24. DRIFT GILLNET SWORDFISH FISHERY

Today's Item **Information ☐** **Action ☒**

Discussion and possible direction to staff regarding the California drift gillnet swordfish fishery.

Summary of Previous/Future Actions (N/A)

- MRC received public request for overview — Mar 23, 2017; MRC, San Clemente
- FGC approved MRC request to add topic — Jun 21-22, 2017; Smith River
- Presentation at MRC — Jul 20, 2017; MRC, Santa Rosa
- **Today's discussion** — **Aug 16, 2017; FGC, Sacramento**

Background

In Mar 2017, MRC received a public request to schedule a presentation on the California swordfish drift gillnet fishery and federal management efforts; at FGC's June 2017 meeting, MRC recommended supporting that request. A presentation was made at the Jul 2017 MRC meeting. The overview included a presentation from the National Marine Fisheries Service (NMFS) Highly Migratory Species (HMS) Unit that provided information regarding the federal management of this fishery, background on the drift gillnet fishery and changes within it over the last 20 years, and potential federal management actions under consideration. Based on discussion at the MRC meeting, President Sklar requested that this topic be added to today's agenda.

The drift gillnet fishery is managed federally by NMFS and the Pacific Fishery Management Council (PFMC) under the federal HMS Fishery Management Plan. The fishery primarily harvests swordfish, but can also take other commercially valuable species like bonito, thresher and mako shark, and opah. The fishery operates under a limited entry permit system with mandatory gear requirements and time-area closures intended to limit bycatch of protected species. In recent years, PFMC has been actively engaged in reviewing management measures and evaluating alternative gear.

Due to concerns about a recent NMFS ruling regarding hard caps for incidental take of marine mammals, PFMC will meet in Sep to consider a range of alternatives for drift gillnet permits for deep-set buoy gear (DSBG) and linked buoy gear (LBG). DSBG and LBG provide alternative gear for use in swordfish fisheries that more selectively target highly migratory species (exhibits 1 and 2). The objective of PFMC action is to provide a commercially viable addition to the existing suite of legal gears used to target swordfish, and encourage use of fishing gear that minimizes bycatch of finfish and protected species, while ensuring the economic viability of the swordfish fishery and sustained participation of west coast fishing communities. Authorizing this innovative gear type has tremendous potential to provide fishermen the flexibility needed to maximize catch of swordfish under varying oceanographic conditions, as well as mitigate bycatch in swordfish fisheries around the globe.

In response to concerns about bycatch issues with drift gillnet, FGC could send a letter to PFMC requesting that it prioritize alternatives that develop the DSBG fishery but also encourage and create an incentive for current drift gillnet fishermen to engage in commercial

DSBG or LBG to reduce bycatch. Staff drafted a letter to PFMC (Exhibit 3) for FGC consideration.

Significant Public Comments (N/A)

Recommendation

FGC staff: Approve draft letter to PFMC regarding prioritizing alternative gear types for the swordfish drift gillnet fishery.

Exhibits

1. Background presentation on DSBG configurations by Dr. Chugey Sepulveda, dated Mar 2014
2. NOAA overview of the drift gillnet gear type and frequently asked questions, dated Jun 2017
3. Draft letter to PFMC regarding alternative gear types

Motion/Direction

Moved by _____ and seconded by _____ that the Commission directs staff to send the letter to the Pacific Fishery Management Council regarding alternative gear types for the swordfish drift gill net fishery, as recommended by staff.

Pacific Fisheries Management Council
2014 Research Update

Agenda Item K.5.b
Supplemental SWFSC PowerPoint 2
March 2014

Development and Trials of Deep-set Buoy Gear in the Southern California Bight

Chugey Sepulveda, PhD
Scott Aalbers, MS
Craig Heberer, MS, NOAA

PFMC 2014 Research Update

Overview

Background on buoy gear (FL, South Pacific, Japan)

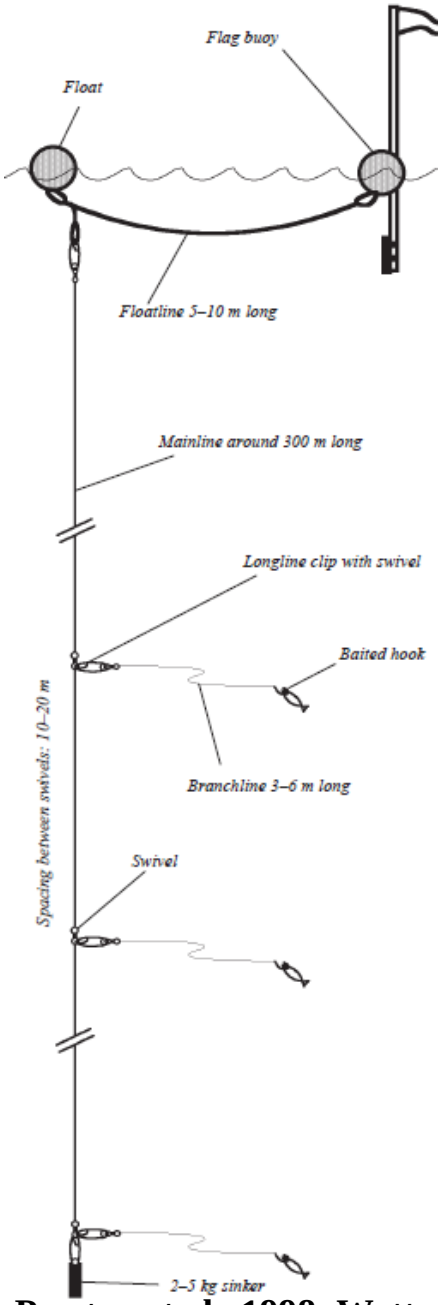
Project progression: Phases I, II, III, PLCA work

Describe 2013-2014 findings

Proposed game plan for 2014

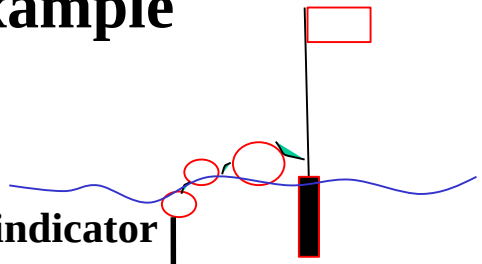
Next Steps

SPC vertical longline example



Preston et al., 1998; Watt et al., 1998

Trial DSBG



Strike indicator float

SCB Avg. thermocline ~71m

2.2mm mono mainline

8m-1.8mm gangions

Power light

Depths fished 250 to 350m

4kg sinker

Cefas DST

PFMC 2014 Research Update

SCB Research Overview

Phase I

PIER award to design and test deep-set buoy gear (DSBG) in Southern California (Saltonstall-Kennedy)

Phase II

Investigate alternative DSBG configurations that may increase efficiency and reduce potential for gear loss

(Bycatch reduction and Engineering Program: 2013)

Phase III

Testing DSBG with cooperative fishers in the SCB

(Bycatch reduction and Engineering Program: 2013)

PLCA Research

Documenting depth distribution and testing DSBG within the PLCA

CFR-West Program & NOAA Cooperative Research Program

SCB-Phase I

Design and test deep-set buoy gear in Southern California

Saltonstall-Kennedy Award, NOAA

Environmental Assessment

Gear development

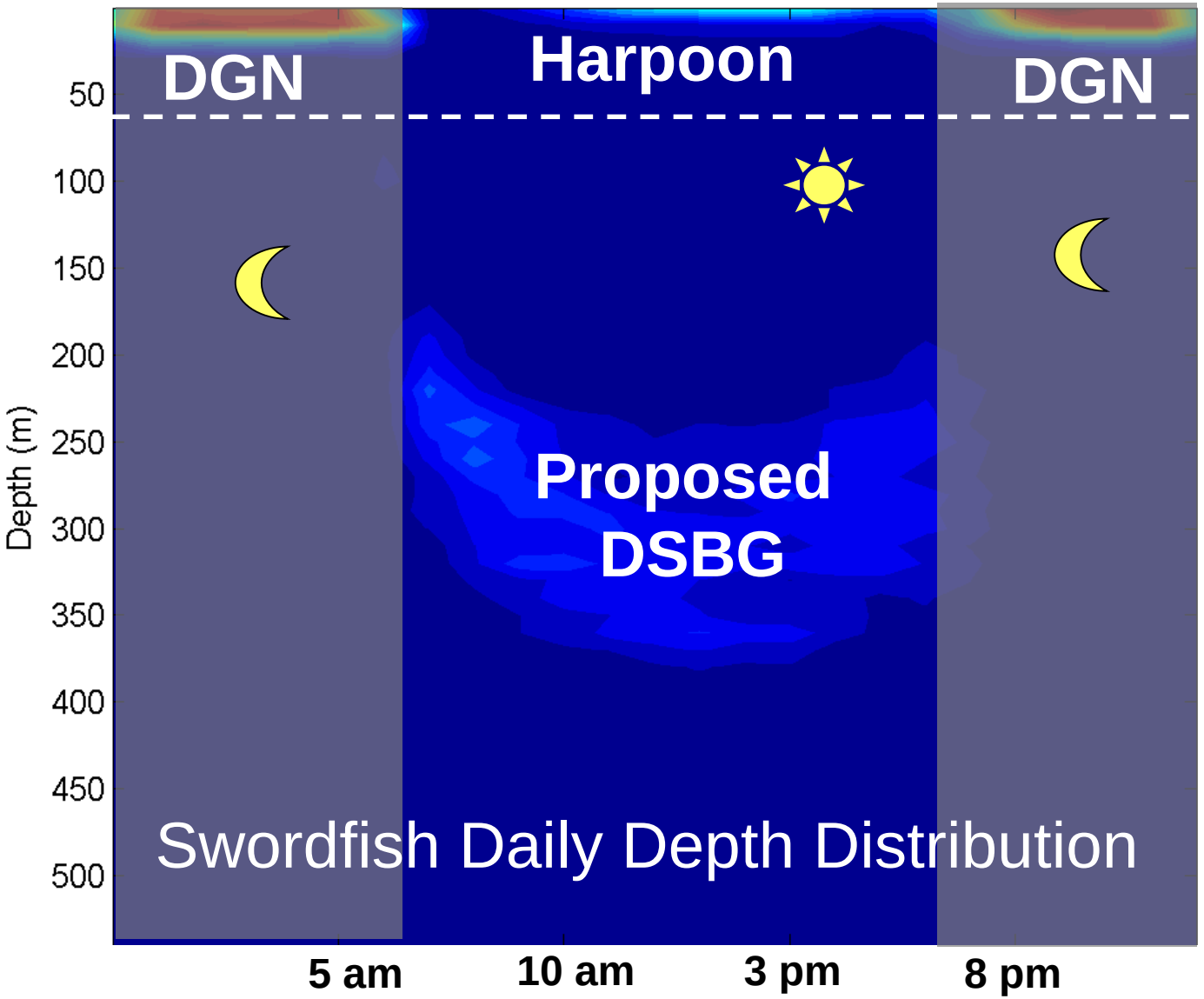
Initiate first fishing trials

Refine gear and set protocols based on tag deployments

Incorporate cooperative fisher involvement

Document feasibility of DSBG in SCB

Gear design based on depth distribution of target and bycatch species



Data modified from Sepulveda et al., 2010

Gear Experiments

8-lb lead

Below thermocline in <1 minute

At depth in <4 minutes

Leader lengths

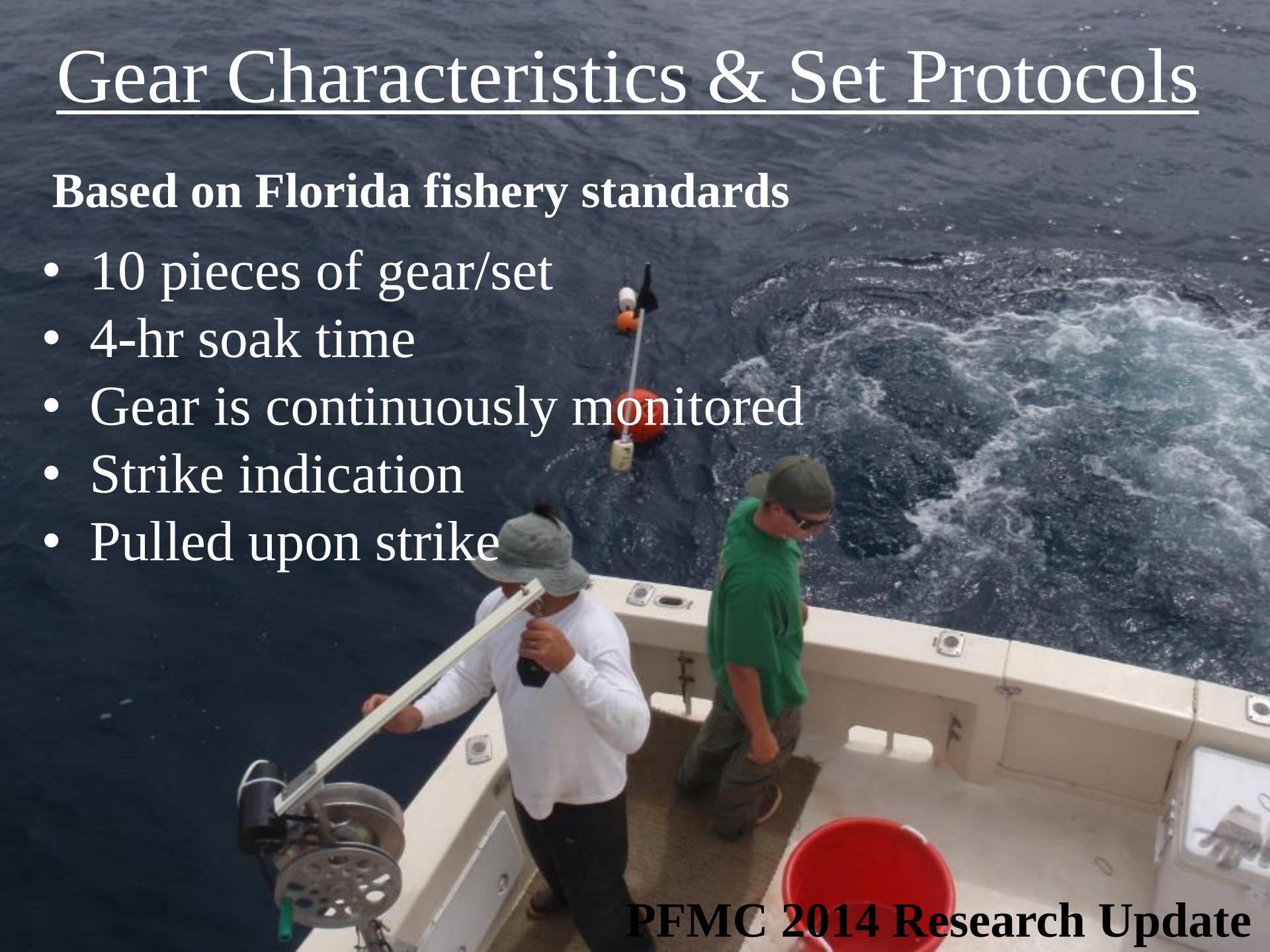
Light source

Buoy configuration

Gear Characteristics & Set Protocols

Based on Florida fishery standards

- 10 pieces of gear/set
- 4-hr soak time
- Gear is continuously monitored
- Strike indication
- Pulled upon strike



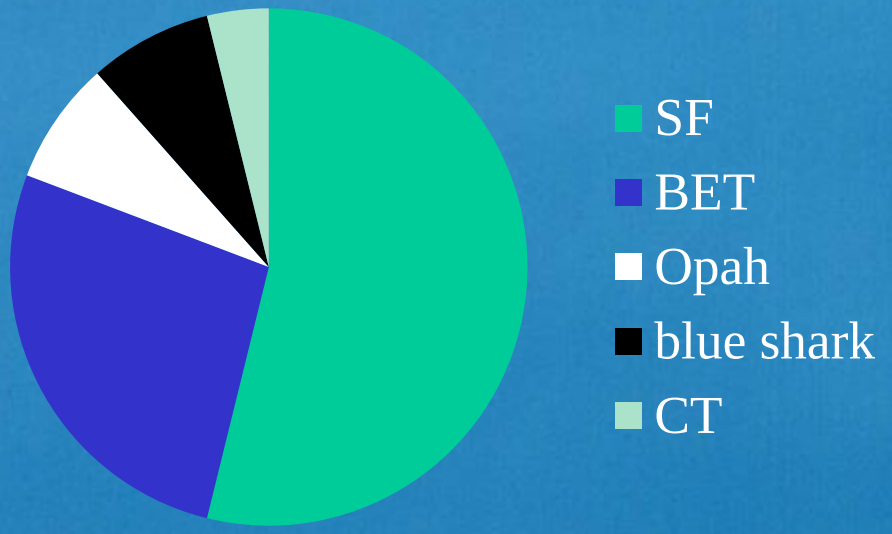
Catch Totals for 2011-2012 DSBG Trials

PFMC 2014 Research Update

- **54 4-hr sets**
- **540 pieces of gear deployed (2 hooks/piece)**
- **1,080 hooks soaked for 4hr**
- **4,320 hook-hours**

Total Catch

Swordfish		**14**
Opah		**2**
Bigeye thresher		**7**
Common thresher		**1**
Mola mola	***Shallow hook**	**1**
Blue Shark		**2**

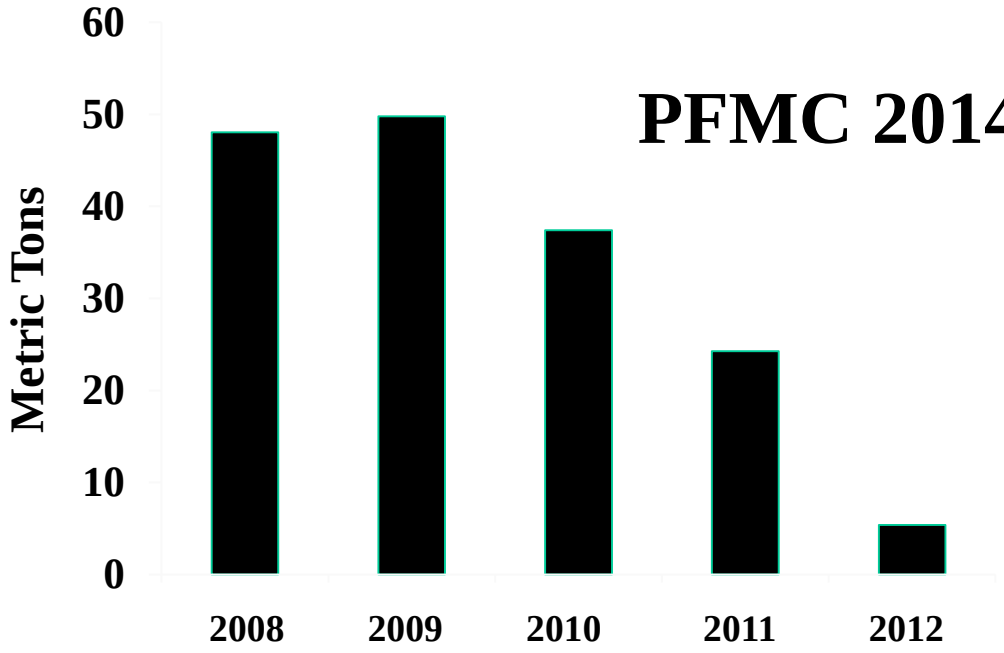


2012 CA Swordfish Landings

Harpoon was ~5 mt

DGN was ~72 mt

Experimental DSBG > than any CA harpoon vessel in 2012



PFMC 2014 Research Update

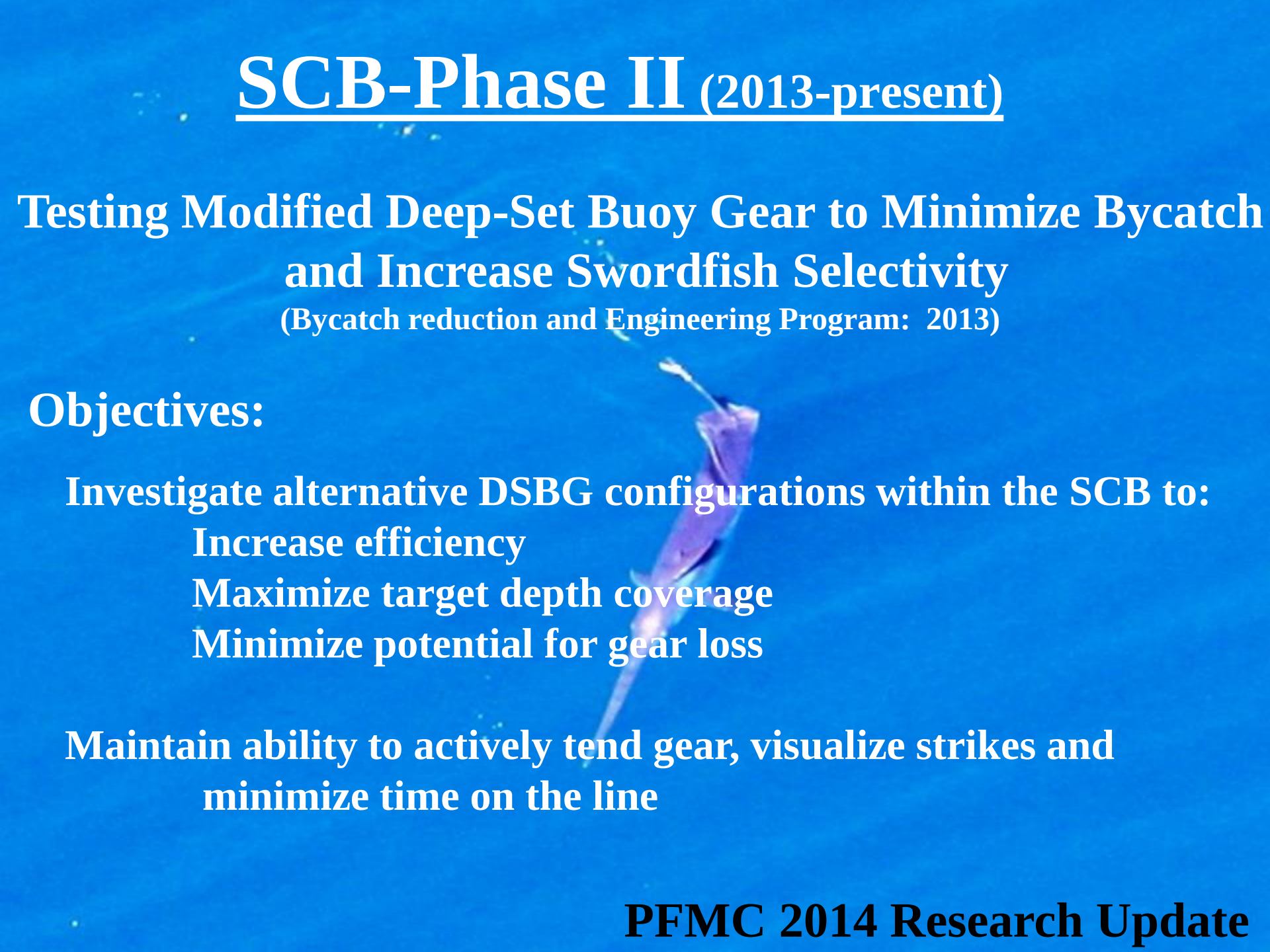
California Harpoon Landings

Data from PacFIN, 2/20/2013

SCB-Phase II (2013-present)

Testing Modified Deep-Set Buoy Gear to Minimize Bycatch and Increase Swordfish Selectivity

(Bycatch reduction and Engineering Program: 2013)

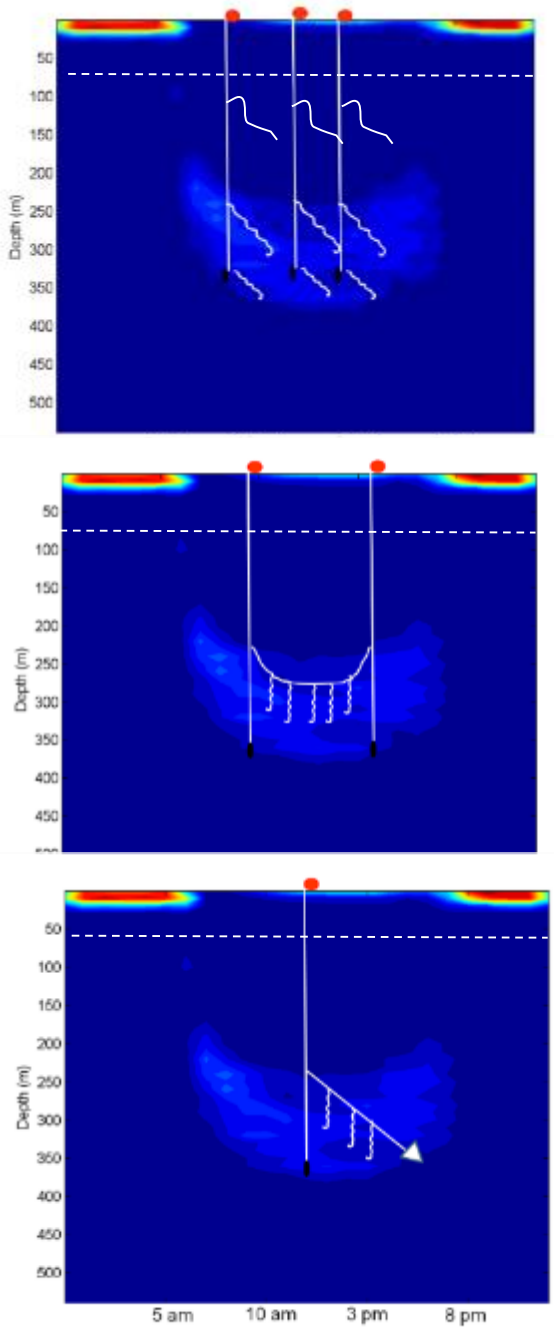


Objectives:

Investigate alternative DSBG configurations within the SCB to:

- **Increase efficiency**
- **Maximize target depth coverage**
- **Minimize potential for gear loss**

Maintain ability to actively tend gear, visualize strikes and minimize time on the line



SCB-Phase II (2013)

Investigate alternative DSBG configurations within the SCB.

1. **Reduce buoy count**
2. **Increase hook count**
3. **Maximize target depth coverage**
4. **Test different weighting regimes**
5. **Test the use of flashers and radar reflectors for nocturnal deployments**

Depth/temperature loggers used on all test sets

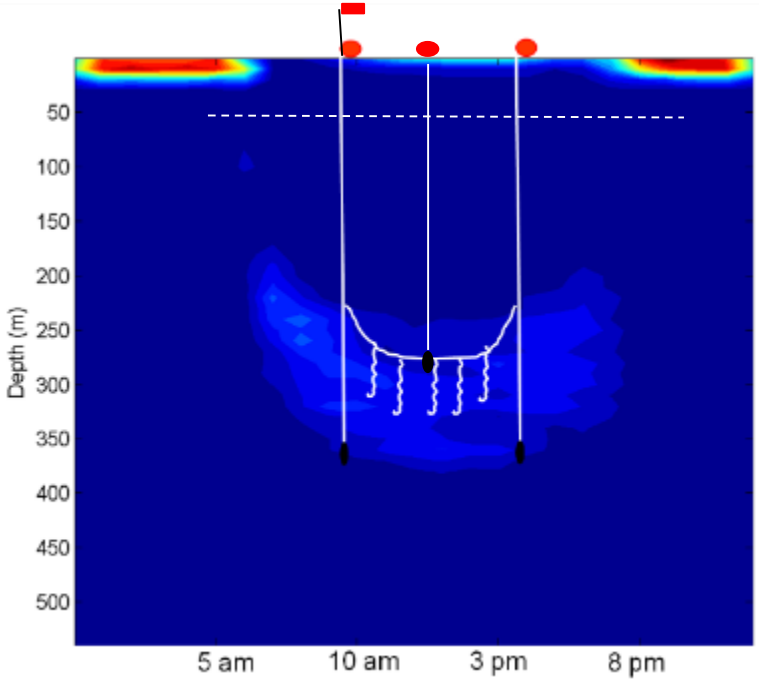
PFMC 2014 Research Update

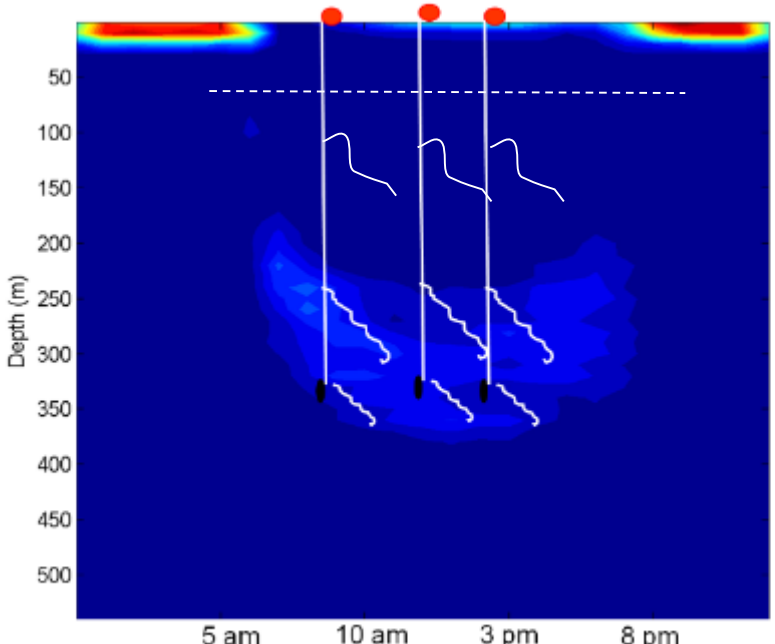
SCB-Phase II (2013)

Two test configurations selected that:

- **Minimized tangling**
- **Maximized water column coverage**
- **Maintained ability to detect strikes**
- **Maintained consistent depths**
- **Maintained rapid sink rate**

PFMC 2014 Research Update





SCB-Phase II (2013-present)

Set information

Experimental trials (during periods of low swordfish harvest)
10 fishing days for 1,850 hook hours
- **3 Opah**
- **3 Bigeye thresher sharks**
- **1 Swordfish (lost at boat)**

Fishing trials: 12 fishing days for 2,590 hook hours
- **1 Mako shark**
- **1 Salmon shark**
- **6 Blue sharks**
- **11 Swordfish (3 lost at boat)**

SCB-Phase III

Phase III
Testing DSBG with cooperative fishers
(Bycatch reduction and Engineering Program: 2014)

Test modified DSBG configuration with 3 vessels in 2014

Collect adequate set data to better assess feasibility, fisher acceptance and catch composition

Continue outreach to fishers, community and markets

DSBG Studies within the Pacific Leatherback Closure Area (PLCA)

Targeting Swordfish Deep During the Day to Reduce Bycatch

Collaborative Study: SWFSC, SWR & PIER

California Fisheries Research Program (CFR- West)
NOAA Cooperative Research Award
NOAA (Heidi Dewar, PhD, SWFSC) and PIER (Chugey Sepulveda, PhD).

PFMC 2014 Research Update

PLCA studies

- Tag swordfish within the PLCA
- Document depth distribution
- Trial alternative gear types:

Deep-set Buoy Gear (PIER)

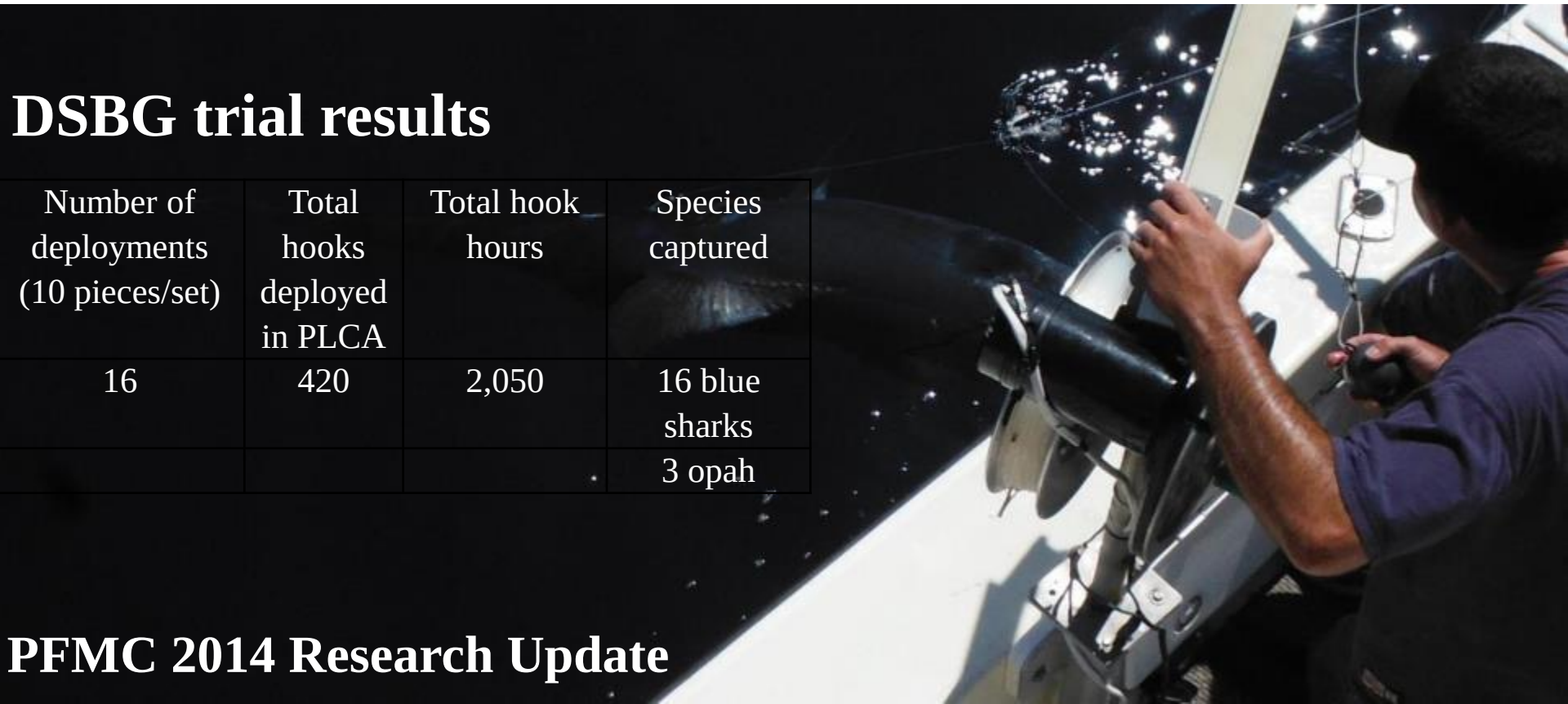
Deep-set Long Line (NOAA)

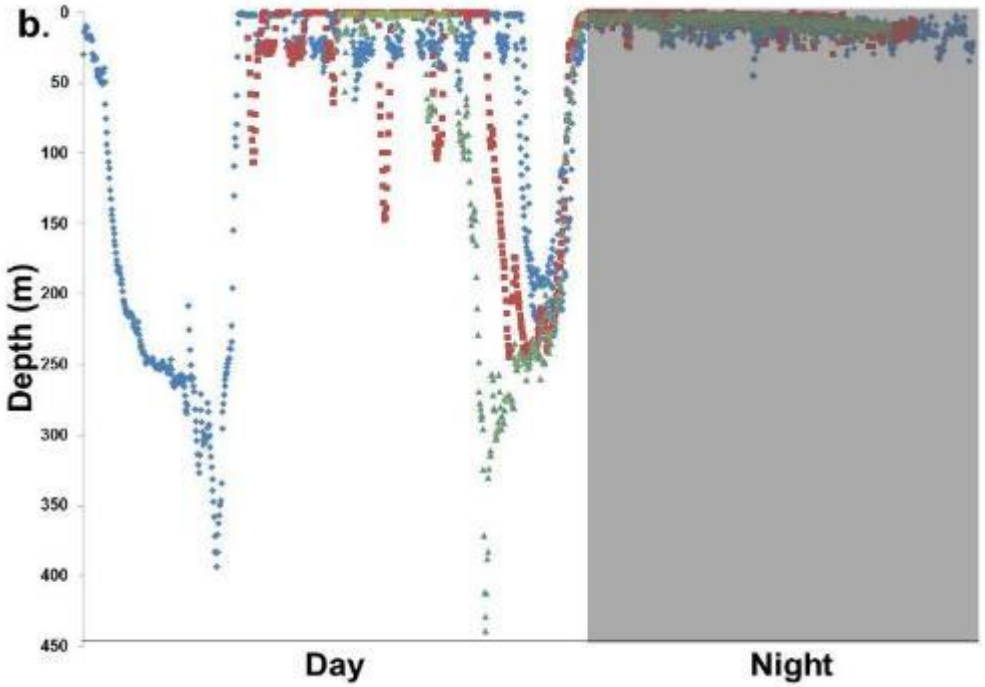
PIER swordfish research above Point Conception

- **Six cruises to the PLCA (2012 & 2013)**
- **Tagged 13 swordfish (all with harpoon)**
  - **11 with PSATs & 2 with SWFSC SPOT tags**

DSBG trial results

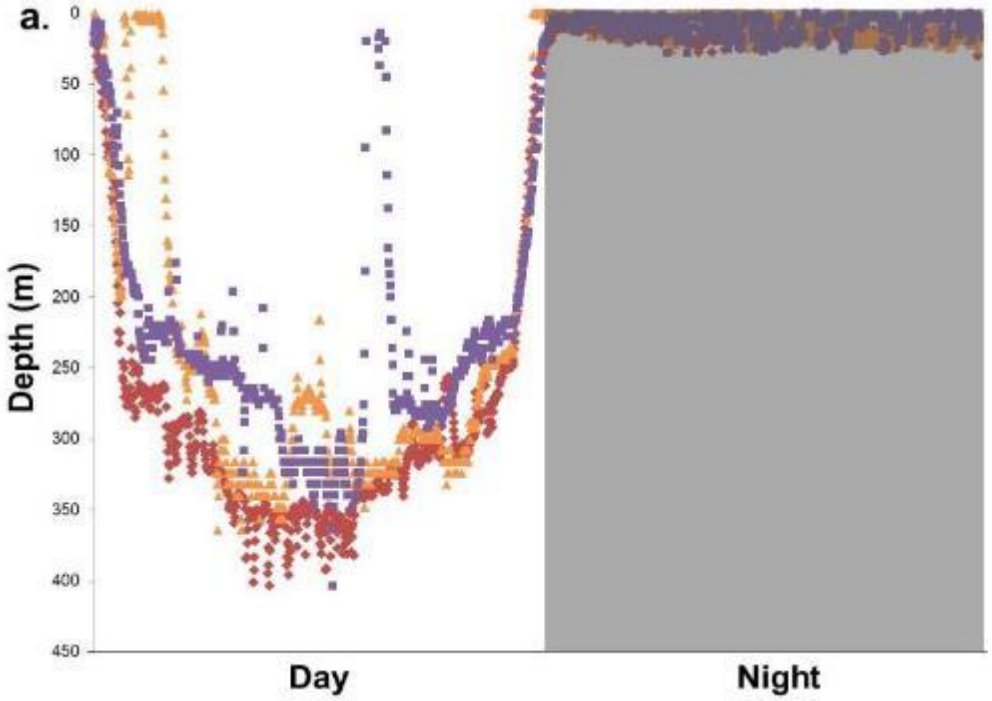
Number of deployments (10 pieces/set)	Total hooks deployed in PLCA	Total hook hours	Species captured
16	420	2,050	16 blue sharks
			3 opah





PLCA Tag Data

- Shallower daytime distribution
- Trends are consistent with 2013 data
- Inshore/bank oriented movements?



SCB Tag Data

- Consistent daytime distribution
- Trends are consistent across years and locations

Next Steps

Test DSBG in 2014 with cooperative fishers

Test Nocturnal fishing

- **Shallow set BG (Florida)**
- **Nocturnal Harpooning**

Acknowledgements

NOAA

- Saltonstall-Kennedy Grant Program
- Cooperative Fisheries Grant Program
- Southwest Fisheries Science Center
- Bycatch Reduction and Engineering Program

California Fisheries Research Grant Program

Santa Monica Seafood

George T. Pfleger Foundation

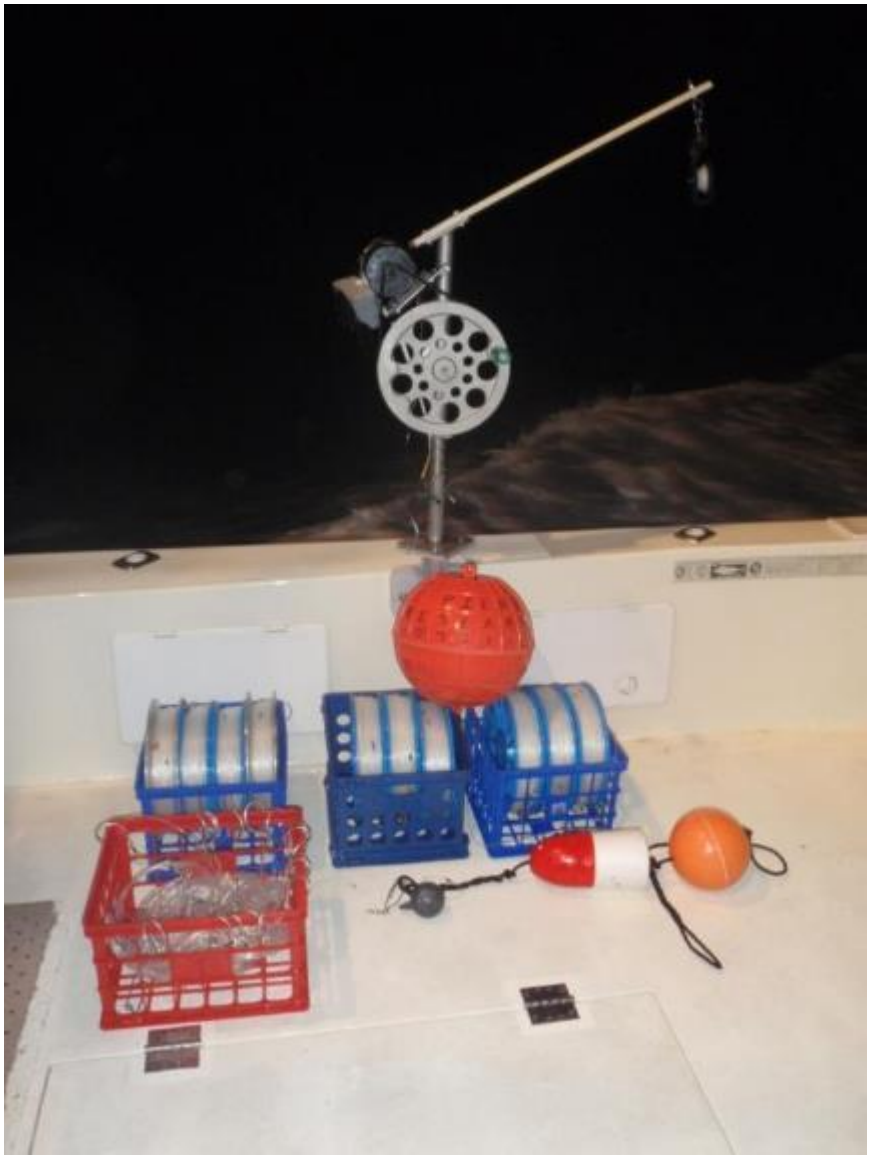
Cooperative Fishers and Partners

Donald Krebs
Andrew White
The Nature Conservancy
Catalina Offshore Products
Chesapeake Fish Company

Gear Design

- Cost effective
- Easy to use
  - 2.8mm mono mainline
  - 1.8mm gangions
  - 18/0 circle hooks
  - 46 lb float
  - 8 lb float
  - 8 lb float
  - Flag & radar reflector

Total set-up cost for 10 sets of gear ~$5,500

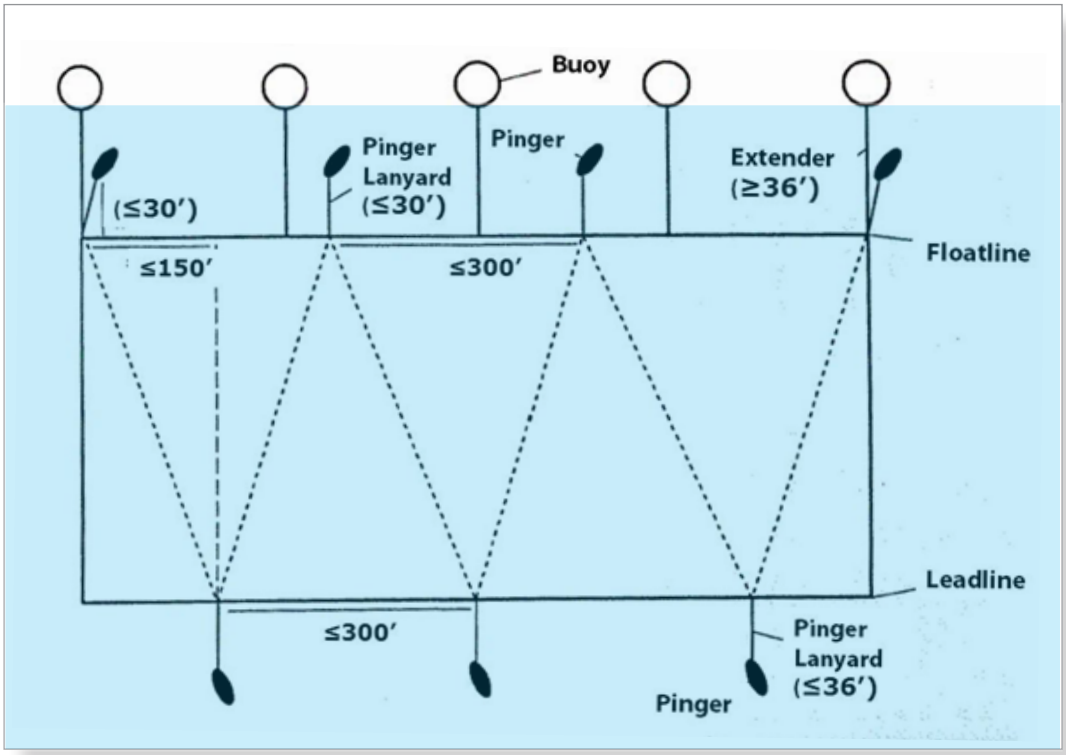


June 2017

FAQs: West Coast drift gillnet (DGN) fishery & protected species

Current measures minimizing marine mammal and sea turtle entanglements, and NOAA Fisheries' withdrawal of a proposed rule for hard caps on interactions with protected species

NOAA FISHERIES WEST COAST REGION



How do drift gillnets work?

Drift gillnets (DGN) are mesh nets that hang down into the ocean from floats on the surface. Nets used off California are large, 14-inch mesh designed to avoid entangling smaller species than the swordfish and other large fish that the fishery targets. The top of the nets hang from underwater lines, called net extenders, at least 36 feet beneath the surface, leaving room above the nets for non-targeted species to pass over them. At one time many whales and other protected species became entangled in drift gillnets, but such entanglements are far rarer today.

What action is NOAA Fisheries taking on the Pacific Fishery Management Council's recommendation for hard caps on protected species interactions in the West Coast drift gillnet fishery?

NOAA Fisheries has decided not to adopt a recommendation from the Council to put limits called "hard caps" on the number of certain marine mammals and sea turtles that could be entangled by drift gillnets. The Council's proposed hard caps would have required the fishery to shut down for the rest of the season and even into the following season if the limits were reached. NOAA Fisheries is required under the Magnuson-Stevens Act to minimize costs and avoid unnecessary duplication when adopting fisheries conservation and management measures. The hard-cap proposal would have likely imposed significant new costs while also overlapping existing conservation measures that already protect those species. Therefore, NOAA Fisheries determined that the hard-cap proposal would not have provided significant additional conservation benefit.

FAQs: West Coast drift gillnet fishery & protected species

How often are protected species killed or injured in the DGN fishery?

It has become unusual for turtles, large whales and other marine mammals to be injured or killed in the DGN fishery. Concerted efforts have reduced the high interaction rates of the 1990s, and today there are far fewer entanglements. NOAA Fisheries estimates the number of protected species that are injured or killed by the DGN fishery based on partial observer coverage. Gray whales are among the most-common whales off California ,but estimates show that only two gray whales have been killed or seriously injured since 2012. The most commonly entangled species is the short-beaked common dolphin; the number of short-beaked common dolphins injured or killed has dropped from more than 200 killed in some years in the early 1990s, to fewer than 10 injured or killed in 2015.

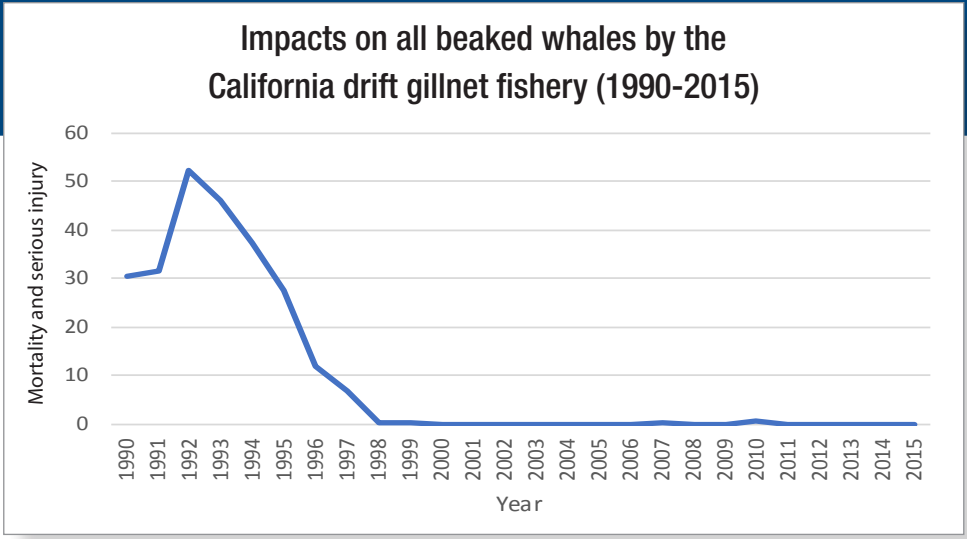
The latest estimates of mortality and serious injuries of protected species in the DGN fishery are described in a technical memorandum by NOAA Fisheries' Southwest Fisheries Science Center (SWFSC).

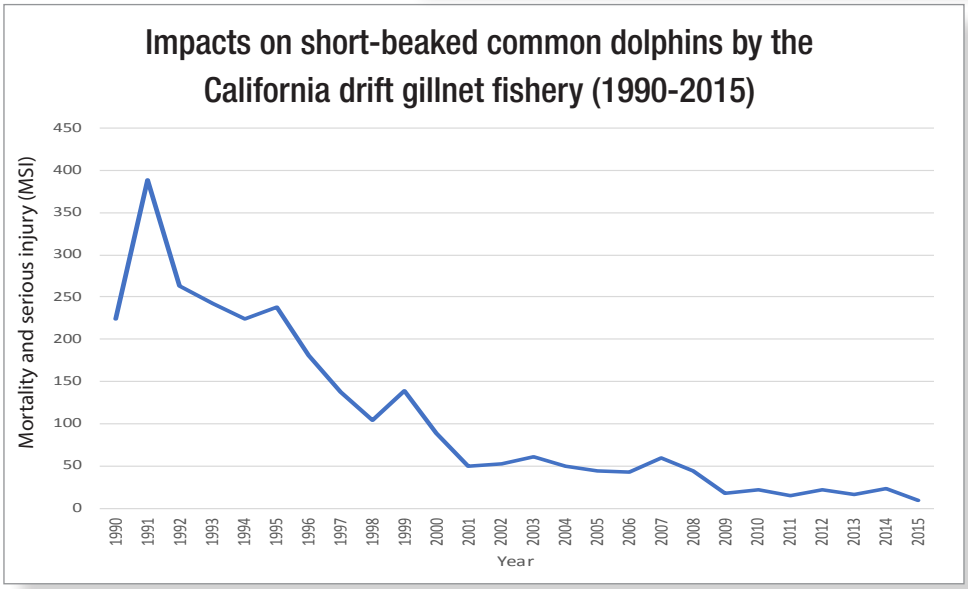
NOAA Technical Memorandum, NOAA-TM-NMFS-SWFSC-568

Regression tree and ratio estimates of marine mammal, sea turtle, and seabird bycatch in the California drift gillnet fishery: 1990-2015

Technical Memorandum available at : https://go.usa.gov/xNmJm

The number of beaked whales entangled in drift gillnets has declined sharply since the early 1990s.





Short-beaked common dolphins are the most commonly entangled species, but the number entangled is greatly reduced since the early 1990s.

FAQs: West Coast drift gillnet fishery & protected species

How does the DGN fishery compare to other fisheries in terms of interactions with protected species?

In recent years, the DGN fishery has had similar or lower rates of interactions with protected sea turtles and marine mammals than other U.S. fisheries that target swordfish, including the Atlantic longline fishery that is certified by the Marine Stewardship Council. Compared to some foreign fisheries that target swordfish, it has comparable or fewer interactions with protected species.

How much swordfish does the DGN fishery catch?

In 2015, 18 drift gillnet vessels landed 66 metric tons of swordfish worth $454,000. The fishery also lands some opah and sharks. In the same year, the United States imported 8,386 metric tons of swordfish from other countries, some of which record more interactions with marine mammals and sea turtles.

Do any laws protect sea turtles and marine mammals from impacts of the DGN fishery?

Yes, the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA) both include provisions requiring NOAA Fisheries to examine and address impacts on these protected species. The Magnuson-Stevens Act also requires that the fishery minimize bycatch to the extent practical and achieve optimum yield, which is the amount of harvest that provides "the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities and taking into account the protection of marine ecosystems."

How do existing laws make the DGN fishery safer for protected species?

NOAA Fisheries and its partners have taken many steps to greatly reduce the inadvertent catch of marine mammals and turtles in the DGN fishery. The Marine Mammal Protection Act provides for "take reduction teams" to develop strategies for reducing the catch (or "take") of marine mammals and other protected species. In 1996 NOAA Fisheries convened the Pacific Offshore Cetacean Take Reduction Team (POCTRT), which includes scientists, fishermen, representatives of environmental groups and scientific organizations, and representatives of fisheries and wildlife agencies. The POCTRT developed a Take Reduction Plan which includes strategies such as the use of sound-emitting devices called pingers to alert marine mammals to the presence of drift gillnets. and the use of net extenders that lower the nets beneath the surface where many marine mammals and turtles spend much of their time.

In addition, NOAA Fisheries has examined the fishery's impact on threatened and endangered species and has adopted additional safeguards to protect them.

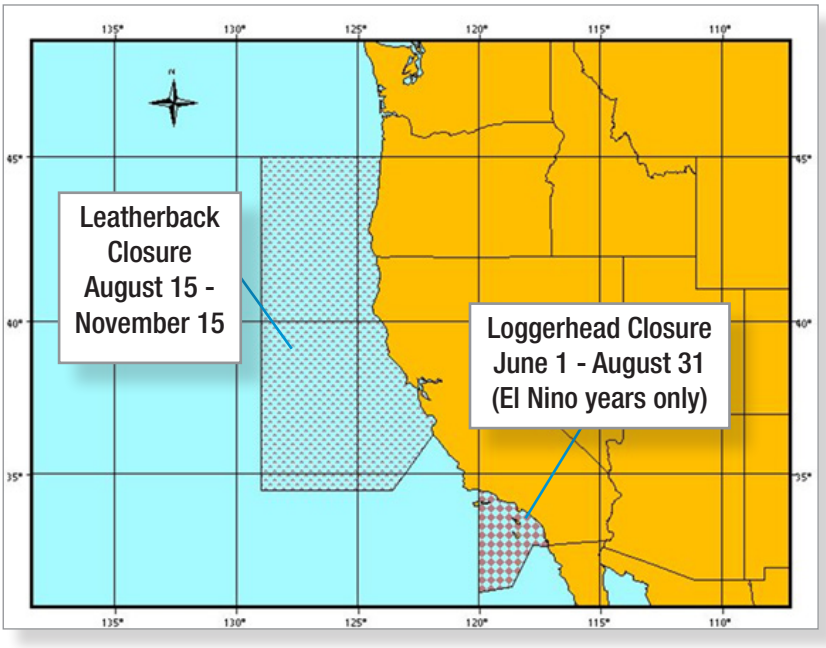
Swordfish fishing vessel Sea Doxy, Moss Landing Harbor, California. Photo: NOAA Fisheries

FAQs: West Coast drift gillnet fishery & protected species

What actions have reduced impacts of the DGN fishery on protected species?

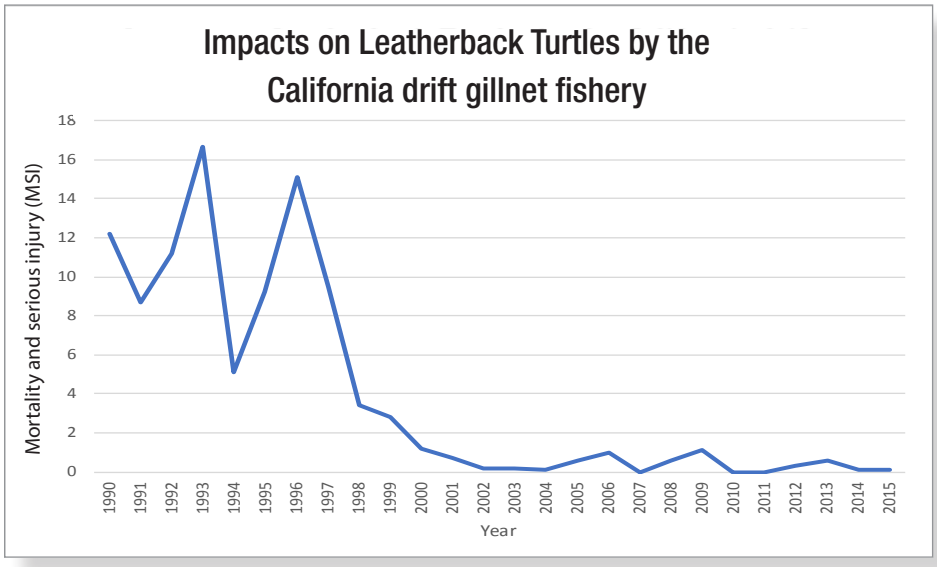
In 1997 NOAA Fisheries adopted the recommendations of the POCTRT, requiring pingers, net extenders, and mandatory workshops for skippers in the DGN fleet. In 2001 NOAA fisheries also established two large conservation areas off the coast of California and Oregon to protect endangered loggerhead and leatherback sea turtles. DGN fishing is prohibited in the conservation areas at times when sea turtles frequent the areas, thereby closing large areas to the fishery for a portion of the year. An annual closure extends from northern Oregon to Central California to protect leatherback turtles' seasonal foraging areas, while another closure in the Southern California Bight is triggered during warmer-than-normal water temperatures to protect loggerhead sea turtles that may be present.

A large area of ocean off the coast of California and Oregon is off limits to drift gillnet fishing each year to protect endangered leatherback sea turtles. Another area off southern California is closed during El Nino years (as determined by NOAA Fisheries) when water temperatures are warmer than average and loggerhead sea turtles are likely to be present.



Have existing regulations to protect marine mammals and sea turtles made a difference?

Yes, in the 1990s the bycatch of protected species was a serious problem in the DGN fishery. However, the actions recommended by the TRT process, as well as other safeguards NOAA Fisheries has adopted in the course of ESA consultations, have dramatically reduced bycatch of protected species such that it is now relatively unusual for many large whales and turtles to become entangled.



Source: Carretta, J.V., J.E. Moore, and K.A. Forney. 2017.

NOAA Technical Memorandum, NOAA-TM-NMFS-SWFSC-568. 83p.

Regression tree and ratio estimates of marine mammal, sea turtle, and seabird bycatch in the California drift gillnet fishery: 1990-2015.

Technical Memorandum available at : https://go.usa.gov/xNmJm

FAQs: West Coast drift gillnet fishery & protected species

How do you know how many protected species are affected?

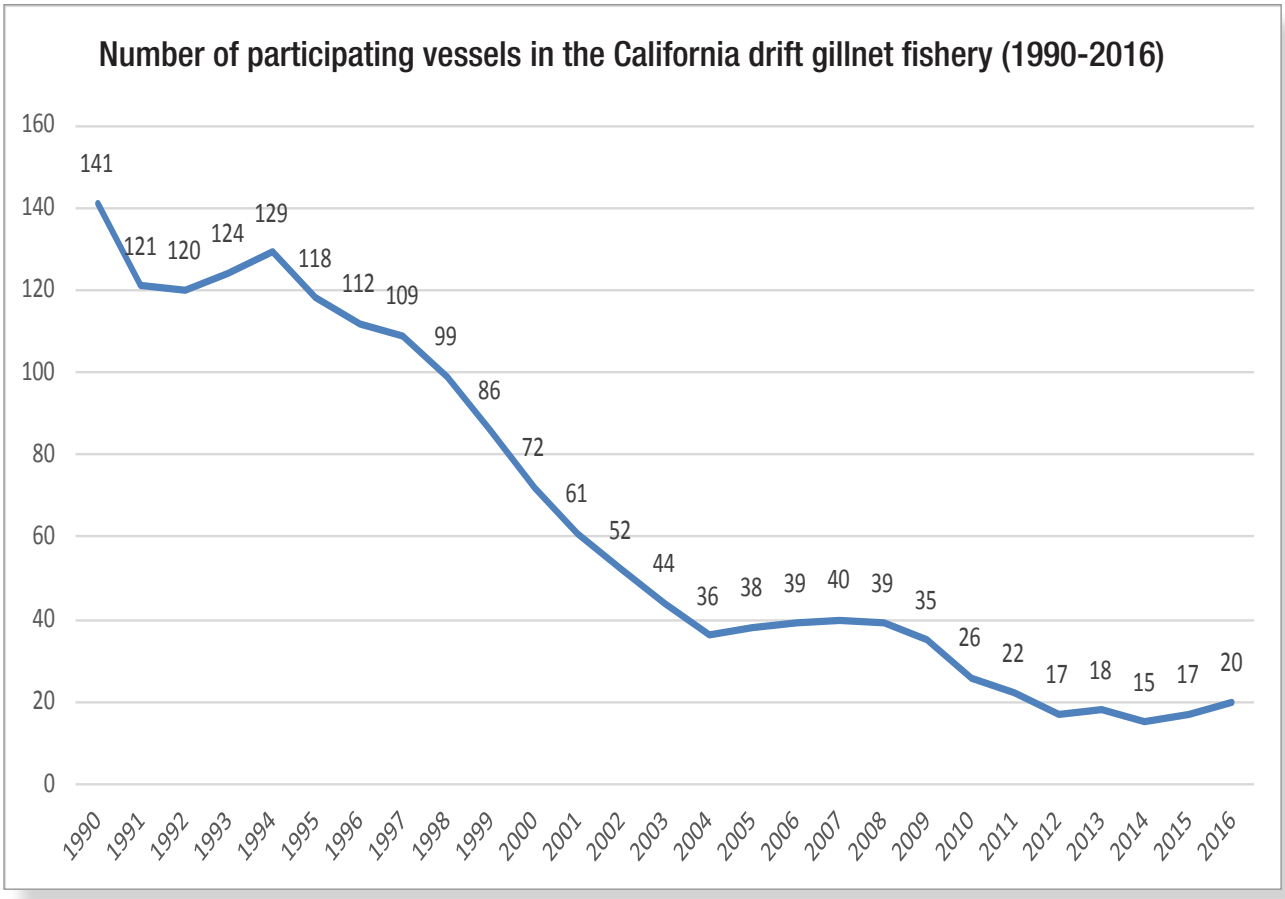
NOAA Fisheries' Observer Program deploys observers aboard some of the DGN vessels to monitor interactions with protected species. Observer coverage varies from year to year but generally observers monitor about 20 percent of the DGN fishing effort. NOAA Fisheries scientists then use the observer data and information on protected species populations to estimate the total bycatch of each species caught in the entire DGN fishery.

Can't DGN vessels just fish for something else?

An analysis by NOAA Fisheries found that most DGN fishery participants rely on the fishery for more than half their annual income. A potentially prolonged closure under the hard caps recommended by the Council could last into the next fishing year, imposing severe consequences and costs on participants. In addition, to fish in other fisheries, DGN fishery participants would have to buy permits for other fisheries and costing as much as $200,000 per permit. The Magnuson-Stevens Act calls for NOAA Fisheries to apply management and conservation measures that, where practicable, minimize costs and avoid unnecessary duplication. The hard caps recommended by the Council would increase costs significantly and overlap existing protections that have already greatly reduced interactions with protected species.

Is the DGN fishery expanding?

No, the number of vessels participating in the DGN fishery has dropped by about 90 percent since the 1990s to just 20 vessels last year. The decline is in part the result of limitations on the fishery to protect other species, such as prohibiting DGN fishing in the Pacific Leatherback Conservation Area, which was historically an area of high swordfish production.



Source: NOAA Fisheries West Coast Region Observer program records

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

Fish and Game Commission

Wildlife Heritage and Conservation
Since 1870

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August XX, 2017

Ms. Dorothy Lowman, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

Barry Thom, Regional Administrator
NOAA Fisheries, West Coast Region
7600 Sand Point Way NE
Seattle, WA 98115

Subject: Request to consider the range of alternatives for deep-set buoy gear (DSBG) and linked buoy gear (LBG) and authorize use of these gear types

Dear Chair Lowman and Regional Administrator Thom:

It has come to the attention of the California Fish and Game Commission (Commission) that the Pacific Fishery Management Council (PFMC) is developing permitting alternatives for new gear types for the West Coast swordfish fishery. I am writing on behalf of the Commission to request that you take action to consider these alternatives to open additional access for California fishermen to fish this healthy and sustainable fish stock. The Commission is aware that research on these alternative DSBG and LBG types has been ongoing and supports such research that could lead to the use of alternative gear types in the drift gillnet fishery.

Over the past twenty years, the number of U.S. West Coast, large-mesh drift gillnet swordfish fishery participants and landings have significantly declined, causing economic harm to fishermen and coastal communities, despite a healthy stock and high demand for swordfish. The decline in landings can be attributed in large part to regulations implemented to mitigate bycatch in the fishery. Through a combined effort of state, federal and private sector funding, the research and development of buoy gear resulted from an effort to design a gear type that would increase fishing opportunities by more selectively targeting swordfish while simultaneously reducing potential for interactions with protected species.

DRAFT

One of the Commission's goals is to support California's sustainable coastal fishing communities. To maintain a robust coastal fishing economy, fisheries need both adaptive management and flexibility to fish a variety of gear types to maximize potential catch under varying oceanographic conditions. One of the objectives articulated by the Magnuson-Stevens Fishery Conservation and Management Act for a healthy fishery such as West Coast swordfish, is to provide for opportunity and to ensure the economic viability of the swordfish fishery with sustained participation of West Coast fishing communities.

Results from collaborative research and experimental fishing permit trials of DSBG conducted thus far indicate that both configurations of this highly selective gear can minimize interactions with protected species and minimize finfish bycatch while expanding fishing opportunities, increasing domestic landings, and contributing to the profitability of the swordfish fishery.

The Commission asks that PFMC thoughtfully consider dual authorization of DSBG and LBG, while also providing an efficient mechanism for authorization to allow fishermen to sustainably harvest a high-quality, high-value product. Dual authorization of these gears helps to address many bycatch concerns, while helping achieve optimum yield of a healthy swordfish stock and maximizing socioeconomic benefits for fishermen and coastal communities.

Thank you,

Valerie Termini
Executive Director

ec: Members, California Fish and Game Commission
Charlton Bonham, Director, California Department of Fish and Wildlife
Craig Shuman, Marine Region Manager, California Department of Fish and Wildlife
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