INFORMATION PAPER ON COUNCIL ACTION SETTING HARD CAPS FOR PROTECTED SPECIES IN THE CALIFORNIA/OREGON LARGE-MESH DRIFT GILLNET FISHERY

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This paper provides background information, including a description of the proposed action and purpose and need adopted by the Council in June 2021, the range of alternatives adopted by the Council in November 2021, and a description of environmental conditions relevant to the action.

1 INTRODUCTION

The Pacific Fishery Management Council (Council) originally adopted a proposal in September 2015 to implement a "hard cap" closure regime on the California large mesh drift gillnet (DGN) fishery, which for a variety of reasons was never fully implemented. Under such a regime, species limits on the takes (defined as observed mortality/injury) of high priority protected species (HPPS), as identified by the Council, would be established. When a threshold for any HPPS is reached the fishery closes.

In March 2020 the Council was briefed on the implementation of its 2015 proposal (through regulations that were later rescinded due to litigation). It asked the National Marine Fisheries Service (NMFS) to report back in more detail on the factors leading to the suspension of rulemaking in 2017. NMFS reported back in November 2020 and the Council directed its Highly Migratory Species Management Team (HMSMT) and HMS Advisory Subpanel to revise its original purpose and need statement and identify alternative hard cap approaches that address NMFS' concerns regarding potential negative economic impacts. These advisory bodies reported back in June 2021. The Council adopted a revised purpose and need statement (see below) and provided further guidance to the HMSMT on the development of a range of alternatives. The Council adopted a range of alternatives at its November 2021 meeting.

The DGN fishery is managed under the Council's <u>Fishery Management Plan for West Coast Fisheries for</u> <u>Highly Migratory Species</u> (HMS FMP).

1.1 Proposed Action

The proposed action is to establish hard caps (i.e., limits) on the number of observed mortalities/injuries of HPPS, including sea turtles, Endangered Species Act- (ESA) listed marine mammals, bottlenose dolphins, and short-finned pilot whales caught in DGN fishery. Hard caps may apply to individual vessels or the fishery as a whole. If a limit is met or exceeded, both the observed vessel and any vessels determined to be unobservable would stop fishing, or the DGN fishery as a whole, would close for a prescribed time period. Such closures would be applicable to all waters where the fishery may operate.

1.2 Proposed Action Area

The Action Area for this proposed action is the U.S. Exclusive Economic Zone (EEZ) and adjacent high seas waters off the coasts of California and Oregon.¹ The fishery is prohibited in the portion of the U.S. EEZ north of 46°16′ N. latitude (Washington coast) (50 CFR 660.731(d)(8). The effective action area for the proposed action is further reduced by the combination of state and federal regulations that have

¹ 50 CFR § 660.701 defines the action area for the HMS FMP but does not define "adjacent high seas waters." For the purposes of the DGN fishery, adjacent high seas waters is the area where very limited DGN fishing effort has occurred. No high seas fishing effort has been observed after 2000.

influenced where this fishery has occurred in the past and would be expected to occur in the foreseeable future. For the purposes of this proposed action, the range and extent of the DGN fishery that has occurred in this area in the decade to 2021 represents the current state and expected extent of the DGN fishery in the foreseeable future. Figure 1-1 shows a model-based estimate of the distribution of DGN fishing effort, 2013-2019 (Suter, *et al.* 2022). As shown in the figure, most fishing effort has occurred south of Monterey, mainly in the Southern California Bight. The Pacific Leatherback Conservation Area (PLCA), a time-area closure implemented to mitigate take of ESA-listed leatherback sea turtles, has limited fishing effort further north (the boundary of the PLCA is shown in Figure 1-1). Historically, fishing occurred in waters off Oregon but not in recent years. No recent management measures have altered the time or area where DGN fishing is allowed.

1.3 Purpose and Need

The purpose of the proposed action is to incentivize fishing practices and tools in an effort to minimize bycatch and bycatch mortality, as well as to conserve other unmarketable non-target species, including ESA-listed species and marine mammals, in the drift gillnet fishery to the extent practicable. The proposed action is needed to ensure that take and bycatch of unmarketable non-target species, including ESA-listed species and marine mammals, in the DGN fishery is minimized to the extent practicable and that such take and bycatch does not result in limitations on the economic viability of the west coast swordfish fishery.



Figure 1-1. Distribution of estimated DGN fishing effort, for six fishing years combined (September 2013 to January 2019). (Source: Suter, *et al.* 2022)

2 ALTERNATIVES PROPOSED FOR THE DRIFT GILLNET FISHERY

The range of alternatives described here was adopted by the Council in November 2021.

2.1 Alternative 1 – The No Action Alternative

Under this alternative hard cap management is not implemented; the fishery continues operation under current regulations.

2.2 Alternative 2 – Rolling Two-Year Fishery Closure

Under this alternative, hard caps are implemented as in the Council's original 2015 action, with rolling two-year caps based on observed mortality/injury for five marine mammal and four sea turtle species. Although NMFS found this proposal was inconsistent with Magnuson-Stevens Fishery Conservation and

Management Act (MSA) National Standard 7, implementation of other proposed actions by the Council could change circumstances such that this alternative now may be consistent with National Standards under the MSA. Further in-depth analysis would be necessary to make that determination.

A description of how hard caps under this alternative would have functioned may be found in the Final Rule Notice (<u>85 FR 7246</u>) published February 20, 2020; subsequent litigation rescinded these regulations. The hard caps for this alternative are shown in Table 1.

Species	Rolling 2-year hard cap
Fin Whale	2
Humpback Whale	2
Sperm Whale	2
Leatherback Sea Turtle	2
Loggerhead Sea Turtle	2
Olive Ridley Sea Turtle	2
Green Sea Turtle	2
Short-fin Pilot Whale (CA/OR/WA stock)	4
Bottlenose Dolphin (CA/OR/WA stock)	4

Table 2-1. Rolling 2-year hard cap levels for HPPS.

Under this alternative, if a cap is reached, the DGN fishery will close until the two-year (i.e., two fishing seasons) mortality and injury for all species falls below their hard cap values. The DGN fishery then reopens on May 1 of the next fishing season. NMFS reports observed protected species mortalities and injuries on an ongoing basis to help participants in the DGN fishery plan for the possibility of a hard cap being reached.

The length of the closure period depends on when a hard cap is reached. The rolling window considers observed mortality/injury during the previous fishing season along with the current fishing season to determine whether a two-year hard cap has been reached or exceeded. Taking a hard cap of two as an example, if one observed mortality/injury occurs in season 1 and a second observed mortality/injury occurs in season 2, the rolling two-year hard cap has been reached and the fishery closes. The fishery would then reopen in season 3 once the level of observed mortality/injury is estimated at one animal during the rolling window for seasons 2-3, which is below the hard cap value of two. However, if two observed mortalities/injuries occurred in season 1, the fishery would close for the remainder of season 1, remain closed for the entirety of season 2 (since the season 1-2 rolling window value is still 2), and reopen in season 3. Under this alternative, the length of closure period can vary considerably under these scenarios, potentially extending up to nearly two entire seasons.

2.3 Alternative 3 – In-Season Individual Vessel and Fleetwide Closures

Under this alternative, a combination of individual and fleetwide annual hard caps are implemented based on the values shown in Table 1. "Annual" refers to the fishing year designated in the HMS FMP and regulations, which is the year beginning at 0801 GMT (0001 local time) on April 1 and ending at 0800 GMT on March 31 (2400 local time) of the following year (50 CFR 660.702), except for the alternative time period specified in Option C.2.² Caps apply to observed interactions, regardless of the level of observer coverage. In all cases, when a hard cap is met fishing shall cease both inside and outside the U.S.

 $^{^{2}}$ Although the fishing year is from April 1 to March 31, the DGN fishery is closed from February 1 to April 30. Thus a "fishing season" is from May 1 to the following January 31.

EEZ. Any hard cap closure is continuous for the applicable period, even if it overlaps with any of the existing DGN fishery closure listed at 50 CFR 660.713(c-e).

Hard caps apply separately to individual vessels and the fleet as a whole. Hard cap levels are further defined in terms of a cap being reached or exceeded. Given the values of the individual and fleetwide caps, the levels for exceeding an individual vessel cap and reaching a fleetwide cap are the same. This is reflected in Table 2-2.

When any individual vessel cap is triggered the vessel subject to the cap, and all unobservable vessels, must cease fishing for the specified time period. The NMFS observer program determines which vessels are unobservable. Generally, vessels are unobservable because they are unable to accommodate an observer due vessel condition, inadequate crew space, or other factors. For a given vessel the designation can switch back and forth between observable and unobservable over time, depending on changes in the characteristics of the vessel.³

Species	Individual Cap Reached	Individual Cap Exceeded and Fleetwide Cap Reached	Fleetwide Cap Exceeded
Fin whale	1	2	3
Humpback whale	1	2	3
Sperm whale	1	2	3
Leatherback sea turtle	1	2	3
Loggerhead sea turtle	1	2	3
Olive-Ridley sea turtle	1	2	3
Green sea turtle	1	2	3
Short-fin pilot whale C/O/W	3	4	5
Common bottlenose dolphin C/O/W Offshore stock	3	4	5

Table 2-2. Hard cap levels under Alternative 3.

Alternative 3 has three different options (A, B, C) with some sub-options describing various closure periods triggered at the different hard cap thresholds. Table 2-3 provides a summary of these options and sub-options.

Option A:

If a vessel **reaches** an individual cap, that vessel and all unobservable vessels cease fishing for:

Sub-option I: 30 days if the cap is reached before November 1, or 14 days if the cap is reached between November 1 and January 31.

Sub-option II: For the remainder of the fishing year.

If a fleetwide cap is **reached**, the entire fleet ceases fishing for the remainder of the fishing year.

³ At any given point in time a vessel may be "observed" meaning it is carrying a fishery observer, "unobserved" meaning it is capable of carrying an observer but is not carrying one, or "unobservable" meaning it is incapable of carrying an observer.

Option B:

If a vessel **reaches** an individual cap, that vessel and all unobservable vessels cease fishing for 30 days if the cap is reached before November 1, or 14 days if the cap is reached between November 1 and January 31.

If a vessel **exceeds** an individual cap, that vessel and all unobservable vessels cease fishing for the remainder of the fishing year.

If a fleetwide cap is **exceeded**, the entire fleet ceases fishing for the remainder of the fishing year.

Option C:

If a vessel **reaches** an individual hard cap, that vessel and all unobservable vessels cease fishing for 30 days if the cap is reached before November 1, or 14 days if the cap is reached between November 1 and January 31.

If a vessel **exceeds** an individual cap, that vessel and all unobservable vessels cease fishing for the remainder of the fishing year, **AND** the remainder of the fleet ceases fishing for 30 days if the cap is exceeded before November 1, or 14 days if the cap is exceeded between November 1 and January 31.

If a fleetwide cap is **reached**, the entire fleet ceases fishing for 30 days if the cap is reached before November 1, or 14 days if the cap is reached between November 1 and January 31. (Note that since the exceedance values for vessel caps and the cap reached values for the fleet are the same, this provision duplicates the fleet provision described above.)

If a fleetwide cap is **exceeded**, the entire fleet ceases fishing until:

Sub-option I: The beginning of the following fishing year.⁴

Sub-option II: The following November 1, with cap counts beginning November 1 each year.

⁴ Ceasing fishing until the beginning of the following fishing year (April 1) is functionally equivalent to ceasing fishing for the remainder of the fishing year (March 31), because the DGN fishery is closed from February 1 through April 30 each year.

Table 2-3. Summary of Alternative 3 options and sub-options. (Note that for individual vessel caps both the observed vessel subject to the cap and all unobservable vessels cease fishing for the specified time period.)

	Alternative 3 Options				
Cap level	A.1	A.2	В	C.1	C.2
Vessel cap reached	Vessel closed 30 days if 5/1-10/31, 14 days if 11/1-1/31	Vessel closed for remainder of fishing year	Vessel closed 30 days if 5/1-10/31, 14 days if 11/1-1/31	Vessel closed 30 d days if 1	ays if 5/1-10/31, 14 1/1-1/31
Vessel cap exceeded			Vessel closed for remainder of fishing year	Vessel closed fish Fleet closed 10/31, 14 d	d for remainder of ing year for 30 days if 5/1- ays if 11/1-1/31
Fleetwide cap reached	Fleet closed for rer	nainder of fishing year		Fleet closed for 10/31, 14 days	30 days if 5/1- if 11/1-1/31*
Fleetwide cap exceeded			Fleet closed for remainder of fishing year	Fleet closed until beginning of following fishing year	Fleet closed to following 10/31, with cap counts beginning 11/1 each year

* Note that since the exceedance values for vessel caps and the cap reached values for the fleet are the same, this provision duplicates the fleet provision described above.

3 ENVIRONMENTAL CONDITIONS

3.1 The DGN Fishery and Participation in Other Fisheries in the Proposed Action Area

The characteristics of the DGN fishery including its evolution since its emergence in the late 1970s, are detailed in the <u>Final Environmental Assessment</u> (EA) prepared by NMFS in 2017 (NMFS 2017) evaluating the Council's 2015 proposal, ⁵ and more recent information is available in the <u>HMS SAFE</u> available on the Council website. That information is briefly summarized here.

DGN gear consists of floating gillnet panels suspended vertically in the water column to catch pelagic species. It has a minimum stretched mesh size of 17 inches and a single set of the gear may not exceed 6,000 feet in length. The gear is set at night targeting thresher shark and swordfish. In recent decades swordfish has emerged as the dominant target species, likely due to its higher value compared to thresher shark and possibly shark conservation measures implemented in the 1990s. Although historically operating as far north as Oregon, today fishing occurs almost entirely south of Monterey, mainly in the Southern California Bight in the fall and winter. Seasonal temperature fronts that concentrate feed for swordfish are a major influence on fishing activity, but regulatory time-area closures also have a big influence on seasonal patterns.

The fishery is managed through both Federal and state regulations to conserve target and non-target stocks including federally protected species that are incidentally captured. Measures in Federal regulations to mitigate impacts to marine mammals include a requirement to attach acoustic pingers on the net as deterrence and setting the net at least 6 fathoms (10.9 m) below the surface.

The fishery is subject to time and area closures to mitigate takes of sea turtles. These are the Pacific Leatherback Conservation Area (50 CFR 660.713(c)(1)) and the Pacific Loggerhead Conservation Area (50 CFR 660.713(c)(2)).

The state of California established a limited entry permit program for the fishery, gear specifications and restrictions, and various time and area closures. (These gear specifications and time/area closures are also described in Federal regulations at 50 CFR 660.713(b) and (d)). Principal among these time and area closures, the fishery is closed in the EEZ from February 1 to April 30. As a result, the DGN fishing season begins on May 1 and ends on January 31, although little fishing effort occurs before August 15 because waters within the 75 nautical miles of the mainland shore are closed May 1 to August 14 (50 CFR 660.713(d)(2)). Pursuant to the HMS FMP, Federal regulations establish a fishing year beginning at 0801 GMT (0001 local time) on April 1 and ending at 0800 GMT on March 31 (2400 local time) of the following year.

A Federal limited entry permit was implemented in 2018 through Amendment 5 to the HMS FMP. It is intended mirror many of the features of the state limited entry permit and is required to fish in Federal waters. In addition to these limited entry permits, the HMS FMP requires a general HMS permit with a drift gillnet gear endorsement for all U.S. vessels that fish for HMS within the West Coast EEZ.

In September 2018 California enacted Senate Bill 1017, which directed the California Department of Fish and Wildlife to develop a program by March 31, 2020, to allow payment to permit holders for the voluntary surrender of drift gillnet permits. After March 31, 2019, California state drift gillnet permits cannot be transferred, and all permits must be surrendered or revoked by January 31 of the fourth year after \$2 million in funding for the program is received by the state. The California Department of Fish

⁵ Hereafter, referred to as the "2017 EA."

and Wildlife established the transition program and funding has been secured to buy out all fishery participants who wish to voluntarily surrender their permits. Transition program participants must surrender both their state and Federal DGN permits and affirm their net has been destroyed at an accredited facility. Any remaining state permits will be revoked on January 31, 2024.

Participation and landings in the DGN fishery have been in decline for a long time as indicated by HMS SAFE Table 12 and displayed in Figure 3-1. In the 10 years prior to the Council's previous action on hard caps (2005-2014), an average of 29 vessels landed 333 mt annually while in the more recent 10-year period up through 2021 an average of 16 vessels landed 156 mt annually. During this recent period there was a distinct change in landings in 2019 as shown in Figure 3-2. In addition to a steep drop in landings, species composition shifted away from swordfish, with Pacific bluefin tuna dominating catch in the 2021-2022 season. However, for the entire 2012-2021 time period swordfish has been the predominant constituent of landings and revenue, as shown in Table 3-1.



Figure 3-1. DGN fishery trends: a) number of vessels, b) landings (mt), and c) inflation-adjusted ex-vessel revenue (dollars) by fishing season, 2000-01 through 2020-22.



Figure 3-2. Landings composition(mt) in the DGN fishery by season, 2012-13 to 2021-22. "Other" means non-HMS.

Table 3-1. Landings composition by species, perc	ent, 2012-13 througl	h -2021-22 seasons,	descending order by
revenue percent.			

		Ex-vessel
	Landings	revenue
Species	(percent)	(percent)
Swordfish	61.5%	77.9%
Bluefin tuna	8.3%	10.1%
Common thresher shark	15.9%	5.1%
Non HMS	8.0%	4.2%
Shortfin mako shark	5.2%	2.0%
Albacore	0.8%	0.5%
Yellowfin tuna	0.1%	0.1%
Skipjack tuna	0.1%	<0.1%

Participation in the DGN fishery, measured by the number of vessels making landings, remained fairly stable from the 2012-13 fishing season through the 2018-19 season, ranging from 16 to 21 vessels. In the last three fishing seasons, participation has successively declined from 14, to 10, to 6 vessels. This is likely due to the vessels exiting the fishery through the California transition program, but the effects of the Covid-19 pandemic on operations and markets likely have been a confounding factor.

In addition to the DGN fishery, there are a variety of other fisheries targeting HMS that occur in the action area. These include the surface hook-and-line (troll and bait boat) fishery targeting albacore tuna, the harpoon fishery targeting swordfish, and the coastal purse seine fishery that intermittently targets yellowfin, skipjack, and bluefin tunas. Table 3-2 shows landings and ex-vessel revenue from authorized HMS fisheries occurring in the action area for the 10 years, 2012 to 2021. In addition to these fisheries, since the Council's 2015 action, it has been recommending issuance of exempted fishing permits (EFPs) to test deep-set buoy gear (DSBG) to target swordfish. In 2019 the Council took final action on a package of management measures, including a limited access permit program, to authorize a fishery for this gear pursuant to the HMS FMP including amending the HMS FMP (Amendment 6). Implementation, including rulemaking, is in progress. Landings with DSBG gear were first recorded in the PacFIN database in 2014. The number of vessels making landings ranged from two to six between 2014 and 2017 and then increased with the issuance of more EFPs to between 20 and 26 in the four years through 2021. Landings peaked in 2020 at 126 mt. Pelagic longline has been the second largest source of landings and revenue among HMS fisheries after the albacore fishery, but this fishery is prohibited in the West Coast EEZ and therefore does not occur in the action area. The characteristics of these fisheries are described in the 2017 EA and in the HMS SAFE, which may be found on the Council's website.

Table 3-2. Average annual landings and ex-vessel revenue from authorized HMS fisheries occurring in the action area, 2012-2021. (Pelagic longline and deep-set buoy gear excluded.)

		Average annual	
	Average annual	ex-vessel	Average annual
Fishery	landings (mt)	revenue	no. vessels
Albacore hook-and-line*	9,154	\$34,171,768	147
Coastal purse seine	1,014	\$1,173,718	2
DGN	125	\$904,013	4
HMS hook and line fishery	41	\$413,771	53
Harpoon	8	\$146,250	5
Other HMS landings	34	\$135,511	22

*Not including Canadian vessels landing in U.S. ports.

Participants in the DGN fishery also participate in a range of other fisheries, and these can be important sources of alternative revenue. Table 3-3 shows annual average landings and revenue of the 35 vessels that made landings in the DGN fishery, 2014-2021, by fishery. ⁶ As shown in the table, DGN vessels derived a larger proportion of revenue from the albacore fishery than it did from DGN, while a range of other HMS and non-HMS fisheries contributed to landings and revenue.

⁶ Since DSBG landings only began in 2014, to accurately represent its contribution, data from 2014 to 2021 is averaged.

grouped using the D'Angelo fishery code, other landings grouped by management group code.					
Fishery	Landings		Ex-vessel revenue		
	metric tons	percent	dollars	percent	
Albacore hook-and-line	509	57.4%	\$1,690,820	41.0%	
DGN	169	19.1%	\$853,797	21.0%	
Other non-HMS	60	6.8%	\$506,390	12.0%	
Dungeness crab	64	7.2%	\$424,509	10.0%	
DSBG*	24	2.7%	\$232,019	6.0%	
Salmon	9	1.0%	\$131,657	3.0%	
Small mesh DGN	14	1.6%	\$101,593	2.0%	
Shrimp	11	1.2%	\$72,311	2.0%	
Harpoon swordfish	4	0.4%	\$44,912	1.0%	
Groundfish	6	0.7%	\$26,331	1.0%	
Other HMS	7	0.7%	\$19,153	<0.1%	

Table 3-3. Average annual landings and inflation-adjusted ex-vessel revenue by fishery for vessels making landings in the DGN fishery, 2014-2021. Percent is of total landings and revenue. HMS fishery landings grouped using the D'Angelo fishery code, other landings grouped by management group code.

*Conducted under exempted fishing permits.

Linked DSBG*

Coastal pelagic species

HMS hook-and line

Table 3-4 presents another perspective on cross-fishery participation. It shows, for the 35 vessels that participated in the DGN fishery between 2012 and 2021, the number of vessels according to the fraction of ex-vessel revenue derived from the DGN fishery and the average annual per-vessel ex-vessel revenue derived from DGN landings for vessels in that category. Notably, those vessels most dependent on the fishery (deriving \geq 75 percent of ex-vessel revenue from the fishery) had lower per-vessel average revenue from DGN compared to those vessels that derive 25-49.9 percent of ex-vessel revenue from the DGN fishery. In terms of numbers of vessels, 69 percent (24 out of 35 vessels) derived 50 percent or more of their revenue from the DGN fishery during this period.

2

1

7

0.3%

0.2%

0.8%

\$18,992

\$8,503

\$2,605

< 0.1%

<0.1%

<0.1%

Table 3-4. Proportion	of inflation-adjusted	ex-vessel revenue fro	om DGN for DGN	vessels, 2012-2021.
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Percent of vessel's total revenue from DGN	Number of vessels	Average annual per vessel revenue from DGN
<25%	6	\$25,200
25-49.9%	5	\$258,304
50-74.9%	10	\$227,677
≥75%	14	\$250,020

The seasonal pattern of landings in different fisheries is another consideration relevant to the proposed action, because it has implications for the availability of alternative sources of revenue should a hard cap closure occur. Figure 3-3 shows the seasonal pattern in ex-vessel revenue for DGN fishery participants by fishery category. As might be expected, little or no revenue is derived from the DGN fishery between

February and August when the fishery is effectively closed.⁷ As evidenced in Table 3-3, the albacore fishery is the main contributor to ex-vessel revenue for DGN fishery participants, but that fishery occurs almost entirely from July to October (see HMS SAFE Table 7) while most DGN landings occur from October to January. The Dungeness crab fishery, the most important single non-HMS fishery for DGN participants, occurs primarily between December and April. Based on data for the 2012-2021 period, the proportion of ex-vessel revenue derived from the crab fishery by DGN fishery participants is 19.2 percent in December and 23.4 percent in January, accounting for most of the alternative revenue during the DGN fishing season. It then becomes a much larger proportion of DGN fishery participant's total ex-vessel revenue once the DGN fishery closes, peaking at 44 percent of total revenue in April.⁸



Figure 3-3. Average monthly inflation-adjusted ex-vessel revenue by fishery for DGN vessels making landings in the DGN fishery, 2014-2021.

3.2 The DGN Observer Program and Catch and Bycatch in the Fishery

NMFS deploys on board observers in the DGN fishery. NMFS has operated an at-sea observer program in the DGN fishery since July 1990 to the present, while CDFW had operated a DGN observer program from 1980 to 1990. The objectives of the NMFS Observer Program are to record, among other things, information on non-target fish species and protected species interactions that may not be typically or accurately reported in the fishing logbooks due to focus on target species by fishermen or incentives not to report certain species to avoid the potential for increased regulation. These observer data are relied upon to produce estimates of protected species interactions and bycatch of other species and to forecast potential impacts of future fishing effort on these species.

NMFS has sought to obtain 20 percent observer coverage of the DGN fishery each year, per recommendations from the Southwest Fisheries Science Center (NMFS 1989). Coverage rates are determined based on fishing effort, or the number of observed sets as a fraction of all logbook reported

⁷ Although the fishery is closed throughout the EEZ from February through April, some landings occur in early February from fishing that occurred in January.

⁸ However, since this represents monthly averages over a period of generally declining participation in the fishery, average monthly participation in other fisheries may in part be the result of vessels exiting the DGN fishery entirely.

sets. NMFS' fleet-wide observer coverage target has been 30 percent since 2013 has averaged 23 percent in recent years (see below). Since some DGN vessels are unobservable due to safety or accommodations requirements, the observable vessels are observed at a rate higher than 30 percent to attain the fleet-wide 30 percent coverage. Historically, four to six DGN vessels were unobservable during each fishing season.

Table 3-5 provides the recent history of observer coverage based on fishing effort (measured in sets) for fishing seasons 2021-2013 through 2020-21. (This information is reported in data summaries available on the <u>NMFS website</u>.) The coverage rate has varied between 11 and 34 percent. The second lowest rate recorded for the 2020-21 season may be an effect of the Covid-19 pandemic. Overall, the annual average of observer coverage during this period was 23 percent.

Season	Observed sets	Total sets (estimated)	Percent observed
2012-13	84	408	21%
2013-14	191	559	34%
2014-15	113	379	30%
2015-16	41	378	11%
2016-17	160	714	22%
2017-18	114	618	18%
2018-19	124	473	26%
2019-20	86	321	27%
2020-21	22	147	15%

 Table 3-5. Observed and estimated total sets by DGN fishing season and resulting coverage rate, 2012-13

 through 2020-21.

As an outcome of the Council's 2015 action on hard caps the Council's HMSMT has been annually reporting estimated bycatch rates against performance metrics (thresholds) for finfish and HPPS established by the Council. These metrics are computed on a calendar year basis, because the underlying estimates are derived from estimates made by the Southwest Fisheries Science Centers Marine Mammal and Turtle division, which have been reported annually beginning in 2020 (Carretta 2021). The statistical method employed by Carretta uses a two-step modeling approach in which random forest classification trees are used for variable selection and then selected variables are included in regression tree random forest to estimate bycatch in unobserved fishing sets. At the Council's direction, in 2021 the HMSMT computed performance metrics (thresholds) for finfish species/species groups (non-swordfish billfish, prohibited sharks, scalloped hammerhead shark, manta ray) and HPPS based on this methodology and reported annual estimates and five- and 10-year moving average trends (Agenda Item F.4.a, HMSMT Report 1 and Supplemental HMSMT Report 2, June 2021). Because of data processing and review requirements, the years for which estimates are reported are lagged by two years; in 2021 years 2018 and 2019 were reported along with trends over the observer data time series dating back to 1990. In 2018 and 2019 estimated bycatch for these species/species groups were below Council established thresholds. In its report the HMSMT noted that the thresholds "... are not population-based standards, such as Potential Biological Removal for marine mammals, but are rather based on the highest observed bycatch for the period from 2004-2013. This period occurred after the MMPA and ESA management measures became effective for the fishery (in the late 1990s and in 2001, respectively). Therefore, the HMSMT regards these metrics as highly conservative, as they reflect a period after DGN bycatch was already substantially reduced" (Supplemental HMSMT Report 2). In addition, the trend analysis showed that the 5- and 10year moving averages were below the thresholds since at least 2010.

3.2.1 <u>Finfish</u>

The 2017 EA identifies swordfish and common thresher shark as target species and further subdivides non-target into major and minor categories using a catch rate of 10 animals per 100 sets to distinguish these two categories. However, the distinction between these categories in a multi-species fishery in which catch composition has changed over time is somewhat arbitrary. For example, swordfish and common thresher shark have typically been designated as the two target species but, as shown in Table 3-1, in the 10 years through 2021 Pacific bluefin tuna has emerged as the third largest fraction of landed catch by weight and second largest measured by ex-vessel revenue. And, as shown in Figure 3-2, in the 2020-21 and 2021-22 fishing seasons it was the largest component of landings.

Table 3-6 shows data on catch and retention rates reported in observer data summaries for fishing seasons 2012-13 through 2020-21, which can be used to categorize catch in a similar fashion. The table ranks species according to catch rate. Using the 10 animals per set catch rate and a retention rate above 50 percent, aside from swordfish and common thresher shark, there are six species that may be considered major retained species: Pacific bluefin tuna, shortfin mako shark, opah, albacore tuna, skipjack tuna, and Pacific bonito. There are five species that may be considered principally bycatch, with a retention rate of 50 percent or below that have catch rates above 10 animals per 100 sets. These are: common mola, blue shark, bullet mackerel, Pacific mackerel, and slender mola. However, the slender mola catch rate is skewed in that 97 out of total of 103 animals recorded in these observer data summaries were caught during the 2018-19 fishing season.

Species	Catch per 100 Sets	Retention Rate	Species	Catch per 100 Sets	Retention Rate
Common Mola	398.4	0.4%	Striped Marlin	1.6	0.0%
Swordfish	287.3	99.6%	Megamouth Shark	0.9	0.0%
Tuna, Bluefin	139.0	93.6%	Yellowtail	0.9	100.0%
Shark, Shortfin Mako	96.7	94.5%	Jack Mackerel	0.6	83.3%
Shark, Blue	77.0	1.4%	Unidentified Fish	0.6	0.0%
Opah	73.5	99.3%	Mobula	0.4	0.0%
Albacore	67.8	96.2%	Remora	0.3	0.0%
Shark, Common Thresher	62.8	98.8%	Unidentified Ray	0.3	0.0%
Tuna, Skipjack	49.5	73.9%	Unidentified Shark	0.3	0.0%
Bullet Mackerel	23.5	44.5%	Oilfish	0.2	50.0%
Pacific Bonito	22.9	83.6%	Other Identified Fish	0.2	50.0%
Pacific Mackerel	15.3	17.5%	Pacific Electric Ray	0.2	0.0%
Slender Mola	11.0	0.0%	Pacific Hake	0.2	50.0%
Pelagic Stingray	9.8	0.0%	Pelagic Thresher Shark	0.2	50.0%
Louvar	9.0	97.6%	Pelagic Tunicates	0.2	0.0%
Pacific Pomfret	5.8	44.4%	Blue Marlin	0.1	0.0%
Tuna, Yellowfin	4.9	100.0%	Escolar	0.1	100.0%
Shark, Bigeye Thresher	4.3	15.0%	Oarfish	0.1	0.0%
Smooth Hammerhead Shark	3.9	2.8%	Sevengill Shark	0.1	0.0%
Unidentified Tuna	2.8	65.4%	Spiny Dogfish	0.1	100.0%
Bat Ray	2.6	0.0%	Unidentified Crustacean	0.1	0.0%
Shark, Salmon	2.1	5.0%	Unidentified Mackerel	0.1	0.00%

 Table 3-6. Observed catch and retention rates based on observer data summaries, 2012-13 through 2020-2021 fishing season.

Status of HMS stocks is reported in the HMS SAFE report along with the status determination criteria used by NMFS and the most recent stock assessment upon which stock status is based.

3.2.2 Prohibited Species

Three species of shark, as well as Pacific halibut (*Hippoglossus stenolepis*) and Pacific salmon (*Onchorhynchus spp.*) are designated as prohibited species under the HMS FMP. The sharks are the great white (*Carcharodon carcharias*), megamouth (*Megachasma pelagios*), and basking shark (*Cetorhinus maximus*). In general, prohibited species must be released immediately if caught in fisheries permitted under the HMS FMP, unless other provisions for their disposition are established, including for scientific study.

Of these species, only megamouth shark is recorded in DGN fishery observer data summaries for the 2012-13 to 2020-21 fishing seasons, with six caught overall. (Because of the nature of the gear and the area where the fishery occurs, it is very unlikely that Pacific halibut or any Pacific salmon species are caught in the DGN fishery.) All six megamouth sharks were recorded as being released alive, although there is no information on post-release survival. As discussed above, the Council established a process for annual reporting of bycatch performance in the DGN fishery against thresholds, or performance metrics,

reflecting historic bycatch rates in the fishery. The prohibited shark species are reported as a group under this process. Estimated bycatch of this group has never exceeded the performance metric established by the Council (see Figure 3-4).



Figure 3-4. DGN annual bycatch trends for prohibited shark species. (Source: Agenda Item F.4.a, Supplemental HMSMT Report 2, June 2021).

3.2.3 Protected Species

Protected species refer to those species for which any form of exploitation is generally prohibited pursuant to applicable law, principally the ESA and the Marine Mammal Protection Act (MMPA). Some level of "incidental take" may be authorized under these statutes, with "take" defined broadly to cover a wide range of interactions resulting from a particular activity.

Pursuant to the ESA, NMFS undertakes a consultation process (generally, for marine species, with the U.S. Fish and Wildlife having authority over all other species) under which a biological opinion (BO) is drafted and a determination is made in an accompanying incidental take statement (ITS), which may impose mitigation measures on an activity such that it is not likely to "jeopardize the continued existence of" a subject species. This process obviates the need to issue an incidental take permit pursuant to section 10(a)(1)(b) of the Act; instead, section 7 applies. The most recent BO and ITS for the DGN fishery was completed in 2013 (NMFS 2013).

The MMPA establishes a general prohibition on the take of any marine mammal (note that the MMPA take definition is somewhat different from the ESA definition). An exemption may be granted if the activity meets certain standards pursuant to MMPA Section 101. To do so, NMFS must reach a negligible impact determination by evaluating various factors. Most recently, NMFS announced a <u>negligible impact</u> determination for the DGN fishery on May 10, 2022, and issuance of a permit to authorize the incidental, but not intentional, take of specific ESA-listed marine mammal species or stocks under the MMPA.

The MMPA mandates that each commercial fishery be classified by the level of mortality and serious injury of marine mammals occurring incidental to each fishery. The List of Fisheries classifies U.S. commercial fisheries into one of three categories according to the level of incidental mortality or serious injury of marine mammals. Commercial fishing vessels that operate in a Category I or II fishery must obtain a marine mammal authorization certificate. This certificate legally authorizes incidental take of marine mammals in a commercial fishery. The DGN fishery is currently a Category II fishery, meaning

that the fishery results in the occasional incidental death or serious injury of marine mammals.

NMFS annually publishes marine mammal stock assessment reports by region. The latest, draft report for the Pacific region was published in 2021 (Carretta, *et al.* 2021). The report describes the biology, distribution, and status for each evaluated stock. The report may be consulted for details on the stocks relevant to the proposed action.

A take reduction plan must be prepared for Category I and II fisheries to help recover and prevent the depletion of strategic marine mammal stocks. Strategic stocks are those: 1) listed under the ESA, 2) declining and likely to be ESA listed, 3) listed as depleted under the MMPA, or 4) experiencing direct human-caused mortality that exceeds the stock's Potential Biological Removal (PBR) level. PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. The Pacific Offshore Take Reduction Team was established in 1996 to draft a plan to address incidental serious injury and mortality of Baird's beaked whales, Cuvier's beaked whales, Mesoplodont species of beaked whales, short-finned pilot whales, pygmy sperm whales, sperm whales, and humpback whales in the DGN fishery. The plan was published in the Federal Register in 1997 (<u>62 FR</u> <u>51805</u>). The Take Reduction Team has met periodically, most recently in 2015, to develop recommendations about mitigating impacts to marine mammals from the DGN fishery.

As noted above, since 2017 NMFS has been annually publishing model-based estimates of annual bycatch of protected species in the DGN fishery (Carretta 2021) based on observed takes. The report presents estimates for the 31 protected species or species groups taken in the fishery since 1990. Table 3-7 combines information from Carretta (2021) and the estimated population parameters from the 2021 Pacific Marine Mammal Stock Assessment Report. As noted above, Carretta reports bycatch estimates for all observed takes since 1990. The table extracts summary totals for the recent years, 2015-2019. The HPPS are highlighted in the table and those species/stocks that are ESA listed or designated as strategic under the MMPA are shown in italic.

The MMPA, as amended, includes a requirement that the level of incidental mortality and serious injury of marine mammals be reduced to insignificant levels approaching a zero rate, which is the basis for defining the Zero Mortality Rate Goal (ZMRG) (69 FR 23477). The ZMRG threshold is defined as 10 percent of PBR. For its 2015 final action, the Council used marine mammal stocks exceeding ZMRG as one criterion for designating HPPS. At that time, estimated total human-caused mortality / serious injury (M&SI) of common bottlenose dolphin exceeded the threshold and was included in the list of HPPS subject to hard caps. However, according to bycatch estimates and the 2021 draft Pacific Marine Mammal Stock Assessments, ZMRG is not currently exceeded for this stock. Of those marine mammal stocks observed taken in the DGN fishery, the only one for which ZMRG is currently exceeded is the California/Oregon/Washington sperm whale stock, which is a HPPS.

Table 3-7. Protected species 2015-2019	total estimated bycatch (Carret	tta 2021) and population (oarameters (SARs).
······································			

Species	Estimated	CV of Estimated	MSI	CV of MSI	N est	CV N est	PBR	Total	Fishery	Population Estimates
	Dycatch	Bycatch		IVISI				ingary	nijary	Last
										Revised
Baird's beaked whale	0	-	0	-	1,363	0.53	8.9	≥0.2	0	2021
Common bottlenose dolphin	0	-	0	-	3,477	0.696	20.0	≥0.8	≥0.8	2021
California Sea Lion	58.7	0.69	57.7	0.35	257,606	n/a	14,011.0	≥321	≥197	2018
Cuvier's beaked whale	0.5	1.5	0.5	1.5	3,274	0.67	21.0	<0.1	<0.1	2017
Dall's porpoise	3.7	1.3	3.7	1.3	16,498	0.61	99.0	≥0.66	≥0.66	2021
Fin whale	0	-	0	-	11,065	0.405	80.0		≥ 2.2	2021
Gray whale	1.9	1.4	1.9	1.4	26,960	0.05	801.0	131	9.3	2020
Hubb's beaked whale	0.1	2.4	0.1	2.4						
Humpback whale	0.3	3.3	0.1	4.2	4,973	0.05	28.7	≥ 48.6	≥ 25.2	2021
Killer whale	0	-	0	-	300	0.1	2.8	0	0	2018
Long-beaked common dolphin	9	0.76	9	0.76	83,379	0.216	668.0	≥29.7	≥26.5	2021
Minke whale	0.9	1.5	0.4	1.7	915	0.792	4.1	≥ 0.59	≥ 0.59	2021
Northern elephant seal	16.8	0.62	16.8	0.62	187,386	n/a	5,122.0	5.3	5.3	2021
Pacific white sided dophin	3	2	3	2	34,999	0.222	279.0	7	4	2021
Pygmy sperm whale	0	-	0	-	4,111	1.12	19.2	0	0	2016
Northern right whale dolphin	35.6	0.7	35.6	0.7	29,285	0.72	163.0	≥6.6	≥6.6	2021
Risso's dolphin	7.4	1.6	7.4	1.6	6,336	0.32	46.0	≥3.7	≥3.7	2016
Short-beaked common dolphin	136.2	0.43	136.2	0	1,056,308	0.21	8,889.0	≥30.5	≥30.5	2021
Short-finned pilot whale	1.2	0.68	1.2	0.68	836	0.79	4.5	1.2	1.2	2016
Sperm whale	2.7	2.4	1.9	1.7	1,997	0.57	2.5	0.6	0.64	2019
Stejneger's beaked whale	0	-	0	-						
Steller sea lion*	0.2	3.8	0.2	3.8	54,267		326	247	35†	2018
Striped dolphin	0	-	0	-	29,988	0.3	225.0	≥4.0	≥4.0	2021
Green turtle	0.1	4.9	0.1	4.9						
Leatherback sea turtle	2	1	1.3	0.93						
Loggerhead sea turtle	2.4	1.9	0.6	1.5						
Olive ridley sea turtle	0.8	1.6	0	-						
All beaked whales	0.7	1.5	0.6	1.4						
Mesoplodon	0.1	1.9	0.1	1.9						

Species	Estimated Bycatch	CV of Estimated Bycatch	MSI	CV of MSI	N est	CV N est	PBR	Total Injury	Fishery Injury	Population Estimates Last Revised
Unidentified Ziphid	0.1	8	0.1	8						
Unidentified cormorant	0.1	6	0.1	6						
Northern fulmar	8.7	0.88	1.2	0.64						

*From 2019 Alaska Marine Mammal Stock Assessment Report †Native subsistence mortality reported separately at 204 animals Highlight: HPPS subject to caps under the proposed action Italic: ESA-listed and/or MMPA strategic stock

Table 3-8 excerpts the expected level of take for subject ESA-listed species from the ITS for the 2013 biological opinion. The biological opinion concluded that this level of anticipated take is not likely to jeopardize the continued existence of the subject species. ("Jeopardy" is the standard derived from the ESA when determining whether take that is incidental to the proposed action should be considered a prohibited taking.) In support of the no jeopardy finding the ITS describes non-discretionary terms and conditions implementing specified reasonable and prudent measures. It also describes discretionary conservation recommendations to further the purposes of the ESA. Generally, re-initiation of an ESA consultation for the subject activities is premised on four criteria, the first of which is that the amount and extent of incidental take described in the ITS has been exceeded. To date, the criteria for re-imitation have not been met for the DGN fishery.

Estimated annual average bycatch or MS&I, 2015-2019, summarized in Table 3-7, can be compared to PBR and/or estimate annual take from the ITS (Table 3-8) for an assessment of current baseline effects of the DGN fishery on protected species. (Since the bycatch values in Table 3-7 are five-year totals, they should be divided by five to produce an annual estimate for comparison to PBR.) For marine mammals the ratio of M&SI to PBR exceeds 1 percent for five stocks: minke whale (2 percent), northern right whale dolphin (4.4 percent), Risso's dolphin (3.2 percent), short-finned pilot whale (5.3 percent), and sperm whale (15.2 percent). The last two stocks are HPPS and the MS&I estimate exceeds the ZMRG threshold for sperm whale. Note that the 1 percent threshold used here is not derived from statute but is simply a way to flag those stocks where MS&I has had the most impact.

None of the 2015-2019 MS&I estimates exceed the level of expected mortalities during a 5-year period identified in the ITS (see Table 3-8).

Species	Annual take	5-year take total	Expected mortalities* during 5- year period
Fin whale	Up to 1	Up to 2	Up to 1
Humpback whale	Up to 2	Up to 4	Up to 2
Sperm whale	Up to 2	Up to 8	Up to 6
Leatherback sea turtle	Up to 3	Up to 10	Up to 7
Loggerhead sea turtle	Up to 3	Up to 7	Up to 4
Olive ridley sea turtle	Up to 1	Up to 2	Up to 1
Green sea turtle	Up to 1	Up to 2	Up to 1

 Table 3-8. Amount and extend of take expected in the DGN fishery as presented in the 2013 biological opinion

 ITS. (Table 12 in NMFS 2013)

*Expected mortalities includes animals that may be determined to have experienced either serious injury or mortality as a result of interaction with the fishing gear.

The 2017 EA exhaustively details information on the biology, distribution, and population status of protected species occurring in the action area including the HPPS subject to the proposed action. More recent information on marine mammals may be found in Pacific marine mammal stock assessment reports. Additional information on ESA-listed stocks affected by the DGN fishery may be found in the 2013 biological opinion. The Draft Environmental Impact Statement for West Coast Highly Migratory Species Fisheries: Authorization of Deep-set Buoy Gear (NMFS 2021) is another more recent source describing some of the protected species affected by this proposed action. Those sources may be consulted for detailed information.

3.3 Essential Fish Habitat and Critical Habitat

The 2017 EA considered whether essential fish habitat (EFH) designated under the HMS FMP or critical habitat designated for ESA-listed species in the action area would be affected by the proposed action. Critical habitat has been designated in the action area for two species: the eastern distinct population segment (DPS) of Steller sea lion, and Pacific leatherback sea turtle. (Note that the eastern DPS of Steller sea lion was de-listed in 2013.)

HMS EFH is described in Appendix F of the HMS FMP. HMS EFH consists of the epi- and mesopelagic zones of neritic and oceanic waters (PFMC 2003). The 2017 EA concluded that the 2015 proposed action was not likely to affect EFH, and its impact was not further evaluated. Likewise, it is reasonable to conclude that the current proposed action would not have a discernable impact on HMS EFH.

The eastern (DPS) of stellar sea lion critical habitat designation includes waters within 3,000 feet of the shoreline of rookery areas. Since the DGN fishery does not operate within 3,000 ft of any shoreline, it is unlikely to affect this critical habitat.

Critical habitat was designated off the U.S. West Coast for leatherback sea turtles in 2012 (77 FR 4169). As discussed in the 2017 EA, much of the area so designated in waters off California falls within the PLCA, which is seasonally closed to the DGN fishery.⁹ Furthermore, the critical habitat designation focuses on prey species as the primary constituent element essential for the conservation of leatherbacks in marine waters off the U.S. West Coast. The 2017 EA notes that the DGN fishery has a negligible impact on leatherback prey species.

For the reasons outlined above, the 2017 EA concluded that the 2015 proposed action would not materially affect critical habitat in the action area.

3.4 Fishing Communities

MSA National Standard 8 requires conservation and management measures to take into account the importance of fishery resources to fishing communities in order to provide for sustained participation by and minimize adverse economic impacts on fishing communities. National standard guidelines define a fishing community as:

a community that is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fish processors that are based in such communities. A fishing community is a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries-dependent services and industries (for example, boatyards, ice suppliers, tackle shops). (50 CFR 600.345(a)(3))

Table 3-9 presents information to characterize fishing communities affected by the proposed action. It shows annual average landings and ex-vessel revenue by PacFIN port group, 2012-2021. No landings have occurred in the other California ports, which are north of San Francisco, since 2017 and only Morro Bay, Santa Barbara, and San Diego saw landings in 2021. Given the PLCA closure period and bad weather after November 15 (when the PLCA opens) combined with reduction in the fleet size due to the California Transition Program, vessels may not fish in more northern areas off California in future years.

⁹ Additional critical habitat was designated in waters off Oregon and Washington outside of area where the fishery currently operates.

San Diego accounted for 52 percent of landings and revenue during this period, indicating it is the main port for the DGN fishery.

	Average	Average ex- vessel	Total no.
Port group	metric tons	revenue	vessels
San Francisco	4.4	\$23,352	5
Monterey	0.9	\$5,289	5
Morro Bay	25	\$122,884	11
Santa Barbara	22.8	\$131,996	12
Los Angeles	19.6	\$96,053	13
San Diego	91.2	\$472,317	24
Other CA ports	11.1	\$52,497	3

 Table 3-9. Average annual DGN landings (mt) and inflation-adjusted ex-vessel revenue by port group, 2012-2021.

Figure 3-5 shows the average inflation-adjusted price-per-pound for swordfish by month and selected HMS fisheries, using data from 2017 to 2021. During the fishing season, DGN landed swordfish fetches prices ranging from \$3.32 to \$4.69 per pound,¹⁰ which are intermediate between pelagic longline and smaller volume, more niche market landings from DSBG and harpoon fisheries. Given high ex-vessel prices, these latter two fisheries are more likely to sell into a premium market, such as the restaurant trade. The slight price premium DGN product commands over pelagic longline landings may reflect relative product quality, given that pelagic longline fishing occurs outside the EEZ so that the fish have already been on ice for some time before reaching markets. Across all fisheries, swordfish prices decline in fall and winter, likely driven by increased supply.

¹⁰ The highest average price of \$5.09 per pound in February, representing the relatively small amount of landings that occur at the beginning of that month after the fishing season has ended. It is probably not very representative of prices that DGN-landed swordfish typically fetch.



Figure 3-5. Average inflation-adjusted price per pound for swordfish, by fishery and month, 2017-2021. (Confidential data excluded.)

Domestic landings represent only a fraction of local market supply; imports represent a larger source. Table 3-10 shows the average price and volume of swordfish imports into California customs districts by product form in 2021. Imports from Mexico are shown separately; it is an important source of supply to the San Diego customs district. Fresh swordfish is the most common product form and considering all sources sells at an average price comparable to DGN-landed swordfish at \$3.55/lb.¹¹ However, imports from Mexico, which may compete more directly with DGN landings, sell at a lower average price of \$2.52/lb. These imports may periodically exert downward price pressure on DGN-landed swordfish prices.

¹¹ The "Swordfish Meat Fresh" product category appears anomalous. This category represents a small amount imported from Mexico.

Table 3-10. Imports of swordfish in 2021 to California customs districts by product form, all sources and Mexico alone, price-per-pound and metric tons. (Source: NOAA Office of Science & Technology <u>online</u> <u>database</u>.)

	Average price				
Product Form	per pound	Quantity (mt)			
Swordfish Fillet Fresh	\$2.72	2.2			
Swordfish Fillet Frozen	\$4.28	658.8			
Swordfish Fresh	\$3.55	1,021.5			
Swordfish Meat Fresh	\$9.92	0.1			
Swordfish Steaks Frozen	\$4.74	25.7			
All Product Forms	\$3.85	1,708.3			
Imports from Mexico					
Swordfish Fresh	\$2.52	412.4			
Swordfish Meat Fresh	\$9.92	0.1			
Swordfish Fillet Fresh	\$2.72	2.2			
All Product Forms	\$2.52	414.8			

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