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Economic Status of the Pacific Hake Fishery, 2009–23

April 2025

U.S. DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration
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Northwest Fisheries Science Center

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NOAA FISHERIES

Economic Status of the Pacific Hake Fishery, 2009–23

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U.S. DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northwest Fisheries Science Center

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Plain Language Summary

The Northwest Fisheries Science Center (NWFSC) collects economic data and generates economic performance metrics for many U.S. West Coast fisheries, including the Pacific hake (a.k.a. whiting) fishery. This fishery consists of catcher vessels that deliver to shorebased processors and at sea to motherships (floating processors), as well as catcher–processors that both catch and process Pacific hake. This information is used in many contexts, including the annual Pacific hake stock assessment,[1] biennial harvest specifications,[2] Regulatory Flexibility Act (RFA) reviews and regulatory impact analyses,[3] as well as Congressional briefings. This report contains time series of each of these economic performance metrics by sector and important information about the sources of data and caveats for interpreting the information. More detailed metrics and statistics about this fishery can be found in NWFSC's interactive data explorer tool.[4]

[1] https://s3.amazonaws.com/media.fisheries.noaa.gov/2025-02/Status-Pacific-Hake-whiting-US-and-Canadian-waters-2025.pdf
[2] https://www.pcouncil.org/documents/2022/08/draft-management-measure-analytical-document-the-preferred-alternative-september-2022.pdf/
[3] https://www.federalregister.gov/documents/2024/04/30/2024-09220/magnuson-stevens-act-provisions-fisheries-off-west-coast-states-pacific-coast-groundfish-fishery
[4] https://connect.fisheries.noaa.gov/Whiting/

Abstract

The Northwest Fisheries Science Center collects economic data and generates economic performance metrics for many U.S. West Coast fisheries, including the Pacific hake fishery. This fishery consists of catcher vessels that deliver to shorebased processors and at sea to motherships (floating processors), as well as catcher–processors that both catch and process Pacific hake. In 2023, the fishery produced $180 million of wholesale seafood product. Many products are derived from Pacific hake, including fillets, headed-and-gutted, surimi, fishmeal, and fish oil, among others. These seafood products are consumed in the United States and also exported to other countries in North America, Europe, Africa, Asia, and the Caribbean.

Summary

The U.S. Pacific hake (a.k.a. Pacific whiting) commercial fishery consists of three sectors: 1) catcher vessels that deliver to shorebased processors, 2) catcher vessels that deliver to floating processors (motherships) at sea, and 3) catcher–processors. All three sectors are part of the West Coast Groundfish Trawl Catch Share Program, which consists of cooperatives for the mothership and catcher–processor sectors and an individual fishing quota program for the shorebased sector (which also includes fishing for non-whiting groundfish with trawl permits). In 2023, the catcher vessel fleet consisted of 31 vessels (Table 1, Figure 1), of which 17 delivered catch to motherships and 27 to shorebased processors. There were seven shorebased processors, four mothership vessels, and ten catcher–processor vessels.

The total economic contribution of the Pacific hake fishery on the U.S. West Coast in 2023 was approximately $210 million in income (Table 2, Figure 2) and 3,877 jobs (Table 3, Figure 3). Over $72.8 million in total labor costs were paid in 2023 in the Pacific hake fishery (Table 4, Figure 4). This includes wages paid to fishing crew, captains, and processing plant workers.

The total ex-vessel revenue received by catcher vessels was $25.5 million in 2023, including $19.3 million from the shorebased sector and $6.2 million from the mothership sector (Table 5). The estimate of the total ex-vessel value of all Pacific hake caught on the U.S. West Coast (excluding tribal catch) was $46.5 million (Table 6).

The total production value of all Pacific hake-based products in 2023 was $180 million (Table 7, Figure 5, Table 8, Figure 6). This represented 89,200 metric tons of product. The types of products produced vary by sector; headed-and-gutted made up 53% of production value in the shorebased sector, surimi and fillets made up 72% in the mothership sector, and frozen whole/round and surimi made up 70% in the catcher–processor sector. Other products included frozen-in-the-round, fish oil, and fishmeal.

The value of Pacific hake exports was $126 million in 2023, including to Lithuania, Netherlands, and Spain, which together make up about 51% of the total (Table 9, Figure 7). This does not include some non-species specific products such as fishmeal or fish oil.

Tables and Figures

Table 1. Number of catcher vessels, shorebased processors, motherships, and catcher–processors participating in the Pacific hake fishery. Catcher vessels include vessels delivering to motherships or shorebased processors (or both).

Year	Catcher vessels	Shorebased processors	Motherships	Catcher–processors
2009	41	12	6	5
2010	41	12	6	6
2011	31	9	5	9
2012	29	8	5	9
2013	29	8	5	9
2014	30	8	5	9
2015	26	8	3	9
2016	28	8	6	9
2017	29	8	4	9
2018	30	8	5	9
2019	32	7	6	9
2020	33	7	5	10
2021	30	7	5	10
2022	32	7	6	9
2023	31	7	4	10

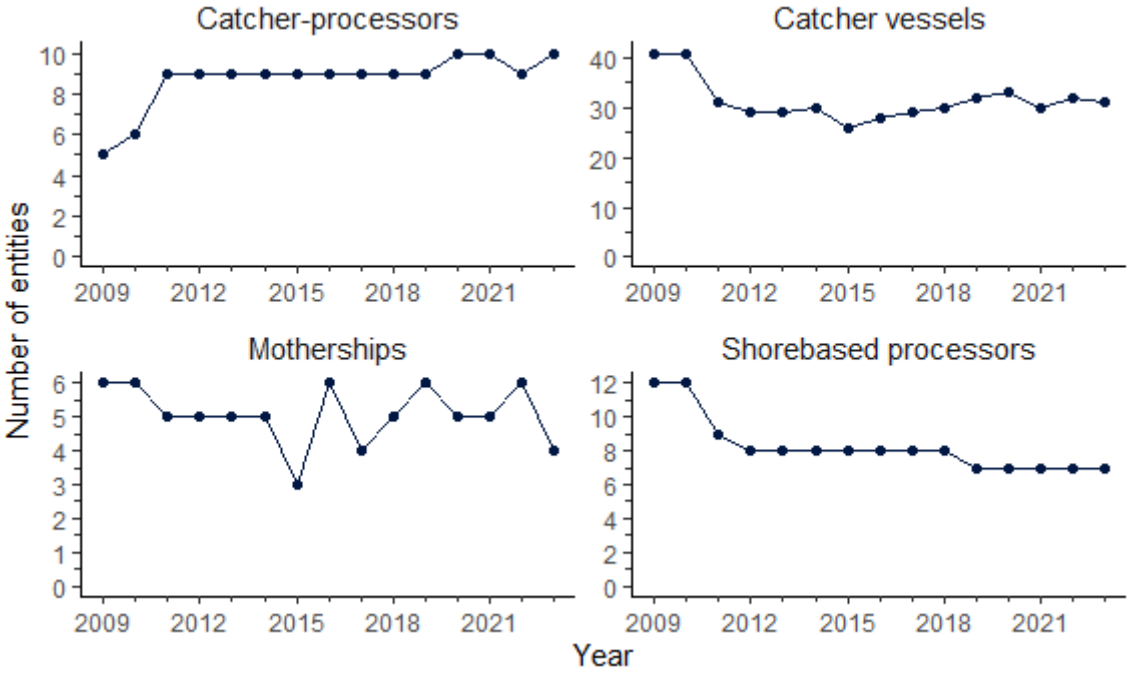

Figure 1. Number of catcher–processors, catcher vessels, motherships, and shorebased processors participating in the Pacific hake fishery. Catcher vessels include vessels delivering to motherships or shorebased processors (or both).

Table 2. Total income contributions (in millions of 2023 USD) to the U.S. West Coast economy by each component of the U.S. Pacific hake fishery. Catcher vessels include vessels delivering to motherships or shorebased processors (or both).

Year	Catcher vessels	Shorebased processors	Motherships	Catcher–processors	Total
2009	14.5	62.6	23.8	58.6	159.5
2010	28.9	41.9	35.3	104.2	210.1
2011	57.4	83.4	43.6	102.6	286.9
2012	48.1	61.3	30.6	87.3	227.3
2013	64.8	83.1	36.6	116.3	300.8
2014	59.9	73.1	46.7	175.0	354.7
2015	24.7	39.2	20.4	106.2	190.4
2016	39.2	53.5	49.6	146.3	288.6
2017	61.1	98.4	83.1	177.6	420.2
2018	53.8	100.8	52.2	171.2	378.0
2019	61.7	122.8	44.8	184.0	413.3
2020	42.6	135.7	16.1	186.7	381.1
2021	46.6	108.2	26.1	188.7	369.6
2022	49.9	63.2	52.5	141.3	306.9
2023	28.0	74.6	14.1	93.7	210.4

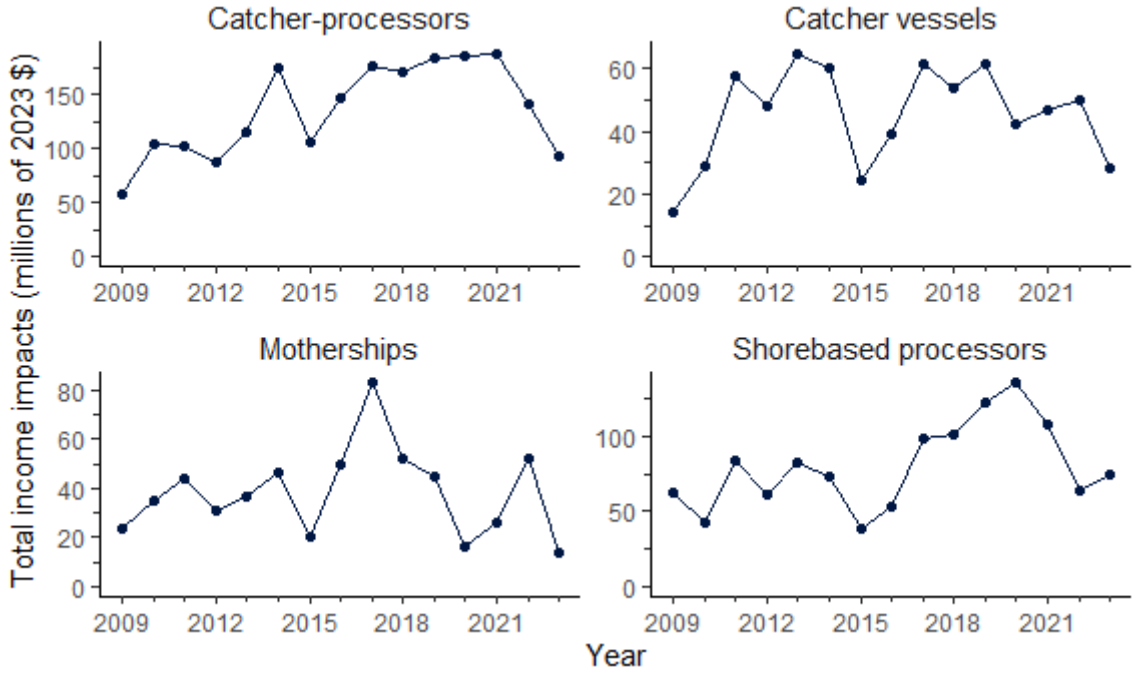

Figure 2. Total income contributions (in millions of 2023 USD) to the U.S. West Coast economy by each component of the U.S. Pacific hake fishery. Catcher vessels include vessels delivering to motherships or shorebased processors (or both).

Table 3. Total employment contributions (number of jobs) to the U.S. West Coast economy by each component of the U.S. Pacific hake fishery. Catcher vessels include vessels delivering to motherships or shorebased processors (or both).

Year	Catcher vessels	Shorebased processors	Motherships	Catcher–processors	Total
2009	239	1,296	877	826	3,237
2010	322	822	885	1,067	3,095
2011	415	1,343	709	1,480	3,948
2012	381	932	709	1,466	3,488
2013	443	1,391	704	1,590	4,129
2014	447	1,073	906	1,802	4,228
2015	245	694	470	1,569	2,978
2016	319	721	864	1,707	3,611
2017	419	1,411	999	1,856	4,685
2018	407	1,240	805	1,885	4,337
2019	484	1,497	923	1,920	4,825
2020	366	1,411	636	2,044	4,457
2021	390	1,221	749	2,081	4,442
2022	461	986	939	1,941	4,327
2023	347	1,168	524	1,838	3,877

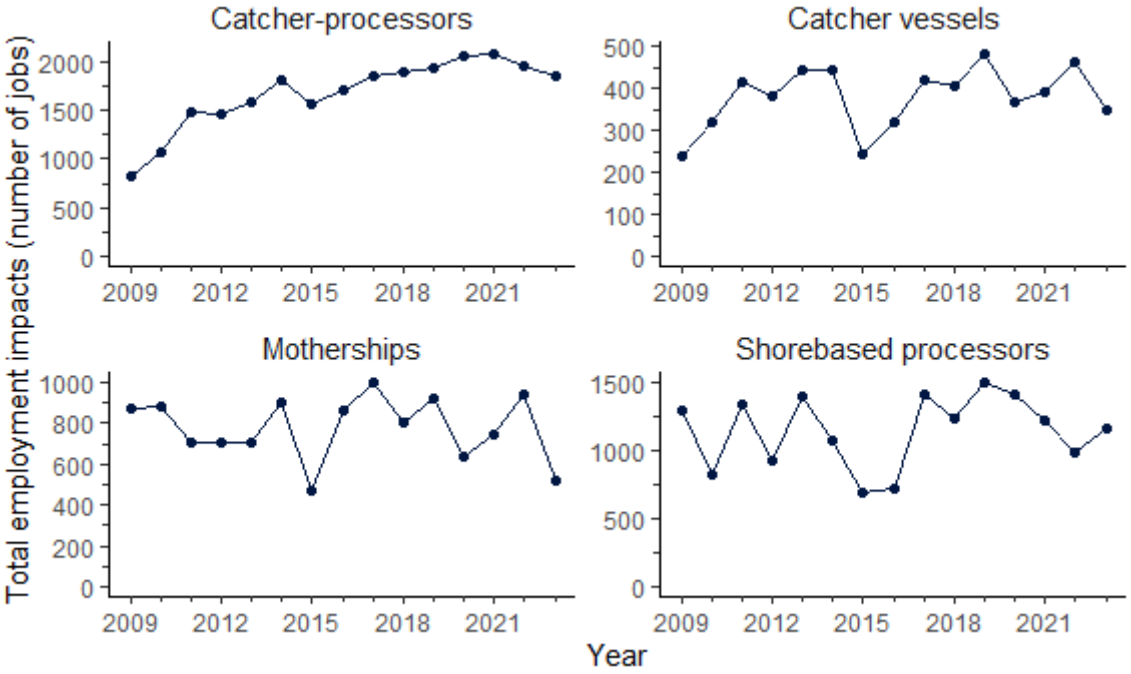

Figure 3. Total employment contributions (number of jobs) to the U.S. West Coast economy by each component of the U.S. Pacific hake fishery. Catcher vessels include vessels delivering to motherships or shorebased processors (or both).

Table 4. Total direct payments (in millions of 2023 USD) to crew, captains, and processing employees within the U.S. Pacific hake fishery. Catcher vessels include vessels delivering to motherships or shorebased processors (or both).

Year	Catcher vessels	Shorebased processors	Motherships	Catcher–processors	Total
2009	4.0	11.1	5.8	10.0	31.0
2010	7.3	8.8	7.7	14.8	38.7
2011	13.3	19.1	10.0	16.1	58.5
2012	12.9	14.9	8.0	15.1	50.8
2013	14.9	20.7	9.0	17.1	61.7
2014	15.5	18.9	11.2	25.3	71.0
2015	6.1	14.9	6.2	17.4	44.7
2016	9.5	18.5	12.8	24.0	64.8
2017	14.5	34.3	10.2	32.9	92.0
2018	13.1	31.7	12.3	29.4	86.4
2019	16.2	42.5	11.5	25.8	95.9
2020	12.5	40.7	7.2	26.9	87.3
2021	12.0	40.4	6.8	24.4	83.6
2022	14.3	35.0	10.7	32.7	92.9
2023	9.1	36.1	4.8	22.7	72.8

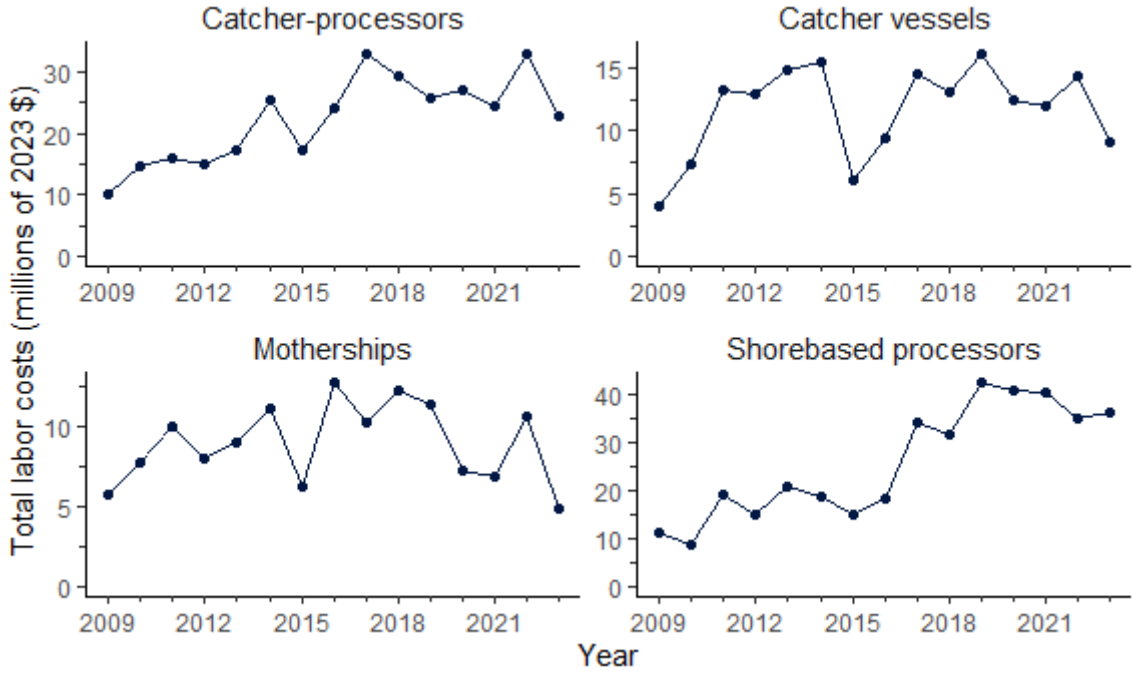

Figure 4. Total direct payments (in millions of 2023 USD) to crew, captains, and processing employees within the U.S. Pacific hake fishery. Catcher vessels include vessels delivering to motherships or shorebased processors (or both).

Table 5. Reported ex-vessel revenue (in millions of 2023 USD) for catcher vessels that deliver to shorebased processors (source: Pacific Fisheries Information Network) and motherships (source: Economic Data Collection Program). The total reflects the reported total ex-vessel value of all Pacific hake catch. The catcher–processor sector is excluded because there is no ex-vessel transaction (see the discussion on ex-vessel revenue under Data Sources).

Year	Shorebased processors	Motherships	Total
2009	7.5	5.8	13.3
2010	13.7	11.5	25.2
2011	30.1	14.9	45.0
2012	27.4	11.8	39.2
2013	34.3	14.5	48.8
2014	30.9	15.9	46.8
2015	13.1	7.0	20.1
2016	17.0	13.2	30.2
2017	30.7	14.0	44.8
2018	26.8	14.5	41.3
2019	35.3	12.7	48.0
2020	23.3	9.2	32.5
2021	27.1	8.7	35.8
2022	25.6	15.5	41.1
2023	19.3	6.2	25.5

Table 6. Estimated ex-vessel revenue (in millions of 2023 USD) for at-sea sectors and reported shorebased ex-vessel revenue (source: Pacific Fisheries Information Network). Total reflects the total estimated ex-vessel value of all Pacific hake catch, valued at the ex-vessel prices of shorebased deliveries. Catcher vessels include vessels delivering to motherships or shorebased processors (or both; see the discussion on ex-vessel revenue under Data Sources).

Year	Shorebased processors	Motherships	Catcher–processors	Total
2009	7.5	3.7	7.2	18.4
2010	13.7	9.1	14.1	36.9
2011	30.1	17.6	24.4	72.2
2012	27.4	15.0	22.0	64.4
2013	34.3	19.1	28.7	82.0
2014	30.9	19.3	32.0	82.2
2015	13.1	5.5	14.0	32.5
2016	17.0	15.2	26.5	58.6
2017	30.7	13.9	30.1	74.7
2018	26.8	13.3	23.5	63.6
2019	35.3	12.5	28.2	76.0
2020	23.3	6.2	18.9	48.5
2021	27.1	8.4	29.7	65.2
2022	25.6	14.5	31.7	71.8
2023	19.3	6.3	20.9	46.5

Table 7. Total production value (in millions of 2023 USD) by sector within the U.S. Pacific hake fishery. Note: production value reflects the value when leaving the processing facility; it does not necessarily reflect the final sale value, depending on the corporate structure of the company.

Year	Shorebased processors	Motherships	Catcher–processors	Total
2009	64.4	24.9	44.9	134.2
2010	45.1	38.8	74.1	158.0
2011	94.1	51.6	79.4	225.2
2012	70.8	39.7	66.8	177.3
2013	95.9	45.9	83.7	225.5
2014	90.6	57.7	125.8	274.0
2015	45.4	25.5	80.5	151.4
2016	58.1	53.6	109.2	220.9
2017	103.2	53.2	130.2	286.6
2018	100.8	56.3	126.6	283.6
2019	125.7	48.1	132.3	306.0
2020	121.2	31.1	134.2	286.5
2021	105.0	32.9	133.9	271.8
2022	74.4	56.3	108.2	238.8
2023	78.8	21.7	79.5	179.9

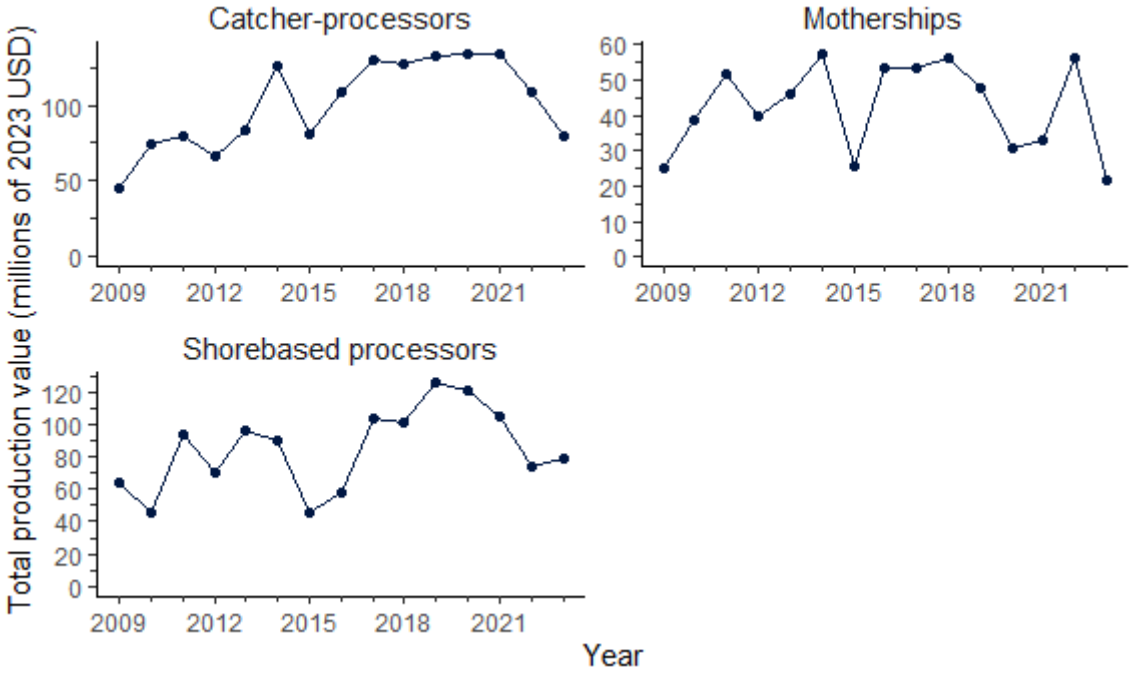

Figure 5. Total production value (in millions of 2023 USD) by sector within the U.S. Pacific hake fishery. Note: production value reflects the value when leaving the processing facility; it does not necessarily reflect the final sale value, depending on the corporate structure of the company.

Table 8. Production value (in millions of 2023 USD) by product type within the U.S. Pacific hake fishery. Data designated as confidential are replaced with —. Note: production value reflects the value when leaving the processing facility; it does not necessarily reflect the final sale value, depending on the corporate structure of the company.

Year	Fillet	Frozen whole/round	Minced	Surimi	Fishmeal	Headed and gutted	Other
2009	39.5	—	6.5	24.4	4.4	56.4	1.0
2010	38.7	1.7	10.2	67.0	7.5	31.9	0.9
2011	57.5	14.8	10.1	67.6	9.2	62.4	3.5
2012	39.8	6.4	5.9	73.3	9.3	40.5	2.2
2013	73.6	8.9	3.7	63.0	7.3	64.9	4.1
2014	88.3	3.2	6.5	105.3	14.8	50.9	5.0
2015	44.1	5.6	3.9	64.0	10.3	23.0	0.5
2016	58.5	2.6	10.2	100.4	15.9	31.2	2.0
2017	77.9	22.4	6.6	105.9	16.3	52.7	4.8
2018	75.7	22.0	5.2	107.3	13.0	53.7	6.7
2019	94.2	22.5	5.3	108.3	9.6	52.6	13.6
2020	74.5	45.5	7.3	94.7	9.3	45.5	9.7
2021	52.6	46.8	4.3	90.2	8.2	64.3	5.4
2022	68.2	36.4	6.9	82.3	10.3	29.2	5.5
2023	36.3	32.4	6.0	55.4	6.4	41.8	1.7

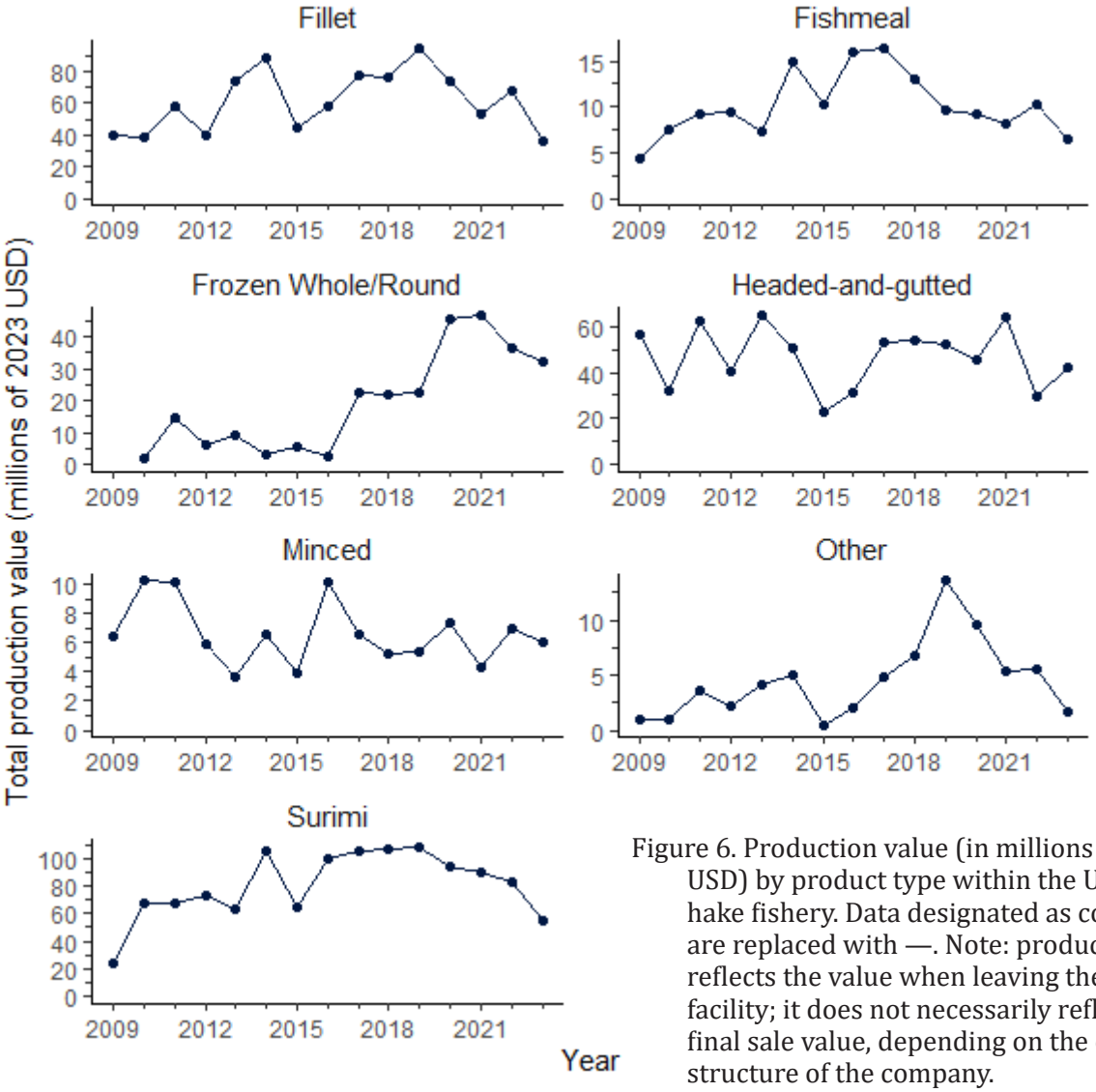

Figure 6. Production value (in millions of 2023 USD) by product type within the U.S. Pacific hake fishery. Data designated as confidential are replaced with —. Note: production value reflects the value when leaving the processing facility; it does not necessarily reflect the final sale value, depending on the corporate structure of the company.

Table 9. Pacific hake export volume (in kg) and value (in 2023 USD) to countries that imported at least a half million U.S. dollars in U.S. Pacific hake in 2023. Source: NOAA Fisheries One Stop Shop.

Country	Weight (kg)	Value ($)
Lithuania	15,420,051	28,641,006
Netherlands	8,879,719	28,282,444
Spain	4,588,545	14,740,352
Nigeria	9,655,883	12,190,074
Ukraine	6,247,541	11,714,191
Italy	2,710,232	10,140,293
Germany	1,615,101	4,503,812
Ghana	1,632,449	1,919,384
South Africa	810,584	1,653,315
Benin	1,347,690	1,632,132
Montenegro	830,830	1,584,898
Canada	676,187	1,314,390
Georgia	651,130	1,161,327
Congo (Brazzaville)	718,200	748,724
Croatia	329,280	609,168

*Additional countries that imported U.S. Pacific hake: Ivory Coast, Equatorial Guinea, South Africa, Mexico, Croatia, Lebanon, Dominican Republic, Serbia, United Arab Emirates, Bulgaria, Albania, Denmark, Angola, Guinea, Bermuda, Cameroon, Azerbaijan, Jordan, Greece, Slovenia, Moldova, Curacao, Montserrat, and Anguilla.

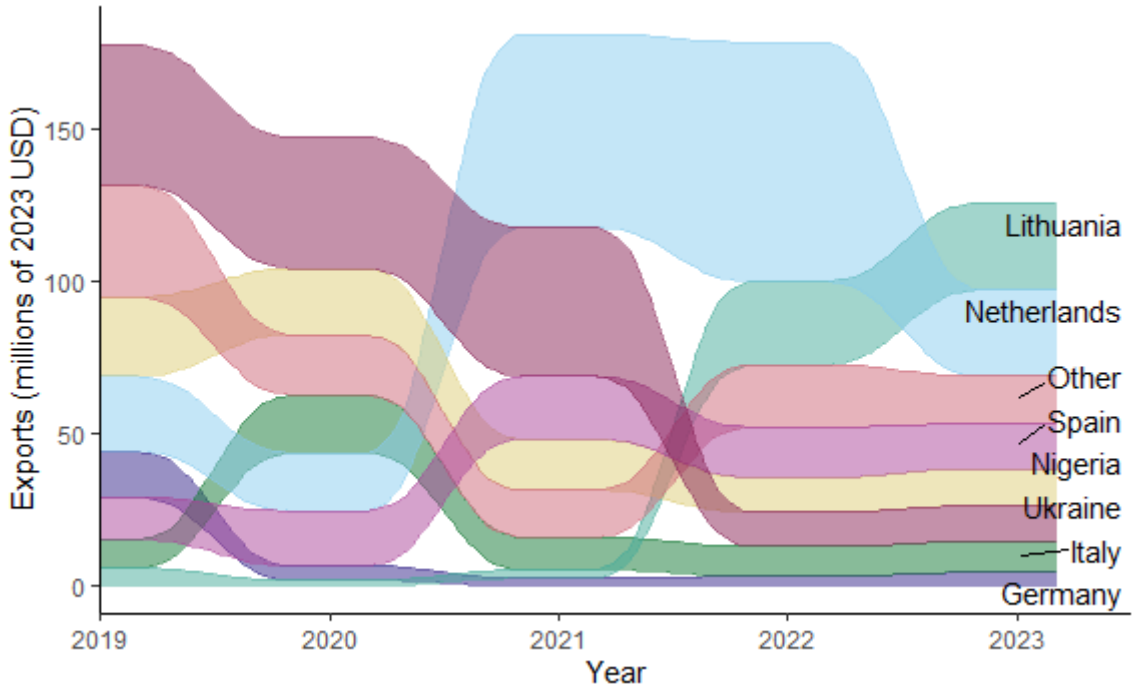

Figure 7. Total exports (in millions of 2023 USD) of Pacific hake by import country.

Data Sources

Data for this report were obtained via the Northwest Fisheries Science Center's (NWFSC) Economic Data Collection (EDC) Program, the NOAA Fisheries One Stop Shop (FOSS), and the Pacific Fisheries Information Network (PacFIN; Table 10).[1] Economic contributions were estimated using the Input–Output Model for West Coast Fisheries (IO-PAC; Leonard and Watson 2011).

Table 10. Data sources for each metric.

Metric	Source	Estimated or Reported
Labor costs	EDC	Reported
Exports	FOSS	Reported
Economic contributions	IO-PAC	Estimated
Production value	EDC	Reported
Ex-vessel value (shorebased)	PacFIN	Reported
Ex-vessel value (mothership)	PacFIN/EDC	Estimated/Reported
Ex-vessel value (catcher–processor)	PacFIN	Estimated
Participation	PacFIN	Reported

Expenditure data, including wage payments, and production values were obtained from the EDC Program. The Program collects annual data from catcher vessels, shorebased processors, motherships, and catcher–processors. Detailed information about the data collection and metrics reported can be found in Steiner et al. (2021).

Product export data were obtained through FOSS. This tool aggregates data obtained from the U.S. Census Bureau's Foreign Trade Data Series—Merchandise Trade (FT900). Key information contained in the trade data series includes annual exports by species or species category, port of departure, import country, volume of seafood, and value of seafood (in U.S. dollars). The two primary species-specific product types are "GROUNDFISH HAKE FILLET FROZEN" and "GROUNDFISH HAKE, WHITING FROZEN." There is also a small amount of Pacific hake exported as "GROUNDFISH HAKE FRESH." "FISH NSPF SURIMI"[2] is also included in these data summaries. Pacific hake is also exported as fish oil and fishmeal, but those cannot be linked to Pacific hake using the Census data. Import countries are identified by the bill of lading, which does not report the final destination of the product.

The IO-PAC model was developed at NWFSC to provide estimates of total economic contributions by the commercial and recreational fishing industries (Leonard and Watson 2011). For commercial fishing industries, it customizes the Impacts Analysis for Planning (IMPLAN) regional input–output model with revenue information obtained from PacFIN and cost data obtained through the EDC Program (among other NWFSC cost and earnings data collections).

[1] NWFSC's Trawl Catch Share Data Exploration Tool (Fisheye) is available at https://connect.fisheries.noaa.gov/fisheye/fisheyelandingpage.html. The FOSS portal is available at https://www.fisheries.noaa.gov/foss/f?p=215. Information about U.S. Census Bureau foreign trade data is available at https://www.census.gov/foreign-trade/index.html. The Pacific Fisheries Information Network can be found at https://pacfin.psmfc.org/.

[2] NSPF = not specifically provided for. Source: https://www.census.gov/foreign-trade/reference/definitions/index.html.

Catch data, including ex-vessel revenue, were obtained from PacFIN, which aggregates fish ticket data collected by the three U.S. West Coast states (Washington, Oregon, and California) for shorebased operations, as well as from At-Sea Hake Observer Program (A-SHOP) data for mothership and catcher–processor operations. Catcher vessels were designated as participating in the Pacific hake fishery if they delivered any fish to a mothership on the U.S. West Coast or if they made at least one shorebased delivery where midwater gear was used and Pacific hake made up the highest portion of the total value of the delivery (Steiner et al. 2021). Shorebased processors were designated as Pacific hake processors if they produce Pacific hake-specific products according to production reported on the EDC surveys. If the processor only buys small amounts of Pacific hake as bycatch, or transfers the fish to another facility for processing, it is not designated as a Pacific hake processor. Motherships and catcher–processors are designated as participants if they buy or catch any fish off the U.S. West Coast.

Ex-vessel revenue, the total payments received by catcher vessels for delivering Pacific hake, was obtained from PacFIN for the shorebased catcher vessels and from the EDC Program (Table 5) for catcher vessels delivering to motherships. In the shorebased component of the fishery, ex-vessel revenue was reported via fish tickets by processors throughout the fishing season. In contrast, mothership vessels do not submit fish tickets and therefore no in-season ex-vessel revenue information is collected. The only reporting requirement is to submit total annual fish payments to the EDC Program. The ex-vessel revenue shown in Table 5 is the actual reported ex-vessel revenue for the shorebased and mothership components of the fishery.

Throughout the fishing season, PacFIN generated estimates of the ex-vessel value of both the catch delivered to motherships as well as the catcher–processor catch (Ames 2014). These estimates were modeled by matching the shorebased hake prices in time and space to the at-sea deliveries. The values were estimated for the mothership data because the EDC data were collected on an annual basis and are therefore only available at a two-year lag (ex-vessel revenue from 2022 was not available until the beginning of 2024). In the catcher–processor sector, there is no ex-vessel transaction because a single vessel catches and processes the fish. PacFIN used the same methods for calculating what the ex-vessel value would have been had the fish been landed on shore. These estimates were calculated to provide the total ex-vessel value of catch (regardless of whether an ex-vessel transaction occurred). The estimates for the mothership and catcher–processor sectors, as well as the reported values for the shorebased sector, are reported in Table 6.

The purpose of the estimated ex-vessel value (Table 6) is to provide the total estimated value of fish caught by all sectors. This is a common request from industry, internal and external agencies, Congressional representatives, and the media. It is also important to report ex-vessel revenue (Table 5) as reported directly by the shorebased processors and motherships, because it is the actual payments made to vessels for the catch.

Income, ex-vessel revenue, and production value are reported in 2023 dollars. They were adjusted for inflation using the monthly Gross Domestic Product: Implicit Price Deflator (GDPDEF) time series obtained from the Federal Reserve of Economic Data, accessed via the `fredr` R package.

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