Audubon CALIFORNIA

Phil Anderson, Chair
Pacific Fishery Management Council
1100 NE Ambassador Place, #101
Portland, Oregon 97220

August 27, 2018

Re: Agenda Item H.6: Swordfish Management and Monitoring Plan

Dear Chair Anderson and Council Members:

We write to ask that the Council discontinue consideration of a west coast-based longline fishery under the Highly Migratory Species Fishery Management Plan (HMS FMP). Specifically, we ask the Council remove actions in the Swordfish Management and Monitoring Plan to introduce a west coast-based longline fishery, and also remove these actions from the Council's year-at-a-glance calendar. Of highest concern to Audubon is the black-footed albatross (*Phoebastria nigripes*) (BFAL). The recovery of this species has stalled and is likely being constrained by adult mortality via longline bycatch throughout its range.[1,2,3,4]

Audubon has previously submitted to the Council two letters opposing development of new west coast longline fisheries, due to unacceptable impacts to BFAL. Since that time, longline bycatch of BFAL in the Hawaii-based fishery has increased, global longline effort remains poorly understood and may be increased, and demographic models have been refined showing higher potential vulnerability of BFAL to fisheries bycatch than thought previously. At stake is the future of one of our three magnificent north Pacific albatrosses, which agencies, funders, and private groups have spent millions of dollars over many decades to recover and protect.

Background
BFAL use area east of the west coast EEZ extensively, especially during the breeding season (Figure 1).[5] The area east of 150 degrees west is important foraging area for all three species of

[1] Guy, T. et al. 2013. Overlap of North Pacific albatrosses with the U.S. West Coast groundfish and shrimp fisheries. Fisheries Research 147 (2013) 222-234
[2] Bakker, V., M. Finkelstein, D. Doak, L. Young, E. VanerWerf, and P.Sievert, 2018. The albatross of assessing and managing risk for long-lived pelagic seabirds. *Biological Conservation* 217: 83-95.
[3] Veran, S., Gimenez, O., Flint, E., Kendall, W.L., Doherty, P.F., Jr., Lebreton, J.-D., 2007. Quantifying the impact of longline fisheries on adult survival in the black-footed albatross. Journal of Applied Ecology 44, 942-952.
[4] Lebreton, J.-D., Veran, S., 2013. Direct evidence of the impact of longline fishery on mortality in the Black-footed Albatross Phoebastria nigripes. Bird Conservation International 23, 25-35.
[5] Agreement on the Conservation of Albatrosses and Petrels. 2015. Species Profiles: Black-footed albatross (Phoebastria nigripes.) http://www.acap.aq/en/resources/acap-species2/239-black-footed-albatross/file

North Pacific albatrosses.[6] The total breeding population of the BFAL numbers roughly 67,000 pairs, with 95 percent of the population nesting in the Northwestern Hawaiian Islands. Albatrosses are long-lived seabirds with deferred maturity, low fecundity and natural high rates of adult survival. These life history characteristics make albatross populations especially vulnerable to small increases in adult mortality. According to the *U.S.G.S. Status Assessment of Laysan and Black-footed Albatrosses, North Pacific Ocean, 1923-2005* (herein referred to as Arata et al. 2009), "incidental mortality (bycatch) in commercial fisheries is the greatest anthropogenic source of mortality (postfledging) for both species….the black-footed albatross breeding population currently may be at risk of decline due to fishery bycatch."[7] A recent definitive study on the overlap of black-footed albatross foraging range with some sectors of the west coast groundfish fleet notes that "low fishing mortality is of conservation concern because fishing mortality is often underestimated and albatrosses are far-ranging and can suffer mortality in many fisheries, resulting in cumulative negative population level impacts."[8]

Other threats to BFAL include predation by introduced mammals, reduced reproductive output due to contaminants, nesting habitat loss and degradation due to human development and invasive plant species, and potential loss and degradation of habitat due to climate change and sea-level rise.[9]

New information showing increased fisheries bycatch and North Pacific longline effort
Bakker & Finkelstein (2018 and 2017)[10,11] building on Arata (2009) have developed and refined population models for BFAL showing the extreme sensitivity of the species to small increases in fisheries bycatch. The Potential Biological Removal (PBR) is an estimate of human caused mortality a population can withstand while recovering towards or maintaining an optimal sustainable population. The PBR approach is mandated for stock assessments under the Marine Mammal Protection Act and has been employed extensively to assess bycatch mortality for sea turtles and well as land and seabirds including albatrosses.[12] For decades, estimated bycatch from all fisheries likely exceeded the traditional PBR value of 5600 birds, illustrating that bycatch is indeed high enough to potentially limit BFAL population growth.

Bakker & Finkelstein (2017) further note that "Increases in BFAL bycatch are predicted to have minimal population level effects if they occur only in Hawaiian fisheries and are temporary or episodic. Likewise, effects are predicted to be relatively small if bycatch increases occur only in

[6] Finkelstein, M., Keitt, B.S., Croll, D.A., Tershy, B., Jarman, W.M., Rodriguez-Pastor, S., Anderson, D.J., Sievert, P.R., Smith, D.R., 2006. Albatross species demonstrate regional differences in North Pacific marine contamination. Ecological Applications 16, 678-686.
[7] Arata, J.A., Sievert, P.R., and Naughton, M.B., 2009, Status assessment of Laysan and black-footed albatrosses, North Pacific Ocean, 1923–2005: U.S. Geological Survey Scientific Investigations Report 2009-5131.
[8] Guy, T. et al. 2013. Ibid.
[9] Arata et al. 2009. Ibid.
[10] Bakker, V., M. Finkelstein, D. Doak, E. VanderWerf, L. Young, J. Arata, P. Sievert, and C. Vanderlip. 2018. The albatross of assessing and managing risk for long-lived pelagic seabirds. *Biological Conservation* 217: 83-95.
[11] Bakker, V. and M. Finkelstein. 2017. Potential impacts of recent increases in Hawaiian longline bycatch on the population dynamics of black-footed albatross *Phoebastria nigripes*. From: Workshop on the factors influencing albatross interactions in the Hawaii longline fishery: towards identifying drivers and quantifying impacts. Western Pacific Fishery Management Council. November 7-9.
[12] Dillingham, P.W., Fletcher, D., 2011. Potential biological removal of albatrosses and petrels with minimal demographic information. Biological Conservation 144, 1885-1894.

Hawaiian fisheries and stabilize at 2015 and 2016 levels. However, in scenarios in which bycatch increases occur in all fisheries, either permanently or episodically, BFAL population growth is substantially affected, with predicted future trajectories at best stable or at worst declining dramatically. Indeed, BFAL populations are predicted to decline as much as 95% by 2040 if total BFAL bycatch has increased proportional to Hawaiian bycatch."

While total BFAL bycatch is unknown, is has been increasing in the Hawaii-based longline fisheries, prompting research and review by NMFS and the Western Pacific Fishery Management Council.[13] In 2017, BFAL bycatch increased in the shallow- and deep-set fleet to 509 birds, which is 36% over average 2010-2016 levels (Table 1). According to a recent study, these increases may be linked to decreasing central North Pacific ocean productivity, which declined 1.1% per year from 1998-2012. During periods of lower ocean productivity, Laysan and BFAL albatrosses appear to preferentially attend vessels and obtain a larger food subsidy from longline fishing vessels.[14]

BFAL bycatch in foreign fleets in poorly understood, but distant-water longline fleet size in China has expanded.[15,16] If total North Pacific longline fleet size is increasing, and albatrosses are increasingly attending vessels, overall bycatch may be increasing. Finally, new research conducted by NMFS has begun to quantify BFAL bycatch in the west coast catcher-processor fleet, comprised of nine vessels. In a 12-month period from 2016-2017, an estimated 58 BFAL were killed during fleet operations by bird strikes on wires and cables.[17]

Conclusion

Due to high levels of bycatch of protected and recreationally important species, longlines have been prohibited off the west coast since 2004[18] and in California since 1989.[19] Fortunately, new gears with lower bycatch offer alternatives for targeting swordfish and have wide public support.[20] We very much appreciate the proactive actions on the part of the Council to protect seabirds over the last several years, including new regulations requiring seabird bycatch mitigation measures in the west coast fleet, protection of the food base through the unmanaged forage species initiative, and 100% observer coverage in many fleets. At its September meeting,

[13] Workshop on the factors influencing albatross interactions in the Hawaii longline fishery: towards identifying drivers and quantifying impacts. Western Pacific Fishery Management Council. November 7-9.
[14] Gilman, E., M. Chaloupka, J. Peschon, and S. Ellgen. 2016. Risk factors for seabird bycatch in a pelagic longline tuna fishery. *PLOS One* 11(5). May 18.
[15] Bycatch in longline fisheries for tuna and tuna-like species: a global review of status and mitigation measures. 2014. United Nations Food and Agriculture Organization. http://www.fao.org/3/a-i4017e.pdf (pg 102)
[16] Tuna Fishery Yearbook 2016. Western and Central Pacific Fisheries Commission. file:///C:/Users/aweinstein/Desktop/YB_2016_0.pdf Pg 9.
[17] Jannot, J. E., T. Good, V. Tuttle, A. M. Eich, and S. Fitzgerald, editors. 2018. U.S. West Coast and Alaska Trawl Fisheries Seabird Cable Strike Mitigation Workshop, November 2017: Summary Report. U.S. Department of Commerce, NOAA Technical Memorandum NMFSNWFSC-142. https://doi.org/10.7289/V5/TM-NWFSC-142
[18] Final rule to prohibit shallow longline sets east of 150° W, 50 CFR Part 223, Fed. Reg. Vol. 69, No. 48, Thursday, March 11, 2004.
[19] In 1989 with the enactment of Section 9028 of the Fish and Game Code, the California Legislature prohibited pelagic longline fishing off the California coast by banning the use of hook and line fishing gear longer than 900 feet.
[20] Shively, P. and T. Brock. Pew Trusts comment under H.6 to the PFMC. September, 2018.

we respectfully ask that the Council follow a similarly prudent approach in the case of longline fisheries.

Thank you for your support and service to our healthy fisheries and oceans.

Sincerely,

Anna Weinstein
Marine Program Director

Year	Shallow set	Deep set	Total
2010	38	66	104
2011	19	73	92
2012	37	167	204
2013	28	257	285
2014	29	160	189
2015	41	535	576
2016	44	380	424
2017	51	458	509

Table 1. Number of black-footed albatrosses captured in Hawaii-based longline fisheries. Shallow set data is observed and deep set is estimated/extrapolated from ~20% observer coverage. Compiled from: NMFS. http://www.fpir.noaa.gov/OBS/obs_hi_ll_ds_rprts.html

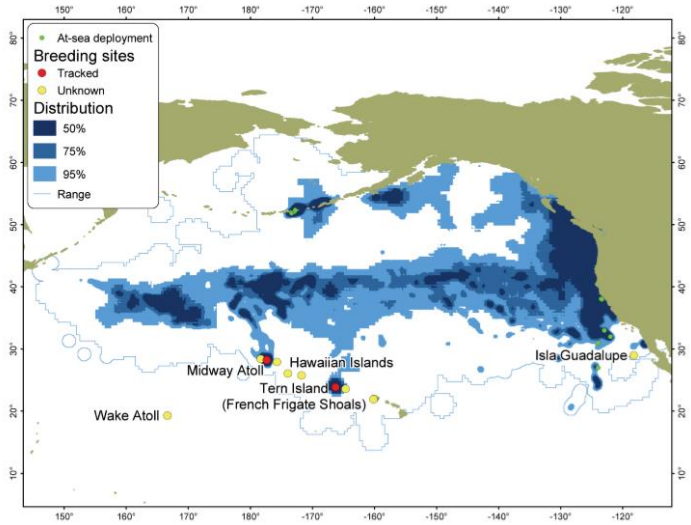

Figure 1. Satellite tracking of non-breeding adult black-footed albatrosses, spring/summer. From: Agreement on the Conservation of Albatrosses and Petrels. 2015. Species Profiles: Black-footed albatross (*Phoebastria nigripes.*) http://www.acap.aq/en/resources/acap-species2/239-black-footed-albatross/file

Sent via email

August 27, 2018

Phil Anderson, Chair
Pacific Fishery Management Council
1100 NE Ambassador Place, #101
Portland, Oregon 97220

RE: Agenda Item H.6, Swordfish Management and Monitoring Plan

Dear Chair Anderson and Members of the Council:

Thank you for your consideration of the following comments on the Swordfish Management and Monitoring Plan ("Swordfish Plan"). We urge the Council to revise its plan to move away from destructive gear such as drift gillnets and pelagic longlines, and move toward authorizing deep-set buoy gear, which causes far less bycatch and yields higher-value swordfish.

As an initial matter, the plan's stated goal to "[r]educe protected species bycatch to the extent practicable" misstates the applicable legal standard. The Magnuson-Stevens Fishery Conservation and Management Act ("MSA") requires fishery managers to minimize bycatch to the extent practicable.[1] However, these "protected species" are protected under the Endangered Species Act ("ESA") and Marine Mammal Protection Act ("MMPA"), both of which have more stringent bycatch reduction requirements than the MSA. The ESA tasks NMFS not just with preventing the extinction of listed species, but actively promoting their recovery.[2] Section 2(c) of the ESA establishes that it is "…the policy of Congress that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this Act."[3] The ESA defines "conservation" to mean "…the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary."[4] It does not permit fishery managers to decline to take actions necessary to conserve listed species, such as avoiding bycatch of listed species, on the grounds of cost or feasibility.[5] In addition, the MMPA requires that all fisheries "shall reduce incidental mortality and serious injury of marine mammals to insignificant levels approaching a zero mortality and serious injury rate."[6] NMFS has defined ZMRG by regulation as ten percent of Potential Biological Removal ("PBR"). The Council should revise the Swordfish Plan to accurately reflect applicable legal requirements. With these requirements in mind, we request that the Council revise its Swordfish Plan to reflect the following steps.

[1] 16 U.S.C. § 1851(a)(9).
[2] 16 U.S.C. §§ 1532(15), 1536(a)(2).
[3] 16 U.S.C. § 1531(c)(1).
[4] 16 U.S.C. § 1532(3).
[5] *Tennessee Valley Auth. v. Hill*, 437 U.S. 153, 174, 184 (1978).
[6] 16 U.S.C. § 1387(b)(1).

First, the Council's Swordfish Plan should lay out steps to phase out the use of DGN gear. The Council and NMFS have spent considerable time and resources trying to find ways to reduce bycatch in the DGN fishery. Most recently, the Council invested a great deal of time and effort in developing hard caps on bycatch, only to have NMFS refuse to implement them. The fact is that there is no way to make a mile-long gillnet "selective." By design, DGN gear entangles anything that swims into that is larger than the mesh size. It should come as no surprise that even with restrictions such as the Pacific Leatherback Conservation Area ("PLCA"), which provides some protection for ecological hotspot in the California Current, the DGN fishery still catches more non-target species—including critically endangered leatherback and loggerhead sea turtles, sperm whales, billfish, and other—than target species. On that note, the Council should remove any consideration of allowing the use of DGN gear in the PLCA from the Swordfish Management Plan. The best available science shows that the PLCA is effective and necessary to protect the critically endangered Pacific leatherback as required under the ESA.

Second, the Council should maintain the current prohibition on the use of pelagic longline gear under the Highly Migratory Species Fishery Management Plan and forego any consideration of authorizing such a fishery in the future. Like DGN fishing, pelagic longlining catches, injures, and kills protected species, including critically endangered Pacific leatherback sea turtles, loggerhead and green sea turtles, whales and other marine mammals, endangered albatross and other seabirds, sharks, and billfish, among others. Rather than spending more time and resources promoting the use of this unsustainable and controversial gear, we urge the Council to instead focus its resources on investigating and promoting the use of more selective gear and taking actions to foster the recovery of threatened, endangered, and otherwise vulnerable species.

Expanding the use of shallow-set longline gear off the West Coast would conflict with a number of applicable laws, including the Endangered Species Act ("ESA") and the MSA. The development of a new pelagic longline fishery outside the U.S. West Coast EEZ would dramatically increase the injury and death of numerous non-target species, including multiple species protected under the ESA. These species include the short-tailed albatross, a species whose population is already limited by fisheries bycatch and loggerhead and leatherback sea turtles. While all listed species must receive full attention, we are particularly concerned about impacts to the critically endangered western Pacific leatherback sea turtle.

NMFS includes the Pacific leatherback its 2016-2020 "Species in the Spotlight" plan, which is "part of a strategy to marshal resources for species listed under the Endangered Species Act of 1973 (ESA) for which immediate, targeted efforts are vital for stabilizing their populations and preventing their extinction."[7] NMFS identifies the Pacific leatherback as a "Priority #1" species, meaning it is "a species whose extinction is almost certain in the immediate future because of a rapid population decline or habitat destruction…."[8] In the Pacific leatherback's case, fisheries bycatch is major factor in its rapid population decline. Both the

[7] NOAA Fisheries. January 2016. Species in the Spotlight, Priority Actions: 2016-2020, Pacific Leatherback Sea Turtle, *Dermochelys coriacea*, at 1.
[8] NOAA Fisheries. January 2016. Species in the Spotlight, Priority Actions: 2016-2020, Pacific Leatherback Sea Turtle, *Dermochelys coriacea*, at 1, quoting NMFS Endangered and Threatened Listing Recovery Guidelines (55 Fed. Reg. 24296 (June 15, 1990)).

IUCN and NMFS have determined that reducing fisheries bycatch of Pacific leatherbacks is essential to promoting the species' survival and recovery. Facilitating the expansion of longline gear in the Pacific leatherback's migratory and foraging areas when that gear is already known to injure and drown these critically endangered turtles is contrary to the ESA imperative of stabilizing the leatherback populations and preventing their extinction. The Council should be seeking to move away from the use of longline gear in all Pacific leatherback migratory pathways and habitats, not expand its use into new areas.

The western Pacific leatherback has declined by more than 80% since the 1980s; the IUCN projects that the population will experience a 96% decline by 2040.[9] The population is so low that removing even one leatherback during the proposed experimental fishing could significantly impair the species' ability to survive and recover. In fact, in order to avoid delaying the species' recovery, scientists estimate that total take by all U.S. West Coast fisheries needs to be limited to no more than one turtle every six years.[10] Recent bycatch analyses estimate that the drift gillnet fishery kills 0.6 leatherback per year.[11]

Given that the leatherback is already deeply in jeopardy and expanded longlining would inevitably increase take, it is highly unlikely that NMFS could authorize a new pelagic longline fishery. When determining whether any new pelagic longline fishery would be likely to jeopardize the species' continued existence, NMFS must examine its likely effect on the Pacific leatherback's chance of recovery as well as survival.[12] The Ninth Circuit has made clear that actions that appreciably reduce a species' likelihood of recovery are considered to jeopardize its continued existence.[13] The best available science shows that allowing more take of leatherbacks would impair the species' recovery, if not its survival. The Council should refrain from spending valuable time and resources on developing an action that NMFS could not legally approve.

Establishing a new pelagic longline fishery would also conflict with the Council's obligations under the MSA. The MSA requires the Council to prevent or end overfishing.[14] Yet a new longline fishery would impermissibly increase fishing effort on already overfished bigeye tuna and the Eastern Pacific Ocean stock of swordfish. It would also increase fishing mortality for a number of data poor species that may be vulnerable to overfishing or at risk of being overfished, including mahi mahi, shortbill spearfish, moonfish, and wahoo. Moreover, such a

[9] IUCN Redlist of Threatened Species, Version 2015-4, www.iucnredlist.org, downloaded August 24, 2018.
[10] Curtis KA, Moore JE, Benson SR (2015) Estimating Limit Reference Points for Western Pacific Leatherback Turtles (*Dermochelys coriacea*) in the U.S. West Coast EEZ. PLoS ONE 10(9): e0136452. doi:10.1371/journal.pone.0136452
[11] Carretta, J.V., J.E. Moore, and K.A. Forney. 2017. Regression tree and ratio estimates of marine mammal, sea turtle, and seabird bycatch in the California drift gillnet fishery: 1990-2015.NOAA Technical Memorandum, NOAA-TM-NMFS-SWFSC-568.83, *available at* https://swfsc.noaa.gov/publications/TM/SWFSC/NOAA-TM-NMFS-SWFSC-568.pdf.
[12] 16 U.S.C. § 1536(a)(2).
[13] *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 481 F. 3d 1224, 1237–38 (9th Cir. 2007), *as amended on other grounds by* 524 F.3d 917 (9th Cir. 2008) (requiring agency to consider both survival and recovery in determining whether project is likely to jeopardize species); *see also* 50 C.F.R. § 402.02 (defining "jeopardize" as action that would reduce "the survival and recovery of a listed species" by "reducing the reproduction, numbers, or distribution of that species.").
[14] 16 U.S.C. § 1851(a)(1).

fishery would significantly increase bycatch and bycatch mortality in the HMS fishery, contrary to National Standard 9.[15]

Finally, the Council should continue to move forward with authorizing deep-set buoy gear and facilitating the transition from DGN gear to this cleaner, higher value mode of fishing. More than seven years of testing has demonstrated that this gear is effective at catching swordfish and causes far less bycatch and bycatch mortality than DGN or pelagic longlining. Authorizing DSBG will allow the Council to achieve its goal of increasing domestic swordfish supply and providing higher quality, more valuable swordfish for fishers to sell while significantly reducing the swordfish fishery's impact on non-target and imperiled species. We ask the Council to maintain its schedule for authorizing DSBG by March 2019.

Conclusion

In sum, we urge the Council to use its Swordfish Plan to phase out the use of DGN gear, continue to prohibit the use of pelagic longline gear under the HMS FMP, and facilitate a transition to selective, actively tended gear such as deep-set buoy gear. The Council has a great opportunity now to demonstrate leadership in sustainable fishing and take advantage of the considerable work that has been done to find new, more sustainable and valuable ways to fish for swordfish. Please take that opportunity.

Thank you for your consideration.

Sincerely,

Andrea A. Treece
Staff Attorney, Oceans Program

[15] 16 U.S.C. § 1851(a)(9).

Kit Dahl - NOAA Affiliate <kit.dahl@noaa.gov>

Fwd: Shallow long line Fisheries

1 message

PFMC Comments - NOAA Service Account <pfmc.comments@noaa.gov> Mon, Aug 27, 2018 at 5:03 PM
To: Brett Wiedoff - NOAA Affiliate <brett.l.wiedoff@noaa.gov>
Cc: Kit Dahl <kit.dahl@noaa.gov>, Mike Burner <mike.burner@noaa.gov>

---------- Forwarded message ----------
From: **Amanda Ferre** <aferre2009@gmail.com>
Date: Mon, Aug 27, 2018 at 5:00 PM
Subject: Shallow long line Fisheries
To: pfmc.comments@noaa.gov

My name is Miguel Ferre, I have been a commercial fisherman in California for over 30 yrs, I would like to participate in the shallow long line Fisheries.

Sent from my iPad

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Pacific Fishery Management Council
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Portland, OR 97220
Phone: 503-820-2280
Toll Free: 1-866-806-7204
Fax: 503-820-2299
Twitter: http://Twitter.com/PacificCouncil

Kit Dahl - NOAA Affiliate <kit.dahl@noaa.gov>

Fwd: Proposed Shallow Set Longline Fishery

1 message

PFMC Comments - NOAA Service Account <pfmc.comments@noaa.gov> Mon, Aug 27, 2018 at 4:15 PM
To: Kit Dahl <kit.dahl@noaa.gov>
Cc: Mike Burner <mike.burner@noaa.gov>, Brett Wiedoff - NOAA Affiliate <brett.l.wiedoff@noaa.gov>

---------- Forwarded message ----------
From: **Kelly Flynn** <kellyflynn1997@gmail.com>
Date: Mon, Aug 27, 2018 at 3:59 PM
Subject: Proposed Shallow Set Longline Fishery
To: pfmc.comments@noaa.gov

Chair Anderson and Council Members

My name is Mike Flynn. I am a 3rd generation commercial Fishermen, I have participated in the west coast drift sword fish fishery since its beginning in 1980 full time. I am very interested in participation of the proposed shallow set longline fishery off our coast. I have fished longline out of American Samoa as well as the North East Pacific targeting albacore and big eye tuna. Our sword stock seems to be very healthy and it would be great to be able to sustainably harvest the vast stock and increase domestic production of swordfish, sustainably and well regulated. Please keep this open for the November 2018 agenda and also the LLSMMP. Thank you and look forward to the development and implementation of the proposed fishery.

Thank you for your consideration concerning this matter, if I am unable to attend in person I authorize my letter to be read by one of our representatives.

Mike Flynn F/V: Baby Joe

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Kit Dahl - NOAA Affiliate <kit.dahl@noaa.gov>

Fwd: Shallow Set Long Line Sword Fish Fishery

1 message

PFMC Comments - NOAA Service Account <pfmc.comments@noaa.gov> Mon, Aug 27, 2018 at 4:16 PM
To: Brett Wiedoff - NOAA Affiliate <brett.l.wiedoff@noaa.gov>, Kit Dahl <kit.dahl@noaa.gov>
Cc: Mike Burner <mike.burner@noaa.gov>

---------- Forwarded message ----------
From: **Kelly Flynn** <kellyflynn1997@gmail.com>
Date: Mon, Aug 27, 2018 at 4:10 PM
Subject: Shallow Set Long Line Sword Fish Fishery
To: pfmc.comments@noaa.gov

Dear council members,
My name is Anthony Makul. I have been sword fishing on the west coast off California and Oregon since the early 1980s. I would be interested in the proposed SSLL fishery outside the EEZ if the fishery is implemented. I support increasing domestic production of our swordfish stock on the west coast. This proposed fishery would do just that. While staying sustainable and regulated.

Thank you,
Anthony Makul F/V: Spirit

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August 27, 2018

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

RE: Agenda Items H.6 Swordfish Management and Monitoring Plan

Dear Chair Anderson and Council members:

We request that the Pacific Fishery Management Council (Council) revise the draft Swordfish Management and Monitoring Plan to support the development and expansion of a responsible, low-bycatch swordfish fishery. We appreciate efforts made by the Council to that end, including your previous recommendations for drift gillnet (DGN) hard caps, 100% monitoring of all DGN vessels and trips by 2018, making sperm whale emergency regulations permanent, establishing DGN performance objectives on marine mammal and finfish bycatch, and the initiation of authorization and permitting of deep-set buoy gear (DSBG). Unfortunately, the National Marine Fisheries Service (NMFS) has chosen not to implement hard caps or 100% monitoring as recommended by the Council in 2015, or make permanent the emergency rules to protect sperm whales as recommended by the Council in 2014, effectively rejecting the Council's efforts to achieve its swordfish fishery management and bycatch reduction goals. Moving forward, we would like to see the Council phase out DGN gear, cease efforts to authorize pelagic longlines, and shift the swordfish fishery toward more selective gear types including DSBG, linked DSBG, and harpoons.

To this end, we have recently completed an August 2018 update to our previously submitted report "Providing Domestically Caught U.S. West Coast Swordfish: How to Achieve Environmental Sustainability and Economic Profitability" (Attached). This report analyzes the most recently available bycatch data across North American swordfish fisheries and provides a science-based rationale for a swordfish fishery transition plan that phases out DGN, continues to prohibit pelagic longlines, reduces unsustainable swordfish imports, and promotes the use of cleaner gears, specifically deep-set buoy gear and harpoons. We also include other, concise attachments which speak to our position on management of the swordfish fishery. The remainder of this letter discusses various elements of that transition plan that we request the Council adopt in a revised Swordfish Management and Monitoring Plan.

Phase out Drift Gillnet gear

Given the DGN swordfish fishery is failing to meet bycatch performance standards established by the Council, the widespread public support for a full transition away from DGN to cleaner gears, ongoing state and federal legislative efforts to phase out DGN gear, the availability of cleaner fishing methods, and the reluctance of NMFS and the fleet to implement 100% monitoring and hard caps as directed by the Council, the time is right for the Council to clearly establish the goal of phasing out the use of DGN gear once and for all.

In March 2014, prior to the Council's June 2014 decision to develop a hard cap regime, the Council articulated the goal of "…developing a comprehensive plan to transition the current drift gillnet fishery to a fishery utilizing a suite of more environmentally and economically sustainable gear types that can effectively target the healthy West Coast swordfish stock operating under MSA authority."[1] The Council tasked its staff and advisory bodies with "…initial development of a fishery transition plan and possible regulations under a typical MSA process, with the transition period being of sufficient duration to maintain a reasonable commercial flow of swordfish to domestic markets during the transition."[2]

Expansion of DGN fishing is inconsistent with the objective of phasing out DGN gear. As such, efforts to explore the use of DGN gear inside the Pacific Leatherback Conservation Area are unwarranted, given the continued decline of Pacific Leatherback sea turtles, and recent NOAA scientific studies concluding that "the temporal extent of the current static closure period is the shortest and most effective for protecting turtles while allowing fishing during low bycatch-risk periods."[3]

We recommend reestablishing the Council's primary goal of reducing and ultimately phasing-out DGN gear while shifting to more selective gear types. We recommend amending the Swordfish Management and Monitoring Plan to articulate the following actions:

1) Immediately retire latent DGN permits,
2) establish a time-certain end date after which DGN permits are no longer issued;
3) establish bycatch caps;
4) require 100% monitoring of all DGN trips made by all vessels in the fleet, and
5) eliminate all actions that would consider allowing DGN gear inside the Pacific Leatherback Conservation Area (PLCA).

Transition active DGN fishery participants to clean gear

Deep-set buoy gear has proven to be a profitable commercial gear type to target swordfish with minimal bycatch. According to NOAA Fisheries, in 2017, five vessels fishing deep-set buoy gear landed fish valued at $408,874 ($81,774 per vessel) while seventeen drift gillnet vessels landed fish valued at $890,443 ($52,379 per vessel).[4]

The 2015 draft Swordfish Management and Monitoring Plan listed the following action: "Consider how a federal limited entry permit could facilitate transitioning DGN fishery participants to other gear types. For example, a limited entry permit could be designed to include endorsements for more than one gear type or to encourage swapping a DGN permit for a permit for another fishery/gear type."[5] Since then, NMFS has established a federal limited entry permit for DGN and the Council is now considering a range of alternatives for DSBG authorization and permitting. The Council is wrestling with the question of whether to make DSBG permits open access or limited entry. We urge the Council to follow through with its previously stated goal by selecting a final preferred alternative that:

[1] PFMC March 2014 Council Meeting Decision Summary Document. Available: http://www.pcouncil.org/wp-content/uploads/0314decisions.pdf at 4-5.
[2] Id at 5.
[3] Eguchi, T., Benson, S., Foley, D.G., and Forney, K.A. 2017. Predicting overlap between drift gillnet fishing and leatherback turtle habitat in the California Current Ecosystem. Fisheries Oceanography 26(1):17-33.
[4] Pacific Council Swordfish Landings Report, May 2018, Available: https://www.pcouncil.org/wp-content/uploads/2018/05/G7_Att2_Landings_of_swordfish_2008-2017_Jun2018BB.pdf
[5] PFMC 2015. Pacific Coast Swordfish Management and Monitoring Plan. Available: http://www.pcouncil.org/wp-content/uploads/2015/08/G2_Att1_SwordfishPlan1509_SEPT2015BB.pdf, at page 4.

1) Establishes a limited entry permit regime for DSBG;
2) Allows active DGN fishermen to receive a DSBG limited entry permit or gear endorsement for both DGN and DSBG, so long as DGN is phased out within a time certain period, and the fishermen continue to land swordfish with DSBG; and
3) Allows for voluntary permit trade-ins such that an active DGN permit holder can surrender a DGN permit in exchange for a limited entry DSBG permit.

Cease efforts to authorize pelagic longline gear

Oceana opposes efforts to schedule scoping for an HMS fishery management plan (FMP) amendment that would authorize a pelagic shallow-set longline swordfish fishery off the U.S. West Coast, outside the EEZ, and we oppose proposals to 'test' pelagic longlines inside the West Coast EEZ. The California Current Ecosystem is globally important for its unique oceanographic conditions supporting a diverse array of wildlife, including sea turtles, sea lions, whales, dolphins, seabirds, and commercially and recreationally important fish species. The use of pelagic longlines has been duly considered, and appropriately rejected on several occasions; there is no need to revisit it now.

In 1989, with the enactment of Section 9028 of the Fish and Game Code, the California Legislature prohibited pelagic longline fishing in the EEZ off the California coast by banning the use of hook and line fishing gear longer than 900 feet.[6] This gear prohibition is incorporated in the Council's HMS FMP, and when faced with the opportunity to authorize pelagic longlines in 2009, the Council selected a "no-action" alternative due to bycatch concerns.

Pelagic shallow-set longlines are not a rational gear alternative for swordfish fishing off the West Coast. Shallow-set longlines in the U.S. Atlantic, Canadian Atlantic, and Hawaii had discard rates ranging from 44-51% of total catch with discard mortality rates of 20-36%. California deep-set longline experiments caught 76% unmarketable species while swordfish represented less than 2% of the catch.[7] The Hawaii shallow-set longline fishery from 2007-2017, had a 46% discard rate comprising 88 different species, a 31.4% rate of discard mortality and injury, and over 1,000 takes of protected marine mammals, sharks, sea turtles, and seabirds including seven ESA-listed species.[8]

In 2017, Oceana submitted a petition to the Council signed by 24,494 U.S. residents opposing authorization of pelagic longline fishing gear off the U.S. Pacific Coast.[9] Rather than wasting efforts on untenable pelagic shallow-set longline gear alternatives, the Council should continue to focus on the development and authorization of deep-set buoy gear as a responsible, low impact fishing gear for targeting swordfish off the U.S. West Coast.

Use Existing Statutory Authority to Address Concerns over Unsustainable Swordfish Imports

[6] Cal. Fish & Game Code § 9028
[7] Dewar, H. and Kohin, S. 2014. Deep-set Longline Study. March 2014 PFMC meeting. Agenda Item K. 5. b. Supplemental SWFSC Powerpoint 1. http://www.pcouncil.org/wp-content/uploads/K5b_SUP_SWFSC_PPT1_MAR2014BB.pdf
[8] https://www.pcouncil.org/wp-content/uploads/2018/02/B1b_Pub_Comment_2_Oceana_LLSwordfish_Mar2018BB.pdf
[9] http://www.pcouncil.org/wp-content/uploads/2017/03/B1b_Sup_PubCmt3_FullVersionElectricOnly_Oceana_Apr2017BB.pdf

The U.S. currently imports two times more swordfish than it catches domestically, including a majority of Mexican and Canadian swordfish catch. By requiring swordfish exporters to demonstrate that they are using clean methods to catch swordfish, the U.S. can influence responsible fishing abroad and hold foreign imports to the same standards as domestically caught swordfish. The Marine Mammal Protection Act (MMPA) prohibits import "of commercial fish or products from fish which have been caught with commercial fishing technology which results in the incidental kill or incidental serious injury of ocean mammals in excess of United States standards."[10]

NMFS finalized the import provisions of the MMPA in August 2016. Fish and fish products can only be imported into the United States if the harvesting nation has received a comparability finding from NMFS. To receive a comparability finding, the harvesting nation must demonstrate it has prohibited the intentional mortality or serious injury of marine mammals in the course of commercial fishing operations in the fishery. The harvesting nation must demonstrate that it has adopted and implemented, with respect to an export fishery, a regulatory program governing the incidental mortality and serious injury of marine mammals in the course of commercial fishing operations in its export fishery that is comparable in effectiveness to the U.S. regulatory program.[11] These safeguards protect marine mammals in foreign waters and provide a level playing field for U.S. fishermen.

Overall, actions prescribed in the Swordfish Management and Monitoring Plan must be consistent with the Council's objective to minimize bycatch in the swordfish fishery.

Thank you for your commitment to transition to a clean U.S. West Coast swordfish fishery. The Council should move forward to further reduce bycatch, phase out the use of DGN gear, prevent the introduction of harmful pelagic longlines, and promote an expanded domestic swordfish fishery with deep-set buoy gear innovated by West Coast scientists and fishermen.

Sincerely,

Geoffrey Shester, Ph.D.
California Campaign Director & Sr. Scientist

Erin Kincaid
Marine Scientist

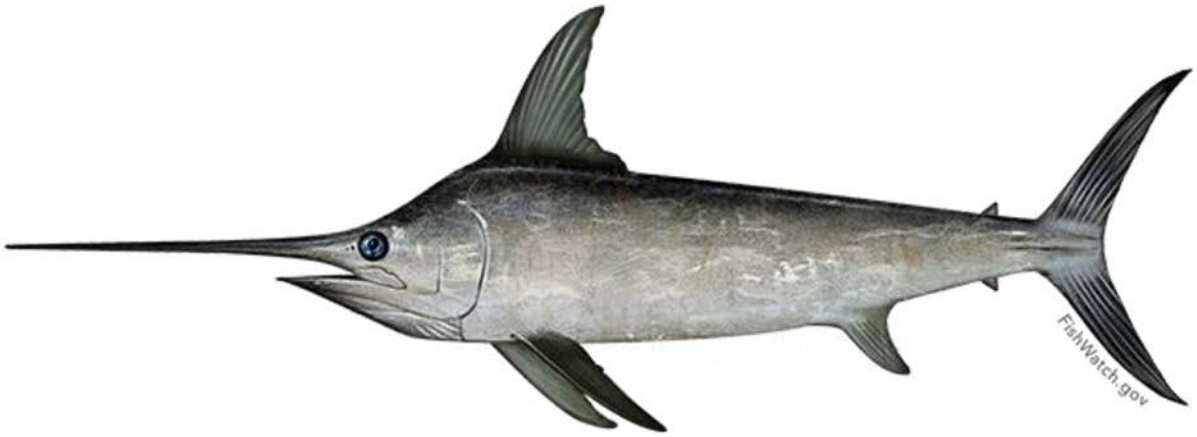
Attachments:

1. *Shester, G., Kincaid, E., Turner, C., and Enticknap, B. 2018. Providing Domestically Caught U.S. West Coast Swordfish: How to Achieve Environmental Sustainability and Economic Profitability. Oceana.*
2. *Oceana. August 2018. Stop the Nets: Sustainable Solutions to Catch Swordfish. Informational Brochure.*
3. *Oceana. 2018. California Swordfish Fishery: Comparing Drift Gillnets to Deep-Set Buoy Gear. Infographic.*
4. *Oceana. 2017 update. California Swordfish Drift Gillnet Fishery.*
5. *Oceana. 2017. Ensuring a Sustainable U.S. West Coast Swordfish Fishery: Benefits of Deep-Set Buoy Gear.*
6. *Oceana. 2017. Wildly Unforgiving: Dangers of Drift Gillnets off the California Coast.*
7. *California Fish and Game Commission. June 2018. Letter of support to Senator Allen for California Senate Bill 1017.*
8. *Oceana. February 2018. Collateral Capture: Bycatch in the Hawaii Shallow-Set Longline Fishery.*
9. *Los Angeles Times. July 2018. Dead dolphins, whales and sea turtles aren't acceptable collateral damage for swordfishing.*
10. *Lieutenant Governor Gavin Newsom. July 2018. Letter of support to Senator Allen for California Senate Bill 1017.*

[10] Marine Mammal Protection Act, 16 U.S.C. § 1371(a)(2).
[11] 81 Fed. Reg. 54,390, 54,390-54,391 (Aug. 15, 2016).

Providing Domestically Caught U.S. West Coast Swordfish:

How to Achieve Environmental Sustainability and Economic Profitability



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August 2018

OCEANA Protecting the World's Oceans

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Cover image: NOAA

Introduction

The California Current Large Marine Ecosystem off the U.S. West Coast is one of the richest temperate marine ecosystems in the world. Fueled by life-giving swarms of krill and forage fish like sardine and anchovy, these productive waters support a wide diversity of marine life including large and diverse populations of whales, dolphins, sea turtles and sea birds, as well as top ocean predators like white sharks, bluefin tuna and swordfish that travel here to feed. The California Current ecosystem also supports many recreational and commercial fisheries. One of those fisheries, the U.S. West Coast drift gillnet swordfish fishery, is at a major crossroad.

Drift gillnets targeting swordfish stretch up to one mile in length and are deployed at night amid this epicenter of ocean wildlife off California. This fishery is one of the dirtiest fisheries in the Nation in terms of its overall bycatch rate and impact to protected marine life. On average, the fishery throws overboard more animals than those kept. It also kills more dolphins than all other observed West Coast fisheries combined. Despite gear modifications to reduce marine mammal interactions and area closures to protect endangered sea turtles, major ecological concerns remain with the unacceptably high levels of bycatch associated with this fishing method. In addition, many fishermen have left the fishery and landings in California have decreased by 57 percent from 2008 to 2018.[1] Fortunately, however, there are other ways to catch swordfish that are cleaner and profitable.

The National Marine Fisheries Service (NMFS) and federal Pacific Fishery Management Council (Council) are considering alternative swordfish fishing gears like shallow-set longlines, deep-set longlines, and deep-set buoy gear.[2] If these fishing gears can maximize catch efficiency and minimize bycatch, they have the potential to replace drift gillnets and revitalize West Coast commercial swordfish fishing. In 2015, the Council and NMFS proposed regulations to implement strict limits—called hard caps—to limit the take of the nine most at-risk species of whales, dolphins, and sea turtles in the drift gillnet swordfish fishery. However, in 2017, NMFS withdrew its proposed rule claiming detrimental economic impacts, without providing the Council the opportunity to correct or address the issue. The Council also approved new monitoring requirements, including 100% observer coverage or electronic monitoring, to be phased in by 2018, and a suite of performance metrics to measure bycatch of other marine mammals and finfish. However, NMFS decided not to adopt these requirements and observer coverage in the fishery has remained below 20 percent on average.

The decline in U.S. West Coast swordfish landings raises concerns about the bycatch impacts of foreign-caught swordfish imports. While the extent of such a transfer effect is likely small (U.S. drift gillnet landings represent roughly 1% of U.S. swordfish consumption)[3], such concerns can be directly addressed by promoting clean domestic fisheries and banning imports from countries that do not meet U.S. standards. As fishery managers on the U.S. West Coast search

[1] PFMC. Swordfish Landings by fishery, 2008-2017. 2018. Agenda Item G.7 Attachment 2 https://www.pcouncil.org/wp-content/uploads/2018/05/G7_Att2_Landings_of_swordfish_2008-2017_Jun2018BB.pdf
[2] NMFS. Status of Exempted Fishing Permits. Available: http://www.westcoast.fisheries.noaa.gov/fisheries/migratory_species/status_exempted_permits.html
[3] California State Senate Appropriations Analysis, April 30, 2018. In 2015 DGN swordfish landings totaled 72.5 metric tons, while nearly 11,000 metric tons of swordfish were imported into the U.S. http://leginfo.legislature.ca.gov/faces/billAnalysisClient.xhtml?bill_id=201720180SB1017#

for ways to boost waning regional swordfish catches, understanding the benefits and drawbacks of different gear types is essential. To that end, this report contains a comparative analysis of the gear types utilized in North American swordfish fisheries, with recommendations for how alternative gear types can best replace destructive drift gillnets. This analysis concludes with a transition plan for the drift gillnet fleet to deep-set buoy gear and harpoon gear that could lead to a clean and productive West Coast swordfish fishery.

Bycatch

"Bycatch" refers to the incidental catch, discarding, and resultant injury or mortality of non-target fish, protected marine species and seabirds in fisheries.[4] Under the Magnuson-Stevens Fishery Conservation and Management Act, Regional Fishery Management Councils and NMFS have an ongoing responsibility to minimize and avoid bycatch.[5] As stated in the National Oceanic Atmospheric Administration (NOAA) National Bycatch Report:

> *Ensuring the sustainability of marine resources for future generations is the primary mission of the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS). Reducing the unintentional capture, or bycatch, of fish, marine mammals, sea turtles, and seabirds is an essential part of this goal and is required under NMFS' guiding legislation.*[6]

Under the law, conservation and management measures are required to minimize and avoid bycatch. Bycatch should be avoided, but where it cannot be avoided, managers must work to minimize the mortality of bycatch. In some fisheries, like the U.S. West Coast swordfish fishery, different gear types can be used that are more selective than drift gillnets, thus target species can be selectively caught, avoiding the take of non-target marine life in the first place.

The Drift Gillnet Fishery

Drift gillnets are an unselective fishing gear used off the California coast to catch swordfish and thresher sharks. The enormous nets, which can measure over a mile in length and two hundred feet in height, drift near the surface at night in the open ocean and indiscriminately entangle many forms of marine life. Due to this, drift gillnets have been internationally recognized as harmful. The practice is banned in many places around the globe including the Mediterranean Sea and on the international High Seas. In the United States, domestic concerns over swordfish drift gillnet gear have led to prohibitions in all coastal states except California. [7,8,9]

[4] NOAA: Policy Directive (2.7.2006).
[5] Magnuson Stevens Fishery Conservation and Management Act, 16 U.S.C. § 1853(a)(11).
[6] National Marine Fisheries Service. 2011. U.S. National Bycatch Report [W. A. Karp, L. L. Desfosse, S. G. Brooke, Editors]. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-F/SPO-117E, 508 p.
[7] PFMC. 2013, Status of the U.S. West Coast Highly Migratory Species Fisheries through 2013. Stock Assessment and Fishery Evaluation Report (SAFE).
[8] PFMC. 2011. Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species: As Amended Through Amendment 2.
[9] NMFS. 2013. Amendment 8 to the 2006 Consolidated Atlantic Highly Migratory Species Fishery Management Plan: Commercial Swordfish Management Measures. 2013.

The California-based drift gillnet fishery discards more animals than it retains. According to data from the NOAA Drift Gillnet Fishery Observer Program, from 2008 to 2018, the drift gillnet fishery discarded approximately 52 percent of all animals caught.[10] A few examples of the frequently discarded species include ocean sunfish (*Mola mola*), blue sharks, pelagic stingrays, and shortfin mako sharks.

NMFS estimates of marine mammals, seabirds, and sea turtles caught in the DGN fishery from 2001-2015.

753 Dolphins
507 Seals and Sea Lions
112 Seabirds
53 Whales
35 Sea Turtles

Source: Carretta JV, Moore JE, Forney KA (2017) Regression tree and ratio estimates of marine mammal, sea turtle, and seabird bycatch in the California drift gillnet fi shery: 1990-2015. NOAA Technical Memorandum, NOAA-TM-NMFS-SWFSC-568. 83 p. Tables 4-39.

© NOAA, 1997. Short beaked common dolphin killed in a California swordfish drift gillnet. Its tail fin is cut off.

From 2001-2015, NMFS estimates that the California drift gillnet fishery caught over 1,400 marine mammals, seabirds and sea turtles.[11] All dolphins were killed, and only a handful of the large whales, turtles and sea lions escaped without serious injury or death. In addition, more than 140,000 fish, including tens of thousands of sharks were thrown overboard.[12] In response to the take of marine mammals in the 1990s, bycatch reduction measures including buoy line extenders and acoustic pingers — devices that emit noise to keep marine mammals away from nets — were made mandatory in 1997. However, there have only been modest improvements in protected species interaction rates in the fishery; from 1990 to 2000, a combined 13.7 marine mammals, sea turtles, and sea birds were caught per 100 drift gillnet sets. From 2004 to 2014, this number fell only marginally to 10.8 per 100 sets.[13] A few of the protected species caught by the drift gillnet fleet include humpback, gray, and minke whales, bottlenose dolphins, Pacific white-sided dolphins, leatherback sea turtles, California sea lions, and Northern elephant seals.

[10] NOAA. 2017. West Coast Region Observer Program. http://www.westcoast.fisheries.noaa.gov/fisheries/wc_observer_programs/sw_observer_program_info/data_summ_report_sw_observer_fish.html
[11] Carretta JV, Moore JE, Forney KA (2017) Regression tree and ratio estimates of marine mammal, sea turtle, and seabird bycatch in the California drift gillnet fishery: 1990-2015. NOAA Technical Memorandum, NOAA-TM-NMFS-SWFSC-568. 83 p. Tables 4-39.
[12] NOAA. 2017. West Coast Region Observer Program. http://www.westcoast.fisheries.noaa.gov/fisheries/wc_observer_programs/sw_observer_program_info/data_summ_report_sw_observer_fish.html
[13] *Id.*

Drift gillnets also threaten endangered sperm whales living in the California Current ecosystem. In 2010, two sperm whales were observed caught by the California drift gillnet fleet. One of the whales was confirmed dead and the other whale sustained serious injuries that were likely fatal.[14] These mortalities exceeded the potential biological removal (1.5 animals)—the maximum number of deaths that the population can sustain and still recover — set at the time for the endangered whales under the Marine Mammal Protection Act.[15] The two sperm whale mortalities occurred in a set where an onboard observer noted that the acoustic pingers were functioning, both before and after the whales were killed.[16] NMFS originally estimated 16 sperm whales were injured or killed by the drift gillnet fleet in 2010 and issued emergency regulations in 2013 requiring hard caps on sperm whale bycatch and 100 percent observer coverage.[17] However, these protections were removed following NMFS's recalculation of potential biological removal and mortality estimates. Since 2010, the observer program has documented the fishery killing gray whales, northern right whale dolphins, shortfin pilot whales, Risso's dolphins, sea lions, elephant seals and porpoises. Furthermore, the fishery continues to catch critically endangered Pacific leatherback sea turtles, including an observed interaction in 2012.[18] NMFS estimates the fishery killed or seriously injured six leatherback sea turtles from 2001-2015.[19] Despite the efforts of fishery managers, bycatch reduction measures have failed to end the indiscriminate killing of marine life.

[14] Carretta, James V., and L. Enriquez. 2012. Marine Mammal and seabird bycatch in California gillnet fisheries in 2010. NOAA Fisheries. Administrative Report LJ-12-01. https://swfsc.noaa.gov/uploadedFiles/Divisions/PRD/Programs/Coastal_Marine_Mammal/2010_Bycatch_Estimates_Carretta_Enriquez%20LJ-12-01.pdf

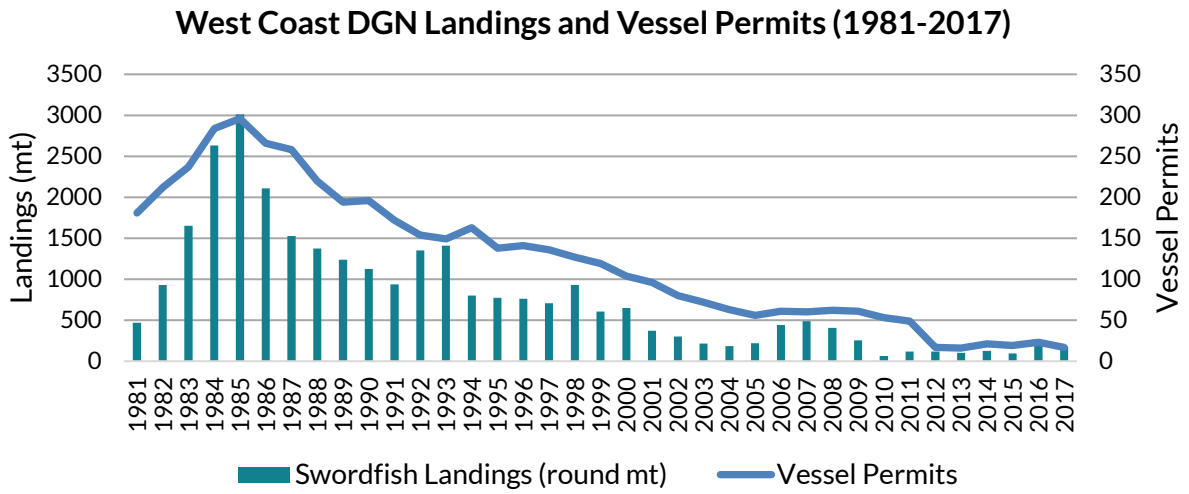
[15] NMFS. 2014. Recommendations from the Pacific Offshore Cetacean Take Reduction Team to Minimize Sperm Whale Interactions in the West Coast Swordfish Drift Gillnet Fishery. 2014. Agenda Item K.5.b. http://www.pcouncil.org/wp-content/uploads/K5b_NMFS_RPT_POCTRT_MAR2014BB.pdf

[16] Carretta, James V., and L. Enriquez. 2012. Marine Mammal and seabird bycatch in California gillnet fisheries in 2010. NOAA Fisheries. Administrative Report LJ-12-01.

[17]http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/swr_observer_program/dgn_observer_fleet_notice_2013.pdf

[18] NOAA. 2017. West Coast Region Observer Program. http://www.westcoast.fisheries.noaa.gov/fisheries/wc_observer_programs/sw_observer_program_info/data_summ_report_sw_observer_fish.html

[19] Carretta JV, Moore JE, Forney KA (2017) Regression tree and ratio estimates of marine mammal, sea turtle, and seabird bycatch in the California drift gillnet fi shery: 1990-2015. NOAA Technical Memorandum, NOAA-TM-NMFS-SWFSC-568. 83 p. Tables 4-39.



West Coast DGN landings and vessel permits. Source: PFMC HMS SAFE 2012, Swordfish Landings by fishery, 2008-2017.

In addition to high levels of bycatch, participation and landings in the drift gillnet fishery are also declining. In California, annual landings by the drift gillnet fleet have declined since peaking at 2,198 metric tons (mt) in the mid-1980s.[20] In 2017, the California drift gillnet fleet landed approximately 176 mt of swordfish.[21] Participation has also dropped precipitously; from 2000 to 2017 the number of drift gillnet permits that have been actively fishing declined by 86 percent, from 119 to just 17.[22]

Exploring North American Swordfish Fisheries and Alternative Gears Used to Catch Swordfish

Alarmingly high levels of bycatch, frequent interactions with endangered and protected species, decreasing swordfish landings, and declining participation by fishermen, all signal that a transition from drift gillnets to clean gear types is needed. There are a number of other gear types that can be used to catch swordfish. Some of these gear types could help reestablish a productive U.S. West Coast swordfish fishery, while others would only exacerbate current problems. Exploring the methods used by other North American swordfish fisheries demonstrates which alternative gears could help revitalize the U.S. West Coast swordfish fishery.

[20] PFMC. 2012, Status of the U.S. West Coast Highly Migratory Species Fisheries through 2011. Stock Assessment and Fishery Evaluation Report (SAFE).
[21] PFMC. Swordfish Landings by fishery, 2008-2017. 2018. Agenda Item G.7 Attachment 2 https://www.pcouncil.org/wp-content/uploads/2018/05/G7_Att2_Landings_of_swordfish_2008-2017_Jun2018BB.pdf
[22] PFMC. 2014 HMSMT Report: Drift Gillnet Management. 2014. Agenda Item K.5.b. http://www.pcouncil.org/wp-content/uploads/K5b_HMSMT_DGN_MAR2014BB.pdf

Harpoon Gear

In **California**, archeological records show that harpoon fishing for swordfish has been practiced for nearly 3,000 years.[23] While technologies have certainly changed, the fundamentals remain the same. To catch swordfish, fishermen spot the swordfish finning, jumping, or basking near the surface, and strike the fish with a harpoon that is attached to a buoy.

California's modern day swordfish harpoon fishery first developed in the early 1900s. Logbook records from 1974 to 1993 indicate that 74 percent of pursued swordfish were harpooned and 91 percent of the harpooned swordfish were landed.[24] Harpoon gear was once a major contributor to the West Coast swordfish fishery and in 1978 over 300 vessels made nearly 1,700 mt in landings.[25] However, after drift gillnets were authorized by the California legislature as a legal gear type, many harpoon vessels converted to drift gillnets and harpoon participation and landings quickly declined. In 2017, only 24.5 mt of swordfish were landed on the West Coast with harpoon gear.[26] The harpoon fishery is considered highly selective and there is near zero bycatch associated with the fishery.[27] The California harpoon fishery has no documented incidents of marine mammal bycatch.[28]

There is also a **Canadian** harpoon fishery operating in the Atlantic that is allotted just 10 percent of the Canadian national swordfish quota. Holders of type "A" harpoon licenses, which receive the vast majority of the quota, were able to catch their full quota in seven of the eight years from 2002 to 2009.[29] From 2000 to 2013, an average of over 172 mt was landed by harpoon gear in Canada.[30] Like the California harpoon fishery, the Canadian harpoon fishery is clean; there is no bycatch associated with the fishery and there are no expected interactions with endangered or protected species.[31] The Canadian harpoon fishery's steady production for over a decade shows that modern harpoon fisheries can be financially and ecologically viable.

[23] Kronman, M. 1988. Harpooning: slow but steady improvements in the technology of a timeless skill. Natl. Fisherman, August, p. 5357, as in, Coan Jr, A.L., Vojkovich, M., Prescott, D. 1998. The California Harpoon Fishery for Swordfish, *Xiphias gladius.*
[24] Coan Jr, A.L., Vojkovich, M., Prescott, D. 1998. The California Harpoon Fishery for Swordfish, *Xiphias gladius.*
[25] *Id.*
[26] PFMC. Swordfish Landings by fishery, 2008-2017. 2018. Agenda Item G.7 Attachment 2 https://www.pcouncil.org/wp-content/uploads/2018/05/G7_Att2_Landings_of_swordfish_2008-2017_Jun2018BB.pdf
[27] California Ocean Science Trust. 2013. Rapid Assessments for Selected California Fisheries. http://opc.ca.gov/webmaster/ftp/project_pages/Rapid%20Assessments/CA%20Rapid%20Assessments.pdf
[28] NMFS. 2014. List of Fisheries, 2014. Web. Last Accessed: October 19, 2015.
[29] Intertek Moody Marine (IMM). 2010. North Atlantic Swordfish Canadian Harpoon Fishery Public Certification Report.
[30] ICCAT. 2015. ICCAT Database. Web. Last Accessed: October 20, 2015.
[31] Intertek Moody Marine (IMM). 2010. North Atlantic Swordfish Canadian Harpoon Fishery Public Certification Report.

Shallow-set Longline

© NOAA, 2013. An endangered Pacific leatherback sea turtle ensnared by a Hawaii-based shallow-set longline.

A shallow-set longline (SSLL) consists of a mainline that can measure up to 60 miles long, attached to hundreds or thousands of baited hooks. Shallow-set gear is set from dusk until dawn when targeting swordfish. The **Hawaii-based** shallow-set longline fleet is required to use circle hooks and mackerel-type bait, which have reduced sea turtle interactions. However, this fishery remains problematic; since reopening in 2004, the fishery has been forced to close twice due to excessive interactions with endangered loggerhead and leatherback sea turtles and was shut down in May of 2018 following settlement of a 2012 lawsuit challenging NMFS action to increase caps for sea turtle takes. From 2007 to 2017, the fleet also caught 755 seabirds, 92 marine mammals, and 193 sea turtles.[32] From 2007 to 2017, on board observers noted that 46 percent of the animals caught by this fishery were discarded, often dead or dying (31 percent).[33]

The **U.S. Atlantic** shallow-set longline fishery targets primarily swordfish and tunas. Swordfish caught in the Atlantic Ocean are subject to minimum size requirements and undersized fish must be released.[34] These size regulations are intended to protect juvenile fish, allowing them to grow and reproduce. However, as a result of being caught underwater for hours, hooked juvenile swordfish have little chance at survival. In the Atlantic shallow-set longline fishery, between 2005 and 2011, 71 percent of the swordfish discards were released dead.[35] In 2012, NMFS estimated that U.S. Atlantic SSLL the fishery caught 413 marine mammals, 1,006 leatherback sea turtles, and 681 loggerhead sea turtles.[36] From 2005 to 2011, the U.S. Atlantic SSLL fishery's catch (not including the Gulf of Mexico and Caribbean) had a 49 percent discard rate and only 17 percent of the total catch was comprised of retained swordfish.[37]

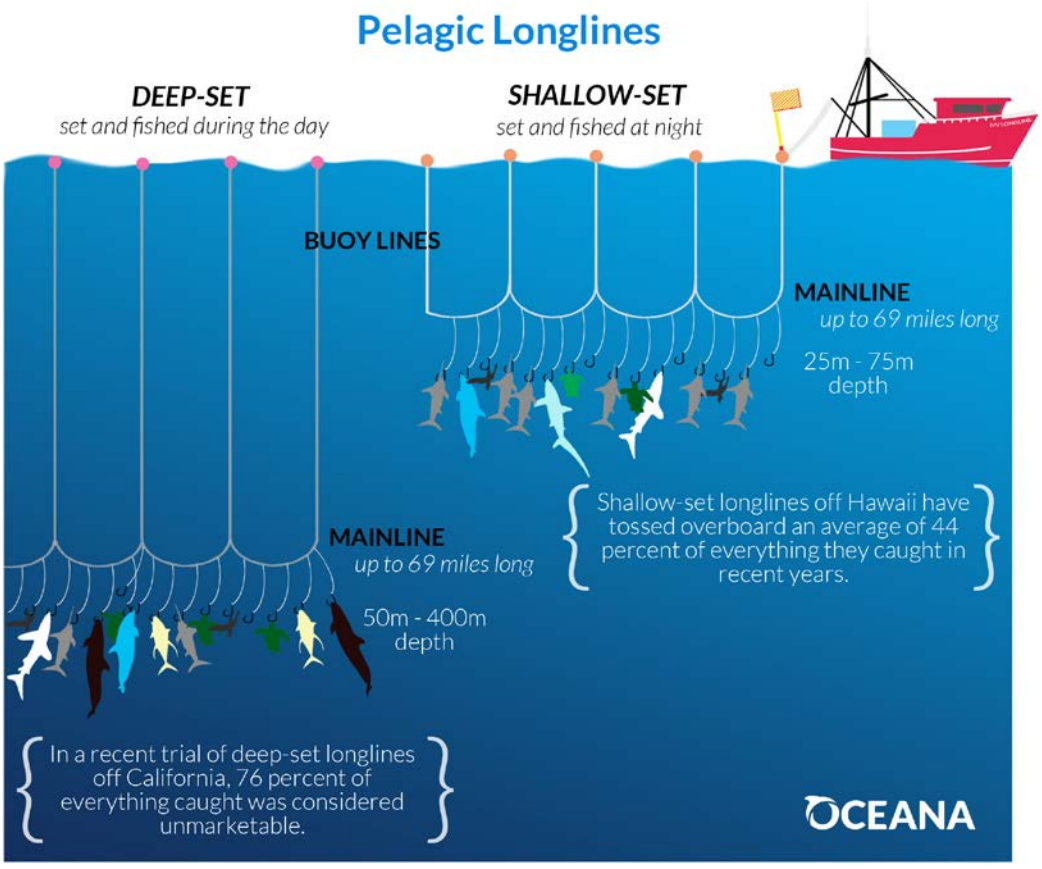
Canada's swordfish fisheries are exclusive to the Atlantic coast and 100 percent of Canadian swordfish catch is exported to the United States.[38] This fishery catches an estimated 1,200 loggerhead sea turtles and 100,000 sharks per year.[39] The fishery also has over eight protected

[32] NOAA. 2014. Pacific Islands Regional Office Observer Program. Hawaii Longline Shallow-set Quarterly and Annual Status Reports. http://www.fpir.noaa.gov/OBS/obs_hi_ll_ds_rprts.html
[33] NMFS. 2017. Hawaii Shallow-set Longline Data (2007-2017). Unpublished data.
[34] NOAA. 2014. NOAA Highly Migratory Species Commercial Compliance Guide. http://www.nmfs.noaa.gov/sfa/hms/compliance/guides/documents/hms_commercial_compliance_guide_april_2014__print_.pdf
[35] MRAG. 2013. MSC Public Certification Report for U.S. North Atlantic Swordfish Pelagic Longline and Handgear Buoy Line Fishery.
[36] NMFS. 2014. Stock Assessment and Fishery Evaluation (SAFE) Report for Atlantic Highly Migratory Species.
[37] MRAG. 2013. MSC Public Certification Report for U.S. North Atlantic Swordfish Pelagic Longline and Handgear Buoy Line Fishery.
[38] Department of Fisheries and Oceans, Canada. 2014. "Swordfish: Species at a glance" Last Accessed October 19, 2015. http://www.dfo-mpo.gc.ca/fm-gp/sustainable-durable/fisheries-peches/swordfish-espadon-eng.htm
[39] Christian, Claire, et al. 2013. "A review of formal objections to Marine Stewardship Council fisheries certifications." *Biological Conservation* 161: 10-17.

species (marine mammals, sea turtles, and sea birds) interactions for every 100 retained swordfish it lands; this is a higher rate than any of the other fisheries assessed in this report. Observer data shows that 51 percent of the catch was discarded between 2002 and 2009.[40] Despite the high levels of bycatch in the Canadian SSLL fishery, the fleet is allotted 90 percent of Canada's national swordfish quota.

Deep-set longline

This report focuses on the shallow-set longline fishery because deep-set longlines primary targets include tunas. However, an alternative experiment using deep-set longline gear was recently conducted off **California**. The results are discouraging. Just 24 percent of the catch was marketable species and less than two percent of the total catch was swordfish.[41] In these experimental trials, over 40 unmarketable blue sharks were caught for every swordfish. Deep-set longline gear is similar to shallow-set longline gear, however deep-set longlines are deployed at greater depths and fished during the day. The low percentage of target catch along with high bycatch rates make deep-set longline gear a poor alternative for the West Coast swordfish fishery.



Both shallow-and deep-set longlines off Hawaii discard important and iconic marine life accidentally caught during fishing, including sea turtles, sharks, whales, albatrosses, and dolphins.

[40] Intertek Moody Marine (IMM). 2011. North Atlantic Swordfish Canadian Pelagic Longline Fishery. Volume 1: Final Report and Determination.
[41] Dewar, H., Kohin, S. 2014. Deep-Set Longline Study. Agenda Item K.5.b. NMFS SWFSC Report. http://www.pcouncil.org/wp-content/uploads/K5b_NMFS_SWFSC_ALTERNATIVE_GEAR_MAR2014BB.pdf

Deep-Set Buoy Gear

In 2006, a deep-set buoy gear fishery was established on the **U.S. Atlantic Coast**. There, fishing takes place at night, with one to two hooks attached to each buoy. Buoys are deployed and retrieved by hand and a vessel will normally deploy 11 to 14 buoys per trip. Between 2007 and 2012, the number of vessels participating in the fishery increased from 42 to 55.[42] Landings from logbook records show that the catch composition during that time period was over 90 percent swordfish.[43] Atlantic buoy gear is also subject to minimum size requirements for swordfish, but because buoy gear is constantly monitored, hooked bycatch is quickly landed and released; subsequently the fishery has very low rates of bycatch mortality. According to logbook records, between 2007 and 2012, 92 percent of the swordfish discarded were released alive.[44] This means that high numbers of released juvenile swordfish may grow large enough to reproduce. The Atlantic buoy gear fishery has low bycatch interaction rates and NMFS has determined that the likelihood of buoy gear injuring marine mammals and protected species is remote.[45]

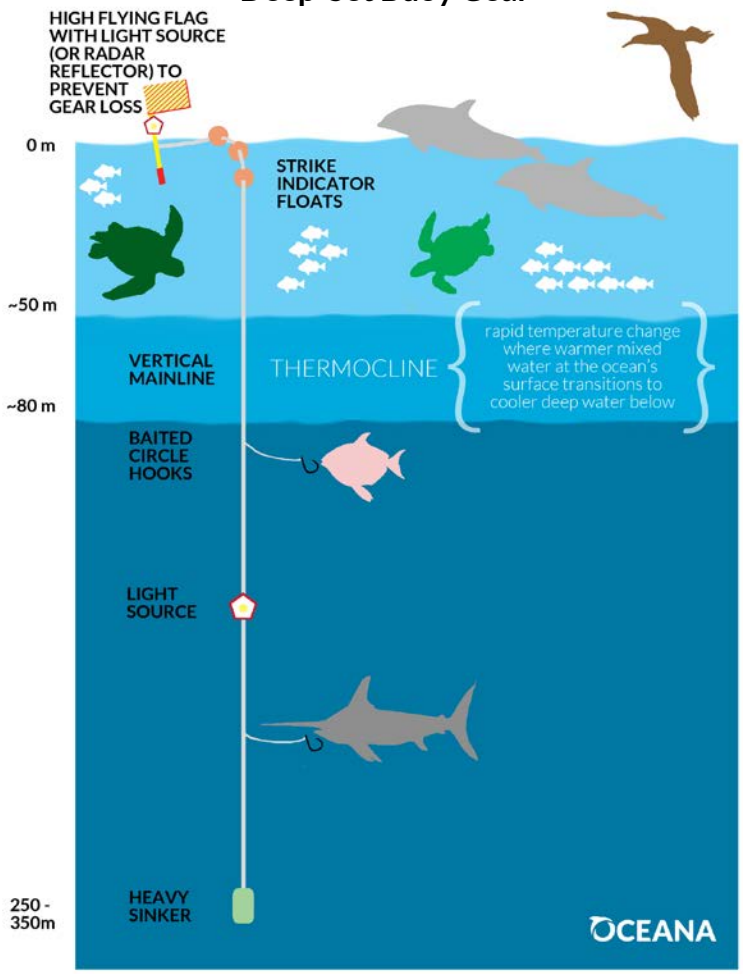
In 2011, researchers and fishermen began testing the use of deep-set buoy gear to target swordfish off **California,** modeled on the commercially successful swordfish fishery in the Atlantic Ocean. Each buoy is connected to a single vertical line with two to three branch lines and baited hooks. The gear is deployed at depths between 250 meters and 350 meters (820 feet to 1148 feet) during the daytime, far below the surface depths where species like sea turtles frequently swim. Commercial fishing trials began in 2015, after four years of successful research trials demonstrated the gear could be profitable and had minimal bycatch. The commercial fishing trials, authorized under exempted fishing permits issued by NMFS, have further confirmed these successful results. Results from the deep-set buoy gear commercial trials in California are demonstrate profitability and minimal bycatch, and the Pacific Fishery Management Council has scheduled authorization of the gear for March 2019.

From 2011 to 2017, more than 98 percent of fish caught in deep-set buoy gear off California were marketable species. There were no sea turtle takes, and only two marine mammal interactions (Northern elephant seals) where the animals were quickly released alive. The catch was primarily swordfish (approximately 83 percent), followed by bigeye thresher shark (approximately 12 percent), and the remainder was various shark species, escolar, and opah.[46] Unlike many other gear types, deep-set buoy gear is actively tended by fishermen, and when a bite is detected the gear is immediately hauled in; this means that if bycatch is captured, it can be released quickly with a high probability of post-release survival. In fact, all non-marketable species captured in experimental and commercial trials to date were released alive.[47] Swordfish caught by deep-set buoy gear are a higher value product pound for pound than drift gillnet or

[42] NMFS. 2014. Stock Assessment and Fishery Evaluation (SAFE) Report for Atlantic Highly Migratory Species.
[43] *Id.*
[44] *Id.*
[45] NMFS. 2013. Amendment 8 to the 2006 Consolidated Atlantic Highly Migratory Species Fishery Management Plan: Commercial Swordfish Management Measures. 2013.
[46] Exempt Fishery Proposal Application for Deep-Set Buoy Gear. Pfleger Institute of Environmental Research. February 2015. http://www.pcouncil.org/wp-content/uploads/H3a_Att2_PIER_MAR2015BB.pdf; PFMC. 2015-2017 PIER Deep-set Buoy Gear EFP. June 2018. Agenda Item G.4 https://www.pcouncil.org/wp-content/uploads/2018/05/G4_Att1_PFMC_2017-2018.BB_.PIER-DSBG.EFP_.Update_Jun2018BB.pdf
[47] *Id.*

pelagic longline caught swordfish (imported and domestic), due to greater freshness, quality, and market demand for sustainable seafood. From 2015-2017, the average market price for swordfish caught with deep-set buoy gear (2015-2017) was $6.53 per pound, versus $3.92 per pound for drift gillnet caught swordfish.[48] A higher market price for selective gear increases its profitability and economic viability. Switching to deep-set buoy gear may involve initial transition costs, with more time required to set and retrieve the gear relative to deploying a drift gillnet. Deep-set buoys, however, may provide fishermen with additional opportunities to fish in locations that are off limits to drift gillnets per existing regulations and where pelagic longlines are banned due to bycatch interactions.[49] High levels of targeted catch and low levels of discard mortality make deep-set buoy gear a profitable, low-bycatch alternative to drift gillnets, with potential to increase domestic landings of swordfish on the U.S. West Coast.

Deep-Set Buoy Gear



Deep-set buoy gear targets swordfish and secondary species like opah, thresher sharks, and mako sharks below the thermocline during the daytime, depths that greatly reduce interactions with marine mammals and sea turtles.

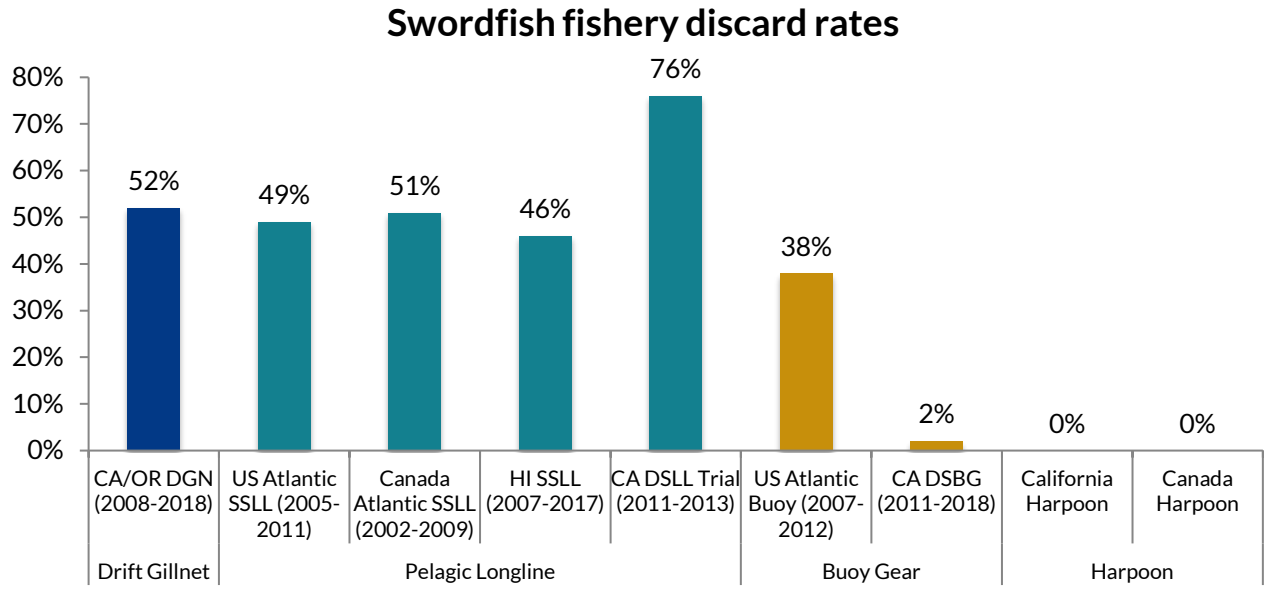
[48] PFMC. Swordfish Landings by fishery, 2008-2017. June 2018. Agenda Item G.7 Attachment 2 https://www.pcouncil.org/wp-content/uploads/2018/05/G7_Att2_Landings_of_swordfish_2008-2017_Jun2018BB.pdf
[49] Sepulveda et. al. Testing Modified Deep-Set Buoy Gear to Minimize Bycatch and Increase Swordfish Selectivity. 2014.

Comparison of Swordfish Fisheries

A side-by-side comparison across swordfish fisheries can show us which gear types may be best suited to transition the West Coast swordfish fishery to clean and sustainable methods. For this analysis we compared discard rates, discard mortality, percentage of total catch that is swordfish, and sensitive species caught per retained swordfish across North American swordfish fisheries. These metrics were selected because they help address current concerns in the fishery regarding total catch and selectivity. When compared, these data help elucidate the best options for a clean and productive swordfish fishery on the West Coast.[50]

Discard Rate

The discard rate measures the percentage of the total catch that is discarded. Discards can be alive or dead and include undersized target catch, non-target species, or even protected species—like whales and sea turtles. The drift gillnet fishery has the highest discard rate of any of the commercial fisheries assessed. During a ten-year period from 2008 to 2018, the drift gillnet fishery discarded 52 percent of its catch. Data revealed that commercial longline fisheries also have high discard rates, ranging from 46 percent to 51 percent. For the experimental fisheries (deep-set longlines and deep-set buoy gear) non-marketable species have been used as a proxy for discards because non-marketable species have no economic value and are likely to be discarded. The experimental California deep-set longline catch was comprised of an astounding 76 percent non-marketable species. While Atlantic deep-set buoy gear is highly selective for swordfish, size-limit regulations prevent the retention of undersize fish, so most of the discards are juvenile swordfish. The California deep-set buoy gear trials revealed that less than two percent of the catch was non-marketable species and the harpoon fisheries are estimated to have a discard rate of zero.

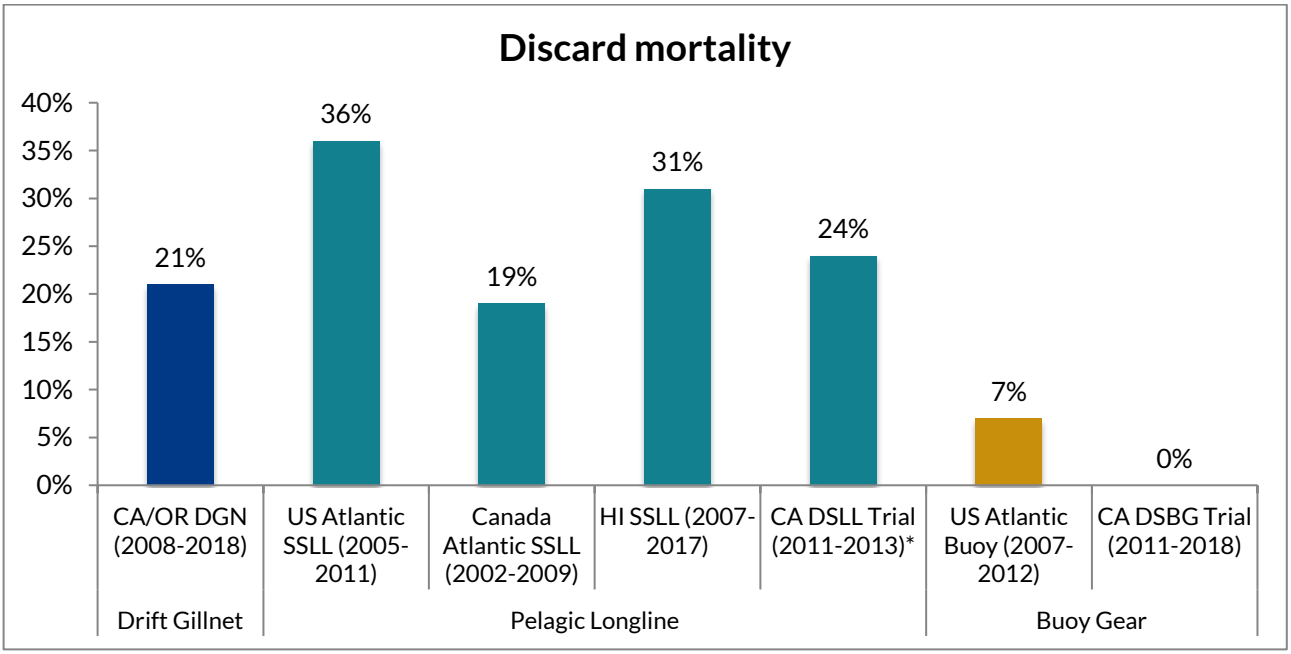


[50] Note: The sources for all data used in these comparisons can be found in the references section. Data that was collected by onboard observers has been used (to the extent available) for the purposes of this analysis.

Discard Mortality

Not all discards are released dead. Discard mortality measures the percentage of discards that are discarded dead, injured, or in an unknown state. However, it does not include potential post-release mortality, which can be high for some species but is not currently assessed. The process of being caught in nets or on hooks can be traumatic. Some animals that are released may live for several hours or days before succumbing to injuries. Due to insufficient species-specific scientific studies, these post-release mortalities are difficult to calculate and are not counted in discard mortality estimates, thus the figures for discard mortality likely underrepresents total mortality.

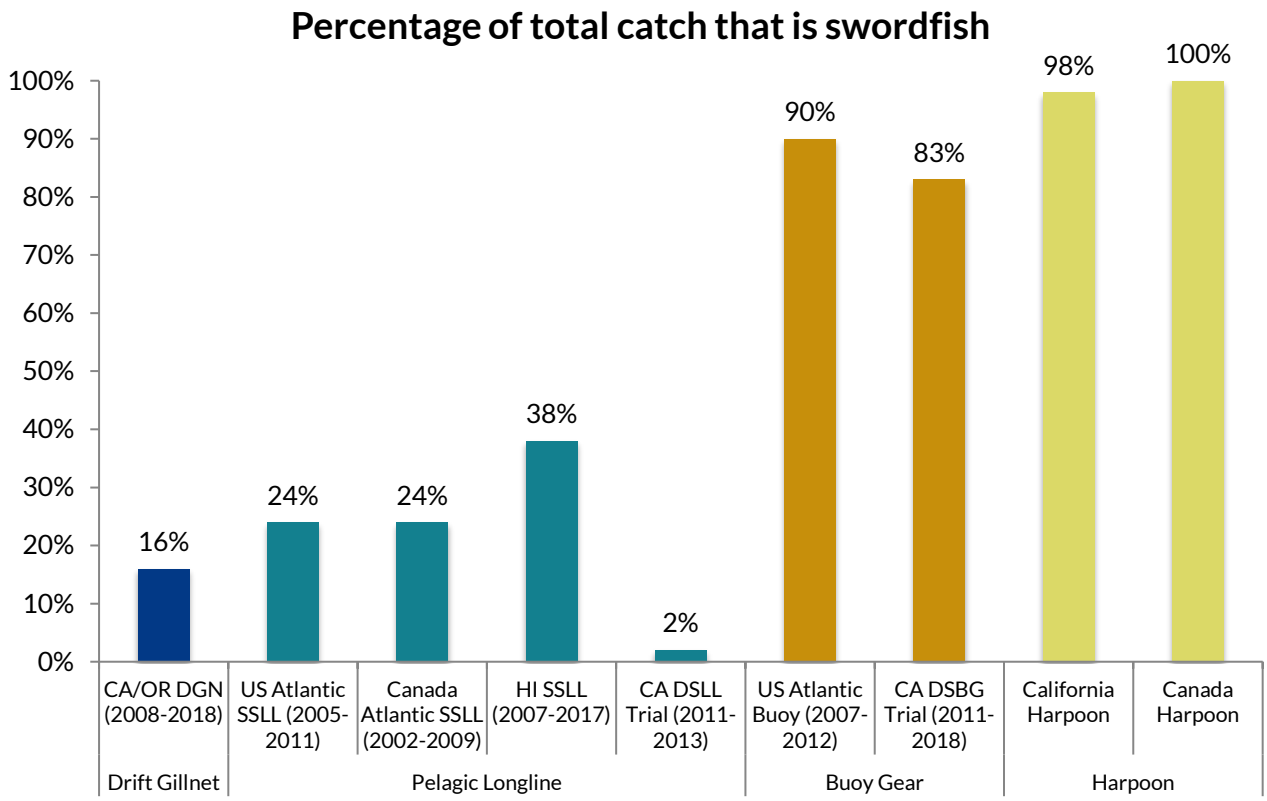
Data shows that of the swordfish fisheries analyzed, those utilizing shallow-set longline gear, deep-set longline gear, and drift gillnets had higher discard mortality than deep-set buoy gear. These gears are normally passively fished for many hours at a time; as a result, animals that are caught in the nets or longlines are often trapped beneath the surface for hours. Marine mammals are unable to surface for air and sharks are unable to pass water over gills, and drown. In contrast, buoy gear is actively monitored, meaning that bycatch can be quickly released, greatly improving the chance of survival.



Note: Discards with a status of "unknown" or "injured" are counted as mortalities.

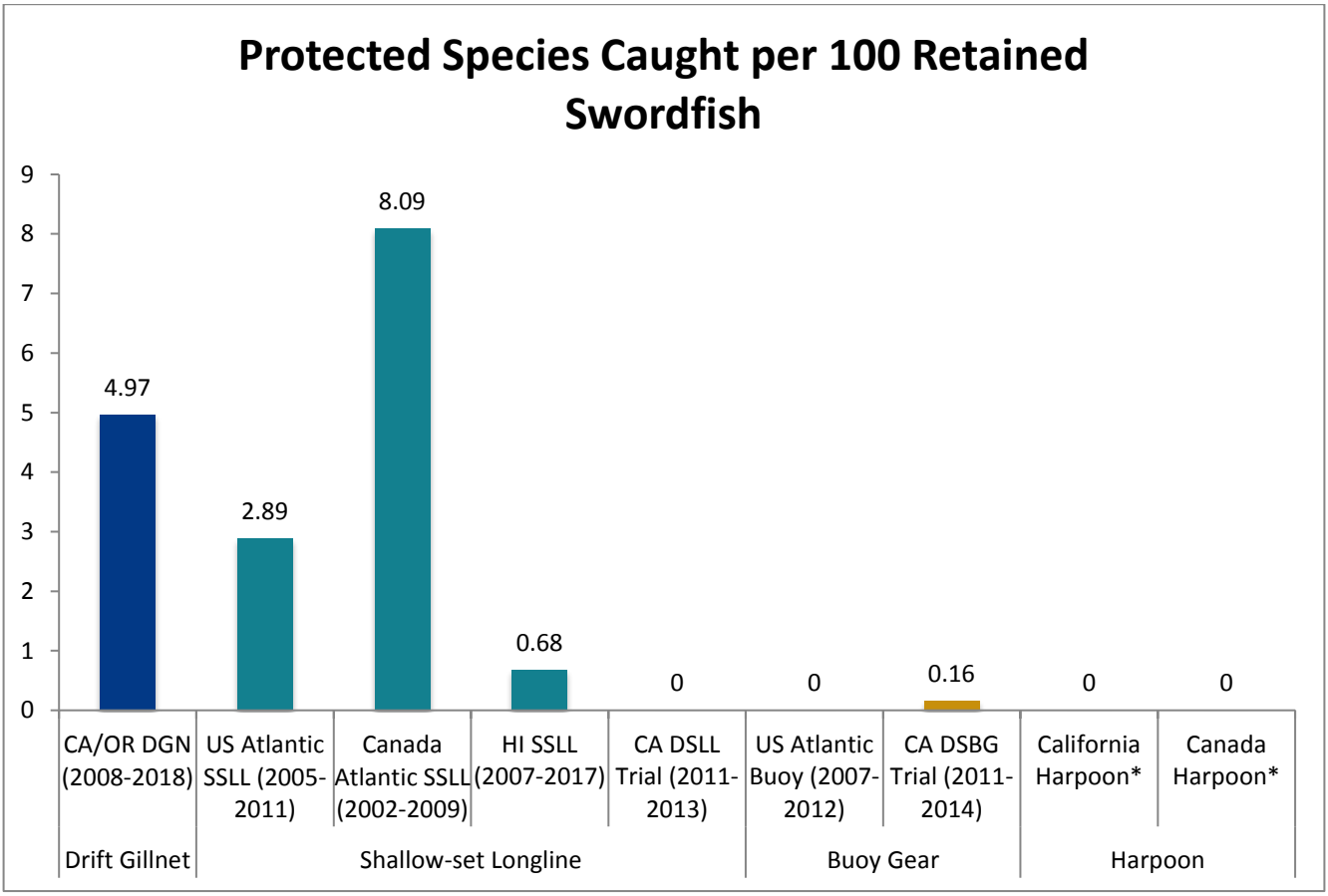
Percentage of the Total Catch that is Swordfish

Maximizing the catch of the target species is critical to the productivity and profitability of a fishery. The ability to catch the target species — in this case swordfish — is also a strong indicator of a gear's efficiency and selectivity. In the drift gillnet fishery only 16 percent of the animals caught were swordfish — the lowest number of any commercial fishery analyzed. Commercial longline gears performed better, with swordfish comprising between 24 percent and 38 percent of the total catch. The California deep-set buoy gear trials and Experimental Fishing Permits (EFP) resulted in a catch composition of 83 percent swordfish, and the commercially successful Atlantic buoy gear fishery is comprised of 90 percent swordfish. Notably, 98 to 100 percent of the harpoon catch is swordfish.



Comparing the Bycatch of Protected Marine Life to Retained Swordfish

Comparing the bycatch of protected marine life (marine mammals, sea turtles, and seabirds) with the amount of retained swordfish is a measure of the overall impact of a swordfish fishery on sensitive and important species adjusted for the amount of swordfish landed. The figure below answers the question: for every 100 swordfish kept, how many interactions did the fishery have with protected species? The highest proportion of protected species per 100 retained swordfish was recorded by the Canadian SSLL fishery, which caught over eight marine mammals, seabird or sea turtles per 100 retained swordfish.



* Based on data from Fisheries Logbook System in NMFS, 2014 and observer data from Kerstetter, 2009.

Transitioning the West Coast Swordfish Fishery to Deep-set Buoy Gear and Supplementing with Increased Harpoon Gear

The bycatch comparisons in this report show that drift gillnet gear is one of the most destructive methods for catching swordfish among North America's swordfish fisheries. Concerns over high discard rates, frequent interactions with protected species, and waning landings and participation demonstrate a need to transition from drift gillnets to selective fishing methods.

Shallow-set longlines, a gear type that is currently banned off the West Coast, are not a solution as they would only create a new suite of bycatch problems including additional takes of several endangered species. Data from SSLL fisheries in Hawaii, the U.S. Atlantic, and Canada, clearly show that the introduction of pelagic longlines would only exacerbate the bycatch issues that are pervasive in the California swordfish drift gillnet fishery.

Deep-set longlines are also an unacceptable alternative. The DSLL trials in California have shown that less than 2 percent of the total catch is actually comprised of swordfish and over three quarters of the catch are unmarketable species, primarily blue sharks. Like SSLL, a commercial DSLL fishery on the West Coast would only exacerbate current bycatch issues. Although drift gillnets and longlines are poor choices for targeting swordfish, the West Coast swordfish fishery has two excellent options: deep-set buoy gear and harpoon gear.

Deep-set Buoy Gear

Why deep-set buoy gear should replace drift gillnets: Buoy gear is an efficient and highly selective method to catch West Coast swordfish. In the deep-set buoy gear trials conducted off California to date, 83 percent of the catch was swordfish, compared to only 16 percent in the California drift gillnet fishery. In the Atlantic buoy gear fishery, 90 percent of the total catch is swordfish. Both in the California trials and the Atlantic fishery, no marine mammals, birds, or sea turtles have been killed or seriously injured to date. One of the major advantages of buoy gear is that it is actively tended. Once a bite is detected, the gear is hauled in, meaning that retained fish are higher quality and any bycatch is expected to be primarily released alive. In the Atlantic buoy gear fishery between 2007 and 2012, 92 percent of the swordfish discards were discarded alive. Since its inception, participation and landings in the Atlantic buoy gear fishery have remained steady or increased, while maintaining low levels of bycatch, proving that buoy gear is commercially sustainable. Based on 100 percent live discards thus far, an expanded commercial California deep-set buoy gear fishery should expect the same positive results.

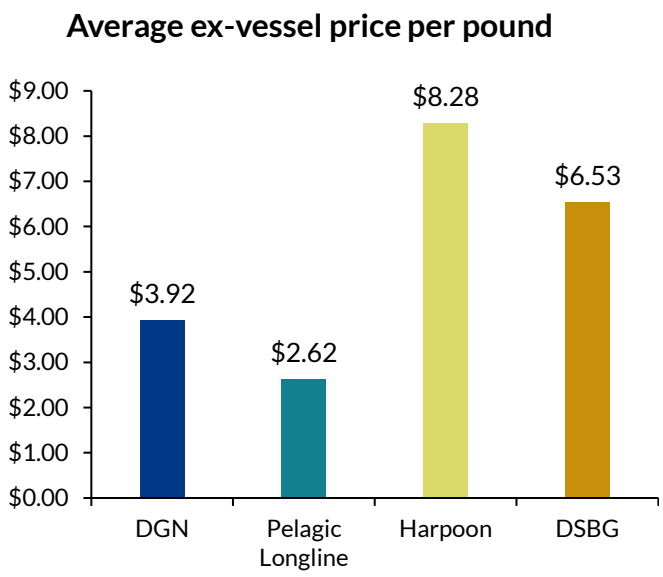
The prospects for economic success in a commercial deep-set buoy gear fishery in California are already demonstrated. Thus far, swordfish landed with deep-set buoy gear has attained high ex-vessel prices, similar to harpoon gear, due to freshness and quality of the landed catch. From 2015-2017 deep-set buoy gear swordfish fetched an average ex-vessel price of $6.53 per pound compared to $3.92 per pound for drift gillnet caught swordfish.[51] This premium price-point means that even if deep-set buoy gear swordfish landings per fishing day are lower than

[51] PFMC. Swordfish Landings by fishery, 2008-2017. June 2018. Agenda Item G.7 Attachment 2 https://www.pcouncil.org/wp-content/uploads/2018/05/G7_Att2_Landings_of_swordfish_2008-2017_Jun2018BB.pdf

drift gillnet landings, fishermen can earn equal or greater profits due to markedly higher prices per pound. From 2015-2017, the average annual swordfish landings revenue per deep-set buoy gear vessel was $57,498 versus $46,181 per drift gillnet vessel.[52]

These ecological and economic indicators suggest that deep-set buoy gear has the potential to reinvigorate the West Coast commercial swordfish fishery, while enabling a full transition away from drift gillnets while maintaining and even increasing domestic swordfish landings and fishing jobs. Along with proven commercial success in the Atlantic, the experience to date off California shows that buoy gear is a viable commercial alternative to drift gillnet swordfish gear.

Harpoon Gear



Source: PFMC. Swordfish Landings by fishery, 2008-2017. June 2018. Agenda Item G.7 Attachment 2

Why harpoon gear can further increase sustainable West Coast swordfish landings: Harpoon fishing is an extremely selective method that produces little to no bycatch. Skilled harpoon fishermen can target and land swordfish with precision, making it one of the cleanest gear types available. In addition, consumer demand for harpoon caught swordfish is high and customers are willing to pay for sustainably caught, high quality swordfish. In 2017, California harpooned dressed (gutted with head and tail removed) swordfish held an average ex-vessel price of $7.78 per pound — over double the price of swordfish caught in drift gillnets ($3.37) and triple that of longline-caught swordfish ($2.59).[53] There are also opportunities for significant cost savings over other gear types such as drift gillnets and shallow-set longlines, which often require onboard observers to monitor fishing due to high levels of bycatch. Harpoon vessels do not require observers, saving the fleet considerable expense including the management costs associated with the observer program.

Why harpoon gear can complement the deep-set buoy gear fishery: Harpoon landings reached a historic high in 1978, when 1,699 mt were landed in California, over ten times greater than the drift gillnet fishery has landed in recent years.[54] However, since the

[52] *Id.*
[53] PFMC. Swordfish Landings by fishery, 2008-2017. June 2018. Agenda Item G.7 Attachment 2 https://www.pcouncil.org/wp-content/uploads/2018/05/G7_Att2_Landings_of_swordfish_2008-2017_Jun2018BB.pdf
[54] Ito, R., Coan, I. 2007. U.S. Swordfish Fisheries in the North Pacific Ocean. ISC Billfish Working Group Workshop.

introduction of drift gillnets, the harpoon fishery has seen declining participation and production. The harpoon fishery landed 24 mt in 2011 and just 4.2 mt in 2013.[55,56]

In recent years, however, it is not just harpoon caught swordfish that has been low. In 2013, California's swordfish drift gillnet fishery landed only 61 mt.[57] Because swordfish fishing with harpoon gear does not incur bycatch, harpoon gear isn't subject to time and area closures or other management safeguards like those needed to limit bycatch in the drift gillnet fishery. In other words, acting responsibly by fishing with clean gear types comes with the benefit of fewer management measures and more flexibility. Further, phasing out drift gillnet gear all together could help shift fishing effort to other legal gear types like harpoon, and encourage a rise in harpoon landings.

The main economic concern with the harpoon swordfish fishery is that it is only possible during certain ocean conditions where swordfish are basking at the surface, which makes it a less dependable fishing technique if fished on its own. However, during certain periods, it can be extremely productive and could therefore be a supplement to increase swordfish landings if opportunistically fished in tandem with deep-set buoy gear.

It is unknown whether harpoon landings may once again peak to historic levels seen in the 1970s, but if California can encourage the resurgence of the once robust harpoon fishery, harpoon gear could provide a valuable complement to deep-set buoy gear landings.

The Next Step: A Drift Gillnet Transition Plan

Oceana recommends a *transition plan for the West Coast swordfish fishery that phases out and prohibits drift gillnets within a time-certain period, while authorizing and incentivizing deep-set buoy gear and additional harpoon effort***.** We envision a comprehensive transition plan that includes the following elements:

1) *Phase out and prohibit drift gillnets over a time-certain period.*

   Establishing a timeline for the complete phase out would allow the remaining swordfish drift gillnet fleet to plan its transition to clean gear types.

2) *Provide financial compensation to drift gillnet fishermen who retire their drift gillnet permits and surrender their drift gillnets.*

   Providing financial compensation from government and non-government sources would help provide the capital necessary for fishermen to transition to cleaner methods, including the purchase of deep-set buoy gear and modifications to fishing vessels to

[55] *Id.*
[56] PFMC. 2012, Status of the U.S. West Coast Highly Migratory Species Fisheries through 2011. Stock Assessment and Fishery Evaluation Report (SAFE).
[57] California Department of Fish and Wildlife (CDFW). 2014. Annual Marine Fisheries Report 2014.

allow fishing with other gears. Fishermen who participate in such a program should qualify for a federal deep-set buoy gear permit.

3) *Oppose attempts to replace drift gillnets with gear types that are similarly destructive.*

   Proposals to re-establish damaging fishing gears such as a California-based shallow-set or deep-set longline fishery should be rejected.

4) *Expand and promote the use of deep-set buoy gear and harpoon gear*.

   Results from California testing and the experience in the Atlantic demonstrate that deep-set buoy gear has the potential to develop into a clean and viable fishery off the West Coast that can increase total landings above current levels. The continued research and commercial trials of deep-set buoy gear will allow for authorization as an allowable gear type in the federal U.S. West Coast Highly Migratory Species Fishery Management Plan and inform any necessary management measures. A successful transition to deep-set buoy gear and harpoon gear will require cooperation among fishermen, fisheries managers, seafood markets and other stakeholders. Marketing efforts, traceability, and partnerships can help grow demand and new markets for deep-set buoy gear caught swordfish to help maintain higher prices.

5) *Ban swordfish imports from countries that do not meet U.S. bycatch standards*.

   The U.S. currently imports two times more swordfish than it catches domestically, including a majority of Mexican and Canadian swordfish catch. By requiring swordfish exporters to demonstrate that they are using clean methods to catch swordfish, the U.S. can influence responsible fishing abroad and hold foreign imports to the same standards as domestically caught swordfish. Under section 101(a)(2) of the Marine Mammal Protection Act (MMPA): *"the Secretary of the Treasury shall ban the importation of commercial fish or products from fish which have been caught with commercial fishing technology which results in the incidental kill or incidental serious injury of ocean mammals in excess of United States standards."*

   NMFS finalized the import provisions of the MMPA in August 2016. Fish and fish products can only be imported into the United States if the harvesting nation has received a comparability finding from NMFS. To receive a comparability finding, the harvesting nation must demonstrate it has prohibited the intentional mortality or serious injury of marine mammals in the course of commercial fishing operations in the fishery. The harvesting nation must demonstrate that it has adopted and implemented, with respect to an export fishery, a regulatory program governing the incidental mortality and serious injury of marine mammals in the course of commercial fishing operations in its export fishery that is comparable in effectiveness to the U.S. regulatory program.[58]

[58] 81 Fed. Reg. 54,390, 54,390-54,391 (Aug. 15, 2016).

Conclusion

Drift gillnets and pelagic longlines targeting swordfish both have high levels of bycatch. Conversely, harpoon and deep-set buoy gear can selectively target swordfish with minimal bycatch. A plan should be developed to transition the current drift gillnet fishery off California from unselective drift gillnets to deep-set buoy gear and harpoon gear. Such a plan should provide drift gillnet fishermen with opportunities to continue fishing swordfish with clean gears and financial incentives so that they can continue to profitably catch swordfish as they learn to effectively use new, clean fishing methods. Concerns over impacts of imported swordfish can be directly addressed by imposing bans on imported swordfish that do not meet U.S. standards, while authorizing and promoting the use of clean methods for targeting swordfish off the U.S. West Coast. Financial compensation cushions the learning curve and capital costs of a gear switch. By assisting fishermen with this transition and focusing efforts toward known sustainable fishing methods, we can achieve a clean, sustainable U.S. West Coast swordfish fishery.

Swordfish Catch and Discard Data References

CA/OR DGN: NOAA. 2018. West Coast Region Observer Program: Summaries & Reports.
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Canada Harpoon: Coan Jr, A.L., Vojkovich, M., Prescott, D. 1998. The California Harpoon Fishery for Swordfish, *Xiphias gladius*.

STOP THE NETS

Sustainable Solutions to Catch Swordfish

AUGUST 2018

OCEANA Protecting the World's Oceans

Ocean waters off the U.S. West Coast boast an unparalleled diversity of wildlife. Referred to by scientists as the "Blue Serengeti", the cold, productive ocean currents off California, Oregon, and Washington host globally significant populations of dolphins, critical shark nurseries, and crucial underwater highways for migrating whales. Yet, off California, in the heart of this biodiversity hotspot, the swordfish drift gillnet (DGN) fleet — one of the nation's dirtiest fisheries — continues to entangle and kill dolphins, sea turtles, sea lions, whales, sharks and other recreationally and commercially important fish.

The California-based swordfish drift gillnet fishery catches and throws overboard more animals than are kept, many of them dead or dying

Swordfish drift gillnets are not used anywhere else in the U.S. and are banned in many places around the world, but they are still allowed off California. Clean, selective fishing methods are available that profitably catch swordfish while drastically reducing interactions with non-target ocean wildlife. It is time to turn the tide in this fishery by phasing out large mesh drift gillnets off California while transitioning to cleaner fishing gears.

SWORDFISH DRIFT GILLNETS ARE AN ANTIQUATED, INDISCRIMINATE FISHING GEAR

Nearly one mile long, drift gillnets are an unselective method used to catch swordfish and thresher sharks. The nearly invisible nets drift in the open ocean overnight, indiscriminately entangling many forms of marine life. Despite management efforts made over the decades to reduce unintended catch (e.g., change in mesh size, inclusion of acoustic pingers to deter marine mammals, time and area closures), the fishery continues to kill dolphins, whales, and sea lions regularly and serious concerns persist due to unacceptably high bycatch. According to data from the National Oceanic and Atmospheric Administration (NOAA) Drift Gillnet Fishery Observer Program, on observed trips the California drift gillnet fishery discarded 52 percent of all animals caught from 2008 to 2018. This discard rate persists despite management measures to curb bycatch. Participation in the fishery has declined precipitously with a drop in actively used drift gillnet permits plummeting from 119 to just 17 between the years 2000 and 2017. Additionally, less than 30 percent of all fishing trips carry federally trained observers on board who monitor and record all catch. Without a complete record of everything caught and killed on every vessel, the true number of marine mammal and sea turtle deaths is unknown.

THE SWORDFISH DRIFT GILLNET FISHERY HAS:

ENTANGLED AND DISCARDED MORE THAN 70 DIFFERENT SPECIES OF NON-TARGET OCEAN LIFE

CAPTURED SPERM WHALES, LOGGERHEAD SEA TURTLES, RISSO'S DOLPHINS, BLUE SHARKS, MARLINS, TUNAS AND MORE

KILLED ENDANGERED PACIFIC LEATHERBACK SEA TURTLES – ONE OF EIGHT MARINE ENDANGERED SPECIES MOST LIKELY TO GO EXTINCT IN THE NEAR FUTURE

KILLED MORE DOLPHINS EVERY YEAR THAN ALL OTHER OBSERVED WEST COAST FISHERIES COMBINED

Photos: animals caught and killed in California swordfish drift gillnets. NOAA Observer Program.

West Coast DGN Landings and Vessel Permits (1981-2017)

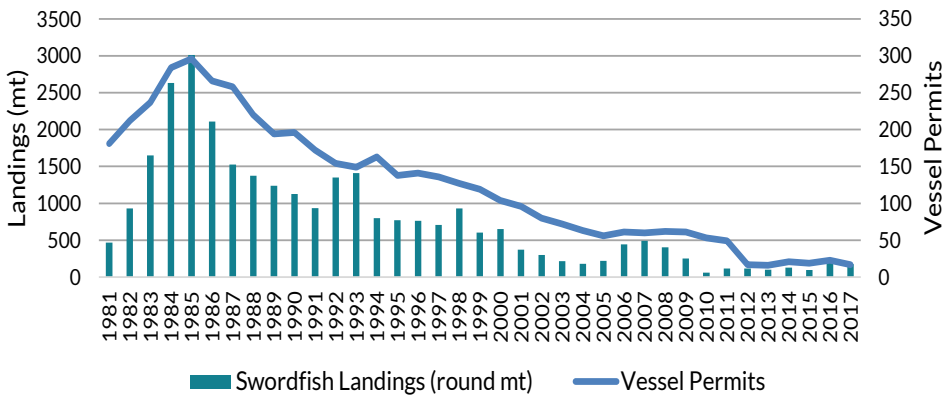

Figure 1 Participation and landing levels in the drift gillnet fishery over time. Sources: PFMC HMS SAFE 2018, Swordfish Landings by fishery, 2008-2017.

Cover photo: Swordfish, Joe Fish Flynn/Shutterstock

DEEP-SET BUOY GEAR IS A PROFITABLE, LOW-BYCATCH ALTERNATIVE

Deep-set buoy gear (DSBG) is an innovative gear type used to target swordfish on the U.S. West Coast that consists of two buoys supporting a fishing line with 1-3 hooks attached. The gear is actively tended by fishermen, and deployed at depths between 250 meters and 350 meters (820 feet to 1,148 feet) during the daytime, far below the surface depths where species like sea turtles frequently swim and feed. The buoys indicate when a fish has been caught, so fishermen can retrieve their catch within minutes of it being hooked.

Four years of research and three years of commercial use off California demonstrate that 83 percent of the catch using deep-set buoy gear was swordfish, 98 percent of all animals caught were marketable, and all non-marketable species were released alive.

Swordfish caught with deep-set buoy gear is a higher value product than drift gillnet caught swordfish due to greater freshness, quality, and market demand for sustainable seafood. Over the last three fishing seasons, the average vessel using deep-set buoy gear brought in more revenue from swordfish catch than the average drift gillnet vessel.

Additionally, harpoons can also optimize swordfish catch with zero bycatch. Harpoons were once the primary method used to catch swordfish off California, supporting a lucrative domestic fishery prior to the introduction of drift gillnets in 1980. Similar to deep-set buoy gear, harpoon-caught swordfish garners a higher price per pound than drift gillnet-caught swordfish. There is some continued harpoon use off California with the opportunity for expansion. Harpoons and deep-set buoy gear are both financially viable methods to optimize swordfish catch and responsible fishing.

Average ex-vessel price per pound for California landed swordfish (2015-2017)

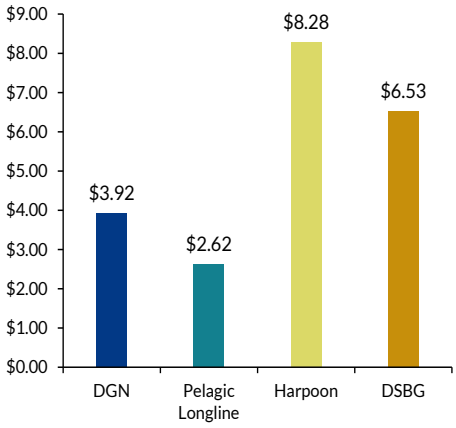

Figure 2 DGN = drift gillnet; DSBG = deep-set buoy gear Source: PFMC. Swordfish Landings by fishery, 2008-2017. June 2018. Agenda Item G.7 Attachment 2.

PELAGIC LONGLINES ARE NOT A LOW–BYCATCH ALTERNATIVE

LIKE DRIFT GILLNETS, PELAGIC LONGLINES ARE HIGHLY UNSELECTIVE AND HAVE A WIDE SUITE OF SEVERE BYCATCH CONCERNS

For good reason, pelagic longlines have been banned off the state of California since 1989. Shallow-set longline gear, for example, consists of a continuous mainline supported by floats that typically stretches 30 to 60 miles long. Anywhere from 700 to 1,200 hooks are attached, posing a high risk for ensnarement of non-target marine life.

An endangered Pacific leatherback sea turtle ensnared by a Hawaii-based shallow-set longline. NOAA, 2013.

Percentage of total catch that is swordfish

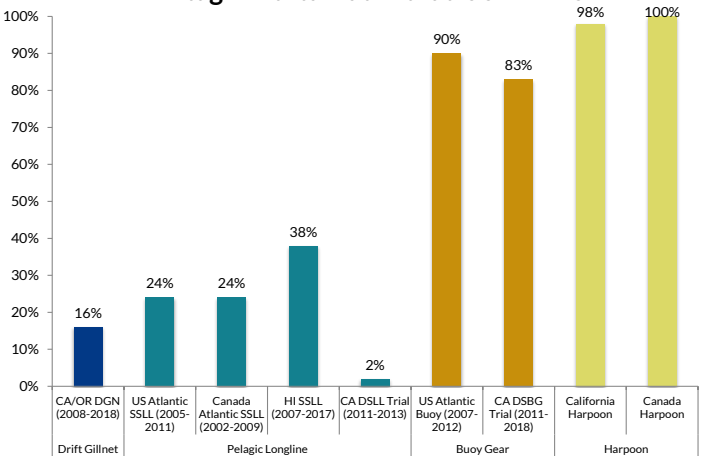

Figure 3 Percentage of total catch that is swordfish across select fisheries and gear types. SSLL = shallow-set longline; DSLL = deep-set longline

Swordfish fishery discard rates

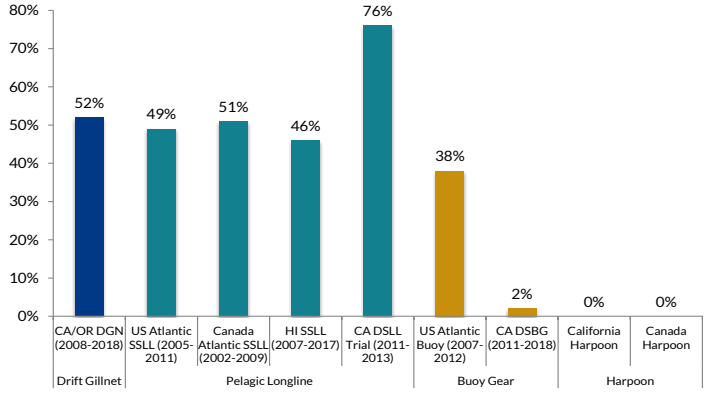

Figure 4 Percentage of animals caught that were discarded across select swordfish fisheries and gear types.

CALIFORNIA CAN HAVE A DOMESTICALLY PROFITABLE SWORDFISH FISHERY WHILE SAFEGUARDING OCEAN WILDLIFE

Photo Credit L to R, Clockwise: Pilot whale, Adam Li, NOAA/NMFS/SWFSC; Leatherback sea turtle, Scubazoo/Alamy Stock Photo; Humpback whale, Tory Kallman/Shutterstock; Blue Shark, Mark Conlin/NMFS; Long-beaked common dolphins, Chase Dekker/Shutterstock; Mola mola, NOAA; Risso's dolphin, Geoff Shester/Oceana; Sperm whale pod, Peter Allinson/Marine Photobank.

Mile-long drift gillnets must be pulled from the water for good and the switch to cleaner fishing gears like deep-set buoy gear and harpoons should be incentivized. Due to bycatch concerns, swordfish drift gillnets should be prohibited in federal waters. Transitioning the swordfish fishery to cleaner gears is supported by the recreational fishing community, seafood and tourism businesses, elected officials, and the California Fish and Game Commission.

IT'S TIME TO #STOPTHENETS FOR A BRIGHTER, ENVIRONMENTALLY SUSTAINABLE SWORDFISH FISHERY THAT CALIFORNIA CAN BE PROUD OF

Figures 3, 4 Sources: ***CA/OR DGN****: NOAA. 2018. West Coast Region Observer Program: Summaries & Reports.* ***US Atlantic SSLL****: MRAG. 2013. MSC Public Certification Report for US North Atlantic Swordfish Pelagic Longline and Handgear Buoy Line Fishery.* ***Canada Atlantic SSLL****: Intertek Moody Marine (IMM). 2011. North Atlantic Swordfish Canadian Pelagic Longline Fishery. Volume 1: Final Report and Determination.* ***HI SSLL****: NMFS. 2017. Hawaii Shallow-set Longline Data (2007-2017). Unpublished.* ***CA DSLL Trial****: Dewar, H., Kohin, S. 2014. Deep-Set Longline Study.* ***US Atlantic Buoy****: NMFS. 2014. Stock Assessment and Fishery Evaluation Report (SAFE) for Atlantic Highly Migratory Species; Kerstetter. 2009. Characterization of the Catch by Swordfish Buoy Gear in Southeast Florida.* ***CA DSBG Trial****: Sepulveda, C. 2015. Exempt Fishery Proposal Application for Deep-set Buoy Gear; PFMC. June 2018. 2015-2017 PIER Deep-Set Buoy Gear EFP Preliminary Summary.* ***California Harpoon****: Coan Jr, A.L., Vojkovich, M., Prescott, D. 1998. The California Harpoon Fishery for Swordfish, Xiphias gladius and PFMC 2015. Highly Migratory Species Stock Assessment and Fishery Evaluation Reports Current HMS SAFE Report.* ***Canada Harpoon****: Coan Jr, A.L., Vojkovich, M., Prescott, D. 1998. The California Harpoon Fishery for Swordfish, Xiphias gladius.*

For more detailed analysis, please see our full report at: www.oceana.org/StopTheNetsReport

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CALIFORNIA SWORDFISH FISHERY

COMPARING DRIFT GILLNETS TO DEEP-SET BUOY GEAR

MILE-LONG DRIFT GILLNETS USED TO TARGET SWORDFISH OFF CALIFORNIA ARE WASTEFUL – ENTANGLING, INJURING AND KILLING MORE ANIMALS THAN THE FISH KEPT

CLEANER FISHING GEARS ARE AVAILABLE – LIKE DEEP-SET BUOY GEAR – THAT SUCCESSFULLY AND PROFITABLY CATCH SWORDFISH WHILE SAFEGUARDING MARINE WILDLIFE

IN 2017, VESSELS THAT CAUGHT SWORDFISH WITH BUOY GEAR RECEIVED MORE REVENUE PER VESSEL AND SOLD THE CATCH FOR A HIGHER PRICE PER POUND

DRIFT GILLNETS	2017 BY THE NUMBERS	DEEP-SET BUOY GEAR
17 VESSELS		5 VESSELS
$890,000 TOTAL REVENUE FOR ALL DRIFT GILLNET VESSELS		$408,000 TOTAL REVENUE FOR ALL BUOY GEAR VESSELS
$52,000 AVERAGE REVENUE PER VESSEL		$81,000 AVERAGE REVENUE PER VESSEL
$3.37 AVERAGE PRICE PER POUND OF SWORDFISH SOLD		$6.06 AVERAGE PRICE PER POUND OF SWORDFISH SOLD
PERCENT OF CATCH THROWN BACK TO SEA 52%*		PERCENT OF CATCH THROWN BACK TO SEA 2%†

*Ten year average

† Seven year average

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Data Sources: Pfleger Institute of Environmental Research (2018): https://bit.ly/2MiaZI3
National Marine Fisheries Service Economic Data: https://bit.ly/2K3aQ8o
NOAA Fisheries Observer Program drift gillnet catch and discard data. Average, 52% discard rate, 2008/09 to 2017/18. Available: https://bit.ly/1ThbPyb

2017 UPDATE CALIFORNIA SWORDFISH DRIFT GILLNET FISHERY

OBSERVER COVERAGE MISSED THE MARK

Trained fishery observers are essential for monitoring and managing catch in the California swordfish drift gillnet fishery. Without observers on every fishing trip to count and record everything captured, there is no way to accurately know the true number of all animals caught and thrown overboard, dead or dying.

IN 2017, 82% OF ALL SWORDFISH DRIFT GILLNET SETS WERE UNMONITORED, LEAVING FISHERY MANAGERS AND THE PUBLIC IN THE DARK

THE PACIFIC FISHERY MANAGEMENT COUNCIL RECOMMENDED OBSERVER COVERAGE LEVELS BE SET AT **100%**

THE NATIONAL MARINE FISHERIES SERVICE IGNORED THIS ADVICE AND SET COVERAGE LEVELS AT **30%**

ACTUAL COVERAGE LEVELS FELL SHORT, REACHING A MERE 18%

MARINE MAMMALS KILLED LAST FISHING SEASON INCLUDE:

WITHOUT A COMPLETE RECORD OF EVERYTHING CAUGHT AND KILLED ON EVERY VESSEL, WHO KNOWS HOW MANY MARINE MAMMAL DEATHS HAVE GONE UNREPORTED?

It's high time we phase out drift gillnets and replace them with deep-set buoy gear that has shown to successfully catch swordfish while safeguarding marine wildlife.

VOTE YES ON SB 1017

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Data Source: National Marine Fisheries Service

STOP THE NETS:
CLEANING UP CALIFORNIA'S SWORDFISH DRIFT GILLNET FISHERY

THE DRIFT GILLNET FISHERY TARGETING SWORDFISH OFF CALIFORNIA IS WASTEFUL – INJURING AND KILLING MORE OCEAN ANIMALS THAN THE FISH IT KEEPS

THE NETS EXTEND MORE THAN **200 FEET** BELOW THE SURFACE

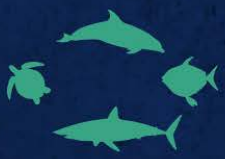
THAT'S THE HEIGHT OF A **20 STORY BUILDING**

A DRIFT GILLNET IS **ONE MILE** LONG

THAT'S ALMOST AS LONG AS THE **GOLDEN GATE BRIDGE**

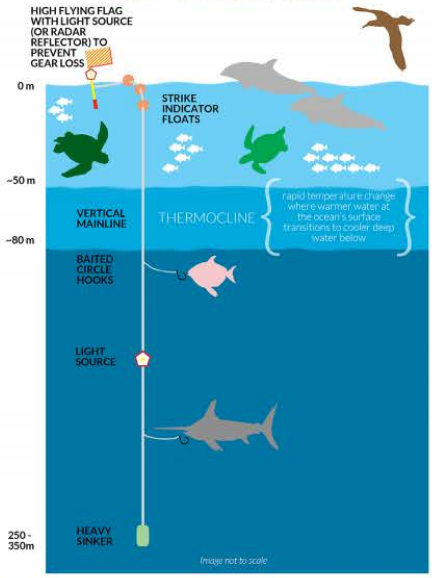
FOR EVERY **SWORDFISH** CAUGHT

FOUR MARINE ANIMALS ARE ENTANGLED



THE SWORDFISH DRIFT GILLNET FISHERY **TOSSES OVERBOARD 52%** OF EVERYTHING IT CATCHES

DEEP SET BUOY GEAR



CLEANER GEAR TYPES ARE AVAILABLE THAT SUCCESSFULLY AND PROFITABLY CATCH SWORDFISH.

OVER 6 YEARS, DEEP SET BUOY GEAR HAS ONLY DISCARDED 2% OF THE CATCH. IT HAS SENT 98% OF ALL FISH CAUGHT TO MARKET.

AUTHORIZATION OF DEEP SET BUOY GEAR CAN REVITALIZE THE FISHERY, MAKING DOMESTICALLY CAUGHT SWORDFISH AVAILABLE TO CONSUMERS WHILE SAFEGUARDING MARINE WILDLIFE.

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Data Sources: National Marine Fisheries Service; Pfleger Institute of Environmental Research

ENSURING A SUSTAINABLE U.S. WEST COAST SWORDFISH FISHERY:

Benefits of Deep-Set Buoy Gear

Buoy Gear Design

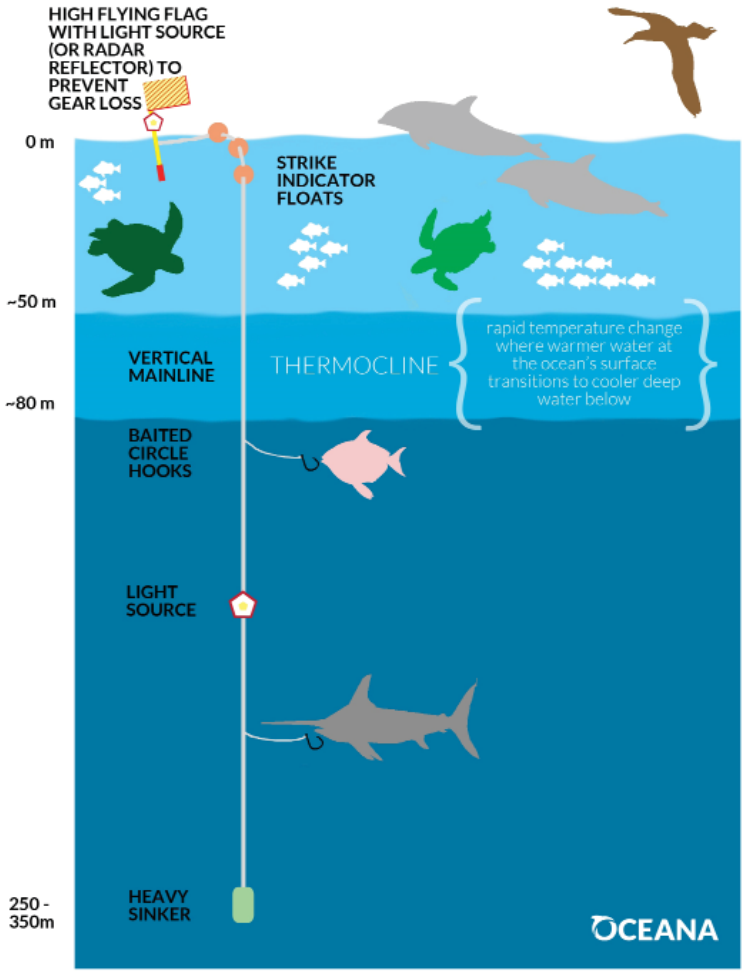

Figure 1: Deep-set buoy gear targets swordfish and secondary species like opah, thresher sharks, and mako sharks below the thermocline during the daytime, depths that greatly reduce interactions with marine mammals and sea turtles.

Over the last several decades, the majority of swordfish commercially caught off California has been in drift gillnets. Spanning up to a mile in length, and positioned 200 feet below the ocean surface, these nets hang like invisible curtains overnight. In addition to swordfish, these nets also entangle marine mammals, sea turtles, and sharks, which die when they are unable to surface for air or pass water over their gills (in the case of fish). Fortunately, there is a cleaner method that successfully catches swordfish while avoiding harm to other sea creatures.

A Clean Alternative to Catch Swordfish

Deep-set buoy gear is a type of fishing gear consisting of a floating buoy supporting a single vertical line to which one to three baited hooks are attached. This type of fishing gear is currently used to target swordfish in the Atlantic and is now being used commercially off California on a limited basis. This deep-set buoy gear targets swordfish during the day because they feed at a different depth than most other species. Hooks are deployed below the thermocline between 250 meters and 350 meters deep (820 feet-1148 feet). Buoy gear is more effective at catching its target species relative to drift gillnets or pelagic longlines—indiscriminate gears—that are set at night near the surface where many other ocean wildlife species congregate. A typical buoy gear deployment has up to ten individual buoys that are actively tended by fishermen. The buoys indicate when a fish has been caught, so fishermen can retrieve their catch within minutes of it being hooked.

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March 2017

Deep-Set Buoy Gear Holds the Potential for the Economic Advancement of the Fishery

Swordfish caught by deep-set buoy gear is a higher value product pound for pound than drift gillnet or pelagic longline-caught swordfish (imported and domestic), due to greater freshness, quality, and market demand for sustainable seafood. Current prices and initial market research in California indicate that buoy gear caught swordfish is likely to garner a market price approximately twice that of drift gillnet swordfish. Deep-set buoys may provide fishermen with additional opportunities to fish in locations that are off limits to drift gillnets per existing regulations and where pelagic longlines are banned due to pervasive and harmful bycatch interactions. A high market value for deep-set buoy gear caught swordfish and continued improvements in catch efficiency indicate the potential for a profitable fishery with increased total catch as fishermen develop expertise using this new gear type.

Deep-set Buoy Gear is Highly Selective in Targeting Swordfish with Minimal Bycatch

In experimental and commercial deep-set buoy gear trials to date, the primary catch has been swordfish (approximately 81 percent), followed by bigeye thresher shark (15 percent), and the remainder has been mostly opah and other shark species. Non-marketable fish catch (i.e. blue shark) has been low and all non-marketable species have been released alive.

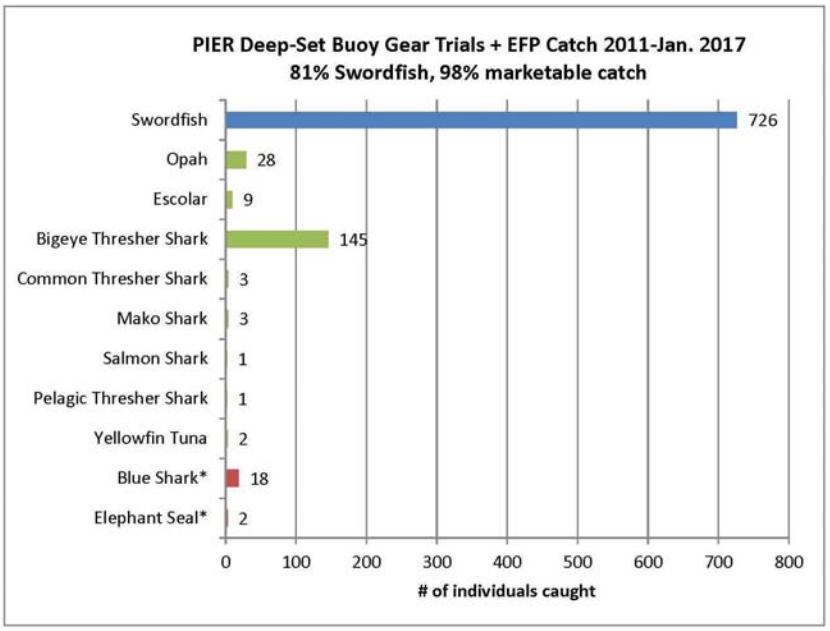
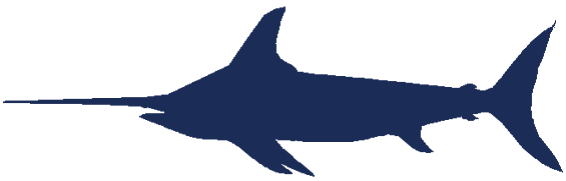


Figure 2: Collective catch from all deep-set buoy gear experiments to date. Data is from 529 eight-hour fishing days from 2011 to early 2017 in which a full 10-buoy set was made. Of the hundreds of deep-set buoy gear sets, two interactions with a protected species were observed. Two elephant seals were caught and both were reported to be released alive in good condition.



Benefits of Deep-Set Buoy Gear

Experimental and commercial deep-set buoy gear trials off California—led by the Pfleger Institute of Environmental Research (PIER) between 2011 and early 2017—have confirmed that:

- Swordfish can be selectively targeted at depth during the day.
- Non-target catch rates (e.g. sharks) are significantly lower than with drift gillnets or pelagic longlines.
- There were few discards, no sea turtle takes, and only two marine mammal interactions.
- There were no interactions with species of concern like whales, dolphins, or sea turtles.
- The gear is actively tended—strikes are detected immediately— and all catch is retrieved in a matter of minutes. This allows a quick release of non-marketable species, avoiding long-term or serious injury, and allows the marketable product to arrive at the dock more quickly in a fresher, high quality condition.
- 98 percent of fish caught off California with buoy gear from 2011- January 2017 were marketable species.

Targeting Swordfish with Deep-set Buoy Gear is Good for the Environment

According to PIER, based on trip expenses calculated in 2014, swordfish fishermen using a two-person operation (captain and one crew member) had average trip expenses around $500/day. With the capture and sale of one average sized swordfish (200-pound dressed weight) at the average market price of $8.75/ pound, the 2-person operation could result in a net gain of $1,250/day. Given that catch rates ranged from 1.3 to 2.9 swordfish/day in 2016, these results show that deep-set buoy gear can be profitable.

In 2015 and 2016 the National Marine Fisheries Service approved additional commercial use of deep-set buoy gear through Exempted Fishing Permits, and is now considering authorizing the gear more widely in 2017.

	Deep-Set Buoy Gear	Harpoons	Drift Gillnets	Pelagic longlines
Swordfish Catch	81%	100%	12.8%	35%
Retained, Marketable catch	98%	100%	36%	56%
Discards	2%	0% *	64%	44%
Endangered species injured or killed	no	no	yes	yes

Figure 3: Comparison of marketable catch and bycatch among deep-set buoy gear trials, swordfish harpoon fishery, swordfish drift gillnet fishery, and shallow-set pelagic longlines. Sources: NOAA CA Swordfish Drift Gillnet observer program 2004-2014; NOAA shallow set longline observer program, 2007-2014; NOAA Hawaii shallow-set longline Observer Program Data, 2007-2013.* Note, some swordfish strikes with harpoons may injure the swordfish yet do not result in a successful catch, however, we are not counting that as "bycatch" here.

Sources:

Pfleger Institute of Environmental Research (PIER). 2017. 2015-2016 PIER deep-set buoy gear EFP. Pacific Fishery Management Council Summary Report. March 2017. Available at: http://www.pcouncil.org/wp-content/uploads/2017/02/J2_Att2_PIER_2015-16_DSBG_EFP_SummaryRpt_Mar2017BB.pdf

PIER. 2015. Exempt Fishery Proposal Application for Deep-Set Buoy Gear. Pacific Fishery Management Council. March 2015. Available at: http://www.pcouncil.org/wp-content/uploads/H3a_Att2_PIER_MAR2015BB.pdf

Sepulveda, C.A., S.A. Aalbers, and C. Heberer. 2014. Testing Modified Deep-Set Buoy Gear to Minimize Bycatch and Increase Swordfish Selectivity. BREP 1 (2014) pp.27-32. Available at: http://www.nmfs.noaa.gov/by_catch/docs/brep_2014_sepulveda.pdf

Sepulveda, C.A., S.A. Aalbers, C. Heberer. 2014. Development and trial of deep-set buoy gear for swordfish (*Xiphias gladius*) in the Southern California Bight. Marine Fisheries Review 76(4). Available at: http://spo.nmfs.noaa.gov/mfr764/mfr7642.pdf

Wildly Unforgiving

Dangers of Drift Gillnets off the California Coast

The Problem:

Drift gillnets targeting swordfish off California entrap and kill ocean wildlife

Mile-long drift gillnets are set at night in ocean waters off California to target swordfish and thresher sharks, but they create deadly traps for iconic ocean wildlife. More than 70 non-target species of marine life including many types of whales, dolphins, seals, sea lions, sea turtles, sharks, tunas, marlins, and other fish drown or become critically injured in these nets. This fishery catches and throws back more marine life than it keeps, discarding approximately 62 percent of the catch on average from 2004-2017.[1] Nearly one quarter of the animals caught as bycatch and pulled from the nets are dead and the fate of surviving animals that are released is unknown. Drift gillnets also kill fish that are highly important to California recreational fishermen and recreational fishing jobs.

According to a recent National Marine Fisheries Service study,[2] between 2001 and 2015, the California-based swordfish drift gillnet fishery caught:

- 753 dolphins
- 507 seals and sea lions
- 112 seabirds
- 53 whales
- 35 sea turtles

All dolphins were killed, and only a handful of the large whales, turtles and sea lions escaped without serious injury or death. In addition, more than 140,000 fish, including tens of thousands of sharks were thrown overboard.

Cover photo: short beak common dolphin (*Delphinus delphis*) caught and killed in a California swordfish drift gillnet © NOAA

This drift gillnet fishery is the only fishery on the U.S. West Coast with Category I status under the Marine Mammal Protection Act, the federal designation reserved for fisheries that have the highest incidence of entangling and killing marine mammals.

Management of this West Coast swordfish fishery is drastically falling behind the global curve of responsible fishery management. Swordfish drift gillnets are banned in the Mediterranean Sea and on the high seas, have been phased out off the U.S. East Coast, and are not permitted by Oregon or Washington states. In July 2015, Russia became the next country in a long list of regions worldwide to prohibit the use of drift gillnets due to bycatch concerns.

In 1985 there were 228 drift gillnets vessels.[3] This number dwindled to fewer than 20 vessels actively fishing in 2016.[4]

In September 2015, after a years-long process incorporating input from fishery stakeholders, the Pacific Fishery Management Council —a 14-voting member advisory body with industry, state, and tribal representatives— recommended that the National Marine Fisheries Service (NMFS) increase bycatch monitoring to 100 percent and set hard caps on the

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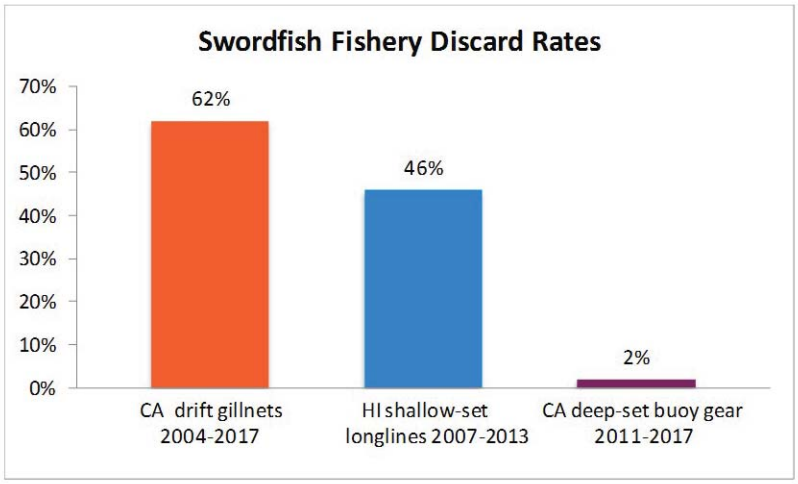
September 2017



Discard rates (percentage of the total number of animals caught that are thrown overboard) are provided for different U.S. fisheries gear types that target swordfish in the Pacific Ocean. Discards include live and dead discards, however the fate of most live discards after release remains unknown. CA DGN= California drift gillnet; HI SSLL= Hawaii shallow-set longline;[5] CA DSBG= California deep-set buoy gear.[6]

injury and mortality of nine sea turtle and marine mammal species most at risk from entanglement in swordfish drift gillnets. If these hard caps were reached, the fishery would close for the remainder of the season.

The hard caps would have applied to endangered fin, humpback, and sperm whales, short-fin pilot whales, and common bottlenose dolphins; as well as endangered leatherback, loggerhead, olive ridley, and green sea turtles. NMFS released a draft rule for public comment in October 2016. In an unprecedented move, the new federal administration withdrew the proposed rule in June 2017 and chose not to propose a rule to require 100 percent monitoring. In doing so, the National Marine Fisheries Service ignored the will of its federal fishery advisors, the State of California, California state legislators and Congressional members, and the more than 58,000 members of the public who weighed in to support these caps. In response, Congress must pass legislation prohibiting swordfish drift gillnets off the U.S. West Coast once and for all and encourage the transition to cleaner gears.

1. National Oceanic Atmospheric Administration (NOAA) Observer Program drift gillnet fishery catch and discard data. Available: http://www.westcoast.fisheries.noaa.gov/fisheries/wc_observer_programs/sw_observer_program_info/data_summ_report_sw_observer_fish.html

2. Carretta JV, Moore JE, Forney KA (2017) Regression tree and ratio estimates of marine mammal, sea turtle, and seabird bycatch in the California drift gillnet fishery: 1990-2015. NOAA Technical Memorandum, NOAA-TM-NMFS-SWFSC-568. 83 p. Tables 4-39.

3. NMFS (2013) Biological Opinion on the continued management of the drift gillnet fishery under the Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species (May 2, 2013). At, 9, Table 1.

4. NMFS (2017) MMPA List of Fisheries. 82 Fed. Reg. 3,655, 3,663 (January 12, 2017)

5. NOAA Hawaii shallow-set longline Observer Program Data, 2007-2013 received via Freedom of Information Act Request in 2015

6.Pfleger Institute of Environmental Research (PIER). Deep-set buoy gear trials and exempted fishing permit results. Available: http://www.pcouncil.org/wp-content/uploads/H3a_Att2_PIER_MAR2015BB.pdf and http://www.pcouncil.org/wp-content/uploads/2017/02/J2_Att2_PIER_2015-16_DSBG_EFP_SummaryRpt_Mar2017BB.pdf

The Solution:

End drift gillnets and transition to cleaner fishing gears

Deep-set buoy gear and harpoons are gear types that catch swordfish with far less bycatch than drift gillnets or pelagic longlines. Experiments with deep-set buoy gear indicate economic profitability, active gear tending which allows quick release and minimal mortality to untargeted animals, high selectivity at targeting swordfish based on daytime sets at swordfish feeding depths, and potential to scale up swordfish catches with low bycatch.[6]

Additionally, harpoons are currently a legal and historically proven gear type that target swordfish in a more sustainable manner where products also earn substantially higher prices in the marketplace relative to drift gillnet-caught swordfish. Harpoons can be used in addition to deep-set buoy gear.

Pelagic longlines are already prohibited by state and federal law off California due to extremely high bycatch. It is imperative that this remain a prohibited gear type.

Now is the time to switch to alternative gear types that catch swordfish in a way that is safer for marine life.

LEARN MORE:

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STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

Fish and Game Commission

Wildlife Heritage and Conservation
Since 1870

Valerie Termini, Executive Director
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June 26, 2018

The Honorable Ben Allen
California State Senate
State Capitol, Room 5072
Sacramento, CA 95814

Subject: Support of concepts within Senate Bill 1017

Dear Senator Allen:

The California Fish and Game Commission (Commission) writes in support of the concepts within SB 1017 regarding the California drift gillnet (DGN) fishery. As you know, the DGN fishery that operates off of California is complicated. Finding comprehensive, long-term solutions to address the environmental impacts associated with the DGN fishery is needed, while also considering economic impacts within the solutions.

One of the Commission's current priorities is to support California's sustainable coastal fishing communities. To maintain a robust coastal fishing economy, fishing communities need both adaptive management and flexibility to fish a variety of fish stocks. This priority aligns with one of the objectives articulated by the Magnuson-Stevens Fishery Conservation and Management Act (MSA), which governs management of federal fisheries, including the DGN swordfish fishery. The MSA highlights the importance of providing opportunity, and ensuring the environmental and economic viability of fisheries and fishing communities, while at the same time avoiding and minimizing bycatch.

As you may be aware, the DGN fishery is managed federally by the Pacific Fishery Management Council (PFMC); however, a California state-issued DGN permit is required to participate. The fishery primarily consists of swordfish, but can also involve the take of other commercially valuable species such as bonito, thresher shark, mako shark and opah. The DGN fishery operates under a limited entry permit system, which has included increasingly more restrictive gear requirements and time-area closures intended to limit bycatch of protected species. In recent years, PFMC has been actively engaged in reviewing DGN management measures and evaluating alternative gear,

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including deep set buoy gear (DSBG). PFMC is in the process of authorizing DSBG, which would help to open additional access for California fishermen to fish this healthy and sustainable fish stock with lower bycatch.

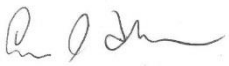
Senate Bill 1017 highlights two key areas for the DGN fishery: (1) transition of DGN to DSBG and (2) financial compensation to DGN permit holders. Over the past twenty years, the number of U.S. West Coast DGN swordfish fishery participants and landings have significantly declined, attributed in large part to regulations and time/area closures implemented to mitigate bycatch in the fishery. From a peak of 251 permits in 1986, the number of participants has dwindled to below 70; in 2017, all DGN swordfish landings were made by just seventeen of these permitees. However, concerns remain regarding management measures implemented to address bycatch and the subsequent economic impacts to California fishermen and coastal communities, despite a healthy swordfish stock, a high demand for swordfish, and concerns over imported swordfish.

Collaborative research and experimental fishing permit trials of DSBG conducted thus far indicate that the gear can minimize interactions with protected species and minimize finfish bycatch, and may prove to be economically viable for some fishermen. DSBG, if implemented, should also be aligned with economic incentives to allow for fishermen to easily convert from DGN to DSBG.

As mentioned, sustainable coastal fishing communities are a priority to the Commission and to Californians. Continuing to work with fishermen on this challenging issue to ensure their economic livelihoods is critical to the successful transition to a different gear type and to the resiliency of these communities.

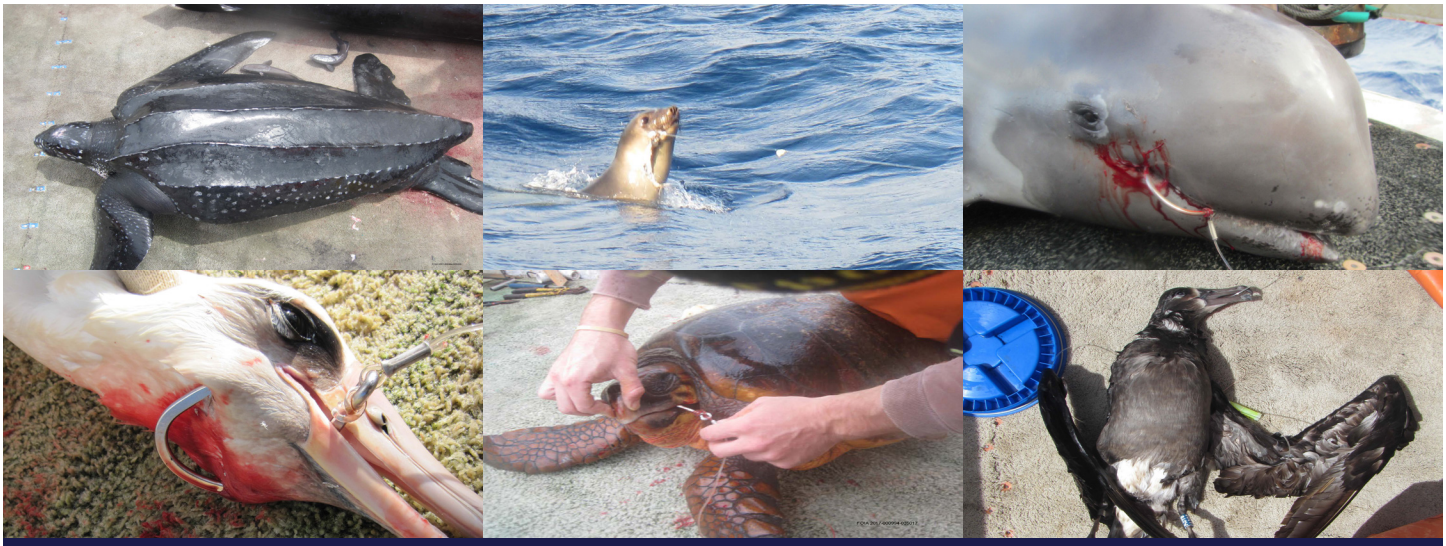
Thank you for your work on this important issue.

Sincerely,



Eric Sklar
President

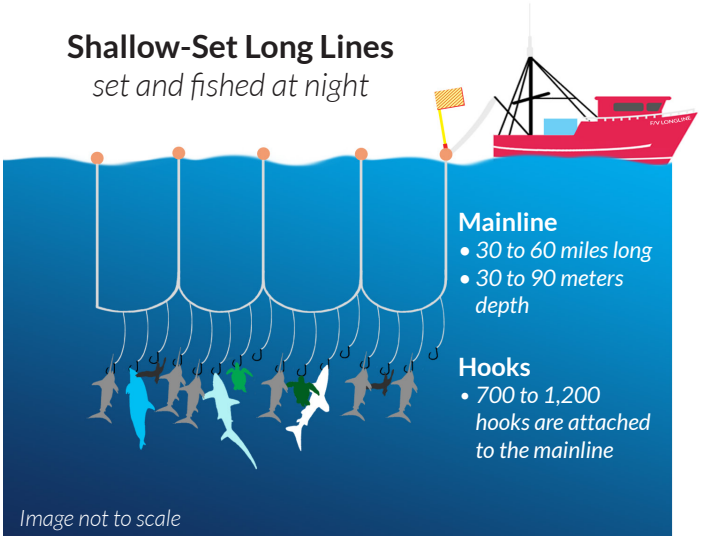
cc: Eduardo Garcia, Chair, Committee on Water, Parks and Wildlife, California State Assembly
James Gallagher, Vice Chair, Committee on Water, Parks and Wildlife, California State Assembly
Charlton H. Bonham, Director, California Department of Fish and Wildlife



Collateral Capture
Bycatch in the Hawaii Shallow-Set Longline Fishery

The Hawaii Shallow-Set Longline (HI SSLL) fishery uses pelagic (midwater) gear to target swordfish. Unfortunately, of all the animals ensnared by these suspended, baited hooks, nearly half are injured, dying, or dead non-target species and are consequently tossed overboard.

Shallow-set longline gear consists of a continuous mainline supported by floats that typically stretches 30 to 60 miles in length. Anywhere from 700 to 1,200 hooks are attached. The lines are set at dusk between 30 and 90 meters depth and left to soak until dawn.



As the lines are pulled out of the water they reveal a multitude of other animals carelessly captured including seabirds, sea turtles, dolphins, and many non-target fish. This gear also entraps and harms marine mammals including humpback whales, bottlenose dolphins, short-finned pilot whales, false killer whales, and Risso's dolphins. Because of these documented entanglements, the HI SSLL fishery is classified as a Category II fishery under the Marine Mammal Protection Act – a federal designation given to fisheries that are known to cause incidental death or serious injury to marine mammals.

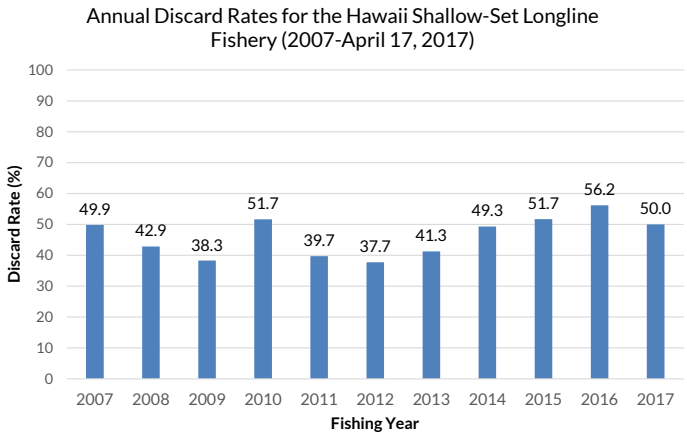
The Hawaii Shallow-Set Longline fishery entangled many threatened and endangered species from 2007 to 2017. These include Pacific leatherbacks, Pacific loggerheads, and green sea turtles, humpback and fin whales, Guadalupe fur seals, and oceanic whitetip sharks. A scientific study estimates that even one Pacific leatherback mortality from waters off the U.S. West Coast over the course of five years is sufficient to hinder recovery of this critically endangered animal.[1] Putting further pressure on these endangered species by introducing pelagic longlines off the U.S. West Coast would be reckless.

Cover Photo: Documented bycatch ensnared by shallow-set longlines off Hawaii includes leatherback sea turtles, northern elephant seals, Risso's dolphins, Laysan albatrosses, loggerhead sea turtles, and black-footed albatrosses.

OCEANA Protecting the World's Oceans

From 2007 through April 17, 2017:

- 206,987 animals were discarded
- 46% of the total catch was discarded
- 64,926 of the discarded animals were released dead or injured, resulting in a death/injury rate of discards of 31.4%
- Over 750 seabirds, 60 dolphins, and 190 sea turtles were caught by this fishery
- 131,270 sharks and rays were discarded
- In 2015, a humpback whale and a fin whale were entangled in this gear and consequently injured



A discard refers to any animal caught that is not kept. This includes animals released alive, dead, or injured. Discard rates (percentage of the total number of animals caught that are thrown overboard) are determined using data provided by fishery observers.[2] The HI SSLL fishery has 100% observer coverage. Data from all sets in the fishery for 2007 through April 17, 2017 were used to determine discard rates.

Keep Shallow-Set Longlines Off the U.S. West Coast

In 1989, longlines were prohibited off the state of California and the Pacific Fishery Management Council (Council) included this prohibition in the West Coast Highly Migratory Species Fishery Management Plan. The Council in 2009 voted to not authorize a West Coast-based pelagic shallow-set longline fishery on the high seas due to significant bycatch concerns.

The drift gillnet swordfish fishery also has very high bycatch, jettisoning approximately 61 percent of everything it catches, on average. Adding another dirty gear to a fishery with disturbingly high discard rates will only complicate and delay progress toward reducing bycatch in the West Coast swordfish fishery. Selective, alternative gear, such as deep-set buoy gear, must be promoted and utilized to build a responsible and sustainable swordfish fishery off the U.S. West Coast.

[1]K.A. Curtis, J. Moore, and S. Benson. 2015. Estimating Limit Reference Points for Western Pacific Leatherback Turtles (Dermochelys coriacea) in the U.S. West Coast EEZ. PLoS One DOI:10.1371/journal.pone.0136452

[2]NMFS. 2017. Hawaii shallow-set longline observer data. Freedom of Information Act release.

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Los Angeles Times

Dead dolphins, whales and sea turtles aren't acceptable collateral damage for swordfishing

By THE TIMES EDITORIAL BOARD
JUL 23, 2018 | 4:10 AM

A herd of dolphin leap out of the water near Laguna Beach. (Los Angeles Times)

Catching swordfish off the coast of California today means leaving milelong mesh nets deep in the ocean overnight. But what fishermen pull up is mostly *not* swordfish. For every one of the hefty, long-billed swordfish in a net, it's estimated that there are four other marine animals entangled there.

The particular kind of drift "gillnets" used by swordfishermen have holes sized to ensnare swordfish (by their gills, hence the name). But the nets also capture dolphins, whales, sharks, sea turtles and numerous other species of fish. At least half of this "bycatch" is tossed back out to sea — in the case of dolphins, sometimes without their fins (which get tangled in the nets), leaving them no chance of surviving. Most of the mammals trapped in the nets are already dead or dying by the time the nets are raised, having spent hours thrashing underwater. But the marketable fish that are trapped by happenstance are hauled in and sold.

There is a United Nations treaty that outlaws large-scale gillnets in international waters because of their destructive effect on marine life, and the federal government has banned this kind of fishing in federal waters off the East Coast. (An attempt to limit gillnet fishing in federal waters off the West Coast fizzled last year when the proposal was shelved by Commerce Secretary Wilbur Ross.) Other

states have prohibited gillnets too, leaving California as the last state in the nation to issue permits for their use. Those permits are good only for federal waters off the California coast.

"The way to prevent swordfishermen from indiscriminately killing sea life is to have California ban gillnets outright."

The National Marine Fisheries Service sends trained observers out to sea with gillnet fishers to count and report back what fish and mammals are caught with the nets. But in the 2016-2017 swordfishing season, the observers were present for only about a sixth of all such outings.

The way to prevent swordfishermen from indiscriminately killing sea life is to have California ban gillnets outright. California Senate Bill 1017, introduced by Sen. Ben Allen (D-Santa Monica), would phase out drift gillnet fishing by Jan. 31, 2023, and compensate the fishermen who used them for the loss of their nets and permits. The compensation would peak at $75,000 for active swordfishermen who surrender their nets and permits and agree not to obtain new ones.

The number of drift gillnet permit holders has dwindled over the past decade; there are a little more than 70 today. Under the bill's compensation plan, they would collectively receive about $2.5 million — with half the money expected to come from federal, nonprofit or philanthropic sources.

Yet fishermen who give up gillnets don't have to find a new line of work — or even give up swordfishing. An innovative approach being used off the East Coast and tested off the West Coast employs deep-set buoy gear. Fishermen drop weighted hooks during the daytime as deep as 1,200 feet into the ocean. When swordfish go for the baited hooks, a buoy on (or under) the surface alerts the fisherman that a fish is on the line and can be retrieved. Studies by various environmental groups show the amount of fish caught incidentally using this kind of gear is reduced to a mere 2% to 3% of the entire catch.

Meanwhile, there are two bipartisan bills in Congress to ban drift gillnets in all federal waters. One is sponsored by California's two Democratic senators, Dianne Feinstein and Kamala Harris, and Sen. Shelley Moore Capito (R-W.Va.). The House companion to it is sponsored by Reps. Ted Lieu (D-Torrance) and Brian Fitzpatrick (R-Pa.).

The measure with the greatest chance of being passed and signed into law, though, is Allen's SB 1017 in the California Legislature, which already has cleared the state Senate and is now before the Assembly Appropriations Committee. It is supported by animal welfare advocates, environmental organizations, the California Fish and Game Commission**,** the Pew Charitable Trusts (which has helped fund trials with the newer fishing gear), Lt. Gov. Gavin Newsom, the Sierra Club California, Sea World, sportfishermen and many businesses. There are some fishery businesses and fishermen opposed. But it's long past time to join the rest of the country — and the world — in banishing this inhumane and environmentally damaging fishing practice.

GAVIN NEWSOM
LIEUTENANT GOVERNOR

The Honorable Anthony Rendon
Speaker
California State Assembly
State Capitol, Room 219
Sacramento, CA 95814

Lorena Gonzalez-Fletcher
Chair
Assembly Committee on Appropriations
State Capitol, Room 2114
Sacramento, CA 95814

RE: SB-1017 (Allen) – Commercial fishing: drift gill net shark and swordfish fishery

July 23, 2018

Dear Speaker Rendon and Assemblymember Gonzalez-Fletcher,

I am writing to express my support for SB-1017 (Allen), which advances the state's leadership in promoting sustainable fisheries and protecting marine wildlife. The bill directs the California Department of Fish and Wildlife (CDFW) to develop a voluntary Drift Gillnet (DGN) permit transition program for fishermen who voluntary surrender their DGN permits before the end of the 2023 fishing season, after which point, the state will no longer issue DGN permits.

As you both are aware, drift gillnets indiscriminately capture swordfish and other, non-target species, resulting in a fishery where bycatch vastly exceeds swordfish landings.[1,2] This high bycatch rate poses an unacceptable risk to populations of iconic or threatened marine species, such as sea turtles, whales, dolphins, sea lions, and sharks. In the 2016-2017 season, observers noted that on 160 of the fishery's 714 net deployments, drift gillnets killed 10 Short-Beaked Common Dolphins, 6 Northern Right Whale Dolphins, 34 Blue Sharks, 29 Common Molas, and 1 Sea Lion.[1] In the 2017-18 season, observers documented 114 of 681 net deployments, finding that drift gillnets killed a California gray whale, elephant seal, northern right whale dolphin, California sea lion, 10 short-beaked common dolphins, 52 blue sharks and 47 bluefin tuna.[2] These figures represent mortality resulting from just 22 and 17 percent of the fishery's effort in the 2016-2017 and 2017-2018 seasons, suggesting a substantially higher level of bycatch across the industry.

With your support, efforts to increase transparency and sustainability in the fishery were previously considered and adopted by the Pacific Fishery Management Council (PFMC) in 2015. However, the National Marine Fisheries Service, which issues final approval of PFMC policies, rejected these provisions in June 2017. This decision perpetuates ineffective oversight of the DGN fishery, and allows continued fishing irrespective of incidental bycatch that includes

[1]http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/swr_observer_program/drift_gillnet_catch_summaries/observeddgncatch2016-2017.pdf
[2]http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/swr_observer_program/drift_gillnet_catch_summaries/observeddgncatch2017-2018.pdf

endangered marine species. In the absence of leadership and environmental stewardship from federal regulatory bodies, the state has a responsibility to ensure that our fisheries operate using sustainable methods that do not threaten our treasured ocean wildlife.

SB-1017 builds upon collaborative efforts by CDFW, the fishing industry, and environmental NGOs to develop solutions that reduce bycatch while bolstering the industry's viability for participants. Developing a phase-out program will provide an incentive for the industry to turn away from an unsustainable gear type and facilitate adoption of modern gear that reduces bycatch. These incentives and protections for the industry are essential to any effort to address bycatch mortality associated with California's swordfish fishery. Just as the state's policies on climate change have enabled us to aggressively reduce greenhouse gas emissions while promoting economic growth, improving the environmental sustainability of the swordfish industry should not happen at the expense of the fishery's economic sustainability.

California's iconic marine species have far greater value if left alive and thriving than if they are caught and discarded as bycatch. These species play a significant role in the health of marine ecosystems, contribute tremendous value to eco-tourism, and have inherent value as charismatic species that are loved by Californians young and old. For these reasons, 86 percent of Californians support efforts to protect wildlife by developing a more sustainable fishery that uses less harmful gear types.[3]

For the reasons outlined above, I encourage your continued support to address this issue through passage of SB-1017 (Allen), which will advance a sustainable swordfish fishery. Thank you for your consideration.

Sincerely,

GAVIN NEWSOM
Lieutenant Governor
State of California

CC:

The Honorable Ben Allen, Senator, California Senate District 26
The Honorable Toni Atkins, President Pro Tempore, California State Senate
The Honorable Edmund G. Brown, Governor, State of California

[3] http://www.pewtrusts.org/en/research-and-analysis/analysis/2016/08/03/new-poll-californians-support-transition-to-less-wasteful-gear-for-catching-swordfish

Mr. Phil Anderson, Chairman
Pacific Fishery Management Council
770 NE Ambassador Place, Suite 101
Portland, Oregon 97220-1384

RE: Agenda Item H.6 and F.7

Dear Chair Anderson and Council Members,

We have reviewed the Draft Swordfish Management and Monitoring Plan and are encouraged to see the goals that are to serve as a guide for the Council to manage the West Coast swordfish fishery. Specifically, we are supportive of promoting a wide range of harvest strategies for swordfish off the West Coast so that it can meet the domestic demand and reduce reliance on imported seafood. We are also encouraged to see some of the potential actions to be taken under this plan. Specifically, we are supportive of the development of longline fisheries off the West Coast.

Support the economic viability of the swordfish fishery so that it can meet demand for a fresh, high quality, locally-caught product and reduce reliance on imported seafood

On an individual country basis, the United States consumes (demands) more swordfish than any other country in the world.[1] However, annual U.S. landing provide less than 25 percent of the swordfish consumed in the United States. Consequently, the reliance on foreign imports remains at more than three times that supplied by U.S. fishermen. Overall, seafood imports have constituted up to 90 percent by weight of domestically consumed seafood in recent years compared to 61% in the early 1990s.[2] Last year the seafood trade deficit was estimated to be about $14 billion as a result of this overreliance on imported seafood, which U.S. Commerce Secretary Wilbur Ross said is one of his "pet peeves."[3]

Recent assessments of swordfish stock status in the northeast Pacific indicate the population is healthy and fished at a level that is below maximum sustainable yield (MSY).[4] Of all the major swordfish fishing areas in close proximity to the United States, only the West Coast lacks a commercially viable swordfish fishery operating at or near MSY levels.[5] In a list of ten challenges facing the Commerce Department's 47,000 employees, Secretary Ross specifically identified the need for "obtaining maximum sustainable yield for our fisheries."[6]

[1] http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/hms_program/2011%20swordfish%20workshop%20Background%20materials/understanding_swo_issues-_whitepaper.pdf
[2] NOAA NMFS, Fisheries of the United States, U.S. Department of Commerce 2015, NOAA, 2014, p. 152.
[3] https://www.youtube.com/watch?v=NDWiAiSWgNU
[4] https://www.pifsc.noaa.gov/library/pubs/admin/PIFSC_Admin_Rep_10-01.pdf
[5] http://www.pcouncil.org/wp-content/uploads/K5a_SUP_ATT2_SWFSC_TIRN_RESPONSE_MAR2014BB.pdf
[6] https://www.youtube.com/watch?v=gJJg86FvFSk

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Promote and support a wide range of harvest strategies for swordfish off the West Coast
In April of 2015, the Bren School of Environmental Science & Management concluded a yearlong thesis analysis titled "Evaluating Management Scenarios to Revitalize the California Commercial Swordfish Fishery."[7] The Abstract of the final Bren report states, "In the California commercial swordfish fishery, participation has declined in recent decades, resulting in decreased domestic swordfish catch and an increased reliance on imported swordfish from countries with relatively higher bycatch rates. Increasing imports is expected to result in a transfer of effort to these countries, thereby causing higher bycatch on a global scale. To simulate an increase in domestic swordfish catch while limiting bycatch, we created a model to analyze a range of management scenarios composed of drift gillnet, longline, and harpoon based on their associated catch, profit, and bycatch interactions. We conducted tradeoff analyses of catch and profit versus bycatch to evaluate viable management scenarios to revitalize the fishery. Our analysis revealed that utilizing a gear portfolio of the three gear types could increase catch and profit compared to the status quo without exceeding proposed bycatch constraints. Fisheries managers can use this model as a decision-making tool to consider management options to enhance productivity and conservation in the fishery and decrease reliance on imports with the goal of protecting sensitive species globally."

The Conclusion of the final Bren report states: "The Pacific swordfish stock off the West Coast is an underutilized domestic resource. We modeled 252 management scenarios in the California commercial swordfish fishery, and revealed numerous options to increase the catch and profit in the fishery without exceeding the PFMC proposed bycatch hard cap levels… Our analysis demonstrated that reincorporating longline into the fishery could increase domestic swordfish catch and fleetwide profits without exceeding bycatch hard cap levels. Therefore, we recommend the PFMC consider approving EFPs for longline as a first step to assessing viability and bycatch performance of this gear off the West Coast. Overall, we recommend the Council consider a gear portfolio composed of a mixed-gear fleet of drift gillnet, longline, and harpoon as this results in the highest profit and catch outcomes and will provide a steady supply of domestically-caught, California swordfish throughout most of the year."

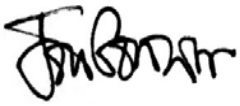
Out of the 252 management scenarios modeled in the Bren report, the model with the highest profit and catch without exceeding bycatch hard cap levels suggests the addition of 41 drift gillnet vessels and 3 longline vessels to the West coast fleet. According to the report, this scenario would result in an increase of $1.6 million profit and 281 metric tons of catch annually.

[7] Pages 79-188 http://www.pcouncil.org/wp-content/uploads/2015/06/E3b_SupPubCom2_Full_E-Only_JUN2015BB.pdf

Of the eight regional fisheries management councils, the PFMC is the only one that authorizes a longline fishery, and then prohibits longline fishing within its jurisdiction. We respectfully ask the PFMC to support longline as a wide range of harvest strategies off the West Coast, and to keep scoping of a longline fishery on the November 2018 PFMC Agenda.

Thank you for your attention consideration.

Sincerely,



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THE PEW CHARITABLE TRUSTS

111 SW Columbia Street, Suite 200
Portland, Oregon 97201
pewtrusts.org

August 27, 2018

Phil Anderson, Chair
Pacific Fishery Management Council
1100 NE Ambassador Place, #101
Portland, Oregon 97220

Re: Agenda Item H.6, Swordfish Management and Monitoring Plan (SMMP)

Dear Chair Anderson and members of the Council:

Council discussions over the last several years acknowledge the need to address bycatch in the large mesh drift gillnet (DGN) fishery. In light of this, we encourage the Council to transition the West Coast swordfish fleet away from the use of DGN gear toward more selective and actively tended gears with minimal bycatch including deep-set buoy gear (DSBG). Given the Council's goal of reducing bycatch in the West Coast swordfish fishery, we ask the Council take action to:

1. initiate a plan to transition away from DGN gear;
2. prioritize the authorization of DSBG; and
3. forgo future consideration of a longline fishery under the Highly Migratory Species (HMS) Fishery Management Plan (FMP).

We offer the following comments for the Council's consideration during their deliberations on this agenda item.

1. Initiate a plan to transition away from DGN gear

We ask the Council to affirm their 2014 decision to transition away from DGN gear.[1] Continued restrictions placed on the DGN fishery since its introduction on the West Coast, including time and area closures, gear modifications, and performance standards, demonstrate the difficulty this gear has in meeting acceptable bycatch standards.

The draft SMMP details future actions to be taken by the Council[2] and proposes to address bycatch in the DGN Fishery through hard caps on loggerhead and leatherback sea turtles and performance standards on other species.[3] Although we support efforts to reduce bycatch in the

[1] March 2014 Council Meeting Decision Summary Document, p.4 *available at* http://www.pcouncil.org/wp-content/uploads/0314decisions.pdf
[2] Draft SMMP, September 2018, p. 2 *available at* https://www.pcouncil.org/wp-content/uploads/2018/08/H6_Att1_Revised_SMMP_SEPT2018BB.pdf
[3] *Id.*

DGN fishery and have previously been supportive of a hard cap regime, we do not agree that this is the best use of the Council's time and resources. The hard caps adopted by the Council in 2015 required a significant amount of Council deliberation including substantial staff and advisory body resources. Ultimately, the Council's recommendation was overruled by the National Marine Fisheries Service (NMFS) despite the agency's support for the measures during Council discussions.

We ask the Council to weigh the efficacy of implementing additional management measures to reduce bycatch in a fishery that discards over half of what it catches on average instead of focusing on a plan to transition away from DGN gear and offering new opportunities to swordfish fishermen. Significant time and resources have been invested in an attempt to reduce bycatch in the DGN fishery. Yet, the fishery continues to have unacceptable levels of bycatch. Based on past efforts, catch data, and the inability to meet performance standards, we do not believe it is possible to make a mile-long net more selective.

We also oppose allowing DGN vessels to access the Pacific Leatherback Conservation Area (PLCA) and do not view this as a productive use of the Council's time. Recent research confirms that prohibiting the use of DGN gear in the PLCA is the most effective means to protect leatherback sea turtles.[4] We ask the Council to remove these actions from the draft SMMP and focus on a comprehensive plan to transition away from DGN gear. This direction will address the Council's goal of bycatch reduction while being consistent with public sentiment. We remind the Council that over the years, thousands of citizens have written comments or spoken in favor of a transition plan during public comment periods. Additionally, in a Pew-commissioned poll, 86 percent of Californians supported a transition away from drift gillnets.[5]

2. Prioritize the authorization of DSBG

In determining next steps for the swordfish fishery, we request the Council prioritize the authorization of DSBG and maintain the schedule laid out in the March 2018 motion which schedules final action in March 2019. DSBG has broad support from a variety of stakeholders. The conservation community is supportive of DSBG due to its selective design, active tending, serviceability, and ability to catch swordfish with minimal bycatch. In authorizing a DSBG fishery, the Council can meet its goals of reducing bycatch while maintaining the economic viability of the West Coast swordfish fishery.

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[4] P. Santidrián Tomillo, N. J. Robinson, A. Sanz-Aguilar, J. R. Spotila, F. V. Paladino and G. Tavecchia, High and variable mortality of leatherback turtles reveal possible anthropogenic impacts, Ecology, 98, 8, (2170-2179), (2017) (finding that the temporal extent of the current static closure period is the shortest and most effective for protecting the turtles).

[5] California Drift Gillnet Fisheries Survey, February 2016, *available at* http://www.pewtrusts.org/en/research-and-analysis/articles/2016/08/03/new-poll-californians-support-transition-to-less-wasteful-gear-for-catching-swordfish

PIER has tested DSBG for over 7 years under variable ocean conditions with consistent catch composition and over 98 percent marketable catch. DSBG has also been shown to be profitable for fishermen. In 2017, five vessels fishing DSBG had an ex-vessel revenue of $408,874 ($81,774 per vessel) while seventeen DGN vessels had an ex-vessel revenue of $890,443 ($52,379 per vessel).[6] This is because swordfish caught with DSBG can garner a significantly higher price per pound as fish caught with DGN or longline gear[7] because buoy-caught fish are fresher and in better condition.

Over 8,000 hours of on-the-water fishing suggests that the risk of interaction with protected and sensitive species is low. Further, once authorized, a DSBG fishery has the potential to produce a significant amount of swordfish,[8] which could lessen reliance on imported swordfish, provide more opportunity for West Coast fishermen, and increase domestic production. Assuming an average dressed weight of 150 per swordfish, a 50 vessel DSBG fishery has the potential to land 260 metric tons of swordfish annually[9] which is more than the DGN fishery has landed in a decade.[10]

In authorizing DSBG under the HMS FMP, we suggest the Council specifically describe and mandate the use of the configuration developed by PIER to minimize the risk of interaction with protected species. The gear used by PIER EFP participants is designed to be streamlined at the surface, avoiding any loops or exposed braided lines that are known to lead to entanglements. The PIER design also uses noncompressible buoys to minimize the risk of lost gear. It is our understanding that the terms and conditions of the new DSBG EFPs were not written to mandate use of streamlined gear. Although we understand the desire to allow for innovation, the researchers at PIER spent countless hours testing DSBG configurations to optimize the design. The features of PIER's gear that have led the conservation community to support the authorization of DSBG must be a requirement in an authorized fishery.

3. Forgo any future consideration of a longline fishery under the HMS FMP

The authorization of longlines under the HMS FMP is likely to be highly controversial given the history and nature of similar longline fisheries in Hawaii.[11] Considering the Council's goal to

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[6] Pacific Council Swordfish Landings Report, May 2018, *available at* https://www.pcouncil.org/wp-content/uploads/2018/05/G7_Att2_Landings_of_swordfish_2008-2017_Jun2018BB.pdf

[7] Draft SMMP, September 2018, p. 5 *available at* https://www.pcouncil.org/wp-content/uploads/2018/08/H6_Att1_Revised_SMMP_SEPT2018BB.pdf

[8] HMSMT Report on DSBG Authorization, June 2018, p.13 *available at* https://www.pcouncil.org/wp-content/uploads/2018/05/G5a_HMSMT_Rpt1_DSBG_ROA_Analysis_Jun208BB.pdf

[9] *Id* (assuming constant returns to scale, a 50 vessel DSBG fishery could land 3,481 swordfish).

[10] HMS Stock Assessment and Fishery Evaluation documents, Table 12. Number of vessels and commercial landings (round mt) in the West Coast drift gillnet fishery, 1990-2017 *available at* http://www.pcouncil.org/wp-content/uploads/HMS-SAFE-Table-12.htm

[11] Pacific Islands Regional Office Observer Program, Quarterly Reports, *available at* http://www.fpir.noaa.gov/OBS/obs_qrtrly_annual_rprts.html

reduce bycatch in the swordfish fishery, we request that this action be removed from the SMMP and the Council's year-at-a-glance calendar. Longlines are known to have high bycatch including protected and recreationally important species. As the Council looks toward alternative gears, it is important to consider their overall ecosystem impact and evaluate which gears are likely to meet the Council's twin goals of reducing bycatch and promoting a West Coast swordfish fishery.

It is difficult to see a way in which increased longline effort would not increase take of protected species and bycatch of finfish. In 2014, the Hawaii shallow-set longline fishery caught 16 leatherback and 15 loggerhead sea turtles.[12] This is far above the number of turtle takes currently authorized in the West Coast swordfish fishery. Since 2004, the Hawaii shallow-set fleet has also caught over 8,000 billfish,[13] which are not permitted to be landed on the West Coast under the Billfish Conservation Act and would be required to be discarded as bycatch.[14] We also share the concerns over albatross bycatch in longline fisheries detailed by Audubon California at this meeting and during several previous meetings.

Further, with overfishing occurring on the Eastern Pacific Ocean (EPO) stock of swordfish,[15] the Council should consider how increasing longline effort could exacerbate fishing pressure on this stock. The Hawaii fishery is known to catch fish from the EPO stock[16] and it is assumed that a West Coast fleet would fish primarily in the eastern portion of the Hawaii fishery's range, closer to the EPO stock boundary.[17] Climate change and stronger El Niño events may also affect the distribution of the EPO swordfish stock.[18] It is important that managers assess what, if any, changes are occurring and how this could increase the amount of EPO fish caught in any potential longline fisheries particularly when the stock boundary line is "quasi-arbitrary."[19]

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[12] Scoping Information Document for Council Action to Authorize the Use of Shallow-Set Longline Gear outside the West Coast Exclusive Economic Zone under the Fishery Management Plan for West Coast Fisheries for Highly Migratory Species, p. 4.
[13] *Id.*
[14] Billfish Conservation Act of 2012, H.R. 2706.
[15] Determination of Overfishing or an Overfished Condition, Fed. Reg. Volume 80, Number 170, p.53115, Wednesday, September 2, 2015.
[16] Billfish Working Group. 2014. North pacific swordfish (Xiphiaus gladius) stock assessment in 2014. International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean, July 2014.
[17] Scoping Information Document for Council Action to Authorize the Use of Shallow-Set Longline Gear outside the West Coast Exclusive Economic Zone under the Fishery Management Plan for West Coast Fisheries for Highly Migratory Species, Figure 6, p. 9.
[18] Cheung et al., *Projecting future changes in distributions of pelagic fish species of Northeast Pacific shelf seas*, Progress in Oceanography, Vol. 130, January 2015, pp. 19-31 (predicting eastern Pacific species shifting poleward by 30 km per decade).
[19] Scoping Information Document for Council Action to Authorize the Use of Shallow-Set Longline Gear outside the West Coast Exclusive Economic Zone under the Fishery Management Plan for West Coast Fisheries for Highly Migratory Species, p. 17 ("This boundary is quasi-arbitrary so the actual catch of EPO swordfish by the Hawaii SSLL fishery could be more or less than the amount stated in the notification.").

In 2011, 2012 and 2013, NMFS conducted deep-set longline trials inside the West Coast EEZ. The results of these tests showed very high bycatch rates including 41 blue sharks caught for every swordfish and more than three non-marketable species for each marketable fish caught.[20] At the very least, before any decisions are made on future testing or authorization of longlines, the Council should request from NMFS all data produced from previous longline trials off the West Coast.

Longlines have been prohibited off our coast since the implementation of the HMS FMP[21] and in California for over 25 years.[22] The Council's reasons given for not authorizing a longline fishery in 2009 are still relevant and some even more significant than they were at that time. Given the ability of new gears to target swordfish with significantly lower bycatch and ecological impact, we ask the Council not to move forward with a longline fishery inside or outside the EEZ.[23]

Conclusion

At the September meeting, the Council can change the future direction of the West Coast swordfish fishery and move toward more selective and actively tended gear types. The public's support for such a transition is abundantly clear. Thousands of people and dozens of organizations and businesses have contacted the Council urging a shift away from DGN gear, opposing the introduction of longlines, and supporting the authorization of DSBG. By taking the above actions, the Council can set its priorities and workload to reflect the Council's bycatch reduction goals.

Sincerely,

Paul Shively
Project Director
U.S. Oceans, Pacific

Tara Brock
Principal Associate
U.S. Oceans, Pacific

[20] NOAA Fisheries presentation to the PFMC, Agenda Item K.5.b, Supplemental SWFSC PowerPoint 1, March 2014, p. 12.
[21] Final rule to prohibit shallow longline sets east of 150° W, 50 CFR Part 223, Fed. Reg. Vol. 69, No. 48, Thursday, March 11, 2004.
[22] In 1989 with the enactment of Section 9028 of the Fish and Game Code, the California Legislature prohibited pelagic longline fishing off the California coast by banning the use of hook and line fishing gear longer than 900 feet.
[23] Decisions of the 198th Session of the PFMC, p.1 *available at* http://www.pcouncil.org/wp-content/uploads/0409decisions.pdf

Businesses Support S. 2773 / H.R. 5638

August 15, 2018

The United States Congress
U.S. Senate and House of Representatives
Washington, D.C.

RE: Support for S. 2773 / H.R. 5638 to reform the West Coast swordfish fishery

Dear Legislators,

We, the undersigned California businesspersons, support S. 2773 / H.R. 5638 to reform the West Coast swordfish fishery. We want and deserve the opportunity to enjoy locally-caught seafood – but not at the expense of whales, dolphins, sea turtles, sportfish, sharks and other sensitive marine wildlife that are caught in mile-long drift gillnets off our coast.

In 2017, the federal government, via NOAA Fisheries, withdrew important regulations to address bycatch in drift gillnets. Members of the Pacific Fishery Management Council spent several years crafting strict limits on endangered and vulnerable species caught in drift gillnets off the west coast, including marine mammals and sea turtles. This was done in consultation with the California Department of Fish and Wildlife, fishermen, conservation groups, and the public. Many business leaders on this letter supported these actions.

More recently, gruesome video footage from drift gillnet vessels surfaced demonstrating that the deadly bycatch in this fishery continues. Deckhands are seen sawing the fins off living sharks and dolphins as the only way to free them from the nets. A majority of what is caught in this fishery is thrown overboard, often injured or dead.

We want these practices to end. We also want to make sure that fishermen are given the tools to transition to more sustainable fishing gear.

Deep-set buoy gear – successfully used on the East Coast and tested on the West Coast for more than six years – provides such an alternative. This innovative approach allows fishermen to drop 30 hooks as deep as 1,200 feet, where swordfish are typically found during the day, and avoid the sensitive species that fall victim to drift gillnets. Indicator buoys signal when there's a fish on the line, so fishermen can quickly retrieve their catch and release nonmarketable species. Buoy-caught fish also are landed immediately and delivered to market more quickly, resulting in a higher-quality product that can bring more than double the price of swordfish caught with longlines or drift gillnets.

The solutions are within reach and we're encouraged to see the political will to get there. We see this effort as part of building a stronger blue economy, one with sustainable recreational and commercial fishing, ecotourism and outdoor recreation on the West Coast. We will be following this issue in the coming weeks and months, and look forward to a solution.

Sincerely,

We the undersigned

Renee Stone
Business Development
3blindmice
San Diego, CA

Justin Wilder
Captain
Hooked on Mendo
Fort Bragg, CA

Mike Long
Captain
Miss Vic Sportfishing
Bodega Bay, CA

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Royal Polaris
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