

GROUND FISH MANAGEMENT TEAM INFORMATION REPORT ON QUILLBACK ROCKFISH

The Groundfish Management Team (GMT) discussed the current status of quillback rockfish off California in the commercial and recreational non-trawl sectors and the need for additional information to inform management for the remainder of 2023 and the upcoming 2024 fishing year.

To prepare for the quillback rockfish South of 42° North latitude (N. lat.) rebuilding analysis, which is due to the Pacific Fishery Management Council (Council) at their November 2023 meeting, the GMT reviewed the Groundfish Mortality Report, which includes the Groundfish Expanded Multiyear Mortality (GEMM, [G.1.b. NWFSC Report 1, September 2023](#)), and noticed unanticipated high values of mortality associated with open access (OA) hook-and-line gear from 40° 10' N. lat. to 42° N. lat. in 2022. To help inform future management decisions, including potential inseason action at this September Council meeting to make Federal and state regulations consistent ([Agenda Item G.8.a, Supplemental CDFW Report 2, September 2023](#)), the GMT attempted to characterize the quillback rockfish catch, discards, and effort North and South of 40° 10' N. lat. across California and by depth bin (**Table 1** and **Table 2**). However, there are significant limitations to the data, including low observer coverage, the lack of new non-trawl logbooks, the need to maintain confidentiality in presented data, and that the majority of quillback rockfish encountered were discarded. Given quillback rockfish are most commonly associated with rocky bottom habitats, one key question about encountering them is at what depth is fishing occurring. To date, none of the data sources available to the GMT contain gear depth of fixed gear fisheries.

Table 1. Estimated California quillback rockfish removals (2021-2022) by fishing sector for the area between 40° 10' N. lat. to 42° N. lat. Data from the Estimated Discard and Catch of Groundfish Species in the 2022 U.S. West Coast Fisheries and GEMM report. Discards were apportioned between 40° 10' N. lat. and 42° N. lat. using a 5-year average of observed discards of West Coast Groundfish Observer Program (WCGOP) raw data.

Sector	2021			2022		
	Landings (mt)	Discards Mortality (mt)	Total Mortality (mt)	Landings (mt)	Discards Mortality (mt)	Total Mortality (mt)
OA Fixed Gear	0.0	0.1	0.1	0.0	5.3	5.3
Nearshore	2.0	0.2	2.2	0.7	1.2	1.9
Directed P. Halibut	0.0	0.0	0.0	0.0	0.3	0.3
Catch Shares	0.0	0.0	0.0	0.0	0.0	0.0
Catch Shares EM	0.0	0.0	0.0	0.0	0.0	0.0
LE Fixed Gear DTL	0.0	0.0	0.0	0.0	0.0	0.0
Recreational	3.0	0.0	3.0	2.9	0.0	2.9

Table 2. Estimated California quillback rockfish removals (2021-2022) by fishing sector for the area South of 40° 10' N. lat. Data from the Estimated Discard and Catch of Groundfish Species in the 2022 U.S. West Coast Fisheries and GEMM report.

Sector	2021			2022		
	Landings (mt)	Discards Mortality (mt)	Total Mortality (mt)	Landings (mt)	Discards Mortality (mt)	Total Mortality (mt)
OA Fixed Gear	0.0	0.0	0.0	0.0	0.8	0.8
Nearshore	2.7	0.0	2.7	0.6	1.0	1.6
Incidental	0.0	0.0	0.0	0.0	0.0	0.0
Recreational	7.5	0.0	7.5	6.3	0.0	6.3

Where did the commercial effort occur in 2022 and how does this compare to 2017-2021?

Given the high discard mortality shown in the OA Hook-and-Line sector between 40° 10' N. lat. to 42° N. lat. (see **Table 1**), the GMT investigated whether there were significant changes in the location of OA fisheries in California in 2022 compared to years from 2017 (data not shown for confidentiality reasons). The catch data from Pacific Fisheries Information Network (PacFIN) and location data (in CDFW block area bins), showed no discernable shift in where effort has taken place off California. The GMT also investigated locations from the raw WCGOP data, and the new electronic non-trawl logbooks, but none of those sources provided non-confidential data or show a spatial shift in effort.

Although spatial effort has not shifted, in 2022 overall effort increased in the OA hook-and-line fishery between 40° 10' N. lat. and 42° N. lat. (**Table 4**), with 2022 target landings (*i.e.*, retained groundfish), with total landings at their highest level in the past 10 years (**Figure 1**). In addition, in recent years a greater number of vessels have been using pole gear (**Figure 2**), and WCGOP observer coverage roughly mirrors this shift.

California OA hook and line landings

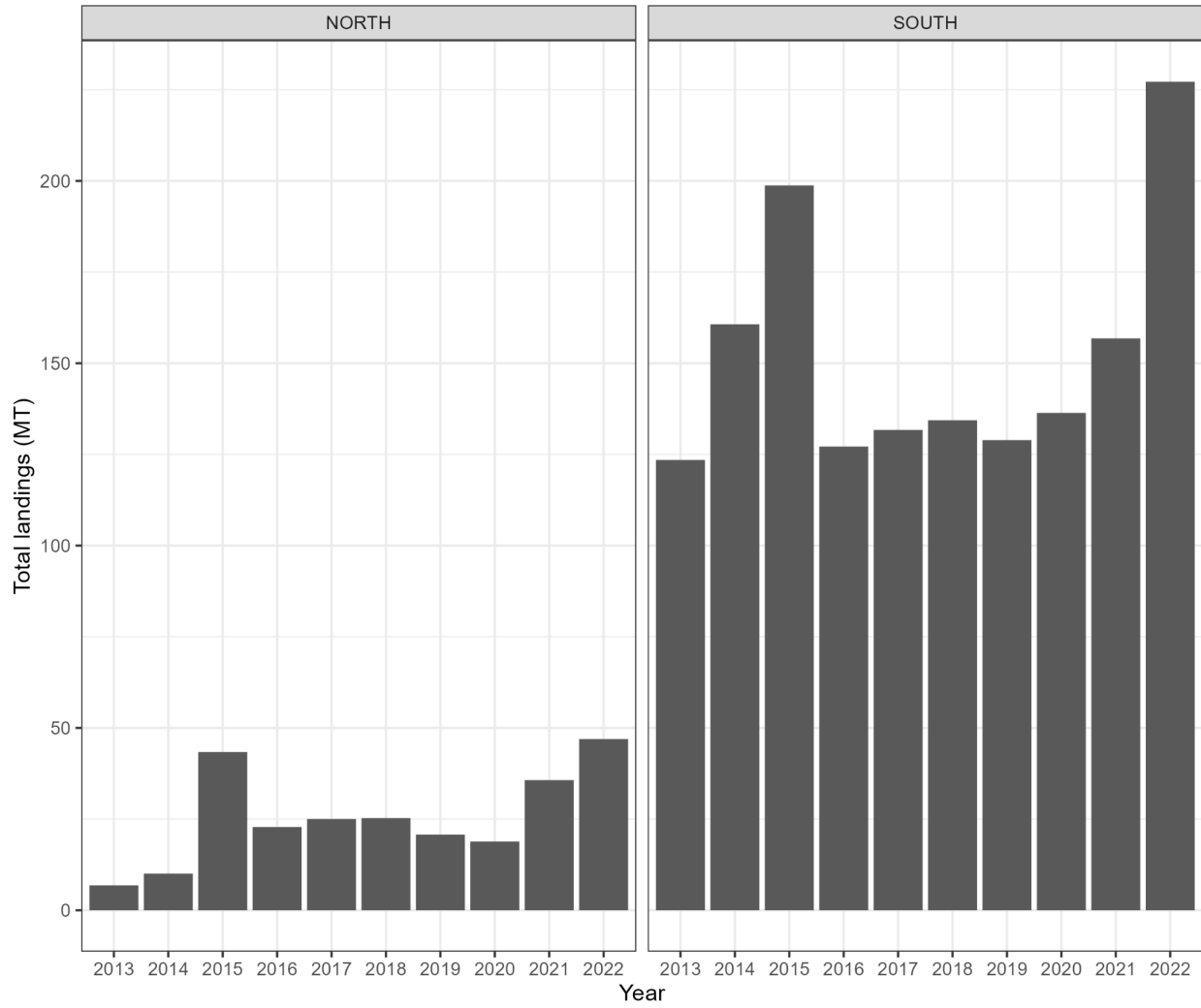


Figure 1. Total landings in California open access (OA) hook and line (mt) south of 40° 10' N. lat. (SOUTH) and north of 40° 10' N. lat. to 42° N. lat. (NORTH) between 2013-2022.

California open access fixed gear hook and line gears

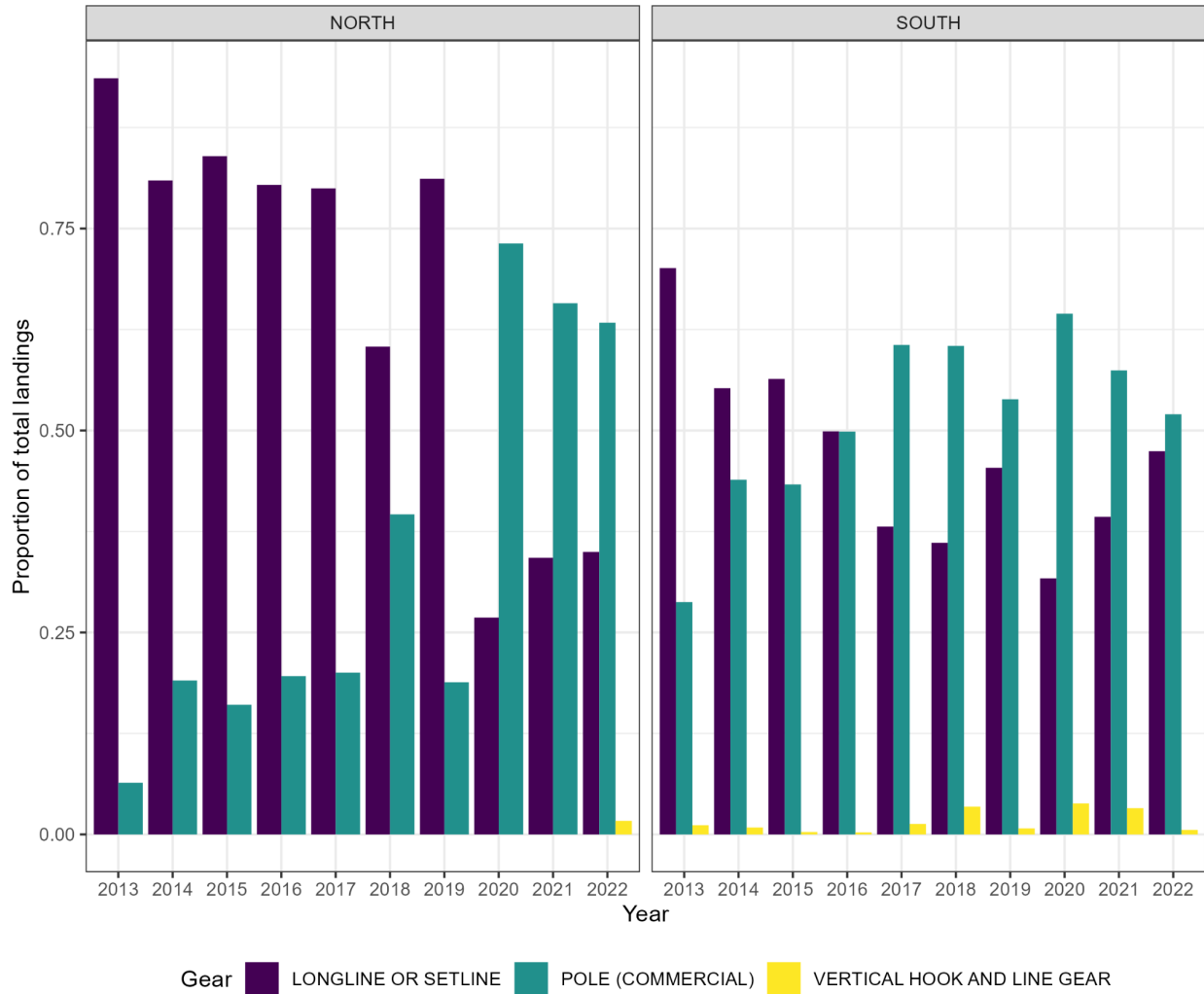


Figure 2. Proportion of California open access hook and line landings (mt) associated with specific gear types south of 40° 10' N. lat. (SOUTH) and north of 40° 10' N. lat. to 42° N. lat. (NORTH) between 2013-2022. Source: PacFIN.

Since 2020 there has been an increase in total trips in the nearshore sector North and South 40° 10' N. lat. (*Table 3* and *Table 4*). Additionally, over the same time period the OA Fixed Gear North and South 40° 10' N. lat. has seen an increase in total trips and total catch, as well as an increase in discards observed by WCGOP (*Table 5* and *Table 6*), indicating an effort increase in the sectors which typically catch quillback rockfish. Approximately 92 percent of the OA Fixed Gear hook-and-line vessels north of 40° 10' N. lat. observed by WCGOP caught and discarded at least one quillback rockfish in 2022.

Table 3. Groundfish Nearshore 40° 10' N. lat. to 42° N. lat. Total number of nearshore trips, trips that landed quillback rockfish, total vessels, vessels that landed quillback rockfish reported in PacFIN, and discards reported in the GEMM. 2017-2023 are shown as a range due to confidentiality concerns. Depth-dependent mortality rates are applied to discards (Table A-2 in the Groundfish Mortality Report).

Year	Total Trips	# of Trips with Quillback Rockfish	Total Catch (mt)	Quillback Rockfish Catch (mt)	Total Vessels	Vessels with Quillback Rockfish	GEMM Discards (mt)
2017-2021	572-747	83-131	54.2-78.4	1.3-2.1	37-48	10-18	0.2-0.8
2022	870	94	90.3	2.0	46	15	2.8

Table 4. Groundfish Nearshore South 40° 10' N. lat. Total number of nearshore trips, trips that landed quillback rockfish, total vessels, vessels that landed quillback rockfish reported in PacFIN, and discards reported in the GEMM. 2017-2023 are shown as a range due to confidentiality concerns. Depth-dependent mortality rates are applied to discards (Table A-2 in the Groundfish Mortality Report).

Year	Total Trips	# of Trips with Quillback Rockfish	Total Catch (mt)	Quillback Rockfish Catch (mt)	Total Vessels	Vessels with Quillback Rockfish	GEMM Discards (mt)
2017-2021	3,039-3,375	83-209	160.4-207.9	0.3-2.7	125-149	20-29	0.0
2022	3,314	150	216.0	0.6	123	23	0.0

Table 5. Groundfish OA hook-and-line Fixed Gear North 40° 10' N. lat. to 42° N. lat. Total number of OA hook-and-line trips, trips that landed quillback rockfish, total vessels, vessels that landed quillback rockfish reported in PacFIN, and discards reported in the GEMM. 2017-2023 are shown as a range due to confidentiality concerns.

Year	Total Trips	# of Trips with Quillback Rockfish	Total Catch (mt)	Quillback Rockfish Catch (mt)	Total Vessels	Vessels with Quillback Rockfish	GEMM Discards (mt)
2017-2021	126-186	0-5	20.6-35.5	0-0.122	15-43	0-2	0.0-0.1
2022	216	0	44.1	0	17	0	5.3

Table 6. Groundfish OA hook-and-line Fixed Gear South 40° 10' N. lat. Total number of OA hook-and-line trips, trips that landed quillback rockfish, total vessels, vessels that landed quillback rockfish reported in PacFIN, and discards reported in the GEMM. 2017-2023 are shown as a range due to confidentiality concerns.

Year	Total Trips	# of Trips with Quillback Rockfish	Total Catch (mt)	Quillback Rockfish Catch (mt)	Total Vessels	Vessels with Quillback Rockfish	GEMM Discards (mt)
2017-2021	1,207-1,481	0-2	124.8-154.5129.3	0.0-0.01	218-288	0-2	0.0
2022	1,521	0	225.5	0.0	201	0	0.8

At what depths along the California coast are quillback rockfish being caught in the commercial sectors?

Historically, in the commercial sectors, quillback rockfish mortality has primarily come from the nearshore sector (GEMM), however in 2022 with the increase in hook-and-line fishing in the OA sector between 40° 10' N. lat. to 42° N. lat., the highest mortality can be attributed to that sector. The following tables present nearshore and OA encounters of quillback rockfish in the raw WCGOP data. In 2022, deeper nearshore permit holders still had a 75 lbs. per 2 month trip limit for quillback rockfish and therefore landings could be made. In contrast, in the OA fishery quillback rockfish was not allowed to be landed.

Quillback rockfish are most commonly caught between 21 and 50 fathoms in non-trawl commercial fisheries (see **Table 7**); however, there is also notable catch between 10 and 20 fathoms North of 40° 10' N. lat. Greater than 50 percent of the nearshore trips from 40° 10' N. lat. to 42° N. lat. encountered quillback rockfish and the positive hauls can be attributed equally to the 1-20 and 21-50 fathom bottom depth bins (**Table 8**). In 2022, the nearshore fishery South of 40° 10' N. lat., only three of the 60 trips that encountered quillback rockfish (i.e., five percent of total trips), which was lower than the five-year average of seven percent (**Table 9**). In 2021 the quillback rockfish encounter rate rose to 18 percent from approximately 3 percent in all of the other years in that five-year range, therefore the average is being inflated by the higher rate from 2021 is being inflated by the higher rate from 2021.

The shallow nearshore sector is limited by a California authorized shallow nearshore permit, and their respective trip limits are separated from the minor nearshore South of 40° 10' N. lat. Upon review of WCGOP there is no information suggesting the shallow nearshore sector operating South of 40° 10' N. lat. are catching nor discarding quillback. Furthermore, they are operating in less than 20 fathoms, in which quillback are less likely to occur (Table 7).

Table 7. Proportion of WCGOP California commercially sampled quillback rockfish per sector (total encounters which includes kept and all reported released fish) by bottom depth bin from 2018-2022.

<i>40°10' N. lat. to 42° N. lat.</i>					
Bin of Bottom Depth (fm)	Catch Shares	Directed P. Halibut	Nearshore	OA Fixed Gear	Limited Entry Sablefish
1-20	0%	1%	47%	18%	--
21-50	0%	99%	53%	82%	--
50+	100%	0%	0%	0%	--
<i>South of 40°10' N. lat.</i>					
1-20	--	--	1%	0%	0%
21-50	--	--	99%	100%	100%
50+	--	--	0%	0%	0%

Table 8. Nearshore North of 40° 10' N. lat. to 42° N. lat. number of total observed trips, number of observed trips with quillback rockfish, and the number of positive hauls for quillback rockfish partitioned into 1-20 and 21-50 fathom (fm) bottom depth bins between 2017-2021 and 2022 alone. There were no observations of quillback rockfish caught in greater than 50 fathoms. Source: WCGOP

Year	Trips per Year	# of Trips per Year with Quillback Rockfish	# of Positive Hauls per Year within Depth Bins of Quillback Rockfish	
			1-20 fm	21-50 fm
2017-2021	26-39	9-17	7-16	3-14
2022	33	18	26	3

Table 9. Nearshore South of 40° 10' N. lat. number of total observed trips, number of observed trips with quillback rockfish, and number of positive hauls for quillback rockfish partitioned into 1-20 and 21-50 fathom (fm) bottom depth bin. There were no observations of quillback rockfish caught in greater than 50 fathoms. Source: WCGOP

Year	Trips per Year	# of Trips per Year with Quillback Rockfish	# of Positive Hauls per Year within Depth Bins of Quillback Rockfish	
			1-20 fm	21-50 fm
2017-2021	58-91	2-11	1-11	0-7
2022	60	3	0	5

In OA Fixed Gear North 40° 10' N. lat. to 42° N. lat., the encounter rate of trips with quillback rockfish was very high in 2022 compared to the almost negligible encounter rates since 2017, with most of the hauls being from the 21-50 fathom bottom depth bin (*Table 10*). In the South, 2022 was the first year of observed quillback rockfish encounters and all of the hauls were also in the 21-50 fathom depth bin (*Table 11*).

Table 10. OA Hook & Line North 40° 10' N. lat. to 42° N. lat. number of total observed trips, number of observed trips with quillback rockfish, and number of positive hauls for quillback rockfish partitioned into 1-20 and 21-50 fathom (fm) bottom depth bin. There were no observations of quillback rockfish caught in greater than 50 fathoms. Source: WCGOP

Year	Trips per Year	# of Trips per Year with Quillback Rockfish	# of Positive Hauls per Year within Depth Bins of Quillback Rockfish	
			1-20 fm	21-50 fm
2017-2021	1-3	0-1	1	1
2022	26	24	4	26

Table 11. OA Hook & Line South 40° 10' N. lat. number of total observed trips, number of observed trips with quillback rockfish, and number of positive hauls for quillback rockfish partitioned into 1-20 and 21-50 fathom (fm) bottom depth bin. There were no observations of quillback rockfish caught in greater than 50 fathoms. Source: WCGOP

Year	Trips per Year	# of Trips per Year with Quillback Rockfish	# of Positive Hauls per Year within Depth Bins of Quillback Rockfish	
			1-20 fm	21-50 fm
2017-2021	9-24	0	0	0
2022	39	<10	0	<10

What gear types are landing quillback rockfish in the commercial sectors?

In the last 6 years, quillback rockfish has been landed mostly on longline, and on hook-and-line (i.e. pole) gear. There are minimal instances of quillback rockfish being landed with pot gear.

Table 12. Quillback rockfish landings in metric tons by gear type off California, 2017-2023. Source: PacFIN

Gear Type	Total Catch (mt) from 2017-2023
Hook-and-line (i.e. pole)	6.65
Longline	13.19
Pot	0.004
Trawl	0.174

One consideration that was made as part of this analysis was whether the newly created 12e non-bottom contact troll and non-bottom contact stationary vertical jig gear has been encountering quillback rockfish. This gear was legal as of January 1, 2023 within the non-trawl Rockfish Conservation Area, and based on declaration codes, 50 trips declared they were fishing with stationary vertical jig gear and 34 trips were made into the non-bottom contact troll gear (from 230 different fish tickets). Of those trips with the new gear types only eight trips (8 fish tickets on different days) on fewer than three boats have caught quillback rockfish, which might imply that there is a learning curve to using the gears efficiently and effectively. However, given the GMR/GEMM only goes through 2022 we will not have an accurate picture of quillback rockfish discards with the newly created 12e gear for a few more years. In the years the three exempted fishing permits (EFPs) operated that used similar gear (Emley-Platt, Real Good Fish, and OR RFA EFP) a total of only three quillback rockfish were caught. The GMT notes that the name of this gear is non- bottom contact and therefore would not expect this gear to catch quillback rockfish once anglers become proficient in its use.

Which species are the OA Hook-and-Line sector targeting when discarding quillback rockfish?

Within the OA Hook-and-Line sector quillback rockfish are primarily discarded when participants target shelf rockfish and lingcod. Specifically, yellowtail, canary, widow, vermilion, olive, and bocaccio rockfishes. Currently depth-dependent mortality rates have not been adopted for the OA hook-and-line sector and therefore all contribute to quillback rockfish total mortality.

What depths does recreational gear encounter quillback rockfish?

Table 13 shows the proportion of recreational sampled quillback rockfish by depth and Groundfish Management Area (GMA) in California. In the Northern and Mendocino GMA quillback rockfish are primarily encountered at depths between 11 - 30 fathoms. In the San Francisco and Central GMA quillback rockfish are primarily encountered deeper than 20 fathoms. This may be due to bathymetry of the areas, presence or absence of rocky habitat in different depths in relation to major port areas or the fishing preference of anglers in each management area. Quillback rockfish are not a targeted species in the California recreational fishery and are primarily caught when fishing for other rockfish and lingcod as they often co-occur in the same area.

In all California GMAs there are very few encounters of quillback rockfish deeper than 50 fathoms. Additional information on California recreational impacts on quillback rockfish can be found in Appendix 4 of [Supplemental CDFW Report 2, Agenda item G.8, Sept. 2023](#).

Table 13. Proportion of recreationally-sampled quillback rockfish in California (total encounters which includes kept and all reported released fish) by 10 fathom (fm) depth bin from 2018-2022 (2020 not included because of COVID-19 impacts to the data) and GMA. Reported fishing depths of “zero” were not included, but account for three to 18 percent of total reported quillback rockfish encounters each year. Southern Management Area is not shown as no quillback rockfish were sampled in that area during this time frame. Data are from CDFW/CRFS. NOTE: Over the 2018-2022 time frame, RCA depth constraints deferred by year and GMA, heavily influencing data shown here.

Depth Bin (fm)	Northern GMA	Mendocino GMA	San Francisco GMA	Central GMA
0-10	4%	2%	3%	1%
11-20	47%	55%	10%	10%
21-30	46%	32%	34%	12%
31-40	3%	9%	47%	46%
41-50	0%	2%	5%	31%
>50	0%	0%	1%	0%

Summary of Informational Take-Home Messages:

- Spatial effort in the OA fishery between 40° 10' N. lat. to 42° N. lat. did not notably shift between 2017 and 2022.
- Overall effort in the OA hook-and-line fishery between 40° 10' N. lat. and 42° N. lat. increased, with 2022 landings at the highest level in the past 10 years (Figure 1).
- Quillback rockfish are most commonly encountered (landings and discard) between 21 and 50 fathoms in non-trawl commercial fisheries (see *Table 7*); however, there is also notable catch between 10 and 20 fathoms.
- In the last 6 years, quillback rockfish has primarily been caught with longline and hook-and-line (i.e., pole) gear; quillback rockfish has been caught minimally in pots (see *Table 12*).
- In the Northern and Mendocino GMA, quillback rockfish are primarily encountered in waters between 11 - 30 fathoms. In the San Francisco and Central GMA, quillback rockfish are primarily encountered deeper than 20 fathoms. In all areas, quillback rockfish are rarely encountered deeper than 50 fathoms.