the Point Reyes colony complex (Carter et al. 2001; M. Parker, unpublished data).

Oil Pollution & Gill Nets: Significant mortality occurred during the September 1998 *Command* oil spill in the southern Gulf of the Farallones when an estimated 3,500 murres were killed (Ford 2002). Gill-net mortality resulted in the deaths of 5,200 murres between April 1999 and March 2000 in Monterey Bay and further south (K. Forney, personal communication). These mortalities occurred after the period when decline mainly occurred at the DBCC but may have contributed to the stalling of population growth in 1999-2000. However, it is unclear to what extent, if any, murres from DBCC colonies might move to these areas in fall and winter and be exposed to these mortality factors.



## Literature Cited

- Ainley, D.G., and R.J. Boekelheide, editors. 1990. Seabirds of the Farallon Islands: ecology, structure and dynamics of an upwelling-system community. Stanford University Press, Stanford, California.
- Ainley, D.G., H.R. Carter, D.W. Anderson, K.T. Briggs, M.C. Coulter, F. Cruz, J.B. Cruz, C.A. Valle, S.I. Fefer, S.A. Hatch, E.A. Schreiber, R.W. Schreiber, and N.G. Smith. 1988. Effects of the 1982-1983 El Niño-Southern Oscillation on Pacific Ocean bird populations. Proceedings of the XIX International Ornithological Congress (1986): 1747-1758.
- Ainley, D.G., L.B. Spear, S.G. Allen, and C.A. Ribic. 1996. Temporal and spatial patterns in the diet of the Common Murre in California waters. Condor 98: 691-705.
- Ainley, D.G., C.S. Strong, T.M. Penniman, and R.J. Boekelheide. 1990. The feeding ecology of Farallon seabirds. Pages 51-127 in D.G. Ainley and R.J. Boekelheide, editors. Seabirds of the Farallon Islands. Stanford University Press, Stanford, California.
- Allen, S.G. 1988. The movement and activity patterns of Harbor Seals in Drake's Estero, California. M.S. Thesis, University of California, Berkeley, California.
- Allen, S.G. 1994. The distribution and abundance of marine birds and mammals in the Gulf of the Farallones and adjacent waters, 1985-1992. Ph.D. Dissertation, University of California, Berkeley, California.
- Allen, S.G., S.C. Peaslee, and H.R. Huber. 1989. Colonization by Northern Elephant Seals of the Point Reyes Peninsula, California. Marine Mammal Science 5: 298-302.
- Anderson, D.W., F. Gress, and D.M. Fry. 1996. Survival and dispersal of oiled Brown Pelicans after rehabilitation and release. Marine Pollution Bulletin 32: 711-718.
- Bayer, R.D., R.W. Lowe, and R.E. Loeffel. 1991. Persistent summer mortalities of Common Murres along the Oregon central coast. Condor 93: 516-525.
- Birkhead, T.R. 1977. The effect of habitat and density on breeding success in the Common Guillemot (*Uria aalge*). Journal of Animal Ecology 46: 751-764.
- Birkhead, T.R. 1978. Behavioral adaptations to high density nesting in the Common Guillemot *Uria aalge*. Animal Behaviour 26: 321-331.
- Boekelheide, R.J., and D.G. Ainley. 1989. Age, resource availability, and breeding effort in Brandt's Cormorant. Auk 106: 389-401.
- Boekelheide, R.J., D.G. Ainley, S.H. Morrell, H.R. Huber, and T. J. Lewis. 1990. Common Murre. Pages 245-275 in D.G. Ainley and R.J. Boekelheide, editors. Seabirds of the

- Farallon Islands. Stanford University Press, Stanford, California.
- Briggs, K.T., W.B. Tyler, D.B. Lewis, and K.F. Dettman. 1983a. Seabirds of central and northern California, 1980-1983: status, abundance and distribution. Unpublished report, University of California, Center for Marine Studies, Santa Cruz, California.
- Briggs, K.T., W.B. Tyler, D.B. Lewis, P.R. Kelly, and D.A. Croll. 1983b. Brown Pelicans in central and northern California. *Journal of Field Ornithology* 54: 353–373.
- Burger, A.E., and D.M. Fry. 1993. Effects of oil pollution on seabirds in the northeast Pacific. Pages 254–263 in K. Vermeer, K.T. Briggs, K.H. Morgan, and D. Siegel-Causey, editors. The status, ecology, and conservation of marine birds of the north Pacific. Canadian Wildlife Service Special Publication, Ottawa, Ontario.
- Capitolo, P.J., R.J. Young, H.R. Carter, W.R. McIver, and T.W. Keeney. 2003. Roosting patterns of Brown Pelicans at Mugu Lagoon, California, and other nearby roosts in 2002. Unpublished report, Humboldt State University, Department of Wildlife, Arcata, California; and Naval Base Ventura County, Natural Resources Management Office, Point Mugu, California.
- Carter, H.R. 1996. Central California seabird die-off: numbers of dead birds on sample beaches between Sonoma and San Mateo counties on 12-19 July 1995. Unpublished report, National Biological Service, California Science Center, Dixon, California.
- Carter, H.R. 1997. Oiled seabird rescue at the J.V. Fitzgerald Marine Reserve, San Mateo County, California, 1968-95. *Journal of Wildlife Rehabilitation* 20: 3–6, 13–14.
- Carter, H.R. In Press. Oiled seabirds in California: an overview. *Marine Ornithology*.
- Carter, H.R., P.J. Capitolo, G.J. McChesney, W.R. McIver, and J.E. Takekawa. 2000. Population monitoring of seabirds in California: colony and subcolony databases for 1985-1995 surveys of breeding colonies of Common Murres, Brandt's Cormorants, and Double-crested Cormorants between Point Arena and Point Conception. Unpublished report, U.S. Geological Survey, Western Ecological Research Center, Dixon, California; Humboldt State University, Department of Wildlife, Arcata, California; and U.S. Fish and Wildlife Service, San Francisco Bay National Wildlife Refuge Complex, Newark, California.
- Carter, H.R., P.J. Capitolo, M.W. Parker, R.T. Golightly and J.L. Yee. 2003. Population impacts to Common Murres at the Drake's Bay colony complex, California. Pages 43-68 in H.R. Carter and R.T. Golightly, editors. Seabird injuries from the 1997-1998 Point Reyes Tarball Incidents. Unpublished report, Humboldt State University, Department of Wildlife, Arcata, California.
- Carter, H.R., D.S. Gilmer, J.E. Takekawa, R.W. Lowe, and U.W. Wilson. 1995a. Breeding seabirds in California, Oregon, and Washington. Pages 43–49 in E.T. La Roe, G.S.



- Farris, C.E. Pickett, P.D. Doran, and M.J. Mac, editors. Our living resources: a report to the nation on the distribution, abundance, and health of U.S. plants, animals and ecosystems. National Biological Service, Washington, D.C.
- Carter, H.R., V.A. Lee, G.W. Page, M.W. Parker, R.G. Ford, G. Swartzman, S.W. Kress, B.R. Siskin, S.W. Singer, and D.M. Fry. In Press. The 1986 *Apex Houston* oil spill in central California: seabird injury assessments and litigation process. Marine Ornithology.
- Carter, H.R., G.J. McChesney, D.L. Jaques, C.S. Strong, M.W. Parker, J.E. Takekawa, D.L. Jory, and D.L. Whitworth. 1992. Breeding populations of seabirds in California, 1989-1991. Volumes 1 and 2. Unpublished report, U.S. Fish and Wildlife Service, Northern Prairie Wildlife Research Center, Dixon, California.
- Carter, H.R., G.J. McChesney, J.E. Takekawa, L.K. Ochikubo, D.L. Whitworth, T.W. Keeney, W.R. McIver, and C.S. Strong. 1996. Population monitoring of seabirds in California: 1993-1995 aerial photographic surveys of breeding colonies of Common Murres, Brandt's Cormorants, and Double-crested Cormorants. Unpublished report, U.S. Geological Survey, California Science Center, Dixon, California.
- Carter, H.R. and G.W. Page. 1989. Central California oilspill contingency plan: assessment of numbers and species composition of dead beached birds. NOAA Technical Memorandum NOS MEMD 25.
- Carter, H.R., A.L. Sowls, M.S. Rodway, U.W. Wilson, R.W. Lowe, G.J. McChesney, F. Gress, and D.W. Anderson. 1995b. Population size, trends, and conservation problems of the Double-crested Cormorant on the Pacific coast of North America. Pages 189-215 in D.N. Nettleship and D.C. Duffy, editors. The Double-crested Cormorant: biology, conservation and management. Colonial Waterbirds 18 (Special Publication 1).
- Carter, H.R., U.W. Wilson, R.W. Lowe, M.S. Rodway, D.A. Manuwal, J.E. Takekawa, and J.L. Yee. 2001. Population trends of the Common Murre (*Uria aalge californica*) in D.A. Manuwal, H.R. Carter, T.S. Zimmerman, and D.L. Orthmeyer, editors. Biology and conservation of the Common Murre in California, Oregon, Washington, and British Columbia. Volume 1: natural history and population trends. U.S. Geological Survey, Information and Technology Report, USGS/BRD/ITR-2000-0012, Washington, D.C.
- Chambers Group, Inc. 1993. Administrative draft environmental impact report for consideration of a new lease for the operation of a crude oil and petroleum product marine terminal on state tide and submerged lands at Unocal's San Francisco refinery, Oleum, Contra Costa County. Unpublished report, Chambers Group, Inc.
- Croll, D.A. 1990. Physical and biological determinants of the abundance, distribution, and diet of the Common Murre in Monterey Bay, California. Pages 139-148 in S.G. Sealy, editor. Auks at Sea. Studies in Avian Biology 14.
- Dobbin, J.A., H.E. Robertson, R.G. Ford, K.T. Briggs, and E.H. Clark, II. 1986. Resource

- Damage Assessment of the *T/V Puerto Rican* oil spill incident. Unpublished report, James Dobbin Associates, Inc., Alexandria, Virginia.
- Ford, R.G. 1985. Biological hindcast of the effects of the *T/V Puerto Rican* oil spill on three seabird species. Unpublished report, Ecological Consulting, Inc., Portland, Oregon.
- Ford, R.G. 1994. An analysis of the relationship of oil spill size and oil spill location to risk to the Southern Sea Otter. Unpublished report, Ecological Consulting, Inc., Portland, Oregon.
- Ford, R.G. 2002. Estimated Common Murre and Marbled Murrelet mortality resulting from the *T/V Command* spill. Unpublished report, R.G. Ford Consulting, Portland, Oregon.
- Ford, R.G., M.L. Bonnell, D.H. Varoujean, G.W. Page, H.R. Carter, B.E. Sharp, D. Heinemann, and J.L. Casey. 1996. Total direct mortality of seabirds from the *Exxon Valdez* oil spill. Pages 684–711 in S.D. Rice, R.B. Spies, D.A. Wolfe, and B.A. Wright, editors. Proceedings of the Exxon Valdez Oil Spill Symposium. American Fisheries Society Symposium 18.
- Ford, R.G., M.L. Bonnell, D.H. Varoujean, G.W. Page, B.E. Sharp, D. Heinemann, and J.L. Casey. 1991b. An assessment of direct seabird mortality in Prince William Sound and the Western Gulf of Alaska resulting from the *Exxon Valdez* oil spill. Unpublished report, Ecological Consulting, Inc., Portland, Oregon.
- Ford, R.G., J.L. Casey, D.B. Hewitt, D.H. Varoujean, D.R. Warrick, and W.A. Williams. 1991a. Seabird mortality resulting from the *Nestucca* oil spill incident, winter 1988-1989. Unpublished report, Ecological Consulting, Inc., Portland, Oregon.
- Ford, R.G., and G.K. Himes Boor. 2003. Trajectory backcast. Pages 29–42 in H.R. Carter and R.T. Golightly, editors. Seabird injuries from the 1997-1998 Point Reyes Tarball Incidents. Unpublished report, Humboldt State University, Department of Wildlife, Arcata, California.
- Ford, R.G., G.K. Himes Boor, B.E. Sharp, and J.L. Casey. 2002. Estimates of bird impacts resulting from the *M/V Kure*/Humboldt Bay oil spill of November 5, 1997. Unpublished report, R.G. Ford Consulting Company, Portland, Oregon.
- Ford, R.G., G.K. Himes Boor, and J.C. Ward. 2001. Seabird mortality resulting from the *New Carissa* oil spill incident of February and March 1999. Unpublished report, R.G. Ford Consulting Company, Portland, Oregon.
- Ford, R.G., G.W. Page, and H.R. Carter. 1987. Estimating mortality of seabirds from oil spills. Pages 747–751 in Proceedings of the 1987 Oil Spill Conference, American Petroleum Institute, Washington, D.C.
- Ford, R.G., and J.C. Ward. 1999a. Carcass scavenging rates study for the *M/V Kure*/Humboldt Bay oil spill. Unpublished report, R.G. Ford Consulting Company, Portland, Oregon.

- Ford, R.G., and J.C. Ward. 1999b. Chevron Long Wharf oil spill scenarios. Unpublished report, Chambers Group, Inc.
- Ford, R.G. and J.C. Ward. 2000. Bird carcass detection rates following the *M/V Kure*/Humboldt Bay oil spill. Unpublished report, R.G. Ford Consulting Company, Portland, Oregon.
- Forney, K.A., S.R. Benson, and G.A. Cameron. 2001. Central California gill-net effort and bycatch of sensitive species, 1990-1998. Pages 141–160 in E.F. Melvin and J.K. Parrish, editors. Seabird bycatch: trends, roadblocks, and solutions. University of Alaska, Sea Grant Program Publication AK-SG-01-01, Fairbanks, Alaska.
- Freeman, W.H. 2001. The bird conservation handbook, globally important bird areas of the U.S. The Nature Conservancy.
- Golightly, R.T., S.H. Newman, E.N. Craig, H.R. Carter, and J.A.K. Mazet. 2002. Survival and behavior of Western Gulls following exposure to oil and rehabilitation. Wildlife Society Bulletin 30: 539–546.
- Grinnell, J., and A.H. Miller. 1944. The distribution of the birds of California. Pacific Coast Avifauna No. 27.
- Halley, J., M. Harris, and S. Wanless. 1995. Colony attendance patterns and recruitment in immature Common Murres (*Uria aalge*). Auk 112: 947–957.
- Hampton S., S.G. Allen, J. Haas, and J. Roletto. 2003a. Spill event and response. Pages 1–6 in H.R. Carter and R.T. Golightly, editors. Seabird injuries from the 1997-1998 Point Reyes Tarball Incidents. Unpublished report, Humboldt State University, Department of Wildlife, Arcata, California.
- Hampton S., S.G. Allen, J. Haas, and J. Roletto. 2003b. Observations of oil and injury. Pages 7–10 in H.R. Carter and R.T. Golightly, editors. Seabird injuries from the 1997-1998 Point Reyes Tarball Incidents. Unpublished report, Humboldt State University, Department of Wildlife, Arcata, California.
- Hampton, S., R.G. Ford, H.R. Carter, C. Abraham, and D. Humple. In Press. Chronic oiling and seabird mortality from the sunken vessel *S.S. Jacob Luckenbach* in central California. Marine Ornithology.
- Harris, M.P., and S. Wanless. 1995. Survival and non-breeding of adult Common Guillemots *Uria aalge*. Ibis 137: 192–197
- Harris, M.P., S. Wanless, and T.R. Barton. 1996a. Site use and fidelity in the Common Guillemot *Uria aalge*. Ibis 138: 399–404.
- Harris, M.P., D.J. Halley, and R.L. Swann. 1994. Age of first breeding in Common Murres.

Auk 111: 207–209.

- Harris, M.P., D.J. Halley, and S. Wanless. 1996b. Philopatry in the Common Guillemot *Uria aalge*. *Bird Study* 43: 134–137.
- Hayward, T.L., T.R. Baumgartner, D.M. Checkley, R. Durazo, G. Gaxiola-Castro, K.D. Hyrenbach, A.W. Mantyla, M.M. Mullin, T. Murphree, F.B. Schwing, P.E. Smith, and M.J. Tegner. 1999. The state of the California Current in 1998-1999: transition to cool-water conditions. *CalCOFI Rep.* 40: 29–62.
- Himes Boor, G.K., R.G. Ford, J. Roletto, J. Mortensen, J.A.K. Mazet, S.G. Allen, H.R. Carter, R.T. Golightly, P.J. Capitolo, and H.R. Nevins. 2003. Estimated total number of beached birds. Pages 11–28 in H.R. Carter and R.T. Golightly, editors. *Seabird injuries from the 1997-1998 Point Reyes Tarball Incidents*. Unpublished report, Humboldt State University, Department of Wildlife, Arcata, California.
- Jaques, D.L. 1994. Range expansion and roosting ecology of non-breeding California Brown Pelicans. M.S. thesis, University of California, Davis, California.
- Jaques, D.L., C.S. Strong, and T.W. Keeney. 1996. Brown Pelican roosting patterns and responses to disturbance at Mugu Lagoon and other non-breeding sites in the Southern California Bight. National Biological Service, Technical Report No. 54, Tucson, Arizona.
- Julian, F., and M. Beeson. 1998. Estimates of marine mammal, turtle, and seabird mortality for two California gill-net fisheries: 1990-1995. *Fishery Bulletin* 96: 271–284.
- Kelly J.P., K.L. Etienne, and J.E. Roth. 2002. Abundance and distribution of the Common Raven and American Crow in the San Francisco Bay Area, California. *Waterbirds* 33: 202–217.
- Lynn, R.L., T. Baumgartner, J. Garcia, C.A. Collins, T.L. Hayward, K.D. Hyrenbach, A.W. Mantyla, T. Murphree, A. Shankle, F.B. Schwing, K.M. Sakuma, and M.J. Tegner. 1998. The state of the California Current, 1997-1998: transition to El Niño conditions. *CalCOFI Rep.* 39: 25–49.
- Manuwal, D.A., and H.R. Carter. 2001. Natural history of the Common Murre (*Uria aalge californica*). Pages 1–32 in D.A. Manuwal, H.R. Carter, T.S. Zimmerman, and D.L. Orthmeyer, editors. *Biology and conservation of the Common Murre in California, Oregon, Washington, and British Columbia*. Volume 1: natural history and population trends. U.S. Geological Survey, Information and Technology Report, USGS/BRD/ITR-2000-0012, Washington, D.C.
- Mazet, J.A.K., S.H. Newman, K.V. Gilardi, F. Tseng, J. Holcomb, D.A. Jessup, and M.H. Ziccardi. 2002. Advances in oiled bird emergency medicine and management. *Journal of Avian Medicine and Surgery* 16: 146–149.

- McChesney, G.J., H.R. Carter, M.W. Parker, P.J. Capitolo, and J.E. Takekawa. 1999. Subcolony use by Common Murres at Castle Rocks and Mainland and Hurricane Point Rocks, California, 1979-1997. Unpublished report, U.S. Geological Survey, Western Ecological Research Center, Dixon, California; Humboldt State University, Department of Wildlife, Arcata, California; and U.S. Fish and Wildlife Service, San Francisco Bay National Wildlife Refuge Complex, Newark, California.
- McChesney, G.J., H.R. Carter, M.W. Parker, and J.E. Takekawa. 1998. Breeding population surveys and subcolony use of Common Murres and Brandt's Cormorants at Point Reyes Headlands, California, 1979-1997. Unpublished report, U.S. Geological Survey, Western Ecological Research Center, Dixon, California; Humboldt State University, Department of Wildlife, Arcata, California; and U.S. Fish and Wildlife Service, San Francisco Bay National Wildlife Refuge Complex, Newark, California.
- Nevins, H.M., and H.R. Carter. In Press. Age and sex of Common Murres *Uria aalge* recovered during the 1997-1998 Point Reyes Tarball Incidents. *Marine Ornithology*.
- Nur, N., W.J. Sydeman, P. Pyle, L.E. Stenzel, D.G. Ainley, and T.G. Schuster. 1997. Temporal, spatial, and species-specific patterns of chronic oiling as revealed by the Beached Bird Survey, Farallon Oiled Bird Survey, and bird rescue programs in Central California. Unpublished report, Point Reyes Bird Observatory, Stinson Beach, California.
- Page, G.W., H.R. Carter, and R.G. Ford. 1990. Numbers of seabirds killed or debilitated in the 1986 *Apex Houston* oil spill in central California. Pages 164-174 in S.G. Sealy, editor. *Auks at Sea*. *Studies in Avian Biology* 14.
- Page, G.W., L.E. Stenzel, and D.G. Ainley. 1982. Beached bird carcasses as a means of evaluating natural and human-caused seabird mortality. Unpublished report, Point Reyes Bird Observatory, Stinson Beach, California.
- Parker, M.W., J.A. Boyce, E.N. Craig, H. Gellerman, D.A. Nothhelfer, R.J. Young, S.W. Kress, H.R. Carter, and G.A. Moore. 1999. Restoration of Common Murre colonies in central California: annual report 1998. Unpublished report, U. S. Fish and Wildlife Service, San Francisco Bay National Wildlife Refuge Complex, Newark, California.
- Parker, M.W., J.A. Boyce, R. Young, N. Rojek, C. Hamilton, V. Slowik, H. Gellerman, S.W. Kress, H.R. Carter, G.A. Moore, and L. Cohen. 2000. Restoration of Common Murre colonies in central California: annual report 1999. Unpublished report, U.S. Fish and Wildlife Service, San Francisco Bay National Wildlife Refuge Complex, Newark, California.
- Parker, M.W., C. Hamilton, I. Harrauld, H. Knechtel, M. Murphy, V. Slowik, H. Gellerman, S.W. Kress, H.R. Carter, G.A. Moore, and S. Boehm. 2001. Restoration of Common Murre colonies in central California: annual report 2000. Unpublished report, U.S. Fish and Wildlife Service, San Francisco Bay National Wildlife Refuge Complex, Newark, California.

- Parker, M.W., E.B. McLaren, J.A. Boyce, V. Collins, D.A. Nothelfer, R.J. Young, S.W. Kress, H.R. Carter, and A.M. Hutzell. 1998. Restoration of Common Murre colonies in central California: annual report 1997. Unpublished report, U.S. Fish and Wildlife Service, San Francisco Bay National Wildlife Refuge Complex, Newark, California.
- Parker, M.W., E.B. McLaren, S.E. Schubel, J.A. Boyce, P.J. Capitolo, M.A. Ortwerth, S.W. Kress, H.R. Carter, and A. Hutzell. 1997. Restoration of Common Murre colonies in central California: annual report 1996. Unpublished report, U.S. Fish and Wildlife Service, San Francisco Bay National Wildlife Refuge Complex, Newark, California.
- Parrish, J.K. 1995. Influence of group size and habitat type on reproductive success in Common Murres (*Uria aalge*). *Auk* 112: 390–401.
- Piatt, J.F., H.R. Carter, and D.N. Nettleship. 1991. Effects of oil pollution on marine bird populations. Pages 125–141 in J. White, editor. The effects of oil on wildlife: research, rehabilitation and general concerns. Proc. Oil Symposium, Herndon, Virginia, October 16–18, 1990. Sheridan Press, Hanover, Pennsylvania.
- Piatt, J.F., and R.G. Ford. 1996. How many seabirds were killed by the *Exxon Valdez* oil spill? Pages 712–719 in S.D. Rice, R.B. Spies, D.A. Wolfe, and B.A. Wright, editors. Proceedings of the *Exxon Valdez* oil spill symposium. American Fisheries Society Symposium 18.
- Point Reyes Bird Observatory. 1985. The impacts of the *T/V Puerto Rican* oil spill on marine bird and mammal populations in the Gulf of the Farallones, 6–19 November 1984. Unpublished report, Point Reyes Bird Observatory, Stinson Beach, California.
- Roletto, J. 2000. Beach Watch: a guide to long-term beach monitoring. Unpublished report, Gulf of the Farallones National Marine Sanctuary and the Farallones Marine Sanctuary Association, San Francisco, California.
- Roletto, J., L. Grella, J. Mortenson, and L. Hug. 1998. Beach Watch annual report: 1997. Unpublished report, Gulf of the Farallones National Marine Sanctuary, San Francisco, California.
- Roletto, J., J. Mortenson, and L. Grella. 1999. Beach Watch annual report: 1998. Unpublished report, Gulf of the Farallones National Marine Sanctuary, San Francisco, California.
- Roletto, J., J. Mortenson, L. Grella, and D. Osorio. 2000. Beach Watch annual report: 1999. Unpublished report, Gulf of the Farallones National Marine Sanctuary, San Francisco, California.
- Schwing, F.B., T.L. Hayward, K.M. Sakuma, T. Murphree, A.S. Mascarenas, Jr., S.I.L. Castillo, A.W. Mantyla, S.L. Cummings, F.P. Chavez, K. Baltz, and D.G. Ainley. 1997. The state of the California Current, 1996–1997: mixed signals from the tropics. *CalCOFI Rep.* 38: 22–47.

- Sharp, B.E. 1996. Post-release survival of oiled, cleaned seabirds in North America. *Ibis* 138: 222–228.
- Sharp, B.E. 2000. Survival and fate after release of Common Murres oiled on the Pacific coast of North America since 1996: an update. Unpublished report, Ecological Perspectives, Inc., Portland, Oregon.
- Shuford, W.D. 1993. The Marin County breeding bird atlas: a distributional and natural history of coastal California birds. Bushtit Books, Bolinas, California.
- Siskin, B.R., G.W. Page, and H.R. Carter. 1993. Impacts of the 1986 *Apex Houston* oil spill on marine birds in central California. Unpublished report, U.S. Dept. of Justice, Washington, D.C.
- Sowls, A.L., A.R. DeGange, J.W. Nelson, and G.S. Lester. 1980. Catalog of California seabird colonies. U.S. Department of Interior, Fish and Wildlife Service, Biological Services Program. FWS/OBS 37/80.
- Spear, L.B. 1993. Dynamics and effect of western gull feeding in a colony of Guillemots and Brandt's Cormorants. *Journal of Animal Ecology* 62: 399–414.
- Stenzel, L.E., G.W. Page, D.G. Ainley, and H.R. Carter. 1988. Seabird mortality in California as witnessed through 14 years of beached bird censuses. Unpublished report, Point Reyes Bird Observatory, Stinson Beach, California.
- Swartzman, G., and H.R. Carter. 1991. Long-term injuries to the Central California population of Common Murres (*Uria aalge*) due to mortality from the 1986 *Apex Houston* oil spill. Unpublished report, U.S. Department of Justice, Washington, D.C.
- Sydeman, W.J., and S.G. Allen. 1999. Pinniped population dynamics in Central California: Correlations with sea surface temperature and upwelling indices. *Marine Mammal Science* 15: 446–461.
- Sydeman, W.J., H.R. Carter, J.E. Takekawa, and N. Nur. 1997. Common Murre *Uria aalge* population trends at the South Farallon Islands, California, 1985-95. Unpublished report, Point Reyes Bird Observatory, Stinson Beach, California; U.S. Geological Survey, Dixon, California; and U.S. Fish and Wildlife Service, Newark, California.
- Takekawa, J.E., H.R. Carter, and T.E. Harvey. 1990. Decline of the Common Murre in central California, 1980-86. Pages 149–163 in S.G. Sealy, editor. *Auks at sea*. Studies in Avian Biology No. 14.
- Thayer, J.A., W.J. Sydeman, N.P. Fairman, and S.G. Allen. 1999. Attendance and effects of disturbance on coastal Common Murre colonies on Point Reyes, California. *Waterbirds* 22: 130–139.

- Torgrimson, G.M. 1984. The on-scene spill model. NOAA Technical Memorandum NOS OMA 12.
- Weise, F.K., and I.L. Jones. 2001. Experimental support of a new drift block design to assess seabird mortality from oil pollution. *Auk* 118: 1062–1068.
- Wild, P.W. 1990. The Central California experience: a case history of California Halibut set net laws and regulations. Pages 321–339 *in* C.W. Haugen, editor. The California Halibut, *Paralichthys californicus*, resource and fisheries. Fish Bulletin 174.



## Appendix A. Common and scientific names for species and sub-species in this report.

Common Name	Scientific Name	Common Name	Scientific Name
<b>Birds</b>		<b>Mammals</b>	
American Coot	<i>Fulica americana</i>	Blue Whale	<i>Balaenoptera musculus</i>
American Peregrine Falcon	<i>Falco peregrinus</i>	California Gray Whale	<i>Eschrichtus robustus</i>
Ancient Murrelet	<i>Synthliboramphus antiquus</i>	California Sea Lion	<i>Zalophus californianus</i>
Ashy Storm-Petrel	<i>Oceanodroma homochroa</i>	Guadalupe Fur Seal	<i>Arctocephalus townsendi</i>
Black Oystercatcher	<i>Haematopus bachmani</i>	Harbor Seal	<i>Phoca vitulina</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Humpback Whale	<i>Megaptera novaeangliae</i>
Black Scoter	<i>Melanitta nigra</i>	Northern Elephant Seal	<i>Mirounga angustirostris</i>
Black-legged Kittiwake	<i>Rissa tridactyla</i>	Northern Fur Seal	<i>Callorhinus ursinus</i>
Black-vented Shearwater	<i>Puffinus opisthomelas</i>	Salt Marsh Harvest Mouse	<i>Reithrodontomys raviventris</i>
Bonaparte's gull	<i>Larus philadelphia</i>	Southern Sea Otter	<i>Enhydra lutris nereis</i>
Brandt's Cormorant	<i>Phalacrocorax penicillatus</i>	Steller Sea Lion	<i>Eumetopias jubatus</i>
Brant	<i>Branta bernicla</i>		
Brown Pelican	<i>Pelecanus occidentalis</i>	<b>Amphibians and Reptiles</b>	
Bufflehead	<i>Bucephala albeola</i>	California Red-legged Frog	<i>Rana aurora draytoni</i>
Bushtit	<i>Psaltiriparus minimus</i>	Green Sea Turtle	<i>Caretta caretta</i>
California Black Rail	<i>Laterallus jamaicensis coturniculus</i>	Leatherback Sea Turtle	<i>Dermochelys coriacea</i>
California Clapper Rail	<i>Rallus longirostris obsoletus</i>	Loggerhead Sea Turtle	<i>Chelonia mydas</i>
California Gull	<i>Larus californicus</i>		
California Least Tern	<i>Sterna antillarum browni</i>	<b>Fish</b>	
Cassin's Auklet	<i>Ptychoramphus aleuticus</i>	Chinook Salmon	<i>Oncorhynchus tshawytscha</i>
Clark's Grebe	<i>Aechmophorus clarkii</i>	Coho Salmon	<i>Oncorhynchus kisutch</i>
Common Loon	<i>Gavia immer</i>	Green Sturgeon	<i>Salmo trutta</i>
Common Murre	<i>Uria aalge</i>	Pacific Herring	<i>Clupea pallasii</i>
Common Raven	<i>Corvus corax</i>	Pacific Lamprey	<i>Lampetra tridentata</i>
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	Rockfish	<i>Sebastes spp.</i>
Eared Grebe	<i>Podiceps nigricollis</i>	Steelhead Trout	<i>Oncorhynchus mykiss</i>
Glaucous Gull	<i>Larus hyperboreus</i>	Tidewater Goby	<i>Eucyclogobius newberry</i>
Glaucous-winged Gull	<i>Larus glaucescens</i>		
Greater Scaup	<i>Aythya marila</i>	<b>Invertebrates</b>	
Heermann's Gull	<i>Larus heermanni</i>	Black Abalone	<i>Haliotis cracherodii</i>
Herring Gull	<i>Larus argentatus</i>	Globose Dune Beetle	<i>Coelus globosus</i>
Horned Grebe	<i>Podiceps auritus</i>	Myrtle's Silverspot	<i>Speyeria zerene myrtleae</i>
Horned Puffin	<i>Fratercula corniculata</i>	Pink Abalone	<i>Haliotis corrugata</i>
Leach's Storm-Petrel	<i>Oceanodroma leucorhoa</i>	Red Abalone	<i>Haliotis rufescens</i>
Marbled Murrelet	<i>Brachyramphus marmoratus</i>		
Mew Gull	<i>Larus canus</i>	<b>Plants</b>	
Northern Fulmar	<i>Fulmarus glacialis</i>	Beach Layia	<i>Layia carnosa</i>
Pacific Loon	<i>Gavia pacifica</i>	Point Reyes Meadowfoam	<i>Limnanthes douglassii ssp. sulphurea</i>
Pelagic Cormorant	<i>Phalacrocorax pelagicus</i>	Sonoma Alopecurus	<i>Alopecurus aequalis var. sonomensis</i>
Pied-billed Grebe	<i>Podilymbus podiceps</i>	Tidestrom's Lupine	<i>Lupinus tidestromii</i>
Pigeon Guillemot	<i>Cepphus columba</i>		
Red Phalarope	<i>Phalaropus fulicarius</i>		
Red-necked Grebe	<i>Podiceps grisegena</i>		
Red-necked Phalarope	<i>Phalaropus lobatus</i>		
Red-throated Loon	<i>Gavia stellata</i>		
Rhinoceros Auklet	<i>Cerorhinca monocerata</i>		
Ring-billed Gull	<i>Larus delawarensis</i>		
Rock Dove	<i>Columba livia</i>		
Ruddy Duck	<i>Oxyura jamaicensis</i>		
Short-tailed Albatross	<i>Phoebastria albatrus</i>		
Short-tailed Shearwater	<i>Puffinus tenuirostris</i>		
Sooty Shearwater	<i>Puffinus griseus</i>		
Surf Scoter	<i>Melanitta perspicillata</i>		
Western Grebe	<i>Aechmophorus occidentalis</i>		
Western Gull	<i>Larus occidentalis</i>		
Western Snowy Plover	<i>Charadrius alexandrinus nivosus</i>		
White-winged Scoter	<i>Melanitta fusca</i>		



## Appendix B. Appendices referred to in Chapter 5.

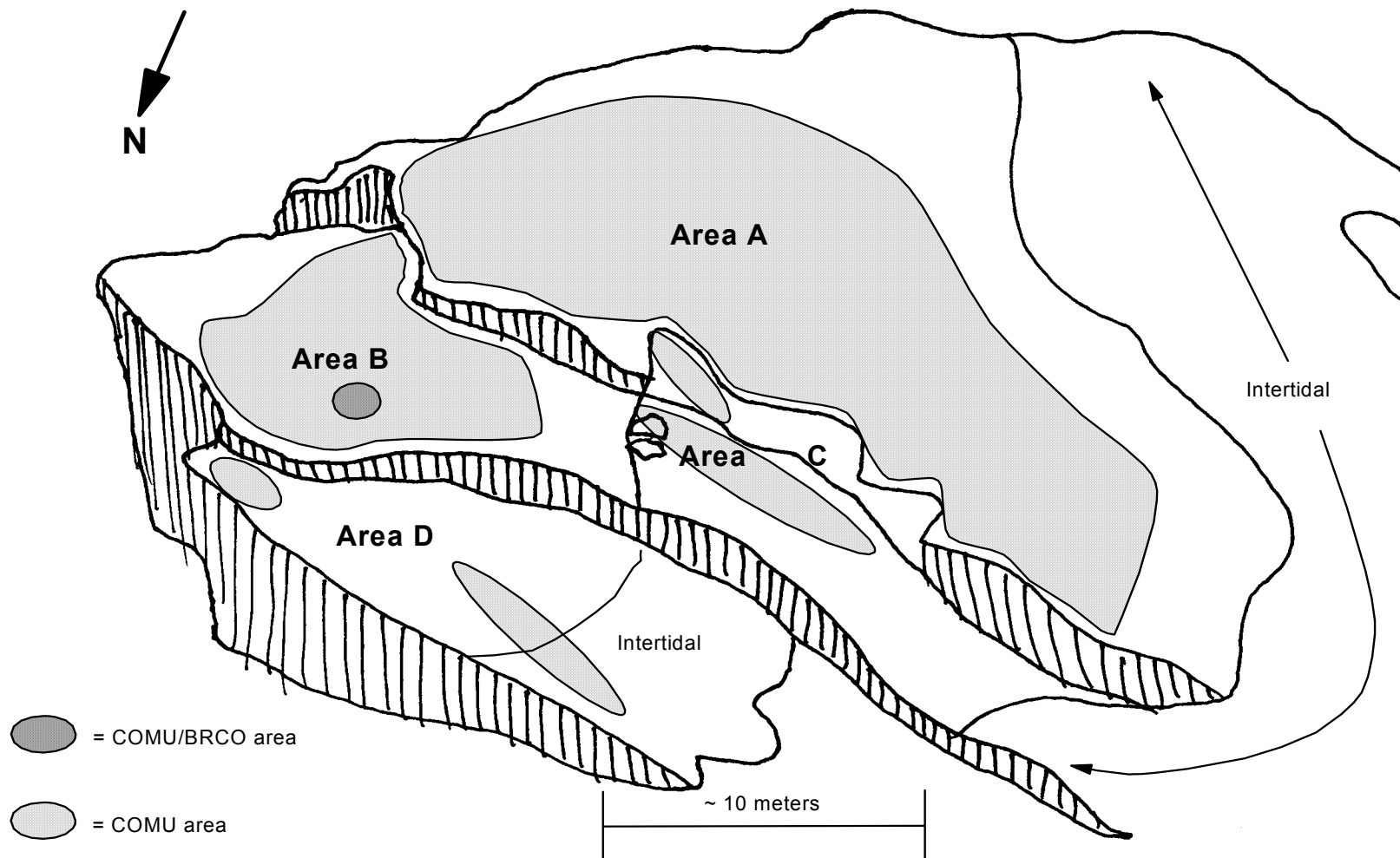
### Appendix B-1. Summary of aerial photographic survey flights at the Drake's Bay Colony Complex in 1998.

Survey Date	Survey Time <sup>1</sup>	Aircraft	Pilot	Photographers	Data Recorder	Other Areas Surveyed <sup>2</sup>
7-May	0957-1021	Partenavia	R. VanBenthuyzen	P. Capitolo, H. Carter	M. Parker	SPR
14-May	1035-1047	Partenavia	R. VanBenthuyzen	M. Parker, J. Boyce	E. McLaren	Central California colonies
15-May	1110-1115	Partenavia	B. Morgan	M. Parker, J. Boyce	E. McLaren	Central California colonies
22-May	1201-1223	Partenavia	R. VanBenthuyzen	P. Capitolo	G. McChesney	SPR
26-May	1218-1231	Partenavia	L. Heitz	M. Parker, J. Boyce	J. Buffa	Central California colonies
29-May	1226-1237	Partenavia	B. Morgan	M. Parker, J. Boyce	G. McChesney	Central California colonies
1-Jun	1023-1038	Partenavia	R. VanBenthuyzen	H. Carter, M. Parker	J. Boyce	Northern California colonies
15-Jun	1025-1037	Partenavia	R. VanBenthuyzen	G. McChesney, P. Capitolo	W. McIver	SPR
22-Jun	1335-1345	Partenavia	L. Heitz	M. Parker, J. Boyce	J. Boyce	Central California colonies
29-Jun	1330-1345	Partenavia	L. Heitz	P. Capitolo	P. Capitolo	SPR
10-Jul	1355-1415	Partenavia	L. Heitz	P. Capitolo	P. Capitolo	SPR
15-Jul	1350-1414	Cessna	B. VanWagenen	H. Carter	H. Carter	SPR
24-Jul	1305-1330	Cessna	B. VanWagenen	P. Capitolo	P. Capitolo	DSR, SPR
31-Jul	1305-1315	Cessna	B. VanWagenen	P. Capitolo	P. Capitolo	DSR, SPR, PRH
10-Aug	1248-1305	Cessna	B. VanWagenen	P. Capitolo	P. Capitolo	SPR, PRH
11-Aug	Fogged Out	Partenavia	B. Cole	P. Capitolo	P. Capitolo	PRH (partial due to fog)
21-Aug	Fogged Out	Cessna	B. VanWagenen	P. Capitolo	P. Capitolo	None due to fog
26-Aug	1510-1520	Cessna	B. VanWagenen	P. Capitolo	P. Capitolo	PRH (not photographed)

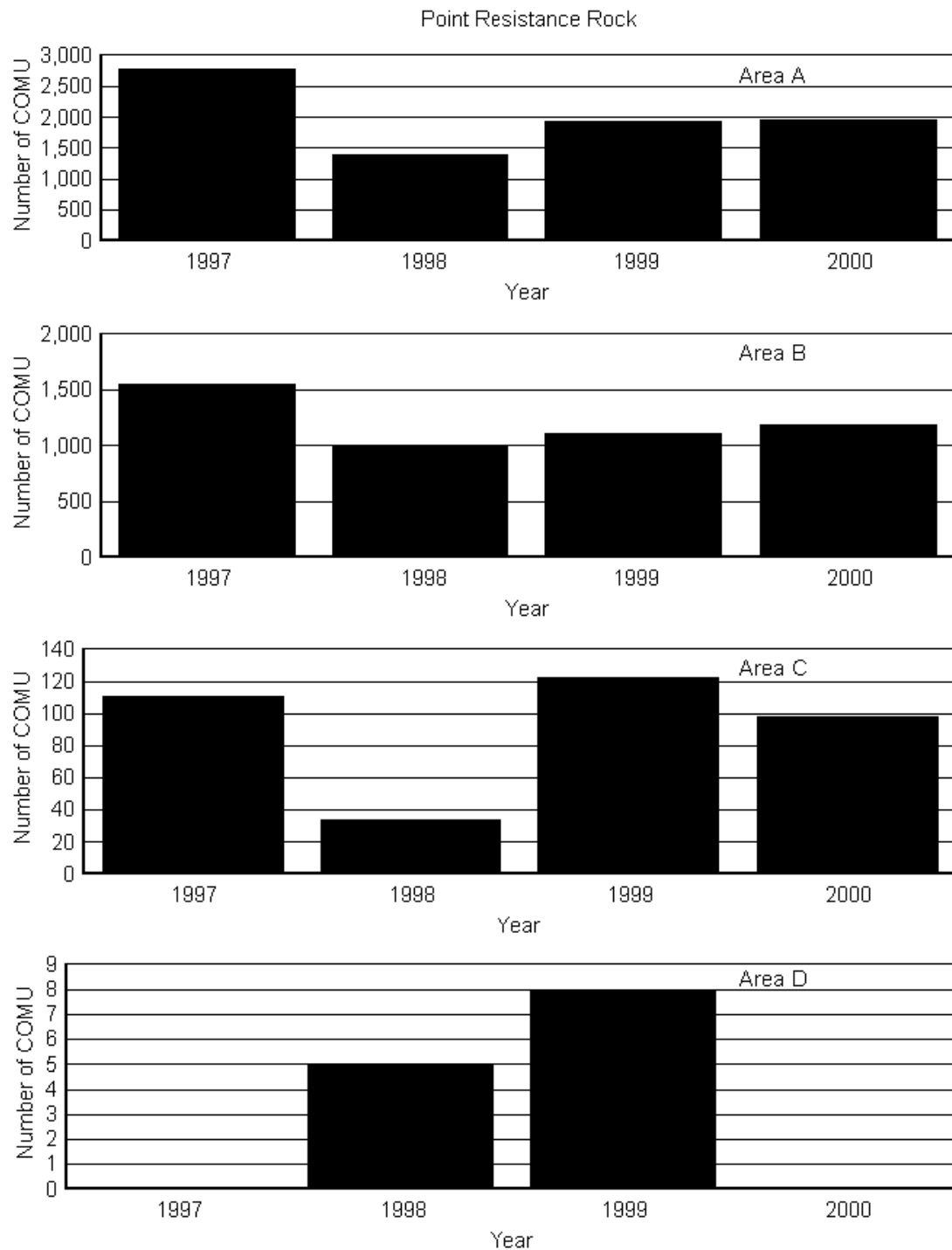
<sup>1</sup>Time does not include other areas surveyed or transit time from and to airports.

<sup>2</sup> SPR, San Pedro Rock; DSR, Devil's Slide Rock; PRH, Point Reyes Headlands.

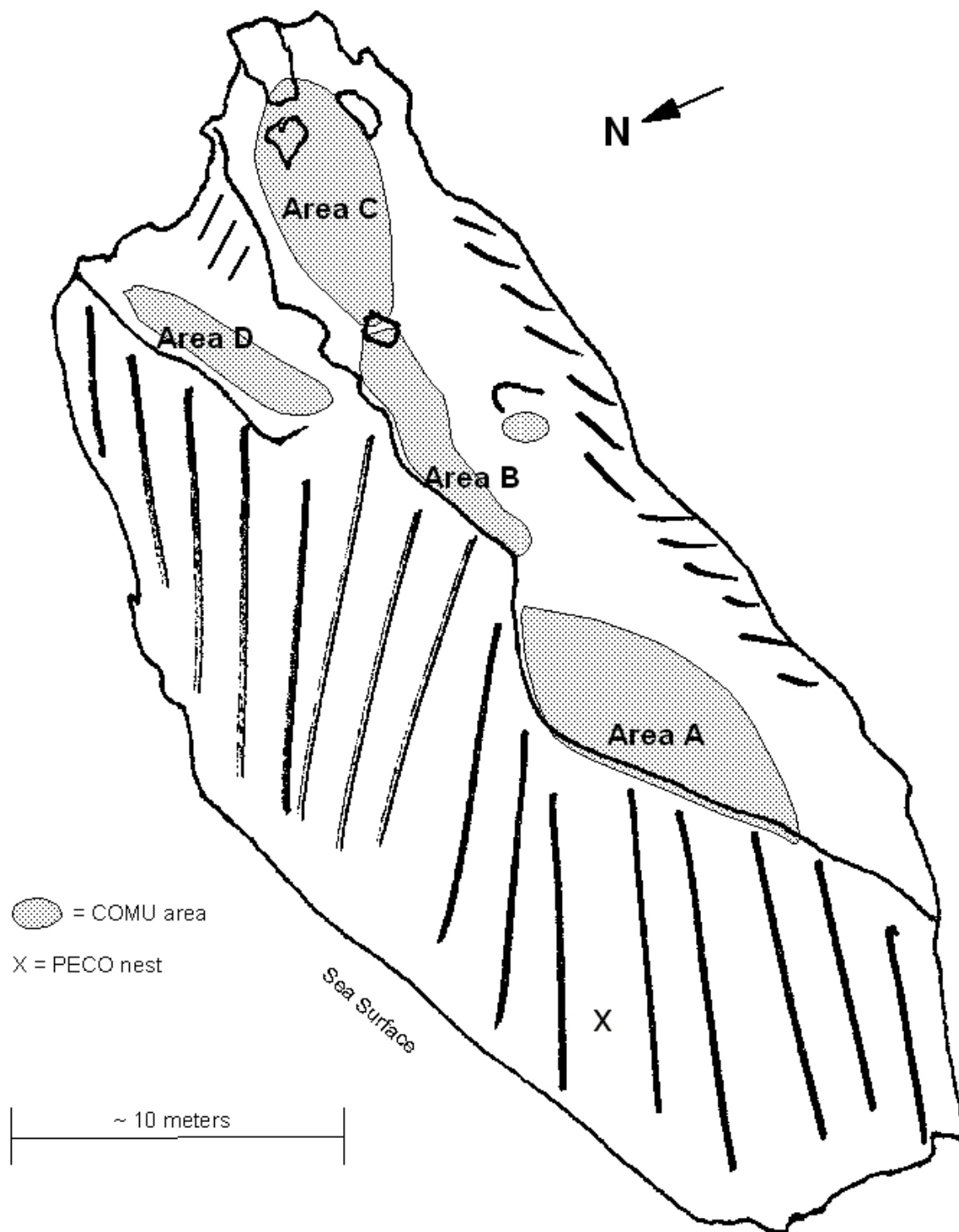
**Appendix B-2.** Subcolony areas at Point Resistance Rock in 1998. Outline of rock traced from photo 95-CRT-12-1, 20 June 1995. Scale estimated from U.S.G.S. Double Point Quadrangle. Codes are: COMU = Common Murre; BRCO = Brandt's Cormorant; PECO = Pelagic Cormorant; and BRPE = Brown Pelican.



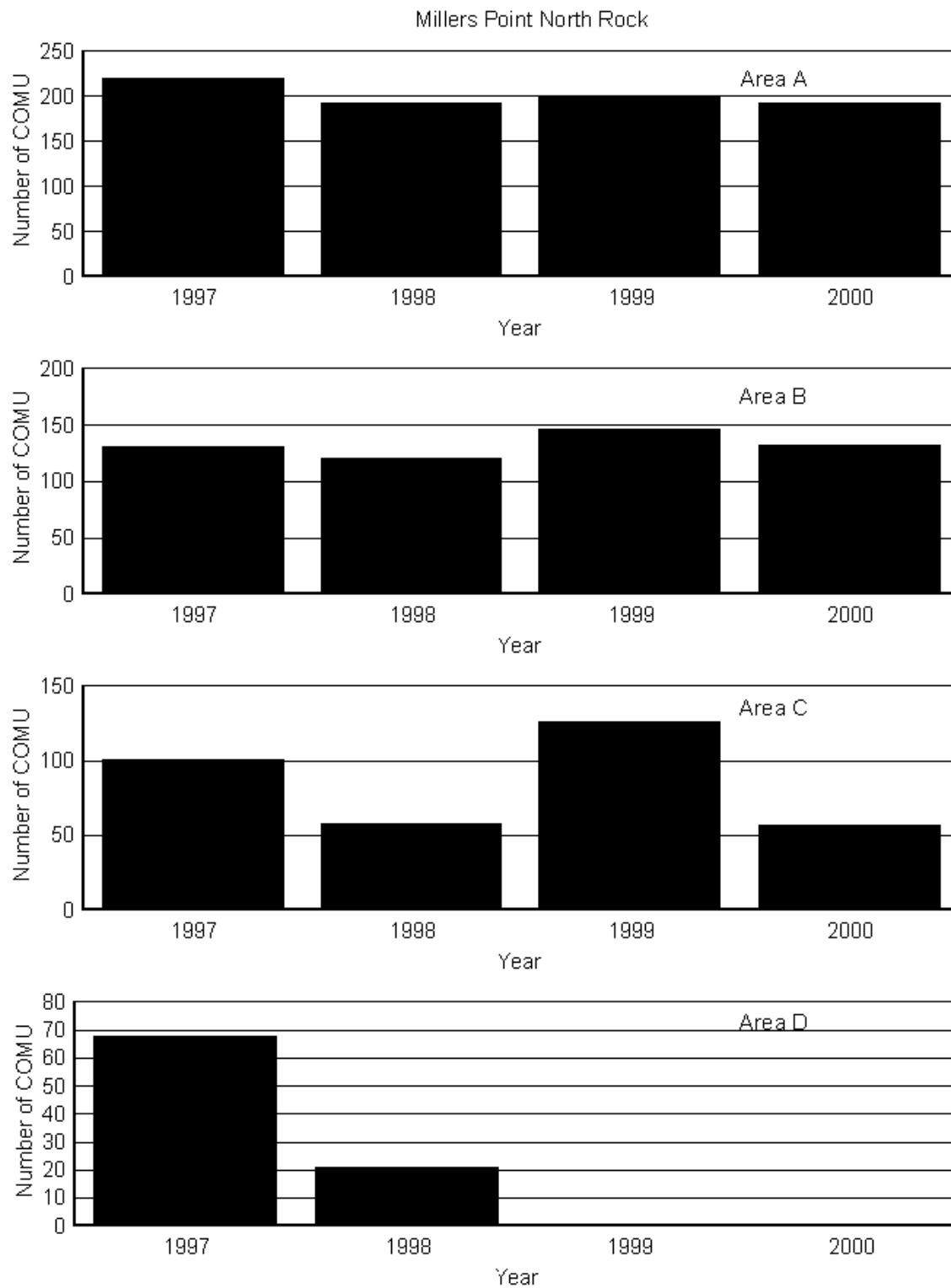
**Appendix B-3.** Counts of Common Murres by subareas at Point Resistance Rock, 1997-2000. Counts are means from the 22 May-15 June period.



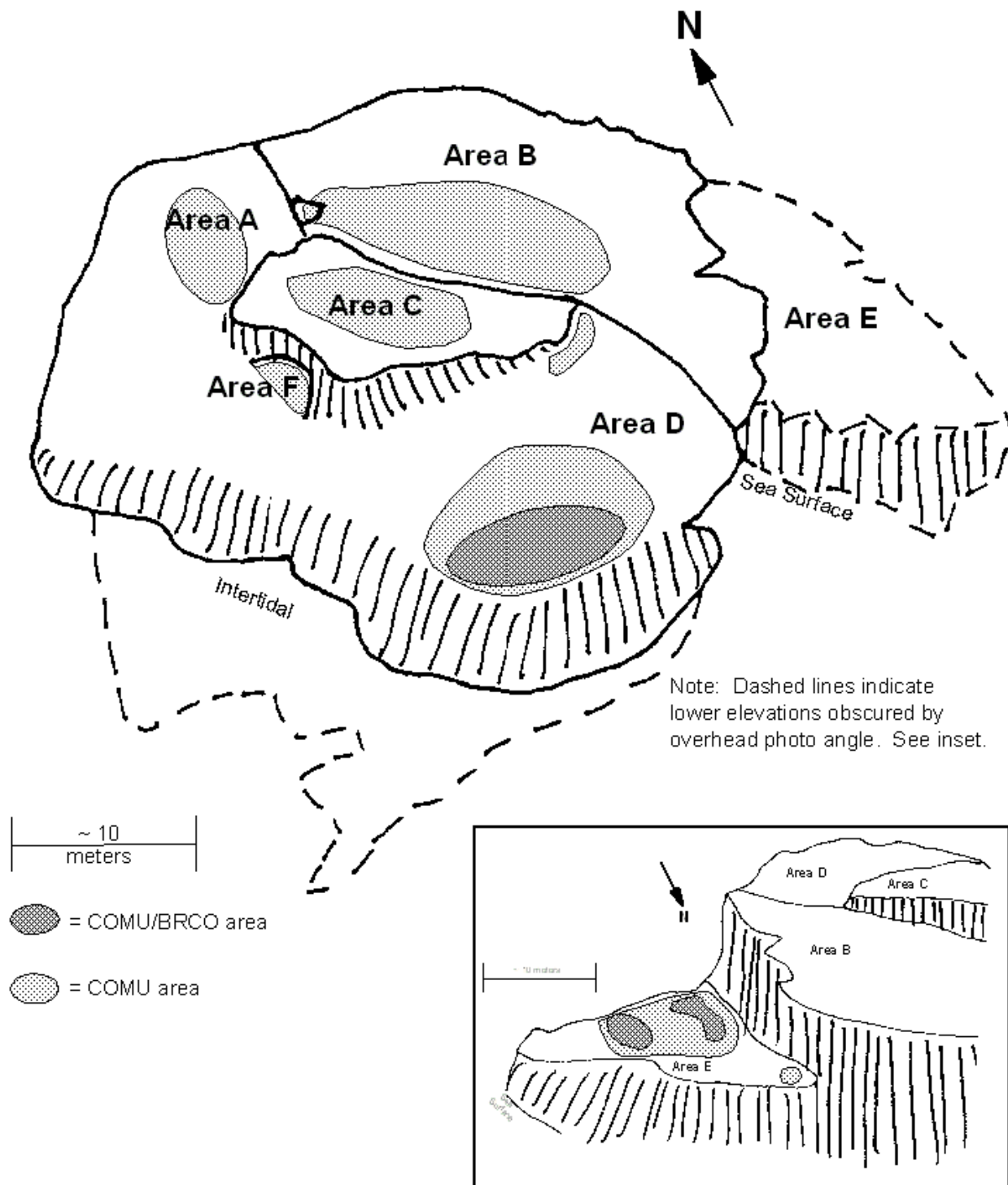
**Appendix B-4.** Subcolony areas at Millers Point North Rock in 1998. Outline of rock traced from photo 98-DP-2-25, 24 July 1998. Format as in Appendix 2.



**Appendix B-5.** Counts of Common Murres by subareas at Millers Point North Rock, 1997-2000. Counts are means from the 22 May-15 June period.

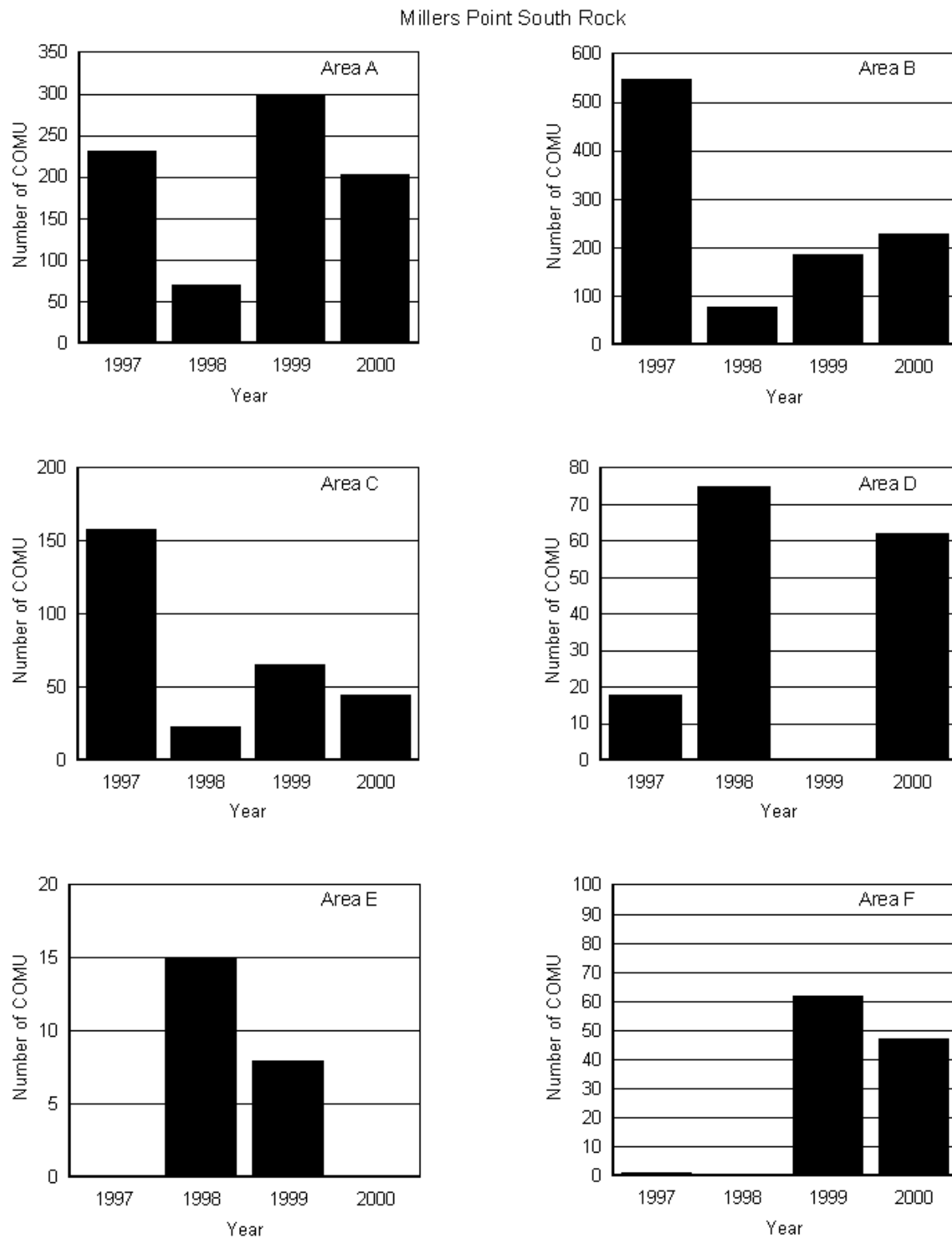


**Appendix B-6.** Subcolony areas at Millers Point South Rock in 1998. Outline of rock traced from photo 98-PJC-3-3, 29 June 1998. Inset showing Area E traced from photo 98-CP-5-19, 10 July 1998. Format as in Appendix 2.

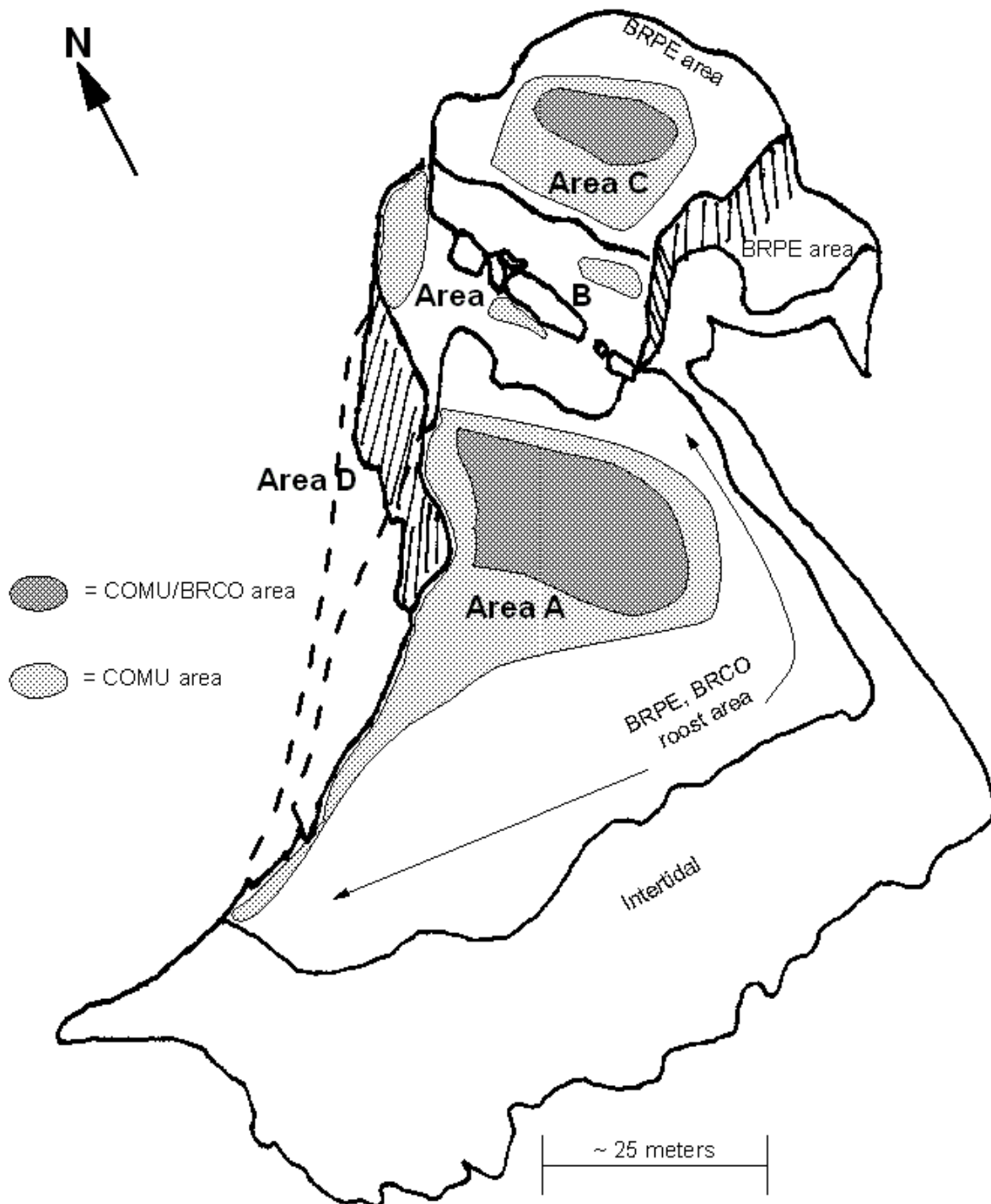




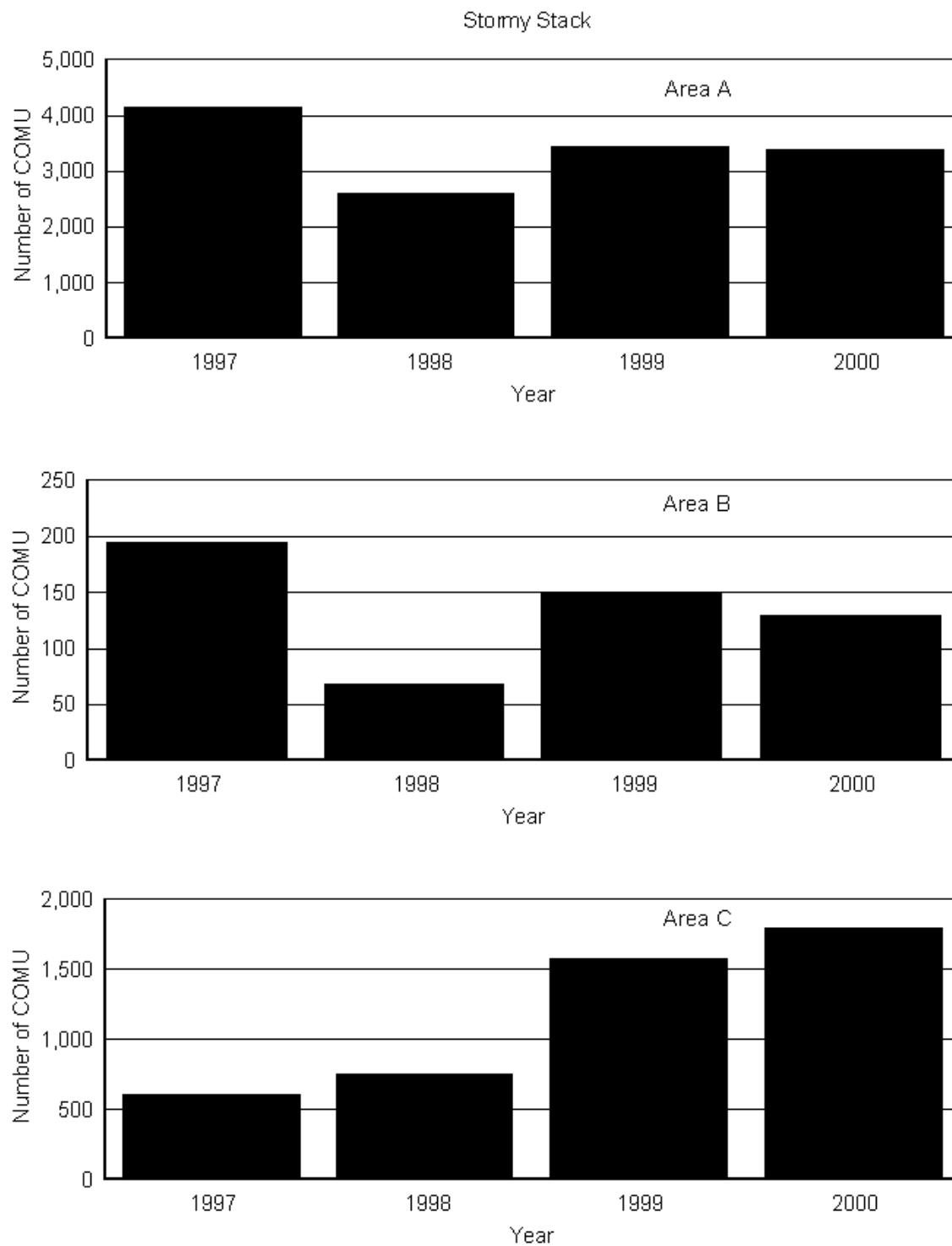
**Appendix B-7.** Counts of Common Murres by subareas at Millers Point South Rock, 1997-2000. Counts are means from the 22 May-15 June period.



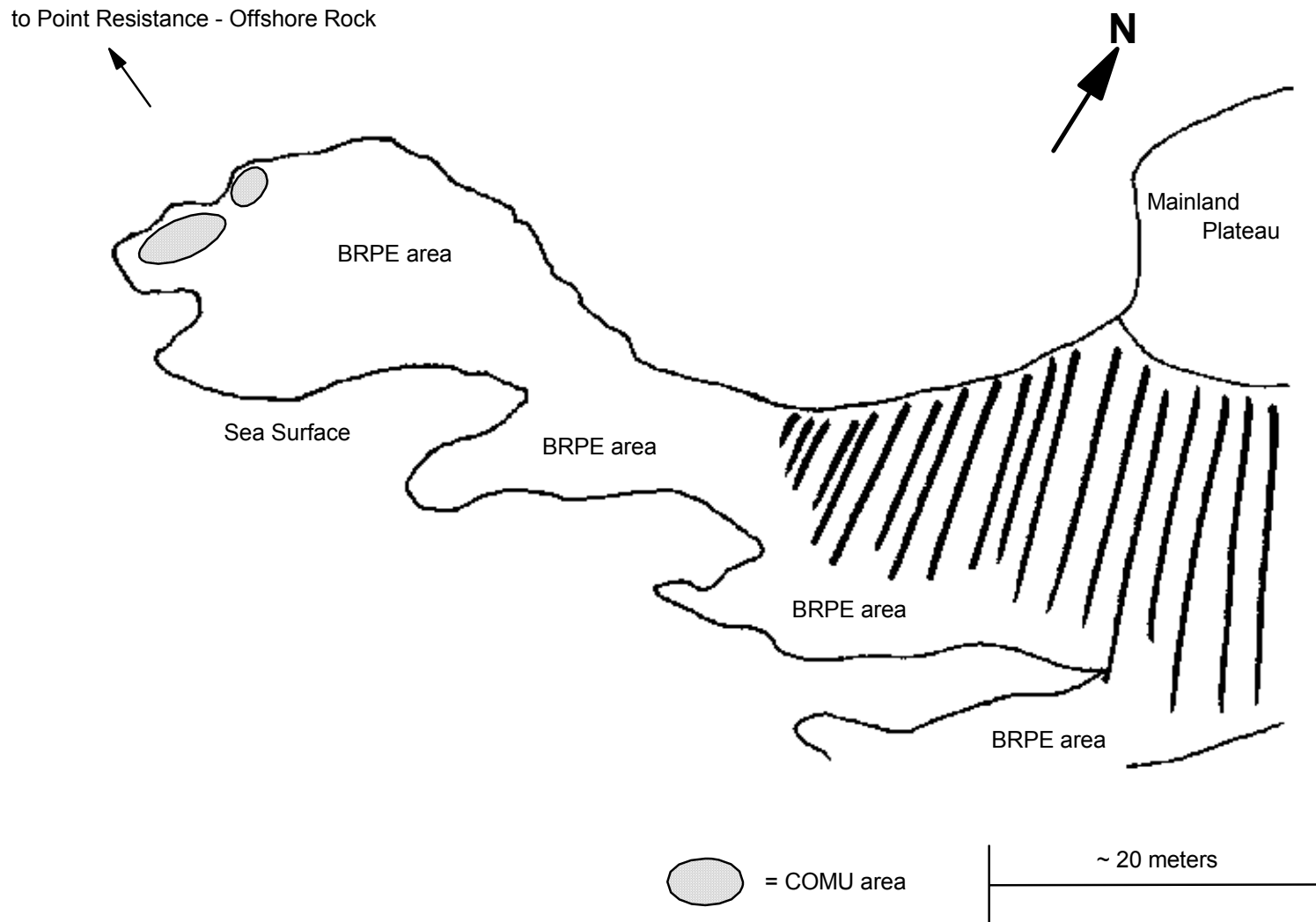
**Appendix B-8.** Subcolony areas at Stormy Stack in 1998. Outline of rock traced from photo 98-SPR-35, 24 July 1998. Dashed Area D (drawn from photo 85-3-34, 30 May 1985) shows the rough extent of nesting habitat lost due to erosion between 1985 and 1986 (see text). Format as in Appendix 2.



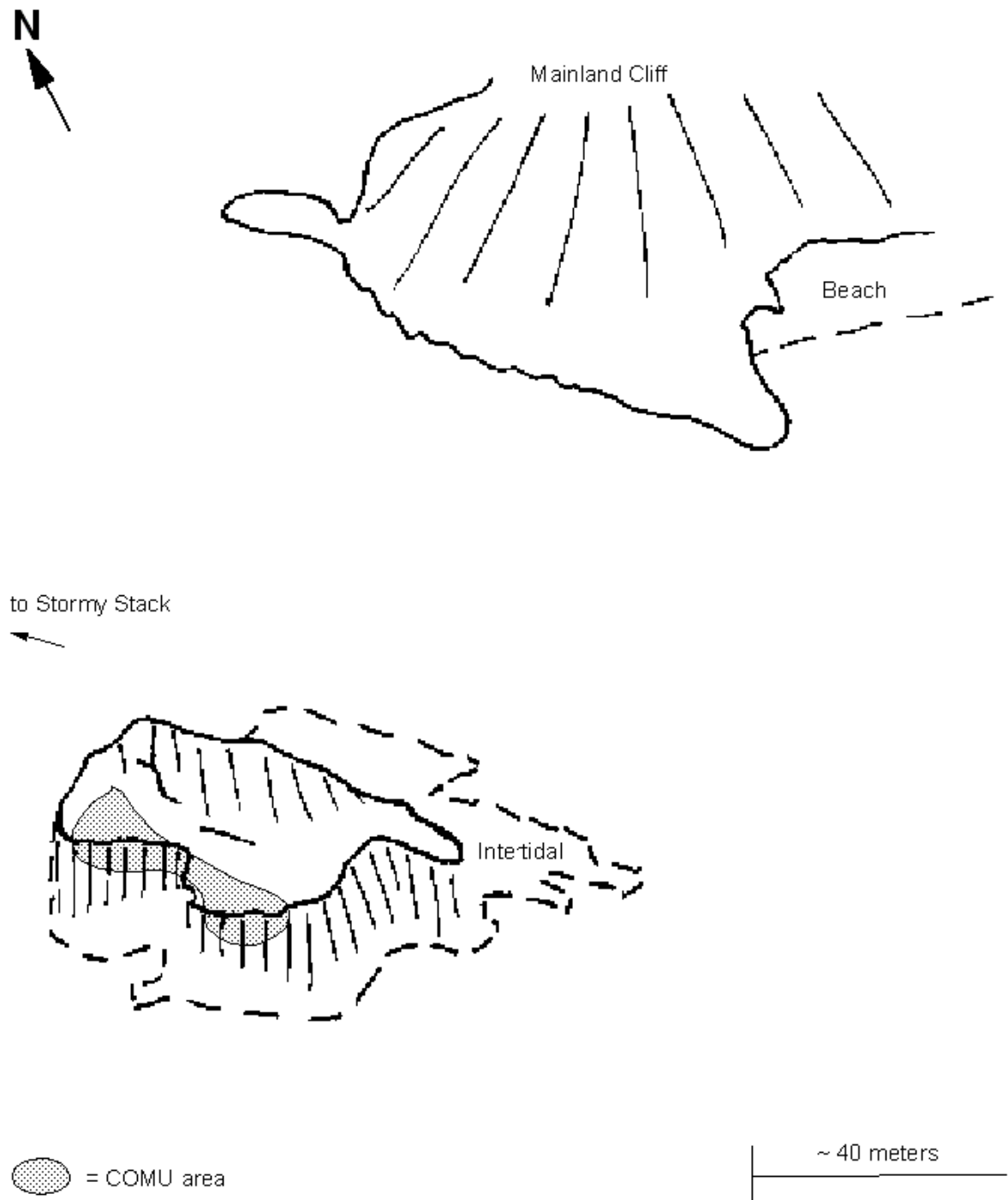
**Appendix B-9.** Counts of Common Murres by subareas at Stormy Stack, 1997-2000. Counts are means from the 22 May-15 June period.



**Appendix B-10.** Locations at Point Resistance Mainland that were attended by Common Murres and Brown Pelicans in 1998. Outline traced from photo 98-WRM-1-9, 15 June 1998. Format as in Appendix 2.



**Appendix B-11.** Locations at Double Point South Rock attended by Common Murres in 1998. Outline of rock traced from photo 98-AUG-2-24, 31 July 1998. Format as in Appendix 2.





**Appendix C.** Individual seabirds recovered during the 1997-98 Point Reyes Tarball Incidents. Found Status code: 1 - found alive; 2 - found dead; U - unknown. Oiling Status code: oiled; not visibly oiled; unknown; or other (i.e., not oiled with other cause of death). Oiling Extent code: 1 - small globules (<2% of body); 2 - 2-33% of body; 3 - 34-66% of body; 4 - 67-100% of body; and U - unknown. Scavenged code: Y - yes; N - no; U - unknown; and NN - no but necropsied. Decomposition code: 1 - alive; 2 - fresh dead; 3 - decomposed; 4 - dried, mummified; U - unknown; and S - sandy. Banded leg is indicated with band number.

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1	Freezer	1	Western Grebe	01/21/98		Drake's Beach West	Unknown	--	1	Dead	Oiled	2-3	N	1	Pink	387
2	Freezer	2	Common Murre	01/22/98		South Beach	Unknown	--	1	Dead	Oiled	3	N	1	Light Green	76
3	Freezer	3	Common Murre	01/25/98		Drake's Beach	Unknown	--	1	Dead	Oiled	3	N	1	Yellow Orange	98L
4	Freezer	4	Common Murre	01/24/98		Pescadero	Unknown	--	1	Dead	Oiled	3	N	1	Teal	14L
5	Freezer	5	Common Murre	01/24/98		Moss Beach - Weinke Way	Unknown	--	1	Dead	Oiled	3	N	1	Teal	20L
6	Freezer	6	Common Murre				Unknown	--	1	Dead	Oiled	2	N	1	Pink	88L
7	Freezer	7	Common Murre	01/24/98		Miramar Beach Half Moon Bay	Unknown	--	1	Dead	Oiled	4	N	1	Pink	97L
8	Freezer	8	Common Murre	01/25/98		Doran Beach	Unknown	--	1	Dead	Oiled	3	N	1	Yellow Orange	32L
9	Freezer	9	Common Murre	01/25/98		Drake's Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	92R
10	Freezer	10	Common Murre	01/24/98		Limantour Beach	Unknown	--	1	Dead	Oiled	3	N	1	Green	84L
11	Freezer	11	Common Murre	02/11/98		Pilar Point	Pilar Point	3-32	1	Dead	Oiled	2	N	1		
12	Freezer	12	Common Murre	02/11/98		Pilar Point	Pilar Point	3-32	1	Dead	Oiled	2	N	1		
13	Freezer	13	Common Murre	02/11/98		Pilar Point	Pilar Point	3-32	2	Dead	Oiled	4	N	2		
14	Freezer	14	Common Murre	02/11/98		Surfer's Beach - Half Moon Bay	Unknown	--	1	Dead	Oiled	2	N	1	Green	2651R
15	Freezer	15	Common Murre	02/04/98		Doran Beach South	Unknown	--	1	Dead	Oiled	3	N	1	Green	722R
16	Freezer	16	Common Murre	02/04/98		Doran Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	715R
17	Freezer	17	Common Murre				Unknown	--	2	Dead	Oiled	2	Y	2S		
18	Freezer	18	Common Murre				Unknown	--	2	Dead	Oiled	2	Y	2S		
19	Freezer	19	Common Murre				Unknown	--	2	Dead	Oiled	3	N	2S		
20	Freezer	20	Common Murre				Unknown	--	2	Dead	Oiled	2	Y	2S		
21	Freezer	21	Common Murre				Unknown	--	2	Dead	Oiled	2	Y	2S		
22	Freezer	22	Common Murre				Unknown	--	2	Dead	Oiled	2	N	2S		
23	Freezer	23	Common Murre	11/18/97	K. Brewer	Point Reyes Section 2	Unknown	--	2	Dead	Oiled	2	Y	2S		
24	Freezer	24	Common Murre				Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2S		
25	Freezer	25	Common Murre				Unknown	--	2	Dead	Oiled	3	Y	2S		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
26	Freezer	26	Common Murre				Unknown	--	2	Dead	Oiled	2	N	2S		
27	Freezer	27	Common Murre	01/24/98		Doran Beach	Unknown	--	1	Dead	Oiled	3	NN	1	Pink	100R
28	Freezer	28	Common Murre	01/25/98		Natural Bridges	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	33L
29	Freezer	29	Common Murre	01/26/98		Dunes Beach	Unknown	--	2	Dead	Oiled	2	Y	2		
30	Freezer	30	Common Murre	01/26/98		Greyhound Rock	Greyhound Rk. To Pelican Rk.	5-13	2	Dead	Oiled	3	U	3		
31	Freezer	31	Common Murre	01/28/98		Pacifica State Beach	Linda Mar	3-19	2	Dead	Oiled	3	Y	3		
32	Freezer	32	Common Murre	01/26/98		Fitzgerald Marine Reserve	J.V. Fitzgerald Marine Reserve	3-31	1	Dead	Oiled	2	N	1		
33	Freezer	33	Common Murre	01/20/98	M. Brown	Ocean Beach Central	Ocean Beach, Central	3-09	2	Dead	Oiled	2	N	2		
34	Freezer	34	Northern Fulmar	01/25/98	E. Ueber	Half Moon Bay	Half Moon Bay D	4-05	2	Dead	Oiled	1	U	3		
35	Freezer	35	Common Murre	01/20/98	M. Brown	Ocean Beach Central	Ocean Beach, Central	3-09	2	Dead	Oiled	4	Y	3		
36	Freezer	36	Common Murre	01/20/98		Ocean Beach Central	Ocean Beach, Central	3-09	2	Dead	Oiled	2	N	2S		
37	Freezer	37	Common Murre	01/25/98	E. Ueber	Half Moon Bay	Half Moon Bay D	4-05	2	Dead	Oiled	3	N	2S		
38	Freezer	38	Common Murre	01/25/98	E. Ueber	Half Moon Bay	Half Moon Bay D	4-05	2	Dead	Oiled	2	Y	3		
39	Freezer	39	Common Murre	01/25/98	L. Raden	Pescadero	Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Oiled	2	N	2		
40	Freezer	40	Common Murre	01/25/98	L. Raden	Pescadero	Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Oiled	2	N	2S		
41	Freezer	41	Common Murre	01/25/98	L. Raden	Fiddlers Cove	Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Oiled	2	N	2		
42	Freezer	42	Common Murre	01/26/98		Fitzgerald Marine Reserve	Unknown	--	1	Dead	Oiled	3	NN	1	Yellow Orange	36L
43	Freezer	43	Common Murre	01/20/98		Lifeboat Station	Unknown	--	1	Dead	Oiled	2-3	NN	1	Red	2821R
44	Freezer	44	Northern Fulmar	11/16/97		Drake's Beach	Unknown	--	1	Dead	Oiled	1	N	1	Red	59
45	Freezer	45	Common Murre				Unknown	--	2	Dead	Oiled	4	N	2		
46	Freezer	46	Northern Fulmar	11/16/97		Point Reyes Beach	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Green	81
47	Freezer	47	Common Murre	11/17/97		South Point Reyes Beach	Unknown	--	1	Dead	Oiled	3	N	1	Green	87L
48	Freezer	48	Common Murre	11/19/97		Fort Cronkite	Unknown	--	U	Dead	Oiled	2	N	1-2	Red	1754R
49	Freezer	49	Northern Fulmar	11/20/97		North Beach	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Yellow	50L
50	Freezer	50	Northern Fulmar	11/20/97		Salmon Creek	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Red	1903



Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
51	Freezer	51	Common Murre	11/17/97		North Point Reyes Beach	Unknown	--	1	Dead	Oiled	3	N	1	Green	90L
52	Freezer	52	Common Murre	02/12/98	J. Holcomb	Bodega Bay North Beach	Doran Beach	1-06	2	Dead	Oiled	2	Y	3		
53	Freezer	53	Common Murre	02/06/98		Doran Beach	Doran Beach	1-06	2	Dead	Oiled	3	N	2S		
54	Freezer	54	Common Murre	02/12/98	C. Clumpner	Bodega Harbor North	Doran Beach	1-06	2	Dead	Oiled	1	N	2		
55	Freezer	55	Common Murre	02/06/98		Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
56	Freezer	56	Common Murre	02/06/98		Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	Y	2		
57	Freezer	57	Common Murre	02/12/98	J. Holcomb	Bodega Bay North Beach	Doran Beach	1-06	2	Dead	Oiled	3	Y	2-3		
58	Freezer	58	Common Murre	02/12/98	J. Holcomb	Bodega Bay North Beach	Doran Beach	1-06	2	Dead	Oiled	2	Y	3		
59	Freezer	59	Common Murre	02/12/98	C. Clumpner	Bodega Bay North Beach	Doran Beach	1-06	2	Dead	Oiled	2	Y	2-3		
60	Freezer	60	Common Murre	02/12/98	C. Clumpner	Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	2	N	2S		
61	Freezer	61	Common Murre	02/09/98	D. Press	Drake's West	Drakes Beach W.	2-03	2	Dead	Oiled	2	Y	2		
62	Freezer	62	Horned Grebe	02/09/98	D. Press	Drake's West	Drakes Beach W.	2-03	2	Dead	Oiled	1	N	2		
63	Freezer	63	Common Murre	02/17/98	D. Press	Drake's West	Drakes Beach W.	2-03	2	Dead	Oiled	2	Y	2		
64	Freezer	64	Common Murre	02/09/98	D. Press	Drake's West	Drakes Beach W.	2-03	2	Dead	Oiled	2	N	2		
65	Freezer	65	Common Murre	02/17/98	D. Press	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	2		
66	Freezer	66	Cassin's Auklet	02/17/98	D. Press	Limantour Beach East	Limantour Beach E.	2-06	U	Dead	Oiled	2	N	1-2		
67	Freezer	67	Common Murre	02/17/98	D. Press	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	2S		
68	Freezer	68	Cassin's Auklet	02/17/98	A. Frank	RCA Beach	RCA Beach	2-12	2	Dead	Oiled	2	N	2-3		
69	Freezer	69	Common Murre	01/24/98	Shaw/Erin	South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Oiled	2	Y	2-3S		
70	Freezer	70	Common Murre	01/18/98	J. Hall	Goat Rock Beach	Other	--	2	Dead	Oiled	3	Y	2		
71	Freezer	71	Northern Fulmar	01/21/98	J. Hall	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	1	N	2		
72	Freezer	72	Common Murre	01/24/98	Ames/Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	4	Y	2		
73	Freezer	73	Common Murre	01/18/98	J. Hall	Goat Rock Beach	Other	--	2	Dead	Oiled	2	N	2S		
74	Freezer	74	Common Murre	01/25/98	A. Frank/S. McCallister	McClure's Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	2	N	2S		
75	Freezer	75	Common Murre	01/24/98	Ames/Imai	Limantour Beach	Unknown	--	2	Dead	Oiled	2	N	2		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
76	Freezer	76	Common Murre	01/24/98	Ames/Imai	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	2		
77	Freezer	77	Common Murre	01/24/98	Shaw/Erin	South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Oiled	2	Y	2		
78	Freezer	86	Western Grebe	11/28/97	J. Hall/J. Campo	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	1	N	2S		
79	Freezer	87	Common Murre	11/28/97	J. Hall/J. Campo	Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	2	Y	2		
80	Freezer	88	Common Murre	11/28/97	J. Hall/J. Campo	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
81	Freezer	89	Common Murre	11/28/97	J. Hall/J. Campo	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	4	N	2S		
82	Freezer	90	Rhinoceros Auklet	11/28/97	S. McCarthy	Sharp Park Beach	Sharp Park	3-15	2	Dead	Oiled	3	Y	2		
83	Freezer	91	Common Murre	11/28/97	J. Hall/J. Campo	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	1	Y	2S		
84	Freezer	92	Western Grebe	11/28/97	J. Hall/J. Campo	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
85	Freezer	93	Common Murre	11/28/97	J. Hall/J. Campo	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	4	Y	2-3S		
86	Freezer	94	Common Murre	11/28/97	J. Hall/J. Campo	Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	2	Y	2-3S		
87	Freezer	95	Common Murre	01/21/98	A. Frank	Palomarin	E. Double Pt. to Palomarin	2-11	2	Dead	Oiled	2	Y	2S		
88	Freezer	96	Surf Scoter	01/21/98	D. Mellow	Limantour Beach South	Limantour Beach E.	2-06	2	Dead	Oiled	1	Y	2S		
89	Freezer	97	Common Murre	01/21/98	D. Mellow	Limantour Beach South	Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	2S		
90	Freezer	98	Common Murre	02/05/98	C. Clumpner	Drake's Beach South	Unknown	--	2	Dead	Oiled	2	N	2		
91	Freezer	99	Western or Clark's Grebe	01/21/98	D. Mellow	Limantour Beach South	Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3S		
92	Freezer	100	Common Murre	01/21/98	D. Mellow	Limantour Beach South	Limantour Beach E.	2-06	2	Dead	Oiled	3	Y	2S		
93	Freezer	101	Common Murre	01/21/98	A. Frank	Palomarin	E. Double Pt. to Palomarin	2-11	2	Dead	Oiled	2	Y	2S		
94	Freezer	102	Common Murre	01/21/98	A. Frank	Palomarin	E. Double Pt. to Palomarin	2-11	2	Dead	Oiled	3	Y	2S		
95	Freezer	103	Common Murre	01/21/98	D. Mellow	Limantour Beach South	Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	2S		
96	Freezer	104	Common Murre	11/25/97	C. Raleigh	SEFI	Unknown	--	2	Dead	Oiled	3	N	2S		
97	Freezer	105	Brandt's Cormorant	11/28/97	L. Patrick	Gazos Creek	Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	3		
98	Freezer	106	Common Murre	12/05/97	D. Howard	Crissy Field	Other	--	2	Dead	Oiled	2	N	2S		
99	Freezer	107	Western Grebe	11/28/97	L. Patrick	Gazos Creek	Gazos Creek Beach	5-03	2	Dead	Oiled	1	N	2S		
100	Freezer	108	Common Murre	02/05/98		Drake's Beach	Unknown	--	1	Dead	Oiled	3	N	1	Red	681R

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
101	Freezer	109	Common Murre	02/05/98		New Brighton State Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	961L
102	Freezer	110	Common Murre	02/01/98		Doran Beach	Unknown	--	1	Dead	Oiled	1	N	1	Green	3019 L
103	Freezer	111	Common Murre	02/06/98		Lover's Point	Figueroa Rd. to Lovers Pt.	9-01	1	Dead	Oiled	2	N	1	Pink	33 L
104	Freezer	112	Common Murre	02/03/98		Salmon Creek	Unknown	--	1	Dead	Oiled	2-3	N	1	Yellow	56L
105	Freezer	113	Common Murre	02/05/98		Bolinas Beach	Unknown	--	1	Dead	Oiled	3	N	1	White	61L
106	Freezer	114	Common Murre	02/05/98		Lover's Point Beach	Unknown	--	1	Dead	Oiled	2-4	N	1	Green	963L
107	Freezer	115	Common Murre	02/04/98		Doran Beach	Unknown	--	1	Dead	Oiled	3	N	1	Green	2926 R
108	Freezer	116	Common Murre	02/07/98		SC Main Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	962L
109	Freezer	117	Common Murre	02/06/98		Cowells Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	959L
110	Freezer	118	Common Murre	12/04/97		Pilar Point	Unknown	--	1	Dead	Oiled	2	N	1	Pink	45L
111	Freezer	119	Common Murre	02/05/98		Drake's Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	2927 R
112	Freezer	120	Red Phalarope	02/06/98			Unknown	--	1	Dead	Other	--	N	1		
113	Freezer	121	Red Phalarope	02/06/98		Natural Bridges	Unknown	--	1	Dead	Oiled	2	N	1	Tape	454
114	Freezer	122	Red Phalarope	02/07/98		Seacliff	Unknown	--	1	Dead	Oiled	2	N	1	Tape	464
115	Freezer	123	Red Phalarope	02/05/98		Seabright Beach	Unknown	--	1	Dead	Oiled	2	N	1	Tape	394
116	Freezer	124	Black-vented Shearwater	02/14/98		Pilar Point	Pilar Point	3-32	2	Dead	Oiled	3-4	N	3		
117	Freezer	125	Common Murre	02/05/98		Point Reyes Section 2	Point Reyes Beach B	1-15	1	Dead	Oiled	2-4	N	1	Green	2933 L
118	Freezer	126	Common Murre	02/14/98		Pigeon Point	Pilar Point	3-32	2	Dead	Oiled	2	N	2-3S		
119	Freezer	127	Common Murre	02/14/98		Pilar Point	Pilar Point	3-32	2	Dead	Oiled	3	N	2-3		
120	Freezer	128	Common Murre	02/12/98		Salmon Creek	Unknown	--	1	Dead	Oiled	2	N	1	Green	2654L
121	Freezer	129	Common Murre	02/14/98		Pilar Point	Pilar Point	3-32	2	Dead	Oiled	2	Y	2S		
122	Freezer	130	Red-throated Loon	02/14/98		Pilar Point	Pilar Point	3-32	2	Dead	Oiled	3	N	3		
123	Freezer	131	Common Murre	02/14/98		Pilar Point	Pilar Point	3-32	2	Dead	Oiled	2	N	2S		
124	Freezer	132	Black-legged Kittiwake	02/07/98		Limantour Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	3376R
125	Freezer	133	Brandt's Cormorant	02/19/98		Pajaro Dunes	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
126	Freezer	134	Pied-billed Grebe	11/19/97	B. Adkins	Point Reyes Section 1	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2-3S		
127	Freezer	135	Common Murre	11/19/97	K. Brewer	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Not Visibly Oiled	--	Y	2		
128	Freezer	136	Common Murre	11/19/97	B. Adkins	Point Reyes Section 1	Unknown	--	2	Dead	Oiled	2	N	2-3S		
129	Freezer	137	Common Murre	11/19/97	K. Brewer	Point Reyes Section 2	Unknown	--	2	Dead	Oiled	2	Y	2S		
130	Freezer	138	Common Murre	11/19/97	B. Adkins	Point Reyes Section 1	Unknown	--	2	Dead	Oiled	3	N	2S		
131	Freezer	139	Common Murre	11/19/97	B. Adkins	Point Reyes Section 1	Unknown	--	2	Dead	Oiled	4	Y	2S		
132	Freezer	140	Clark's Grebe	11/19/97	K. Brewer	Point Reyes Section 1	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2		
133	Freezer	141	Common Murre	11/19/97	K. Brewer	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		
134	Freezer	142	Common Murre	11/19/97	B. Adkins	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		
135	Freezer	143	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	3-4S		
136	Freezer	144	Common Murre	02/02/98		Doran Beach	Unknown	--	1	Dead	Oiled	3	N	1	Red	2582L
137	Freezer	145	Common Murre	01/20/98		Drake's Beach West	Unknown	--	1	Dead	Oiled	2-3	N	1	Red	2815R
138	Freezer	146	Common Murre	01/25/98		Lifeboat station, Point Reyes	Unknown	--	1	Dead	Oiled	2-3	N	1	White	46R
139	Freezer	147	Common Murre	02/02/98		Linda Mar Beach	Unknown	--	1	Dead	Oiled	3	N	1	Red	2589R
140	Freezer	148	Common Murre	02/04/98		Capitola Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	2593 R
141	Freezer	149	Common Murre	01/18/98		Salmon Creek	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	3222R
142	Freezer	150	Common Murre	02/03/98		Fisherman's Wharf	Unknown	--	1	Dead	Oiled	2	N	1	Green	3020R
143	Freezer	151	Common Murre	02/05/98		Drake's Beach	Unknown	--	1	Dead	Oiled	3	N	1	Red	680R
144	Freezer	152	Common Murre	02/06/98		Farallones	Unknown	--	1	Dead	Oiled	3	N	1	Green	967L
145	Freezer	153	Common Murre	02/03/98		Año Nuevo	Unknown	--	1	Dead	Oiled	2	N	1	Red	2592R
146	Freezer	154	Red Phalarope	02/09/98		Beach near Carmel River	Unknown	--	1	Dead	Oiled	2	N	1	Tape	511
147	Freezer	155	Brandt's Cormorant				Unknown	--	1	Dead	Not Visibly Oiled	--	N	1		
148	Freezer	156	Common Murre	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		
149	Freezer	157	Western Grebe	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		
150	Freezer	158	Common Murre	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav. Decomp.	Band Color	Band Number
151	Freezer	159	Common Murre	02/09/98	Imai	South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Oiled	2	Y	2-3	
152	Freezer	160	Common Murre	02/09/98	Imai	South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Oiled	2	N	2S	
153	Freezer	161	Common Murre	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S	
154	Freezer	162	Common Murre	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2-3S	
155	Freezer	163	Common Murre	02/04/98	A. Frank	Stinson Beach	Stinson Beach B	2-14B	2	Dead	Oiled	3	N	2S	
156	Freezer	164	Common Murre	02/04/98	D. Press	South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Oiled	2	N	2S	
157	Freezer	165	Common Murre	02/05/98	A. Frank	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	Y	2	
158	Freezer	166	Common Murre	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Not Visibly Oiled	--	Y	2S	
159	Freezer	167	Common Murre	02/09/98	C. Clumpner	Palomarin	E. Double Pt. to Palomarin	2-11	2	Dead	Oiled	2	Y	2	
160	Freezer	168	Common Murre	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S	
161	Freezer	169	Rhinoceros Auklet	02/09/98	Dymytrk	Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	2	Y	2	
162	Freezer	170	Common Murre	02/09/98	Imai	South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Oiled	2	Y	2	
163	Freezer	171	Common Murre	02/09/98	Newman	Bolinas	Bolinas Beach	2-13	2	Dead	Oiled	2	N	3S	
164	Freezer	172	Common Murre	02/09/98	Imai	South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Oiled	2	Y	2S	
165	Freezer	173	Pacific Loon	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2-3	
166	Freezer	174	Common Murre	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S	
167	Freezer	175	Common Murre	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S	
168	Freezer	176	Common Murre	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2	
169	Freezer	177	Common Murre	02/09/98	Imai	South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Oiled	2	Y	2S	
170	Freezer	178	Common Murre	02/09/98	Imai	South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2S	
171	Freezer	179	Common Murre	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2	
172	Freezer	180	Common Murre	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S	
173	Freezer	181	Common Murre	02/09/98	Newman	Bolinas	Bolinas Beach	2-13	2	Dead	Oiled	2	N	3S	
174	Freezer	182	Common Murre	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	N	2S	
175	Freezer	183	Common Murre	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S	

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
176	Freezer	184	Common Murre	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	N	2S		
177	Freezer	185	Common Murre	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2-3		
178	Freezer	186	Common Murre	02/09/98	Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		
179	Freezer	187	Common Murre	01/27/98		Drake's Beach	Unknown	--	2	Dead	Oiled	2	N	2		
180	Freezer	188	Common Murre	02/03/98		Pacifica	Unknown	--	1	Dead	Oiled	4	N	1	Red	2590R
181	Freezer	189	Western Gull				Unknown	--	1	Dead	Other	--	N	1		
182	Freezer	190	Pacific Loon	02/07/98		Pilar Point	Unknown	--	1	Dead	Oiled	2	N	1	Blue	2304R
183	Freezer	191	Common Murre	02/07/98		South Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	700R
184	Freezer	192	Common Murre	02/09/98		San Gregorio	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	638L
185	Freezer	193	Common Murre	02/08/98		San Carlos Bch Monterey	Unknown	--	1	Dead	Oiled	2	N	1	Pink	30L
186	Freezer	194	Common Murre	02/08/98		Stinson Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	645R
187	Freezer	195	Common Murre	01/21/98		Bolinas	Unknown	--	1	Dead	Oiled	3-4	N	1	Red	3230L
188	Freezer	196	Red Phalarope	02/07/98		Santa Cruz OWCN	Unknown	--	1	Dead	Oiled	2	N	1	Tape	467
189	Freezer	197	Northern Fulmar	11/18/97	G. Conde		Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2		
190	Freezer	198	Pacific Loon	11/18/97	D. Howard	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	2		
191	Freezer	199	Northern Fulmar	11/18/97	G. Conde	Drake's Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2		
192	Freezer	200	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	3S		
193	Freezer	201	Northern Fulmar	11/18/97		Drake's Beach	Unknown	--	2	Dead	Oiled	1	Y	2		
194	Freezer	202	Double-crested Cormorant	11/18/97	G. Conde	Drake's Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	3S		
195	Freezer	203	Common Murre	11/18/97	G. Conde	Drake's Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
196	Freezer	204	Northern Fulmar	11/18/97	G. Conde	Drake's Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2-3		
197	Freezer	205	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2-3S		
198	Freezer	206	Northern Fulmar	11/18/97	G. Conde	Drake's Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2		
199	Freezer	207	Common Murre		C. Clumpner	Abbott's Lagoon	Unknown	--	2	Dead	Oiled	2	Y	2S		
200	Freezer	208	Common Murre		D. Howard	Limantour Beach	Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	2S		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
201	Freezer	209	Common Murre		K. Brewer	McClure's Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	2	Y	3		
202	Freezer	210	Cassin's Auklet	11/18/97			Unknown	--	2	Dead	Unknown	U	Y	3S		
203	Freezer	211	Common Murre	11/18/97	C. Clumpner	McClure's Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	2	Y	3S		
204	Freezer	212	Western or Clark's Grebe	11/18/97	K. Brewer	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Unknown	U	Y	3S		
205	Freezer	213	Common Murre		D. Howard	Limantour Beach	Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	2S		
206	Freezer	214	Northern Fulmar				Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
207	Freezer	215	Common Murre				Unknown	--	2	Dead	Oiled	3	Y	2S		
208	Freezer	216	Brandt's Cormorant				Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
209	Freezer	217	Common Murre	01/24/98	Ames/Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	Y	2S		
210	Freezer	218	Common Murre	02/08/98		Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	N	2S		
211	Freezer	219	Unidentified Alcid	01/17/98	J. Hall	Half Moon Bay	Half of Half Moon Bay E	4-06S	2	Dead	Oiled	4	Y	3S		
212	Freezer	220	Western Grebe	01/17/98		Tunita's Creek	Tunitas Creek Beach	4-10	2	Dead	Oiled	2	Y	2S		
213	Freezer	221	Surf Scoter	01/24/98	Ames/Imai	Drake's Bay West	Drakes Beach W.	2-03	2	Dead	Oiled	2	N	2S		
214	Freezer	222	Common Murre	01/17/98	J. Hall	Tunitas Creek	Tunitas Creek Beach	4-10	2	Dead	Unknown	U	Y	3S		
215	Freezer	223	Common Murre	01/17/98	J. Hall	Tunitas Creek	Tunitas Creek Beach	4-10	2	Dead	Oiled	3	N	2S		
216	Freezer	224	Common Murre	01/17/98	J. Hall	Tunitas Creek	Tunitas Creek Beach	4-10	2	Dead	Oiled	2	Y	2S		
217	Freezer	225	Common Murre	01/24/98	Ames/Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		
218	Freezer	226	Western Grebe		E. Ueber	Crissy Field	Unknown	--	1	Dead	Oiled	2	N	1		
219	Freezer	227	Northern Fulmar	11/17/97	T. Williamson	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Not Visibly Oiled	--	N	2S		
220	Freezer	228	Northern Fulmar	11/17/97	T. Williamson	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Not Visibly Oiled	--	Y	2S		
221	Freezer	229	Northern Fulmar	11/17/97	T. Williamson	South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	N	2S		
222	Freezer	230	Common Murre	11/17/97	T. Williamson	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	Y	2S		
223	Freezer	231	Common Murre	11/17/97	T. Williamson	South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Oiled	4	N	2S		
224	Freezer	232	Common Murre	11/17/97	T. Williamson	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		
225	Freezer	233	Common Murre	11/17/97	T. Williamson	South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Oiled	2	N	2S		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
226	Freezer	234	Common Murre	11/17/97	T. Williamson	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	N	2S		
227	Freezer	235	Northern Fulmar	11/18/97		Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
228	Freezer	236	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2S		
229	Freezer	237	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
230	Freezer	238	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2S		
231	Freezer	239	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Oiled	1	N	2S		
232	Freezer	240	Red Phalarope	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	4		
233	Freezer	241	Common Murre	11/18/97	D. Howard	Limantour Beach	Limantour Beach E.	2-06	2	Dead	Oiled	2	N	2S		
234	Freezer	242	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	3		
235	Freezer	243	Common Murre	11/18/97	D. Howard	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2	N	2S		
236	Freezer	244	Common Murre	11/18/97	K. Cooper	Section H	Unknown	--	2	Dead	Oiled	2	Y	2S		
237	Freezer	245	Common Murre	11/17/97	M. Ziccardi	Limantour Beach	Unknown	--	2	Dead	Unknown	--	Y	2S		
238	Freezer	246	Common Murre	11/17/97	C. Clumpner	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Unknown	--	Y	3		
239	Freezer	247	Common Murre	11/17/97	T. Williamson	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	N	2S		
240	Freezer	248	Western Grebe	11/17/97	C. Clumpner	Abbott's Lagoon	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1		
241	Freezer	249	Common Murre	11/17/97	M. Ziccardi	Limantour Beach	Unknown	--	2	Dead	Oiled	3	Y	2S		
242	Freezer	250	Western Grebe	11/17/97	M. Ziccardi	Limantour Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
243	Freezer	251	Common Murre	11/17/97	M. Ziccardi	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
244	Freezer	252	Common Murre	11/17/97	M. Ziccardi	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	3S		
245	Freezer	253	Common Murre	11/17/97	M. Ziccardi	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	3S		
246	Freezer	254	Common Murre	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
247	Freezer	255	Common Murre	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
248	Freezer	256	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
249	Freezer	257	Western or Clark's Grebe	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
250	Freezer	258	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2S		



Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
251	Freezer	259	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	3S		
252	Freezer	260	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	U		
253	Freezer	261	Western or Clark's Grebe	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	3S		
254	Freezer	262	Common Murre	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
255	Freezer	263	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Unknown	U	Y	3S		
256	Freezer	264	Common Murre	11/19/97		Limantour Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
257	Freezer	265	Common Murre	11/19/97	G. Goeden	Limantour Beach	Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	2S		
258	Freezer	266	Common Murre	11/19/97	B. Goeden	Limantour Beach	Limantour Beach E.	2-06	2	Dead	Oiled	3	Y	2S		
259	Freezer	267	Western or Clark's Grebe	11/19/97	B. Goeden	Limantour Beach	Limantour Beach E.	2-06	2	Dead	Oiled	3	Y	3S		
260	Freezer	268	Common Murre	11/19/97	L. Hug	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	3	Y	2S		
261	Freezer	269	Common Murre	11/19/97	L. Hug	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	N	2S		
262	Freezer	270	Common Murre	11/19/97	D. Reno	Limantour Beach	Unknown	--	2	Dead	Oiled	3	Y	2S		
263	Freezer	271	Common Murre	11/19/97	L. Hug	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	3	Y	2S		
264	Freezer	272	Common Murre	11/19/97	B. Goeden	Limantour Beach	Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	2S		
265	Freezer	273	Northern Fulmar	11/19/97	D. Reno	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	3S		
266	Freezer	274	Common Murre	01/22/98	J. Holcomb/ S. McCallister	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
267	Freezer	275	Common Murre	01/22/98	J. Mazet	South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Oiled	4	N	2S		
268	Freezer	276	Western or Clark's Grebe	01/22/98	J. Holcomb/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	3S		
269	Freezer	277	Common Murre	01/22/98	J. Holcomb/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	3S		
270	Freezer	278	Common Murre	01/22/98	J. Mazet/ Ames/Newman	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	3S		
271	Freezer	279	Common Murre	01/22/98	J. Holcomb/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		
272	Freezer	280	Common Murre	01/21/98	S. McCallister/ J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	Y	2S		
273	Freezer	281	Northern Fulmar	01/22/98	J. Mazet	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	4	N	2S		
274	Freezer	282	Common Murre	01/21/98	S. McCallister	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	2	N	2S		
275	Freezer	283	Cassin's Auklet	01/22/98	J. Holcomb/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
276	Freezer	284	Common Murre	01/17/98		South Beach	Unknown	--	1	Dead	Oiled	2-3	N	1S	Red	196L
277	Freezer	285	Western Grebe	01/28/98		Doran Beach	Unknown	--	1	Dead	Oiled	2	N	1S	Blue	3L
278	Freezer	286	Common Murre	01/25/98		Doran Beach	Unknown	--	1	Dead	Oiled	3	N	1S	Yellow	37L
279	Freezer	287	Common Murre	01/27/98		Waddell Beach	Unknown	--	1	Dead	Oiled	2	N	1S	Yellow	38R
280	Freezer	288	Common Murre	01/28/98		SF, La Playa & Judah	Unknown	--	1	Dead	Oiled	2	N	1S	Blue	12R
281	Freezer	289	Common Murre	01/24/98		Drake's Beach West	Unknown	--	1	Dead	Oiled	3	N	1S	Pink	87R
282	Freezer	290	Common Murre	01/26/98		Francis Beach, Half Moon Bay	Unknown	--	1	Dead	Oiled	3	N	1S	Yellow	34L
283	Freezer	291	Common Murre	01/19/98		Stinson Beach	Unknown	--	1	Dead	Oiled	3	N	1S	Blue	1L
284	Freezer	292	Pacific Loon	01/28/98		Lover's Point Beach	Unknown	--	1	Dead	Oiled	2	N	1S	Green	248R
285	Freezer	293	Common Murre	11/19/97	B. Hilliard	Bolinas Point	Bolinas Beach	2-13	2	Dead	Oiled	2	Y	2S		
286	Freezer	294	Eared Grebe	11/19/97	B. Hilliard	Bolinas Point	Bolinas Beach	2-13	2	Dead	Not Visibly Oiled	--	N	2S		
287	Freezer	295	Common Murre	11/19/97	T. Haidet	Agate Beach	RCA Beach	2-12	2	Dead	Oiled	2	N	2S		
288	Freezer	296	Common Murre	11/19/97	M. Haulena	Palomarin	E. Double Pt. to Palomarin	2-11	2	Dead	Oiled	3	N	2S		
289	Freezer	297	Common Murre	11/19/97	N. Koons	Palomarin	E. Double Pt. to Palomarin	2-11	2	Dead	Oiled	3	U	2S		
290	Freezer	298	Common Murre	11/19/97	G. Goeden	Limantour Beach	Limantour Beach E.	2-06	2	Dead	Oiled	3	N	2S		
291	Freezer	299	Common Murre	11/19/97	M. Migdal	Palomarin	E. Double Pt. to Palomarin	2-11	2	Dead	Oiled	3	N	2S		
292	Freezer	300	Common Murre	11/19/97	M. Migdal	Palomarin	E. Double Pt. to Palomarin	2-11	2	Dead	Oiled	2	Y	2S		
293	Freezer	302	Common Murre	12/22/97		Del Monte Beach	Unknown	--	2	Dead	Oiled	2	N	2S	Red	126L
294	Freezer	306	Western Grebe				Unknown	--	U	Dead	Oiled	2	N	1-2	Tape	5-710
295	Freezer	309	Common Murre	11/19/97	D. Reno	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
296	Freezer	310	Northern Fulmar	11/19/97	L. Grella	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	3S		
297	Freezer	311	Common Murre	11/19/97	D. Reno	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
298	Freezer	312	Common Murre	11/19/97	C. Dernisse/J. Campo	Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	3	N	2S		
299	Freezer	313	Common Murre	11/19/97	D. Reno	Limantour Beach	Unknown	--	2	Dead	Oiled	3	N	2S		
300	Freezer	314	Western or Clark's Grebe	11/19/97	D. Reno	Limantour Beach	Unknown	--	2	Dead	Oiled	2	N	4		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
301	Freezer	315	Common Murre	11/19/97	D. Reno	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	3S		
302	Freezer	316	Common Murre	11/19/97	L. Grella	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	3	Y	2S		
303	Freezer	317	Red Phalarope	11/19/97	L. Grella	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	2S		
304	Freezer	318	Northern Fulmar	11/19/97	L. Grella	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	1	Y	4		
305	Freezer	319	Western Grebe	01/25/98		Doran Beach	Unknown	--	1	Dead	Oiled	2-3	NN	1	Yellow	678L
306	Freezer	320	Surf Scoter				Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Blue	1656L
307	Freezer	321	Common Murre	01/22/98		Fitzgerald Marine Reserve	Unknown	--	1	Dead	Oiled	3-4	N	1	Green	604R
308	Freezer	322	Common Murre	01/20/98		Lifeboat Station	Unknown	--	1	Dead	Oiled	2-3	N	1	Red	2817R
309	Freezer	323	Common Murre	01/24/98		Salmon Creek	Unknown	--	1	Dead	Oiled	3-4	NN	1	Pink	80R
310	Freezer	324	Common Murre	01/31/98		Rio del Mar Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	606L
311	Freezer	325	Common Murre	01/30/98		Abbott's Lagoon	Unknown	--	1	Dead	Oiled	3	N	1	Green	608R
312	Freezer	326	Common Murre	01/25/98		Bolinas Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	39R
313	Freezer	327	Common Murre			Unknown	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Yellow	46L
314	Freezer	328	Common Murre	01/24/98		Limantour Beach	Unknown	--	1	Dead	Oiled	2-4	N	1	Green	92R
315	Freezer	329	Common Murre	11/19/97		Salmon Creek	Unknown	--	1	Dead	Oiled	2	N	1	Blue	28L
316	Freezer	330	Common Murre	11/17/97		Limantour Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	86L
317	Freezer	331	Western Grebe	11/19/97		Doran Park, Bodega Bay	Unknown	--	1	Dead	Oiled	4	N	1	Blue	959R
318	Freezer	332	Surf Scoter	11/18/97		Unknown	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Blue	2104L
319	Freezer	333	Common Murre	11/17/97		South Beach, Section 2	Unknown	--	1	Dead	Oiled	2	N	1	Green	99
320	Freezer	334	Red-throated Loon	11/16/97		Limantour Beach	Unknown	--	1	Dead	Oiled	3	N	1	Pink	32
321	Freezer	335	Northern Fulmar	11/17/97		North Point Reyes Beach	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Green	76
322	Freezer	336	Common Murre	11/19/97		South Beach	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	41R
323	Freezer	338	Common Murre	01/25/98		Point Reyes Beach	Unknown	--	1	Dead	Oiled	3	N	1	White	30L
324	Freezer	339	Common Murre	01/24/98		Limantour Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	86R
325	Freezer	340	Common Murre	01/24/98		Doran Park, Bodega Bay	Unknown	--	1	Dead	Oiled	2	N	1	Blue	5L

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
326	Freezer	341	Common Murre	01/24/98		Salmon Creek	Unknown	--	1	Dead	Oiled	2	N	1	Pink	82R
327	Freezer	342	Common Murre	01/25/98		San Mateo	Unknown	--	1	Dead	Oiled	3	N	1	Pink	3R
328	Freezer	343	Common Murre	01/24/98		Limantour Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	85L
329	Freezer	344	Common Murre	01/23/98		South Beach	Unknown	--	1	Dead	Oiled	3	N	1	White	16L
330	Freezer	345	Common Murre	01/26/98		Unknown	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	79L
331	Freezer	346	Common Murre	01/22/98		Pomponio SB, Pescadero	Unknown	--	1	Dead	Oiled	2	N	1	Red	22L
332	Freezer	347	Western Grebe	01/21/98		Drake's Beach	Unknown	--	1	Dead	Oiled	3-4	N	1	Pink	400R
333	Freezer	348	Common Murre	01/25/98		Doran Beach	Unknown	--	1	Dead	Oiled	2	N	1	Blue	18L
334	Freezer	349	Common Murre	01/25/98		Pilar Point	Unknown	--	1	Dead	Oiled	2	N	1	White	47L
335	Freezer	350	Common Murre	01/20/98		Fitzgerald Marine Reserve	Unknown	--	1	Dead	Oiled	3	N	1	Pink	22R
336	Freezer	351	Common Murre	01/25/98		Drake's Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	96L
337	Freezer	352	Common Murre	01/18/98		Unknown	Unknown	--	1	Dead	Oiled	2-3	N	1	White	4R
338	Freezer	353	Western Grebe	11/20/97	L. Grella	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Unknown	U	Y	4		
339	Freezer	354	Northern Fulmar	11/20/97	D. Osorio	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	3S		
340	Freezer	355	Unidentified Waterbird	11/20/97	D. Osorio	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Unknown	U	Y	U		
341	Freezer	356	Northern Fulmar	11/20/97		Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	2S		
342	Freezer	357	Unidentified Waterbird	11/20/97	D. Osorio	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	U	Y	U		
343	Freezer	358	Common Murre	11/11/97	D. Osorio	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	N	2S		
344	Freezer	359	Common Murre	11/20/97	D. Osorio	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	3S		
345	Freezer	360	Northern Fulmar	11/20/97	D. Osorio	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	3	Y	U		
346	Freezer	361	Northern Fulmar	11/20/97	D. Osorio	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	2S		
347	Freezer	362	Northern Fulmar	11/20/97	D. Osorio	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	2S		
348	Freezer	363	Common Murre	01/25/98	P. Dejung	Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	N	2S		
349	Freezer	364	Common Murre	01/21/98	S. McCallister/ J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	4	Y	2S		
350	Freezer	365	Common Murre	01/21/98	S. McCallister/ J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
351	Freezer	366	Common Murre	01/25/98	S. McCallister	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	2	Y	2S		
352	Freezer	367	Common Murre	01/25/98	S. McCallister/A. Frank	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	N	2S		
353	Freezer	368	Common Murre	01/25/98	S. McCallister/A. Frank	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	Y	2S		
354	Freezer	369	Common Murre	01/25/98	P. Dejung	Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	N	2S		
355	Freezer	370	Northern Fulmar	01/25/98	P. Dejung	Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	3S		
356	Freezer	371	Common Murre	01/25/98	P. Dejung	Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	2S		
357	Freezer	372	Northern Fulmar	01/25/98	S. McCallister/A. Frank	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	U	Y	2S		
358	Freezer	373	Common Murre	01/25/98	S. McCallister/A. Frank	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	Y	3S		
359	Freezer	374	Common Murre	01/21/98	Ames/Newman	North Point Reyes Beach	Half of Point Reyes Beach C	1-16A	2	Dead	Oiled	3	Y	2S		
360	Freezer	375	Pacific Loon	11/18/97		Drake's Beach, Segment 24	Unknown	--	1	Dead	Oiled	3	N	1	Green	68R
361	Freezer	376	Common Murre	11/19/97		Pilar Point Harbor	Unknown	--	U	Dead	Oiled	3	N	1-2S	Pink	29L
362	Freezer	377	Common Murre	11/19/97		Pilar Point Harbor	Unknown	--	U	Dead	Oiled	3	N	1-2S	Yellow	4R
363	Freezer	379	Common Murre	11/19/97		Pilar Point Harbor	Unknown	--	U	Dead	Oiled	2	N	1-2S	Red	998L
364	Freezer	380	Western Grebe	11/19/97		Fort Cronkite	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Yellow	746L
365	Freezer	381	Common Murre	11/17/97		Kehoe Beach	Unknown	--	1	Dead	Oiled	3	N	1	Blue	60L
366	Freezer	382	Common Murre	11/19/97		South Beach	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	42R
367	Freezer	383	Common Murre	11/19/97		Sharp Park Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	195L
368	Freezer	384	Common Murre	11/17/97		South Point Reyes Beach	Unknown	--	1	Dead	Oiled	3	N	1	Green	94R
369	Freezer	385	Common Murre	11/19/97		South Beach	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	37R
370	Freezer	386	Northern Fulmar	11/19/97		South Beach	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Yellow	44L
371	Freezer	387	Northern Fulmar	11/19/97		Drake's Beach	Unknown	--	1	Dead	Oiled	1	N	1	Yellow	31R
372	Freezer	388	Northern Fulmar				Unknown	--	2	Dead	Unknown	U	Y	3S		
373	Freezer	389	Common Murre	11/17/97		Limantour Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	88L
374	Freezer	390	Common Murre	11/19/97		South Beach	Unknown	--	1	Dead	Oiled	2	N	1S	Yellow	39L
375	Freezer	391	Common Murre	11/17/97		Limantour Beach	Unknown	--	1	Dead	Oiled	3	N	1	Green	95L

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
376	Freezer	392	Common Murre				Unknown	--	2	Dead	Oiled	3	Y	2S		
377	Freezer	393	Common Murre				Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
378	Freezer	394	Common Murre	11/17/97		Lover's Point Monterey	Unknown	--	1	Dead	Oiled	3	N	1	Red	38R
379	Freezer	395	Common Murre	11/17/97		North Beach	Unknown	--	1	Dead	Oiled	3	N	1	Green	80R
380	Freezer	396	Northern Fulmar	11/16/97		Drake's Beach	Unknown	--	1	Dead	Oiled	1	N	1	White	42L
381	Freezer	397	Northern Fulmar	11/16/97		Unknown	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Yellow	89
382	Freezer	398	Western Grebe	11/18/97		North Beach	Unknown	--	1	Dead	Oiled	3	N	1	Blue	2107
383	Freezer	399	Common Murre	11/17/97		North Point Reyes Beach	Unknown	--	1	Dead	Oiled	3	N	1	Green	79L
384	Freezer	400	Common Murre	11/16/97		Limantour Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	193L
385	Freezer	401	Common Murre	11/17/97		Limantour Beach	Unknown	--	1	Dead	Oiled	3	N	1	Green	92L
386	Freezer	402	Common Murre	01/18/98	S. McArthur	Half Moon Bay	Half Moon Bay D	4-05	2	Dead	Oiled	3	Y	2S		
387	Freezer	403	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	4	Y	2S		
388	Freezer	404	Common Murre	01/25/98	L. Raven	Pescadero Point	Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Oiled	2	N	2S		
389	Freezer	405	Common Murre	01/25/98	L. Raven	Pescadero Point	Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Oiled	2	N	2S		
390	Freezer	406	Common Murre	01/19/98		Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	N	2S		
391	Freezer	407	Common Murre	01/18/98		Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	N	2S		
392	Freezer	408	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	2	N	2S		
393	Freezer	409	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3S		
394	Freezer	410	Common Murre	01/18/98		Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	N	2S		
395	Freezer	411	Common Murre	01/21/98	J. Conklin	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	2	Y	2S		
396	Freezer	412	Common Murre	11/17/97	J. Hall/J. Mortenson	Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	3	Y	2S		
397	Freezer	413	Common Murre	11/19/97	J. Hall/J. Mortenson	Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	4	N	2S		
398	Freezer	414	Common Murre	11/19/97	J. Hall/J. Mortenson	Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	3	Y	2S		
399	Freezer	415	Common Murre	11/20/97	D. Hatch	Ocean Beach	Ocean Beach, N.	3-08	2	Dead	Oiled	2	N	2S		
400	Freezer	416	Western Grebe	11/20/97	D. Hatch	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	2	Y	2S		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
401	Freezer	417	Northern Fulmar	11/20/97	P. Pyle/K. Zaremba/R. Forrest	Limantour Beach West	Limantour Beach E.	2-06	2	Dead	Unknown	U	Y	4		
402	Freezer	418	Common Murre	11/20/97	D. Hatch	Ocean Beach	Ocean Beach, N.	3-08	2	Dead	Oiled	2	N	2S		
403	Freezer	419	Red-throated Loon	11/20/97	D. Hatch	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	2	Y	2S		
404	Freezer	420	Common Murre	11/20/97	D. Hatch	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	2	N	2S		
405	Freezer	421	Common Murre	11/20/97	D. Hatch	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	2	N	2S		
406	Freezer	422	Common Murre	11/20/97	T. Weber	Rodeo Beach	Rodeo Cove Beach	2-23	2	Dead	Not Visibly Oiled	--	Y	2S		
407	Freezer	423	Common Murre	11/20/97	D. Hatch	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	4	N	2S		
408	Freezer	424	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	4	Y	2S		
409	Freezer	425	Common Murre	01/20/98	C. Jochums	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	4	N	2S		
410	Freezer	426	Common Murre	01/20/98	C. Jochums	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		
411	Freezer	427	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	N	2S		
412	Freezer	428	Eared Grebe	01/20/98	C. Finke	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	2S		
413	Freezer	429	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	4	N	2S		
414	Freezer	430	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	4		
415	Freezer	431	Northern Fulmar	01/20/98		Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	4		
416	Freezer	432	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	4	N	2S		
417	Freezer	434	Common Murre	01/26/98		Waddell Creek Beach	Waddell Cr. Beach	5-11	1	Dead	Oiled	3	N	1S		
418	Freezer	435	Common Murre	01/26/98		Drake's Bay	Unknown	--	1	Dead	Oiled	2	N	1	Blue	87L
419	Freezer	436	Common Murre	01/27/98		Pescadero	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	39L
420	Freezer	437	Common Murre	01/21/98		San Gregorio Beach	Unknown	--	1	Dead	Oiled	2	N	1	Blue	25
421	Freezer	438	Common Murre	01/26/98			Unknown	--	2	Dead	Oiled	2	N	2S		
422	Freezer	439	Common Murre	01/27/98		Point Reyes Beach, Venice	Unknown	--	1	Dead	Oiled	2	N	2	Yellow	42R
423	Freezer	440	Common Murre	01/27/98		Pacifica, Linda Mar & De Soto	Unknown	--	1	Dead	Oiled	3	N	2	Red	157R
424	Freezer	441	Western Grebe	01/23/98		Doran Beach	Unknown	--	1	Dead	Oiled	2	N	1	Blue	77R
425	Freezer	442	Common Murre	01/17/98		South Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	Blue	83R

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
426	Freezer	443	Common Murre	01/16/98		Pacifica, Linda Mar	Unknown	--	1	Dead	Oiled	3-4	N	1	Red	63L
427	Freezer	444	Common Murre	01/26/98		Fitzgerald Marine Reserve	Unknown	--	1	Dead	Oiled	3	N	1	Yellow	35L
428	Freezer	445	Common Murre	01/19/98		Chimney Rock	Unknown	--	1	Dead	Oiled	3	N	1	Red	2808L
429	Freezer	446	Common Murre	01/26/98		McClure's Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	23L
430	Freezer	447	Common Murre	01/27/98	H. Albeus	Santa Cruz Boardwalk	Cowell and Santa Cruz Beaches	8-02	2	Dead	Oiled	2	Y	2S		
431	Freezer	448	Common Murre	01/27/98	H. Albeus	Santa Cruz Boardwalk	Cowell and Santa Cruz Beaches	8-02	2	Dead	Oiled	2	N	2S		
432	Freezer	449	Common Murre	01/27/98	H. Albeus	Santa Cruz Boardwalk	Cowell and Santa Cruz Beaches	8-02	2	Dead	Oiled	2	N	2S		
433	Freezer	450	Common Murre	01/27/98	H. Albeus	Santa Cruz Boardwalk	Cowell and Santa Cruz Beaches	8-02	2	Dead	Oiled	2	Y	2S		
434	Freezer	451	Common Murre	02/05/98		Drake's Beach	Unknown	--	1	Dead	Oiled	2-4	N	1	White	58L
435	Freezer	452	Common Murre	02/02/98		Limantour Beach	Unknown	--	1	Dead	Oiled	3-4	N	1	Red	94R
436	Freezer	453	Common Murre	02/04/98		Capitola Beach	Unknown	--	1	Dead	Oiled	3-4	N	1	Red	2594R
437	Freezer	454	Common Murre	01/31/98		Kehoe Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	607R
438	Freezer	455	Common Murre	02/04/98		Agate Beach, Bolinas	Unknown	--	1	Dead	Oiled	2-4	N	1	Green	952R
439	Freezer	456	Western Grebe	02/11/98		Pilar Point	Unknown	--	1	Dead	Oiled	2-3	N	1	Blue	2311L
440	Freezer	457	Common Murre	11/18/97	G. Page	Limantour Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
441	Freezer	458	Rhinoceros Auklet	11/18/97	G. Page	Limantour Beach	Unknown	--	2	Dead	Oiled	2	N	3S		
442	Freezer	459	Short-tailed Shearwater	11/18/97	G. Page	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	3S		
443	Freezer	460	Common Murre	11/18/97		Drake's Beach North	Drakes Beach E.	2-04	2	Dead	Oiled	3	N	2S		
444	Freezer	461	Common Murre	11/18/97	B. Adkins	Drake's Beach North	Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	N	2S		
445	Freezer	462	Common Murre	11/18/97	B. Adkins	Drake's Beach North	Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	N	2S		
446	Freezer	463	Common Murre	11/18/97	B. Adkins	Drake's Beach North	Drakes Beach W.	2-03	2	Dead	Not Visibly Oiled	--	N	2S		
447	Freezer	464	Common Murre	11/18/97	B. Adkins	Drake's Beach North	Drakes Beach W.	2-03	2	Dead	Oiled	3	N	2S		
448	Freezer	465	Common Murre	11/18/97	G. Page	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2S		
449	Freezer	466	Common Murre	11/18/97	B. Adkins	Drake's Beach North	Drakes Beach W.	2-03	2	Dead	Not Visibly Oiled	--	Y	3S		
450	Freezer	467	Common Murre	02/05/98		Agate Beach G466	Unknown	--	1	Dead	Oiled	3	N	1	Red	685R



Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
451	Freezer	468	Common Murre	01/17/98		Pebble Beach, Pescadero	Unknown	--	1	Dead	Oiled	2-4	N	1	Yellow	92R
452	Freezer	469	Common Murre	02/01/98		Pajaro Dunes	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	612R
453	Freezer	470	Common Murre	02/10/98		41st Street Beach, SC	Unknown	--	1	Dead	Oiled	2	N	1	Green	647R
454	Freezer	471	Brown Pelican				Unknown	--	1	Dead	Other	--	N	1		
455	Freezer	472	Common Murre	02/08/98		Kehoe Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	White	71R
456	Freezer	473	Western Grebe	02/08/98		SF	Unknown	--	1	Dead	Oiled	2-3	N	1	Pink	184L
457	Freezer	474	Common Murre	01/25/98	Ames/Imai	Drake's Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
458	Freezer	475	Common Murre	01/21/98	Ames/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	Y	3S		
459	Freezer	476	Common Murre	01/21/98	Ames/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	Y	2S		
460	Freezer	477	Common Murre	01/21/98	Ames/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	4	N	2S		
461	Freezer	478	Horned Grebe	01/08/98	A. Holmes	Bolinas Beach	Bolinas Beach	2-13	2	Dead	Oiled	2	N	2S		
462	Freezer	479	Common Murre	01/21/98	Ames/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	4	N	2S		
463	Freezer	480	Common Murre	01/21/98	Ames/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	Y	3S		
464	Freezer	481	Western or Clark's Grebe			North Point Reyes Beach	Point Reyes Beach B	1-15	2	Dead	Oiled	4	Y	2S		
465	Freezer	482	Common Murre	12/05/97		El Granada	Unknown	--	1	Dead	Oiled	3	N	1	Red	1755 L
466	Freezer	483	Common Murre	12/04/97		Pilar Point	Unknown	--	1	Dead	Oiled	2	N	1	Green	1396L
467	Freezer	484	Common Murre	12/01/97			Unknown	--	1	Dead	Oiled	2	N	1		
468	Freezer	485	Common Murre	12/04/97		Pilar Point	Unknown	--	1	Dead	Oiled	3	N	1	Red	168
469	Freezer	486	Common Murre	11/29/97		Pilar Point	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	91L
470	Freezer	487	Common Murre	12/04/97		Miramontes	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	88L
471	Freezer	488	Common Murre	12/04/97		Moss Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	15
472	Freezer	489	Common Murre	11/30/97		North Point Reyes Beach	Point Reyes Beach C	1-16	1	Dead	Oiled	3	N	1		
473	Freezer	490	Common Murre	11/29/97		Linda Mar Beach	Unknown	--	1	Dead	Oiled	2-4	N	1	Blue	61R
474	Freezer	491	Common Murre	11/23/97		San Gregorio Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	Red	85L
475	Freezer	492	Common Murre	12/03/97		Francis Beach, Half Moon Bay	Unknown	--	1	Dead	Oiled	2	N	1	Red	151R

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
476	Freezer	493	Western Grebe	12/03/97		Unknown	Unknown	--	U	Dead	Oiled	3	N	1-2	Pink	32R
477	Freezer	494	Common Murre	11/22/97		South Beach	Unknown	--	1	Dead	Oiled	2-4	N	1	Blue	79R
478	Freezer	495	Common Murre	11/18/97			Unknown	--	1	Dead	Oiled	3	N	1	Yellow	15L
479	Freezer	496	Common Murre	11/24/97		Drake's Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	14R
480	Freezer	497	Common Murre	11/17/97		Rockview Beach, Santa	Unknown	--	1	Dead	Oiled	2	NN	1	Yellow	16R
481	Freezer	498	Common Murre	11/24/97		Drake's Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	71R
482	Freezer	499	Common Murre	11/17/97		North Point Reyes Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	78R
483	Freezer	500	Western Grebe	11/21/97		Drake's Beach	Unknown	--	1	Dead	Oiled	2	N	1	Blue	78L
484	Freezer	501	Common Murre	01/17/98	K. Zaremba/B. Perry	Stinson Beach	Stinson Beach A	2-14A	2	Dead	Oiled	3	N	2S		
485	Freezer	502	Northern Fulmar	01/02/98	K. Zaremba	Stinson Beach	Stinson Beach A	2-14A	2	Dead	Oiled	2	N	2S		
486	Freezer	503	Northern Fulmar	01/17/98	K. Zaremba/B. Perry	Stinson Beach	Stinson Beach A	2-14A	2	Dead	Not Visibly Oiled	--	Y	3		
487	Freezer	504	Western Gull	01/18/98	K. Zaremba/B. Perry	Stinson Beach	Stinson Beach A	2-14A	2	Dead	Not Visibly Oiled	--	N	2S		
488	Freezer	505	Common Murre	01/17/98	K. Zaremba/B. Perry	Stinson Beach	Stinson Beach A	2-14A	2	Dead	Oiled	2	Y	2S		
489	Freezer	506	Common Murre	01/25/98	P. Dejung	Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	3	Y	3S		
490	Freezer	507	Common Murre	01/25/98	P. Dejung	Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	3	N	2S		
491	Freezer	508	Cassin's Auklet	01/22/98	Newman/J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	4	N	2S		
492	Freezer	509	Common Murre	01/22/98	Newman/J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	4	Y	2S		
493	Freezer	510	Common Murre	01/22/98	Newman/J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		
494	Freezer	511	Common Murre	01/22/98	Newman/J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		
495	Freezer	512	Common Murre	01/22/98	S. McCallister/J. Mazet	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	N	2S		
496	Freezer	513	Common Murre	01/22/98	Newman/J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	Y	2S		
497	Freezer	514	Common Murre	01/22/98	Newman/J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	Y	2S		
498	Freezer	515	Common Murre	01/18/98	T. Gardali/M. Hester	Stinson Beach	Stinson Beach	2-14	2	Dead	Oiled	3	N	2S		
499	Freezer	516	Western Gull	01/18/98	H. Guers	Stinson Beach	Stinson Beach	2-14	2	Dead	Oiled	2	N	2S		
500	Freezer	517	Common Murre	01/22/98	A. Frank	Drake's Beach	Unknown	--	2	Dead	Oiled	1	N	2S		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
501	Freezer	518	Common Murre	01/20/98	B. Goeden/ J. Hardwick/S. Kelly	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	1	N	2S		
502	Freezer	519	Common Loon	01/20/98		North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		
503	Freezer	520	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	2S		
504	Freezer	521	Northern Fulmar	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	2	N	2S		
505	Freezer	522	Western Grebe	11/19/97	K. Brewer	Drake's Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
506	Freezer	523	Common Murre	11/19/97	C. Clumpner	Drake's Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
507	Freezer	524	Western Grebe	11/19/97	K. Brewer	Drake's Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
508	Freezer	525	Common Murre	11/18/97	C. Clumpner	McClure Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	4	Y	3S		
509	Freezer	526	Common Murre	11/18/97	K. Brewer	McClure Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	3	Y	2S		
510	Freezer	527	Sooty Shearwater	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	3S		
511	Freezer	528	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Oiled	2	U	3S		
512	Freezer	529	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Unknown	U	Y	3S		
513	Freezer	530	Common Murre	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	3S		
514	Freezer	531	Common Murre	11/20/97	J. Hall	Dillon's Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	3	Y	2S		
515	Freezer	532	Common Murre	11/19/97	J. Hall/J. Mortenson	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
516	Freezer	533	Common Murre	11/20/97	J. Hall	Dillon's Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	3	N	2S		
517	Freezer	534	Common Murre	11/20/97	J. Hall	Dillon's Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	3	Y	2S		
518	Freezer	535	Common Murre	11/20/97	J. Hall	Dillon's Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	2	N	2S		
519	Freezer	536	Common Murre			Doran Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
520	Freezer	537	Northern Fulmar	11/20/97	J. Campo/G. Bennett	Limantour Beach	Limantour Beach W.	2-05	2	Dead	Oiled	4	Y	3S		
521	Freezer	538	Common Murre	11/20/97	J. Campo/G. Bennett	Limantour Beach	Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	3S		
522	Freezer	539	Common Murre	11/20/97	J. Campo/G. Bennett	Limantour Beach	Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	2S		
523	Freezer	540	Northern Fulmar	11/20/97	L. Allen	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Not Visibly Oiled	--	N	2S		
524	Freezer	541	Northern Fulmar	11/20/97	L. Grella	Drake's Beach	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	3S		
525	Freezer	542	Common Murre	12/06/97	K. Carolan/G. Bennett	Dillon's Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	3	Y	3S		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
526	Freezer	543	Rhinoceros Auklet	12/06/97	J. Hall/J. Campo	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	4	U	3S		
527	Freezer	544	Eared Grebe	12/06/97	K. Carolan/G. Bennett	Dillon's Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	2	Y	3S		
528	Freezer	545	Common Murre	11/23/97	G. Page	Limantour Beach	Limantour Beach W.	2-05	2	Dead	Oiled	4	Y	3S		
529	Freezer	546	Unidentified Gull	11/20/97	A. Frank	Limantour Beach	Limantour Beach E.	2-06	2	Dead	Unknown	U	Y	3S		
530	Freezer	547	Common Murre	11/20/97	A. Frank	Limantour Beach	Limantour Beach E.	2-06	2	Dead	Oiled	3	Y	2S		
531	Freezer	548	Common Murre	11/20/97	J. Campo/G. Bennett	Limantour Beach	Limantour Beach W.	2-05	2	Dead	Oiled	3	Y	2S		
532	Freezer	549	Northern Fulmar	11/20/97	A. Frank	Limantour Beach	Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3S		
533	Freezer	550	Western Grebe				Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
534	Freezer	551	Common Murre		C. Clumpner	McClure Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	2	Y	3S		
535	Freezer	551A	Brandt's Cormorant				Unknown	--	2	Dead	Oiled	2	N	2S		
536	Freezer	552	Northern Fulmar	11/19/97	A. Frank	South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2S		
537	Freezer	553	Surf Scoter	11/19/97	L. Adkins	Limantour Beach	Unknown	--	1	Dead	Not Visibly Oiled	--	N	2		
538	Freezer	554	Common Murre	11/19/97	K. Brewer	North Point Reyes Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	2	Y	2S		
539	Freezer	555	Brandt's Cormorant	11/19/97	A. Frank	South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	N	2S		
540	Freezer	556	Western Gull	11/19/97	J. Campo/C. Derrisse	Drake's Beach	Limantour Beach W.	2-05	2	Dead	Oiled	3	Y	3S		
541	Freezer	557	Common Murre	11/19/97	J. Campo/C. Derrisse	Drake's Beach	Limantour Beach W.	2-05	2	Dead	Oiled	3	N	2S		
542	Freezer	558	Common Murre	11/19/97	J. Campo/C. Derrisse	Drake's Beach	Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3S		
543	Freezer	559	Common Murre	11/19/97	D. Reno	Drake's Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
544	Freezer	560	Northern Fulmar	11/20/97	C. Clumpner	Abbott's Lagoon	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
545	Freezer	561	Common Murre	11/20/97	K. Brewer	Section 3	Unknown	--	2	Dead	Oiled	2	N	2S		
546	Freezer	562	Northern Fulmar	11/20/97	C. Clumpner	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Not Visibly Oiled	--	Y	3S		
547	Freezer	563	Common Murre	11/20/97	M. Ziccardi	South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Oiled	2	N	2S		
548	Freezer	564	Common Murre	11/17/97			Unknown	--	2	Dead	Unknown	U	Y	3S		
549	Freezer	565	Western Grebe	11/19/97	B. Adkins		Unknown	--	2	Dead	Oiled	2	Y	2S		
550	Freezer	566	Common Murre	11/19/97	L. Heig	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Unknown	U	Y	3S		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
551	Freezer	567	Northern Fulmar	11/19/97	L. Heig	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	4		
552	Freezer	568	Common Murre	11/19/97	C. Clumpner	McClure Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	2	N	2S		
553	Freezer	569	Common Murre	11/19/97	C. Clumpner	McClure Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	2	Y	2S		
554	Freezer	571	Common Murre			Cannery Row	Unknown	--	1	Dead	Oiled	2	N	1	Pink	4
555	Freezer	572	Common Murre		L. Grella	Drake's Beach	Drakes Beach E.	2-04	2	Dead	Oiled	3	Y	3S		
556	Freezer	573	Common Murre		L. Hug	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3S		
557	Freezer	574	Common Murre	11/19/97	J. Campo/Dernisse	Drake's Beach	Limantour Beach W.	2-05	2	Dead	Oiled	3	N	2S		
558	Freezer	575	Common Murre		L. Grella	Drake's Beach	Drakes Beach E.	2-04	2	Dead	Oiled	4	Y	3S		
559	Freezer	576	Common Murre		L. Grella	Drake's Beach	Drakes Beach E.	2-04	2	Dead	Oiled	3	Y	3S		
560	Freezer	577	Common Murre		L. Grella	Drake's Beach	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	3S		
561	Freezer	578	Common Murre		L. Hug	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	2S		
562	Freezer	579	Common Murre		J. Conklin	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	2	Y	2S		
563	Freezer	580	Common Murre		J. Conklin	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	2	Y	2S		
564	Freezer	581	Common Murre		Shaw	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	Y	3S		
565	Freezer	582	Common Murre		A. Frank	Bodega Bay	Unknown	--	2	Dead	Oiled	3	Y	3S		
566	Freezer	583	Sooty Shearwater			Ocean Beach	Ocean Beach, S.	3-10	2	Dead	Oiled	2	N	2S		
567	Freezer	584	Common Murre		B. Dinneen	Ocean Beach	Ocean Beach, S.	3-10	2	Dead	Oiled	2	Y	2S		
568	Freezer	585	Common Murre		A. Mace	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	2	Y	3S		
569	Freezer	586	Common Murre		A. Mace/S. McComb	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	2	N	2S		
570	Freezer	587	Common Murre		A. Mace	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	2	Y	3S		
571	Freezer	588	Common Loon	11/19/97		Drake's Beach	Unknown	--	1	Dead	Oiled	2-4	N	1	Green	98
572	Freezer	589	Brandt's Cormorant	11/27/97		Kehoe Beach	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Blue	58
573	Freezer	590	Common Murre		C. Clumpner	Bodega Bay	Unknown	--	2	Dead	Oiled	2	N	2		
574	Freezer	591	Pacific Loon	11/27/97		(Santa Rosa Wldf Rescue)	Unknown	--	1	Dead	Oiled	3-4	N	1	Pink	37
575	Freezer	592	Common Murre	11/23/97		San Gregorio Beach	Unknown	--	1	Dead	Oiled	3	N	1	Yellow	57

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
576	Freezer	593	Common Loon	11/20/97		Drake's Beach	Unknown	--	1	Dead	Oiled	3-4	N	1	Yellow	107
577	Freezer	594	Common Murre	11/23/97		Unknown	Unknown	--	1	Dead	Oiled	4	N	1S	Blue	36
578	Freezer	595	Common Murre	12/01/97		Limantour Beach	Unknown	--	1	Dead	Oiled	2	N	1		
579	Freezer	596	Common Murre	12/09/97		Del Monte Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	128R
580	Freezer	597	Pacific Loon	12/12/97		Del Monte Beach	Unknown	--	1	Dead	Oiled	2	N	2	Blue	12 L
581	Freezer	599	Common Murre	02/04/98		Doran Beach	Unknown	--	1	Dead	Oiled	3	N	1	Green	717R
582	Freezer	600	Common Murre			Doran Beach	Doran Beach	1-06	2	Dead	Oiled	4	N	2S		
583	Freezer	601	Western Grebe			Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
584	Freezer	602	Common Murre		MacMillan	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	3	N	2S		
585	Freezer	603	Common Murre	01/20/98		Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	N	2S		
586	Freezer	604	Common Murre		A. Frank	Bolinas Beach	Bolinas Beach	2-13	2	Dead	Oiled	2	Y	2S		
587	Freezer	605	Common Murre	01/20/98		Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	N	2S		
588	Freezer	606	Common Murre	02/07/98	Ames	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	3	Y	2S		
589	Freezer	607	Common Murre	02/07/98	Ames	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	N	2S		
590	Freezer	608	Unidentified Duck	01/26/98	Park Ranger	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
591	Freezer	609	Common Murre	01/26/98	S. McCallister/ A. Frank	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		
592	Freezer	610	Common Murre	01/26/98	S. McCallister/ A. Frank	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	4	Y	3S		
593	Freezer	611	Common Murre	02/12/98	J. Holcomb	Drake's Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
594	Freezer	612	Common Murre	02/12/98	C. Clumpner	Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	2	Y	2S		
595	Freezer	613	Common Murre	02/12/98	J. Holcomb	Drake's Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
596	Freezer	614	Common Murre	02/17/98	Goodfriend	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	4	N	2S		
597	Freezer	615	Common Murre	02/12/98	Shaw/Imai	Stinson Beach	Stinson Beach	2-14	2	Dead	Oiled	2	N	2S		
598	Freezer	616	Common Murre	02/12/98	A. Frank	Dillon's Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	2	Y	3S		
599	Freezer	617	Common Murre	02/12/98	J. Holcomb	Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	2	N	2		
600	Freezer	618	Common Murre	02/12/98	C. Clumpner	Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	3	N	2S		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
601	Freezer	619	Common Murre	02/05/98	A. Frank	Stinson Beach	Stinson Beach	2-14	2	Dead	Oiled	2	N	2S		
602	Freezer	620	Common Murre	01/20/98	C. Finke	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	2S		
603	Freezer	621	Common Murre	01/20/98	C. Finke	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	3	Y	2S		
604	Freezer	622	Common Murre	01/20/98	C. Finke	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	3S		
605	Freezer	623	Common Murre	01/21/98	A. Frank	Palomarin	E. Double Pt. to Palomarin	2-11	2	Dead	Oiled	2	Y	3S		
606	Freezer	624	Common Murre	01/20/98	C. Finke	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	4	N	2S		
607	Freezer	626	Common Murre	01/25/98	P. Dejung	Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	3	Y	3S		
608	Freezer	627	Common Murre	01/25/98		North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	N	2S		
609	Freezer	628	Common Murre	01/23/98	J. Tarpley	Abbott's Lagoon	Unknown	--	2	Dead	Oiled	4	Y	3S		
610	Freezer	629	Common Murre	01/25/98	Ames/Imai	Drake's Bay	Unknown	--	2	Dead	Oiled	2	N	2S		
611	Freezer	630	Common Murre	01/25/98	P. Dejung	Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	3	Y	3S		
612	Freezer	631	Common Murre	01/25/98	P. Dejung	Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	3	Y	3S		
613	Freezer	632	Unidentified Waterbird	01/23/98	E. Ueber/L. Allen	Abbott's Lagoon	Unknown	--	2	Dead	Oiled	4	Y	3S		
614	Freezer	633	Common Murre	01/25/98	Ames/Imai	Drake's Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	N	2S		
615	Freezer	634	Bonaparte's Gull	01/20/98		Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	2S		
616	Freezer	635	Northern Fulmar	01/20/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3S		
617	Freezer	636	Common Murre	01/20/98	C. Jocham	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	3	N	2S		
618	Freezer	637	Common Murre	01/20/98	S. McCallister	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		
619	Freezer	638	Common Murre	01/20/98	S. McCallister	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	3S		
620	Freezer	639	Common Murre	12/06/97	L. Hug/Corben	Abbott's Lagoon	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3S		
621	Freezer	640	Common Murre		L. Hug	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	3	N	2S		
622	Freezer	641	Common Murre	12/06/97	L. Hug/Corben	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	4	Y	2S		
623	Freezer	642	Common Murre		L. Hug	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	3	Y	2S		
624	Freezer	643	Common Murre	02/20/98		Woodrow W. Cliff on rocks	Unknown	--	1	Dead	Oiled	2-3	N	1	Yellow	61L
625	Freezer	644	Common Murre			Point Reyes Beach	Kirby Cove	2-30	1	Dead	Unknown	U	N	2		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
626	Freezer	645	Common Murre			Point Reyes Beach	Figuerroa Rd. to Lovers Pt.	9-01	2	Dead	Oiled	2	N	2S		
627	Freezer	647	Common Murre	02/27/98		Fort Ord Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	125R
628	Freezer	648	Common Murre	02/27/98		17 Mile Drive, Pebble Beach	Unknown	--	1	Dead	Oiled	2	N	1	White	105R
629	Freezer	649	Common Murre			Point Reyes Beach	Unknown	--	U	Released/Died	Oiled	1	N	1-2	Silver	1056-11918R
630	Freezer	650	Common Murre	02/26/98		Del Monte Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	58R
631	Freezer	651	Common Murre	03/01/98		Del Monte Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	141R
632	Freezer	652	Common Murre			Pacific Grove	Unknown	--	2	Dead	Oiled	2	N	2		
633	Freezer	653	Red Phalarope				Unknown	--	1	Dead	Oiled	2	N	2		
634	Freezer	654	Common Murre	01/18/98		Salmon Creek	Unknown	--	1	Dead	Oiled	3-4	N	1	Yellow	53L
635	Freezer	655	Common Murre	02/27/98		Año Nuevo	Unknown	--	1	Dead	Oiled	4	N	1	Red	115R
636	Freezer	656	Common Murre	01/25/98		Beach S End Spanish Bay	Unknown	--	1	Released/Died	Oiled	2-3	NN	1	Yellow	71L
637	Freezer	657	Common Murre	02/26/98		Asilomar State Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	104 R
638	Freezer	658	Common Murre	02/27/98		Upper Sunset Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	124L
639	Freezer	659	Common Murre			Point Reyes Beach	Figuerroa Rd. to Lovers Pt.	9-01	2	Dead	Oiled	2	Y	2		
640	Freezer	661	Common Murre	02/25/98		Monterey	Unknown	--	1	Dead	Oiled	2-3	NN	1	Pink	63L
641	Freezer	662	Common Murre	01/22/98	Newman/J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		
642	Freezer	663	Common Murre	01/22/98	Newman/J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	3S		
643	Freezer	664	Common Murre	01/27/98	Ames/Mealiske/J. Mazet	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		
644	Freezer	665	Common Murre	01/22/98	J. Holcomb/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	Y	3S		
645	Freezer	666	Common Murre	01/22/98	J. Holcomb/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		
646	Freezer	667	Northern Fulmar	01/22/98	J. Holcomb/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	3S		
647	Freezer	668	Common Murre	01/22/98	A. Frank	Drake's Beach	Unknown	--	2	Dead	Oiled	3	Y	3S		
648	Freezer	669	Common Murre	01/22/98	J. Holcomb/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	3		
649	Freezer	670	Common Murre	01/22/98	J. Holcomb/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	3S		
650	Freezer	671	Unidentified Shearwater	01/22/98	J. Holcomb/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	4	Y	3S		



Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
651	Freezer	672	Unidentified Scoter	01/22/98	Ames/S. McCallister/ J. Mazet	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	3S		
652	Freezer	673	Western Grebe	01/22/98	J. Holcomb/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		
653	Freezer	674	Common Murre	01/22/98	J. Holcomb/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		
654	Freezer	675	Common Murre	01/17/98		North Point Reyes Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	N	2S		
655	Freezer	676	Northern Fulmar	11/28/97	P. Dejung	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	2S		
656	Freezer	677	Common Murre	11/28/97	R. Faure-Brac	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3S		
657	Freezer	678	Common Murre	11/28/97	P. Dejung	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	2S		
658	Freezer	679	Common Murre	11/28/97	P. Dejung	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	2S		
659	Freezer	680	Common Murre	11/22/97	P. Dejung	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	3	Y	3S		
660	Freezer	681	Common Murre	11/28/97	P. Dejung	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	3	Y	2S		
661	Freezer	682	Common Murre	11/28/97	P. Dejung	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	3	Y	2S		
662	Freezer	683	Common Murre	11/28/97	P. Dejung	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3S		
663	Freezer	684	Unidentified Waterbird	11/28/97	P. Dejung	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3S		
664	Freezer	685	Common Murre	02/19/98		Del Monte Beach	Highway 218 to Figueroa Rd.	8-28	2	Dead	Oiled	2	N	2S		
665	Freezer	686	Common Murre	11/28/97	P. Dejung	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	3	Y	3S		
666	Freezer	687	Western Gull	11/28/97	P. Dejung	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3-4		
667	Freezer	688	Common Murre		C. O'Connor	Stinson Beach	Stinson Beach	2-14	2	Dead	Oiled	2	N	2S		
668	Freezer	689	Common Murre	02/19/98		Del Monte Beach	Highway 218 to Figueroa Rd.	8-28	2	Dead	Oiled	3	N	2S		
669	Freezer	690	Common Murre			Del Monte Beach	Highway 218 to Figueroa Rd.	8-28	2	Dead	Oiled	2	N	2S		
670	Freezer	691	Common Murre	02/19/98		Del Mar Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
671	Freezer	692	Common Murre	02/19/98		Del Monte Beach	Highway 218 to Figueroa Rd.	8-28	2	Dead	Not Visibly Oiled	--	N	2S		
672	Freezer	693	Common Murre	02/19/98		Del Monte Beach	Highway 218 to Figueroa Rd.	8-28	2	Dead	Oiled	2	N	2S		
673	Freezer	694	Common Murre	02/19/98		Del Monte Beach	Highway 218 to Figueroa Rd.	8-28	2	Dead	Oiled	2	N	2S		
674	Freezer	695	Common Murre	11/23/97		Montara State Beach	Unknown	--	1	Dead	Oiled	2	N	1	Blue	73L
675	Freezer	696	Common Murre	11/28/97		Kehoe Beach	Point Reyes Beach A	1-14	1	Dead	Oiled	3	N	1	Green	74

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
676	Freezer	697	Common Murre	11/17/97		South Point Reyes Beach	Unknown	--	1	Dead	Oiled	3	N	1	Green	77R
677	Freezer	698	Northern Fulmar			Unknown	Unknown	--	1	Dead	Oiled	2	N	1	Pink	50L
678	Freezer	699	Western Grebe	11/20/97		Limantour Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	Red	99L
679	Freezer	700	Common Murre	01/21/98	K. Zaremba	Stinson Beach	Stinson Beach	2-14	2	Dead	Oiled	3	N	2S		
680	Freezer	701	Common Murre	01/21/98	S. McCallister/J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	3S		
681	Freezer	703	Common Murre	01/22/98	Newman/J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Unknown	U	Y	2S		
682	Freezer	704	Common Murre	01/22/98	Newman/J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2-	Y	3S		
683	Freezer	705	Cassin's Auklet	01/21/98	E. Ueber	Point Reyes Beach	Coast Camp to Pt. Resistance	2-07	2	Dead	Not Visibly Oiled	--	Y	3		
684	Freezer	706	Common Murre	01/22/98	Newman/J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		
685	Freezer	707	Black-vented Shearwater	01/18/98		Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2-	Y	3		
686	Freezer	708	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/ Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	2	N	3S		
687	Freezer	709	Northern Fulmar	01/20/98	B. Goeden/J. Hardwick	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	2	Y	4S		
688	Freezer	710	Western Gull	01/18/98	T. Gardoli/M. Hester	Stinson Beach	Stinson Beach	2-14	2	Dead	Other	--	N	3S		
689	Freezer	711	Northern Fulmar	01/20/98	L. Hug	Abbott's Lagoon	Point Reyes Beach B	1-15	2	Dead	Oiled	2+	Y	3S		
690	Freezer	712	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	3	Y	3S		
691	Freezer	713	Cassin's Auklet	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3S		
692	Freezer	714	Northern Fulmar	01/20/98		Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	N	3S		
693	Freezer	715	Common Murre	01/20/98	J. Mazet	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	4	N	3S		
694	Freezer	716	Red Phalarope	11/19/97	K. Zaremba	Stinson Beach	Stinson Beach A	2-14A	2	Dead	Not Visibly Oiled	--	N	3S		
695	Freezer	717	Western Gull		C. Clumpner	Drake's Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
696	Freezer	718	Common Murre	11/18/97	K. Brewer	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	3S		
697	Freezer	719	Common Murre	11/18/97	K. Brewer	McClure Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	2	Y	2S		
698	Freezer	720	Common Murre		C. Clumpner	Drake's Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
699	Freezer	721	Northern Fulmar		K. Cooper	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	3S		
700	Freezer	722	Common Murre		D. Howard	Limantour Beach	Limantour Beach E.	2-06	2	Dead	Oiled	2	N	2S		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
701	Freezer	723	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
702	Freezer	724	Western Gull	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	3S		
703	Freezer	725	Cassin's Auklet	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	3S		
704	Freezer	726	Common Murre	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	3S		
705	Freezer	727	Common Murre	11/19/97	J. Hall/J. Mortenson	Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	2	Y	3S		
706	Freezer	728	Common Murre	01/21/98	P. Cotter	Davenport Landing	Davenport Landing Beach	5-17	2	Dead	Oiled	2	N	2S		
707	Freezer	729	Common Murre	11/19/97	J. Hall/J. Mortenson	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	Y	2S		
708	Freezer	730	Common Murre	11/19/97	J. Hall/J. Mortenson	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	Y	2S		
709	Freezer	731	Cassin's Auklet	11/19/97	J. Hall	South Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Not Visibly Oiled	--	Y	34S		
710	Freezer	732	Common Murre	01/21/98	P. Cotter	Davenport Landing	Davenport Landing Beach	5-17	2	Dead	Oiled	2	N	2S		
711	Freezer	733	Northern Fulmar	11/20/97	L. Allen	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	3S		
712	Freezer	734	Common Murre	11/20/97	C. Clumpner	McClure Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	3	N	2S		
713	Freezer	735	Common Murre	11/20/97	L. Allen	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	2	Y	2S		
714	Freezer	736	Pink-footed Shearwater	11/20/97	L. Allen	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	2	N	3S		
715	Freezer	737	Northern Fulmar	11/20/97	L. Allen	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	3S		
716	Freezer	738	Common Murre	12/06/97	L. Grella	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	23S		
717	Freezer	739	Pacific Loon	12/06/97	K. Carolan/ G. Bennett	Dillon Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	2	Y	3S		
718	Freezer	740	Common Murre	12/06/97	J. Hall/J. Campo	Doran Beach	Doran Beach	1-06	2	Dead	Unknown	U	N	3		
719	Freezer	741	Common Murre	11/20/97	A. Frank	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	2S		
720	Freezer	742	Common Murre	11/20/97	A. Frank	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3S		
721	Freezer	743	Common Murre		A. Frank	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	2S		
722	Freezer	744	Surf Scoter		A. Frank	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3S		
723	Freezer	745	Common Murre		A. Frank	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	N	2S		
724	Freezer	746	Common Murre	11/20/97	A. Frank	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3S		
725	Freezer	747	Common Murre	11/18/97	C. Clumpner	South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Oiled	2	N	2S		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
726	Freezer	748	Brandt's Cormorant				Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2S		
727	Freezer	749	Common Murre		K. Brewer	North Point Reyes Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2S		
728	Freezer	750	Northern Fulmar		A. Frank	South Point Reyes Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
729	Freezer	751	Brandt's Cormorant		A. Frank	South Point Reyes Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
730	Freezer	752	Common Murre		A. Frank	South Point Reyes Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
731	Freezer	753	Northern Fulmar		A. Frank	South Point Reyes Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	3S		
732	Freezer	754	Common Murre		K. Brewer	North Point Reyes Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
733	Freezer	755	Common Murre		C. Clumpner/ K. Brewer	Abbott's Lagoon	Unknown	--	2	Dead	Oiled	2	N	2S		
734	Freezer	756	Surf Scoter		C. Clumpner	Indian Beach	Indian Beach to Laird's Lndg.	7-11	2	Dead	Not Visibly Oiled	--	Y	3S		
735	Freezer	757	Common Murre	11/19/97	D. Reno	Drake's Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
736	Freezer	758	Common Murre		C. Clumpner/ K. Brewer	Abbott's Lagoon	Unknown	--	2	Dead	Oiled	2	N	2S		
737	Freezer	759	Surf Scoter		C. Clumpner	Indian Beach	Indian Beach to Laird's Lndg.	7-11	2	Dead	Not Visibly Oiled	--	Y	3S		
738	Freezer	760	Surf Scoter		C. Clumpner	Indian Beach	Indian Beach to Laird's Lndg.	7-11	2	Dead	Not Visibly Oiled	--	Y	3S		
739	Freezer	761	Unidentified Grebe	11/19/97	J. Campo/ C. Derrisse		Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3S		
740	Freezer	762	Common Murre				Unknown	--	2	Dead	Oiled	3	N	2S		
741	Freezer	763	Northern Fulmar	11/20/97	C. Clumpner	Abbott's Lagoon	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
742	Freezer	764	Common Murre	11/20/97	M. Ziccaldi	South Point Reyes Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
743	Freezer	765	Common Murre		C. Clumpner	Abbott's Lagoon	Unknown	--	2	Dead	Oiled	2	Y	3S		
744	Freezer	766	Common Murre		K. Brewer	Section 3	Unknown	--	2	Dead	Oiled	2	Y	3S		
745	Freezer	767	Western Grebe	11/17/97	T. Williamson	Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		
746	Freezer	768	Common Murre		K. Brewer	Section 3	Unknown	--	2	Dead	Oiled	2	N	2S		
747	Freezer	769	Western Grebe	11/19/97	B. Goeden	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	N	2S		
748	Freezer	770	Common Murre	11/19/97	B. Goeden	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3S		
749	Freezer	771	Common Murre		C. Clumpner	McClure Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	2+	Y	2S		
750	Freezer	772	Western Gull	11/19/97	A. Frank	Drake's Beach	Unknown	--	1	Dead	Oiled	2	N	1	Blue	2105R

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
751	Freezer	773	Common Murre		C. Clumpner	McClure Beach	Driftwood & McClures Beaches	1-12	2	Dead	Not Visibly Oiled	--	Y	3S		
752	Freezer	774	Northern Fulmar	11/19/97	A. Frank	Drake's Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2		
753	Freezer	775	Common Murre	11/19/97	C. Clumpner	McClure Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	2	Y	3S		
754	Freezer	777	Common Murre	12/22/97		Carmel Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	Pink	10L
755	Freezer	778	Common Murre			Half Moon Bay	Unknown	--	2	Dead	Oiled	2	N	3S		
756	Freezer	779	Surf Scoter			Half Moon Bay	Unknown	--	2	Dead	Not Visibly Oiled	--	N	3S		
757	Freezer	780	Common Murre			Half Moon Bay	Unknown	--	2	Dead	Oiled	2-	Y	2S		
758	Freezer	781	Common Murre			Half Moon Bay	Unknown	--	2	Dead	Oiled	2	N	3S		
759	Freezer	783	Common Murre			Half Moon Bay	Half Moon Bay D	4-05	2	Dead	Oiled	3	N	3S		
760	Freezer	784	Sooty Shearwater	11/19/97	L. Allen	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	2-3S		
761	Freezer	785	Northern Fulmar		L. Allen	Drake's Beach	Drakes Beach E.	2-04	2	Dead	Oiled	2+	Y	2-3S		
762	Freezer	786	Northern Fulmar		L. Allen	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	2S		
763	Freezer	787	Unidentified Shearwater		L. Allen	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	4	Y	2S		
764	Freezer	789	Common Murre		L. Grella	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	3	Y	2S		
765	Freezer	790	Northern Fulmar		L. Grella	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2S		
766	Freezer	791	Western Grebe		L. Allen	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2+	Y	2S		
767	Freezer	792	Northern Fulmar		L. Allen	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	3S		
768	Freezer	793	Common Murre		L. Allen	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	N	2S		
769	Freezer	794	Northern Fulmar		L. Allen	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	4S		
770	Freezer	795	Common Murre			Davenport Landing	Davenport Landing Beach	5-17	1	Dead	Oiled	2	N	1	Yellow	32R
771	Freezer	796	Common Murre	01/22/98		Monterey Coast Guard Pier	Unknown	--	1	Dead	Oiled	2	N	1	Pink	36R
772	Freezer	797	Common Murre	01/25/98		Spanish Bay	Unknown	--	1	Dead	Oiled	3	N	1	Pink	42L
773	Freezer	798	Common Murre	01/21/98		Del Monte Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	2R
774	Freezer	799	Red-throated Loon	01/22/98		Monterey Harbor Beach	Unknown	--	1	Dead	Oiled	2	N	1	Blue	19R
775	Freezer	800	Common Murre	01/26/98		Asilomar State Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	27R

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
776	Freezer	801	Common Murre	01/22/98		Del Monte Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	166L
777	Freezer	802	Common Murre	01/24/98		Fisherman's Wharf, Mntry	Unknown	--	1	Dead	Oiled	2	N	1	Pink	46L
778	Freezer	803	Common Murre	01/24/98		SF	Unknown	--	1	Dead	Oiled	3	N	1	Yellow	80R
779	Freezer	804	Common Murre	11/18/97		South Point Reyes Beach	Unknown	--	1	Dead	Oiled	3	N	1	Yellow	27L
780	Freezer	805	Common Murre	01/23/98		South Beach	Unknown	--	1	Dead	Oiled	4	N	1	White	10L
781	Freezer	806	Northern Fulmar	11/16/97		Drake's Beach	Unknown	--	1	Dead	Oiled	2	N	1		
782	Freezer	807	Common Murre	01/19/98		Linda Mar Beach	Unknown	--	1	Dead	Oiled	3-4	N	1	Blue	92R
783	Freezer	808	Common Murre	11/17/97		Limantour Beach	Unknown	--	1	Dead	Oiled	3	N	1	Green	89L
784	Freezer	809	Common Murre	01/21/98		Lover's Point, Pacific Grove	Unknown	--	1	Dead	Oiled	2	N	1	Pink	13L
785	Freezer	810	Common Murre	01/20/98		Moss Landing Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	135L
786	Freezer	811	Common Murre	01/17/98		Moss Landing Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	169R
787	Freezer	812	Common Murre	01/26/98		Doran Beach	Doran Beach	1-06	1	Dead	Oiled	2	N	1	White	43L
788	Freezer	813	Common Murre	01/25/98		Carmel Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	32L
789	Freezer	814	Western Grebe				Unknown	--	1	Dead	Oiled	2	N	1		
790	Freezer	815	Common Murre	11/17/97		Limantour Beach	Unknown	--	1	Dead	Oiled	3	N	1	Green	82R
791	Freezer	816	Northern Fulmar	11/20/97		South Beach	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Yellow	48R
792	Freezer	817	Common Murre				Unknown	--	2	Dead	Oiled	2	Y	3S		
793	Freezer	818	Western Grebe	11/18/97		Drake's Beach	Unknown	--	1	Dead	Oiled	2	N	1	Blue	2101R
794	Freezer	819	Common Murre	11/19/97		Drake's Beach	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	28L
795	Freezer	820	Common Murre				Unknown	--	2	Dead	Oiled	2	Y	3S		
796	Freezer	821	Common Murre	11/18/97		North Beach Section 3	Unknown	--	1	Dead	Oiled	2	N	1	Green	98L
797	Freezer	822	Common Murre	11/17/97		South Beach	Unknown	--	1	Dead	Oiled	3+	N	1	Green	96L
798	Freezer	823	Common Murre				Unknown	--	2	Dead	Oiled	2	Y	3S		
799	Freezer	824	Northern Fulmar				Unknown	--	2	Dead	Not Visibly Oiled	--	Y	3S		
800	Freezer	825	American Coot				Unknown	--	1	Dead	Not Visibly Oiled	--	N	1		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
801	Freezer	826	Northern Fulmar	11/19/97		South Beach	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	White	37L
802	Freezer	827	Northern Fulmar	11/19/97		South Beach	Unknown	--	1	Dead	Oiled	2-	N	1	Yellow	36L
803	Freezer	828	Northern Fulmar				Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Yellow	46L
804	Freezer	829	Northern Fulmar	11/20/97		Salmon Creek	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Red	1904R
805	Freezer	830	Common Murre	11/19/97		South Beach	Unknown	--	1	Dead	Oiled	2-	N	1	Yellow	43L
806	Freezer	831	Northern Fulmar	11/20/97		South Beach	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Yellow	47R
807	Freezer	832	Western Grebe	11/17/97		Stinson Beach	Stinson Beach	2-14	1	Dead	Oiled	2	N	1	Blue	2601L
808	Freezer	833	Surf Scoter	11/20/97		Drake's Estero	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Blue	76L
809	Freezer	834	Northern Fulmar	11/20/97		South Beach	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	49R
810	Freezer	835	Horned Puffin	11/19/97	L. Hug	Point Reyes Beach	Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	4S		
811	Freezer	836	Common Murre		L. Grella	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	N	2S		
812	Freezer	837	Common Murre	11/19/97	H. Clock	Point Reyes Beach	Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3S		
813	Freezer	838	Common Murre	02/11/98	J. Conklin	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	2+	N	2S		
814	Freezer	839	Common Murre	02/13/98	Shaw	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	Y	3S		
815	Freezer	840	Common Murre	02/13/98	A. Frank	Bodega Bay	Unknown	--	2	Dead	Oiled	2	Y	3		
816	Freezer	841	Common Murre	02/13/98	A. Frank	Bodega Bay	Unknown	--	2	Dead	Oiled	3	Y	3		
817	Freezer	842	Common Murre	12/04/97	D. Howard	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2	N	2S		
818	Freezer	843	Common Murre		G. Bennett	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	3S		
819	Freezer	844	Common Murre	11/28/97	G. Bennett/K. Conlan	Drake's Beach	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	3S		
820	Freezer	845	Western Grebe	11/28/97	G. Bennett/K. Conlan	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	2S		
821	Freezer	846	Common Murre	11/28/97	G. Bennett/K. Conlan	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	3S		
822	Freezer	847	Pacific Loon	11/28/97	A. Mace	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Not Visibly Oiled	--	N	2S		
823	Freezer	848	Common Murre	01/27/98	A. Frank	McClure Beach	Driftwood & McClures Beaches	1-12	2	Dead	Not Visibly Oiled	--	Y	3S		
824	Freezer	849	Common Murre	11/28/97	A. Mace	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	2	Y	3S		
825	Freezer	850	Common Murre	11/28/97	A. Mace	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	2	N	2S		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
826	Freezer	851	Common Murre	11/23/97		Pescadero Creek Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	27L
827	Freezer	852	Common Murre	11/27/97		Pescadero State Beach	Unknown	--	1	Dead	Oiled	2-4	N	1	Red	20L
828	Freezer	853	Common Murre	11/23/97		El Granada, N of radar site	Unknown	--	1	Dead	Oiled	2-3	N	1	Yellow	85L
829	Freezer	854	Common Murre	11/30/97		Front Beach Linda Mar	Unknown	--	1	Dead	Oiled	2	N	1	Pink	62U
830	Freezer	855	Common Murre	11/25/97		Tunitas Creek Beach	Unknown	--	1	Dead	Oiled	2+	N	1	Blue	24L
831	Freezer	856	Common Murre	11/23/97		Beach at Hwy 84/Hwy 1	Unknown	--	1	Dead	Oiled	2-3	N	1	Red	77L
832	Freezer	857	Common Murre	11/23/97		Cowell State Beach	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	90L
833	Freezer	858	Pacific Loon	11/28/97		Unknown	Unknown	--	1	Dead	Oiled	3	N	1	Green	34L
834	Freezer	859	Common Murre	11/22/97		Fitzgerald Marine Reserve	Unknown	--	1	Dead	Oiled	2	N	1	Red	195R
835	Freezer	860	Common Murre	11/22/97		Linda Mar Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	Red	189R
836	Freezer	861	Red Phalarope	11/26/97		Sir Francis Drake nr Olema	Unknown	--	1	Dead	Oiled	2	N	1	White	41R
837	Freezer	862	Common Murre	11/23/97		Pescadero Creek Beach	Unknown	--	2	Dead	Oiled	2	Y	2S	Yellow	87U
838	Freezer	863	Pacific Loon	11/25/97		Fort Funston	Unknown	--	1	Dead	Oiled	3	N	1	Pink	34L
839	Freezer	864	Common Murre	11/16/97		RCA Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	274R
840	Freezer	865	Western Grebe	12/29/97		Tiburon	Unknown	--	1	Dead	Oiled	2-4	NN	1	Pink	169R
841	Freezer	866	Common Murre	11/23/97		Poplar Bch Co. Park, HMB	Unknown	--	1	Dead	Oiled	4	N	1	Blue	52R
842	Freezer	867	Common Murre	11/27/97		Pacifica - Beach Blvd.	Unknown	--	1	Dead	Oiled	3	N	1	Yellow	730R
843	Freezer	870	Common Murre	11/19/97		600 block of Cannery Row	Unknown	--	1	Dead	Oiled	2	N	1	Red	130R
844	Freezer	871	Pacific Loon	12/21/97		Monterey Harbor Master	Unknown	--	1	Dead	Oiled	3	N	1	Pink	25R
845	Freezer	872	Common Murre	11/19/97		Unknown	Unknown	--	1	Dead	Oiled	2	N	1	Red	106R
846	Freezer	873	Red Phalarope	02/03/98		Unknown	Unknown	--	1	Dead	Oiled	2	N	1	Tape	310
847	Freezer	875	Common Murre			Doran Beach	Doran Beach	1-06	1	Dead	Oiled	3	N	2		
848	Freezer	876	Common Murre			Doran Beach	Doran Beach	1-06	1	Dead	Oiled	3	N	2	White	326R
849	Freezer	877	Common Murre	02/03/98		Doran Beach	Doran Beach	1-06	U	Dead	Oiled	3	N	1-2		
850	Freezer	878	Western Grebe	02/03/98		Doran Beach	Doran Beach	1-06	U	Dead	Oiled	2	N	1-2S		



Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
851	Freezer	879	Common Murre	02/03/98		Doran Beach	Doran Beach	1-06	U	Dead	Oiled	3	N	1-2		
852	Freezer	880	Common Murre	02/03/98		Doran Beach	Doran Beach	1-06	U	Dead	Oiled	4	N	1-2S		
853	Freezer	881	Surf Scoter	02/03/98		Doran Beach	Doran Beach	1-06	U	Dead	Not Visibly Oiled	--	N	1-2S		
854	Freezer	882	Common Murre		D. Reno	North Point Reyes Beach	Unknown	--	2	Dead	Oiled	3	N	2S		
855	Freezer	883	Common Murre		Ames	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Unknown	U	N	3S		
856	Freezer	884	Common Murre		Ames	South Great Beach	Unknown	--	2	Dead	Oiled	3	Y	3S		
857	Freezer	885	Common Murre		Ames	South Great Beach	Unknown	--	2	Dead	Oiled	2	Y	3S		
858	Freezer	886	Common Murre		Ames	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	N	2S		
859	Freezer	887	Common Murre	01/26/98	Park Ranger	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	4S		
860	Freezer	888	Common Murre		A. Frank/ S. McCallister	McClure Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	2	Y	3S		
861	Freezer	889	Common Murre		A. Frank/ S. McCallister	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Unknown	U	Y	4S		
862	Freezer	890	Common Murre		A. Frank/ S. McCallister	McClure Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	2	Y	3S		
863	Freezer	891	Western Grebe		J. Holcomb	Drake's Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
864	Freezer	892	Common Murre		C. Clumpner	Abbott's Lagoon	Unknown	--	2	Dead	Oiled	4	Y	3S		
865	Freezer	893	Common Murre		C. Clumpner	Abbott's Lagoon	Unknown	--	2	Dead	Oiled	2	Y	3S		
866	Freezer	894	Common Murre		C. Clumpner	Abbott's Lagoon	Unknown	--	2	Dead	Unknown	U	Y	U		
867	Freezer	895	Common Murre		J. Holcomb	Drake's Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
868	Freezer	896	Common Murre	01/25/98		Drake's Beach	Unknown	--	1	Dead	Oiled	3	N	1	White	31R
869	Freezer	897	Common Murre		Shaw/Imai	South Point Reyes Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2S		
870	Freezer	898	Common Murre		Shaw/Imai	Doran Jetty	Doran Beach	1-06	2	Dead	Oiled	3	N	2S		
871	Freezer	899	Common Murre		Shaw/Imai	Stinson Beach	Stinson Beach	2-14	2	Dead	Oiled	2	Y	2S		
872	Freezer	900	Common Murre	02/06/98		Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	2	N	2S		
873	Freezer	901	Common Murre		J. Mazet	North Point Reyes Beach	Unknown	--	2	Dead	Oiled	4	N	2S		
874	Freezer	902	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	U	Dead	Oiled	2+	N	1-2	Red	2802R
875	Freezer	903	Northern Fulmar		C. Finke	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2-	Y	3S		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
876	Freezer	904	Northern Fulmar		C. Finke	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2-	Y	3S		
877	Freezer	905	Pacific Loon			Limantour Beach	Unknown	--	1	Dead	Oiled	2-	N	1		
878	Freezer	906	Unidentified Grebe		Ames/Newman	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3S		
879	Freezer	907	Western or Clark's Grebe	01/23/98	S. McCallister	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Unknown	U	Y	3S		
880	Freezer	908	Unidentified Shearwater	01/20/98			Unknown	--	2	Dead	Oiled	3-4	Y	U		
881	Freezer	909	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	4	N	3S		
882	Freezer	910	Northern Fulmar	01/20/98		Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	3S		
883	Freezer	911	Northern Fulmar	01/20/98		Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3S		
884	Freezer	912	Common Murre	01/24/98		Fitzgerald Marine Reserve	J.V. Fitzgerald Marine Reserve	3-31	2	Dead	Oiled	2	Y	2S		
885	Freezer	913	Common Murre	01/20/98	S. McCallister	North Point Reyes Beach	Unknown	--	2	Dead	Oiled	2	Y	3-4S		
886	Freezer	914	Common Murre		Corben/L. Hug	Point Reyes Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3S		
887	Freezer	915	Herring Gull		Corben/L. Hug	Point Reyes Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3S		
888	Freezer	916	Common Murre		Corben/L. Hug	Point Reyes Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	3	N	2S		
889	Freezer	917	Common Murre	12/06/97	L. Hug	Point Reyes Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	4	Y	3S		
890	Freezer	918	Common Murre	11/27/97		McClure's Beach	Unknown	--	1	Dead	Oiled	2	N	1		
891	Freezer	919	Common Murre			Wildcare	Unknown	--	1	Dead	Oiled	2	N	1		
892	Freezer	920	Common Murre	02/28/98		Pacific Grove	Figueria Rd. to Lovers Pt.	9-01	2	Dead	Oiled	2	N	2-3S		
893	Freezer	921	Common Murre	01/14/98		Unknown	Unknown	--	1	Dead	Oiled	3-4	NN	1	Green	1239R
894	Freezer	922	Common Murre	02/28/98		Monterey Harbor	Figueria Rd. to Lovers Pt.	9-01	2	Dead	Oiled	2	N	2S		
895	Freezer	923	Common Murre	02/27/98		Pacific Grove, Oceanview Blv	Unknown	--	1	Dead	Oiled	2	N	1	Red	103R
896	Freezer	924	Common Murre	02/03/98		Salmon Creek	Unknown	--	1	Dead	Oiled	2-3	NN	1	Red	2581L
897	Freezer	925	Common Murre	02/23/98		Bolinas	Unknown	--	1	Dead	Oiled	3	N	1	Red	172R
898	Freezer	927	Common Murre			Monterey Harbor	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
899	Freezer	928	Common Murre	02/05/98		Agate Beach	Unknown	--	1	Dead	Oiled	2-4	NN	1	White	59L
900	Freezer	929	Common Murre	02/27/98		Unknown	Unknown	--	1	Dead	Oiled	2-3	N	1	Pink	71R

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
901	Freezer	930	Common Murre	02/28/98		Monterey Harbor	Figueroa Rd. to Lovers Pt.	9-01	2	Dead	Oiled	2	N	2S		
902	Freezer	931	Common Murre	01/18/98		Unknown	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	3215L
903	Freezer	932	Common Murre	02/28/98		Unknown	Unknown	--	1	Dead	Oiled	2	N	1	Pink	88R
904	Freezer	933	Common Murre	02/07/98		Near Belvedere	Unknown	--	1	Released/ Died	Not Visibly Oiled	--	N	1	Aluminum	1056-11852
905	Freezer	934	Common Murre	02/20/98		San Carlos Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	67R
906	Freezer	935	Common Murre	02/28/98		Monterey Harbor	Figueroa Rd. to Lovers Pt.	9-01	2	Dead	Oiled	2	N	2S		
907	Freezer	936	Western Grebe			South Point Reyes Beach	Unknown	--	1	Dead	Unknown	U	NN	1	Yellow	159L
908	Freezer	937	Common Murre	01/20/98		Maverick's Beach, HMB	Unknown	--	1	Released/ Died	Oiled	2-3	N	1	Green/ Aluminum	615R/1056-11920
909	Freezer	938	Common Murre	02/24/98		Marina - on beach	Unknown	--	1	Dead	Oiled	2-3	NN	1	Pink	66R
910	Freezer	939	Common Murre	02/04/98		North Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	956L
911	Freezer	940	Common Murre			Monterey Harbor	Unknown	--	2	Dead	Oiled	2	N	2S		
912	Freezer	941	Common Murre			Del Monte Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
913	Freezer	942	Common Murre	02/28/98		Monterey Harbor	Figueroa Rd. to Lovers Pt.	9-01	2	Dead	Oiled	2	N	2S		
914	Freezer	943	Common Murre	02/28/98		Monterey Harbor	Figueroa Rd. to Lovers Pt.	9-01	2	Dead	Not Visibly Oiled	--	N	2S		
915	Freezer	944	Common Murre	02/28/98			Unknown	--	1	Dead	Unknown	U	NN	1	Green	3132R/488R
916	Freezer	945	Common Murre	02/28/98		Monterey Harbor	Figueroa Rd. to Lovers Pt.	9-01	2	Dead	Oiled	2	N	2S		
917	Freezer	946	Pacific Loon	02/04/98		Limantour Beach	Unknown	--	1	Dead	Oiled	2-3	NN	1	Blue	20L
918	Freezer	947	Pacific Loon	02/04/98		Montara	Unknown	--	1	Dead	Oiled	2-3	NN	1	Blue	2301R
919	Freezer	948	Brown Pelican				Unknown	--	1	Dead	Other	--	N	1		
920	Freezer	949	Western Grebe	02/10/98		Santa Cruz, Port Office	Unknown	--	1	Dead	Oiled	2	NN	1	Blue	2318-R
921	Freezer	950	Surf Scoter			Point Reyes Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2		
922	Freezer	951	Common Murre	02/05/98		Natural Bridges	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	10R
923	Freezer	952	Common Murre	02/06/98		Doran Beach	Unknown	--	U	Dead	Oiled	2	N	1-2	White	62L
924	Freezer	953	Common Loon	02/07/98		North Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	60L
925	Freezer	954	Common Murre	02/03/98		Salmon Creek	Unknown	--	1	Dead	Oiled	3	N	1	Red	2586R

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
926	Freezer	955	Common Murre	02/02/98		Unknown	Unknown	--	1	Dead	Oiled	2	N	1	White	49
927	Freezer	956	Common Murre	02/04/98		Doran Beach	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	83R
928	Freezer	957	Common Murre	02/07/98		Limantour Beach	Unknown	--	1	Dead	Oiled	2	N	1	White	63L
929	Freezer	958	Common Murre			Stinson Beach	Stinson Beach	2-14	1	Dead	Oiled	2	N	1		
930	Freezer	959	Common Murre	02/07/98		South Beach	Unknown	--	1	Dead	Oiled	2	N	1	White	64R
931	Freezer	960	Common Murre			Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	Y	2		
932	Freezer	961	Common Murre	02/03/98		Doran Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	705L
933	Freezer	962	Common Murre	02/04/98		Monterey tourist dropoff	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	16R
934	Freezer	963	Pacific Loon			Bodega Head	Unknown	--	2	Dead	Oiled	4-3	Y	2		
935	Freezer	964	Common Murre	02/03/98		Rodeo Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	2580L
936	Freezer	965	Common Murre	02/07/98		Drake's	Unknown	--	1	Dead	Oiled	2	N	1	Red	692R
937	Freezer	966	Common Murre	02/02/98		Pacific Grove	Unknown	--	1	Dead	Oiled	2	N	1	Red	2595R
938	Freezer	967	Common Murre			Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2		
939	Freezer	968	Common Loon	11/19/97		Drake's Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	Blue	65R
940	Freezer	969	Western Grebe	11/21/97		Fort Baker	Unknown	--	1	Dead	Oiled	3	N	1	Yellow	166L
941	Freezer	970	Common Murre	11/16/97		RCA Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	2808L
942	Freezer	971	Common Murre	11/21/97		Del Monte Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	200L
943	Freezer	972	Common Murre	11/20/97		Lover's Point, Pacific Grove	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	85
944	Freezer	973	Common Murre	11/17/97		Stinson Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	84L
945	Freezer	974	Common Murre	11/20/97		Lover's Point, Pacific Grove	Unknown	--	1	Dead	Oiled	3	N	1	Blue	70R
946	Freezer	975	Common Murre	11/23/97		HMB	Unknown	--	1	Dead	Oiled	4	N	1	Green	1414L
947	Freezer	976	Western Grebe	11/23/97		Pescadero Creek Beach	Unknown	--	1	Dead	Oiled	2	N	1	Blue	921L
948	Freezer	977	Common Murre	11/24/97		Unknown	Unknown	--	1	Dead	Oiled	3	N	1	Blue	13L
949	Freezer	978	Common Murre	11/19/97		Cannery Row	Unknown	--	1	Dead	Oiled	2	N	1	Green	23
950	Freezer	979	Common Murre	11/23/97		Palomarin Beach	Unknown	--	1	Dead	Oiled	3	N	1	Yellow	11L

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
951	Freezer	980	Common Murre	11/18/97		Drake's Beach (Section 32)	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	97L
952	Freezer	981	Western Grebe	11/23/97		Drake's Beach	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Blue	967R
953	Freezer	982	Common Murre	11/22/97		South Beach	Unknown	--	1	Dead	Oiled	3	N	1	Pink	41R
954	Freezer	983	Common Murre	11/22/97		Sharp Park Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	188L/274R
955	Freezer	984	Common Murre	01/22/98	S. McCallister/ J. Mazet/Ames	North Point Reyes Beach	Unknown	--	2	Dead	Oiled	3	Y	2S		
956	Freezer	985	Surf Scoter	01/22/98	A. Frank	Drake's Beach	Unknown	--	2	Dead	Unknown	U	Y	3S		
957	Freezer	986	Common Murre	01/22/98	Newman/J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		
958	Freezer	987	Common Murre	01/22/98	J. Mazet	South Point Reyes Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
959	Freezer	988	Common Murre				Unknown	--	2	Dead	Oiled	3	N	2S		
960	Freezer	989	Common Murre	01/22/98	Newman/J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2+	Y	2-3S		
961	Freezer	990	Common Murre	01/22/98	Newman/J. Holcomb	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	Y	2-3S		
962	Freezer	991	Common Murre	01/22/98	J. Mazet/Newman/ Ames	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2+	Y	3S		
963	Freezer	992	Common Murre	01/22/98	J. Mazet/Newman/ Ames	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2+	Y	3S		
964	Freezer	993	Common Murre	01/22/98	J. Mazet/Newman/ Ames	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2+	Y	3S		
965	Freezer	994	Common Murre	01/22/98	J. Mazet/Newman/ Ames	Limantour Beach	Unknown	--	2	Dead	Oiled	2+	Y	3S		
966	Freezer	995	Western Grebe	11/21/97	S. Allen	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	2S		
967	Freezer	996	Western Gull	11/21/97	S. Allen	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	1	Y	2		
968	Freezer	997	Common Murre	11/21/97	C. Clumpner	Drake's Beach	Unknown	--	2	Dead	Unknown	U	Y	3S		
969	Freezer	998	Common Murre		D. Osorio	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	3S		
970	Freezer	999	Western or Clark's Grebe	11/18/97			Unknown	--	2	Dead	Oiled	2	Y	3		
971	Freezer	1001	Pacific Loon	12/01/97		Agate Beach, Bollinas	Unknown	--	2	Dead	Oiled	2	N	2S		
972	Freezer	1002	Pacific Loon	11/27/97		Limantour Beach	Unknown	--	1	Dead	Oiled	3-4	N	1	Pink	25R
973	Freezer	1003	Pacific Loon	11/26/97		Stinson Beach	Unknown	--	1	Dead	Oiled	3-4	N	1	Blue	69L
974	Freezer	1004	Common Murre	11/23/97		San Gregorio State Beach	Unknown	--	1	Dead	Oiled	2-4	N	1	Pink	21L
975	Freezer	1005	Common Murre	11/22/97		Pilar Point	Unknown	--	1	Dead	Oiled	3-4	N	1	Red	183L

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
976	Freezer	1006	Common Murre	11/20/97		Muir Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	2803
977	Freezer	1007	Common Murre	02/28/98		Monterey Harbor	Figuerroa Rd. to Lovers Pt.	9-01	2	Dead	Oiled	2	N	2S		
978	Freezer	1008	Common Murre	02/28/98		Breakwater Cove, Mty	Unknown	--	1	Dead	Oiled	2-4	N	1	Red	120R
979	Freezer	1009	Common Murre	03/01/98		Lover's Point	Unknown	--	1	Re-released /Died	Oiled	2-4	NN	1	Red	107
980	Freezer	1010	Common Murre	02/27/98		Seaside Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	85L
981	Freezer	1011	Common Murre	02/26/98		Del Monte Beach	Unknown	--	1	Dead	Oiled	3-4	N	1	White	104R
982	Freezer	1012	Common Murre	02/28/98		Monterey Harbor	Figuerroa Rd. to Lovers Pt.	9-01	2	Dead	Oiled	2	N	2S		
983	Freezer	1013	Black-legged Kittiwake	02/26/98		unk parking lot, MSPCA	Unknown	--	1	Dead	Oiled	3	N	1	Yellow	104R
984	Freezer	1014	Black-legged Kittiwake	02/28/98		in ocean 10 mi S of Pt. Pinos	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	132L
985	Freezer	1015	Mew Gull	01/21/98		Unknown	Unknown	--	1	Dead	Oiled	2-3	NN	1	Red	76 L
986	Freezer	1016	Common Murre	02/18/98		Miramontes Pt. Rd., HMB	Unknown	--	1	Dead	Oiled	2-3	N	1	Blue	75L
987	Freezer	1017	Common Murre	02/27/98		Pacific Grove, bch HoMaLab	Unknown	--	1	Dead	Oiled	2	N	1	Red	102R
988	Freezer	1018	Common Murre	03/03/98		Asilomar State Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	108R
989	Freezer	1019	Common Murre	02/20/98		Monterey Harbor	Unknown	--	1	Dead	Oiled	1	N	1	Green	2674R
990	Freezer	1020	Common Murre	02/27/98		Wharf I Monterey	Unknown	--	1	Dead	Oiled	2	N	1S	Pink	80L
991	Freezer	1021	Common Murre	02/28/98		Monterey Harbor	Figuerroa Rd. to Lovers Pt.	9-01	2	Dead	Oiled	2	N	2		
992	Freezer	1022	Common Murre	01/17/98		Stinson Beach	Unknown	--	1	Dead	Oiled	2-3	NN	1	Green	3207L
993	Freezer	1023	Common Murre	01/22/98		Fitzgerald Marine Reserve	Unknown	--	1	Dead	Oiled	2	N	1	Green	80R
994	Freezer	1024	Common Murre	01/22/98		Surfer's Beach, El Granada	Unknown	--	1	Dead	Oiled	2	N	1	Blue	19L
995	Freezer	1025	Common Murre	01/13/98		Linda Mar Beach	Unknown	--	1	Dead	Oiled	2-3	NN	1	Green	97L
996	Freezer	1026	Common Murre	02/05/98		Monterey tourist dropoff	Unknown	--	1	Dead	Oiled	2-3	N	1	Yellow	22
997	Freezer	1027	Common Murre	01/22/98		Pigeon Point Lighthouse	Unknown	--	1	Dead	Oiled	2	N	1	Green	82R
998	Freezer	1028	Common Murre	01/12/98		Sharp Park Beach	Unknown	--	1	Dead	Oiled	2-3	NN	1	Blue	86R
999	Freezer	1029	Common Murre	03/05/98		Wharf II Monterey	Unknown	--	1	Dead	Oiled	3	N	1	White	192
1000	Freezer	1030	Western Grebe	12/28/97		Año Nuevo	Unknown	--	1	Dead	Oiled	2-4	NN	1	Pink	17L

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1001	Freezer	1031	Red Phalarope			Bodega Bay	Unknown	--	1	Dead	Oiled	2	N	1		
1002	Freezer	1032	Common Murre			Goat Rock	Unknown	--	2	Dead	Oiled	3	N	2		
1003	Freezer	1033	Common Murre			Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	2	N	2S		
1004	Freezer	1034	Common Murre			Spud Point Marina	Unknown	--	2	Dead	Oiled	2	N	2S		
1005	Freezer	1035	Common Murre			Salmon Creek	South Salmon Creek Beach	1-01	1	Dead	Oiled	2	N	1		
1006	Freezer	1036	Cassin's Auklet	02/07/98	Dmytryk	Drake's Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1007	Freezer	1037	Red Phalarope	02/07/98	Ames	Drake's Beach South	Drakes Beach W.	2-03	2	Dead	Oiled	2	N	2S		
1008	Freezer	1038	Common Murre	02/07/98	A. Frank/Imai	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
1009	Freezer	1039	Common Murre	02/07/98	Dmytryk	Drake's Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1010	Freezer	1040	Common Murre	02/07/98	Ames	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	3	Y	2S		
1011	Freezer	1041	Common Murre	02/07/98	Dmytryk	Drake's Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1012	Freezer	1042	Common Murre	02/07/98	Ames	South Great Beach	Unknown	--	2	Dead	Oiled	3	N	2S		
1013	Freezer	1043	Northern Fulmar	01/20/98		Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	N	2S		
1014	Freezer	1044	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	2	N	2S		
1015	Freezer	1045	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	3-4	N	2S		
1016	Freezer	1046	Common Murre	01/22/98	J. Holcomb/ S. McCallister	Limantour Spit	Limantour Beach W.	2-05	2	Dead	Oiled	3-4	Y	3S		
1017	Freezer	1047	Unidentified Grebe	01/22/98	A. Frank	Drake's Beach	Unknown	--	2	Dead	Oiled	2	Y	3S		
1018	Freezer	1048	Common Murre	01/22/98	Newman/J. Holcomb	North Point Reyes Beach	Unknown	--	2	Dead	Oiled	2	Y	3S		
1019	Freezer	1049	Common Murre	01/21/98	Ames/J. Mazet	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	3	Y	3S		
1020	Freezer	1050	Common Murre	01/22/98	J. Mazet	Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Oiled	3-4	Y	2S		
1021	Freezer	1051	Common Murre	01/22/98	Newman/J. Mazet/Ames	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	3-4	Y	3S		
1022	Freezer	1052	Common Murre	01/22/98	S. McCallister/ J. Mazet/ Ames	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		
1023	Freezer	1053	Common Murre	01/22/98	J. Mazet	North Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Oiled	2	N	2S		
1024	Freezer	1054	Ancient Murrelet	01/21/98	J. Mazet	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
1025	Freezer	1056	Common Murre	02/01/98		Pacific Grove, S of Lover's Point	Unknown	--	1	Dead	Oiled	2	N	1	Green	614R

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1026	Freezer	1057	Common Murre			Point Reyes Beach	Unknown	--	2	Dead	Oiled	2	Y	3S		
1027	Freezer	1058	Common Murre	01/25/98		Drake's Beach	Unknown	--	1	Dead	Oiled	3	N	1S	Pink	93R
1028	Freezer	1059	Common Murre			Point Reyes Beach	Unknown	--	2	Dead	Oiled	3	N	2S		
1029	Freezer	1060	Common Murre			Lover's Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1030	Freezer	1061	Common Murre	01/26/98		Limantour Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	89L
1031	Freezer	1062	Common Murre	12/26/97		Pigeon Pt.	Unknown	--	1	Released/ Died	Oiled	3-4	N	1	Metal	896-32464R
1032	Freezer	1063	Common Murre			Point Reyes Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1033	Freezer	1064	Common Murre			Point Reyes Beach	Unknown	--	2	Dead	Oiled	2+	Y	2S		
1034	Freezer	1065	Common Murre			Point Reyes Beach	Unknown	--	2	Dead	Oiled	3	Y	2S		
1035	Freezer	1066	Surf Scoter	01/31/98		Point Reyes Beach	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1		
1036	Freezer	1067	Red Phalarope	01/31/98		Point Reyes Beach	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1		
1037	Freezer	1068	Cassin's Auklet				Unknown	--	2	Dead	Oiled	2	N	2S		
1038	Freezer	1069	Common Murre		A. Holmes	Bolinas Beach	Bolinas Beach	2-13	2	Dead	Oiled	3	N	2S		
1039	Freezer	1070	Common Murre				Unknown	--	2	Dead	Oiled	3	N	3S		
1040	Freezer	1071 A	Western Grebe	01/18/98	A. Holmes	Bolinas Beach	Bolinas Beach	2-13	2	Dead	Oiled	3-4	N	2S		
1041	Freezer	1071 B	Common Murre		A. Holmes	Bolinas Beach	Bolinas Beach	2-13	2	Dead	Oiled	3	N	2S		
1042	Freezer	1072	Common Murre	01/21/98	Ames/Newman	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		
1043	Freezer	1073	Common Murre		A. Holmes	Bolinas Beach	Bolinas Beach	2-13	2	Dead	Oiled	4	N	2S		
1044	Freezer	1074	Common Murre			Bolinas Beach	Bolinas Beach	2-13	2	Dead	Oiled	2	N	2S		
1045	Freezer	1075	Unidentified Cormorant	01/28/98	L. Hug		Point Reyes Beach B	1-15	2	Dead	Oiled	3	Y	3S		
1046	Freezer	1076	Common Murre	11/23/97	J. White/J. Lammers		Unknown	--	2	Dead	Oiled	2	Y	3S		
1047	Freezer	1077	Common Murre	11/23/97	J. White	South Point Reyes Beach	Unknown	--	2	Dead	Oiled	3	Y	3S		
1048	Freezer	1078	Common Murre	11/23/97	J. White	South Point Reyes Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	3S		
1049	Freezer	1079	Common Murre	12/06/97	K. Carolan/ G. Bennett	Dillon Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	3	Y	3S		
1050	Freezer	1080	Common Murre	12/06/97	K. Carolan/ G. Bennett	Dillon Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	2	Y	3S		



Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1051	Freezer	1081	Common Murre	12/06/97	P. Dejung	Limantour Beach	Unknown	--	2	Dead	Oiled	2+	Y	2S		
1052	Freezer	1082	Common Murre		J. White		Unknown	--	2	Dead	Oiled	2	Y	3S		
1053	Freezer	1083	Western Gull	11/27/97	C. Mrozek	Dillon Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	4	N	2S		
1054	Freezer	1084	Common Murre		J. White	Southeast Farallon Island	Unknown	--	2	Dead	Oiled	3	N	2S		
1055	Freezer	1085	Common Murre	11/18/97	J. White	Southeast Farallon Island	Unknown	--	2	Dead	Oiled	4	N	2		
1056	Freezer	1086	Common Murre		J. White	Southeast Farallon Island	Unknown	--	2	Dead	Oiled	4	N	2S		
1057	Freezer	1087	Common Murre	01/20/98	G. Goeden	Drake's Beach	Drakes Beach W.	2-03	2	Dead	Oiled	4	Y	2S		
1058	Freezer	1088	Common Murre	01/20/98	G. Goeden/S. Kelly/J. Hardwick	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	2	Y	2S		
1059	Freezer	1089	Common Murre		S. Kelly/B. Goeden	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	3	N	2S		
1060	Freezer	1090	Common Murre	01/20/98	J. Hall	Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	3	N	2S		
1061	Freezer	1091	Common Murre	01/20/98	J. Hall	Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	3	N	2S		
1062	Freezer	1092	Common Murre	01/20/98	B. Goeden	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	4	Y	2S		
1063	Freezer	1093	Northern Fulmar	01/20/98	G. Goeden/S. Kelly/J. Hardwick	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	3	Y	3S		
1064	Freezer	1094	Common Murre	01/18/98	B. Goeden	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	4	N	2S		
1065	Freezer	1095	Common Murre	01/19/98	S. McCallister	Limantour Beach	Limantour Beach W.	2-05	2	Dead	Oiled	3	Y	3S		
1066	Freezer	1096	Common Murre	01/18/98	B. Goeden	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	2S		
1067	Freezer	1097	Common Murre	01/27/98		Dunes Miramar	Unknown	--	2	Dead	Oiled	2	Y	3S		
1068	Freezer	1098	Common Murre	01/24/98	Fitzgerald		Unknown	--	2	Dead	Oiled	2	Y	2S		
1069	Freezer	1099	Common Murre	01/27/98		Pacifica	Unknown	--	2	Dead	Oiled	3	Y	3S		
1070	Freezer	1100	Common Murre	01/27/98		Capitola Beach	Capitola Beach	8-07	1	Dead	Oiled	2	N	2	White	532R
1071	Freezer	1101	Common Murre			Pilar Point	Pilar Point	3-32	2	Dead	Oiled	3	Y	3S		
1072	Freezer	1102	Common Murre	01/27/98		Pacifica	Unknown	--	2	Dead	Oiled	2	Y	2S		
1073	Freezer	1103	Common Murre	01/24/98		Fitzgerald Marine Reserve	J.V. Fitzgerald Marine Reserve	3-31	2	Dead	Oiled	2	N	2S		
1074	Freezer	1104	Common Murre	01/26/98	J. Hardwick/B. Suiul	Fort Funston	Thornton Beach, N.	3-11	2	Dead	Oiled	3	N	2S		
1075	Freezer	1105	Common Murre	01/24/98		Fitzgerald Marine Reserve	J.V. Fitzgerald Marine Reserve	3-31	2	Dead	Oiled	2	Y	2S		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1076	Freezer	1106	Common Murre	01/24/98		Fitzgerald Marine Reserve	J.V. Fitzgerald Marine Reserve	3-31	2	Dead	Oiled	4	Y	2S		
1077	Freezer	1107	Unidentified Loon	01/24/98			Unknown	--	2	Dead	Oiled	2	Y	3S	Pink	30L
1078	Freezer	1108	Western or Clark's Grebe				Unknown	--	2	Dead	Oiled	2	Y	2S	Pink	43R
1079	Freezer	1109	Common Murre	01/26/98		Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	3	N	2S	Blue	25L
1080	Freezer	1110	Common Murre	01/24/98		Point Reyes Beach	Unknown	--	2	Dead	Oiled	3	N	2S		
1081	Freezer	1111	Common Murre	01/25/98		Año Nuevo	Cove Beach, Ano Nuevo	5-09	1	Dead	Not Visibly Oiled	--	N	2	Red	261R
1082	Freezer	1113	Common Murre			Point Reyes Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1083	Freezer	1114	Common Murre			Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S	Red	96L
1084	Freezer	1115	Common Murre			Moss Beach	J.V. Fitzgerald Marine Reserve	3-31	2	Dead	Oiled	2	N	2		
1085	Freezer	1116	Common Murre	01/23/98		Año Nuevo	Unknown	--	1	Dead	Oiled	3	N	1	Red	163R
1086	Freezer	1117	Common Murre	01/24/98			Unknown	--	2	Dead	Oiled	3	Y	3S		
1087	Freezer	1118	Common Murre				Unknown	--	2	Dead	Oiled	3	N	2S		
1088	Freezer	1119	Common Murre	02/13/98	C. Clumpner	Drake's Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
1089	Freezer	1120	Common Murre	02/13/98	A. Frank	Bodega Bay	Unknown	--	2	Dead	Oiled	2	N	2S		
1090	Freezer	1121	Common Murre	02/13/98	Imai/Shaw	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Unknown	U	Y	2S		
1091	Freezer	1122	Common Murre	02/13/98	A. Frank	Bodega Bay	Unknown	--	2	Dead	Oiled	2	Y	3S		
1092	Freezer	1123	Common Murre	02/13/98	A. Frank	Bodega Bay	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
1093	Freezer	1124	Common Murre	02/13/98	A. Frank	Bodega Bay	Unknown	--	2	Dead	Oiled	3	N	2S		
1094	Freezer	1125	Common Murre	02/13/98	A. Frank	Bodega Bay	Unknown	--	2	Dead	Oiled	3	N	2S		
1095	Freezer	1126	Western or Clark's Grebe	02/13/98	C. Clumpner	Drake's Beach	Unknown	--	2	Dead	Oiled	2	N	2		
1096	Freezer	1127	Common Murre	01/29/98	A. Frank	Dillon Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	4	N	3S		
1097	Freezer	1128	Western or Clark's Grebe	01/27/98		Oroloma Marsh Hayward	Unknown	--	1	Dead	Oiled	2+	NN	1	Blue	53L
1098	Freezer	1129	Common Murre	01/24/98		Half Moon Bay	Unknown	--	1	Dead	Oiled	2+	NN	1	Red	193L
1099	Freezer	1130	Common Murre	01/27/98		Drake's Beach	Unknown	--	1	Dead	Oiled	3	NN	1	Yellow	45L
1100	Freezer	1131	Common Murre				Unknown	--	U	Dead	Unknown	U	NN	2	Yellow	49R

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1101	Freezer	1132	Red-throated Loon	01/24/98		Monterey	Unknown	--	1	Dead	Oiled	2+	NN	2	Blue	11L
1102	Freezer	1133	Common Murre	02/07/98	Ames	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	3	Y	3S		
1103	Freezer	1134	Common Murre	01/20/98		Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	3S		
1104	Freezer	1135	Common Murre	01/20/98		Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	3S		
1105	Freezer	1136	Common Murre	01/20/98		Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	3	Y	3S		
1106	Freezer	1137	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	4	N	2S		
1107	Freezer	1138	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	3	Y	3S		
1108	Freezer	1139	Common Murre	01/19/98	S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	2+	N	3S		
1109	Freezer	1140	Northern Fulmar	01/20/98		Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3S		
1110	Freezer	1141	Common Murre	02/08/98		on the street Bodega Bay	Unknown	--	1	Dead	Oiled	2	N	1	Green	62 R
1111	Freezer	1142	Common Murre			Unknown	Unknown	--	1	Dead	Oiled	2-4	N	1	Green	3011R
1112	Freezer	1143	Brandt's Cormorant	02/08/98			Unknown	--	1	Dead	Not Visibly Oiled	--	N	1		
1113	Freezer	1144	Pacific Loon	02/07/98		Tiburon, on beach	Unknown	--	1	Dead	Oiled	2	N	2	Pink	176L
1114	Freezer	1145	Common Murre	02/07/98		Doran Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	627R
1115	Freezer	1146	Common Murre	02/06/98		Wharf Road, Bolinas	Unknown	--	1	Dead	Oiled	3	N	1	Green	632R
1116	Freezer	1147	Common Murre	02/05/98		Bolinas	Unknown	--	1	Dead	Oiled	3-4	N	1	White	60L
1117	Freezer	1148	Common Murre	02/07/98		Doran Beach	Unknown	--	1	Dead	Oiled	2+	N	1	Green	628L
1118	Freezer	1149	Common Murre	02/02/98	J. Holcomb	Pacific Grove	Figueria Rd. to Lovers Pt.	9-01	2	Dead	Oiled	2	Y	3S		
1119	Freezer	1150	Common Murre				Unknown	--	2	Dead	Oiled	2	N	2S		
1120	Freezer	1151	Common Murre				Unknown	--	2	Dead	Oiled	3+	Y	2S		
1121	Freezer	1152	Common Murre				Unknown	--	2	Dead	Oiled	3	Y	3S		
1122	Freezer	1153	Common Murre	01/20/98	J. Mazet	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	3S		
1123	Freezer	1154	Common Murre	01/20/98	J. Mazet	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	4	N	2S		
1124	Freezer	1155	Common Murre				Unknown	--	2	Dead	Oiled	3	N	2S		
1125	Freezer	1156	Common Murre	01/20/98	J. Mazet	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	4	Y	3S		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1126	Freezer	1157	Common Murre	01/20/98	Vanderwerf		Half Moon Bay D	4-05	2	Dead	Oiled	3	Y	2S		
1127	Freezer	1158	Common Murre	02/07/98		Doran Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	633R
1128	Freezer	1159	Common Murre	02/09/98		Moss Beach	Unknown	--	1	Dead	Oiled	2-4	NN	1	Green	2652R
1129	Freezer	1160	Common Murre	02/17/98		Monterey Harbor	Unknown	--	1	Dead	Oiled	2	N	1	Green	2666R
1130	Freezer	1161	Common Murre	02/08/98		South Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	White	65R
1131	Freezer	1162	Common Murre	02/18/98		Monterey Bay	Unknown	--	U	Dead	Oiled	2	N	1-2	Green	2672L
1132	Freezer	1163	Common Murre	02/03/98		Pacific Grove, Cabrillo Pt.	Unknown	--	1	Dead	Oiled	2-4	N	1	Red	2596L
1133	Freezer	1164	Horned Grebe	02/18/98		Monterey Bay	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2		
1134	Freezer	1165	Western Grebe	02/13/98		Waddell Creek	Unknown	--	1	Dead	Oiled	2+	NN	1	Blue	2313L
1135	Freezer	1166	Common Murre	02/18/98		Monterey Harbor	Unknown	--	1	Dead	Oiled	2	N	1	Green	2670R
1136	Freezer	1167	Common Murre	02/05/98		Stinson Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	953L
1137	Freezer	1168	Common Murre	02/19/98		Del Monte Beach	Highway 218 to Figueroa Rd.	8-28	2	Dead	Oiled	3	N	2S		
1138	Freezer	1169	Red-necked Grebe	02/07/98		Monterey Bay	Unknown	--	1	Released/Died	Oiled	2-3	N	1	Metal	1537-25482
1139	Freezer	1170	Common Murre	02/08/98		MAC Beach, Cannery Row	Unknown	--	1	Dead	Oiled	3	N	1	Green	635R
1140	Freezer	1171	Common Murre	02/08/98		SF	Unknown	--	1	Dead	Oiled	2+	N	1	Green	634R
1141	Freezer	1172	Common Murre	02/08/98		Doran Beach	Unknown	--	1	Dead	Oiled	2+	N	1	Green	2938R
1142	Freezer	1173	Common Murre	02/08/98		Salmon Creek	Unknown	--	1	Dead	Oiled	2-4	NN	1	Green	2659R
1143	Freezer	1174	Common Murre	02/15/98		Monterey	Unknown	--	1	Dead	Oiled	2+	NN	1	Pink	59R
1144	Freezer	1175	Western Grebe	02/05/98		SF	Unknown	--	1	Dead	Oiled	3-4	NN	1	Blue	2306L
1145	Freezer	1176	Common Murre	02/07/98		South Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	2937R
1146	Freezer	1177	Common Murre	02/04/98		Muir Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	Yellow	15R
1147	Freezer	1178	Common Murre	02/08/98		Doran Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	697 R
1148	Freezer	1179	Common Murre	02/17/98		Monterey Harbor	Unknown	--	1	Dead	Oiled	2	NN	1	Green	2667L
1149	Freezer	1180	Common Murre	02/05/98		Stinson Beach	Unknown	--	1	Dead	Oiled	4	N	1	Red	683L
1150	Freezer	1181	Common Murre	02/02/98	J. Holcomb	Pacific Grove	Figueroa Rd. to Lovers Pt.	9-01	2	Dead	Oiled	2	N	2S		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1151	Freezer	1182	Common Murre	02/02/98		Seabright Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	3130L
1152	Freezer	1183	Common Murre	02/02/98		Pacific Grove	Unknown	--	1	Dead	Oiled	2	N	1	Green	3136L
1153	Freezer	1184	Common Murre	02/02/98		Seabright Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	3146L
1154	Freezer	1185	Common Murre	02/01/98		Pt. Piños	Unknown	--	1	Dead	Oiled	2	N	1	Green	3145L
1155	Freezer	1186	Common Murre	01/31/98		Sand City Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	94R
1156	Freezer	1187	Common Murre	01/31/98		Moss Landing State Beach	Unknown	--	1	Dead	Oiled	3	N	1	Green	3144L
1157	Freezer	1188	Common Murre	02/02/98		Seacliff Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	3143R
1158	Freezer	1189	Common Murre	02/15/98			Unknown	--	U	Dead	Oiled	2	N	1-2		
1159	Freezer	1190	Common Murre	02/03/98			Unknown	--	U	Dead	Oiled	2	N	1-2		
1160	Freezer	1191	Common Murre				Unknown	--	1	Dead	Oiled	2	N	1	Pink	17L
1161	Freezer	1192	Common Murre	02/14/98		Princeton	Unknown	--	1	Dead	Oiled	2	N	1	Green	2661R
1162	Freezer	1193	Common Murre	01/25/98		Pilar Point Harbor	Unknown	--	1	Dead	Oiled	2	N	1	Green	2663R
1163	Freezer	1194	Common Murre	01/23/98		Cowell Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	14R
1164	Freezer	1195	Common Murre	02/11/98		Cowell's Beach SC	Unknown	--	1	Dead	Oiled	2	N	1	Green	649R
1165	Freezer	1196	Common Murre	02/12/98		Fitzgerald Marine Reserve	J.V. Fitzgerald Marine Reserve	3-31	2	Dead	Oiled	2	Y	2S		
1166	Freezer	1197	Common Murre	02/12/98			Unknown	--	2	Dead	Oiled	2	Y	2S		
1167	Freezer	1198	Common Murre	02/12/98		Pilar Point	Pilar Point	3-32	2	Dead	Oiled	3	Y	2S		
1168	Freezer	1199	Common Murre	02/12/98			Unknown	--	2	Dead	Oiled	2	N	2S		
1169	Freezer	1300	Common Murre	11/21/97	C. Clumpner	Drake's Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2S		
1170	Freezer	1301	Common Murre	11/20/97	C. Clumpner	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2+	Y	3S		
1171	Freezer	1302	Common Murre	11/20/97	C. Clumpner	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3S		
1172	Freezer	1303	Common Murre	02/06/98	C. Clumpner	Bolinas Beach	Bolinas Beach	2-13	2	Dead	Oiled	2	N	2S		
1173	Freezer	1304	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1174	Freezer	1305	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1175	Freezer	1306	Horned Grebe	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Unknown	U	Y	2S		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1176	Freezer	1307	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	3	Y	2S		
1177	Freezer	1308	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1178	Freezer	1309	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1179	Freezer	1310	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1180	Freezer	1311	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
1181	Freezer	1312	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	3S		
1182	Freezer	1313	Western or Clark's Grebe	11/17/97	Lasky	Drake's Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2S		
1183	Freezer	1314	Unidentified Gull	11/18/97	K. Woper	Limantour Beach	Unknown	--	2	Dead	Oiled	1	Y	4		
1184	Freezer	1315	Common Murre	11/18/97	J. Hall	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	3	Y	3S		
1185	Freezer	1316	Northern Fulmar	11/18/97	K. Cooper		Unknown	--	2	Dead	Not Visibly Oiled	--	Y	3S		
1186	Freezer	1317	Common Murre	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	4		
1187	Freezer	1318	Northern Fulmar	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Oiled	1	Y	3S		
1188	Freezer	1319	Common Murre	11/18/97	K. Brewer	Section 2	Unknown	--	2	Dead	Oiled	2+	Y	3S		
1189	Freezer	1320	Common Murre	11/18/97	K. Cooper	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	3S		
1190	Freezer	1321	Northern Fulmar	11/18/97		South Point Reyes Beach	Point Reyes Beach D	1-17	2	Dead	Oiled	4	N	2S		
1191	Freezer	1322	Common Murre			Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	3-	Y	3S		
1192	Freezer	1323	Common Murre		C. Finke	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2	N	2S		
1193	Freezer	1324	Northern Fulmar		C. Finke	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	3S		
1194	Freezer	1325	Common Murre		L. Hug	Abbott's Lagoon	Point Reyes Beach B	1-15	2	Dead	Oiled	2	Y	2S		
1195	Freezer	1326	Common Murre		L. Hug	Abbott's Lagoon	Point Reyes Beach B	1-15	2	Dead	Oiled	4	Y	2S		
1196	Freezer	1327	Northern Fulmar		M. Hester/T. Gardali	Stinson Beach	Stinson Beach	2-14	2	Dead	Not Visibly Oiled	--	N	2S		
1197	Freezer	1328	Common Murre		A. Frank	Bolinas Beach	Bolinas Beach	2-13	2	Dead	Unknown	U	Y	3S		
1198	Freezer	1329	Common Murre		Tarpley	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2S		
1199	Freezer	1330	Common Murre		C. Finke	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Oiled	2+	Y	2S		
1200	Freezer	1331	Common Murre		B. Goeden/S. Kelly/J. Hardwick	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	4	Y	2S		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1201	Freezer	1332	Common Murre	02/10/98		17 Mile Drive & ocean	Unknown	--	1	Dead	Oiled	2	N	1	Green	648R
1202	Freezer	1333	Common Murre	02/08/98		Bolinas	Unknown	--	1	Dead	Oiled	2	N	1	White	67L
1203	Freezer	1334	Common Murre	01/22/98		McClure's Beach	Unknown	--	1	Dead	Oiled	2-4	N	1	Green	641R
1204	Freezer	1335	Pacific Loon	02/06/98		Goat Rock	Unknown	--	1	Dead	Oiled	2-3	N	1	Red	34L
1205	Freezer	1336	Common Murre	02/03/98		Drake's Beach	Unknown	--	1	Dead	Oiled	4-	N	1	Green	719R
1206	Freezer	1337	Common Murre	02/04/98		Salmon Creek	Unknown	--	1	Dead	Oiled	4-	N	1	White	53R
1207	Freezer	1338	Western Gull				Unknown	--	1	Dead	Not Visibly Oiled	--	N	1		
1208	Freezer	1339	Common Murre	02/11/98		(SCSPCA)	Unknown	--	1	Dead	Oiled	2	N	1	Green	650R
1209	Freezer	1340	Surf Scoter	02/09/98		Del Monte Beach	Unknown	--	1	Dead	Not Visibly Oiled	--	N	1	Yellow	59L
1210	Freezer	1341	Common Murre	01/21/98		Palomarin	Unknown	--	2	Dead	Oiled	2	Y	2S		
1211	Freezer	1342	Common Murre			Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2+	N	2S		
1212	Freezer	1343	Common Murre			Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	2S		
1213	Freezer	1344	Pacific Loon		W. Crela		Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
1214	Freezer	1345	Common Murre	01/18/98		Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2+	N	2S		
1215	Freezer	1346	Common Murre	01/18/98	S. Thomas	Stinson Beach	Stinson Beach A	2-14A	2	Dead	Oiled	2	Y	2S		
1216	Freezer	1347	Common Murre	01/19/98			Unknown	--	2	Dead	Oiled	3	N	2S		
1217	Freezer	1348	Common Murre	01/19/98			Unknown	--	2	Dead	Oiled	2+	N	2S		
1218	Freezer	1349	Common Murre	01/18/98	S. Thomas	Stinson Beach	Stinson Beach A	2-14A	2	Dead	Oiled	2	N	2S		
1219	Freezer	1350	Pacific Loon	01/18/98		Stinson Beach	Stinson Beach A	2-14A	2	Dead	Not Visibly Oiled	--	Y	2S		
1220	Freezer	1351	Common Murre	02/04/98		Doran Beach	Doran Beach	1-06	2	Dead	Oiled	3	N	2		
1221	Freezer	1352	Common Murre	02/03/98	S. McCallister	Pacifica	Unknown	--	2	Dead	Oiled	3	N	2S		
1222	Freezer	1353	Eared Grebe	02/03/98		Doran Beach	Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	N	2S		
1223	Freezer	1354	Common Murre	02/04/98		Point Reyes Beach	Unknown	--	U	Dead	Oiled	3	N	1-2		
1224	Freezer	1355	Common Murre		S. McCallister	Pacifica	Unknown	--	2	Dead	Oiled	2	Y	2S		
1225	Freezer	1356	Common Murre	02/04/98	S. McCallister	Pacifica	Unknown	--	2	Dead	Oiled	2+	Y	3S		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1226	Freezer	1357	Common Murre	02/04/98		Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2+	N	2S		
1227	Freezer	1358	Common Murre	02/04/98		Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2+	Y	3S		
1228	Freezer	1359	Common Murre	02/04/98		Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2+	N	2S		
1229	Freezer	1360	Common Murre	02/04/98		Doran Beach	Doran Beach	1-06	2	Dead	Oiled	3	N	2S		
1230	Freezer	1361	Common Murre	02/04/98		Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	Y	3S		
1231	Freezer	1362	Surf Scoter		B. Duff	Miwok Camp to Jetty Day Use	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
1232	Freezer	1363	Common Murre		B. Duff	Miwok Camp to Jetty Day Use	Unknown	--	2	Dead	Oiled	2	Y	2S		
1233	Freezer	1364	Common Murre		B. Duff	Miwok Camp to Jetty Day Use	Unknown	--	2	Dead	Oiled	2	N	2S		
1234	Freezer	1365	White-winged Scoter		B. Duff	Miwok Camp to Jetty Day Use	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
1235	Freezer	1366	Western Grebe	02/03/98	C. Clumpner	Francis State Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
1236	Freezer	1367	Common Murre	02/03/98	A. Frank	Aptos	New Brighton Beach to Seacliff Pier	8-09	2	Dead	Unknown	U	Y	3S		
1237	Freezer	1368	Common Murre	02/03/98	A. Frank	Aptos	New Brighton Beach to Seacliff Pier	8-09	2	Dead	Oiled	2	N	2S		
1238	Freezer	1369	Horned Grebe			Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2-	Y	2S		
1239	Freezer	1370	Common Murre	01/19/98		Abbott's Lagoon	Unknown	--	2	Dead	Oiled	3+	Y	2S		
1240	Freezer	1371	Common Murre		S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	2	N	2S		
1241	Freezer	1372	Common Murre		S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	4	Y	2S		
1242	Freezer	1373	Common Murre		A. Frank	Bolinas Beach	Bolinas Beach	2-13	2	Dead	Oiled	2	N	2S		
1243	Freezer	1374	Common Murre		S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	2S		
1244	Freezer	1375	Common Murre			Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2-	Y	2S		
1245	Freezer	1376	Common Murre		S. McCallister	Abbott's Lagoon/Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	3	N	2S		
1246	Freezer	1377	Common Murre	02/13/98		Pigeon Point	Unknown	--	2	Dead	Oiled	2	Y	2S		
1247	Freezer	1378	Common Murre	02/13/98		Pilar Point	Pilar Point	3-32	2	Dead	Oiled	2	N	2S		
1248	Freezer	1379	Western Grebe	02/12/98		Pilar Point	Pilar Point	3-32	U	Dead	Oiled	2	N	1-2		
1249	Freezer	1380	Common Murre	02/13/98		Pilar Point	Pilar Point	3-32	2	Dead	Oiled	3+	N	2S		
1250	Freezer	1381	Common Murre	02/13/98		Bean Hollow State Beach	Bean Hollow Beach	4-21	2	Dead	Oiled	2+	Y	2S		



Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1251	Freezer	1382	Common Murre	02/12/98	Shaw/Imai	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1252	Freezer	1383	Red Phalarope	02/12/98		Drake's Beach	Unknown	--	2	Dead	Oiled	2-	N	2S		
1253	Freezer	1384	Common Murre	02/12/98	Shaw/Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		
1254	Freezer	1385	Common Murre	02/12/98	A. Frank	Bolinas Beach	Bolinas Beach	2-13	2	Dead	Oiled	2	N	2		
1255	Freezer	1386	Common Murre	02/12/98	Shaw/Imai	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1256	Freezer	1387	Common Murre		L. Allen/C. Finke	Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	2S		
1257	Freezer	1388	Common Murre	02/12/98	J. Holcomb	Drake's Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
1258	Freezer	1389	Common Murre	02/12/98	Shaw/Imai	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2-	N	2S		
1259	Freezer	1390	Common Murre	02/12/98	C. Clumpner	Drake's Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
1260	Freezer	1391	Common Murre	02/12/98	Shaw/Imai	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1261	Freezer	1392	Common Murre		S. Thomas	Stinson Beach	Stinson Beach A	2-14A	2	Dead	Oiled	4	N	2S		
1262	Freezer	1393	Common Murre		A. Frank	Bolinas Beach	Bolinas Beach	2-13	2	Dead	Oiled	2	Y	2S		
1263	Freezer	1394	Common Murre		S. Thomas	Stinson Beach	Stinson Beach A	2-14A	2	Dead	Oiled	2	N	2S		
1264	Freezer	1395	Common Murre		A. Frank	Bolinas Beach	Bolinas Beach	2-13	2	Dead	Oiled	2	N	2S		
1265	Freezer	1396	Common Murre		S. Thomas	Stinson Beach	Stinson Beach A	2-14A	2	Dead	Oiled	4	N	2S		
1266	Freezer	1397	Common Murre		A. Frank		Bolinas Beach	2-13	2	Dead	Oiled	4	N	2S		
1267	Freezer	1398	Common Murre		A. Frank	Bolinas Beach	Bolinas Beach	2-13	2	Dead	Oiled	2+	Y	2S		
1268	Freezer	1399	Rhinoceros Auklet	02/05/98	R.D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1269	Freezer	1400	Common Murre	02/05/98	R.D.	Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	2	Y	2S		
1270	Freezer	1401	Common Murre	02/05/98	R.D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	2	Y	2S		
1271	Freezer	1402	Common Murre	02/05/98	R.D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	3	N	2S		
1272	Freezer	1403	Common Murre	02/05/98	R.D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	3	N	2S		
1273	Freezer	1404	Common Murre	02/05/98	R.D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1274	Freezer	1405	Common Murre	02/05/98	R.D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1275	Freezer	1406	Common Murre	02/05/98	R.D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1276	Freezer	1407	Common Murre	02/08/98		SF	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	631L
1277	Freezer	1408	Black-legged Kittiwake	02/08/98		South Beach	Unknown	--	1	Dead	Oiled	2+	N	1	Green	751R
1278	Freezer	1409	Common Murre	02/20/98		1 mi. N of Bean Hollow State	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	60L
1279	Freezer	1410	Common Murre	02/15/98		Salinas River State Beach	Unknown	--	1	Dead	Oiled	4	N	1	Pink	65R
1280	Freezer	1411	Common Murre	02/08/98		MBA	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	636L
1281	Freezer	1412	Common Murre	02/10/98		SF	Unknown	--	1	Dead	Oiled	2	N	1	Green	646L
1282	Freezer	1413	Common Murre	02/08/98		Unknown	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	643L
1283	Freezer	1414	Pelagic Cormorant	02/15/98	R. Noonwater	Rio Del Mar	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
1284	Freezer	1415	Common Murre	02/26/98		Spanish Bay /Pebble Beach	Unknown	--	1	Dead	Oiled	3	N	1	Pink	55L
1285	Freezer	1416	Common Murre	02/26/98		Del Monte Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	74R
1286	Freezer	1417	Common Murre	02/26/98		Asilomar State Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	57 R
1287	Freezer	1418	Common Murre	02/25/98		Monterey	Unknown	--	1	Dead	Oiled	2	N	1	Pink	70L
1288	Freezer	1419	Common Murre	02/26/98		Monterey Bay	Highway 218 to Figueroa Rd.	8-28	U	Dead	Oiled	2	N	1-2	Yellow	69L
1289	Freezer	1420	Common Murre	02/26/98		Del Monte Beach	Highway 218 to Figueroa Rd.	8-28	1	Dead	Oiled	2	N	1	Pink	75 L
1290	Freezer	1421	Common Murre	02/26/98		Del Monte Beach	Highway 218 to Figueroa Rd.	8-28	1	Dead	Oiled	2	N	1	Pink	56R
1291	Freezer	1422	Common Murre	02/25/98		Pt. Pinos, Pacific Grove	Unknown	--	1	Dead	Oiled	2	N	1	Pink	60R
1292	Freezer	1423	Common Murre	02/24/98		Lover's Point, Pacific Grove	Unknown	--	1	Dead	Oiled	2	N	1	Pink	53R
1293	Freezer	1424	Common Murre	02/25/98		Del Monte Beach	Highway 218 to Figueroa Rd.	8-28	U	Dead	Oiled	2	N	1-2	Pink	68L
1294	Freezer	1425	Common Murre	02/08/98	Imai/Newman	North Great Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1295	Freezer	1426	Common Murre	02/08/98	A. Frank	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	Y	2S		
1296	Freezer	1427	Common Murre	02/08/98	Imai/Newman	South Great Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
1297	Freezer	1428	Common Murre	02/08/98	Imai/Newman	North Great Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1298	Freezer	1429	Common Murre	02/08/98	Imai/Newman	South Great Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1299	Freezer	1430	Common Murre	02/08/98	A. Frank	Doran Beach	Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	N	2S		
1300	Freezer	1431	Common Murre	02/08/98	A. Frank	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	3	N	2S		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1301	Freezer	1432	Pacific Loon	02/08/98	Imai/Newman	North Great Beach	Unknown	--	2	Dead	Oiled	3	N	2S		
1302	Freezer	1433	Common Murre	02/20/98		Monterey Bay	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	74R
1303	Freezer	1434	Common Murre	02/18/98		Monterey Harbor	Unknown	--	1	Dead	Oiled	2	N	1	Green	2671L
1304	Freezer	1435	Common Murre	02/17/98		Hopkins Marine Lab	Unknown	--	1	Dead	Oiled	2	N	1	Green	2668L
1305	Freezer	1436	Common Murre	02/17/98		Linda Mar Beach	Linda Mar	3-19	2	Dead	Oiled	3	Y	3S		
1306	Freezer	1437	Common Murre	02/17/98		Linda Mar Beach	Linda Mar	3-19	2	Dead	Oiled	3	Y	3S		
1307	Freezer	1438	Common Murre	02/17/98		Waddell Beach	Waddell Cr. Beach	5-11	2	Dead	Oiled	2	Y	3S		
1308	Freezer	1439	Western Gull	02/17/98			Unknown	--	1	Dead	Other	--	N	1		
1309	Freezer	1440	Surf Scoter	02/06/98			Unknown	--	1	Dead	Not Visibly Oiled	--	N	1		
1310	Freezer	1441	Common Murre	02/07/98		Pilar Point	Unknown	--	1	Dead	Oiled	2	N	1	Green	971R
1311	Freezer	1442	Common Murre	02/06/98		Bolinas	Unknown	--	1	Dead	Oiled	2	N	1	Red	687L
1312	Freezer	1443	Common Murre	02/05/98		Scott Creek	Unknown	--	1	Dead	Oiled	2	N	1	Metal	M00530
1313	Freezer	1444	Common Murre	02/04/98		Pacifica	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	11R
1314	Freezer	1445	Pacific Loon	02/04/98		Limantour Beach	Unknown	--	1	Dead	Oiled	3	N	1	Blue	2302R
1315	Freezer	1446	Western Gull				Unknown	--	2	Dead	Other	--	N	2		
1316	Freezer	1447	Common Murre	02/04/98		Kelly State Beach, HMB	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	1R
1317	Freezer	1448	Common Murre	02/04/98		Salmon Creek	Unknown	--	1	Dead	Oiled	3	N	1	White	52R
1318	Freezer	1449	Common Murre	02/04/98		Doran Beach	Unknown	--	1	Dead	Oiled	3	N	1	Green	713R
1319	Freezer	1451	Common Murre	02/03/98	C. Clumpner	Pilar Point	Pilar Point	3-32	2	Dead	Oiled	3	N	2S		
1320	Freezer	1452	Common Murre	02/02/98	S. McCallister	Four Mile Beach	Four-mile Beach	5-29	2	Dead	Oiled	2	Y	3S		
1321	Freezer	1454	Common Murre	02/03/98	C. Clumpner	Pilar Point	Pilar Point	3-32	2	Dead	Oiled	2	N	2S		
1322	Freezer	1455	Common Murre	02/03/98	A. Frank	Del Rio	Unknown	--	2	Dead	Oiled	3	N	2S		
1323	Freezer	1457	Common Murre	02/12/98		Rockaway Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1324	Freezer	1458	Common Murre			Scott Creek	Unknown	--	2	Dead	Oiled	2	Y	2S		
1325	Freezer	1459	Common Murre	02/12/98		Pilar Point	Pilar Point	3-32	2	Dead	Oiled	3	Y	2S		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1326	Freezer	1460	Western Grebe				Unknown	--	1	Dead	Not Visibly Oiled	--	N	1		
1327	Freezer	1461	Double-crested Cormorant				Unknown	--	1	Dead	Unknown	U	N	1	Red	163L
1328	Freezer	1462	Cassin's Auklet	02/12/98		Pilar Point	Pilar Point	3-32	2	Dead	Oiled	3	N	3S		
1329	Freezer	1463	Red Phalarope	02/12/98			Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2		
1330	Freezer	1464	Red Phalarope	02/12/98			Unknown	--	2	Dead	Not Visibly Oiled	--	N	2		
1331	Freezer	1465	Red Phalarope	02/12/98			Unknown	--	2	Dead	Not Visibly Oiled	--	N	2		
1332	Freezer	1466	Common Murre	02/05/98	R.D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1333	Freezer	1467	Common Murre	02/09/98	R.D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	3	N	2S		
1334	Freezer	1468	Common Murre	02/09/98	R.D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	3	N	2S		
1335	Freezer	1469	Common Murre	02/05/98	R.D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	3	N	2S		
1336	Freezer	1470	Common Murre	02/05/98	R.D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1337	Freezer	1471	Common Murre	02/05/98	R.D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1338	Freezer	1472	Common Murre	02/05/98	R.D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1339	Freezer	1473	Common Murre	02/05/98	R.D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1340	Freezer	1474	Common Murre	02/05/98	R.D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1341	Freezer	1475	Common Murre	02/05/98	R.D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1342	Freezer	1476	Common Murre	02/16/98			Unknown	--	2	Dead	Oiled	2	N	2S		
1343	Freezer	1477	Common Murre	02/16/98			Unknown	--	2	Dead	Oiled	2	N	2S		
1344	Freezer	1478	Common Murre	01/25/98		Año Nuevo	Unknown	--	1	Dead	Oiled	2	N	1	Green	2658R
1345	Freezer	1479	Common Murre	01/20/98		Del Monte Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	Red	134R
1346	Freezer	1480	Common Murre	02/01/98		Pilar Point under radar site	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	610
1347	Freezer	1481	Common Murre	02/03/98		Pacifica	Unknown	--	1	Dead	Oiled	2-3	N	1	Yellow	8R
1348	Freezer	1482	Double-crested Cormorant				Unknown	--	1	Dead	Unknown	U	N	1		
1349	Freezer	1483	Common Murre	02/12/98	L. Allen/C. Finke	Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	3S		
1350	Freezer	1484	Common Murre	02/12/98	Shaw/Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	N	2S		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1351	Freezer	1485	Common Murre	02/12/98	L. Allen/C. Finke	Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	2S		
1352	Freezer	1486	Common Murre	02/12/98	Shaw/Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		
1353	Freezer	1487	Pacific Loon	02/12/98	Shaw/Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		
1354	Freezer	1488	Common Murre	02/12/98	Shaw/Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		
1355	Freezer	1489	Common Murre	02/12/98	Shaw/Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		
1356	Freezer	1490	Common Murre	02/12/98	Shaw/Imai	South Point Reyes Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
1357	Freezer	1491	Common Murre	02/03/98		Doran Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	2587R
1358	Freezer	1492	Surf Scoter				Unknown	--	1	Dead	Not Visibly Oiled	--	N	1		
1359	Freezer	1493	Common Murre	02/02/98		Doran Beach	Unknown	--	1	Dead	Oiled	2	N	1	Red	2578L
1360	Freezer	1494	Surf Scoter				Unknown	--	1	Dead	Not Visibly Oiled	--	N	1		
1361	Freezer	1495	Surf Scoter				Unknown	--	1	Dead	Not Visibly Oiled	--	N	1		
1362	Freezer	1496	Common Murre	02/03/98		Lover's Point	Unknown	--	1	Dead	Oiled	2	N	1	Green	3021L
1363	Freezer	1497	Common Murre	01/25/98		Drake's Beach	Unknown	--	1	Dead	Oiled	4	N	1	Pink	98R
1364	Freezer	1498	Northern Fulmar	01/26/98	S. McCallister/A. Frank	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Unknown	U	Y	4		
1365	Freezer	1499	Common Murre	01/26/98	S. McCallister/A. Frank	Fish Dock	Unknown	--	2	Dead	Oiled	2	N	2S		
1366	Freezer	1500	Common Murre	01/26/98	Ames/Imai	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	2	N	2S		
1367	Freezer	1501	Common Murre	02/17/98	J. Conklin	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	3	Y	2S		
1368	Freezer	1502	Common Murre	02/17/98	J. Conklin	Ocean Beach	Unknown	--	2	Dead	Oiled	3	N	2S		
1369	Freezer	1503	Common Murre	02/17/98	J. Conklin	Ocean Beach	Unknown	--	2	Dead	Oiled	3	N	2S		
1370	Freezer	1504	Common Murre	02/17/98	J. Conklin	Ocean Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
1371	Freezer	1505	Common Murre	02/05/98	A. Frank	Stinson Beach	Stinson Beach	2-14	2	Dead	Oiled	2	N	2S		
1372	Freezer	1506	Common Murre	02/05/98	C. Clumpner	Drake's Bay	Unknown	--	2	Dead	Oiled	2	N	2		
1373	Freezer	1507	Common Murre	02/05/98	A. Frank	Bolinas Beach	Bolinas Beach	2-13	2	Dead	Oiled	2	N	3S		
1374	Freezer	1508	Western Grebe	02/06/98		Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	Y	2S		
1375	Freezer	1509	Common Murre	02/06/98		SEFI North Landing	Unknown	--	U	Dead	Oiled	3	N	1-2		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1376	Freezer	1510	Common Murre	02/11/98	J. Conklin	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	2	N	2S		
1377	Freezer	1511	Common Murre	02/11/98	J. Conklin	Ocean Beach	Ocean Beach, N.	3-08	2	Dead	Oiled	3	N	2S		
1378	Freezer	1512	Common Murre	02/11/98	J. Conklin	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	3	N	2S		
1379	Freezer	1513	Common Murre	02/11/98	J. Conklin	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	3	N	2S		
1380	Freezer	1514	Common Murre	02/11/98	J. Conklin	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	2	N	2S		
1381	Freezer	1515	Common Murre	02/11/98	J. Conklin	Ocean Beach	Ocean Beach, N.	3-08	2	Dead	Oiled	2	N	2S		
1382	Freezer	1516	Pacific Loon	02/11/98	J. Conklin	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	3	N	2S		
1383	Freezer	1517	Bushtit		J. Conklin	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	2	N	2S		
1384	Freezer	1518	Cassin's Auklet	02/11/98	J. Conklin	Ocean Beach	Ocean Beach, Central	3-09	2	Dead	Oiled	2	Y	2S		
1385	Freezer	1519	Common Murre		J. Bennett/Cotler	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	3S		
1386	Freezer	1520	Northern Fulmar	01/10/98	B. Goeden	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	N	3S		
1387	Freezer	1521	Common Murre	01/09/98	Ranger Comb	Lifeboat Station	Unknown	--	2	Dead	Oiled	2	Y	3		
1388	Freezer	1522	Common Murre	01/08/98	B. Goeden	Marin County	Unknown	--	2	Dead	Oiled	3	N	2S		
1389	Freezer	1523	Common Murre	01/20/98	Hass/D. Press	South Point Reyes Beach	Unknown	--	2	Dead	Oiled	3	N	2S		
1390	Freezer	1524	Common Murre		A. Voropaeff	Francis State Beach	Half Moon Bay D	4-05	2	Dead	Oiled	4	N	2S		
1391	Freezer	1525	Common Murre	01/20/98	B. Goeden/S. Kelly	Drake's Beach	Drakes Beach W.	2-03	2	Dead	Oiled	3	N	2S		
1392	Freezer	1526	Northern Fulmar		G. Bennett/P. Cotter	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2S		
1393	Freezer	1527	Northern Fulmar		G. Bennett/P. Cotter	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	N	3S		
1394	Freezer	1528	Western Gull		G. Bennett/P. Cotter	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	4		
1395	Freezer	1529	Bushtit	01/20/98	B. Goeden/S. Kelly/J. Hardwick	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	2	Y	3S		
1396	Freezer	1530	Common Murre	01/25/98		Drake's Beach	Unknown	--	1	Dead	Oiled	3	N	1	White	40L
1397	Freezer	1531	Common Murre	01/24/98		Pigeon Point	Unknown	--	1	Dead	Oiled	3	N	1	Red	136R
1398	Freezer	1532	Western Grebe	01/24/98		Salmon Creek	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	151L
1399	Freezer	1533	Heermann's Gull	02/03/98		Pt. Joe	Unknown	--	1	Dead	Oiled	2	N	1	Green	2023L
1400	Freezer	1534	Common Murre	01/23/98	Newman/Ames	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1401	Freezer	1535	Common Murre	01/23/98	L. Allen/E. Ueber	Abbott's Lagoon	Unknown	--	2	Dead	Oiled	2	Y	2S		
1402	Freezer	1536	Common Murre	01/23/98	S. McCallister	Drake's Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
1403	Freezer	1537	Common Murre	01/23/98	S. McCallister	Drake's Beach	Unknown	--	2	Dead	Oiled	4	N	2S		
1404	Freezer	1538	Common Murre	01/23/98	Newman/Ames	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		
1405	Freezer	1539	Common Murre	01/23/98	Newman/Ames	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	N	2S		
1406	Freezer	1540	Brandt's Cormorant	01/23/98	L. Allen	Abbott's Lagoon	Unknown	--	2	Dead	Oiled	2	Y	4		
1407	Freezer	1541	Northern Fulmar	01/23/98	C. Finke	Limantour Beach West	Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	3-4S		
1408	Freezer	1542	Red-necked Grebe	01/21/98	J. Hall	North Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	2	N	2		
1409	Freezer	1543	Ruddy Duck	01/20/98	Lesserd/J. Hall	Doran Beach	Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	N	2		
1410	Freezer	1544	Eared Grebe	01/21/98	J. Hall	Dillon Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	3	N	2S		
1411	Freezer	1545	Common Murre	01/21/98	J. Hall	Dillon Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	2	Y	2S		
1412	Freezer	1546	Common Murre	01/21/98	J. Hall	Dillon Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	2	N	2S		
1413	Freezer	1547	Common Murre	01/21/98	J. Hall	Dillon Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	3	Y	2S		
1414	Freezer	1548	Common Murre	01/21/98	S. McCallister/A. Frank	McClure Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	3	Y	2S		
1415	Freezer	1549	Common Murre	01/24/98	S. McCallister	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
1416	Freezer	1550	Unidentified Waterbird	01/26/98	A. Frank	Lifeboat Station	Unknown	--	2	Dead	Oiled	3	Y	4		
1417	Freezer	1551	Common Murre	01/23/98		Drake's Beach	Unknown	--	1	Dead	Oiled	2	N	1	White	7L
1418	Freezer	1552	Common Murre	01/25/98	S. McCallister/A. Frank	Fish Dock/ Lifeboat Station	Unknown	--	2	Dead	Oiled	2	N	2		
1419	Freezer	1553	Common Murre	02/12/98	C. Clumpner	Bodega Bay North	Unknown	--	2	Dead	Oiled	2-3	Y	2-3S		
1420	Freezer	1554	Common Murre	02/12/98	A. Frank	Dillon Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	2	N	2S		
1421	Freezer	1555	Common Murre	02/12/98	Shaw/Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		
1422	Freezer	1556	Common Murre	01/24/98	S. McCallister/A. Frank	McClure Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	4	Y	2S		
1423	Freezer	1557	Common Murre	02/05/98	A. Frank	Stinson Beach	Stinson Beach	2-14	2	Dead	Oiled	2	N	2S		
1424	Freezer	1558	Common Murre	02/06/98		Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1425	Freezer	1559	Common Murre	02/12/98	Shaw/Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1426	Freezer	1560	Western Grebe	02/12/98	A. Frank	Dillon Beach	Dillon Beach to Sand Pt.	1-10	2	Dead	Oiled	2	Y	2S		
1427	Freezer	1561	Common Murre	02/05/98	A. Frank	Agate Beach	Bolinas Beach	2-13	2	Dead	Oiled	2	N	2		
1428	Freezer	1562	Ancient Murrelet	02/11/98	A. Frank	Stinson Beach	Stinson Beach	2-14	2	Dead	Not Visibly Oiled	--	N	2		
1429	Freezer	1563	Marbled Murrelet	02/05/98	C. Clumpner	Drake's Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1430	Freezer	1564	Common Murre	01/26/98		Drake's Beach	Unknown	--	U	Dead	Oiled	2	N	1-2	White	29R
1431	Freezer	1565	Common Murre	01/24/98			Unknown	--	2	Dead	Oiled	2	N	2S		
1432	Freezer	1566	Common Murre				Unknown	--	2	Dead	Oiled	2	N	2S		
1433	Freezer	1567	Common Murre				Unknown	--	2	Dead	Oiled	2	N	2S		
1434	Freezer	1568	Common Murre				Unknown	--	2	Dead	Oiled	2	N	2S		
1435	Freezer	1569	Common Murre			Pilar Point	Pilar Point	3-32	2	Dead	Oiled	2	N	2S		
1436	Freezer	1570	Marbled Murrelet	02/12/98	Shaw/Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	N	2S		
1437	Freezer	1571	Common Murre	02/11/98		North Beach	Unknown	--	1	Dead	Oiled	2	N	1	Blue	32R
1438	Freezer	1572	Common Murre	02/13/98		Pigeon Point	Unknown	--	2	Released/Died	Unknown	U	Y	2S		1056-11916
1439	Freezer	1573	Common Murre	02/07/98		Pilar Point	Unknown	--	1	Dead	Oiled	3	N	1	Green	972L
1440	Freezer	1574	Common Murre	02/10/98		MBA	Unknown	--	1	Dead	Oiled	3	N	1	Pink	64L
1441	Freezer	1575	Common Murre	02/04/98		North Agate Beach, Bolinas	Unknown	--	1	Dead	Oiled	3	N	1	Yellow	18R
1442	Freezer	1576	Brant	02/13/98			Unknown	--	1	Dead	Not Visibly Oiled	--	N	1		
1443	Freezer	1577	Common Murre	03/02/98		Del Monte Beach	Unknown	--	1	Dead	Oiled	2	N	1	White	107R
1444	Freezer	1578	Common Murre	02/27/98		West Cliff Drive	Unknown	--	1	Dead	Oiled	2-3	NN	1	Yellow	72R
1445	Freezer	1579	Common Murre	01/19/98		Limantour Beach	Unknown	--	1	Dead	Oiled	2-3	N	1	Red	2806L
1446	Freezer	1580	Common Murre	02/06/98		Farallones	Unknown	--	1	Dead	Oiled	2-3	N	1		
1447	Freezer	1581	Common Murre	02/28/98		Monterey Harbor	Figuerroa Rd. to Lovers Pt.	9-01	2	Dead	Oiled	2	N	2S		
1448	Freezer	1582	Common Murre	01/14/98		Half Moon Bay	Unknown	--	1	Dead	Oiled	2-3	NN	1	White	6L
1449	Freezer	1583	Common Murre				Unknown	--	1	Dead	Unknown	U	N	1		
1450	Freezer	1584	Common Murre	02/26/98		Del Monte Beach	Unknown	--	1	Dead	Oiled	2-4	N	1	Pink	33R



Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1451	Freezer	1585	Common Murre	03/01/98		Pacific Grove, Lover's - Hopk.	Unknown	--	1	Dead	Oiled	2	N	1	Red	106R
1452	Freezer	1586	Common Murre	03/01/98		Carmel Beach	Unknown	--	1	Dead	Oiled	2	N	1	White	108L
1453	Freezer	1587	Common Murre			Del Monte Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
1454	Freezer	1588	Common Murre	02/17/98		Monterey Harbor	Unknown	--	1	Dead	Oiled	2-3	N	1		
1455	Freezer	1589	Common Murre				Unknown	--	1	Dead	Oiled	3	N	1		
1456	Freezer	1590	Common Murre	01/20/98	Hass/D. Press	South Point Reyes Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
1457	Freezer	1591	Common Murre	01/20/98	Hass/D. Press		Unknown	--	2	Dead	Oiled	3	N	2S		
1458	Freezer	1592	Common Murre	01/20/98		Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	2	N	2S		
1459	Freezer	1593	Northern Fulmar	01/20/98	Hass/D. Press		Unknown	--	2	Dead	Oiled	2	N	3S		
1460	Freezer	1594	Cassin's Auklet	01/20/98	C. Jochem	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Unknown	U	Y	3S		
1461	Freezer	1595	Northern Fulmar		G. Bennett/P. Cotter	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	N	2S		
1462	Freezer	1596	Eared Grebe	01/19/98	S. McCallister/J. Holcomb	Northwest Limantour	Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	2S		
1463	Freezer	1597	Common Murre	01/19/98	S. McCallister/J. Holcomb	Northwest Limantour	Limantour Beach W.	2-05	2	Dead	Oiled	3	N	2S		
1464	Freezer	1598	Common Murre	01/19/98		Abbott's Lagoon/ Kehoe	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	2S		
1465	Freezer	1599	Common Murre	01/19/98	S. McCallister	Northwest Limantour	Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	2S		
1466	Freezer	1600	Common Murre	01/19/98	S. McCallister/J. Holcomb	Northwest Limantour	Limantour Beach W.	2-05	2	Dead	Oiled	2	N	3S		
1467	Freezer	1601	Common Murre	02/17/98	A. Frank/Shaw	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1468	Freezer	1602	Common Murre		C. Clumpner	Drake's Beach	Unknown	--	2	Dead	Oiled	2	N	2		
1469	Freezer	1603	Common Murre	02/27/98	C. Clumpner	Drake's Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
1470	Freezer	1604	Common Murre	02/17/98	C. Clumpner	Drake's Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1471	Freezer	1605	Common Murre	02/17/98	A. Frank/Shaw	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	3	N	2S		
1472	Freezer	1606	Common Murre	02/17/98	A. Frank/Shaw	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	3	N	3S		
1473	Freezer	1607	Common Murre	02/13/98	C. Clumpner	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	3	Y	2S		
1474	Freezer	1608	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1475	Freezer	1609	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	2	N	2S		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1476	Freezer	1610	Common Murre	02/13/98	Imai/Shaw	North Great Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2S		
1477	Freezer	1611	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
1478	Freezer	1612	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1479	Freezer	1613	Cassin's Auklet	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
1480	Freezer	1614	Common Murre	01/27/98	A. Frank	Drake's Beach	Unknown	--	2	Dead	Oiled	2	Y	4		
1481	Freezer	1615	Common Murre	02/08/98	A. Frank	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	Y	2S		
1482	Freezer	1616	Common Murre	02/08/98	A. Frank	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1483	Freezer	1617	Common Murre	02/08/98	A. Frank	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	Y	2-3S		
1484	Freezer	1618	Common Murre	02/08/98	A. Frank	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	Y	2S		
1485	Freezer	1619	Common Murre	02/08/98	A. Frank	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	Y	2S		
1486	Freezer	1620	Common Murre	12/04/97	D. Howard	Limantour Beach East	Limantour Beach E.	2-06	2	Dead	Unknown	U	Y	4S		
1487	Freezer	1621	Common Murre	12/04/97	D. Howard	Limantour Beach	Limantour Beach E.	2-06	2	Dead	Oiled	2	N	2S		
1488	Freezer	1622	Common Murre	12/04/97	D. Howard	Limantour Beach	Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	2S		
1489	Freezer	1623	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
1490	Freezer	1624	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1491	Freezer	1625	Common Murre	01/27/98	A. Frank	Drake's Beach	Unknown	--	2	Dead	Oiled	4	N	2S		
1492	Freezer	1626	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	4	Y	2S		
1493	Freezer	1627	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1494	Freezer	1628	Western Grebe	02/07/98	Ames	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	2-3S		
1495	Freezer	1629	Rhinoceros Auklet	02/07/98	Ames	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	3	Y	2S		
1496	Freezer	1630	Cassin's Auklet	01/20/98	B. Goeden/ J. Hardwick/S. Kelly	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	2	N	2S		
1497	Freezer	1631	Common Murre				Unknown	--	1	Dead	Oiled	U	N	1	Green	617R
1498	Freezer	1632	Common Murre	02/02/98	Imai/Newman	South Great Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1499	Freezer	1633	Common Murre	02/08/98	Imai/Newman	North Great Beach	Unknown	--	2	Dead	Oiled	3	N	2S		
1500	Freezer	1634	Common Murre	02/08/98	A. Frank	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1501	Freezer	1635	Common Murre	01/21/98	Espinoza	Point Reyes Boat House	Unknown	--	2	Dead	Oiled	2	N	2		
1502	Freezer	1636	Common Murre	02/08/98	Imai/Newman	North Great Beach	Unknown	--	2	Dead	Oiled	2	N	2		
1503	Freezer	1637	Common Murre	01/21/98	Mellow	Limantour Beach South	Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	2S		
1504	Freezer	1638	Common Murre	02/08/98	Imai/Newman	Drake's Beach South	Drakes Beach W.	2-03	2	Dead	Oiled	3	N	2S		
1505	Freezer	1639	Common Murre	02/08/98	Imai/Newman	Drake's Beach North	Drakes Beach E.	2-04	2	Dead	Oiled	2	N	2S		
1506	Freezer	1640	Common Murre	01/25/98		Bonita Beach	E. Pt. Bonita Beach	2-26	1	Dead	Oiled	2	N	1	Green	3024L
1507	Freezer	1641	Common Murre	02/02/98		Poplar Beach, HMB	Unknown	--	1	Dead	Oiled	2	N	1	Green	3001R
1508	Freezer	1642	Common Murre	01/27/98		Dillon Beach	Dillon Beach to Sand Pt.	1-10	1	Dead	Oiled	2	N	1	Green	3150R
1509	Freezer	1643	Common Murre	01/21/98		Pescadero Beach	Unknown	--	1	Dead	Oiled	3-4	N	1	White	50L
1510	Freezer	1644	Common Murre	02/02/98		Drake's Beach parking lot	Unknown	--	1	Dead	Oiled	2	N	1	Green	3009L
1511	Freezer	1645	Western Grebe				Unknown	--	1	Dead	Unknown	U	N	1	Blue	1719L
1512	Freezer	1646	Red Phalarope				Unknown	--	1	Dead	Oiled	2	N	1		
1513	Freezer	1647	Red Phalarope	02/03/98			Unknown	--	1	Dead	Oiled	2	N	1	Tape	338
1514	Freezer	1648	White-winged Scoter				Unknown	--	1	Dead	Not Visibly Oiled	--	N	1		
1515	Freezer	1649	Western Grebe	01/30/98		Kehoe Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	175R
1516	Freezer	1650	Common Murre	02/01/98		Limantour Beach	Unknown	--	1	Dead	Oiled	4	N	1	Green	3025L
1517	Freezer	1651	Common Murre	01/23/98		South Beach	Unknown	--	1	Dead	Oiled	2	N	1	White	15L
1518	Freezer	1652	Common Murre	01/26/98	Park Ranger	Limantour Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	4S		
1519	Freezer	1653	Common Murre	01/26/98	S. McCallister/A. Frank	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	3		
1520	Freezer	1654	Common Murre	01/26/98	S. McCallister/A. Frank	Abbott's Lagoon	Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S		
1521	Freezer	1655	Common Murre	01/26/98	S. McCallister/A. Frank	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Unknown	U	Y	4S		
1522	Freezer	1656	Common Murre	01/26/98	S. McCallister/A. Frank	Abbott's Lagoon	Unknown	--	2	Dead	Oiled	4	N	2S		
1523	Freezer	1657	Common Murre	01/26/98		North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	4	Y	2S		
1524	Freezer	1658	Common Murre	01/26/98	S. McCallister/A. Frank	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	2S		
1525	Freezer	1659	Common Murre	01/20/98	B. Vanderwerf	Kelly Avenue	Half Moon Bay D	4-05	2	Dead	Oiled	2	N	2S		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1526	Freezer	1660	Common Murre	01/26/98	B. Vanderwerf	Kelly Avenue	Half Moon Bay D	4-05	2	Dead	Oiled	2	Y	2S		
1527	Freezer	1661	Common Murre	02/13/98	Imai/Shaw	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	3S		
1528	Freezer	1662	Common Murre	02/13/98	Imai/Shaw	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	4		
1529	Freezer	1663	Common Murre	02/13/98	Shaw	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	Y	3S		
1530	Freezer	1664	Common Murre	02/13/98	Imai/Shaw	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	3S		
1531	Freezer	1665	Common Murre	02/13/98	Imai/Shaw	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	N	2S		
1532	Freezer	1666	Common Murre	02/13/98	A. Frank	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	3	N	2S		
1533	Freezer	1667	Common Murre	02/13/98	Imai/Shaw	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	Y	3S		
1534	Freezer	1668	Common Murre	01/26/98	Ames/Imai	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	3S		
1535	Freezer	1669	Western or Clark's Grebe	01/26/98	S. McCallister/A. Frank	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Unknown	U	Y	4		
1536	Freezer	1670	Common Murre	01/26/98	S. McCallister/A. Frank	Fish Dock	Unknown	--	2	Dead	Oiled	2	N	2		
1537	Freezer	1671	Common Murre	01/27/98	Imai	Limantour Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
1538	Freezer	1672	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1539	Freezer	1673	Horned Grebe	01/25/98	P. Dejung	Limantour Beach	Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3S		
1540	Freezer	1674	Common Murre	01/20/98	L. Hug	North Beach Park	Unknown	--	2	Dead	Unknown	U	Y	3S		
1541	Freezer	1675	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	3	N	2S		
1542	Freezer	1676	Eared Grebe	02/08/98	Imai/Newman	North Great Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1543	Freezer	1677	Common Murre	01/20/98	Ranger Mello	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	2	Y	3S		
1544	Freezer	1678	Common Murre	02/07/98	Ames	North Great Beach	Unknown	--	2	Dead	Oiled	4	Y	3S		
1545	Freezer	1679	Common Murre	02/08/98	A. Frank	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1546	Freezer	1680	Common Murre	01/20/98	J. Hall	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2		
1547	Freezer	1681	Common Murre	01/20/98	J. Hall	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	Y	2S		
1548	Freezer	1682	Common Murre	01/20/98	Ranger Mello	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Oiled	3	N	2S		
1549	Freezer	1701	Western Grebe				Unknown	--	2	Dead	Not Visibly Oiled	--	N	2S	Metal	1157-64748
1550	Freezer	1702	Common Murre	02/03/98		Marina State Beach, Marina	Unknown	--	1	Dead	Oiled	2	N	1	Pink	40R

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1551	Freezer	1703	Common Murre	02/03/98		Point Lobos Marina	Unknown	--	1	Dead	Oiled	2	N	1	Pink	39 R
1552	Freezer	1704	Heermann's Gull	02/04/98		Pilar Point	Unknown	--	1	Dead	Oiled	2	N	1	Green	701R
1553	Freezer	1705	Red Phalarope	02/04/98		Castroville	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	86R
1554	Freezer	1706	Common Murre	02/04/98		Doran Beach	Unknown	--	1	Dead	Oiled	3	N	1	Green	716R
1555	Freezer	1707	Common Murre	01/30/98		Roosevelt Beach, HMB	Unknown	--	1	Dead	Oiled	2-3	N	1	Green	603R
1556	Freezer	1708	Common Murre	02/02/98		Cowell Beach, Santa Cruz	Unknown	--	1	Dead	Oiled	3	N	1	Green	3128L
1557	Freezer	1709	Common Murre	02/04/98		Pacifica	Unknown	--	1	Dead	Oiled	2	N	1	Green	621R
1558	Freezer	1710	Common Murre	02/04/98		Doran Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	702R
1559	Freezer	1711	Common Murre	02/04/98	S. McCallister	Pilar Point	Pilar Point	3-32	2	Dead	Oiled	2	N	2S		
1560	Freezer	1712	Common Murre	02/03/98		Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2		
1561	Freezer	1713	Common Murre	02/04/98	S. McCallister	Pacifica	Unknown	--	2	Dead	Oiled	2	Y	2S		
1562	Freezer	1714	Rhinoceros Auklet	02/04/98	S. McCallister	Pacifica	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2S		
1563	Freezer	1715	Common Murre	02/04/98		Doran Harbor	Doran Beach	1-06	2	Dead	Oiled	3	N	2		
1564	Freezer	1716	Common Murre	02/03/98	S. McCallister	Pacifica	Unknown	--	2	Dead	Oiled	2	N	2S		
1565	Freezer	1717	Common Murre	02/03/98		McClure's Beach	Unknown	--	1	Dead	Oiled	2	N	1	Pink	34L
1566	Freezer	1718	Common Murre			Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1567	Freezer	1719	Common Murre			Doran Beach	Doran Beach	1-06	2	Dead	Oiled	3	N	2S		
1568	Freezer	1720	Common Murre	01/24/98	S. McCallister/ A. Frank	McClure Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	2	N	2S		
1569	Freezer	1721	Common Murre	01/24/98	S. McCallister/ A. Frank	McClure Beach	Driftwood & McClures Beaches	1-12	2	Dead	Oiled	3	Y	2S		
1570	Freezer	1722	Common Murre	01/24/98	Ames/Imai	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	3	N	2S		
1571	Freezer	1723	Common Murre	02/06/98		Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	2	N	2S		
1572	Freezer	1724	Brown Pelican	02/06/98	A. Frank	Salmon Creek	South Salmon Creek Beach	1-01	2	Dead	Oiled	2	Y	2S		
1573	Freezer	1725	Common Murre			Thornton Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1574	Freezer	1726	Common Murre			Ocean Beach	Unknown	--	2	Dead	Other	--	Y	2S		
1575	Freezer	1727	Common Murre	02/05/98		Bodega Head, side of road	Unknown	--	1	Dead	Oiled	2	N	1	Red	677R

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1576	Freezer	1728	Common Murre			Ocean Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1577	Freezer	1729	Common Murre	02/06/98		McClure's Beach	Unknown	--	1	Dead	Oiled	2	N	1	Green	637R
1578	Freezer	1730	Western Grebe	02/05/98		Unknown	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	52R
1579	Freezer	1731	Common Murre	01/22/98		South Beach	Unknown	--	1	Dead	Oiled	2-4	N	1	Red	78L
1580	Freezer	1732	Red Phalarope				Unknown	--	1	Dead	Oiled	2	N	1		
1581	Freezer	1733	Common Murre		S. McCallister	Montara Beach	S. Montara Beach	3-27	2	Dead	Oiled	2	N	2S		
1582	Freezer	1734	Common Murre	02/05/98		Cowell Beach	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	4R
1583	Freezer	1735	Common Murre	01/31/98		Pajaro Dunes	Unknown	--	1	Dead	Oiled	2	N	1	Green	609L
1584	Freezer	1736	Common Murre	02/04/98		Half Moon Bay beach	Unknown	--	1	Dead	Oiled	2	N	1	Yellow	2R
1585	Freezer	1737	Red Phalarope	02/05/98		Unknown	Unknown	--	1	Dead	Oiled	1	N	1	Tape	384 R
1586	Freezer	1738	Northern Fulmar	01/23/98	Newman/Ames	North Point Reyes Beach	Point Reyes Beach C	1-16	2	Dead	Not Visibly Oiled	--	Y	2S		
1587	Freezer	1739	Common Murre		S. McCallister/A. Frank	Drake's Beach West	Drakes Beach W.	2-03	1	Dead	Oiled	2	Y	1		
1588	Freezer	1740	Common Murre	01/23/98	S. McCallister	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	2	Y	2S		
1589	Freezer	1741	Common Murre	01/23/98	S. McCallister	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	2	Y	2S		
1590	Freezer	1742	Black-vented Shearwater	01/23/98	Newman/Ames	Kehoe Beach	Point Reyes Beach A	1-14	2	Dead	Oiled	2+	Y	3S		
1591	Freezer	1743	Common Murre	01/23/98	Newman/Ames	North Beach	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	2S		
1592	Freezer	1744	Common Murre	01/23/98	S. Allen	Abbott's Lagoon	Unknown	--	2	Dead	Oiled	2	Y	3S		
1593	Freezer	1745	Common Murre	01/23/98	S. McCallister	Drake's Beach West	Drakes Beach W.	2-03	2	Dead	Oiled	2	Y	3S		
1594	Freezer	1746	Cassin's Auklet	01/23/98	S. Allen	Abbott's Lagoon	Unknown	--	2	Dead	Not Visibly Oiled	--	Y	3		
1595	Freezer	1747	Common Murre	01/23/98	Newman/Ames	North Beach	Unknown	--	2	Dead	Oiled	2	N	2S		
1596	Freezer	1748	Common Murre	01/20/98	G. Bennett/B. Cotter	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	3S		
1597	Freezer	1749	Western Gull	01/18/98	M. Hester/T. Gardali	Stinson Beach	Stinson Beach	2-14	2	Dead	Not Visibly Oiled	--	Y	2S		
1598	Freezer	1750	Common Murre	01/18/98	D. Humple/S. Guus	Stinson Beach	Stinson Beach	2-14	2	Dead	Not Visibly Oiled	--	N	2S		
1599	Freezer	1751	Western Grebe	01/18/98	M. Hester/T. Gardali	Stinson Beach	Stinson Beach	2-14	2	Dead	Oiled	2	N	2S		
1600	Freezer	1752	Western Grebe	01/18/98	M. Hester/T. Gardali	Stinson Beach	Stinson Beach	2-14	2	Dead	Not Visibly Oiled	--	Y	3S		

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1601	Freezer	1753	Common Murre	01/20/98	G. Bennett/B. Cotter	Drake's Beach	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	2S		
1602	Freezer	1754	Common Murre	01/18/98	M. Hester/T. Gardali	Stinson Beach	Stinson Beach	2-14	2	Dead	Not Visibly Oiled	--	Y	2S		
1603	Freezer	1755	Surf Scoter	01/18/98	M. Hester/T. Gardali	Stinson Beach	Stinson Beach	2-14	2	Dead	Not Visibly Oiled	--	N	2S		
1604	Freezer	1756	Common Murre	01/20/98	G. Bennett/B. Cotter	Drake's Beach East	Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	3S		
1605	Freezer	1757	Common Murre	01/18/98	M. Hester/T. Gardali	Stinson Beach	Stinson Beach	2-14	2	Dead	Oiled	2	N	2S		
1606	Freezer	1758	Common Murre	02/08/98	A. Frank	Drake's Beach	Unknown	--	2	Dead	Oiled	2	Y	2S		
1607	Freezer	1759	Common Murre	01/20/98	J. Hall	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	3	Y	2S		
1608	Freezer	1760	Common Murre	02/08/98	A. Frank	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1609	Freezer	1761	Common Murre	02/08/98	A. Frank	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1610	Freezer	1762	Common Murre	01/15/98		1/2 mi N of NBPL	Unknown	--	2	Dead	Unknown	U	Y	4		
1611	Freezer	1763	Common Murre	02/08/98	A. Frank	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	3	N	2S		
1612	Freezer	1764	Common Murre	02/08/98	A. Frank	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1613	Freezer	1765	Common Murre	01/20/98	J. Hall	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	2	Y	2S		
1614	Freezer	1766	Common Murre	02/08/98	A. Frank	Doran Beach	Doran Beach	1-06	2	Dead	Oiled	3	N	2S		
1615	Freezer	1767	Common Murre	02/05/98	R. D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	1	Y	2S		
1616	Freezer	1768	Common Murre	02/05/98		Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	3	N	2S		
1617	Freezer	1769	Common Murre	02/05/98	R. D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	3	N	2S		
1618	Freezer	1770	Common Murre	02/05/98	R. D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1619	Freezer	1771	Common Murre	02/05/98	R. D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1620	Freezer	1772	Common Murre	02/05/98	R. D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1621	Freezer	1773	Common Murre	02/05/98	R. D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1622	Freezer	1774	Common Murre	02/05/98	R. D.	Doran Beach South	Doran Beach	1-06	2	Dead	Oiled	2	N	2S		
1623	Freezer	1775	Common Murre	02/05/98	C. Clumpner	Drake's Beach	Unknown	--	2	Dead	Oiled	3	N	2S		
1624	Freezer	1776	Common Murre	02/05/98	C. Clumpner	Drake's Beach	Unknown	--	U	Dead	Oiled	2	N	1-2		
1625	Freezer	1777	Common Murre	01/23/98		North Davenport	Unknown	--	1	Dead	Oiled	2	N	1	Green	2657L

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1626	Freezer	1778	Common Murre	02/16/98			Unknown	--	2	Dead	Oiled	2	N	2S		
1627	Freezer	1779	Common Murre	02/16/98			Unknown	--	2	Dead	Oiled	2	N	2		
1628	Beach Watch		Common Murre	11/01/97			Pescadero Beach	4-17	2	Dead	Not Visibly Oiled	--	Y	3		
1629	Beach Watch		Common Murre	11/01/97			Pescadero Beach	4-17	2	Dead	Not Visibly Oiled	--	Y	4		
1630	Beach Watch		Common Murre	11/01/97			Pescadero Beach	4-17	2	Dead	Not Visibly Oiled	--	Y	4		
1631	Beach Watch		Surf Scoter	11/01/97			Pescadero Beach	4-17	2	Dead	Not Visibly Oiled	--	Y	3		
1632	Beach Watch		Unidentified Scoter	11/01/97			Pescadero Beach	4-17	2	Dead	Not Visibly Oiled	--	Y	3		
1633	Beach Watch		Pacific Loon	11/01/97			Pescadero Beach	4-17	2	Dead	Not Visibly Oiled	--	N	3		
1634	Beach Watch		Surf Scoter	11/01/97			Pescadero Beach	4-17	2	Dead	Not Visibly Oiled	--	Y	3		
1635	Beach Watch		White-winged Scoter	11/02/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
1636	Beach Watch		Western Gull	11/02/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
1637	Beach Watch		Common Murre	11/02/97			Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Not Visibly Oiled	--	Y	4		
1638	Beach Watch		California Gull	11/02/97			Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Not Visibly Oiled	--	Y	2		
1639	Beach Watch		Northern Fulmar	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1640	Beach Watch		Northern Fulmar	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1641	Beach Watch		Northern Fulmar	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1642	Beach Watch		Northern Fulmar	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1643	Beach Watch		Northern Fulmar	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1644	Beach Watch		Common Murre	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1645	Beach Watch		Brandt's Cormorant	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1646	Beach Watch		Northern Fulmar	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1647	Beach Watch		Sooty Shearwater	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1648	Beach Watch		Sooty Shearwater	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1649	Beach Watch		Northern Fulmar	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1650	Beach Watch		Northern Fulmar	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		



Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1651	Beach Watch		Northern Fulmar	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1652	Beach Watch		Western Gull	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1653	Beach Watch		Unidentified Scoter	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1654	Beach Watch		Northern Fulmar	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1655	Beach Watch		Northern Fulmar	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1656	Beach Watch		Northern Fulmar	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1657	Beach Watch		Northern Fulmar	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1658	Beach Watch		Common Murre	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1659	Beach Watch		American Coot	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1660	Beach Watch		Bushtit	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1661	Beach Watch		Northern Fulmar	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	N	3		
1662	Beach Watch		Unidentified Grebe	11/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1663	Beach Watch		Common Murre	11/08/97			Muir Beach	2-19	2	Dead	Not Visibly Oiled	--	Y	4		
1664	Beach Watch		Unidentified Grebe	11/08/97			Muir Beach	2-19	2	Dead	Not Visibly Oiled	--	Y	3		
1665	Beach Watch		Western Grebe	11/08/97			Thornton Beach, N.	3-11	2	Dead	Not Visibly Oiled	--	N	2		
1666	Beach Watch		Brandt's Cormorant	11/08/97			Thornton Beach, N.	3-11	2	Dead	Not Visibly Oiled	--	N	2		
1667	Beach Watch		Heermann's Gull	11/08/97			Thornton Beach, N.	3-11	2	Dead	Not Visibly Oiled	--	N	4		
1668	Beach Watch		Common Murre	11/08/97			Thornton Beach, N.	3-11	2	Dead	Unknown	U	Y	4		
1669	Beach Watch		Surf Scoter	11/08/97			Thornton Beach, N.	3-11	2	Dead	Not Visibly Oiled	--	N	2		
1670	Beach Watch		Common Murre	11/08/97			Thornton Beach, N.	3-11	2	Dead	Not Visibly Oiled	--	NN	2		
1671	Beach Watch		Common Murre	11/08/97			Thornton Beach, N.	3-11	2	Dead	Unknown	U	Y	4		
1672	Beach Watch		Common Murre	11/08/97			Thornton Beach, N.	3-11	2	Dead	Not Visibly Oiled	--	Y	2		
1673	Beach Watch		Western Grebe	11/08/97			Thornton Beach, N.	3-11	2	Dead	Not Visibly Oiled	--	Y	2		
1674	Beach Watch		Northern Fulmar	11/08/97			Thornton Beach, N.	3-11	2	Dead	Not Visibly Oiled	--	Y	3		
1675	Beach Watch		Clark's Grebe	11/08/97			Thornton Beach, N.	3-11	2	Dead	Not Visibly Oiled	--	Y	2		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1676	Beach Watch		Northern Fulmar	11/08/97			Thornton Beach, N.	3-11	2	Dead	Not Visibly Oiled	--	Y	2		
1677	Beach Watch		Common Murre	11/08/97			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	Y	3		
1678	Beach Watch		Common Murre	11/08/97			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	Y	3		
1679	Beach Watch		Western or Clark's Grebe	11/08/97			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	Y	3		
1680	Beach Watch		Western Grebe	11/08/97			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	Y	2		
1681	Beach Watch		Heermann's Gull	11/08/97			Thornton Beach, S.	3-12	2	Dead	Oiled	N	U	4		
1682	Beach Watch		Common Murre	11/08/97			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	N	U	3		
1683	Beach Watch		Common Murre	11/08/97			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	Y	4		
1684	Beach Watch		Western Gull	11/08/97			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	Y	4		
1685	Beach Watch		Rock Dove	11/08/97			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	Y	4		
1686	Beach Watch		Clark's Grebe	11/08/97			Thornton Beach, S.	3-12	2	Dead	Oiled	1	Y	4		
1687	Beach Watch		Western Gull	11/08/97			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	Y	4		
1688	Beach Watch		Clark's Grebe	11/08/97			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	Y	2		
1689	Beach Watch		Common Murre	11/08/97			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	Y	2		
1690	Beach Watch		Pigeon Guillemot	11/09/97			Stinson Beach	2-14	2	Dead	Unknown	U	Y	3		
1691	Beach Watch		Western Gull	11/09/97			Stinson Beach	2-14	2	Dead	Unknown	U	Y	3		
1692	Beach Watch		Common Murre	11/09/97			Stinson Beach	2-14	2	Dead	Unknown	U	Y	3		
1693	Beach Watch		Horned Grebe	11/09/97			Rodeo Cove Beach	2-23	2	Dead	Not Visibly Oiled	--	Y	3		
1694	Beach Watch		Horned Grebe	11/09/97			Rodeo Cove Beach	2-23	2	Dead	Not Visibly Oiled	--	Y	3		
1695	Beach Watch		Western Grebe	11/09/97			Rodeo Cove Beach	2-23	2	Dead	Not Visibly Oiled	--	Y	3		
1696	Beach Watch		Western Grebe	11/09/97			Rodeo Cove Beach	2-23	2	Dead	Not Visibly Oiled	--	Y	2		
1697	Beach Watch		Glaucous-winged Gull	11/09/97			Rodeo Cove Beach	2-23	2	Dead	Not Visibly Oiled	--	Y	3		
1698	Beach Watch		Surf Scoter	11/09/97			Tunitas Creek Beach	4-10	2	Dead	Unknown	U	Y	3		
1699	Beach Watch		Western Grebe	11/09/97			Tunitas Creek Beach	4-10	2	Dead	Unknown	U	Y	3		
1700	Beach Watch		Western Grebe	11/10/97			Bolsa Pt.-Pigeon Pt. Lighthouse	4-24	2	Dead	Not Visibly Oiled	--	U	2		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1701	Beach Watch		Surf Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	N	2		
1702	Beach Watch		Surf Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1703	Beach Watch		Surf Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	3		
1704	Beach Watch		Surf Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1705	Beach Watch		Surf Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	3		
1706	Beach Watch		White-winged Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1707	Beach Watch		Surf Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1708	Beach Watch		White-winged Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1709	Beach Watch		Surf Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1710	Beach Watch		Surf Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1711	Beach Watch		Surf Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1712	Beach Watch		Surf Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1713	Beach Watch		Surf Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1714	Beach Watch		Surf Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1715	Beach Watch		Surf Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1716	Beach Watch		Surf Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1717	Beach Watch		Surf Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1718	Beach Watch		Surf Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1719	Beach Watch		Surf Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1720	Beach Watch		White-winged Scoter	11/11/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1721	Beach Watch		Western Grebe	11/12/97			San Gregorio Bch.- Pomponio Bch	4-14	2	Dead	Unknown	U	Y	2		
1722	Beach Watch		Northern Fulmar	11/12/97			San Gregorio Bch.- Pomponio Bch	4-14	2	Dead	Not Visibly Oiled	--	Y	2		
1723	Beach Watch		Western Grebe	11/12/97			San Gregorio Bch.- Pomponio Bch	4-14	2	Dead	Unknown	U	Y	2		
1724	Beach Watch		Western Grebe	11/12/97			San Gregorio Bch.- Pomponio Bch	4-14	2	Dead	Not Visibly Oiled	--	Y	2		
1725	Beach Watch		California Gull	11/12/97			San Gregorio Bch.- Pomponio Bch	4-14	2	Dead	Unknown	U	Y	4		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1726	Beach Watch		Northern Fulmar	11/12/97			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	3		
1727	Beach Watch		Western or Clark's Grebe	11/12/97			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	3		
1728	Beach Watch		Common Murre	11/12/97			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	3		
1729	Beach Watch		Northern Fulmar	11/12/97			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	3		
1730	Beach Watch		Unidentified Waterbird	11/12/97			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	4		
1731	Beach Watch		Western Grebe	11/12/97			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	3		
1732	Beach Watch		Pacific Loon	11/12/97			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	4		
1733	Beach Watch		Short-tailed Shearwater	11/12/97			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	N	3		
1734	Beach Watch		Western Gull	11/12/97			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	2		
1735	Beach Watch		Red-throated Loon	11/12/97			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	N	3		
1736	Beach Watch		Herring Gull	11/12/97			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	N	3		
1737	Beach Watch		Unidentified Waterbird	11/12/97			Shoreline Highway mi marker 14.41-15.84	6-05	2	Dead	Not Visibly Oiled	--	U	3		
1738	Beach Watch		Western Grebe	11/14/97			Pescadero Beach	4-17	2	Dead	Not Visibly Oiled	--	N	2		
1739	Beach Watch		Common Murre	11/16/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	N	2		
1740	Beach Watch		Common Murre	11/16/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
1741	Beach Watch		Common Murre	11/16/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
1742	Beach Watch		Northern Fulmar	11/16/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	N	2		
1743	Beach Watch		Northern Fulmar	11/16/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
1744	Beach Watch		Northern Fulmar	11/16/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
1745	Beach Watch		Northern Fulmar	11/16/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
1746	Beach Watch		Clark's Grebe	11/16/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
1747	Beach Watch		Western Gull	11/16/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
1748	Beach Watch		Common Murre	11/16/97			Limantour Beach W.	2-05	2	Dead	Oiled	2	N	2		
1749	Beach Watch		Common Murre	11/16/97			Limantour Beach W.	2-05	2	Dead	Oiled	4	N	2		
1750	Beach Watch		Pacific Loon	11/16/97			Half Moon Bay B	4-03	2	Dead	Not Visibly Oiled	--	Y	2		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1751	Beach Watch		Common Murre	11/20/97			Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	2		
1752	Beach Watch		Common Murre	11/20/97			Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	2		
1753	Beach Watch		Northern Fulmar	11/20/97			Drakes Beach E.	2-04	2	Dead	Oiled	4	Y	3		
1754	Beach Watch		Northern Fulmar	11/20/97			Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	2		
1755	Beach Watch		Northern Fulmar	11/20/97			Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	4		
1756	Beach Watch		Unidentified Waterbird	11/20/97			Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	4		
1757	Beach Watch		Northern Fulmar	11/20/97			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2		
1758	Beach Watch		Northern Fulmar	11/20/97			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2		
1759	Beach Watch		Northern Fulmar	11/20/97			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2		
1760	Beach Watch		Northern Fulmar	11/20/97			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	3		
1761	Beach Watch		Northern Fulmar	11/20/97			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2		
1762	Beach Watch		Northern Fulmar	11/20/97			Drakes Beach E.	2-04	2	Dead	Oiled	1	Y	3		
1763	Beach Watch		Red Phalarope	11/20/97			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2		
1764	Beach Watch		Red Phalarope	11/20/97			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2		
1765	Beach Watch		Red Phalarope	11/20/97			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2		
1766	Beach Watch		Unidentified Waterbird	11/20/97			Drakes Beach E.	2-04	2	Dead	Oiled	1	Y	2		
1767	Beach Watch		Northern Fulmar	11/20/97			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2		
1768	Beach Watch		Western Grebe	11/20/97			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2		
1769	Beach Watch		Common Murre	11/20/97			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2		
1770	Beach Watch		Brown Pelican	11/20/97			Drakes Beach E.	2-04	2	Dead	Unknown	U	U	U		
1771	Beach Watch		Northern Fulmar	11/20/97			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	4		
1772	Beach Watch		Western Gull	11/20/97			Drakes Beach E.	2-04	2	Dead	Unknown	U	U	U		
1773	Beach Watch		Common Murre	11/21/97			Ocean Beach, S.	3-10	2	Dead	Oiled	U	N	2		
1774	Beach Watch		Common Murre	11/22/97			Point Reyes Beach D	1-17	2	Dead	Oiled	4	Y	3		
1775	Beach Watch		Brandt's Cormorant	11/22/97			Point Reyes Beach D	1-17	2	Dead	Oiled	4	Y	3		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1776	Beach Watch		Common Murre	11/22/97			Point Reyes Beach D	1-17	2	Dead	Oiled	U	U	U		
1777	Beach Watch		Common Murre	11/22/97			Point Reyes Beach D	1-17	2	Dead	Oiled	U	U	U		
1778	Beach Watch		Common Murre	11/22/97			Point Reyes Beach D	1-17	2	Dead	Oiled	U	U	U		
1779	Beach Watch		Brown Pelican	11/22/97			Point Reyes Beach D	1-17	2	Dead	Unknown	U	Y	3		
1780	Beach Watch		Brandt's Cormorant	11/22/97			Point Reyes Beach D	1-17	2	Dead	Unknown	U	Y	3		
1781	Beach Watch		Northern Fulmar	11/22/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
1782	Beach Watch		Unidentified Gull	11/22/97			Muir Beach	2-19	2	Dead	Not Visibly Oiled	--	Y	4		
1783	Beach Watch		Surf Scoter	11/22/97			Muir Beach	2-19	2	Dead	Not Visibly Oiled	--	Y	2		
1784	Beach Watch		Western or Clark's Grebe	11/22/97			Muir Beach	2-19	2	Dead	Not Visibly Oiled	--	Y	3		
1785	Beach Watch		Northern Fulmar	11/23/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	2		
1786	Beach Watch		Northern Fulmar	11/23/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1787	Beach Watch		Northern Fulmar	11/23/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	2		
1788	Beach Watch		Horned Grebe	11/23/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	U		
1789	Beach Watch		Common Murre	11/23/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	2		
1790	Beach Watch		Common Murre	11/23/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	2		
1791	Beach Watch		Common Murre	11/23/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	2		
1792	Beach Watch		Ancient Murrelet	11/23/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1793	Beach Watch		Northern Fulmar	11/23/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	2		
1794	Beach Watch		Western Grebe	11/23/97			Point Reyes Beach C	1-16	2	Dead	Not Visibly Oiled	--	Y	2		
1795	Beach Watch		Unidentified Waterbird	11/23/97			Point Reyes Beach C	1-16	2	Dead	Oiled	U	U	U		
1796	Beach Watch		Northern Fulmar	11/23/97			Point Reyes Beach C	1-16	2	Dead	Not Visibly Oiled	--	Y	2		
1797	Beach Watch		Common Murre	11/23/97			Point Reyes Beach C	1-16	2	Dead	Not Visibly Oiled	--	Y	2		
1798	Beach Watch		Northern Fulmar	11/23/97			Point Reyes Beach C	1-16	2	Dead	Not Visibly Oiled	--	Y	2		
1799	Beach Watch		Northern Fulmar	11/23/97			Point Reyes Beach C	1-16	2	Dead	Not Visibly Oiled	--	Y	2		
1800	Beach Watch		Northern Fulmar	11/23/97			Point Reyes Beach C	1-16	2	Dead	Not Visibly Oiled	--	Y	2		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1801	Beach Watch		Northern Fulmar	11/23/97			Point Reyes Beach C	1-16	2	Dead	Not Visibly Oiled	--	Y	4		
1802	Beach Watch		Northern Fulmar	11/23/97			Point Reyes Beach C	1-16	2	Dead	Not Visibly Oiled	--	Y	2		
1803	Beach Watch		Horned Grebe	11/23/97			Point Reyes Beach C	1-16	2	Dead	Not Visibly Oiled	--	Y	2		
1804	Beach Watch		Northern Fulmar	11/23/97			Point Reyes Beach C	1-16	2	Dead	Not Visibly Oiled	--	Y	2		
1805	Beach Watch		Western or Clark's Grebe	11/23/97			Point Reyes Beach C	1-16	2	Dead	Not Visibly Oiled	--	Y	2		
1806	Beach Watch		Northern Fulmar	11/23/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3		
1807	Beach Watch		Common Murre	11/23/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	2		
1808	Beach Watch		Northern Fulmar	11/23/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3		
1809	Beach Watch		Western Grebe	11/23/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	2		
1810	Beach Watch		Common Murre	11/23/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3		
1811	Beach Watch		Sooty Shearwater	11/23/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3		
1812	Beach Watch		Western Grebe	11/23/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3		
1813	Beach Watch		Ring-billed Gull	11/23/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3		
1814	Beach Watch		Northern Fulmar	11/23/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3		
1815	Beach Watch		Common Murre	11/23/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3		
1816	Beach Watch		Pacific Loon	11/23/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	2		
1817	Beach Watch		Common Murre	11/23/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	2		
1818	Beach Watch		Common Murre	11/23/97			Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	3		
1819	Beach Watch		Common Murre	11/23/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3		
1820	Beach Watch		Western Grebe	11/23/97			Baker Beach	3-02	2	Dead	Not Visibly Oiled	--	N	2		
1821	Beach Watch		Western or Clark's Grebe	11/23/97			Ocean Beach, N.	3-08	2	Dead	Unknown	U	Y	U		
1822	Beach Watch		Brandt's Cormorant	11/23/97			Ocean Beach, N.	3-08	2	Dead	Unknown	U	Y	U		
1823	Beach Watch		Common Murre	11/24/97			Cove Beach, Año Nuevo	5-09	2	Dead	Oiled	3	Y	2		
1824	Beach Watch		Red Phalarope	11/24/97			Cove Beach, Año Nuevo	5-09	2	Dead	Oiled	2	N	2		
1825	Beach Watch		Red-throated Loon	11/24/97			Cove Beach, Año Nuevo	5-09	2	Dead	Oiled	3	N	2		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1826	Beach Watch		Ancient Murrelet	11/27/97			Half Moon Bay D	4-05	2	Dead	Not Visibly Oiled	--	N	2		
1827	Beach Watch		Western Grebe	11/28/97			Doran Beach	1-06	2	Dead	Oiled	2	N	2		
1828	Beach Watch		Common Murre	11/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	N	2		
1829	Beach Watch		Common Murre	11/28/97			Doran Beach	1-06	2	Dead	Oiled	2	N	2		
1830	Beach Watch		Common Murre	11/28/97			Doran Beach	1-06	2	Dead	Oiled	2	Y	3		
1831	Beach Watch		Common Murre	11/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
1832	Beach Watch		Common Murre	11/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
1833	Beach Watch		Western Grebe	11/28/97			Doran Beach	1-06	2	Dead	Oiled	4	N	U		
1834	Beach Watch		Common Murre	11/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
1835	Beach Watch		Common Murre	11/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	U		
1836	Beach Watch		Common Murre	11/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
1837	Beach Watch		Common Murre	11/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
1838	Beach Watch		Surf Scoter	11/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
1839	Beach Watch		Surf Scoter	11/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
1840	Beach Watch		Northern Fulmar	11/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
1841	Beach Watch		Northern Fulmar	11/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
1842	Beach Watch		Northern Fulmar	11/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
1843	Beach Watch		Pacific Loon	11/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	U		
1844	Beach Watch		Common Murre	11/28/97			Doran Beach	1-06	2	Dead	Oiled	4	N	2		
1845	Beach Watch		Common Murre	11/28/97			Doran Beach	1-06	2	Dead	Oiled	2	N	2		
1846	Beach Watch		Common Murre	11/28/97			S. Montara Beach	3-27	2	Dead	Oiled	2	Y	2		
1847	Beach Watch		Northern Fulmar	11/28/97			S. Montara Beach	3-27	2	Dead	Not Visibly Oiled	--	Y	3		
1848	Beach Watch		Common Murre	12/01/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
1849	Beach Watch		Common Murre	12/01/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
1850	Beach Watch		Common Murre	12/01/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		



Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1851	Beach Watch		Common Murre	12/01/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
1852	Beach Watch		Common Murre	12/01/97			Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	3		
1853	Beach Watch		Common Murre	12/01/97			Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	2		
1854	Beach Watch		Common Murre	12/01/97			Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	2		
1855	Beach Watch		Common Murre	12/01/97			Limantour Beach W.	2-05	2	Dead	Oiled	1	Y	3		
1856	Beach Watch		Northern Fulmar	12/01/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
1857	Beach Watch		Northern Fulmar	12/01/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
1858	Beach Watch		Western Grebe	12/01/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
1859	Beach Watch		Clark's Grebe	12/01/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
1860	Beach Watch		Brandt's Cormorant	12/01/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
1861	Beach Watch		Western Grebe	12/01/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
1862	Beach Watch		Surf Scoter	12/04/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	N	2		
1863	Beach Watch		Common Murre	12/04/97			Limantour Beach E.	2-06	2	Dead	Oiled	2	N	2		
1864	Beach Watch		Common Murre	12/04/97			Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	4		
1865	Beach Watch		Common Murre	12/04/97			Limantour Beach E.	2-06	2	Dead	Oiled	2	N	2		
1866	Beach Watch		Western Grebe	12/04/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	N	2		
1867	Beach Watch		Common Murre	12/04/97			Limantour Beach E.	2-06	2	Dead	Oiled	2	Y	2		
1868	Beach Watch		Marbled Murrelet	12/04/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	N	3		
1869	Beach Watch		Pacific Loon	12/04/97			Coast Camp to Pt. Resistance	2-07	2	Dead	Not Visibly Oiled	--	Y	2		
1870	Beach Watch		Red-throated Loon	12/04/97			Coast Camp to Pt. Resistance	2-07	2	Dead	Not Visibly Oiled	--	Y	2		
1871	Beach Watch		Common Murre	12/04/97			Coast Camp to Pt. Resistance	2-07	2	Dead	Oiled	2	Y	3		
1872	Beach Watch		Pigeon Guillemot	12/04/97			Coast Camp to Pt. Resistance	2-07	2	Dead	Not Visibly Oiled	--	Y	3		
1873	Beach Watch		Northern Fulmar	12/04/97			Coast Camp to Pt. Resistance	2-07	2	Dead	Not Visibly Oiled	--	Y	4		
1874	Beach Watch		Pelagic Cormorant	12/04/97			Coast Camp to Pt. Resistance	2-07	2	Dead	Not Visibly Oiled	--	Y	4		
1875	Beach Watch		Common Murre	12/04/97			Coast Camp to Pt. Resistance	2-07	2	Dead	Oiled	3	Y	3		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1876	Beach Watch		Brown Pelican	12/06/97			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	3		
1877	Beach Watch		Western Grebe	12/06/97			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	3		
1878	Beach Watch		Surf Scoter	12/06/97			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	3		
1879	Beach Watch		Common Loon	12/06/97			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2		
1880	Beach Watch		Common Murre	12/06/97			Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	2		
1881	Beach Watch		Common Murre	12/06/97			Tunitas Creek Beach	4-10	2	Dead	Not Visibly Oiled	--	N	3		
1882	Beach Watch		Pacific Loon	12/06/97			Tunitas Creek Beach	4-10	2	Dead	Not Visibly Oiled	--	N	3		
1883	Beach Watch		Brandt's Cormorant	12/06/97			Bolsa Pt.-Pigeon Pt. Lighthouse	4-24	2	Dead	Not Visibly Oiled	--	N	2		
1884	Beach Watch		Pelagic Cormorant	12/07/97			Rodeo Cove Beach	2-23	2	Dead	Not Visibly Oiled	--	Y	3		
1885	Beach Watch		Common Murre	12/08/97			Point Reyes Beach B	1-15	2	Dead	Oiled	2	N	3		
1886	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Oiled	2	Y	3		
1887	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1888	Beach Watch		Brown Pelican	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1889	Beach Watch		Western Grebe	12/08/97			Point Reyes Beach B	1-15	2	Dead	Oiled	U	Y	3		
1890	Beach Watch		Western Grebe	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1891	Beach Watch		Western Gull	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	N	4		
1892	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1893	Beach Watch		California Gull	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1894	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1895	Beach Watch		Common Murre	12/08/97			Point Reyes Beach B	1-15	2	Dead	Oiled	4	Y	3		
1896	Beach Watch		Pacific Loon	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	2		
1897	Beach Watch		Common Murre	12/08/97			Point Reyes Beach B	1-15	2	Dead	Oiled	4	Y	3		
1898	Beach Watch		Brandt's Cormorant	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1899	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1900	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1901	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1902	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1903	Beach Watch		Brandt's Cormorant	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1904	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1905	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1906	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1907	Beach Watch		Common Murre	12/08/97			Point Reyes Beach B	1-15	2	Dead	Oiled	2	Y	3		
1908	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1909	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1910	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1911	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1912	Beach Watch		Common Murre	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1913	Beach Watch		Western Gull	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1914	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1915	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1916	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1917	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1918	Beach Watch		Common Murre	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1919	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1920	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1921	Beach Watch		Common Murre	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1922	Beach Watch		Brandt's Cormorant	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1923	Beach Watch		Common Murre	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
1924	Beach Watch		Northern Fulmar	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
1925	Beach Watch		Red-necked Grebe	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1926	Beach Watch		Pacific Loon	12/08/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	2		
1927	Beach Watch		Common Murre	12/08/97			Baker Beach	3-02	2	Dead	Oiled	2	N	2		
1928	Beach Watch		Western Grebe	12/09/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1929	Beach Watch		Western or Clark's Grebe	12/09/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1930	Beach Watch		Glaucous-winged Gull	12/09/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1931	Beach Watch		Western Grebe	12/09/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1932	Beach Watch		Western Grebe	12/09/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1933	Beach Watch		Western or Clark's Grebe	12/09/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1934	Beach Watch		Surf Scoter	12/09/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	3		
1935	Beach Watch		Surf Scoter	12/09/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
1936	Beach Watch		Surf Scoter	12/09/97			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	3		
1937	Beach Watch		Pacific Loon	12/10/97			San Gregorio Bch.- Pomponio Bch	4-14	2	Dead	Not Visibly Oiled	--	Y	2		
1938	Beach Watch		Common Murre	12/10/97			San Gregorio Bch.- Pomponio Bch	4-14	2	Dead	Oiled	2	Y	2		
1939	Beach Watch		Brandt's Cormorant	12/10/97			San Gregorio Bch.- Pomponio Bch	4-14	2	Dead	Not Visibly Oiled	--	N	2		
1940	Beach Watch		Common Murre	12/10/97			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	4		
1941	Beach Watch		Northern Fulmar	12/10/97			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	N	3		
1942	Beach Watch		Common Murre	12/10/97			Gazos Creek Beach	5-03	2	Dead	Oiled	2	Y	3		
1943	Beach Watch		Common Murre	12/10/97			Gazos Creek Beach	5-03	2	Dead	Oiled	2	Y	3		
1944	Beach Watch		Western Grebe	12/10/97			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	3		
1945	Beach Watch		Common Murre	12/10/97			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	3		
1946	Beach Watch		Common Murre	12/10/97			Gazos Creek Beach	5-03	2	Dead	Oiled	2	Y	3		
1947	Beach Watch		Common Murre	12/12/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3		
1948	Beach Watch		Common Murre	12/12/97			Limantour Beach E.	2-06	2	Dead	Oiled	3	Y	3		
1949	Beach Watch		Western or Clark's Grebe	12/12/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled		Y	3		
1950	Beach Watch		Surf Scoter	12/12/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1951	Beach Watch		Pacific Loon	12/12/97			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3		
1952	Beach Watch		Unidentified Waterbird	12/12/97			Shoreline Highway (mile marker 14.41 to	6-05	2	Dead	Not Visibly Oiled	--	U	2		
1953	Beach Watch		Western or Clark's Grebe	12/12/97			Shoreline Highway (mile marker 14.41 to	6-05	2	Dead	Not Visibly Oiled	--	U	3		
1954	Beach Watch		Surf Scoter	12/12/97			Shoreline Highway (mile marker 14.41 to	6-05	2	Dead	Not Visibly Oiled	--	U	4		
1955	Beach Watch		Horned Grebe	12/12/97			Shoreline Highway (mile marker 14.41 to	6-05	2	Dead	Not Visibly Oiled	--	U	3		
1956	Beach Watch		Common Murre	12/13/97			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
1957	Beach Watch		Northern Fulmar	12/13/97			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	N	2		
1958	Beach Watch		Common Murre	12/13/97			Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3		
1959	Beach Watch		Common Murre	12/13/97			Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3		
1960	Beach Watch		Common Murre	12/13/97			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
1961	Beach Watch		Common Murre	12/13/97			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
1962	Beach Watch		Northern Fulmar	12/13/97			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	2		
1963	Beach Watch		Northern Fulmar	12/13/97			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
1964	Beach Watch		Northern Fulmar	12/13/97			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
1965	Beach Watch		Northern Fulmar	12/13/97			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
1966	Beach Watch		Glaucous-winged Gull	12/13/97			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	4		
1967	Beach Watch		Brandt's Cormorant	12/13/97			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
1968	Beach Watch		Surf Scoter	12/13/97			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	N	2		
1969	Beach Watch		Common Murre	12/13/97			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	N	2		
1970	Beach Watch		Herring Gull	12/13/97			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	4		
1971	Beach Watch		Common Murre	12/13/97			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	4		
1972	Beach Watch		Unidentified Grebe	12/13/97			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	4		
1973	Beach Watch		Brandt's Cormorant	12/13/97			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
1974	Beach Watch		Common Murre	12/13/97			Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3		
1975	Beach Watch		Common Murre	12/13/97			Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
1976	Beach Watch		Common Murre	12/13/97			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	4		
1977	Beach Watch		Western or Clark's Grebe	12/13/97			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Not Visibly Oiled	--	Y	4		
1978	Beach Watch		Common Loon	12/13/97			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Not Visibly Oiled	--	Y	4		
1979	Beach Watch		Surf Scoter	12/13/97			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Not Visibly Oiled	--	Y	3		
1980	Beach Watch		Surf Scoter	12/13/97			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Not Visibly Oiled	--	Y	4		
1981	Beach Watch		Unidentified Waterbird	12/13/97			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Not Visibly Oiled	--	Y	4		
1982	Beach Watch		Surf Scoter	12/13/97			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Not Visibly Oiled	--	Y	4		
1983	Beach Watch		Surf Scoter	12/13/97			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Not Visibly Oiled	--	Y	4		
1984	Beach Watch		Surf Scoter	12/13/97			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Not Visibly Oiled	--	Y	2		
1985	Beach Watch		Surf Scoter	12/13/97			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Not Visibly Oiled	--	Y	2		
1986	Beach Watch		Surf Scoter	12/13/97			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Not Visibly Oiled	--	Y	2		
1987	Beach Watch		Herring Gull	12/13/97			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Not Visibly Oiled	--	Y	3		
1988	Beach Watch		Western Gull	12/13/97			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Not Visibly Oiled	--	Y	4		
1989	Beach Watch		Surf Scoter	12/13/97			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Not Visibly Oiled	--	Y	4		
1990	Beach Watch		Western Gull	12/13/97			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Not Visibly Oiled	--	U	3		
1991	Beach Watch		Pelagic Cormorant	12/14/97			Drakes Beach W.	2-03	2	Dead	Not Visibly Oiled	--	N	3		
1992	Beach Watch		Western Grebe	12/14/97			Drakes Beach W.	2-03	2	Dead	Not Visibly Oiled	--	N	3		
1993	Beach Watch		Cassin's Auklet	12/14/97			Drakes Beach W.	2-03	2	Dead	Oiled	2	N	2		
1994	Beach Watch		Western Grebe	12/14/97			Drakes Beach W.	2-03	2	Dead	Not Visibly Oiled	--	N	2		
1995	Beach Watch		Common Murre	12/14/97			Drakes Beach W.	2-03	2	Dead	Not Visibly Oiled	--	N	3		
1996	Beach Watch		Brandt's Cormorant	12/14/97			Drakes Beach W.	2-03	2	Dead	Not Visibly Oiled	--	N	3		
1997	Beach Watch		Common Murre	12/14/97			Drakes Beach W.	2-03	2	Dead	Not Visibly Oiled	--	N	3		
1998	Beach Watch		Red Phalarope	12/14/97			Half Moon Bay B	4-03	2	Dead	Not Visibly Oiled	--	Y	2		
1999	Beach Watch		Western Grebe	12/14/97			Half Moon Bay B	4-03	2	Dead	Not Visibly Oiled	--	Y	3		
2000	Beach Watch		Common Loon	12/14/97			Pescadero Beach	4-17	2	Dead	Unknown		Y	2		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2001	Beach Watch		Common Murre	12/14/97			Pescadero Beach	4-17	2	Dead	Unknown	U	Y	2		
2002	Beach Watch		Common Murre	12/14/97			Pescadero Beach	4-17	2	Dead	Unknown	U	Y	2		
2003	Beach Watch		Western Grebe	12/14/97			New Years Cr. Rd.-Waddell Cr.	5-10	2	Dead	Oiled	U	N	U		
2004	Beach Watch		Common Murre	12/19/97			Shoreline Highway mi marker 14.41-15.84	6-04	2	Dead	Unknown	U	U	4		
2005	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2006	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2007	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2008	Beach Watch		Common Murre	12/20/97			Point Reyes Beach B	1-15	2	Dead	Oiled	3	Y	3		
2009	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach B	1-15	2	Dead	Oiled	3	Y	3		
2010	Beach Watch		Common Murre	12/20/97			Point Reyes Beach B	1-15	2	Dead	Oiled	3	Y	2		
2011	Beach Watch		Common Murre	12/20/97			Point Reyes Beach B	1-15	2	Dead	Oiled	4	Y	3		
2012	Beach Watch		Common Murre	12/20/97			Point Reyes Beach B	1-15	2	Dead	Oiled	2	Y	3		
2013	Beach Watch		Common Murre	12/20/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	2		
2014	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	2		
2015	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	2		
2016	Beach Watch		Common Murre	12/20/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	2		
2017	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2018	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2019	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	2		
2020	Beach Watch		Common Murre	12/20/97			Point Reyes Beach B	1-15	2	Dead	Oiled	2	Y	3		
2021	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	U	3		
2022	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2023	Beach Watch		Unidentified Gull	12/20/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2024	Beach Watch		Common Murre	12/20/97			Point Reyes Beach B	1-15	2	Dead	Oiled	4	Y	3		
2025	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach B	1-15	2	Dead	Oiled	2	Y	3		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2026	Beach Watch		Unidentified Gull	12/20/97			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2027	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2028	Beach Watch		Brandt's Cormorant	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2029	Beach Watch		Brandt's Cormorant	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2030	Beach Watch		Brandt's Cormorant	12/20/97			Point Reyes Beach D	1-17	2	Dead	Unknown	U	Y	3		
2031	Beach Watch		Brandt's Cormorant	12/20/97			Point Reyes Beach D	1-17	2	Dead	Unknown	U	Y	3		
2032	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Oiled	4	Y	3		
2033	Beach Watch		Brandt's Cormorant	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2034	Beach Watch		Surf Scoter	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	4		
2035	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2036	Beach Watch		Brandt's Cormorant	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2037	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2038	Beach Watch		Brandt's Cormorant	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2039	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2040	Beach Watch		Brandt's Cormorant	12/20/97			Point Reyes Beach D	1-17	2	Dead	Unknown	U	U	3		
2041	Beach Watch		Brandt's Cormorant	12/20/97			Point Reyes Beach D	1-17	2	Dead	Unknown	U	U	3		
2042	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2043	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2044	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Oiled	2	Y	3		
2045	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	4	Y	3		
2046	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2047	Beach Watch		White-winged Scoter	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2048	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2049	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2050	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		



Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2051	Beach Watch		Pacific Loon	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2052	Beach Watch		Pacific Loon	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2053	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2054	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Oiled	4	Y	2		
2055	Beach Watch		Brandt's Cormorant	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2056	Beach Watch		Brandt's Cormorant	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2057	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Oiled	3	Y	2		
2058	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Oiled	4	Y	3		
2059	Beach Watch		Red-throated Loon	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2060	Beach Watch		Brown Pelican	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2061	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2062	Beach Watch		Brandt's Cormorant	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2063	Beach Watch		Pacific Loon	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2064	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2065	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Oiled	3	Y	2		
2066	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2067	Beach Watch		Brown Pelican	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2068	Beach Watch		Brandt's Cormorant	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2069	Beach Watch		Western Grebe	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2070	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2071	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2072	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2073	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2074	Beach Watch		Brandt's Cormorant	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2075	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2076	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Oiled	2	Y	2		
2077	Beach Watch		Pacific Loon	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2078	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2079	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2080	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Oiled	2	Y	2		
2081	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Oiled	2	Y	2		
2082	Beach Watch		Common Murre	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2083	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2084	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2085	Beach Watch		Northern Fulmar	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	2		
2086	Beach Watch		Unidentified Waterbird	12/20/97			Point Reyes Beach D	1-17	2	Dead	Not Visibly Oiled	--	Y	3		
2087	Beach Watch		Unidentified Grebe	12/20/97			Bolsa Pt.-Pigeon Pt. Lighthouse	4-24	2	Dead	Not Visibly Oiled	--	Y	2		
2088	Beach Watch		Brandt's Cormorant	12/20/97			Bolsa Pt.-Pigeon Pt. Lighthouse	4-24	2	Dead	Not Visibly Oiled	--	N	2		
2089	Beach Watch		Pacific Loon	12/20/97			Bolsa Pt.-Pigeon Pt. Lighthouse	4-24	2	Dead	Oiled	2	N	2		
2090	Beach Watch		Northern Fulmar	12/20/97			Bolsa Pt.-Pigeon Pt. Lighthouse	4-24	2	Dead	Unknown	U	N	4		
2091	Beach Watch		Common Murre	12/20/97			Bolsa Pt.-Pigeon Pt. Lighthouse	4-24	2	Dead	Oiled	2	Y	3		
2092	Beach Watch		Common Murre	12/20/97			Bolsa Pt.-Pigeon Pt. Lighthouse	4-24	2	Dead	Oiled	3	N	2		
2093	Beach Watch		Brandt's Cormorant	12/20/97			Bolsa Pt.-Pigeon Pt. Lighthouse	4-24	2	Dead	Not Visibly Oiled	--	N	2		
2094	Beach Watch		Common Murre	12/20/97			Bolsa Pt.-Pigeon Pt. Lighthouse	4-24	2	Dead	Oiled	2	N	2		
2095	Beach Watch		Western or Clark's Grebe	12/22/97			Ocean Beach, N.	3-08	2	Dead	Oiled	2	Y	2		
2096	Beach Watch		Surf Scoter	12/22/97			Ocean Beach, N.	3-08	2	Dead	Unknown	U	N	2		
2097	Beach Watch		Surf Scoter	12/22/97			Ocean Beach, N.	3-08	2	Dead	Unknown	U	Y	2		
2098	Beach Watch		Glaucous-winged Gull	12/22/97			Green Oaks Cr. to North Point	5-06	2	Dead	Not Visibly Oiled	--	Y	3		
2099	Beach Watch		Common Murre	12/23/97			Muir Beach	2-19	2	Dead	Not Visibly Oiled	--	Y	3		
2100	Beach Watch		Western or Clark's Grebe	12/23/97			Muir Beach	2-19	2	Dead	Not Visibly Oiled	--	Y	4		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2101	Beach Watch		Northern Fulmar	12/23/97			Half Moon Bay D	4-05	2	Dead	Not Visibly Oiled	--	Y	4		
2102	Beach Watch		Western Gull	12/23/97			Half Moon Bay D	4-05	2	Dead	Not Visibly Oiled	--	Y	2		
2103	Beach Watch		Western Gull	12/23/97			Half Moon Bay D	4-05	2	Dead	Not Visibly Oiled	--	Y	2		
2104	Beach Watch		Red Phalarope	12/23/97			Half Moon Bay D	4-05	2	Dead	Not Visibly Oiled	--	Y	4		
2105	Beach Watch		Pelagic Cormorant	12/26/97			Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Not Visibly Oiled	--	Y	2		
2106	Beach Watch		Brandt's Cormorant	12/26/97			Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Not Visibly Oiled	--	Y	2		
2107	Beach Watch		Common Murre	12/26/97			Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Oiled	3	Y	2		
2108	Beach Watch		Common Murre	12/26/97			Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Oiled	2	Y	2		
2109	Beach Watch		Common Murre	12/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2110	Beach Watch		Surf Scoter	12/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2111	Beach Watch		Surf Scoter	12/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2112	Beach Watch		Surf Scoter	12/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2113	Beach Watch		Surf Scoter	12/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
2114	Beach Watch		Horned Grebe	12/28/97			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2115	Beach Watch		Common Loon	12/28/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
2116	Beach Watch		Western or Clark's Grebe	12/28/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
2117	Beach Watch		Western or Clark's Grebe	12/28/97			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
2118	Beach Watch		Bufflehead	12/31/97			Pescadero Beach	4-17	2	Dead	Not Visibly Oiled	--	Y	2		
2119	Beach Watch		Black-legged Kittiwake	12/31/97			Pescadero Beach	4-17	2	Dead	Not Visibly Oiled	--	Y	3		
2120	Beach Watch		Common Murre	12/31/97			Pescadero Beach	4-17	2	Dead	Oiled	3	Y	3		
2121	Beach Watch		Common Murre	12/31/97			Pescadero Beach	4-17	2	Dead	Oiled	2	Y	3		
2122	Beach Watch		Northern Fulmar	12/31/97			Pescadero Beach	4-17	2	Dead	Not Visibly Oiled	--	Y	3		
2123	Beach Watch		Unidentified Gull	12/31/97			Pescadero Beach	4-17	2	Dead	Not Visibly Oiled	--	Y	3		
2124	Beach Watch		Black-legged Kittiwake	12/31/97			Pescadero Beach	4-17	2	Dead	Oiled	3	Y	3		
2125	Beach Watch		Common Murre	01/03/98			Point Reyes Beach B	1-15	2	Dead	Oiled	2	Y	3		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2126	Beach Watch		Bufflehead	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2127	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2128	Beach Watch		Eared Grebe	01/03/98			Point Reyes Beach B	1-15	2	Dead	Oiled	3	Y	3		
2129	Beach Watch		Western or Clark's Grebe	01/03/98			Point Reyes Beach B	1-15	2	Dead	Oiled	2	Y	3		
2130	Beach Watch		Bufflehead	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2131	Beach Watch		Eared Grebe	01/03/98			Point Reyes Beach B	1-15	2	Dead	Oiled	3	Y	4		
2132	Beach Watch		Common Murre	01/03/98			Point Reyes Beach B	1-15	2	Dead	Oiled	2	Y	2		
2133	Beach Watch		Unidentified Scoter	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
2134	Beach Watch		Common Murre	01/03/98			Point Reyes Beach B	1-15	2	Dead	Oiled	3	Y	3		
2135	Beach Watch		Common Murre	01/03/98			Point Reyes Beach B	1-15	2	Dead	Oiled	3	Y	3		
2136	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2137	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2138	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2139	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2140	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2141	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
2142	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
2143	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	U		
2144	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
2145	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2146	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2147	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2148	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2149	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	U	3		
2150	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2151	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2152	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2153	Beach Watch		Common Murre	01/03/98			Point Reyes Beach B	1-15	2	Dead	Oiled	2	Y	2		
2154	Beach Watch		Pacific Loon	01/03/98			Point Reyes Beach B	1-15	2	Dead	Oiled	3	Y	3		
2155	Beach Watch		Unidentified Gull	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	U	4		
2156	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	U	3		
2157	Beach Watch		Common Murre	01/03/98			Point Reyes Beach B	1-15	2	Dead	Oiled	1	Y	3		
2158	Beach Watch		Western Grebe	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
2159	Beach Watch		Sooty Shearwater	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2160	Beach Watch		Common Murre	01/03/98			Point Reyes Beach B	1-15	2	Dead	Oiled	2	Y	4		
2161	Beach Watch		Northern Fulmar	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
2162	Beach Watch		Common Murre	01/03/98			Point Reyes Beach B	1-15	2	Dead	Oiled	1	Y	4		
2163	Beach Watch		Common Murre	01/03/98			Point Reyes Beach B	1-15	2	Dead	Oiled	2	Y	3		
2164	Beach Watch		American Coot	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
2165	Beach Watch		Common Murre	01/03/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	4		
2166	Beach Watch		Surf Scoter	01/03/98			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	N	3		
2167	Beach Watch		Common Murre	01/03/98			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	Y	4		
2168	Beach Watch		Northern Fulmar	01/03/98			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	N	2		
2169	Beach Watch		Common Murre	01/03/98			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	Y	4		
2170	Beach Watch		Unidentified Waterbird	01/03/98			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	Y	4		
2171	Beach Watch		Northern Fulmar	01/03/98			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	Y	2		
2172	Beach Watch		Brandt's Cormorant	01/03/98			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	N	3		
2173	Beach Watch		Common Murre	01/03/98			Thornton Beach, S.	3-12	2	Dead	Oiled	3	N	4		
2174	Beach Watch		Northern Fulmar	01/04/98			Coast Camp to Pt. Resistance	2-07	2	Dead	Not Visibly Oiled	--	Y	3		
2175	Beach Watch		Northern Fulmar	01/04/98			Rodeo Cove Beach	2-23	2	Dead	Not Visibly Oiled	--	Y	2		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2176	Beach Watch		Brandt's Cormorant	01/04/98			Rodeo Cove Beach	2-23	2	Dead	Not Visibly Oiled	--	Y	2		
2177	Beach Watch		White-winged Scoter	01/04/98			Baker Beach	3-02	2	Dead	Unknown	U	N	3		
2178	Beach Watch		Northern Fulmar	01/04/98			Baker Beach	3-02	2	Dead	Oiled	1	Y	2		
2179	Beach Watch		Northern Fulmar	01/04/98			Baker Beach	3-02	2	Dead	Not Visibly Oiled	--	N	2		
2180	Beach Watch		Western or Clark's Grebe	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	4		
2181	Beach Watch		Western Gull	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	N	4		
2182	Beach Watch		Western Gull	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	3		
2183	Beach Watch		Northern Fulmar	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2		
2184	Beach Watch		Northern Fulmar	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2		
2185	Beach Watch		Northern Fulmar	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2		
2186	Beach Watch		Northern Fulmar	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	N	2		
2187	Beach Watch		Northern Fulmar	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2		
2188	Beach Watch		Northern Fulmar	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	3		
2189	Beach Watch		Northern Fulmar	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	3		
2190	Beach Watch		Northern Fulmar	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	3		
2191	Beach Watch		Northern Fulmar	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	2		
2192	Beach Watch		Northern Fulmar	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	N	3		
2193	Beach Watch		Northern Fulmar	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	3		
2194	Beach Watch		Unidentified Waterbird	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	3		
2195	Beach Watch		Pacific Loon	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	N	2		
2196	Beach Watch		White-winged Scoter	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	3		
2197	Beach Watch		Black Scoter	01/05/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	Y	4		
2198	Beach Watch		Common Murre	01/07/98			Muir Beach	2-19	2	Dead	Oiled	1	N	2		
2199	Beach Watch		Brandt's Cormorant	01/07/98			Muir Beach	2-19	2	Dead	Not Visibly Oiled	--	N	2		
2200	Beach Watch		Pacific Loon	01/07/98			Gazos Creek Beach	5-03	2	Dead	Oiled	2	Y	3		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2201	Beach Watch		Northern Fulmar	01/07/98			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	U	3		
2202	Beach Watch		Common Murre	01/07/98			Gazos Creek Beach	5-03	2	Dead	Oiled	1	Y	3		
2203	Beach Watch		Unidentified Gull	01/07/98			Gazos Creek Beach	5-03	2	Dead	Unknown	U	U	U		
2204	Beach Watch		Common Murre	01/07/98			Gazos Creek Beach	5-03	2	Dead	Oiled	2	Y	3		
2205	Beach Watch		Northern Fulmar	01/07/98			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	3		
2206	Beach Watch		White-winged Scoter	01/07/98			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	U		
2207	Beach Watch		Brandt's Cormorant	01/07/98			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	3		
2208	Beach Watch		Common Murre	01/07/98			Gazos Creek Beach	5-03	2	Dead	Oiled	2	Y/U	3		
2209	Beach Watch		Brandt's Cormorant	01/07/98			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	3		
2210	Beach Watch		Black-legged Kittiwake	01/07/98			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	3		
2211	Beach Watch		Northern Fulmar	01/07/98			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	N	3		
2212	Beach Watch		Northern Fulmar	01/07/98			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	3		
2213	Beach Watch		Common Murre	01/07/98			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	3		
2214	Beach Watch		Northern Fulmar	01/07/98			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	3		
2215	Beach Watch		Unidentified Gull	01/07/98			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	U		
2216	Beach Watch		Western Grebe	01/07/98			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
2217	Beach Watch		Western or Clark's Grebe	01/07/98			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
2218	Beach Watch		Western or Clark's Grebe	01/07/98			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
2219	Beach Watch		Western or Clark's Grebe	01/07/98			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
2220	Beach Watch		Surf Scoter	01/07/98			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
2221	Beach Watch		Western Grebe	01/07/98			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
2222	Beach Watch		Western or Clark's Grebe	01/07/98			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	2		
2223	Beach Watch		Surf Scoter	01/07/98			N. Tomasini Cr.- Millerton Gul.	7-06	2	Dead	Not Visibly Oiled	--	Y	3		
2224	Beach Watch		Common Murre	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2225	Beach Watch		Common Murre	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2226	Beach Watch		Common Murre	01/08/98			Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3		
2227	Beach Watch		Common Murre	01/08/98			Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3		
2228	Beach Watch		Common Murre	01/08/98			Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3		
2229	Beach Watch		Common Murre	01/08/98			Point Reyes Beach A	1-14	2	Dead	Oiled	2	Y	3		
2230	Beach Watch		Common Murre	01/08/98			Point Reyes Beach A	1-14	2	Dead	Oiled	U	Y	4		
2231	Beach Watch		Common Murre	01/08/98			Point Reyes Beach A	1-14	2	Dead	Oiled	1	Y	4		
2232	Beach Watch		Common Murre	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	4		
2233	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2234	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2235	Beach Watch		Western Grebe	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2236	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2237	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	U		
2238	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	U		
2239	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	U		
2240	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	U		
2241	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	U		
2242	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2243	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2244	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2245	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2246	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2247	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2248	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	4		
2249	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2250	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		



Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2251	Beach Watch		Brown Pelican	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2252	Beach Watch		Western Gull	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2253	Beach Watch		Short-tailed Shearwater	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2254	Beach Watch		Common Loon	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2255	Beach Watch		White-winged Scoter	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	4		
2256	Beach Watch		Eared Grebe	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2257	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2258	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2259	Beach Watch		Common Murre	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2260	Beach Watch		Western or Clark's Grebe	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	4		
2261	Beach Watch		Ring-billed Gull	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	4		
2262	Beach Watch		Black-legged Kittiwake	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	4		
2263	Beach Watch		Black-legged Kittiwake	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	4		
2264	Beach Watch		Western Gull	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	4		
2265	Beach Watch		Common Murre	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2266	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2267	Beach Watch		Black-legged Kittiwake	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	U		
2268	Beach Watch		Glaucous-winged Gull	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	U		
2269	Beach Watch		Pelagic Cormorant	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	4		
2270	Beach Watch		Red-throated Loon	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2271	Beach Watch		Northern Fulmar	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2272	Beach Watch		Western Gull	01/08/98			Point Reyes Beach A	1-14	2	Dead	Not Visibly Oiled	--	Y	3		
2273	Beach Watch		Northern Fulmar	01/08/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
2274	Beach Watch		Northern Fulmar	01/08/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
2275	Beach Watch		Western Gull	01/08/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2276	Beach Watch		Northern Fulmar	01/08/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	N	2		
2277	Beach Watch		Northern Fulmar	01/08/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
2278	Beach Watch		Northern Fulmar	01/08/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
2279	Beach Watch		Northern Fulmar	01/08/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
2280	Beach Watch		Northern Fulmar	01/08/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
2281	Beach Watch		Northern Fulmar	01/08/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
2282	Beach Watch		Common Murre	01/08/98			E. Double Pt. to Palomarin	2-11	2	Dead	Not Visibly Oiled	--	Y	2		
2283	Beach Watch		Northern Fulmar	01/08/98			E. Double Pt. to Palomarin	2-11	2	Dead	Not Visibly Oiled	--	Y	1		
2284	Beach Watch		Pigeon Guillemot	01/08/98			E. Double Pt. to Palomarin	2-11	2	Dead	Not Visibly Oiled	--	Y	1		
2285	Beach Watch		Northern Fulmar	01/08/98			E. Double Pt. to Palomarin	2-11	2	Dead	Oiled	2	Y	2		
2286	Beach Watch		Unidentified Grebe	01/09/98			Shoreline Highway (mile marker 14.41 to	6-05	2	Dead	Not Visibly Oiled	--	U	3		
2287	Beach Watch		Glaucous-winged Gull	01/09/98			Shoreline Highway (mile marker 14.41 to	6-05	2	Dead	Not Visibly Oiled	--	U	2		
2288	Beach Watch		Northern Fulmar	01/10/98			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3		
2289	Beach Watch		Brandt's Cormorant	01/10/98			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	2		
2290	Beach Watch		Northern Fulmar	01/10/98			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	2		
2291	Beach Watch		Northern Fulmar	01/10/98			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	2		
2292	Beach Watch		Northern Fulmar	01/10/98			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	2		
2293	Beach Watch		Northern Fulmar	01/10/98			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3		
2294	Beach Watch		Common Murre	01/10/98			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	2		
2295	Beach Watch		Northern Fulmar	01/10/98			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	2		
2296	Beach Watch		Northern Fulmar	01/10/98			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3		
2297	Beach Watch		Brandt's Cormorant	01/10/98			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	2		
2298	Beach Watch		Northern Fulmar	01/10/98			New Years Cr. Rd.-Waddell Cr.	5-10	2	Dead	Not Visibly Oiled	--	Y	3		
2299	Beach Watch		Northern Fulmar	01/10/98			New Years Cr. Rd.-Waddell Cr.	5-10	2	Dead	Not Visibly Oiled	--	Y	3		
2300	Beach Watch		Northern Fulmar	01/10/98			New Years Cr. Rd.-Waddell Cr.	5-10	2	Dead	Not Visibly Oiled	--	Y	3		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2301	Beach Watch		Northern Fulmar	01/10/98			New Years Cr. Rd.-Waddell Cr.	5-10	2	Dead	Not Visibly Oiled	--	Y	3		
2302	Beach Watch		Northern Fulmar	01/10/98			New Years Cr. Rd.-Waddell Cr.	5-10	2	Dead	Not Visibly Oiled	--	Y	3		
2303	Beach Watch		Northern Fulmar	01/10/98			New Years Cr. Rd.-Waddell Cr.	5-10	2	Dead	Not Visibly Oiled	--	Y	3		
2304	Beach Watch		Northern Fulmar	01/10/98			New Years Cr. Rd.-Waddell Cr.	5-10	2	Dead	Not Visibly Oiled	--	Y	3		
2305	Beach Watch		Northern Fulmar	01/10/98			New Years Cr. Rd.-Waddell Cr.	5-10	2	Dead	Not Visibly Oiled	--	Y	3		
2306	Beach Watch		Glaucous-winged Gull	01/10/98			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Not Visibly Oiled	--	Y	2		
2307	Beach Watch		California Gull	01/10/98			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Not Visibly Oiled	--	Y	1		
2308	Beach Watch		Western Grebe	01/10/98			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Oiled	U	Y	2		
2309	Beach Watch		Horned Grebe	01/10/98			Tomales Bay-Sand Pt.-Tom's Pt.	7-01	2	Dead	Not Visibly Oiled	--	N	1		
2310	Beach Watch		Northern Fulmar	01/11/98			Drakes Beach W.	2-03	2	Dead	Not Visibly Oiled	--	N	2		
2311	Beach Watch		Surf Scoter	01/11/98			Drakes Beach W.	2-03	2	Dead	Not Visibly Oiled	--	U	2		
2312	Beach Watch		Northern Fulmar	01/11/98			Pescadero Beach	4-17	2	Dead	Not Visibly Oiled	--	Y	2		
2313	Beach Watch		Northern Fulmar	01/11/98			Pescadero Beach	4-17	2	Dead	Not Visibly Oiled	--	Y	2		
2314	Beach Watch		Common Murre	01/11/98			Pescadero Beach	4-17	2	Dead	Not Visibly Oiled	--	Y	2		
2315	Beach Watch		Northern Fulmar	01/14/98			Pescadero Beach	4-17	2	Dead	Oiled	2	Y	3		
2316	Beach Watch		Common Murre	01/19/98			Muir Beach	2-19	2	Dead	Oiled	1	N	2		
2317	Beach Watch		Common Murre	01/19/98			Muir Beach	2-19	2	Dead	Oiled	2	N	2		
2318	Beach Watch		Rock Dove	01/19/98			Muir Beach	2-19	2	Dead	Not Visibly Oiled	--	Y	3		
2319	Beach Watch		Western or Clark's Grebe	01/19/98			Muir Beach	2-19	2	Dead	Not Visibly Oiled	--	Y	3		
2320	Beach Watch		Common Murre	01/19/98			Muir Beach	2-19	2	Dead	Oiled	2	Y	2		
2321	Beach Watch		Common Murre	01/19/98			Muir Beach	2-19	2	Dead	Oiled	2	N	2		
2322	Beach Watch		Greater Scaup	01/19/98			Muir Beach	2-19	2	Dead	Not Visibly Oiled	--	Y	3		
2323	Beach Watch		Common Murre	01/19/98			Muir Beach	2-19	2	Dead	Oiled	1	Y	2		
2324	Beach Watch		Rock Dove	01/19/98			Muir Beach	2-19	2	Dead	Not Visibly Oiled	--	Y	U		
2325	Beach Watch		Common Murre	01/19/98			Muir Beach	2-19	2	Dead	Oiled	1	Y	3		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2326	Beach Watch		Common Murre	01/19/98			Muir Beach	2-19	2	Dead	Oiled	1	Y	2		
2327	Beach Watch		Bufflehead	01/19/98			Muir Beach	2-19	2	Dead	Not Visibly Oiled	--	Y	U		
2328	Beach Watch		Common Murre	01/19/98			Ocean Beach, N.	3-08	2	Dead	Oiled	3	Y	2		
2329	Beach Watch		Surf Scoter	01/19/98			Ocean Beach, N.	3-08	2	Dead	Not Visibly Oiled	--	N	2		
2330	Beach Watch		Brown Pelican	01/19/98			Ocean Beach, N.	3-08	2	Dead	Not Visibly Oiled	--	Y	4		
2331	Beach Watch		Surf Scoter	01/20/98			Tunitas Creek Beach	4-10	2	Dead	Unknown	U	Y	3		
2332	Beach Watch		Surf Scoter	01/20/98			Tunitas Creek Beach	4-10	2	Dead	Unknown	U	N	2		
2333	Beach Watch		Surf Scoter	01/20/98			Tunitas Creek Beach	4-10	2	Dead	Unknown	U	Y	3		
2334	Beach Watch		Leach's Storm-Petrel	01/20/98			Tunitas Creek Beach	4-10	2	Dead	Unknown	U	N	2		
2335	Beach Watch		Common Murre	01/20/98			Tunitas Creek Beach	4-10	2	Dead	Unknown	U	N	3		
2336	Beach Watch		Common Murre	01/20/98			Tunitas Creek Beach	4-10	2	Dead	Unknown	U	N	3		
2337	Beach Watch		Common Murre	01/21/98			Bolinas Beach	2-13	2	Dead	Oiled	U	U	2		
2338	Beach Watch		Northern Fulmar	01/21/98			Bolinas Beach	2-13	2	Dead	Not Visibly Oiled	--	U	2		
2339	Beach Watch		Northern Fulmar	01/21/98			Bolinas Beach	2-13	2	Dead	Not Visibly Oiled	--	U	3		
2340	Beach Watch		Cassin's Auklet	01/21/98			Gazos Creek Beach	5-03	2	Dead	Not Visibly Oiled	--	Y	3		
2341	Beach Watch		White-winged Scoter	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2342	Beach Watch		Pelagic Cormorant	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	1		
2343	Beach Watch		Surf Scoter	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	N	1		
2344	Beach Watch		Surf Scoter	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	2		
2345	Beach Watch		Surf Scoter	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2346	Beach Watch		Northern Fulmar	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2347	Beach Watch		White-winged Scoter	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2348	Beach Watch		Western Grebe	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
2349	Beach Watch		Western or Clark's Grebe	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2350	Beach Watch		Unidentified Grebe	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2351	Beach Watch		Common Murre	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
2352	Beach Watch		White-winged Scoter	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	N	1		
2353	Beach Watch		Horned Grebe	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	1		
2354	Beach Watch		Northern Fulmar	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
2355	Beach Watch		Northern Fulmar	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2356	Beach Watch		White-winged Scoter	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	2		
2357	Beach Watch		Heermann's Gull	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2358	Beach Watch		Horned Grebe	01/23/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	N	3		
2359	Beach Watch		Common Murre	01/23/98			S. Montara Beach	3-27	2	Dead	Oiled	2	Y	3		
2360	Beach Watch		White-winged Scoter	01/23/98			S. Montara Beach	3-27	2	Dead	Not Visibly Oiled	--	Y	3		
2361	Beach Watch		Northern Fulmar	01/24/98			Pescadero Beach	4-17	2	Dead	Oiled	2	Y	3		
2362	Beach Watch		Eared Grebe	01/25/98			Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	2		
2363	Beach Watch		Common Murre	01/25/98			Limantour Beach W.	2-05	2	Dead	Oiled	3	N	2		
2364	Beach Watch		Common Murre	01/25/98			Limantour Beach W.	2-05	2	Dead	Oiled	2	N	2		
2365	Beach Watch		Common Murre	01/25/98			Limantour Beach W.	2-05	2	Dead	Oiled	3	Y	2		
2366	Beach Watch		Common Murre	01/25/98			Limantour Beach W.	2-05	2	Dead	Oiled	3	Y	2		
2367	Beach Watch		Common Murre	01/25/98			Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	2		
2368	Beach Watch		Common Murre	01/25/98			Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	3		
2369	Beach Watch		Northern Fulmar	01/25/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
2370	Beach Watch		Northern Fulmar	01/25/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
2371	Beach Watch		Northern Fulmar	01/25/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
2372	Beach Watch		Northern Fulmar	01/25/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
2373	Beach Watch		Northern Fulmar	01/25/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
2374	Beach Watch		Northern Fulmar	01/25/98			Limantour Beach W.	2-05	2	Dead	Oiled	1	Y	3		
2375	Beach Watch		Eared Grebe	01/25/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2376	Beach Watch		Ancient Murrelet	01/25/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
2377	Beach Watch		Northern Fulmar	01/25/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
2378	Beach Watch		Northern Fulmar	01/25/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
2379	Beach Watch		Northern Fulmar	01/25/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
2380	Beach Watch		Northern Fulmar	01/25/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
2381	Beach Watch		Common Murre	01/25/98			Limantour Beach W.	2-05	2	Dead	Oiled	3	Y	2		
2382	Beach Watch		Common Murre	01/25/98			Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	2		
2383	Beach Watch		Common Murre	01/25/98			Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Oiled	3	N	2		
2384	Beach Watch		Common Murre	01/25/98			Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Not Visibly Oiled	--	N	2		
2385	Beach Watch		Common Murre	01/25/98			Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Oiled	2	N	2		
2386	Beach Watch		Common Murre	01/25/98			Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Oiled	3	N	2		
2387	Beach Watch		Brandt's Cormorant	01/25/98			Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Not Visibly Oiled	--	N	2		
2388	Beach Watch		Common Murre	01/25/98			Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Oiled	3	N	2		
2389	Beach Watch		Common Murre	01/25/98			Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Oiled	3	N	2		
2390	Beach Watch		Common Murre	01/25/98			Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Oiled	3	Y	2		
2391	Beach Watch		Bufflehead	01/28/98			Limantour Beach E.	2-06	2	Dead	Not Visibly Oiled	--	Y	3		
2392	Beach Watch		Common Murre	02/01/98			Point Reyes Beach B	1-15	2	Dead	Oiled	3	Y	3		
2393	Beach Watch		Red-necked Phalarope	02/01/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	N	2		
2394	Beach Watch		Common Murre	02/04/98			Gazos Creek Beach	5-03	2	Dead	Oiled	2	N	3		
2395	Beach Watch		Common Murre	02/11/98			Ocean Beach, Central	3-09	2	Dead	Oiled	3	Y	2		
2396	Beach Watch		Cassin's Auklet	02/11/98			Ocean Beach, Central	3-09	2	Dead	Unknown	U	N	2		
2397	Beach Watch		Surf Scoter	02/11/98			Ocean Beach, Central	3-09	2	Dead	Oiled	2	Y	2		
2398	Beach Watch		Common Murre	02/11/98			Ocean Beach, Central	3-09	2	Dead	Oiled	2	N	2		
2399	Beach Watch		Common Murre	02/11/98			Ocean Beach, Central	3-09	2	Dead	Oiled	2	Y	2		
2400	Beach Watch		Common Murre	02/11/98			Ocean Beach, Central	3-09	2	Dead	Oiled	2	Y	2		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2401	Beach Watch		Northern Fulmar	02/11/98			Ocean Beach, Central	3-09	2	Dead	Not Visibly Oiled	--	Y	3		
2402	Beach Watch		Brandt's Cormorant	02/11/98			Ocean Beach, Central	3-09	2	Dead	Not Visibly Oiled	--	N	2		
2403	Beach Watch		Cassin's Auklet	02/11/98			Ocean Beach, Central	3-09	2	Dead	Not Visibly Oiled	--	Y	2		
2404	Beach Watch		Surf Scoter	02/11/98			Ocean Beach, Central	3-09	2	Dead	Not Visibly Oiled	--	N	2		
2405	Beach Watch		Surf Scoter	02/11/98			Ocean Beach, Central	3-09	2	Dead	Not Visibly Oiled	--	N	2		
2406	Beach Watch		Unidentified Cormorant	02/11/98			Ocean Beach, Central	3-09	2	Dead	Not Visibly Oiled	--	N	2		
2407	Beach Watch		Common Murre	02/11/98			Ocean Beach, Central	3-09	2	Dead	Oiled	4	N	2		
2408	Beach Watch		Common Murre	02/11/98			Ocean Beach, Central	3-09	2	Dead	Not Visibly Oiled	--	N	2		
2409	Beach Watch		Common Murre	02/13/98			Rodeo Cove Beach	2-23	2	Dead	Not Visibly Oiled	--	Y	2		
2410	Beach Watch		Northern Fulmar	02/14/98			Bolsa Pt.-Pigeon Pt. Lighthouse	4-24	2	Dead	Not Visibly Oiled	--	Y	4		
2411	Beach Watch		Brandt's Cormorant	02/14/98			Bolsa Pt.-Pigeon Pt. Lighthouse	4-24	2	Dead	Not Visibly Oiled	--	N	1		
2412	Beach Watch		Common Murre	02/14/98			Bolsa Pt.-Pigeon Pt. Lighthouse	4-24	2	Dead	Oiled	3	Y	1		
2413	Beach Watch		Common Murre	02/14/98			Gazos Creek Beach	5-03	2	Dead	Oiled	2	N	3		
2414	Beach Watch		Brown Pelican	02/15/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	3		
2415	Beach Watch		Western or Clark's Grebe	02/15/98			Point Reyes Beach B	1-15	2	Dead	Not Visibly Oiled	--	Y	2		
2416	Beach Watch		Common Murre	02/15/98			Point Reyes Beach B	1-15	2	Dead	Oiled	3	Y	3		
2417	Beach Watch		Common Murre	02/15/98			Point Reyes Beach B	1-15	2	Dead	Oiled	3	N	3		
2418	Beach Watch		Common Murre	02/15/98			Point Reyes Beach B	1-15	2	Dead	Oiled	3	U	3		
2419	Beach Watch		Glaucous-winged Gull	02/15/98			Baker Beach	3-02	2	Dead	Not Visibly Oiled	--	U	2		
2420	Beach Watch		Western Grebe	02/15/98			Baker Beach	3-02	2	Dead	Not Visibly Oiled	--	Y	2		
2421	Beach Watch		White-winged Scoter	02/16/98			Muir Beach	2-19	2	Dead	Not Visibly Oiled	--	N	2		
2422	Beach Watch		Pelagic Cormorant	02/16/98			Muir Beach	2-19	2	Dead	Not Visibly Oiled	--	Y	3		
2423	Beach Watch		Brandt's Cormorant	02/16/98			Muir Beach	2-19	2	Dead	Not Visibly Oiled	--	N	2		
2424	Beach Watch		Brandt's Cormorant	02/16/98			Muir Beach	2-19	2	Dead	Not Visibly Oiled	--	N	2		
2425	Beach Watch		Brandt's Cormorant	02/16/98			Ocean Beach, N.	3-08	2	Dead	Not Visibly Oiled	--	N	2		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2426	Beach Watch		Common Murre	02/16/98			Ocean Beach, N.	3-08	2	Dead	Not Visibly Oiled	--	N	2		
2427	Beach Watch		Clark's Grebe	02/16/98			Ocean Beach, N.	3-08	2	Dead	Not Visibly Oiled	--	N	2		
2428	Beach Watch		Common Murre	02/16/98			Ocean Beach, N.	3-08	2	Dead	Not Visibly Oiled	--	N	2		
2429	Beach Watch		Common Murre	02/16/98			Ocean Beach, N.	3-08	2	Dead	Not Visibly Oiled	--	N	2		
2430	Beach Watch		Ancient Murrelet	02/20/98			Doran Beach	1-06	2	Dead	Oiled	2	Y	1		
2431	Beach Watch		Common Murre	02/20/98			Doran Beach	1-06	2	Dead	Oiled	2	Y	3		
2432	Beach Watch		Common Murre	02/20/98			Doran Beach	1-06	2	Dead	Oiled	2	Y	2		
2433	Beach Watch		Unidentified Gull	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2434	Beach Watch		White-winged Scoter	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	2		
2435	Beach Watch		Cassin's Auklet	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	1		
2436	Beach Watch		Brandt's Cormorant	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	1		
2437	Beach Watch		Common Murre	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	1		
2438	Beach Watch		White-winged Scoter	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	1		
2439	Beach Watch		Western Grebe	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
2440	Beach Watch		Common Murre	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
2441	Beach Watch		Brandt's Cormorant	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	2		
2442	Beach Watch		Brandt's Cormorant	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
2443	Beach Watch		Brandt's Cormorant	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	1		
2444	Beach Watch		Surf Scoter	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
2445	Beach Watch		Surf Scoter	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	1		
2446	Beach Watch		Surf Scoter	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
2447	Beach Watch		Surf Scoter	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	1		
2448	Beach Watch		Unidentified Loon	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2449	Beach Watch		American Coot	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2450	Beach Watch		Western Gull	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		



Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2451	Beach Watch		Common Murre	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2452	Beach Watch		Unidentified Grebe	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
2453	Beach Watch		Northern Fulmar	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2454	Beach Watch		California Gull	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2455	Beach Watch		Common Loon	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
2456	Beach Watch		Common Loon	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2457	Beach Watch		Cassin's Auklet	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
2458	Beach Watch		Common Murre	02/20/98			Doran Beach	1-06	2	Dead	Oiled	2	Y	3		
2459	Beach Watch		Eared Grebe	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	2		
2460	Beach Watch		Unidentified Grebe	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
2461	Beach Watch		Glaucous Gull	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2462	Beach Watch		Horned Grebe	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	3		
2463	Beach Watch		Pelagic Cormorant	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	2		
2464	Beach Watch		White-winged Scoter	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	2		
2465	Beach Watch		Glaucous Gull	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	4		
2466	Beach Watch		Pelagic Cormorant	02/20/98			Doran Beach	1-06	2	Dead	Not Visibly Oiled	--	Y	2		
2467	Beach Watch		Unidentified Duck	02/22/98			Bolinas Beach	2-13	2	Dead	Unknown	U	N	2		
2468	Beach Watch		Western Grebe	02/22/98			Bolinas Beach	2-13	2	Dead	Oiled	2	N	2		
2469	Beach Watch		Unidentified Gull	02/22/98			Bolinas Beach	2-13	2	Dead	Unknown	U	N	2		
2470	Beach Watch		Western Grebe	02/22/98			Bolinas Beach	2-13	2	Dead	Not Visibly Oiled	--	Y	2		
2471	Beach Watch		Common Murre	02/22/98			Bolinas Beach	2-13	2	Dead	Unknown	U	N	2		
2472	Beach Watch		Pelagic Cormorant	02/22/98			Bolinas Beach	2-13	2	Dead	Unknown	U	Y	2		
2473	Beach Watch		Western or Clark's Grebe	02/22/98			Bolinas Beach	2-13	2	Dead	Unknown	U	Y	3		
2474	Beach Watch		Western Grebe	02/22/98			Pescadero Pt.-Bean Hollow Bch.	4-20	2	Dead	Not Visibly Oiled	--	Y	2		
2475	Beach Watch		Common Murre	02/23/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2476	Beach Watch		Pelagic Cormorant	02/23/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
2477	Beach Watch		Unidentified Grebe	02/23/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	3		
2478	Beach Watch		Brown Pelican	02/23/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
2479	Beach Watch		Northern Fulmar	02/23/98			Limantour Beach W.	2-05	2	Dead	Not Visibly Oiled	--	Y	2		
2480	Beach Watch		Common Murre	02/23/98			Limantour Beach W.	2-05	2	Dead	Oiled	3	Y	2		
2481	Beach Watch		Common Murre	02/23/98			Limantour Beach W.	2-05	2	Dead	Oiled	3	Y	2		
2482	Beach Watch		Common Murre	02/23/98			Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	2		
2483	Beach Watch		Common Murre	02/23/98			Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	2		
2484	Beach Watch		Common Murre	02/23/98			Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	3		
2485	Beach Watch		Black-legged Kittiwake	02/23/98			Limantour Beach W.	2-05	2	Dead	Oiled	1	Y	3		
2486	Beach Watch		Common Murre	02/23/98			Limantour Beach W.	2-05	2	Dead	Oiled	2	Y	2		
2487	Beach Watch		Common Murre	02/27/98			Drakes Beach E.	2-04	2	Dead	Oiled	2	Y	4		
2488	Beach Watch		Common Murre	02/27/98			Drakes Beach E.	2-04	2	Dead	Not Visibly Oiled	--	N	4		
2489	Beach Watch		Brandt's Cormorant	02/28/98			Drakes Beach W.	2-03	2	Dead	Not Visibly Oiled	--	Y	3		
2490	Beach Watch		Common Murre	02/28/98			Stinson Beach	2-14	2	Dead	Oiled	2	Y	3		
2491	Beach Watch		Common Murre	02/28/98			Stinson Beach	2-14	2	Dead	Not Visibly Oiled	--	Y	2		
2492	Beach Watch		Western Gull	02/28/98			Thornton Beach, S.	3-12	2	Dead	Not Visibly Oiled	--	Y	4		
2493	Rehab Center	2001	Common Murre	12/21/97		Moss Beach	Unknown	--	1	Died	Oiled	2-3	N	1	Red	155
2494	Rehab Center	2002	Common Murre	12/01/97		Fitzgerald Marine Reserve	Unknown	--	1	Died	Oiled	3-4	N	1	Red	93
2495	Rehab Center	2007	Western Grebe	12/25/97		Moss Beach	Unknown	--	1	Died	Oiled	2-4	N	1	Pink	25
2496	Rehab Center	2008	Common Murre	12/04/97		Pilar Point	Unknown	--	1	Died	Oiled	2-4	N	1	White	22
2497	Rehab Center	2009	Common Murre	12/25/97		Santa Cruz Co.	Unknown	--	1	Died	Oiled	U	N	1	Yellow	83
2498	Rehab Center	2010	Common Murre	01/02/98		Cowell Beach, Santa Cruz	Unknown	--	1	Died	Oiled	U	N	1	Yellow	24
2499	Rehab Center	2011	Western Grebe	01/19/98		Linda Mar Beach	Unknown	--	1	Died	Oiled	2-3	N	1	Blue	15
2500	Rehab Center	2012	Common Murre	12/26/97		Pigeon Point - Whale Cove	Unknown	--	1	Died	Oiled	U	N	1	Red	173

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2501	Rehab Center	2013	Common Murre	12/07/97		Macabee Beach	Unknown	--	1	Died	Oiled	2	N	1	Red	109
2502	Rehab Center	2015	Common Murre	12/16/97		Monterey Bay Aquarium	Unknown	--	1	Died	Oiled	2-3	N	1	Pink	21
2503	Rehab Center	2016	Common Murre	12/18/97		Cannery Row	Unknown	--	1	Died	Oiled	U	N	1	Pink	18
2504	Rehab Center	2019	Common Murre	01/19/98		Ocean Beach	Unknown	--	1	Died	Oiled	2-3	N	1	Blue	11
2505	Rehab Center	2020	Common Murre	12/28/97		Monterey	Unknown	--	1	Died	Oiled	2-4	N	1	Green	2
2506	Rehab Center	2021	Common Murre	12/28/97		Miramar Beach	Unknown	--	1	Died	Oiled	2-4	N	1	Pink	2
2507	Rehab Center	2022	Common Murre	01/20/98		McClure's Beach	Unknown	--	1	Died	Oiled	2-3	N	1	Red	2819
2508	Rehab Center	2024	Common Murre	12/08/97		Monterey	Unknown	--	1	Died	Oiled	2-3	N	1	Red	149
2509	Rehab Center	2030	Western Grebe	01/03/98		Santa Cruz	Unknown	--	1	Died	Oiled	2-3	N	1	Yellow	157
2510	Rehab Center	2031	Common Murre	01/18/98		Limantour	Unknown	--	1	Died	Oiled	3-4	N	1	Red	129
2511	Rehab Center	2032	Common Murre	01/21/98		Limantour Beach West	Unknown	--	1	Died	Oiled	2-3	N	1	Red	3226
2512	Rehab Center	2033	Common Murre	01/11/98		Point Reyes Beach	Unknown	--	1	Died	Oiled	2-3	N	1	Blue	72
2513	Rehab Center	2035	Western Grebe	01/21/98		Drake's Beach West	Unknown	--	1	Died	Oiled	2-3	N	1	Pink	386
2514	Rehab Center	2036	Pacific Loon	12/16/97		Davenport Landing Beach	Unknown	--	1	Died	Oiled	3-4	N	1	Yellow	191
2515	Rehab Center	2037	Common Murre	12/08/97		(Monterey SPCA)	Unknown	--	1	Died	Oiled	2-4	N	1	Red	1764
2516	Rehab Center	2038	Common Murre	12/24/97		Beach by Hopkins Station	Unknown	--	1	Died	Oiled	2-4	N	1	Red	145
2517	Rehab Center	2040	Common Murre	12/09/97		Breakwater Cove, Monterey	Unknown	--	1	Died	Oiled	2-3	N	1	Red	139
2518	Rehab Center	2053	Common Murre	01/22/98		El Granada	Unknown	--	1	Died	Oiled	U	N	1	Green	83
2519	Rehab Center	2054	Common Murre	11/28/97		Moss Landing	Unknown	--	U	Died	Oiled	U	N	1-2	Red	171
2520	Rehab Center	2056	Common Murre	12/03/97		San Carlos Beach, S. of CG	Unknown	--	1	Died	Oiled	U	N	1	Yellow	25
2521	Rehab Center	2057	Pacific Loon	12/07/97		Point Reyes Ranger Station	Unknown	--	1	Died	Oiled	3-4	N	1	Pink	128
2522	Rehab Center	2058	Northern Fulmar	12/21/97		Del Monte Beach	Unknown	--	1	Died	Unknown	U	N	1	Yellow	141
2523	Rehab Center	2059	Common Murre	12/02/97		Asilomar	Unknown	--	1	Died	Oiled	U	N	1	Red	138
2524	Rehab Center	2060	Common Murre	12/15/97		Fitzgerald Marine Reserve	Unknown	--	1	Died	Oiled	2-4	N	1	Green	76
2525	Rehab Center	2061	Pacific Loon	12/21/97		Seabright Beach	Unknown	--	1	Died	Oiled	2-3	N	1	Red	35

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2526	Rehab Center	2062	Western Grebe	12/22/97		Linda Mar Beach	Unknown	--	1	Died	Oiled	2-4	N	1	Yellow	66
2527	Rehab Center	2063	Surf Scoter	12/24/97		Del Monte Beach	Unknown	--	1	Died	Unknown	U	N	1	White	72
2528	Rehab Center	2064	Common Murre	11/30/97		Asilomar State Beach	Unknown	--	1	Died	Oiled	2-3	N	1	Red	112
2529	Rehab Center	2067	Western Grebe	11/17/97		Drake's Beach	Unknown	--	1	Died	Oiled	2	N	1	Blue	2613
2530	Rehab Center	2067	Western Grebe	12/23/97		Limantour Beach	Unknown	--	1	Died	Oiled	2-3	N	1	Blue	63
2531	Rehab Center	2071	Common Murre	11/29/97		Pacific Grove, Oceanview Blv.	Unknown	--	1	Died	Oiled	2-3	N	1	Red	14
2532	Rehab Center	2074	Common Murre	11/30/97		Monterey - near Wharf 1	Unknown	--	1	Died	Oiled	U	N	1	Red	146
2533	Rehab Center	2075	Surf Scoter	12/12/97		Carmel Beach	Unknown	--	1	Died	Oiled	2-3	N	1	Yellow	99
2534	Rehab Center	2041 B	Common Murre	11/30/97		M.B.R.I. - Moss Landing	Unknown	--	1	Died	Oiled	U	N	1	Red	147
2535	Rehab Center	2042 A	Common Murre	01/22/98		Fitzgerald Marine Reserve	Unknown	--	1	Died	Oiled	2-4	N	1	Blue	17
2536	Rehab Center	2042 B	Common Murre	12/23/97		Johnson Pier, El Granada	Unknown	--	1	Died	Oiled	3-4	N	1	Yellow	33
2537	Rehab Center	2043 A	Common Murre	12/04/97		SC main Beach	Unknown	--	1	Died	Oiled	2-4	N	1	Yellow	29
2538	Rehab Center	2043 B	Pacific Loon	12/07/97		Lake Nicasio	Unknown	--	1	Died	Oiled	2-3	N	1	Pink	43
2539	Rehab Center	2044 B	Western Grebe	12/11/97		Rockaway Beach, Pacifica	Unknown	--	1	Died	Oiled	2-3	N	1	Pink	30
2540	Rehab Center	2045 A	Common Murre	01/19/98		Kehoe Beach	Unknown	--	1	Died	Oiled	2-3	N	1	Red	2801
2541	Rehab Center	2045 B	Common Murre	12/08/97		Ocean Beach - Sloat Blvd.	Unknown	--	1	Died	Oiled	2-3	N	1	Green	792
2542	Rehab Center	2047 A	Common Murre	01/21/98		Salmon Creek	Unknown	--	1	Died	Oiled	2-3	N	1	Red	2825
2543	Rehab Center	2047 B	Common Murre	12/08/97		Manresa Bch. (Santa Cruz)	Unknown	--	1	Died	Oiled	2-3	N	1	Red	2009
2544	Rehab Center	2048 A	Common Murre	01/22/98		Limantour Beach	Unknown	--	1	Died	Oiled	2-4	N	1	White	2
2545	Rehab Center	2048 B	Common Murre	12/15/97		Marina State Beach, Marina	Unknown	--	1	Died	Oiled	2-3	N	1	Pink	23
2546	Rehab Center	2049 A	Red-throated Loon	01/20/98		Muir Beach	Unknown	--	1	Died	Oiled	2-4	N	1	Blue	22
2547	Rehab Center	2050 A	Common Murre	01/18/98		Unknown	Unknown	--	1	Died	Oiled	2-3	N	1	Yellow	12
2548	Rehab Center	2051 A	Common Murre	01/22/98		Fitzgerald Marine Reserve	Unknown	--	1	Died	Oiled	2-3	N	1	Green	81
2549	Rehab Center	2052 A	Common Murre	01/09/98		Drake's Beach	Unknown	--	1	Died	Oiled	U	N	1	Red	186
2550	Rehab Center		Common Murre	11/17/97		South Point Reyes Beach	Unknown	--	1	Died	Oiled	2-3	N	1	Green	85

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2551	Rehab Center		Common Murre	11/18/97		South Beach	Unknown	--	1	Died	Oiled	2-3	N	1	Green	100
2552	Rehab Center		Common Murre	11/23/97		Point Reyes Ranger Station	Unknown	--	1	Released/ Died	Oiled	2-3	N	1	Yellow	81
2553	Rehab Center		Pacific Loon	11/27/97		Point Reyes Beach	Unknown	--	1	Died	Oiled	2-4	N	1	Pink	126
2554	Rehab Center		Common Murre	12/01/97		Dunes Beach, Half Moon Bay	Unknown	--	1	Died	Oiled	3-4	N	1	Blue	95
2555	Rehab Center		Common Murre	11/26/97		Carmel Beach	Unknown	--	1	Died	Oiled	2-3	N	1	Blue	19
2556	Rehab Center		Common Murre	12/01/97		Unknown	Unknown	--	1	Died	Unknown	U	N	1		0
2557	Rehab Center		Western Grebe	11/28/97		Drake's Beach	Unknown	--	1	Died	Oiled	U	N	1	Pink	156
2558	Rehab Center		Western Grebe	11/28/97		Limantour Beach	Unknown	--	1	Died	Oiled	2-3	N	1	Pink	186
2559	Rehab Center		Western Grebe	11/28/97		Pier at Fort Baker	Unknown	--	1	Died	Oiled	2-3	N	1	Pink	148
2560	Rehab Center		Common Murre	11/28/97		(SFACCA)	Unknown	--	1	Died	Oiled	2-3	N	1		0
2561	Rehab Center		Common Murre	11/28/97		(SFACCA)	Unknown	--	1	Died	Oiled	2-3	N	1	Green	67
2562	Rehab Center		Common Murre	12/04/97		Fitzgerald Marine Reserve	Unknown	--	1	Died	Oiled	3-4	N	1	Red	161
2563	Rehab Center		Common Murre	12/04/97		Manresa	Unknown	--	1	Died	Oiled	2	N	1	Yellow	30
2564	Rehab Center		Common Murre	12/04/97		Seacliff Beach	Unknown	--	1	Died	Oiled	2	N	1	Yellow	26
2565	Rehab Center		Western Grebe	12/06/97		Half Moon Bay	Unknown	--	1	Died	Oiled	2-4	N	1		0
2566	Rehab Center		Common Murre	12/06/97		(Monterey SPCA)	Unknown	--	1	Died	Oiled	2-3	N	1	Red	167
2567	Rehab Center		Common Murre	11/19/97		Monterey	Unknown	--	1	Died	Unknown	U	N	1	Red	148
2568	Rehab Center		Common Murre	11/30/97		Del Monte Beach	Unknown	--	1	Died	Oiled	U	N	1	Red	133
2569	Rehab Center		Common Murre	12/04/97		Moss Landing State Beach	Unknown	--	U	Died	Oiled	U	N	1-2	Red	140
2570	Rehab Center		Common Murre	12/11/97		Unknown	Unknown	--	1	Died	Oiled	U	N	1	Red	21
2571	Rehab Center		Common Murre	12/13/97		Pebble Beach	Unknown	--	1	Died	Oiled	2-3	N	1	Pink	14
2572	Rehab Center		Common Murre	12/20/97		Johnson Pier, El Granada	Unknown	--	1	Died	Oiled	3-4	N	1	Yellow	97
2573	Rehab Center		Common Murre	12/24/97		Monterey Beach	Unknown	--	1	Died	Oiled	2-3	N	1	Red	13
2574	Rehab Center		Western Grebe	12/30/97		Drake's Beach	Unknown	--	1	Died	Oiled	2	N	1		0
2575	Rehab Center		Common Murre	01/10/98		Seacliff Beach, Santa Cruz	Unknown	--	1	Died	Oiled	2-3	N	1	Red	8

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2576	Rehab Center		Common Murre	01/12/98		Limantour Beach	Unknown	--	1	Died	Oiled	2-4	N	1	Yellow	77
2577	Rehab Center		Red Phalarope	02/01/98		Tomales valley Bike Trail	Unknown	--	1	Died	Oiled	2	N	1	Red	78
2578	Rehab Center		Common Murre	01/21/98		Drake's Beach West	Unknown	--	1	Died	Oiled	2-3	N	1	Red	77
2579	Rehab Center		Common Murre	01/24/98		El Granada	Unknown	--	1	Died	Oiled	2-3	N	1	Blue	8
2580	Rehab Center		Common Murre	01/25/98		Unknown	Unknown	--	1	Died	Unknown	U	N	1	Pink	90
2581	Rehab Center		Common Murre	01/25/98		Drake's Beach	Unknown	--	1	Died	Oiled	3-4	N	1	Pink	95
2582	Rehab Center		Common Murre	01/25/98		Doran Beach	Unknown	--	1	Died	Oiled	2-4	N	1	Blue	20
2583	Rehab Center		Common Murre	01/28/98		Seacliff	Unknown	--	1	Died	Oiled	2-3	N	1	Yellow	44
2584	Rehab Center		Common Murre	02/11/98		1/4 m. N of Pt. Piños	Unknown	--	1	Died	Oiled	2-3	N	1	Pink	72
2585	Rehab Center		Common Murre	02/24/98		Francis State Beach, HMB	Unknown	--	1	Died	Oiled	2-3	N	1	Green	529
2586	Rehab Center		White-winged Scoter	02/02/98		Unknown	Unknown	--	1	Died	Not Visibly Oiled	--	N	1		0
2587	Rehab Center		Common Murre	11/17/97		South Point Reyes Beach	Unknown	--	1	Released	Oiled	3-4	N	1	White	32
2588	Rehab Center		Western Grebe	11/17/97		Stinson Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	1640
2589	Rehab Center		Pacific Loon	11/18/97		South Beach (Section 3)	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	53
2590	Rehab Center		Western Grebe	11/18/97		Drake's Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	2102
2591	Rehab Center		Surf Scoter	11/18/97		South Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	2103
2592	Rehab Center		Pied-billed Grebe	11/19/97		Drake's Beach	Unknown	--	1	Released	Oiled	1-2	N	1	Yellow	29
2593	Rehab Center		Pied-billed Grebe	11/19/97		Drake's Beach	Unknown	--	1	Released	Not Visibly Oiled	--	N	1	Yellow	30
2594	Rehab Center		Common Murre	11/19/97		South Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	38
2595	Rehab Center		Common Murre	11/19/97		South Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	40
2596	Rehab Center		Western Grebe	11/20/97		Salmon Creek	Unknown	--	1	Released	Not Visibly Oiled	--	N	1	Blue	77
2597	Rehab Center		Common Murre	11/16/97		Drake's Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Blue	78
2598	Rehab Center		Common Murre	11/16/97		Drake's Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	26
2599	Rehab Center		Common Murre	11/16/97		Point Reyes Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Blue	84
2600	Rehab Center		Common Murre	11/16/97		Kehoe Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	86

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2601	Rehab Center		Common Murre	11/16/97		Drake's Estero	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	165
2602	Rehab Center		Western Grebe	11/16/97		Limantour Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	174
2603	Rehab Center		White-winged Scoter	11/16/97		Unknown	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	73
2604	Rehab Center		Common Murre	11/16/97		Abbot's Lagoon	Unknown	--	1	Released	Oiled	3-4	N	1	White	8
2605	Rehab Center		Common Murre	11/16/97		Drake's Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Yellow	3
2606	Rehab Center		Common Murre	11/16/97		Drake's Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Red	100
2607	Rehab Center		Common Murre	11/16/97		(SFACC)	Unknown	--	1	Released	Oiled	3-4	N	1	Red	91
2608	Rehab Center		Common Murre	11/16/97		(SFACC)	Unknown	--	1	Released	Oiled	2-4	N	1	Yellow	153
2609	Rehab Center		Western Grebe	11/16/97		Muir Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Pink	175
2610	Rehab Center		Clark's Grebe	11/18/97		Stinson Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Blue	916
2611	Rehab Center		Common Murre	11/18/97		Pacifica State Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Red	1759
2612	Rehab Center		Common Murre	11/17/97		Moss Landing	Unknown	--	1	Released	Oiled	U	N	1	Red	131
2613	Rehab Center		Common Murre	11/22/97		Presidio Harbr, Fort Baker	Unknown	--	1	Released	Oiled	3-4	N	1	Pink	23
2614	Rehab Center		Common Murre	11/21/97		Monterey Bay Aquarium	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	27
2615	Rehab Center		Common Murre	11/23/97		Limantour Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	4
2616	Rehab Center		Western Grebe	11/23/97		San Gregorio State Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	748
2617	Rehab Center		Western Grebe	11/23/97		San Gregorio State Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	747
2618	Rehab Center		Western Grebe	11/24/97		Crissy Field, SF	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	728
2619	Rehab Center		Common Murre	11/24/97		Richardson Bay	Unknown	--	1	Released	Oiled	2-4	N	1	White	43
2620	Rehab Center		Common Murre	11/24/97		Drake's Beach	Unknown	--	1	Released	Oiled	2	N	1	White	45
2621	Rehab Center		Common Loon	11/24/97		Unknown	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	400
2622	Rehab Center		Common Murre	11/27/97		Fort Funston	Unknown	--	1	Released	Oiled	2-4	N	1	Yellow	77
2623	Rehab Center		Northern Fulmar	11/27/97		Kehoe Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	93
2624	Rehab Center		Western Grebe	11/27/97		Stinson Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	906
2625	Rehab Center		Common Murre	11/27/97		(Santa Rosa Wldf Rescue)	Unknown	--	1	Released	Oiled	2-3	N	1	Red	79

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2626	Rehab Center		Common Murre	11/29/97		Unknown	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	95
2627	Rehab Center		Common Loon	11/27/97		Cowell Beach, S of HMB	Unknown	--	1	Released	Not Visibly Oiled	--	N	1	Blue	57
2628	Rehab Center		Common Murre	11/29/97		Pilar Point	Unknown	--	1	Released	Oiled	3-4	N	1	Blue	16
2629	Rehab Center		Common Murre	11/29/97		Half Moon Bay	Unknown	--	1	Released	Oiled	3-4	N	1	Yellow	97
2630	Rehab Center		Common Murre	11/29/97		San Gregorio State Beach	Unknown	--	1	Released	Oiled	U	N	1	Yellow	9
2631	Rehab Center		Common Murre	12/02/97		Princeton Yacht, HMB	Unknown	--	1	Released	Oiled	3-4	N	1	Red	174
2632	Rehab Center		Common Murre	12/02/97		Half Moon Bay	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	94
2633	Rehab Center		Common Murre	12/04/97		Montara State Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Green	2126
2634	Rehab Center		Common Murre	12/03/97		Unknown	Unknown	--	1	Released	Oiled	2-4	N	1	Yellow	40
2635	Rehab Center		Western Grebe	12/04/97		Fitzgerald Marine Reserve	Unknown	--	1	Released	Oiled	3-4	N	1	Blue	961
2636	Rehab Center		Common Murre	12/04/97		Harbor Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	28
2637	Rehab Center		Common Murre	12/04/97		14th Ave. Beach, SC	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	27
2638	Rehab Center		Common Murre	12/04/97		Miramontes	Unknown	--	1	Released	Oiled	U	N	1	Red	92
2639	Rehab Center		Common Murre	12/07/97		Lover's Point Area	Unknown	--	1	Released	Oiled	2-4	N	1	Red	127
2640	Rehab Center		Common Murre	12/08/97		1/4 m. S of Lover's Point	Unknown	--	1	Released	Oiled	3-4	N	1	Green	81
2641	Rehab Center		Common Murre	12/08/97		Natural Bridges	Unknown	--	1	Released	Oiled	2-4	N	1	White	43
2642	Rehab Center		Common Murre	12/09/97		Monterey Harbor Master	Unknown	--	1	Released	Oiled	2-4	N	1	Pink	5
2643	Rehab Center		Common Murre	12/10/97		Año Nuevo Island	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	97
2644	Rehab Center		Western Grebe	12/11/97		Richmond	Unknown	--	1	Released	Oiled	3-4	N	1	Yellow	740
2645	Rehab Center		Common Murre	12/16/97		Pacifica	Unknown	--	1	Released	Oiled	2-4	N	1	Pink	18
2646	Rehab Center		Common Murre	12/16/97		Pacifica	Unknown	--	1	Released	Oiled	2-4	N	1	White	8
2647	Rehab Center		Common Murre	12/13/97		Pacific Grove	Unknown	--	1	Released	Oiled	2-4	N	1	Pink	25
2648	Rehab Center		Common Murre	12/17/97		Unknown	Unknown	--	1	Released	Oiled	2-3	N	1	White	38
2649	Rehab Center		Common Murre	12/17/97		(from SC NAR)	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	62
2650	Rehab Center		Common Murre	12/20/97		San Francisco	Unknown	--	1	Released/ Re-released	Oiled	2-3	N	1	Red	159



Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2651	Rehab Center		Common Murre	12/19/97		(from SC NAR)	Unknown	--	1	Released	Oiled	U	N	1	Blue	21
2652	Rehab Center		Common Murre	12/24/97		Del Monte Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Red	136
2653	Rehab Center		Common Murre	12/24/97		Monterey Dunes	Unknown	--	1	Released	Oiled	2-4	N	1	Red	186
2654	Rehab Center		Western Grebe	12/26/97		San Francisco	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	964
2655	Rehab Center		Common Murre	12/28/97		Miramar Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	252
2656	Rehab Center		Western Grebe	12/27/97		Pescadero	Unknown	--	1	Released	Oiled	3-4	N	1	Green	62
2657	Rehab Center		Common Murre	12/26/97		San Gregorio State Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Red	152
2658	Rehab Center		Common Murre	12/27/97		Fitzgerald Marine Reserve	Unknown	--	1	Released	Oiled	2-3	N	1	Red	172
2659	Rehab Center		Common Murre	12/30/97		Stinson Beach	Unknown	--	1	Released	Oiled	2-3	N	1	White	44
2660	Rehab Center		Common Murre	12/25/97		Santa Cruz Co.	Unknown	--	1	Released	Oiled	U	N	1	White	9
2661	Rehab Center		Common Murre	12/28/97		Del Monte Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	5
2662	Rehab Center		Common Murre	12/30/97		Pt. Lobos	Unknown	--	1	Released/ Died	Oiled	2-3	N	1	Pink	15
2663	Rehab Center		Common Murre	12/25/97		Santa Cruz Co.	Unknown	--	1	Released	Oiled	U	N	1	White	10
2664	Rehab Center		Common Murre	01/05/98		Pacifica	Unknown	--	1	Released	Oiled	3-4	N	1	Blue	71
2665	Rehab Center		Common Murre	01/08/98		Año Nuevo	Unknown	--	1	Released	Oiled	2-4	N	1	Red	13
2666	Rehab Center		Common Murre	01/07/98		Año Nuevo	Unknown	--	1	Released	Oiled	2-4	N	1	Red	3200
2667	Rehab Center		Common Murre	01/07/98		ITS Beach, S. Cruz	Unknown	--	1	Released	Oiled	2-4	N	1	Red	72
2668	Rehab Center		Common Murre	12/23/97		Lover's Point	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	17
2669	Rehab Center		Common Murre	01/12/98		Pacifica	Unknown	--	1	Released	Oiled	2-4	N	1	Pink	20
2670	Rehab Center		Common Murre	01/14/98		Princeton Yacht, HMB	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	196
2671	Rehab Center		Common Murre	01/18/98		Unknown	Unknown	--	1	Released	Oiled	3-4	N	1	Red	89
2672	Rehab Center		Common Murre	01/18/98		Unknown	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	94
2673	Rehab Center		Common Murre	01/18/98		Unknown	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	11
2674	Rehab Center		Common Murre	01/18/98		Unknown	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3205
2675	Rehab Center		Common Murre	01/17/98		S End of Rodeo Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2676	Rehab Center		Common Murre	01/18/98		Point Reyes Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Yellow	84
2677	Rehab Center		Common Murre	01/18/98		Point Reyes Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	16
2678	Rehab Center		Common Murre	01/17/98		Limantour Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	100
2679	Rehab Center		Common Murre	01/17/98		Kehoe Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	51
2680	Rehab Center		Common Murre	01/17/98		South Beach	Unknown	--	1	Released	Oiled	2-4	N	1	White	41
2681	Rehab Center		Common Murre	01/18/98		Unknown	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	23
2682	Rehab Center		Western Grebe	01/15/98		Unknown	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	953
2683	Rehab Center		Common Murre	01/18/98		Point Reyes Beach	Unknown	--	1	Released	Oiled	3-4	N	1	White	28
2684	Rehab Center		Common Murre	01/15/98		South Beach	Unknown	--	1	Released	Oiled	2-3	N	1	White	36
2685	Rehab Center		Common Murre	01/17/98		South Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Blue	88
2686	Rehab Center		Common Murre	01/16/98		Salmon Creek	Unknown	--	1	Released	Oiled	3-4	N	1	Red	76
2687	Rehab Center		Common Murre	01/17/98		Dillon	Unknown	--	1	Released	Oiled	2-3	N	1	Green	10
2688	Rehab Center		Common Murre	01/18/98		Limantour Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	54
2689	Rehab Center		Common Murre	01/18/98		Limantour Beach	Unknown	--	1	Released/ Re-released	Oiled	2-3	N	1	Red	2700
2690	Rehab Center		Common Murre	01/18/98		Drake's East	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	30
2691	Rehab Center		Common Murre	01/18/98		Drake's East	Unknown	--	1	Released	Oiled	3-4	N	1	Green	60
2692	Rehab Center		Common Murre	01/18/98		Drake's East	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	93
2693	Rehab Center		Common Murre	01/18/98		Drake's East	Unknown	--	1	Released	Oiled	3-4	N	1	Yellow	62
2694	Rehab Center		Common Murre	01/18/98		Drake's East	Unknown	--	1	Released	Oiled	2-3	N	1	Green	618
2695	Rehab Center		Common Murre	01/18/98		Fitzgerald Marine Reserve	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	17
2696	Rehab Center		Common Murre	01/18/98		Fitzgerald Marine Reserve	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	264
2697	Rehab Center		Common Murre	01/18/98		Fitzgerald Marine Reserve	Unknown	--	1	Released	Oiled	2-3	N	1	Green	17
2698	Rehab Center		Common Murre	01/17/98		Beach in Half Moon Bay	Unknown	--	1	Released	Oiled	3-4	N	1	Yellow	38
2699	Rehab Center		Common Murre	01/17/98		Pilar Point	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	9
2700	Rehab Center		Common Murre	01/19/98		Kehoe Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Red	2803

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2701	Rehab Center		Common Murre	01/19/98		Kehoe Beach	Unknown	--	1	Released/ Died	Oiled	2-3	N	1	Red	2804
2702	Rehab Center		Common Murre	01/19/98		Limantour Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Red	2805
2703	Rehab Center		Common Murre	01/19/98		Limantour Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Red	2807
2704	Rehab Center		Common Murre	01/19/98		North Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	93
2705	Rehab Center		Common Murre	01/19/98		Pacifica	Unknown	--	1	Released	Oiled	2-3	N	1	Green	1235
2706	Rehab Center		Common Murre	01/19/98		Drake's Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Blue	77
2707	Rehab Center		Common Murre	01/20/98		Kehoe Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Red	2809
2708	Rehab Center		Common Murre	01/20/98		Bolinas Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Red	2810
2709	Rehab Center		Common Murre	01/20/98		Bolinas Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Red	2811
2710	Rehab Center		Common Murre	01/20/98		Bolinas Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Red	2812
2711	Rehab Center		Common Murre	01/20/98		South Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	59
2712	Rehab Center		Common Murre	01/20/98		South Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Red	2814
2713	Rehab Center		Common Murre	01/20/98		Drake's Beach West	Unknown	--	1	Released	Oiled	2-3	N	1	Red	2816
2714	Rehab Center		Common Murre	01/20/98		Unknown	Unknown	--	1	Released	Oiled	2-3	N	1	Red	2820
2715	Rehab Center		Common Murre	01/20/98		Unknown	Unknown	--	1	Released	Oiled	3-4	N	1	Red	2822
2716	Rehab Center		Common Murre	01/20/98		Kehoe Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Red	2823
2717	Rehab Center		Common Murre	01/20/98		Kehoe Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Red	2824
2718	Rehab Center		Common Murre	01/19/98		Francis Beach - HMB	Unknown	--	1	Released	Oiled	3-4	N	1	Yellow	81
2719	Rehab Center		Common Murre	01/20/98		Maverick's Beach - HMB	Unknown	--	1	Released	Oiled	2-4	N	1	Blue	82
2720	Rehab Center		Common Murre	01/20/98		Maverick's Beach - HMB	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3210
2721	Rehab Center		Common Murre	01/21/98		Limantour West	Unknown	--	1	Released	Oiled	2-3	N	1	Red	3227
2722	Rehab Center		Common Murre	01/21/98		Limantour West	Unknown	--	1	Released	Oiled	2-3	N	1	Red	3228
2723	Rehab Center		Common Murre	01/21/98		Limantour West	Unknown	--	1	Released	Oiled	3-4	N	1	Blue	64
2724	Rehab Center		Western Grebe	01/21/98		Mill Valley	Unknown	--	1	Released	Oiled	3-4	N	1	Blue	971
2725	Rehab Center		Common Murre	01/21/98		Pilar Point	Unknown	--	1	Released	Oiled	2-3	N	1	White	27

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2726	Rehab Center		Common Murre	01/22/98		Linda Mar Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	91
2727	Rehab Center		Common Murre	01/22/98		South Beach	Unknown	--	1	Released	Oiled	3-4	N	1	White	3
2728	Rehab Center		Common Murre	01/22/98		Miramontes Rd. - HMB	Unknown	--	1	Released	Oiled	3-4	N	1	Green	77
2729	Rehab Center		Common Murre	01/22/98		Montara State Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Green	78
2730	Rehab Center		Common Murre	01/22/98		Pomponio State Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	79
2731	Rehab Center		Common Murre	01/23/98		North Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	48
2732	Rehab Center		Common Murre	01/23/98		South Beach	Unknown	--	1	Released/ Re-released	Oiled	2-3	N	1	White	9
2733	Rehab Center		Common Murre	01/23/98		South Beach	Unknown	--	1	Released	Oiled	2-4	N	1	White	11
2734	Rehab Center		Common Murre	01/23/98		North Beach	Unknown	--	1	Released	Oiled	2-3	N	1	White	12
2735	Rehab Center		Common Murre	01/23/98		Unknown	Unknown	--	1	Released	Oiled	2-3	N	1	White	14
2736	Rehab Center		Common Murre	01/23/98		South Beach	Unknown	--	1	Released	Oiled	2-4	N	1	White	17
2737	Rehab Center		Common Murre	01/23/98		Bodega Head	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	76
2738	Rehab Center		Common Murre	01/24/98		Salmon Creek	Unknown	--	1	Released	Oiled	3-4	N	1	Pink	81
2739	Rehab Center		Common Murre	01/24/98		Drake's Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Green	87
2740	Rehab Center		Common Murre	01/24/98		Drake's Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	83
2741	Rehab Center		Common Murre	01/24/98		McClure's Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Green	95
2742	Rehab Center		Common Murre	01/24/98		Drake's Beach West	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	84
2743	Rehab Center		Common Murre	01/24/98		Drake's Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Green	100
2744	Rehab Center		Common Murre	01/24/98		Drake's Beach West	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	85
2745	Rehab Center		Common Murre	01/24/98		Drake's Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Green	93
2746	Rehab Center		Common Murre	01/24/98		Limantour Beach	Unknown	--	1	Released/ Died	Oiled	3-4	N	1	Green	94
2747	Rehab Center		Common Murre	01/24/98		Unknown	Unknown	--	1	Released	Oiled	3-4	N	1	Green	88
2748	Rehab Center		Common Murre	01/24/98		Unknown	Unknown	--	1	Released	Oiled	3-4	N	1	Green	91
2749	Rehab Center		Common Murre	01/24/98		Doran Park - Bodega Bay	Unknown	--	1	Released	Oiled	2-4	N	1	Blue	2
2750	Rehab Center		Common Murre	01/24/98		Doran Park - Bodega Bay	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	15

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2751	Rehab Center		Common Murre	01/24/98		Doran Park - Bodega Bay	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	7
2752	Rehab Center		Common Murre	01/25/98		Pacifica	Unknown	--	1	Released	Oiled	2-4	N	1	Pink	79
2753	Rehab Center		Common Murre	01/24/98		El Granada	Unknown	--	1	Released	Oiled	3-4	N	1	Blue	23
2754	Rehab Center		Common Murre	01/25/98		El Granada	Unknown	--	1	Released	Oiled	2-4	N	1	Pink	77
2755	Rehab Center		Common Murre	01/24/98		El Granada	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	13
2756	Rehab Center		Common Murre	01/24/98		San Gregorio	Unknown	--	1	Released	Oiled	2-3	N	1	Red	160
2757	Rehab Center		Common Murre	01/25/98		McClure's Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Pink	91
2758	Rehab Center		Common Murre	01/25/98		Drake's Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Yellow	43
2759	Rehab Center		Common Murre	01/25/98		South Beach	Unknown	--	1	Released	Oiled	2-3	N	1	White	32
2760	Rehab Center		Common Murre	01/25/98		North Beach	Unknown	--	1	Released	Oiled	2-3	N	1	White	45
2761	Rehab Center		Common Murre	01/25/98		North Beach	Unknown	--	1	Released	Oiled	3-4	N	1	White	38
2762	Rehab Center		Common Murre	01/25/98		Fitzgerald Marine Reserve	Unknown	--	1	Released	Oiled	2-3	N	1	White	37
2763	Rehab Center		Common Murre	01/25/98		Drake's Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Yellow	78
2764	Rehab Center		Common Murre	01/25/98		Fitzgerald Marine Reserve	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	19
2765	Rehab Center		Common Murre	01/26/98		Drake's Bay	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	98
2766	Rehab Center		Common Murre	01/27/98		Linda Mar Blvd. - Pacifica	Unknown	--	1	Released	Oiled	2-3	N	1	Red	166
2767	Rehab Center		Common Murre	01/27/98		South Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	40
2768	Rehab Center		Common Murre	01/27/98		Limantour Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	41
2769	Rehab Center		Common Murre	01/27/98		Moss Landing State Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	44
2770	Rehab Center		Common Murre	01/21/98		Asilomar State Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	1
2771	Rehab Center		Common Murre	01/26/98		N. End Carmel River Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	28
2772	Rehab Center		Common Murre	01/16/98		ITS Beach	Unknown	--	1	Released	Oiled	U	N	1	Yellow	47
2773	Rehab Center		Pacific Loon	01/17/98		Del Monte Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	30
2774	Rehab Center		Common Murre	01/17/98		Monterey Bay Aquarium	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	3
2775	Rehab Center		Common Murre	01/17/98		Cypress Point Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	8

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2776	Rehab Center		Common Murre	01/25/98		Año Nuevo Island	Unknown	--	1	Released	Oiled	U	N	1	Red	2602
2777	Rehab Center		Common Murre	01/25/98		Pajaro Dunes Beach	Unknown	--	1	Released	Oiled	U	N	1	Red	2015
2778	Rehab Center		Common Murre	01/25/98		Rio del Mar	Unknown	--	1	Released	Oiled	U	N	1	Red	2019
2779	Rehab Center		Common Murre	01/25/98		2 m. N of Santa Cruz	Unknown	--	1	Released	Oiled	U	N	1	Red	2014
2780	Rehab Center		Common Murre	01/24/98		Unknown	Unknown	--	1	Released	Oiled	U	N	1	Red	18
2781	Rehab Center		Common Murre	01/29/98		North Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	50
2782	Rehab Center		Common Murre	01/25/98		Point Reyes Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	80
2783	Rehab Center		Common Murre	01/29/98		Bonny Doon Beach	Unknown	--	1	Released	Oiled	2	N	1	Green	602
2784	Rehab Center		Common Murre	01/31/98		Half Moon Bay - Mavericks	Unknown	--	1	Released	Oiled	2	N	1	Green	605
2785	Rehab Center		Common Murre	02/01/98		Pilar Point - under radar site	Unknown	--	1	Released	Oiled	2-3	N	1	Green	611
2786	Rehab Center		Common Murre	02/01/98		Pacific Grove, S of Lovers Point	Unknown	--	1	Released	Oiled	2-3	N	1	Green	613
2787	Rehab Center		Red Phalarope	02/01/98		La Selva Beach	Unknown	--	1	Released	Oiled	1-2	N	1	Tape	259
2788	Rehab Center		Common Murre	02/02/98		Santa Cruz Pier Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3126
2789	Rehab Center		Common Murre	02/02/98		Santa Cruz Pier Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3127
2790	Rehab Center		Common Murre	01/30/98		Salmon Creek	Unknown	--	1	Released	Oiled	2-3	N	1	Red	87
2791	Rehab Center		Common Murre	01/31/98		between Abbot's and Kehoe	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3005
2792	Rehab Center		Common Murre	02/02/98		Corcoran Lagoon, Santa	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3129
2793	Rehab Center		Common Murre	02/02/98		Pacific Grove	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3131
2794	Rehab Center		Common Murre	02/02/98		Pacific Grove	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3132
2795	Rehab Center		Common Murre	02/02/98		Pacific Grove	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3133
2796	Rehab Center		Common Murre	02/02/98		Pacific Grove	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3134
2797	Rehab Center		Common Murre	02/02/98		Pacific Grove	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3135
2798	Rehab Center		Heermann's Gull	02/02/98		Pacific Grove	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3137
2799	Rehab Center		Heermann's Gull	02/02/98		Pacific Grove	Unknown	--	1	Released	Oiled	2-4	N	1	Green	3138
2800	Rehab Center		Heermann's Gull	02/02/98		Pacific Grove	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3140

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2801	Rehab Center		Common Murre	02/02/98		Seacliff Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3141
2802	Rehab Center		Common Murre	02/02/98		Main SC pier	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3142
2803	Rehab Center		Common Murre	02/02/98		La Selva Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3147
2804	Rehab Center		Common Murre	02/02/98		Rodeo Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Green	3148
2805	Rehab Center		Common Murre	02/02/98		Limantour Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3149
2806	Rehab Center		Common Murre	02/02/98		Limantour Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3006
2807	Rehab Center		Common Murre	02/02/98		Limantour Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Green	3007
2808	Rehab Center		Common Murre	02/02/98		Limantour Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Green	3008
2809	Rehab Center		Common Murre	02/01/98		Montara State Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Green	3002
2810	Rehab Center		Common Murre	02/01/98		Johnson Pier, El Granada	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3003
2811	Rehab Center		Common Murre	02/01/98		Linda Mar Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Green	3004
2812	Rehab Center		Red Phalarope	02/02/98		30th St. Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Tape	298
2813	Rehab Center		Red Phalarope	02/03/98		Cowell's Beach	Unknown	--	1	Released	Oiled	2	N	1	Tape	299
2814	Rehab Center		Red Phalarope	02/03/98		S.C. Main Beach	Unknown	--	1	Released	Oiled	2	N	1	Tape	300
2815	Rehab Center		Common Murre	02/02/98		Limantour Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Green	3010
2816	Rehab Center		Common Murre	02/02/98		Brighton Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3012
2817	Rehab Center		Common Murre	02/02/98		Limantour Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Green	3013
2818	Rehab Center		Common Murre	02/01/98		Unknown	Unknown	--	1	Released	Oiled	2-3	N	1	Green	3014
2819	Rehab Center		Common Murre	02/02/98		Limantour Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Green	3015
2820	Rehab Center		Common Murre	02/02/98		Limantour Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Green	3016
2821	Rehab Center		Common Murre	02/01/98		Doran Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Green	3017
2822	Rehab Center		Common Murre	02/01/98		Limantour Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Green	3018
2823	Rehab Center		Common Murre	02/03/98		Asilomar State Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Green	3022
2824	Rehab Center		Common Murre	02/02/98		Doran Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Red	2584
2825	Rehab Center		Common Murre	02/02/98		Doran Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Red	2585

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2826	Rehab Center		Common Murre	02/01/98		Beach @ Birch, Pacifica	Unknown	--	1	Released	Oiled	2-3	N	1	Red	2588
2827	Rehab Center		Common Murre	02/02/98		Doran Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Red	2577
2828	Rehab Center		Common Murre	02/03/98		Sonoma County	Unknown	--	1	Released	Oiled	2-4	N	1	Red	620
2829	Rehab Center		Heermann's Gull	02/03/98		Natural Bridges Beach	Unknown	--	1	Released	Oiled	2	N	1	Red	2600
2830	Rehab Center		Common Murre	02/02/98		Doran Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Red	2576
2831	Rehab Center		Common Murre	02/03/98		Doran Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Red	2579
2832	Rehab Center		Common Murre	02/03/98		Doran Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Red	2583
2833	Rehab Center		Common Murre	02/03/98		Sonoma County	Unknown	--	1	Released	Oiled	2-3	N	1	Green	622
2834	Rehab Center		Common Murre	02/02/98		Doran Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	619
2835	Rehab Center		Common Murre	02/04/98		Seacliff	Unknown	--	1	Released	Oiled	2-3	N	1	Green	623
2836	Rehab Center		Common Murre	02/04/98		Monterey	Unknown	--	1	Released	Oiled	2-3	N	1	Red	2597
2837	Rehab Center		Common Murre	02/04/98		Pilar Point	Unknown	--	1	Released	Oiled	2-3	N	1	Red	2598
2838	Rehab Center		Common Murre	02/04/98		Pacifica	Unknown	--	1	Released	Oiled	3-4	N	1	Green	624
2839	Rehab Center		Common Murre	02/04/98		Montara State Beach	Unknown	--	1	Released	Oiled	4	N	1	Red	2599
2840	Rehab Center		Heermann's Gull	02/04/98		Pilar Point	Unknown	--	1	Released	Oiled	2-3	N	1	Green	625
2841	Rehab Center		Common Murre	02/03/98		Doran Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	25
2842	Rehab Center		Common Murre	02/04/98		Doran Beach N.	Unknown	--	1	Released	Oiled	2-3	N	1	Green	704
2843	Rehab Center		Common Murre	02/03/98		Doran Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	725
2844	Rehab Center		Common Murre	02/04/98		Doran Beach N.	Unknown	--	1	Released	Oiled	2-3	N	1	Green	706
2845	Rehab Center		Common Murre	02/03/98		Unknown	Unknown	--	1	Released	Oiled	2-3	N	1	Green	707
2846	Rehab Center		Common Murre	02/03/98		Bolinas Beach	Unknown	--	1	Released	Oiled	2	N	1	Green	708
2847	Rehab Center		Common Murre	02/04/98		Stinson Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	703
2848	Rehab Center		Common Murre	02/03/98		Doran Beach	Unknown	--	1	Released/ Re-released	Oiled	2-3	N	1	Green	709
2849	Rehab Center		Common Murre	02/04/98		Doran Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	710
2850	Rehab Center		Common Murre	02/03/98		Doran Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Green	711



Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2851	Rehab Center		Common Murre	02/04/98		Doran Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	712
2852	Rehab Center		Common Murre	02/04/98		Doran Beach	Unknown	--	1	Released	Oiled	2	N	1	Green	714
2853	Rehab Center		Common Murre	02/03/98		(Santa Rosa Wldf Rescue)	Unknown	--	1	Released	Oiled	2-3	N	1	Green	718
2854	Rehab Center		Common Murre	02/03/98		Doran Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Green	720
2855	Rehab Center		Common Murre	02/04/98		Doran Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Green	721
2856	Rehab Center		Common Murre	02/03/98		Doran Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Green	723
2857	Rehab Center		Common Murre	02/04/98		Kelly State Beach - HMB	Unknown	--	1	Released	Oiled	2-3	N	1	Green	724
2858	Rehab Center		Heermann's Gull	02/05/98		Wedell Creek	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	54
2859	Rehab Center		Common Murre	02/03/98		Pacifica - Kent Street	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	5
2860	Rehab Center		Common Murre	02/03/98		Pacifica - beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	6
2861	Rehab Center		Common Murre	02/04/98		Pacifica	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	9
2862	Rehab Center		Common Murre	02/04/98		South Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	13
2863	Rehab Center		Common Murre	02/04/98		Muir Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	14
2864	Rehab Center		Common Murre	02/04/98		Drake's Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	17
2865	Rehab Center		Common Murre	02/04/98		Monterey	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	19
2866	Rehab Center		Common Murre	02/04/98		Agate Beach - Bolinas	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	23
2867	Rehab Center		Common Murre	02/04/98		(SFACC)	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	24
2868	Rehab Center		Common Murre	02/04/98		South Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	951
2869	Rehab Center		Common Murre	02/04/98		Doran Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	25
2870	Rehab Center		Common Murre	02/04/98		North Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	954
2871	Rehab Center		Common Murre	02/04/98		Limantour Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	955
2872	Rehab Center		Common Murre	02/04/98		Muir Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	957
2873	Rehab Center		Common Murre	02/04/98		Stinson Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	958
2874	Rehab Center		Common Murre	02/06/98		SC Harbor Boat Launch	Unknown	--	1	Released	Oiled	2-3	N	1	Green	960
2875	Rehab Center		Common Murre	02/05/98		Agate Beach - Bolinas	Unknown	--	1	Released	Oiled	3-4	N	1	Red	684

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2876	Rehab Center		Common Murre	02/05/98		Bolinas Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	2934
2877	Rehab Center		Common Murre	02/06/98		Unknown	Unknown	--	1	Released	Oiled	3-4	N	1	Green	975
2878	Rehab Center		Pacific Loon	02/05/98		Stinson Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Blue	1
2879	Rehab Center		Common Murre	02/05/98		Agate Beach - Bolinas	Unknown	--	1	Released	Oiled	2-4	N	1	Green	2932
2880	Rehab Center		Common Murre	02/05/98		Drake's Beach	Unknown	--	1	Released	Oiled	2-3	N	1	White	57
2881	Rehab Center		Common Murre	02/05/98		Drake's Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	2929
2882	Rehab Center		Common Murre	02/05/98		Drake's Beach	Unknown	--	1	Released	Oiled	2-3	N	1	White	55
2883	Rehab Center		Common Murre	02/05/98		Drake's Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Green	2928
2884	Rehab Center		Common Murre	02/05/98		Drake's Beach	Unknown	--	1	Released	Oiled	2-3	N	1	White	54
2885	Rehab Center		Common Murre	02/05/98		Drake's Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Red	679
2886	Rehab Center		Common Murre	02/05/98		Drake's Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Green	2931
2887	Rehab Center		Common Murre	02/05/98		North Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Red	678
2888	Rehab Center		Common Murre	02/05/98		Drake's Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Red	682
2889	Rehab Center		Common Murre	02/05/98		Drake's Beach	Unknown	--	1	Released	Oiled	3-4	N	1	White	56
2890	Rehab Center		Common Murre	02/05/98		Drake's Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	2930
2891	Rehab Center		Heermann's Gull	02/07/98		Pacific Grove	Unknown	--	1	Released	Oiled	2-3	N	1	Green	964
2892	Rehab Center		Heermann's Gull	02/07/98		Pacific Grove	Unknown	--	1	Released	Oiled	2-3	N	1	Green	965
2893	Rehab Center		Common Murre	02/06/98		Bolinas	Unknown	--	1	Released	Oiled	2-3	N	1	Green	2935
2894	Rehab Center		Common Murre	02/05/98		Ocean Beach, SF	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	43
2895	Rehab Center		Common Murre	02/07/98		Pilar Point	Unknown	--	1	Released	Oiled	2-3	N	1	Green	970
2896	Rehab Center		Western Grebe	02/07/98		Pilar Point	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	2305
2897	Rehab Center		Heermann's Gull	02/07/98		Scotts Creek	Unknown	--	1	Released	Oiled	2-4	N	1	Green	973
2898	Rehab Center		Common Murre	02/06/98		Princeton Ave El Granada	Unknown	--	1	Released	Oiled	2-3	N	1	Green	974
2899	Rehab Center		Common Murre	02/07/98		Bolinas	Unknown	--	1	Released/ Re-released	Oiled	2-4	N	1	Green	1946
2900	Rehab Center		Common Murre	02/07/98		Doran Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	626

Bird No.	Data Source	Carcass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2901	Rehab Center		Common Murre	02/07/98		Salmon Creek	Unknown	--	1	Released	Oiled	2-3	N	1	Green	630
2902	Rehab Center		Brown Pelican	02/08/98		Monterey - Wharf II ramp	Unknown	--	1	Released	Oiled	3-4	N	1	Yellow	71
2903	Rehab Center		Common Murre	02/08/98		Doran Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Green	2939
2904	Rehab Center		Common Murre	02/08/98		Doran Beach	Unknown	--	1	Released/ Re-released	Oiled	2-4	N	1	Red	694
2905	Rehab Center		Common Murre	02/09/98		Great Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	639
2906	Rehab Center		Common Murre	02/09/98		McClure's Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	640
2907	Rehab Center		Common Murre	02/10/98		Santa Cruz Pier	Unknown	--	1	Released	Oiled	2-3	N	1	Green	642
2908	Rehab Center		Common Murre	02/08/98		Doran Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	644
2909	Rehab Center		Common Murre	02/09/98		Pacific Grove	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	12
2910	Rehab Center		Western Grebe	02/10/98		Unknown	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	2308
2911	Rehab Center		Western Grebe	02/11/98		Pilar Point	Unknown	--	1	Released	Oiled	2	N	1	Blue	2310
2912	Rehab Center		Western Grebe	02/10/98		Pilar Point Breakwater	Unknown	--	1	Released	Oiled	3-4	N	1	Blue	2312
2913	Rehab Center		Heermann's Gull	02/12/98		Sharp Park	Unknown	--	1	Released	Oiled	2-3	N	1	Green	2653
2914	Rehab Center		Clark's Grebe	02/11/98		Drake's Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	167
2915	Rehab Center		Brown Pelican	02/12/98		Drake's Beach	Unknown	--	1	Released	Oiled	2	N	1	Red	82
2916	Rehab Center		Western Grebe	02/13/98		Great Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	2314
2917	Rehab Center		Common Murre	02/15/98		Bonny Doon Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	2656
2918	Rehab Center		Common Murre	02/16/98		Half Moon Bay Beach	Unknown	--	1	Released	Oiled	3-4	N	1	Green	2660
2919	Rehab Center		Common Murre	02/15/98		Cannery Row	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	73
2920	Rehab Center		Brown Pelican	02/17/98		Monterey Bay	Unknown	--	1	Released	Oiled	2-4	N	1	White	155
2921	Rehab Center		Brown Pelican	02/17/98		Monterey Harbor	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	26
2922	Rehab Center		Common Murre	02/17/98		Monterey Harbor	Unknown	--	1	Released	Oiled	2-3	N	1	Green	2664
2923	Rehab Center		Common Murre	02/17/98		Limantour Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Green	2669
2924	Rehab Center		Brown Pelican	02/18/98		Monterey Harbor	Unknown	--	1	Released	Oiled	2-4	N	1	Red	73
2925	Rehab Center		Brown Pelican	02/18/98		Monterey Harbor	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	151

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2926	Rehab Center		Common Murre	02/19/98		Monterey Harbor	Unknown	--	1	Released	Oiled	2	N	1	Green	2662
2927	Rehab Center		Common Murre	02/20/98		Monterey -near Hopkins Lab	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	64
2928	Rehab Center		Common Murre	02/20/98		Davenport Beach	Unknown	--	1	Released/ Re-released	Oiled	2-4	N	1	Yellow	73
2929	Rehab Center		Brown Pelican	02/20/98		Monterey Beach	Unknown	--	1	Released	Oiled	2	N	1	Blue	13
2930	Rehab Center		Common Murre	02/20/98		Monterey Bay	Unknown	--	1	Released	Oiled	2-3	N	1	Green	2675
2931	Rehab Center		Common Murre	02/23/98		Pacifica	Unknown	--	1	Released	Oiled	2-3	N	1	White	44
2932	Rehab Center		Common Murre	02/23/98		Pacifica	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	54
2933	Rehab Center		Common Murre	02/22/98		Half Moon Bay	Unknown	--	1	Released	Oiled	2-3	N	1	Green	545
2934	Rehab Center		Common Murre	02/19/98		Half Moon Bay	Unknown	--	1	Released	Oiled	2-4	N	1	Red	75
2935	Rehab Center		Common Murre	02/20/98		Pilar Point harbormaster	Unknown	--	1	Released	Oiled	2-4	N	1	Green	549
2936	Rehab Center		Common Murre	02/21/98		Half Moon Bay Beach	Unknown	--	1	Released	Oiled	2-4	N	1	Green	530
2937	Rehab Center		Common Murre	02/25/98		San Gregorio Beach	Unknown	--	1	Released	Oiled	2-3	N	1	White	101
2938	Rehab Center		Common Murre	02/23/98		Half Moon Bay	Unknown	--	1	Released	Oiled	2-3	N	1	White	102
2939	Rehab Center		Common Murre	02/22/98		Año Nuevo	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	65
2940	Rehab Center		Common Murre	02/24/98		Francis Beach - HMB	Unknown	--	1	Released	Oiled	2-3	N	1	Green	531
2941	Rehab Center		Common Murre	02/23/98		Stinson Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	89
2942	Rehab Center		Common Murre	02/27/98		Del Monte Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Red	101
2943	Rehab Center		Brown Pelican	02/26/98		Del Monte Beach	Unknown	--	1	Released	Oiled	2	N	1	Yellow	51
2944	Rehab Center		Common Murre	02/27/98		Pacific Grove	Unknown	--	1	Released	Oiled	2-3	N	1	White	103
2945	Rehab Center		Common Murre	02/27/98		Monterey Harbor	Unknown	--	1	Released	Oiled	2-3	N	1	White	106
2946	Rehab Center		Common Murre	02/25/98		Unknown	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	54
2947	Rehab Center		Common Murre	02/25/98		Point Piños - Pacific Grove	Unknown	--	1	Released	Oiled	2-3	N	1	Pink	51
2948	Rehab Center		Common Murre	02/26/98		Del Monte Beach	Unknown	--	1	Released	Oiled	2	N	1	White	39
2949	Rehab Center		Common Murre	02/26/98		Big Basin St. Park Beach	Unknown	--	1	Released	Oiled	2-3	N	1	Yellow	67
2950	Rehab Center		Western Grebe	02/24/98		Monterey near Wharf II	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	47

Bird No.	Data Source	Car-cass	Species	Date Coll.	Collector	Original Location	Beach Watch Beach Segment	Segment No.	Found Status	Fate	Oiling Status	Oiling Extent	Scav.	Decomp.	Band Color	Band Number
2951	Rehab Center		Common Murre	01/22/98		Unknown	Unknown	--	1	Released	Oiled	U	N	1	White	5
2952	Rehab Center		Common Murre	01/22/98		Manresa Beach	Unknown	--	1	Unknown	Oiled	U	N	1	Red	2017
2953	Rehab Center		Common Murre	01/23/98		Pilar Point Harbor	Unknown	--	1	Unknown	Oiled	2-4	N	1	Red	154
2954	Rehab Center		Common Murre	01/21/98		Linda Mar Beach	Unknown	--	1	Unknown	Oiled	2-3	N	1	White	26
2955	Rehab Center		Common Murre	01/22/98		Unknown	Unknown	--	1	Released	Oiled	2-3	N	1	Blue	22
2956	Rehab Center		Common Murre	02/07/98		Unknown	Unknown	--	1	Released	Unknown	U	N	1	Green	966
2957	Rehab Center		Black-legged Kittiwake	03/01/98		El Granada	Unknown	--	1	Released	Oiled	2	N	1	White	185
2958	Rehab Center		Common Murre	03/06/98		Monterey	Unknown	--	1	Released	Oiled	2	N	1	White	193
2959	Rehab Center		Common Murre	03/07/98		Del Monte Beach	Unknown	--	1	Released	Oiled	2	N	1	White	187



**Appendix D.** Summary of regions, found status, and time period for 2,959 birds recovered during the Point Reyes Tarball Incidents (1 November 1997 to 6 March 1998). Found status coded: D, dead; L, live; U, unknown. See Appendix C for further details.

Recovery Area	1-15 Nov.			16-30 Nov.			1-31 Dec.			1-31 Jan.			1-28 Feb.			1-6 Mar.			Unknown			Total		
	D	L	U	D	L	U	D	L	U	D	L	U	D	L	U	D	L	U	D	L	U	D	L	U
Region 1	24	0	0	135	51	0	161	0	0	256	73	1	215	72	7	0	0	0	67	5	1	858	201	9
Region 2	13	0	0	184	55	1	58	6	0	215	69	1	72	64	2	0	0	0	68	4	0	610	198	4
Region 3	25	0	0	17	12	0	4	18	0	28	31	0	51	27	1	0	0	0	14	0	0	139	88	1
Region 4	18	0	0	3	17	3	34	20	0	38	34	0	16	33	0	0	1	0	8	0	0	117	105	3
Region 5	11	0	0	5	0	0	9	5	0	28	12	0	4	15	0	0	0	0	1	1	0	58	33	0
Region 6	1	0	0	0	0	0	5	0	0	2	0	0	0	0	0	0	0	0	0	0	0	8	0	0
Region 7	20	0	0	0	0	0	23	0	0	12	0	0	0	0	0	0	0	0	4	0	0	59	0	0
Region 8	0	0	0	0	7	1	1	14	1	4	22	0	13	48	3	0	3	0	3	0	0	21	94	5
Region 9	0	0	0	0	11	0	0	17	0	0	14	0	13	70	0	0	6	0	6	1	0	19	119	0
North of Region 1 <sup>1</sup>	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	1	0	0	3	1	0
San Francisco Bay <sup>2</sup>	0	0	0	0	5	0	1	2	0	0	2	0	0	2	0	0	0	0	0	1	0	1	12	0
Southeast Farallon Island	0	0	0	2	0	0	0	0	0	0	0	0	0	2	1	0	0	0	2	0	0	4	2	1
Inland <sup>3</sup>	0	0	0	0	1	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	4	0
Unknown	0	0	0	0	16	0	0	12	1	11	22	0	9	30	2	0	0	0	40	29	2	68	109	5
Total	112	0	0	354	175	5	296	95	2	596	279	2	393	366	1	0	1	0	214	41	3	1,965	966	28

<sup>1</sup>Includes coast between South Salmon Creek Beach and the mouth of the Russian River.

<sup>2</sup>Includes areas east of the Golden Gate Bridge.

<sup>3</sup>Includes areas within 10 miles (40 km) of the coast.





**Appendix E.** Summary of Brown Pelicans recovered during the Point Reyes Tarball Incidents (see Appendix C for definitions and further details).

Bird No.	Date Coll.	Original Location	Found Status	Fate <sup>1</sup>	Oiling Status	Oiling Extent	Scav.	Decomp.
454	Unknown	Unknown	1	Dead <sup>2</sup> 2/11/98	Other <sup>3</sup>	--	N	1
919	Unknown	Unknown	1	Dead <sup>2</sup> 2/9/98	Other <sup>3</sup>	--	N	1
1572	02/06/98	South Salmon Creek Bch	2	Dead	Oiled	2	Y	2S
1770	11/20/97	Drakes Beach E	2	Dead	Unknown	U	U	U
1779	11/22/97	Point Reyes Beach D	2	Dead	Unknown	U	Y	3
1876	12/06/97	Drakes Beach E	2	Dead	Not Visibly Oiled	--	Y	3
1888	12/08/97	Point Reyes Beach B	2	Dead	Not Visibly Oiled	--	Y	3
2060	12/20/97	Point Reyes Beach D	2	Dead	Not Visibly Oiled	--	Y	3
2067	12/20/97	Point Reyes Beach D	2	Dead	Not Visibly Oiled	--	Y	2
2251	01/08/98	Point Reyes Beach A	2	Dead	Not Visibly Oiled	--	Y	3
2330	01/19/98	Ocean Beach N	2	Dead	Not Visibly Oiled	--	Y	4
2414	02/15/98	Point Reyes Beach B	2	Dead	Not Visibly Oiled	--	Y	3
2478	02/23/98	Limantour Beach W	2	Dead	Not Visibly Oiled	--	Y	2
2902	02/08/98	Monterey Wharf	1	Released 3/10/98	Oiled	3-4	N	1
2915	02/12/98	Drake's Beach	1	Released 3/19/98	Oiled	2	N	1
2920	02/17/98	Monterey Bay	1	Released 2/27/98	Oiled	2-4	N	1
2921	02/17/98	Monterey Harbor	1	Released 2/27/98	Oiled	2-3	N	1
2924	02/18/98	Monterey Harbor	1	Released 2/27/98	Oiled	2-4	N	1
2925	02/18/98	Monterey Harbor	1	Released 2/27/98	Oiled	2-3	N	1
2929	02/20/98	Monterey Beach	1	Released 2/27/98	Oiled	2	N	1
2943	02/26/98	Del Monte Beach	1	Released 3/19/98	Oiled	2	N	1

<sup>1</sup>Died or released date indicated.

<sup>2</sup>Euthanized.

<sup>3</sup>Not visibly oiled and broken wing.