

Estimating Groundfish Catch Distribution Across State and Federal Waters in Recreational Fisheries

This report provides information on a state by state basis to estimate recreational catch between state waters (0-3 nautical miles) and federal waters (3-200 nautical miles). Preliminary information is provided below about the differences in spatial data collection from recreational fisheries in each of the three coastal states. Prior to further development of this analysis, we recommend consideration of whether the current spatial recreational data collections are appropriate for application to these policy considerations of whether recreational fisheries predominantly occur in federal waters. There are several substantial caveats that may limit the applicability of this data for this purpose.

Potential challenges with this data use are the self-reporting structure and some known data limitations described in the summary for each state below, as well as the history of fishing area closures to these fleets. Spatial data and bottom depth data (potentially used as a proxy for fishing area) may not be representative of individual fish caught, but rather generalized for the trip as a whole, and are the best estimate provided by the angler. Additionally, the history of closures of shelf waters in federal waters due to recreational rockfish conservation areas influences the estimated catch proportions. It is unknown whether recreational catch of these species would occur in different proportions in the absence of these closed areas. However, to the extent that these closures remain in the future, these recreational data could provide information on recent catch patterns. Even in times and areas where substantial opportunity to fish in federal waters is available, angler preference and subsequent effort is generally concentrated towards fishing closer to shore. This is primarily because fishing closer to shore is safer, not all vessels are large enough with a high enough fuel capacity to access offshore federal waters, and it is more cost effective relative to fuel consumption to fish in nearshore waters.

Appendix 1 provides a sample snapshot output for the year 2022 for California and for Oregon. Due to the data challenges described in the Washington section, no sample output for Washington is provided. If recreational data is used to inform this policy question, previous discussions with state recreational fishery managers have suggested a date range of 2018-2023, excluding 2020 as a substantially anomalous year, which would be analyzed in a future version, if appropriate.

California

California Department of Fish and Wildlife (CDFW) provides estimates of groundfish caught in the recreational fisheries between federal and state waters using a state-specific grid system or angler-provided GPS coordinates. Data was pulled from RecFIN Catch Estimate Report

(CTE001). State waters catch was calculated based on summing total catch (retained and discarded) in number of fish under both the “inland” and the “ocean <= 3 mil” RecFIN_water_area_name data field. This includes shorebased trip types from beaches, banks, jetties, etc. Federal waters catch was calculated based on the “ocean > 3 mile” RecFIN_water_area_name data field. These values were converted to an annual proportion based on total mortality by species.

Caveats

While CDFW’s grid system overlay on maps with geographic reference points helps, this data is angler reported. Anecdotal information from CDFW staff indicate that anglers do their best to pinpoint where they caught the fish as offshore or inshore, however most anglers indicate this is their best guess. The farther anglers get from shore or known geographic points referenced on the grid maps, such as reefs or high spots, the more unreliable the precision of this information becomes. If anglers fish in multiple locations and cannot remember where all fish were caught, California Recreational Fisheries Survey samplers record where the bulk of the fish were caught. Therefore, pinpoint locations for each fish caught that day may not be provided, and it may be a location, or a small number of locations for all the fish caught. Additionally, if anglers are unsure of catch location, are uncooperative with this portion of the survey, or if the sampler is pressed for time, some locations may be missing from the data. Additionally, some grid areas bifurcate the 3-nautical mile line, and while samplers work with anglers on identifying which part of the grid area the catch occurred in, there may be some uncertainty in some areas.

Oregon

Oregon Department of Fish and Wildlife (ODFW) provides groundfish recreational catch estimates that do not readily differentiate fish caught in state versus federal waters. ODFW carries out representative dockside sampling coverage for all day types, season types, and to cover the hours of the day when charter and private fishing vessels can be expected to return from the ocean. Samplers collect the "reef" area, identified as either offshore or inshore of 30 fathoms across 24 discrete north/south bounded areas (48 total "reefs"). This 30 fathom depth contour is reasonably representative of the 3-nautical mile line and can be used as a proxy to differentiate recreational catch distribution. Data was pulled from RecFIN Sample Records Report (SD502). Total catch in numbers of fish was used. The state waters proportion was calculated by summing data points with “estuary” and “ocean <= 3 mil” values in the RecFin_Water_Area_Name data field by species. The federal waters proportion was calculated by summing “ocean > 3 mile” data by species. Catch data with a “not known” value for RecFin_Water_Area_Name were excluded from the analysis.

Caveats

Sampled data may not be a complete match to what is happening across the entire state’s coast, as some ports have more samplers collecting interviews, other ports have more charter vessels, and others have (or do not have) an estuary fishery. To get sampled data into estimates, expansions are

made at the month, port, boat, trip type and species level. To address differences in data between ports, a future iteration of this analysis could potentially calculate the catch proportions by port, and then weight that proportion to that port's contribution to the coast for the year. Additionally, estimations for data from shore-based trip types and estuary fishing vary relative to other trip areas, and may need further investigation.

Washington

Washington Department of Fish and Wildlife (WDFW) provides groundfish recreational catch estimates that do not readily differentiate fish caught in state versus federal waters. Dockside samplers collect fishing depth in feet, however, this does not provide bottom depth. Overall, the depth contours off of Washington do not align closely with the 3 nm line as they do off of Oregon. While south of Copalis Beach, there is decent alignment with the 30 fathom contour, north of Copalis Beach varies considerably. Due to these complexities in spatial recreational data off of Washington, substantial input would be needed from WDFW to determine if and how to utilize available data for this policy application.

Appendix 1: Sample Outputs

Table 1. 2022 California Recreational Catch by Area

Species	Total Number of Fish	Federal Waters Catch Proportion
BANK ROCKFISH	601	35%
BIG SKATE	490	43%
BLACK AND YELLOW ROCKFISH	21,601	2%
BLACK ROCKFISH	308,701	8%
BLUE ROCKFISH	346,943	6%
BOCACCIO	154,132	55%
BRONZESPOTTED ROCKFISH	36	100%
BROWN ROCKFISH	209,279	17%
BUTTER SOLE	16	0%
CABEZON	37,051	4%
CALICO ROCKFISH	6,653	16%
CALIFORNIA SCORPIONFISH	722,779	83%
CALIFORNIA SKATE	1,676	0%
CANARY ROCKFISH	107,632	17%
CHILIPEPPER	13,542	77%
CHINA ROCKFISH	35,307	15%
COPPER ROCKFISH	71,990	13%
COWCOD	519	43%
FLAG ROCKFISH	16,633	53%
FRECKLED ROCKFISH	352	12%
GOPHER ROCKFISH	175,328	3%
GRASS ROCKFISH	14,188	1%
GREENBLOTCHED ROCKFISH	763	63%
GREENSPOTTED ROCKFISH	28,716	55%
GREENSTRIPED ROCKFISH	12,575	73%
HALFBANDED ROCKFISH	18,749	72%
HONEYCOMB ROCKFISH	21,857	66%
KELP GREENLING	20,334	2%
KELP ROCKFISH	17,632	0%
LEOPARD SHARK	52,172	0%
LINGCOD	139,688	10%
LONGNOSE SKATE	228	53%
MEXICAN ROCKFISH	4,334	66%
OLIVE ROCKFISH	51,723	8%
PACIFIC HAKE	1,181	64%
PACIFIC SANDDAB	231,500	56%
PETRALE SOLE	5,202	38%

Species	Total Number of Fish	Federal Waters Catch Proportion
PINKROSE ROCKFISH	23	100%
QUILLBACK ROCKFISH	15,324	17%
REDSTRIPE ROCKFISH	456	0%
ROCK SOLE	2,158	21%
ROSETHORN ROCKFISH	48	0%
ROSY ROCKFISH	66,719	25%
SABLEFISH	8,546	85%
SAND SOLE	657	19%
SOUPFIN SHARK	868	4%
SPECKLED ROCKFISH	11,654	65%
SPINY DOGFISH SHARK	3,096	16%
SQUARESPOT ROCKFISH	52,625	75%
STARRY FLOUNDER	260	52%
STARRY ROCKFISH	90,867	31%
STRIPETAIL ROCKFISH	12	0%
SWORDSPINE ROCKFISH	1,298	92%
TIGER ROCKFISH	603	18%
TREEFISH	17,470	15%
VERMILION ROCKFISH	223,886	24%
WIDOW ROCKFISH	12,717	5%
YELLOWEYE ROCKFISH	8,711	25%
YELLOWTAIL ROCKFISH	132,763	11%

Table 2. 2022 Oregon Recreational Catch by Area

Species	Total Number of Fish	Federal waters catch proportion
ARROWTOOTH FLOUNDER	35	89%
BIG SKATE	17	94%
BLACK AND YELLOW ROCKFISH	4	0%
BLACK ROCKFISH	12,8145	7%
BLUE ROCKFISH	4,803	5%
BOCACCIO	229	77%
BROWN ROCKFISH	138	17%
BUTTER SOLE	*	100%
CABEZON	6,040	6%
CANARY ROCKFISH	14,788	36%
CHILIPEPPER	29	90%
CHINA ROCKFISH	2,417	5%
COPPER ROCKFISH	2,294	6%
CURLFIN SOLE	*	0%

Species	Total Number of Fish	Federal waters catch proportion
DARKBLOTCHED ROCKFISH	*	100%
DEACON ROCKFISH	9,652	6%
DEACON/BLUE ROCKFISH UNKNOWN	87	0%
DOVER SOLE	4	0%
ENGLISH SOLE	4	67%
GOPHER ROCKFISH	34	6%
GRASS ROCKFISH	27	0%
GREENBLOTCHED ROCKFISH	22	95%
GREENSPOTTED ROCKFISH	208	98%
GREENSTRIPED ROCKFISH	284	97%
KELP GREENLING	3,342	6%
KELP ROCKFISH	15	13%
LINGCOD	27,419	11%
LONGNOSE SKATE	33	58%
OLIVE ROCKFISH	43	0%
PACIFIC COD	11	73%
PACIFIC HAKE	25	68%
PACIFIC OCEAN PERCH	6	50%
PACIFIC SANDDAB	885	49%
PETRALE SOLE	1,339	67%
QUILLBACK ROCKFISH	2,845	9%
REDBANDED ROCKFISH	7	100%
REDSTRIPE ROCKFISH	25	96%
ROCK SOLE	5	20%
ROSETHORN ROCKFISH	44	64%
ROSY ROCKFISH	19	47%
SABLEFISH	487	57%
SAND SOLE	147	18%
SHORTSPINE THORNYHEAD	*	100%
SILVERGRAY ROCKFISH	124	95%
SPECKLED ROCKFISH	*	100%
SPINY DOGFISH SHARK	20	90%
STARRY FLOUNDER	15	7%
STARRY ROCKFISH	*	50%
TIGER ROCKFISH	238	22%
VERMILION ROCKFISH	664	6%
WIDOW ROCKFISH	1,852	66%
YELLOW EYE ROCKFISH	2,748	33%
YELLOWMOUTH ROCKFISH	16	13%
YELLOWTAIL ROCKFISH	15,284	67%

*Data withheld for confidentiality