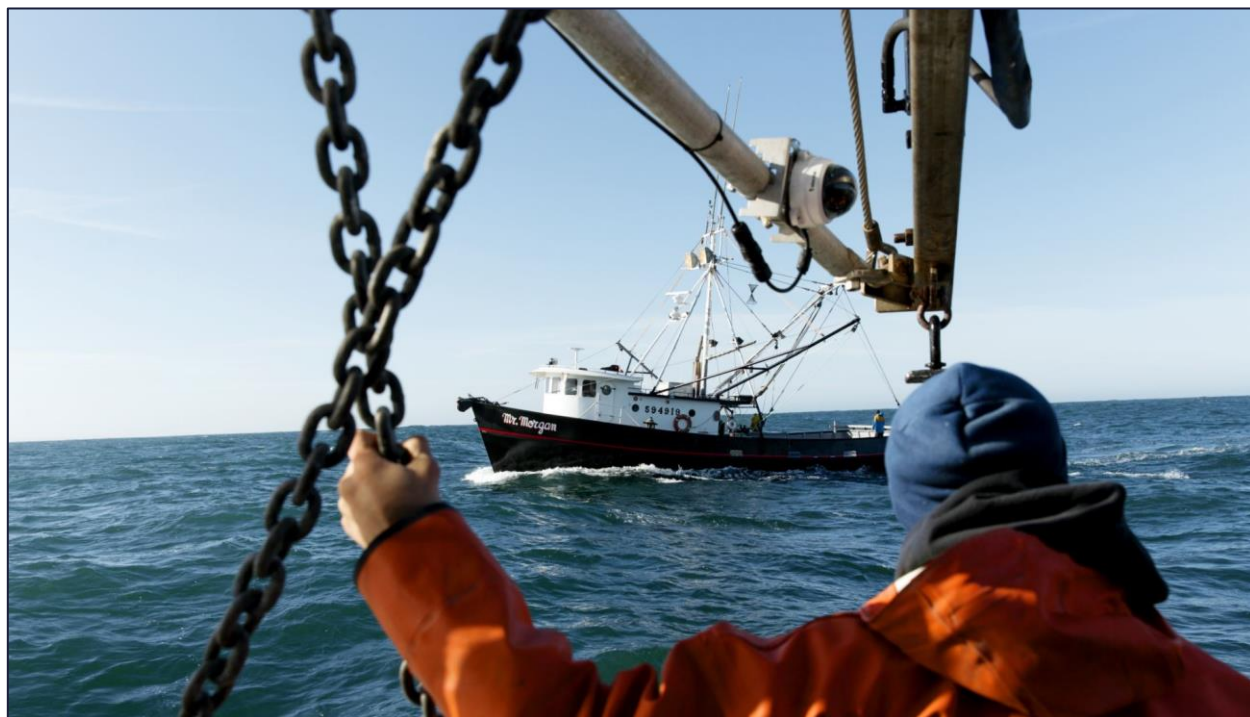


CALIFORNIA GROUND FISH COLLECTIVE ANNUAL REPORT

2017



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Fort Bragg Groundfish Association
A California Fish Marketing Act Corporation

Half Moon Bay Groundfish Marketing Association
A California Fish Marketing Act Corporation

The Nature Conservancy
A District of Columbia Non-profit Corporation



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Acknowledgements:

The authors of this report wish to acknowledge and thank the contributors whose expertise and collaboration have supported the California Groundfish Collective. The California Groundfish Collective has benefitted from the input and guidance from many organizations and individuals; in particular this collaboration and the annual report are made possible by the Fort Bragg Groundfish Association and its fishermen members, the Half Moon Bay Groundfish Marketing Association and its members, the Fort Bragg Groundfish Conservation Trust, the Half Moon Bay Commercial Fisheries Trust, the Morro Bay Community Quota Fund, Joe Sullivan, Sean Matson, Kevin Ford, Jeff Cowen, Justin Kavanaugh, the Pacific Fisheries Management Council, the National Marine Fisheries Service, the Pacific States Marine Fisheries Commission, and the National Fish and Wildlife Foundation.

Suggested Citation:

Kauer, K., Rubinstein, A., and D. Oberhoff. 2019. California Groundfish Collective Annual Report 2017. Report to the Pacific Fisheries Management Council. March 2019.



Background

The U.S. West Coast groundfish fishery is a mixed stock fishery comprised of over 90 species of flatfish, rockfish, roundfish, and others, and operates under an Individual Fishing Quota (IFQ) management system. Under this federal management system, the annual total allowable catch for each managed species is divided into transferable quota shares and allocated among individual fishermen. Quota shares generate an exclusive right to harvest or transfer a certain amount of annual quota pounds based on the scientifically established total allowable catch for each fish species within the fishery.

Many fishery participants face the challenge of a limited supply of quota pounds of federally-declared overfished species, which constrains the harvest of more abundant species as many of these stocks are caught together and can be difficult to avoid. During the 2017 fishing season, five species (see Table 1) were federally designated overfished species, and therefore only small amounts of quota for these stocks were available to the fishery. Given the limited supply of overfished species quota, fishermen face the risk of exceeding their quota allocations for these species while targeting more abundant stocks. If the harvest of any species exceeds a permit holder's quota allocation, he or she may not take another fishing trip until adequate quota is acquired from another participant to cover the deficit. Because catch of overfished species is not entirely predictable (i.e. these species are generally caught incidentally), a fisherman could unintentionally harvest his or her entire annual quota allocation for one or more of the overfished species during one trip or set, even when taking reasonable measures to avoid those species. If too many overfished species are caught, the entire fishery can be closed by fishery managers.

California Groundfish Collective

This report describes the results of a collaborative effort along the coast of California to pool overfished species quota and reduce the risk of catching these species during the 2017 fishing season. In 2017, the California Groundfish Collective ("the Collective") was formed by an annual contractual agreement entered into by the Fort Bragg Groundfish Association (FBGA) and the Half Moon Bay Groundfish Marketing Association (HMBGMA). The 2017 fishing season marked the seventh year of annual operations of the California Groundfish Collective.

The goal of the California Groundfish Collective is to maximize conservation and economic opportunities and retain local access to fish. By establishing the California Groundfish Collective, fishermen members of each association agree to pool their entire allocation of overfished species quota pounds and develop regional, spatially-explicit fishing plans designed to reduce the risk of catching overfished species across 15 million acres of fishing grounds in California (refer to Figure 1). As parties to the agreement, California Groundfish Collective members who catch overfished species are covered by the pool's quota, in return for adhering to the fishing plans and sharing information on the location of catches of overfished species.

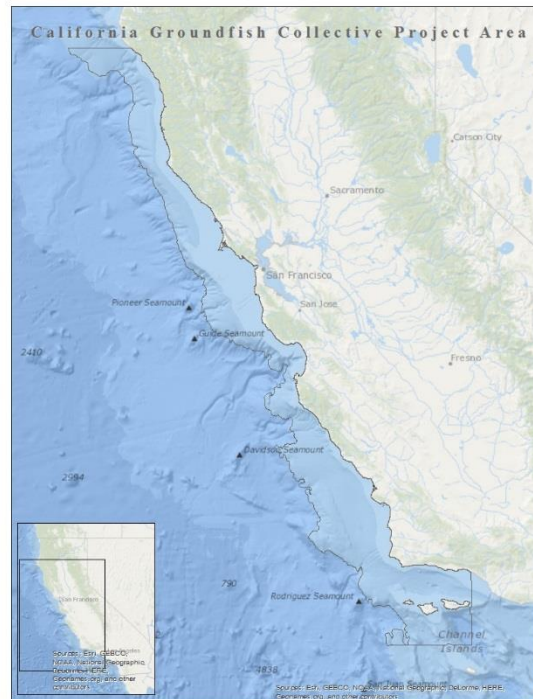


Figure 1. Outline shows the spatial extent of the California Groundfish Collective regional fishing plans.

In 2017, the California Groundfish Collective included seven vessels using various gear types: bottom trawl, longline, pots, and Scottish seine. The California Groundfish Collective was governed by an Advisory Committee made up of one representative from each fishing association.

The Nature Conservancy (TNC) owns quota in the West Coast groundfish fishery and is engaged in the fishery with the goal of working with the industry and local communities to develop and implement best practices for an economically and environmentally sustainable fishery and port communities. TNC served as a scientific advisor, invested overfished species quota into the California Groundfish Collective, and collaborated with the FBGA and HMBGMA to combine the best available science with fishermen knowledge to create regional fishing plans. TNC and the members of the California Groundfish Collective also partner to share information using technology and engage in collaborative fisheries research.

California Groundfish Collective Fishing Plans

Under the California Groundfish Collective agreement, the FBGA and HMBGMA created regional spatial fishing plans intended to reduce the risk of catching overfished species. The objectives of the regional fishing plans are to promote the long-term success of the fishery and the supporting port communities by:

- (i) Maximizing the harvest of target species from the fishery;
- (ii) Minimizing the harvest of overfished species from the fishery;
- (iii) Safeguarding sensitive fish habitat; and,
- (iv) Contributing to the rebuilding of overfished stocks.

The spatial fishing plans cover specific regions and combine fishermen's knowledge with the best available science and technology to delineate risk zones (e.g. high, medium and low) as well as allow for voluntary closures of high-risk areas. The fishing plans are created collaboratively and are specific to each gear type and region. Fishing plans and specific zones may include fishing prescriptions - such as test tows or reduced tow durations - that are assigned based on the perceived risk of encountering overfished species or the presence of sensitive habitat areas. The fishing plans set out specific precautionary actions that a vessel must take when overfished species are harvested above certain thresholds, including move-on rules and communication to all California Groundfish Collective members in the area over radio or satellite phones.

The spatial fishing plans are adapted throughout the fishing season using information collected and shared among California Groundfish Collective participants. In return for adaptively managing and complying with the fishing plans, fishermen members are covered by the California Groundfish Collective for catches of overfished species that occur. When incidental catches do occur, the California Groundfish Collective agreement ensures that spatial information and details of the catch are shared across the membership. Figure 2 provides an example of the spatial component of a regional fishing plan that identifies risk zones (note this is just an example, not an actual plan for confidentiality purposes).

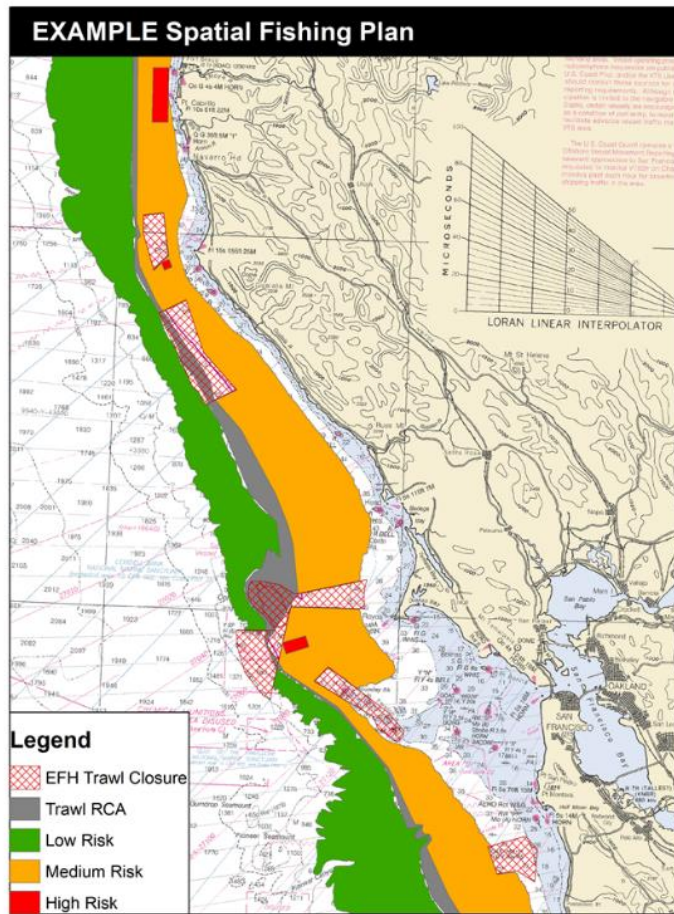


Figure 2. Example of spatial component of a regional fishing plan in the central coast of California that depicts high, medium and low risk zones as well as existing management closures. Certain fishing prescriptions are assigned to each zone.

The California Groundfish Collective has used an application developed by TNC called eCatch (www.ecatch.org) to capture logbook information and share the location of and other information associated with harvests of overfished species. This technology facilitates the sharing of fisheries information that can be used to adapt and inform fishing operations on a trip by trip basis, and it also allows for the manager of the California Groundfish Collective to ensure fishing is occurring in compliance with spatial fishing plans. The private collection and sharing of logbook information using a spatial database has proven useful as a proof-of-concept for electronic reporting, in updating and adapting regional fishing plans, as well as informing other engagements such as pursuing independent ratings and assessments for seafood, like Seafood Watch.

Overfished Species Quota Holdings Summary

Members of the FBGA and HMBGMA transferred their 2017 overfished species quota pounds into holding accounts managed by the California Groundfish Collective (e.g. IFQ vessel accounts) following execution of the annual agreement. In addition, through separate Memorandum of

Understandings, TNC, the Morro Bay Community Quota Fund, the Fort Bragg Groundfish Conservation Trust, and the Half Moon Bay Commercial Fisheries Trust also contributed some of their overfished species quota pounds into holding accounts managed by the California Groundfish Collective. The Collective’s total overfished species quota pound holdings for 2017 are presented in Table 1 and Figure 3 below. In the region where the California Groundfish Collective participants operate, the most constraining overfished species in 2017 were bocaccio (*Sebastes paucispinis*), cowcod (*S. levis*), darkblotched rockfish (*S. crameri*), and yelloweye rockfish (*S. ruberrimus*).¹ Pacific Ocean Perch (*S. alutus*) was also an overfished species 2017 in the West Coast groundfish fishery, however, the California Groundfish Collective did not manage any holdings of this species. Nevertheless, we include Pacific Ocean Perch in the following tables and figures.

Table 1. California Groundfish Collective's quota pound (QP) holdings of overfished species in 2017 compared to the sector allocation for the entire west coast groundfish fleet.

Species	California Groundfish Collective's QP Holdings	IFQ Sector's Total QP Allocation	California Groundfish Collective's QP Holdings as Percentage of IFQ Sector Allocation
Bocaccio rockfish	384,002	666,678	58%
Cowcod	2,435	3,086	79%
Darkblotched rockfish	59,333	1,119,066	5%
Pacific Ocean Perch	0	437,177	0%
Yelloweye rockfish	177	2,425	7%
Totals	445,947	2,228,432	20%

In 2017, approximately 20% of the IFQ’s sector-wide overfished species quota pounds were collectively managed and held by the California Groundfish Collective (refer to Table 1, Figure 3).

¹ The California Risk Pool annual reports for 2011 and 2012 included widow rockfish, as well as Pacific halibut IBQ. Since widow rockfish were delisted in 2012 and canary rockfish were delisted in 2016, the data presented in the 2017 report only include the five overfished species listed in Table 1.

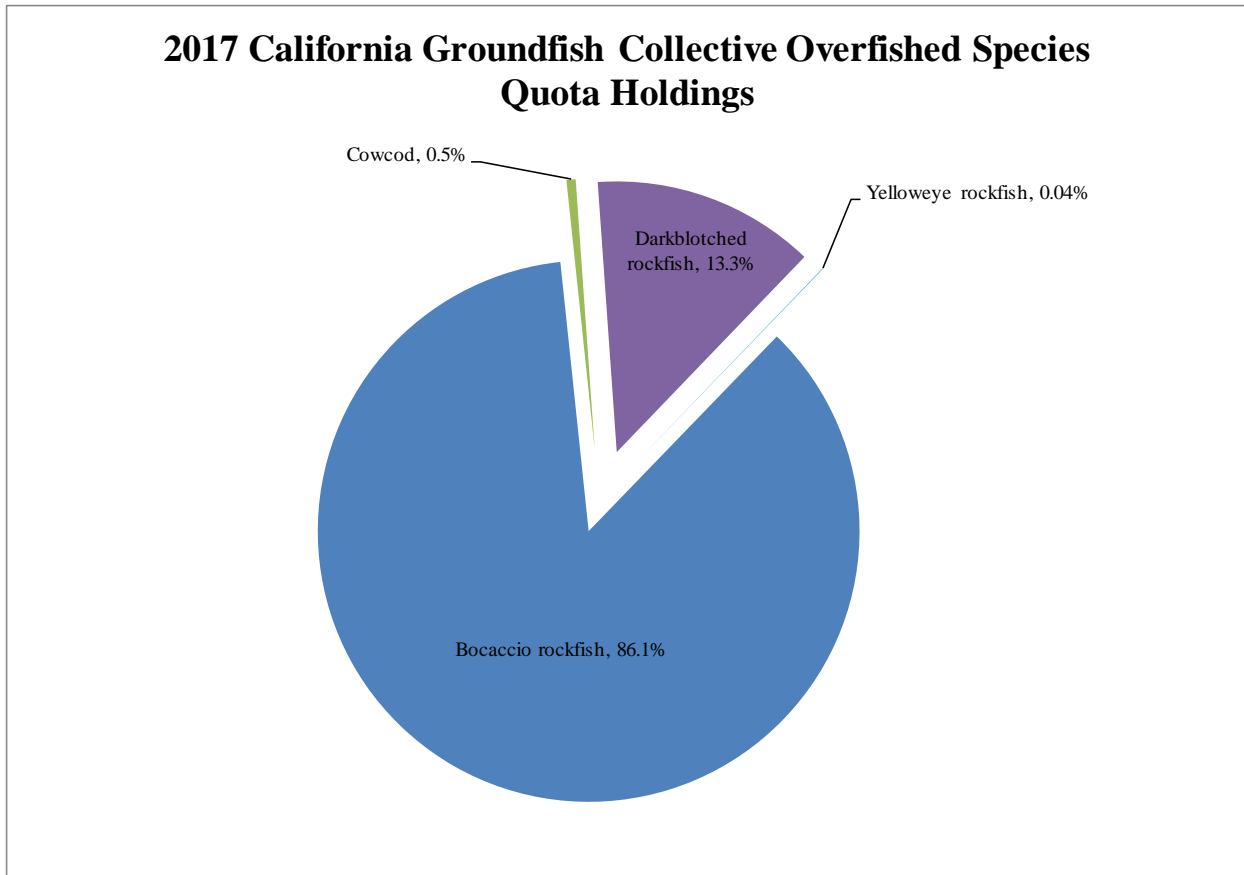


Figure 3. Breakdown of the California Groundfish Collective 2017 overfished species quota pound holdings.

Fishing Results: Catch and Utilization Rates

Overfished Species

In this report, we use utilization rates as a simple (though not perfect) metric to present the fishing activity of the California Groundfish Collective and provide a measure of comparison to the rest of the fleet. Utilization rates represent the percentage of an annual allocation that has been caught (i.e. pounds caught divided by annual allocation).

In 2017, the entire groundfish IFQ fleet (including the California Groundfish Collective) used a 801,987 total of pounds of the available 2,228,432 pounds of overfished species quota pounds available, or 36% of the total allowable catch. The California Groundfish Collective collectively managed a total of 445,947 pounds of overfished species quota pounds and collectively caught a total of 102,300 pounds, or 23% of the total California Groundfish Collective holdings (Table 2).

Table 2. California Groundfish Collective's quota pound holdings, total catch, and utilization rates (total catch as percentage of holdings) in 2017.

Species	2017 California Groundfish Collective's QP Holdings	2017 California Groundfish Collective's Total Catch	2017 California Groundfish Collective's Utilization
Bocaccio rockfish	384,002	100,800	26%
Cowcod	2,435	663	27%
Darkblotched rockfish	59,333	813	1%
Pacific Ocean Perch	0	0	0%
Yelloweye rockfish	177	24	14%
Totals	445,947	102,300	23%

From 2011 to 2017 the California Groundfish Collective’s overall overfished species utilization has remained below the rest of the groundfish fleet’s total utilization of overfished species (Figure 4). In 2017, the California Groundfish Collective’s utilization of overfished species was 23%, which is lower than the rest of the IFQ fleet’s 40% utilization in 2017 (Figure 4). The Collective’s utilization of overfished species was 29% in 2016; the reduction in overfished species utilization from 2016 to 2017 can be attributed to two factors: i) a large increase in bocaccio rockfish holdings (246% increase) from 2016 to 2017, and ii) the rebuilding of canary rockfish, which was no longer managed as an overfished species in 2017.

2011 to 2017 Overfished Species Utilization Rate Comparison
IFQ Fleet-only vs California Groundfish Collective

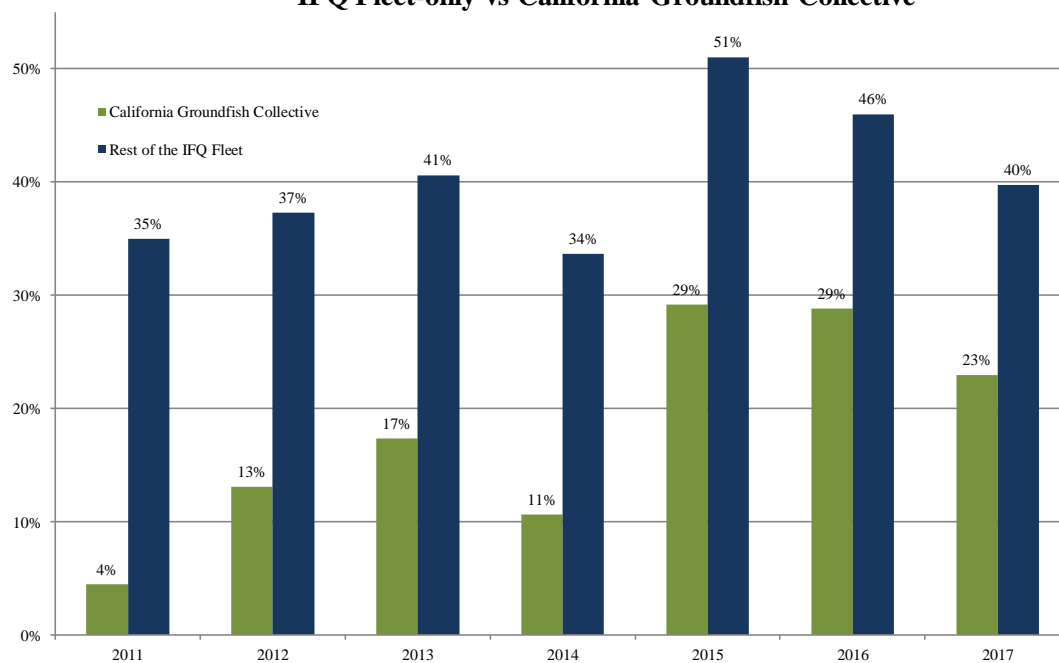


Figure 4. Comparison of overfished species utilization rates for the California Groundfish Collective and the rest of the IFQ groundfish fleet including whiting from 2011 to 2017.

The California Groundfish Collective operates in the non-whiting sector of the groundfish IFQ, thus removing the whiting fleet’s catch and allocations for overfished species and comparing to the rest of the non-whiting fleet provides a relevant utilization comparison. The rest of the non-whiting fleet caught 531,012 pounds of overfished species, or 34% of the non-whiting fleet’s total holdings (Table 3, Figure 6).

Table 3. 2017 overfished species utilization rates for California Groundfish Collective, rest of the non-whiting fleet, and the total IFQ fleet (California Groundfish Collective removed).

Species	2017 California Groundfish Collective's Utilization	2017 Non-whiting Fleet Utilization (Groundfish Collective removed)	2017 Total IFQ Fleet Utilization (Groundfish Collective removed)
Bocaccio rockfish	26%	18%	36%
Cowcod	27%	13%	28%
Darkblotched rockfish	1%	42%	38%
Pacific Ocean Perch	0%	45%	47%
Yelloweye rockfish	14%	18%	15%
Totals	23%	34%	40%

Catch information stored in eCatch was used to map the location and amount of overfished species that were caught by California Groundfish Collective members during the 2017 fishing season. Areas of high catch intensity can indicate higher potential risk of catching overfished species over time (Figure 5), and this information is used by the California Groundfish Collective to adaptively manage the regional fishing plans and update spatial restrictions or rules throughout the year. Data stored in eCatch also makes it possible to evaluate overfished species harvests on a trip by trip or set by set basis. In 2017, the California Groundfish Collective members harvested overfished species in approximately 71% of all sets, which provides a measure of the risk of encounter. Of these encounters, 64% included catch of Bocaccio. Bocaccio has been rebuilding and was taken off of the overfished species list after the end of the 2017 season. Given the increased abundance of Bocaccio, if that species is removed, the risk of encounter drops to 29%.

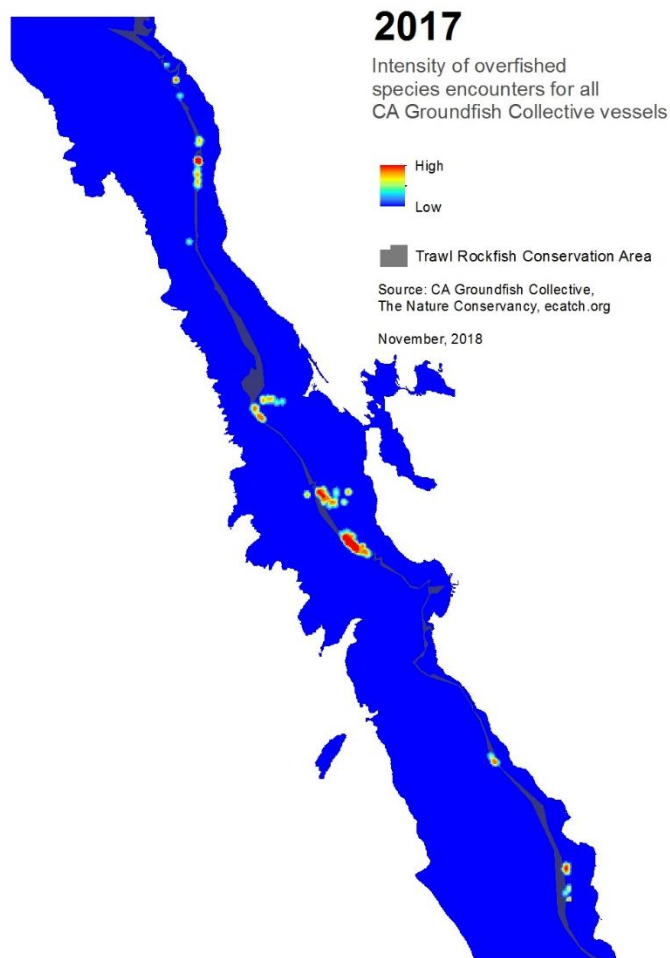


Figure 5. Map created using eCatch data depicting the intensity of overfished species encounters for all California Groundfish Collective vessels during 2017. Intensity is calculated as frequency of fishing sets where overfished species were harvested.

The California Groundfish Collective provides its members with a type of mutual insurance – a secure and reliable source of overfished species quota – so that members may fish and maximize their harvest of target species. In 2017, the California Groundfish Collective manager filled more than 79 overfished species deficits for its members. Requests to fill a deficit were generally processed within minutes to a few hours. This rapid process resulted in no loss of fishing time for the members of the California Groundfish Collective while attempting to acquire overfished species quota pounds, but instead allowed them to concentrate on planning their next fishing trip and manage their overall fishing operations.

By December 31, 2017, the end of the fishing season, all remaining quota pounds were assessed and retransferred pro-rata back to the original contributing members of the California Groundfish Collective and the other contributing community entities.

Target Species

Since the California Groundfish Collective seeks to maximize conservation and economic opportunities, measures of overfished species utilization must be considered in conjunction with target species utilization. A primary objective of the California Groundfish Collective is to maximize harvest of target species. Target species include all species except for overfished species and Pacific halibut Individual Bycatch Quota (IBQ). Allocations included individual allocations plus any additional quota pounds transferred into California Groundfish Collective member vessel accounts throughout the year.

In 2017, California Groundfish Collective members caught a total of 1,904,272 pounds of target species, or 18% of their collective quota pound holdings of 10,522,324 pounds of target species.

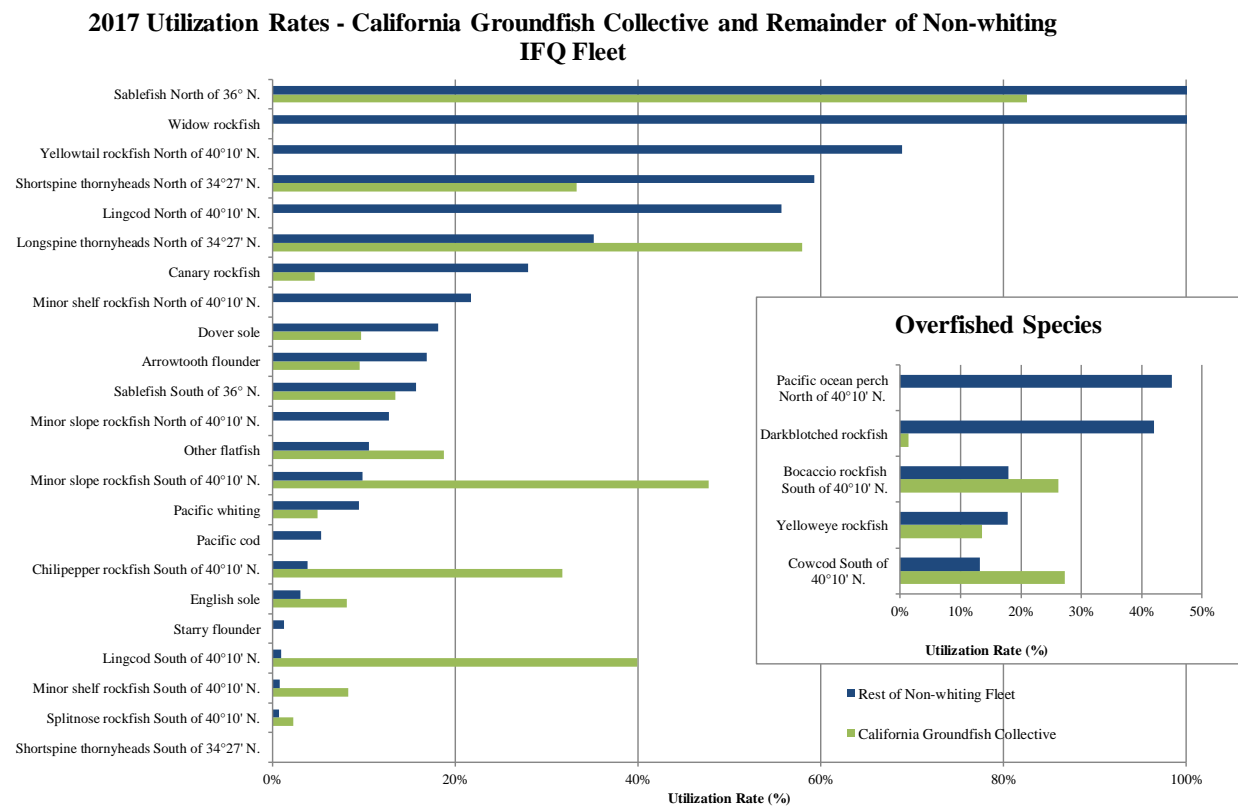


Figure 6. Comparison of target species and overfished species utilization rates for the California Groundfish Collective and the rest of the *non-whiting* IFQ groundfish fleet in 2017.

In 2017, the total catch of target species (including whiting) for the entire IFQ fleet was 382,908,885 pounds, or 62% of the total fleetwide allocation. Whiting contributes a substantial amount of pounds to the total target catch, and when the whiting fleet is removed, the non-whiting groundfish fleet (Collective removed) caught 52,222,235 pounds or 26% of the non-whiting target allocation, compared to 18% for the California Groundfish Collective.²

² Non-whiting data acquired through personal communication with Jeff Cowen, NMFS, June 19, 2018.

A bycatch ratio is an additional metric that can be used to evaluate fishery performance. A simple bycatch ratio can be determined by dividing the total catch of overfished species by the total catch of target species. When comparing bycatch ratios, a smaller number indicates less overfished species were caught while harvesting target species. The California Groundfish Collective’s bycatch ratio was substantially higher than the rest of the non-whiting IFQ fleet for 2017 due to the 173% increased harvest of Bocaccio rockfish from 2016 to 2017. The Collective’s bycatch ratios for the other species, except cowcod, were substantially lower than the rest of the non-whiting IFQ fleet in 2017.

Due to increased harvest and utilization of Bocaccio rockfish in 2015, 2016 and 2017 – and the high harvest and utilization of canary rockfish in 2016 – the average bycatch ratio for the California Groundfish Collective for the period from 2011 to 2017 is greater than the rest of the non-whiting IFQ fleet (Table 4). In 2017, the California Groundfish Collective’s utilization of Bocaccio rockfish was 26%, which is a slight decrease in utilization compared to the 33% utilization in 2016. It should be noted that Bocaccio rockfish is managed as a separate quota stock south of the management line at 40°10' N, whereas, north of that management line Bocaccio is included in the minor shelf rockfish complex³. The California Groundfish Collective operates in the area where Bocaccio is managed as a separate quota stock.

Table 4. Bycatch ratios for the California Groundfish Collective and the rest of the non-whiting IFQ fleet.

Year	California Groundfish Collective	Non-whiting IFQ Fleet (Groundfish Collective removed)
2011	0.20%	0.83%
2012	0.43%	0.81%
2013	0.56%	0.91%
2014	0.39%	0.81%
2015	1.60%	1.08%
2016	2.82%	0.95%
2017	5.37%	1.02%
Averages	1.62%	0.91%

Economic and Social Metrics

Estimated Total Ex-vessel Value

Ex-vessel value is a commonly used to represent the value of the fish at the first landing before any processing is done. The estimated ex-vessel value of the combined total groundfish catch of the California Groundfish Collective members in 2017 was approximately \$1.95 million. The top five

³ In June 2017, the National Oceanic and Atmospheric Administration declared Bocaccio rockfish rebuilt and the IFQ sector allocation for Bocaccio rockfish will increase from 666,677 pounds in 2017 to 1,787,285 in 2019 (a 168% increase in quota pounds).

species, sablefish north, Petrale sole, Dover sole, longspine thornyhead, and chilipepper rockfish accounted for 82% of the California Groundfish Collective member’s estimated ex-vessel value in 2017 (Figure 7). The estimated total ex-vessel value was calculated from California Groundfish Collective members’ fish tickets (landing receipts) for each port where landings occurred in 2017. For landings where fish tickets (landing receipts) were not available, PacFIN (<https://reports.psmfc.org/pacfin/f?p=501:1000:::>) data were used to provide the average price per pound for a specific port.

Estimated Total Ex-Vessel Value for Target Species Caught by the California Groundfish Collective Members in 2017

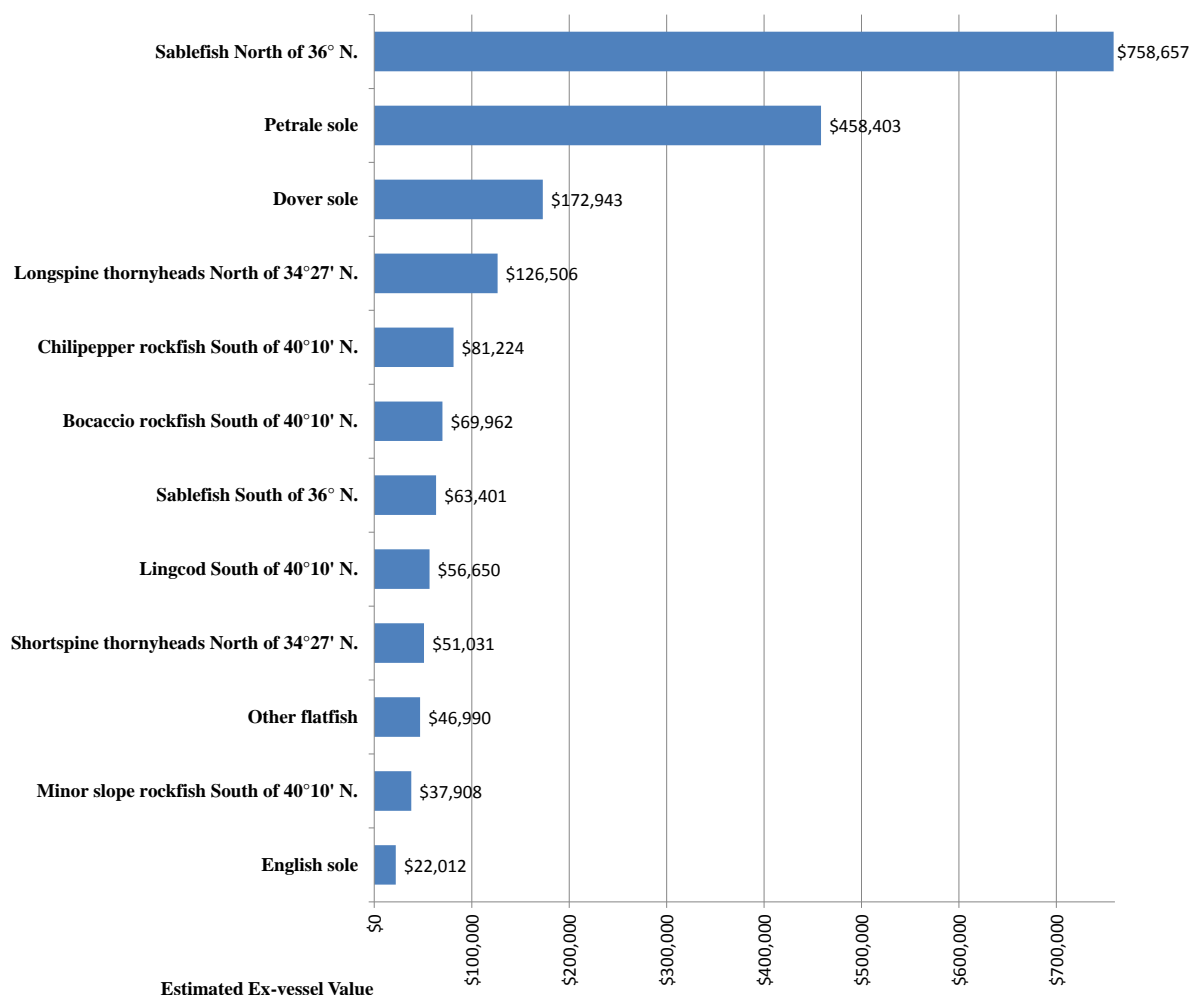


Figure 7. Estimated total ex-vessel value (dollars) of groundfish, by species, landed by the California Groundfish Collective members in 2017.

Compliance and Monitoring

In 2017, the California Groundfish Collective Manager did not observe any non-compliance events by any member of the California Groundfish Collective. The 2017 annual California Groundfish Collective agreement established the protocol for dealing with non-compliance events or possible

violation by one of the associations' vessels of the regional rules in their respective fishing plans. As directed by the California Groundfish Collective Advisory Committee, the California Groundfish Collective Manager was responsible for reviewing all vessel and trip specific data (i.e. spatial data from eCatch, landings, etc.) with incidents of overfished species to ensure compliance with regional fishing plans. In addition, to verify compliance with spatial fishing restrictions, the California Groundfish Collective used eCatch and the Advisory Committee reserved the right to require subsequent audits of Vessel Monitoring Systems (VMS) data from suspected or violating vessels.

Collaborative Research

Since 2014, the California Groundfish Collective has partnered with TNC to manage an Exempted Fishing Permit (EFP) project in the West Coast groundfish fishery to implement electronic monitoring. The purpose of this project is to 1) develop and implement the use of electronic video monitoring (EM) in lieu of human observers for catch compliance purposes; 2) inform the development of new regulations while preserving community access to the West Coast fishery through an alternative catch monitoring option; and 3) inform proposed EM programs in other fisheries.

The EFP process in the West Coast groundfish fishery has provided important opportunities to demonstrate the use of EM across multiple gear types as an option for compliance monitoring. From 2015-2017, the California Groundfish Collective used an EFP to deploy EM systems on three trawl vessels and three fixed gear vessels operating out of the ports of Fort Bragg, Half Moon Bay, and Morro Bay California. Three other EM EFP projects were also initiated. The National Marine Fisheries Service (NMFS) monitors and enforces the terms of the EFPs, and the Pacific States Marine Fisheries Commission (PSMFC) is conducting EM video review. Vessels using EM follow catch-handling requirements per a Vessel Monitoring Plan (VMP) and use state logbooks as well as specific EM logbooks developed by PSMFC to report priority species catch and discard data. This EFP project has produced a total of 174 unique fishing trips (32 in 2015, 48 in 2016 and 94 in 2017), which have been reviewed by PSMFC staff.

Over the course of the two-year project, the California Groundfish Collective and partners have generated significant learning that is informing the development of EM programs. The on-the-water learning generated by this EFP project has directly informed the development of new EM regulations on the West Coast, including program standards for whiting and non-whiting midwater trawl, fixed gear, and bottom trawl in the groundfish IFQ fishery. The California Groundfish Collective produced a report summarizing the results and key lessons learned from the EFP project from 2015 through 2017⁴.

The project partners and participating vessels continue to work with NMFS and other stakeholders to resolve outstanding concerns with pending regulations that are expected to be implemented by 2020.

⁴http://www.cagroundfish.org/s/FINAL_EM-Report-2015-2017-OCT2018.pdf