

Socioeconomic Characterization of West Coast Fisheries in Relation to Offshore Wind Energy Development

NMFS West Coast Regional Office, Northwest Fisheries Science Center, Southwest Fisheries Science Center

Oct 2024: Report summary for MPC

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Project Overview

- Funded under BOEM's [Environmental Studies Program](#)
 - Oct 2022 to Sept 30, 2023. Study brief: <https://www.boem.gov/sites/default/files/documents/regions/pacific-ocs-region/environmental-analysis/PR-22-SOC.pdf>
 - Report posted: <https://www.boem.gov/boem-2024-054>
- Objective:
 - For BOEM to better understand socioeconomic characteristics of West Coast fisheries in relation to offshore wind (OSW) development
 - Provide additional information to enable BOEM to conduct a more thorough analysis of potential impacts from OSW activities (including siting characterization, leasing, construction and operations, and decommissioning) on fishing sectors and communities.
- Leverage NMFS unique expertise in fisheries socioeconomics

Objectives

- Develop products that will help BOEM characterize West Coast fishing communities, including supportive industries, fishing-related infrastructure, fishing sector interconnections, and potential connections between fishing sectors and offshore wind development
- Share fisheries socioeconomic expertise with BOEM to help BOEM achieve its priority goals around engagement with the fishing community
- Provide examples of scientifically robust frameworks used by NMFS for socioeconomic impact analysis, particularly under NEPA
- Foster relationships among subject matter experts in BOEM's Pacific Regional Office and NMFS' NWFSC, WCR, and SWFSC



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Section 1 - Introduction

Section 2 - Overview of West Coast Fisheries

Section 3 - Fisheries Socioeconomic Data

Section 4 - Other Coastal Activities

Section 5 - Fisheries Socioeconomic Impact Assessment and Methods



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Section 2: Overview of West Coast Fisheries

- Four Federal fishery management plans (FMPs) and one fishery ecosystem plan developed by the PFMF and are implemented by NMFS:
 - Pacific Groundfish
 - Coastal Pelagic Species (CPS)
 - Highly Migratory Species (HMS)
 - Pacific Salmon
 - California Current Fishery Ecosystem Plan (CCFEP)
- NMFS is responsible for maintaining the United States' international obligations under treaties and agreements, and as parties to commissions, for salmon, tuna, Pacific halibut, and Pacific whiting (hake).
- Report includes an overview of the general legal and management context for tribal fisheries, noting that individual tribes should be engaged directly about their fisheries and potential impacts from offshore wind energy development.



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GROUNDFISH FISHERIES MANAGEMENT PLAN

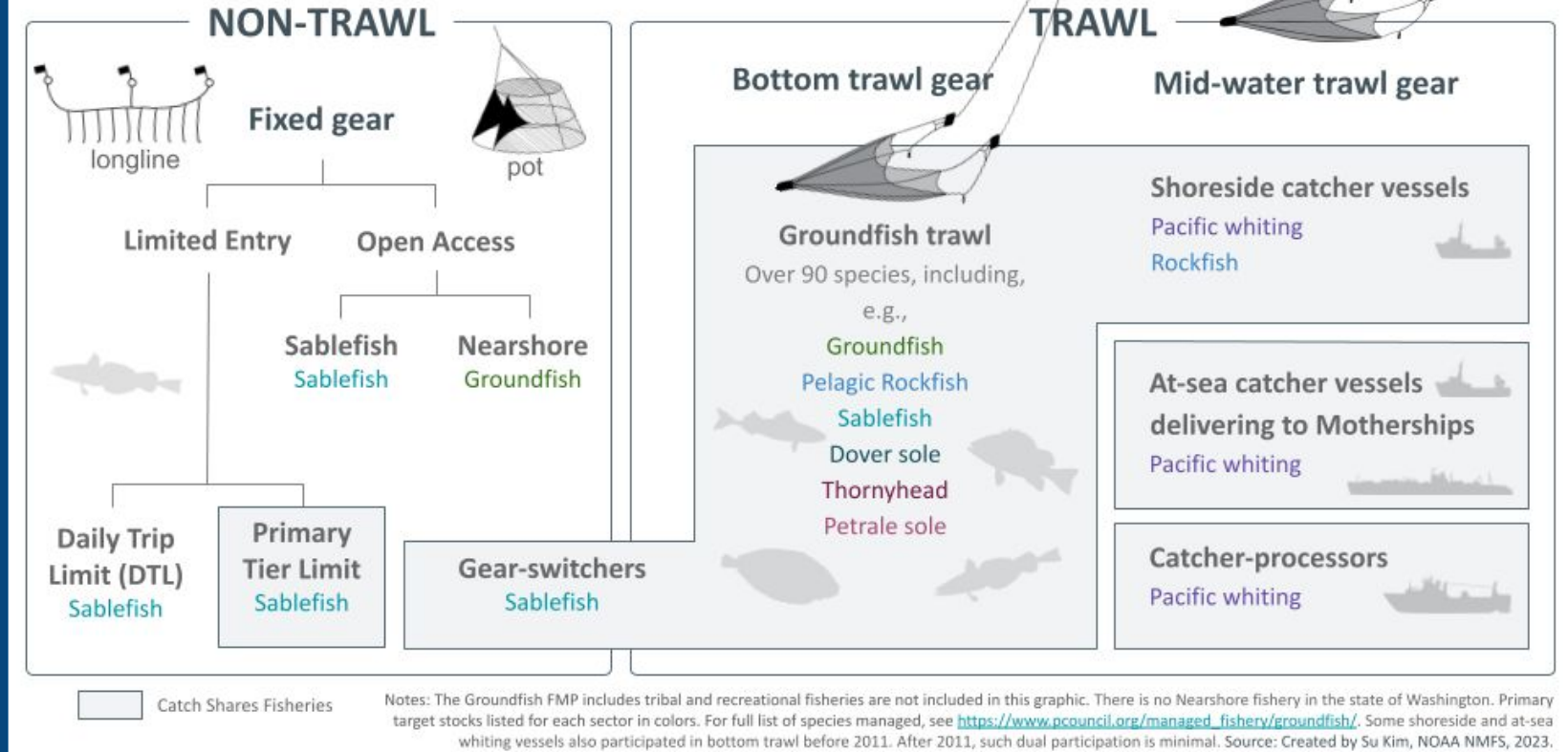


Figure 9. Sectors within the Groundfish Fishery Management Plan. Page 25.

Source: Su Kim [graphic design], NWFSC/NOAA 2023.

Table 8. Gear, location, and number of vessels in HMS fisheries. Page 28

Fishery	Principal Gears	Location/Ports	Number of Vessels 2012-2021
Albacore	Surface-hook-and line: Troll and bait boat (live bait). Incidentally caught by purse seine, longline, and large mesh drift gillnet gears.	Recent landings concentrated in Newport and Astoria ports, Oregon, and Westport and Ilwaco ports, Washington (a)	Varied from 293 in 2021 to 815 in 2012
Swordfish (c) (predominantly) and shark	Drift gillnet	South of Monterey, California, in southern California Bight	Varied from 6 in 2021 to 21 in several previous years
Swordfish	Harpoon	Southern California Bight (b)	Varied between 10 in 2012 to 21 in 2017
Swordfish and Tuna	High seas long line	Pelagic longline vessels fishing outside the West Coast EEZ land swordfish and tuna in West Coast ports, mainly San Francisco, Los Angeles, and San Diego. (d)	Varied between 8 and 23
Yellowfin, skipjack, and bluefin tunas	Coastal purse seine	Southern California Bight	Varied between 1 in 2012 and 14 in 2018
Swordfish	Deep-set buoy	Southern California Bight	50 (2021)

Source: PFMC 2022i

Notes: (a) A treaty between the governments of the U.S. and Canada allows vessels from each country to fish in the other country's EEZ outside of 12 miles. Vessels also have port privileges and Canadian vessels may land albacore in designated ports.

(b) Pacific Ocean from Point Conception to just past San Diego (border with Mexico).

(c) Federal legislation has been proposed to phase out fishery.

(d) The HMS FMP prohibits targeting swordfish with pelagic longline gear. However, vessels possessing a Hawaii longline limited access permit may land swordfish at West Coast ports.



Section 3: Fisheries socio-economic data

In establishing the MSA, Congress found that collection of reliable data is essential to the effective conservation, management, and scientific understanding of the fishery resources of the United States.

The MSA requires that fisheries conservation and management measures be based on the *best scientific information available*.

NMFS and state agencies collect large amounts of data from fishing participants to meet both federal and state goals for sustainable fisheries management under the MSA and other applicable state and federal laws.

This led to the creation of the Pacific States Marine Fisheries Commission, and later PacFIN and RecFIN databases.



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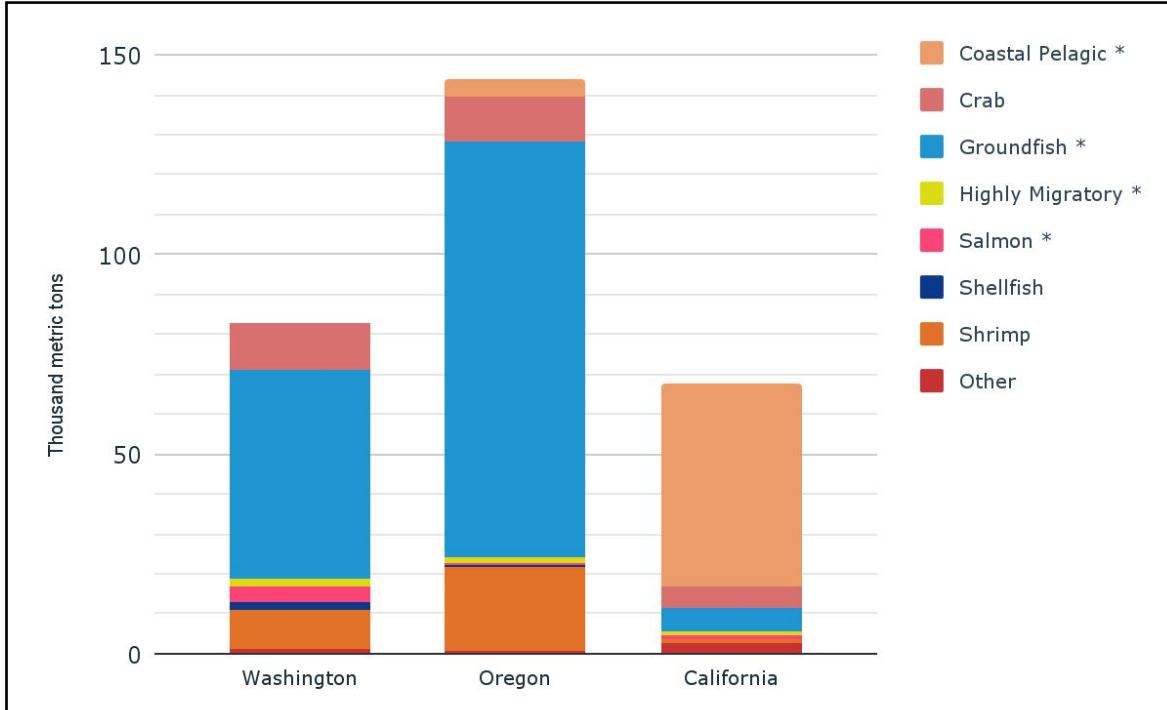


Figure 7. Commercial landings of west coast species, by management group and state, 2021. Page 21.

Source: PacFIN 2022a

Notes: In addition, at-sea retained catch totaled 140.3 thousand metric tons, primarily (99%) groundfish (Pacific whiting).

* indicates Federally-managed species.

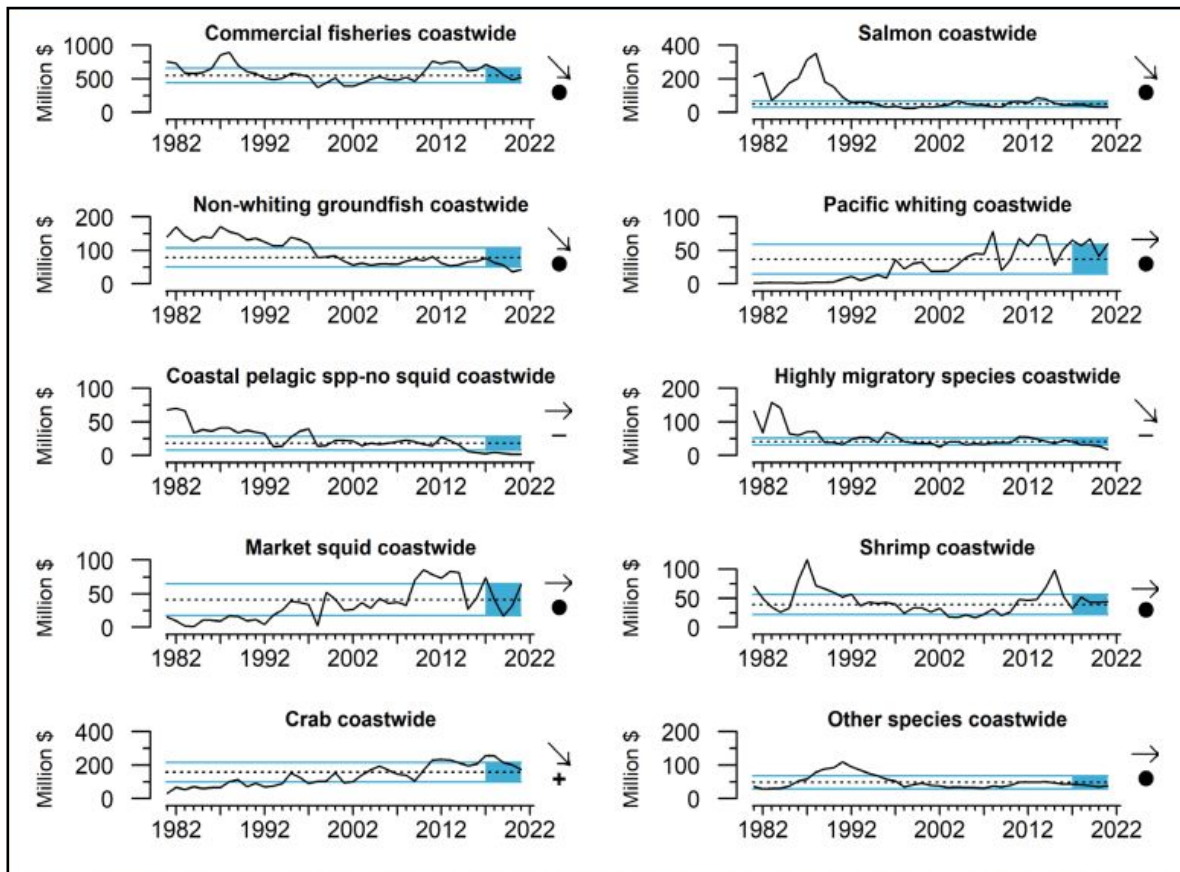


Figure 8. Annual ex-vessel value of west coast commercial fisheries, 1982-2021 (\$2021). Page 22.

Source: NOAA 2022c (Figure O.2.1. Created using PacFIN, which provides data from 1980 to current year, by state and species, accessible using a query tool <https://pacfin.psmfc.org/home/>).



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NMFS' Coastal Community Social Vulnerability Indicators

- Fishing Engagement and Reliance
- Environmental Justice
- Climate Change
- Economics
- Gentrification

Figure 12. Commercial fishing engagement, CA, 2019

Source: NMFS <https://www.st.nmfs.noaa.gov/data-and-tools/social-indicators/>

Note: Commercial fishing reliance is also available.



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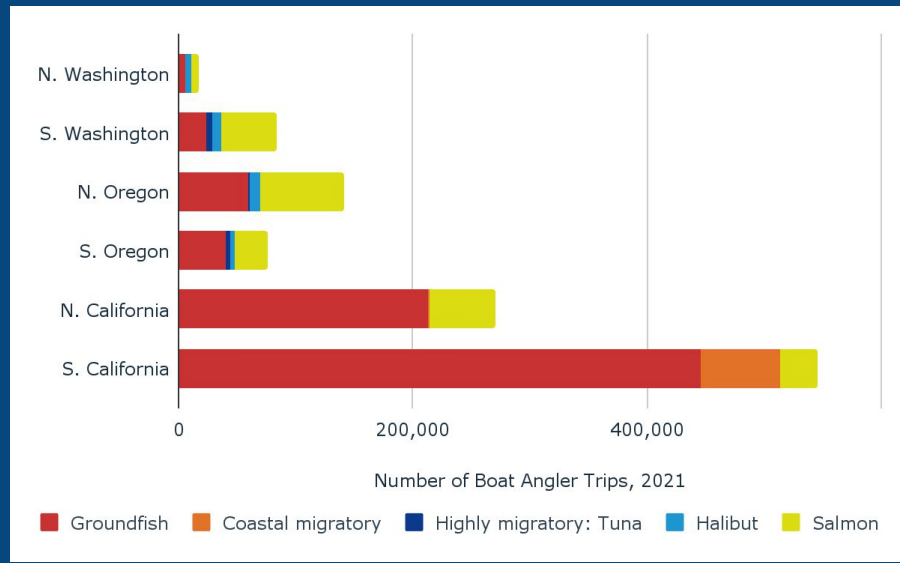


Figure 21. Recreational boat angler fishing trips, by trip type (target species management group) and state subregion, 2021. Pg 48.

Sources: PFMC 2022i; PFMC 2023; RecFIN 2023b

Note: Pacific halibut target trip data not available for California.

**Figure 15. West Coast recreational fishing
Recreational anglers, fishing effort, catch, target
species, and trip spending. Pg 43.**

Source: Su Kim [graphic design], NWFSC/NOAA 2023.

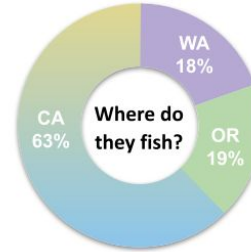
WEST COAST RECREATIONAL FISHING

The anglers

15% of U.S. saltwater anglers fish on the West Coast.



65% of anglers live in West Coast counties.



Sources: NOAA 2023 Fisheries Economics of the US 2020 (U.S. residents from in/out-of-state, 2018); Outdoor Foundation and Recreational Boating & Fishing Foundation 2022 (2022 Special Report on Fishing)

The effort

Each dot represents about 60,000 boat angler trips in 2021.

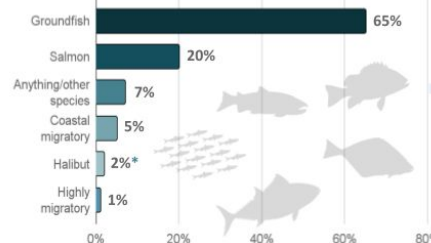
10 out of 20 boat angler trips are off southern California.

The catch

Almost 6.9 million fish in 2021 caught from boats.

The target

Percentage of boat angler trips per target management group.



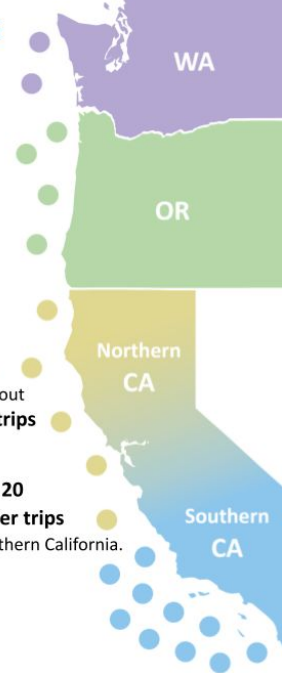
Source: RecFIN, PFMCx
*CA halibut effort is not available

The spend

Total trip spending by anglers: At least \$762 million in 2019 for fuel, bait, ice, charter or guide fees, etc. (2021 dollars)

Source: NOAA 2022x Fisheries Economics of the US 2019 (\$2021)
Does not include spending by anglers fishing off the shores of Washington and Oregon (data unavailable)

Source: RecFIN, PFMCx (not spatially explicit beyond WA, OR, northern and southern CA subregions)



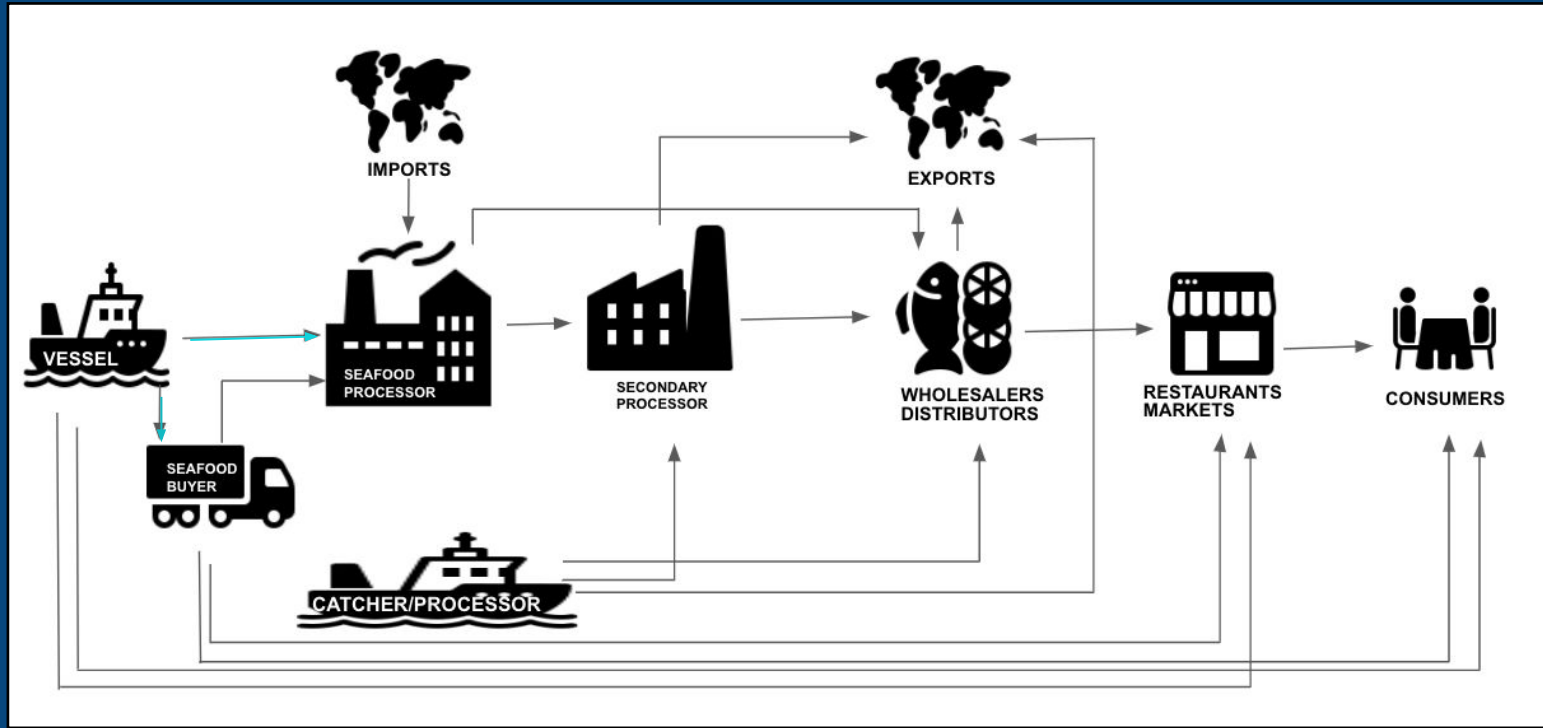


Figure 13. Seafood product distribution chain. Pg 38.

Source: Figure developed based on Figure 3 in “Description of the U.S. West Coast Commercial Fishing Fleet and Seafood Processors” (PSMFC 2000).



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Section 5: Fisheries Socioeconomic Impact Assessment and Methods

- Fisheries data are collected for fisheries management
- Fisheries socioeconomic analyses conducted by NMFS are required to support NEPA, RIR, RFA, and to varying degrees under the MSA, NEPA, ESA, and other applicable laws



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Data type	Purpose	Administrator	PacFIN holds the data?	Coverage depends on fishery?	Major advantages	Major issues	Fisheries
Fish tickets (landings records)	Landings records	State DFWs and PacFIN	yes	no	Record for all landings; also be used to identify shore-based buyers; records revenue	Multiple tickets/trip Multiple trips/ticket Target or fishery not specified Fishing area ID only for CA If no landings there is no record	All landings
Logbooks	Trip records	State DFWs NMFS PacFIN	some	yes	Contemporaneous information; usually spatial information	Some are on paper; compliance varies; Information varies; QA/QC varies;	Variable
Permits	Permitting participation	State DFWs NMFS Regional office	some	yes	Record for all permitted vessels	Some open access fisheries do not require permits	All fisheries that require permits
Observer records	Bycatch and catch records	NMFS Regional office/Northwest Fisheries Science Center	no	yes	Contemporaneous, spatial and temporal information; full QA/QC	Full coverage only for specific fleets	Full coverage on for Groundfish IFQ, At-sea whiting, HMS; partial coverage for variety of other fisheries detailed in https://doi.org/10.25923/ky3a-g655
Electronic monitoring data	Bycatch and catch records without human observer	NMFS Regional office	yes	yes	Contemporaneous, spatial and temporal information; full QA/QC	Video data used for compliance monitoring	Select vessels in at-sea whiting, groundfish IFQ, as detailed in https://www.fisheries.noaa.gov/west-coast/resources-fishing/electronic-monitoring-west-coast
Vessel Monitoring System (VMS)	Area and time-based enforcement	NOAA Office of Law Enforcement	no, but acquired for research	yes	Very frequent spatial information	Target or fishery not specified reliably; gaps in data	Coverage of fisheries is incidental, other than groundfish, non-groundfish trawl, and drift-gillnet vessels, as detailed in https://www.fisheries.noaa.gov/national/enforcement/regional-vessel-monitoring-information#west-coast .
Economic Data Collections (EDC)	Economic analysis	NMFS Northwest Fisheries Science Center Economics and Social Science Program	no	yes	Complete annual economic information; Full QA/QC; economic information on land-based and at-sea processors that purchase groundfish	Required of all vessels and processors annually but 3 year lag	Groundfish catch share program participants only https://dataexplorer.northwestscience.fisheries.noaa.gov/fisheye/About.html
Cost-earnings surveys	Economic analysis	NMFS Northwest and Southwest Fisheries Science Centers	no	yes	Provide basis for cost and earnings profiles of vessels	Voluntary; Every several years (funding dependent)	Limited Entry and Open Access sectors: Groundfish, salmon, crab, shrimp, swordfish, coastal pelagics
Groundfish Social Surveys	Social and cultural analysis	NMFS Northwest Fisheries Science Center	no	yes	Detailed interview and long-form questionnaire	Voluntary; Snowball survey design; every ~5 years (funding dependent)	Groundfish IFQ Program only https://www.fisheries.noaa.gov/west-coast/socioeconomics/west-coast-groundfish-trawl-fishery-social-study
Fishing Participation Social Survey	Social and cultural analysis	NMFS Northwest Fisheries Science Center	no	yes	Detailed questionnaire	Voluntary; Permit-based sample design; conducted twice (funding dependent)	All
Automatic Identification System (AIS)	Location tracking	US Coast Guard	no	yes	Frequent ping rate	Size/format makes it unwieldy; must be matched with other data to determine if fishing vessel; no fishery information	Vessels >65ft starting 3/1/2016; vessels >300GT

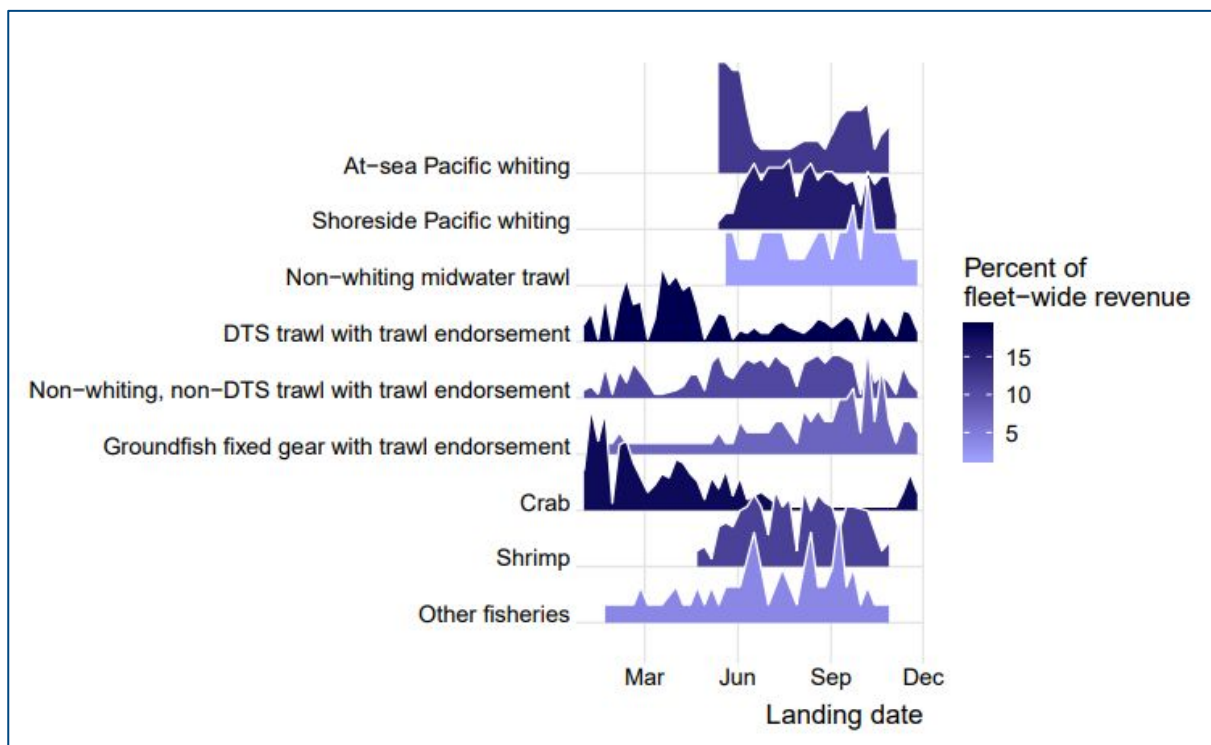


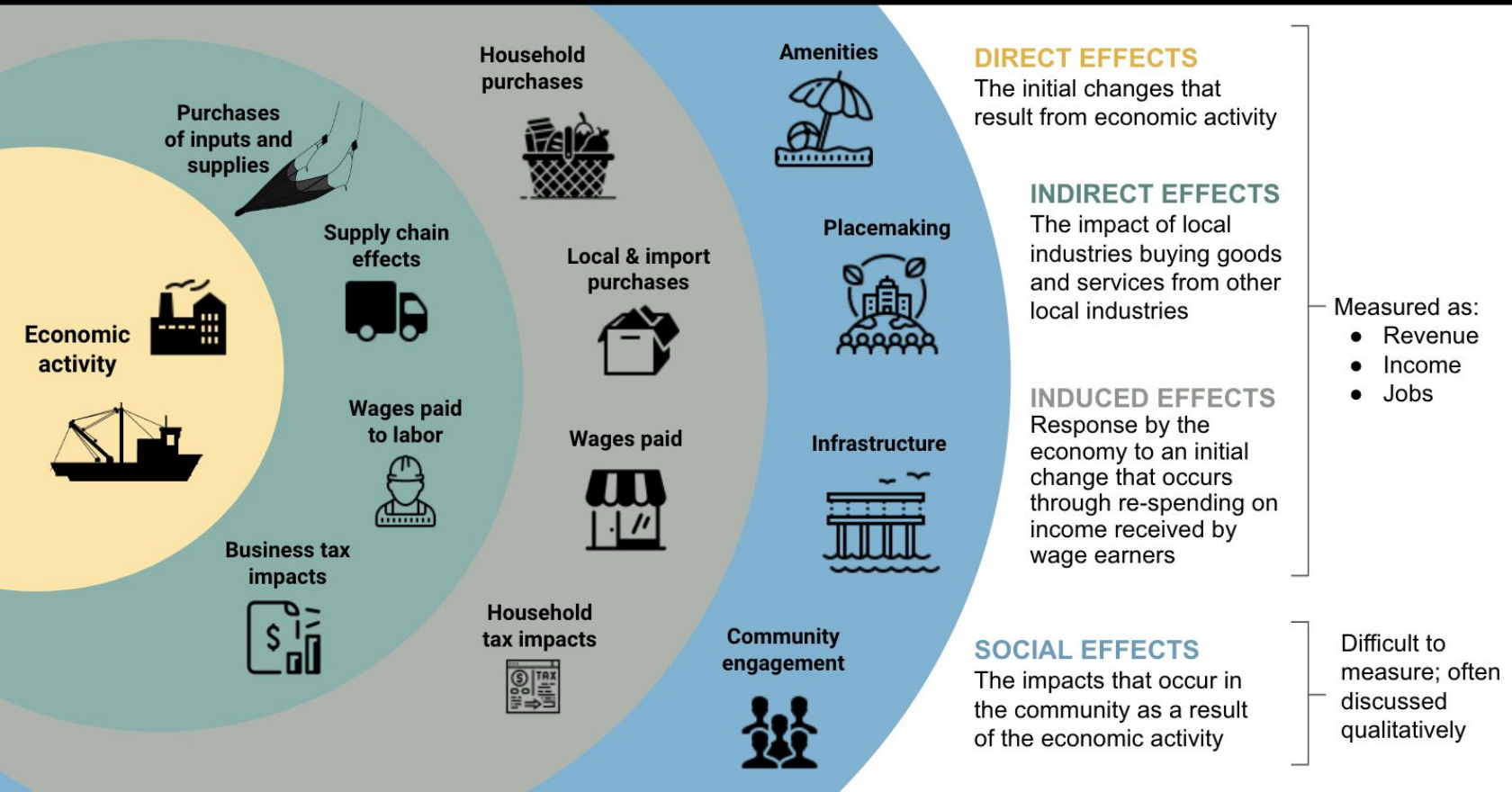
Figure 29. Proportion of trips by week within each fishery that also participates in the groundfish catch share program, 2016. Pg 75.

Darker blue indicates a higher proportion of fleet-wide revenue and lighter blue indicates a lower proportion of revenue.
Source: Reprinted from Steiner 2019.



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HOW DOES THE EFFECT OF AN ECONOMIC ACTIVITY GET TRANSMITTED THROUGH THE ECONOMY?



**Figure 32.
Pg 79.**

Source:
[NWFSC/
NMFS] Su Kim
[graphic
design];
adapted from
Implan



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Table 29. Comparison of socioeconomic analyses in two proposed fisheries management actions. Pg 82.

	Groundfish Essential Habitat	Yelloweye Rockfish Management
Type of Analyses	Primarily qualitative due to limited data; likely direction and magnitude of effects [4.1.2.1]	Quantitative and qualitative
Fisheries	Commercial, tribal [p. 4-12]	Commercial, recreational, tribal
Metrics	Commercial effort (hours), landings, ex-vessel revenue	Commercial ex-vessel revenue, income and employment impacts (by community*); recreational effort, income and employment impacts (by community group); tribal landings
Data Sources	PacFIN, vessel logbooks	PacFIN, RecFIN, vessel cost earnings surveys, recreational expenditure
Models Used	None	PFMC Groundfish Management Team commercial catch and recreational fishing effort (angler trips) projection models, landings distribution model, IOPAC



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Additional data needs to support OSW analyses:

Data likely needed but is not currently in a publicly available form:

- number and location (port) of commercial fishing vessels
- commercial fishing vessel lengths
- location of offshore commercial fishing effort
- number and location of fish buyers
- revenue of fish buyers

Data likely needed but new data collections would need to be designed:

- number and location (port) of recreational fishing vessels
- location of offshore recreational fishing effort
- characteristics of recreational fishing vessels
- number of land-based (shore/jetty) recreational fishing trips in Oregon and Washington
- operational costs for non-groundfish fisheries
- number, location, and characteristics of fish processing facilities



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