Fishing Industry Economic Activity Trends in the Newport, Oregon Area Update 2019

Technical Report

prepared by

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prepared for

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and
Lincoln County Board of Commissioners

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The report was prepared by The Research Group, LLC (TRG), Corvallis, Oregon. Shannon Davis was the lead author who was greatly assisted by Kari Olsen. The author and not the sponsors is solely responsible for analysis methods, interpretations, and conclusions.

The author draws upon past TRG project reports extensively and advances material in a paraphrasing and non-attributed writing style for readability reasons. When other reports are referenced, full citations are included in a bibliography chapter.

Acknowledgments include Heather Mann (MTC Executive Director) who is recognized for her skilled guidance in getting the project underway. Lincoln County commissioner Kaety Jacobson provided encouragement and useful comments. Harvester and processor representatives, staff at the ports of Newport and Toledo, and State agency personnel are anonymously thanked for their input and direction. The project had two advisors with untiring interest and participation: Gil Sylvia (Marine Resource Economist and retired Oregon State University Coastal Oregon Marine Experiment Station Director), and Caroline Bauman (former Executive Director, Economic Development Alliance of Lincoln County).

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List of Acronyms

ADFG	Alaska Department of Fish and Game
AIS	Vessel Automatic Identification Systems
BEA	U.S. Bureau of Economic Analysis
CFEC	Commercial Fisheries Entry Commission, State of Alaska
COMES	Coastal Oregon Marine Experiment Station
FCSP	Fishing Community Sustainability Plan
FEAM	Fisheries Economic Assessment Model
ft.	feet
GDP	Gross Domestic Product
HMSC	Hatfield Marine Science Center
IO-PAC	input-output model for Pacific Coast fisheries
MOC-P	NOAA Marine Operations Center - Pacific
MSA	Magnuson-Stevens Act
MSI	OSU Marine Studies Initiative
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OAIN	Oregon Agricultural Information Network
OCCC	Oregon Coast Community College
ODFW	Oregon Department of Fish and Wildlife
ORBS	Ocean Recreational Boat Survey
OSU	Oregon State University
PacFIN	Pacific Coast Fisheries Information Network
PFMC	Pacific Fishery Management Council
PSMFC	Pacific States Marine Fisheries Commission
RecFIN	Recreational Fisheries Information Network
RM	river mile
SSHSTRP	Salmon-Steelhead, Halibut, and Sturgeon Tag Return Program
TRG	The Research Group, LLC
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service

I. Introduction

A. Purpose

The purpose of the report is to publicize the role of the fishing industry in the Newport Area economy. Descriptions include current and trend information about the commercial and recreational fishing activity as well as this industry's economic contributions made to the area economy. Industry indicators are not easily garnered from traditional serial data sources. The economic activity is spread across many industry categories and separating the fishing industry associated activity requires modeling and in-depth study. The results will be useful in policy making discussions for making local economic development decisions as well as better understanding risks from environmental changes and proposed state and federal actions (renewable and non-renewable energy development, fisheries management, natural resource conservation initiatives, etc.).

B. Scope

The Newport Area is a regional support center for a very active commercial and marine recreational fishing industry and there is a lot of harvesting/processing, supply, research, education, management, enforcement, etc. activity. The direct activities are:

- Commercial sector activity (landings, vessel and processor counts, harvest and processing value added, etc.), and
- Recreational sector activity (catch, trips, participants, etc. for private and charter modes).
- Local processing can include haul-in purchases from landings made elsewhere on the Oregon Coast. The amounts and labor demands could escape modeling when only considering local landings.
- Some of the Newport commercial fishing fleet participates in distant water fisheries. A portion of those business profits are returns to the local economy. This category includes boat repair and outfitting businesses for vessels that participate in local fisheries and vessels that only participate in Alaska fisheries.
- Unconnected to local vessels, residents serve as vessel crew and work at processors at these distant water fisheries. Wages and fishing permit earnings are returns to the local economy.

There are related and connected businesses and government activities, such as:

- Mariculture,
- Gear manufacturing, financial services, supply services,

- New boat building, and

- Agencies (see this report's List of Acronym): HMSC, NMFS, USFWS, ODFW, NOAA MOC-P, USCG, PacWAVE, etc.

The related and connected activity has a "blue economy" association with the fishing industry. These businesses and agencies have overlap in use of facilities and there are similar maritime supply chains.[1] Information from existing studies is compiled to show this category's contributions to the local economy.

There is also associated activities, such as visitors attracted to the Newport Area due to the working waterfronts and the marine environment (OCM 2018). Visitors are interested in the mix of production (seafood processors, shipping, and related businesses) and consumption (retail gift shops, restaurants, etc.) businesses. There are aquariums and visitor centers located at cities within the Newport Area. The visitors are attracted to witness and learn (history, culture, and culinary tourism segments) as well as observe and advance conservation efforts (ecotourism segment). There are difficulties in quantifying the spending and economic contributions attributed to these tourism industry segments. It would be of interest to assess resident and visitor consumer spending on local harvest products, but a consumer survey and econometric modeling would be necessary. Study time and budget resources did not allow for the assessment.

To put the fishing industry in perspective, the economic contributions are compared to Lincoln County's and the State's other industry income sources. All of this information is treated to give concise but complete coverage for the fishing industry importance.

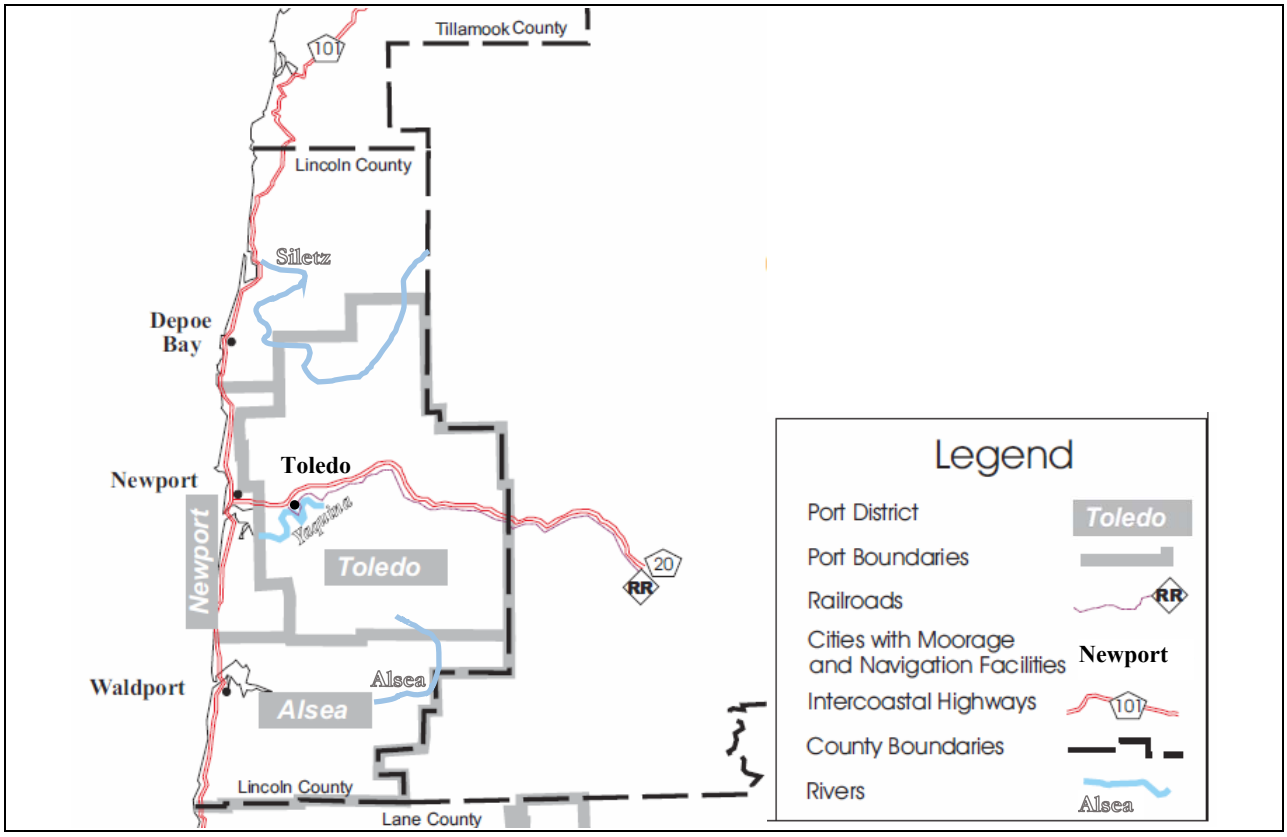
C. Setting

Newport for this project will be used in context as a term that describes economic activity around Yaquina Bay and as a term that encompasses other harbors and communities that are within the local labor market area for the fishing industry.[2] The local labor market area is approximated by Lincoln County boundaries as shown on Map 1. There are three harbors within the group that have commercial fish deliveries. Yaquina Bay and Depoe Bay have deliveries from ocean fishing and Alsea Bay has deliveries from estuary fishing. Toledo is another city on the Yaquina River, but no commercial fish deliveries occur at this location. All of these communities and other places within Lincoln County have businesses that supply both commercial fishing participants and anglers pursuing ocean and inriver recreational fisheries.

Depoe Bay is a city that owns and maintains harbor facilities. Its location is renowned as the smallest harbor in the world. There are 95 slips available to rent in the harbor's only marina (City owned and operated.). There is a launch ramp and fuel services are available. The U.S. Coast Guard (USCG) has year around presence with patrol boats at the harbor. The U.S. Army

1. See Oregon Employment Department (December 2018) for business type definitions.
2. See Chapter II for definition of the term "port group." The definition encompasses port group assignments for all Oregon Coast harbors and rivers.

Map 1
Harbors and Port Districts in Lincoln County



Source: TRG (June 2002) and Study.

Corps of Engineers (USACE) designates the harbor as "shallow draft" with a maintained depth of eight ft. at the entrance and eight ft. inside the navigation channel. Dredging by the USACE occurs periodically when a check dam on Depoe Creek fills with sediment. Commercial fish landings are mostly Dungeness crab and sea urchins. Nineteen vessels made deliveries in 2019 (Table 1, Table 2). No commercial fish processing occurs at Depoe Bay.

Alsea Bay has no waterway improvements at the entrance that would make for safe ocean access. The Port of Alsea owns and maintains a marina which has 20 slips and launch ramp in the lower harbor. There are many other marinas at the middle and upper reaches of tidewater. Commercial fish landings are primarily ghost shrimp and Dungeness crab. Eleven vessels made deliveries in 2019 (Table 1, Table 2). Waldport is a city on the south side of Alsea Bay. No commercial fish processing occurs at Waldport.

Toledo is a city located at river mile (RM) 14.0 on the Yaquina River. The Port of Toledo owns and operates a ship repair and construction yard within the City. There are other boat repair businesses located at the City. The Port owns and maintains a 20 slip marina and transient docks on Depot Slough, a two lane launch ramp on the Yaquina River, and a kayak park on the Yaquina River. The USACE maintains a navigation channel 10 ft. deep from Newport at

approximately RM 4.0 to RM 14.0. The River is regularly surveyed to be eight ft. The channel is generally 150 ft. wide. At Toledo, it extends into Depot Slough and is 200 ft. wide in this area. At RM 14.0, there is a turning basin 350 ft. wide and 500 ft. long. No commercial fish deliveries occur at Toledo. Fish processing businesses have been located at the City from time-to-time.

Newport is a city located on both north and south sides of Yaquina Bay near the Yaquina River's entrance to the Pacific Ocean. The Port of Newport owns property and harbor facilities on both sides of the Bay that includes a shipping dock, 200 slip commercial vessel marina, 500 slip recreational vessel marina, four lane launch ramp, commercial fish offloading dock, and a waterborne commerce shipping dock. There are other private marinas located within the City and upriver. There are many processors on the waterfront that purchase in all major Oregon fisheries. The processors will also handle purchases made at other Oregon harbors that are hauled-in using surface transportation.

Waterway improvements consist of two jetties, an entrance channel 40 ft. by 400 ft., an inner channel and turning basin 30 ft. deep and 900 to 1,200 ft. wide, and an entrance channel to a small boat basin 10 ft. deep. The first authorization was in 1919 and there have been a series of modifications including the South beach small boat basin completed in 1978 (TRG 2002). The USACE designates the harbor as "deep draft" capable of use by oceangoing, self propelled ships in international trade. Dredging activity is concentrated in the ocean entrance channel with lesser dredging activities taking place in the inner channel and turning basin. The entrance channel shoals five ft. or more annually and cessation of dredging would soon lead to severe curtailment of deep draft shipping.

The shipping dock named the Newport International Terminal is uniquely situated and is designed for marine waterborne transportation services. This pier and laydown space is located at one of three ocean deep draft ports in Oregon. The other ocean deep draft ports offering waterborne commerce services are at the Port of Astoria located at the Columbia River entrance and the International Port of Coos Bay located at the southwest Oregon Coast.

The Newport International Terminal is about RM 2.5 and is about a 60 minute transit time from pilot boarding to vessel tie-up. Vessels pass under a Highway 101 bridge that has 135 ft. air draft at low water. Water depth and air clearance limits bulk cargo ships to seawaymax size. The International Longshoremen and Warehouse Union (ILWU) Local 53 provides 10 experienced workers ready for assisting in shipping on/off-loading. Pilotage services for bar crossings are available through the Coos Bay/Yaquina Bay Pilot's Association. The Terminal surface transportation access is via Oregon Highway 20. Shortline rail service terminates at Toledo (10 RM upriver). Rail-to-ocean vessel inter-modal barge transfers between the two ports could be used for cargo shipments. There are no other public or private waterborne commerce docks available for deep draft vessels along the central Oregon Coast.

There are approximately 42 acres of developable land nearby to the Terminal that has had an envisioned use for cargo storage. The Port owns nine acres and has in the past leased the other 33 acres from a private land owner. The Port has recently surrendered the lease because the private land owner has expressed interest in developing it either for other uses or continuing to

make it available for storage. Twenty three of the acres are zoned industrial and the other 19 acres are zoned water dependent. There is a recently announced marine business center to be constructed on a portion of the private land ownership. There has been past negotiations with private businesses who would use a portion of vacant land for raw log queuing for shipments to Asia.

Past Newport waterborne commerce imports and exports were bulk cargo comprised of raw logs and dimension cut timber. There have been no log, containerizable, granular, or liquid shipments since the dock was closed to shipping because of structural deterioration in 2001. The Port completed a structural improvement project in 2014. Commercial fishing vessel berthing and loading/off-loading using a portable crane on the eastern side of the Terminal has been on-going. The Terminal is used for trawler vessel fishing season gear switching, equipment replacements, and provisioning/fueling. Vessels will offload weight on their way to Toledo ship repair facilities. There have been no cargo shipments following the 2014 dock improvement project.

The Port owns uplands on the north side of Yaquina Bay that is leased to a commercial fishing processor, and other public and private agencies. Port owned land on the south side of Yaquina Bay includes 50 acres leased to the Oregon State University Hatfield Marine Science Center and 40 acres to the Oregon Coast Aquarium. The NOAA Marine Operation Center Pacific Fleet (MOC-P) has leased five acres containing parking, buildings, and new berthing docks from the Port. The MOC-P provides centralized management of nine NOAA ships on the West Coast, including Alaska and Hawaii. Yaquina Bay is the permanent homeport for four of these ships. Both the MOC-P and HMSC research and ocean observing activities have expressed interest in using the Newport International Terminal.

Lincoln County harbors are shown in relation to other northern and central Oregon ports on Map 2. The map graphically depicts port landings (symbol size is ex-vessel value amounts) in 2019. The map also depicts commercial fishing vessel location densities based on AIS data in 2017.

D. Report Utility

The fishing industry descriptive information can be used to evaluate tradeoffs when there are competing uses for scarce resources (such as land and capital assets) or fishery management practices. Care must be taken when relying on the information to present balanced descriptions of short and long-term impacts as well as possible adjustment strategies. Economic information can be valuable to decision making when there is forethought in proper data collection, economic modeling, and tradeoff discussions.

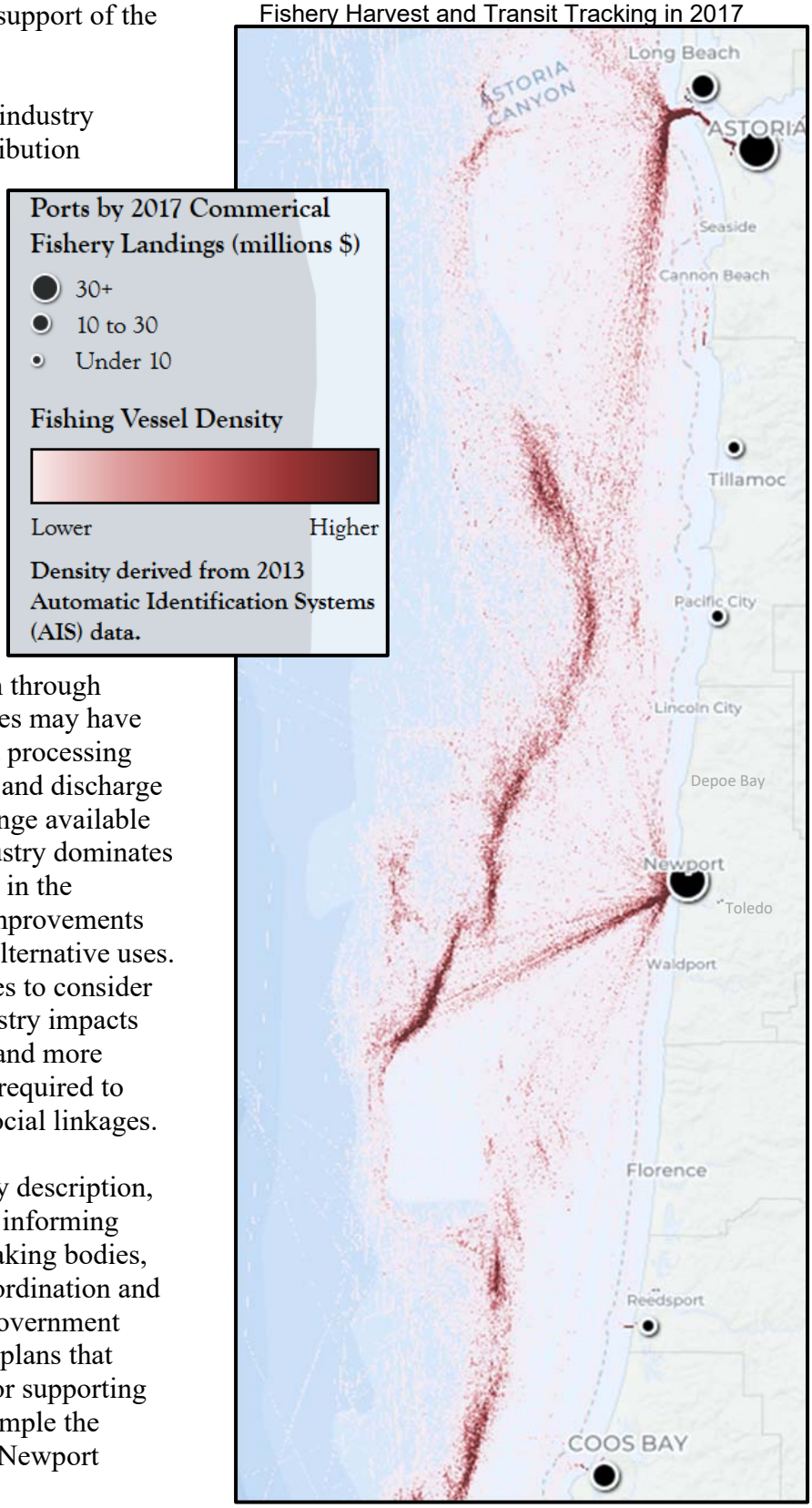
The fishing industry direct and related/connected businesses rely on public infrastructure such as docks and fuel stations (operated and maintained by ports and the City at Depoe Bay) and waterway improvements (jetties, navigation channels, and breakwaters maintained by US Army Corps of Engineers). A collaborative relationship must exist between the public infrastructure providers and the private sector for the fishing industry to thrive. There can be fundamental infrastructure requirements for the continuation and development of a prospering fishing industry in the Newport Area that falling short could signal challenges for industry viability. The report

descriptions will assist public and private investors in making the necessary trade-off decisions for the continued support of the fishing industry.

The report provides fishing industry activity and economic contribution measure descriptions to better understand importance to the Newport Area and state economy. There are even other aspects of economic involvement that deserve mention but study scope did not include modeling. For example, fishing industry businesses add to the local property tax assessment base. In turn, industry workers require housing, transportation facilities, and schools which through property zoning and subsidies may have offsetting impacts. Seafood processing requires a lot of fresh water and discharge treatment which may challenge available capacities. The fishing industry dominates water dependent zoned land in the Newport Area. Land and improvements may have publicly desired alternative uses. There are pluses and minuses to consider when looking at single industry impacts and more detailed research and more complex analysis would be required to understand economic and social linkages.

This report's fishing industry description, while important in itself for informing local and regional policy making bodies, should be part of further coordination and planning. Local and state government agencies do have economic plans that include recommendations for supporting the fishing industry (for example the recent update to the Port of Newport

Map 2
Oregon North and Central Coast Ports Commercial Fishery Harvest and Transit Tracking in 2017



Source: Oregon State University (2019).

Strategic Business Plan (BST Associates 2019)), but it will be helpful in keeping those plans current with a stronger fishing industry specific and maritime industry in general centric planning processes. For example, what should be institutional strategies and investments by the city, port, OSU, Oregon Coast Community College (OCCC), and others with the assistance of state and federal agencies to maximize economic growth and development of the seafood and coastal economy? Where do existing programs and proposals fit, such as the Yaquina Bay Ocean Observing Initiative, Food from the Sea Institute, OSU MSI, the Greater Newport Area Vision 2040 program, and OCCC and other local school curriculum.

Several related forums are already in place to discuss taking on additional coordination and planning responsibilities, i.e. Port of Newport's Commercial Fishing Users Group Committee, Economic Development Alliance of Lincoln County, OSU MSI Working Groups, etc. An areawide and staffed review and planning process would further industry resilience in the face of climate change, new fish resource management approaches, altered business regulations, and dynamic seafood markets. Fishing industry descriptions would inform the planning process and become a part of a larger strategic framework that shows symbiotic leveraging among the related key players. Action plans would address maintaining and attracting assets (boats, permits, quotas, plants, support services including research and education, dredging, jetty work, docks, etc.). The assets are all interrelated and key for future maritime industry development.

A coordination and planning process might be to develop a Fishing Community Sustainability Plan (FCSP). A FCSP is defined in the Magnuson-Stevens Act (MSA) and would make a community eligible to participate in a limited access privilege program to harvest fish (Richmond et al. March 2019). A fishing community that wishes to participate in limited access fisheries needs to develop and present a FCSP to the regional fishery management council. The development process becomes an opportunity to find ways to support the fishing industry and community. Example ports that have approved FCSP are Morro Bay and Monterey in California (Riggs and Pontarelli 2014). These ports participated in the groundfish trawl quota program via leasing quota to local harvesters. It is not necessary to have a goal for such quota ownership to derive benefits from a FCSP development processes. Another planning process template is currently underway in northwest Oregon sponsored by the Wealthworks Northwest Initiative (WNI) with grants from the Ford Family Foundation and U.S. Department of Agriculture Rural Development (RDI September 2019). The WNI partnered with Ecotrust and Massachusetts Institute of Technology Sloan School of Management to research and recommend ways to increase the wealth and well being of fishing industry participants.

There are converging views by economists regarding industry presence and size for predicting future growth potential. Once an industry cluster threshold is reached, regional competitiveness is attained and future expansion can follow if the community wants to overcome barriers and constraints and participate in marketing and incentives programs (Cortright 2006). The coordination and planning process would ferret out views and goals for a post-threshold status to guide better growth-promoting policy making. The assigned forum would review and participate in recruiting, securing funding programs, and forming partnerships to spur compatible government and private business development.

II. Methods

A. Background

The information described in this report principally comes from other publications by the same author. Some interviews with fisherman, processor representatives, and agency personnel were undertaken to make sure there was understandings of local conditions and activities. In addition to archival research, there was some simple analysis and transformations provided to bring clarity to statistics and relationships.

Total economic contribution estimates rely on economic input-output models to reveal how business and individuals spending ends up generating direct, indirect, and induced economic impacts in the local and state economy. The models include the calculations for the multiplier effect.

One-off major construction projects such as for upgrades to the Port of Toledo shipyard, construction of the Oregon State University (OSU) Marine Studies Initiative building, etc. are precluded in the economic contribution modeling. Modeling scope is to account for day-to-day and usual economic activity rather than extraordinary impulses from onetime activities. Recreational economic contributions are for trip spending; capital items are not included in estimates. Economic contribution measurements include income, jobs, and output. Income and jobs measurements are probably the most useful to policy makers as they are identifiable and comparative. Value added is another important measurement that does not have the double counting issue. An estimate is provided for the local processing that occurs in the Newport Area.

B. Definitions

The following definitions and explanations are provided for reader convenience. The terms being defined are shown in bold italic font.

The most recent complete year of fishing activity and economic analysis is 2019. Trend information containing dollars values are adjusted to ***real dollars.*** The adjustment index was the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.

Economic contributions include effects of harvesting and primary processing. The estimates include direct, indirect, and induced impacts, therefore include "multiplier effects." New fishing vessel construction, fishery management, and fishery research and education are not included in the fishing industry economic category.

An economic contribution metric relates to a short-term perspective for how an industry is represented in the local economy. If there is a change in the economy's industry activity, there may very well be adjustments in the longer term that may cause increased economic contributions. For example, a tourism business start-up may replace a fishing industry business closure.

Economic contributions and economic impacts are sometimes used interchangeably in literature. Other authors will differentiate the two terms - the latter being reserved for defining a short term disruption in economic activity. An example would be the lost commercial fishing economic activity due to implementing marine reserves if there was no replacement activity.

The economic contribution measurements selected for this study are income, job equivalents, and output. It could just as well have been other metrics that would describe the same economic direct and secondary effects, but in a different dimension, such as taxes generated.

Economic modeling used for the project relied on two different approaches for calculating economic contribution. Prior to 2016, the model used to calculate economic contributions was the Fisheries Economic Assessment Model (FEAM). The FEAM was originally developed by Hans Radtke and William Jensen for the West Coast Fisheries Development Foundation in 1988. The estimates include direct, indirect, and induced impacts, therefore include "multiplier effects." The FEAM relies on response coefficients from IMPLAN to estimate household income generated from harvester and processor activities. The FEAM has been useful because much of the commercial fishing industry information is not described in published employment data. The Research Group, LLC updated the FEAM periodically using new fleet and processor structural information, changed industry cost-earnings profiles, and new data IMPLAN models. The FEAM methods are described in Seung and Waters (2006). Application of the FEAM adjusts fisheries' multipliers to the current year's harvest prices. IMPLAN is a product of IMPLAN Group LLC, 16740 Birkdale Commons Parkway, Suite 212, Huntersville, NC 28078.

For years 2016 to 2019, the economic model used to calculate economic contributions is the input-output model for Pacific Coast fisheries (IO-PAC), which is maintained by the NMFS Northwest Fisheries Science Center. The model was designed to estimate the changes in economic contributions resulting from policy, environmental, or other changes that affect fishery harvest. IO-PAC was built by customizing IMPLAN software. The development and design of IO-PAC is documented in detail in Leonard and Watson (2011). Discussions about the similarities and differences between FEAM and IO-PAC are found in SSC (2009). The PFMC now uses the IO-PAC instead of the FEAM for analyzing management alternatives.

Basic economic impact analysis attempts to sort out the driving economic activities in regional economies (Scott 1984). Local industries with markets outside of the region bring new money into the region and are called basic industries. Industries with markets within the region are called secondary or support industries. Thus, when there is an increase in spending in basic industries, there is a resultant increase in secondary industries. Trade leakage occurs when spending and respending for labor, supplies, and services occurs outside the region. The relationship between an activity's total impact on the region's economy that includes the effect from the secondary industries, and the basic industry, is known as the ***multiplier effect.*** In the vernacular of input-output modeling terminology, the total impact on an economy included the direct, indirect, and induced effects of the activity. One-off major construction projects are precluded in the economic contribution modeling.

Income accrues to households in the form of net earnings (sometimes called earned income) from wages, salaries, proprietorship income, etc. For example, it can include the contract

payments based on share of catch value that is paid to a commercial fishing vessel crewman/skipper and the net income after operating and fixed expenses for the vessel owner. Total household income would include other sources such as transfer payments (e.g. social security, unemployment insurance, etc.) and investments (e.g. rental income, dividends, interest, etc.). There can be small differences between total income in area that is from households and the area's total personal income because of how BEA calculates the income.

Industry ***output*** is a technical term that is not analogous to sales. It is a measure of annual production with only the margins of some sectors included. For manufacturers, the value would be sales plus/minus change in inventory. For service sectors production would be sales. For retail, wholesale, and transportation, output is margins. Margins represent the value in delivering commodities from producers' establishments to purchasers. The output measurement tends to convey an inflated notion of economic activity by including non-local cash flows and is subject to double counting. The term does not provide meaningful insight on what might be a change to the size of the economy. For understanding change and using measures to compare alternative actions or policies, the more appropriate terms are income, jobs, and value added.

Value added equals output (sales or receipts and other operating income plus inventory change) minus intermediate inputs (consumption of goods and services purchased from other industries or imported). Value added consists of compensation of employees, taxes on production and imports less subsidies, and gross operating surplus. It is a measure of the contribution to GDP made by an individual producer or industry. A value added calculation for this study was made only for the processor sector direct impacts. The calculation for indirect and induced impact value added was not made.

Statewide and regional average annual earnings per job are computed by dividing the economies all industry earned income estimates by total full-time and part-time jobs estimates, which is then applied to fishing industry income to calculate ***job equivalents***. Jobs includes wage and salary employment, self-employed, employment at private households, employment on farms, and employment at other organizations not covered by unemployment insurance programs. Average earnings per job within industries involving more part-time work is lower than industries involving more full-time work, although there could be little difference in the underlying wage of full-time workers. Since average earnings per job is just a simple average, it does not account for variations in the distribution of earnings among high-pay vs. low pay jobs. Equivalent jobs at the statewide level include jobs within all coastal communities plus jobs in the rest of the state.

Commercial fishing trips are approximated using fish tickets. A fish ticket represents the landing of fish or shellfish product from one fishing trip. Ticket counts may not reflect fishing trips, because multiple tickets can be issued for a single trip when a vessel delivers to more than one dealer after returning to port, and vessels issue tickets when a sale is made directly to the public. Trip undercounts could occur in the occasion when tendering services are used because more than one vessel's harvest could be combined onto a single fish ticket. Delivery counts are not additive across fisheries because a fish ticket may include more than one species.

Homeport vessels are based on which Oregon port group where there was a plurality of 2019 harvest value delivered. There may have been additional deliveries in other distant water fisheries locations.

Harvest revenue and price (sometimes called ex-vessel revenue) is the amount paid to fishers at the time of fish delivery to processors or when sold directly to the public. The term ***ex-processor revenue*** is from the wholesale price fetched by processors for manufactured seafood products.

Limited entry (LE) and open access (OA) refer to federal permit types that allow nearshore groundfish to be harvested either as a directed fishery or incidental in other fisheries. The LE permit types have gear restrictions for being trawl (bottom net, mid-water net, etc.) or fixed gear (longline, pot, etc.). Only a prior qualified vessel can be used to hold a LE permit. Open access is a misnomer in that a permit still needs to be acquired and associated with a vessel. An Oregon Nearshore Fishery Permit is required to harvest certain groundfish species up to maximum bimonthly limits set by ODFW. There can be small harvests per trip made without the permit. The permit is limited entry. ODFW (September 2017) has a detailed description about permit requirements and discusses landing histories and fishery management. There are agency and many scholarly reports about the federal limited entry groundfish permits including NOAA Fisheries (2017), Lian et al. (2009), Pfeiffer and Gratz (2016), Holland et al. (2017), and Holland (2020).

The ***distant water fisheries*** are the West Coast offshore fishery, Alaska fisheries, western Pacific highly migratory species fishery, fisheries in Washington and California, and elsewhere. Revenue returned to Oregon in the form of wages and salaries or profits and revenue derived from expenditures made in Oregon for repairs, provisioning, or moorage is referenced in this report as "distant water" fisheries revenue. For example, the revenue generated from the at-sea deliveries for the Pacific whiting fishery is categorized as distant water fishery revenue. Another example is Oregon residents own harvesting permits in Alaska, but keep vessels year around at Alaska ports. Sometimes owners will lease permits for others to harvest the permit quota shares.

Revenue generated from vessel deliveries in Oregon is referenced in this report as ***onshore***. This term differentiates West Coast ***offshore*** harvests delivered to motherships which are included in distant water fisheries tabulations.

Sometimes the term ***recreational fishing trips*** is used in this report's narrative, but the unit of measurement for effort is an angler day. The hours actually spent fishing in a calendar day are not a consideration. The amount of money spent for the fishing experience is not appreciably different whether fishing was for a few or many hours. Literature use of the word trip is usually associated with a fishing experience duration that may be more or less than a calendar day. Trip counts in this study have been adjusted to account for multiple days when fishing occurred during a single trip.

Recreational fishing mode can be charter boat, private boat, bank fishing, or diving. A charter boat is owned by a private business which provides for-hire services on daily and fishing season schedules. The services are usually recreational fishing, but can for non-angling trips such as whale watching or just touring. The boat may make more than one trip per day depending on the

distance to fishing grounds. Private boats do not provide for-hire services, although it is not uncommon that friends and relatives on the trip contribute to cost reimbursement. Bank fishing distinguishes an angling trip when the fishing opportunity will not rely on a boat. It can occur on piers and water shorelines. Dive trips can originate from a boat or shore. There are very few ocean bank or dive fishing trips in Oregon and they are not included in the analysis.

The term ***recreational catch*** used in this study is retained fish. Catch is expanded to include non-retained fish counts using angler preference survey factors in order to calculate total effort using success rates. Success rates are angler days per retained and non-retained catch. Catch per unit effort is the multiplicative inverse of success rates.

Coastal rivers' ***inriver*** trips are in lower rivers or bays. Columbia River inriver trips are in the estuary, tributaries to the estuary, and the mainstem Section 10. The popular "Buoy 10" fishery is included in Columbia River trips. The only trips included at inriver locations are when the catch was Chinook or coho salmon, steelhead, sturgeon, or other marine species. Trips when trout and other resident species are not included. Rivers and streams in the Newport Area are: Yaquina, Siletz, Alsea, and Salmon rivers; Big Elk Creek, Drift Creek.

The ***"Newport Port Group"*** is distinguished from ***"Newport Area"*** by the inclusion of recreational trips that take place in Lane County. Commercial deliveries in Lane County are included in the Coos Bay port group. The Newport Area includes recreational trips and commercial deliveries only made within Lincoln County. Other Oregon port groups are "Astoria" for Clatsop County ports, "Tillamook" for Tillamook County ports, "Coos Bay" for Lane (commercial deliveries), Douglas and Coos counties' ports, and "Brookings" for Curry County ports. Sometimes the port group "Port Orford" singularly applies for deliveries at the Port of Port Orford in which case the "Brookings" port group only includes the ports of Gold Beach and Brookings in Curry County.

The study provided fishing industry economic activity and contribution measure descriptions to better understand importance to the Newport Area and state economy. Commercial fishing, seafood processing, and recreational fishing was assessed as were related and connected businesses. The economic contribution measures include the multiplier effects. The integration of the fishing industry with other industries such as tourism was explained, but providing numerical estimates was beyond the scope of the study. There are even other aspects of economic involvement deserving mention but study scope did not include modeling. For example, fishing industry businesses add to the local property tax assessment base. In turn, industry workers require housing, transportation facilities, and schools which through property zoning and subsidies may have offsetting impacts. Seafood processing requires a lot of fresh water and discharge treatment which may challenge available capacities. The fishing industry dominates water dependent zoned land in the Newport Area. Land and improvements may have publicly desired alternative uses. There are pluses and minus to consider when looking at single industry impacts and more detailed research and more complex analysis would be required to understand economic and social linkages.

III. Fishing Industry Activity

A. Direct Activity

1. Commercial Fisheries

Newport Area specific fisheries trends have ups and downs, but the consistency in industry activity overall has allowed related businesses (repair, provisioning, gear manufacturing, etc.) to develop. The Newport Area had 37 percent of Oregon's onshore harvest value landings in 2019 (Table C.2). Oregon's onshore landings in 2019 were 334.8 million pounds worth $161.6 million in harvest value. The harvest value was a slight decrease over 2018 ($175.0 million), but was still above the previous five-year (2014-2018) average ($155.0 million).

Some notable trends in Oregon fisheries were (Table C.1 and Figure C.1):

- Salmon volumes remained at low levels in 2019. Aggregate real salmon prices eroded in 2019 for both the ocean troll and Columbia River net fisheries as compared to the higher prices received in 2018. Harvest value was split almost evenly between the ocean troll and Oregon landings of the Columbia River treaty and non-treaty net fisheries.

- Pink shrimp volumes and Dungeness crab volumes were down in 2019 as compared to 2018. Real Dungeness crab prices were up by about 10 percent over 2018 prices. Pink shrimp prices continued to be high at $0.74 per pound in 2019. Despite the higher prices, the lower volume made the harvest value lower in 2019 than 2018 for these species.

- The trawl and fixed gear sablefish (also called black cod) fishery comprises about half the harvest value of the overall non-whiting groundfish fishery. Sablefish volume was slightly up in 2019 as compared to 2018, while the two-gear harvested average price was about 20 percent less over the one-year period. The sablefish price has not returned to the record level prices received in 2011. A current management issue is considering placing limits on the proportion of the LE trawl sector allocation that can be harvested using gear switching. Using fixed gear to target sablefish can be profitable, but has the effect of lowering harvests in the other groundfish mixed stock fishery. The other groundfish fishery can be precluded if quota pounds are not available to cover the sablefish bycatch.[1]

- Pacific whiting onshore volume was up in 2019 as compared to the previous five-year average (over 45 percent greater), while the real landing price remained about the same. Whiting can be processed into a variety of forms including whole, fillets, and surimi depending on market demands. Carcasses are used in making fish meal.

- There was a slight decrease in groundfish (other than sablefish) harvest volumes in 2019 over 2018. Some species management quota volumes were not attained due to fleet and processing capacity issues and vessels having difficulty covering bycatch and non-target

1. Sablefish gear switching trends and management is summarized in PFMC (April 2021).

species catch quotas in this mixed stock fishery. Still, the fishery had 24 percent more volume that the previous five-year average. The overall real price remained steady in 2019 as compared to 2018, but was a significant decrease to prices received in the 2015-2016 time period.

- Other fishery news for 2018 and 2019 was the continued closure for the Pacific sardine directed fishery, and the market squid fishery returned in a big way. Approximately 7.0 million pounds of market squid were landed in 2018 and 5.2 million pounds were landed in 2019. The delivery price was $0.55 per pound in 2019 which was an increase of $0.10 received in 2018. Market squid is harvested with purse seine gear using lights (sometimes on a separate light boat) to attract the fish. Harvests are largely trucked to southern California to be processed into bait. The processed bait is used in the Dungeness crab fishery.

- Oregon coast aquaculture is principally Pacific oysters. The estimated farm-gate value was about $8 million in 2019 (ODA 2021).

There were 331 commercial fishing vessels that made 4,788 deliveries in the Newport Area in 2019: 311 delivered at Yaquina Bay, 19 delivered at Depoe Bay, and 11 delivered at Alsea Bay (some of the Depoe Bay and Alsea Bay vessels also delivered at Yaquina Bay) (Table 1). Of the unique vessels making deliveries, 264 would be defined as homeport vessels (port group where plurality of harvest value is delivered).[1] Eighty-seven vessels made deliveries worth at least $250 thousand in 2019 (Table 2). Figure 1 shows that the top 47 vessels (revenue per vessel $350 thousand or greater), which were 14 percent of the fleet making deliveries, landed 67 percent of the Newport Area total onshore harvest value in 2019. The average revenue per vessel making deliveries of $500 or more in 2019 was $186 thousand (Figure 2). The average length for vessels in 2019 was 48 feet (Table 2, Figure 3). Forty percent of the vessels are longer than or equal to 50 feet (Table 2). Some of the vessels participate in distant water fisheries (an example fishery is the West Coast at-sea whiting fishery as well as many Alaska fisheries) and another 35 vessels that use the Yaquina Bay for moorage, repairs, and provisioning, but do not make deliveries locally.

Commercial landings totaled $59 million harvest value (1st highest harvest value at any Oregon port and 14th highest harvest value in the nation) in 2019 (Table 1). Of the $59 million harvest value, 42 percent was Dungeness crab, 14 percent whiting, 8 percent sablefish, 12 percent pink shrimp, 8 percent albacore tuna, 8 percent other groundfish, 3 percent salmon, and 5 percent other (Figure 4). The mix of species being delivered is variable in any given year. For example, ocean salmon fishing was better in 2014 and represented 10 percent of landings revenue. (Figure 5).

1. Homeport vessel counts have definitional uncertainty. For example, vessels that moor at Newport and are registered to residents in Lincoln County but deliver to distant water fisheries ports would be considered as plus. Vessels from homeports in California, Puget Sound, and Alaska that have traveled to participate only in the Oregon market squid fishery would be considered as minus. There were 23 vessels whose majority landings in Oregon were market squid. Of those, 8 were unique to Newport (landed market squid with "other net gear" only at Newport), 4 were unique to the Coos Bay area, and 11 delivered to both areas.

The number of processors accepting the deliveries in the Newport Area was 69 in 2019 which included 13 vessels selling direct to the public. There were 21 processors whose purchases were more than $100 thousand and 6 that purchased more than $5 million (Table 3).

The value added from processing is estimated to be $46 million in 2019 (Table 4). The estimates are from the model described in TRG (2021) which was adapted to apply to the Newport Area landings and processing situation.

Distant water fisheries locations include other West Coast states, western Pacific (highly migratory species fishery), Alaska, and deliveries made in the West Coast at-sea fishery. Real harvest value trends for the West Coast offshore fishery and Alaska fisheries compared to the Newport Area fisheries are shown on Figure 6 and Table B.3. The West Coast at-sea fishery has been up and down since 2002. The Alaska fisheries overall have generally had steady value in recent years. The Newport Area fisheries have trended to be on the rise with some years of downturn exceptions (such as 2015). Lincoln County resident participation (crew member and vessel permit license counts) in Alaska fisheries for 2012, 2017, and 2019 are shown on Table B.1. Vessel license counts were down one-third during this period. With rising fuel costs to commute and tax incentives to use Alaska registration, it could be vessel business license addresses may not reflect ownership residence. More investigation is needed to find out why distant water fisheries impacts are in a recent downward trend.

Economic contributions from the commercial fishing industry in 2019 are estimated to be $155 million income, about 3,300 jobs, and $328 million output in the local economy (Table 5, Figure 7). The share of generated income from primary processing which includes fish meal production and hauled-in fish resource processing is 28 percent for Newport Area in 2019. There is one large aquaculture operation within the Newport Area and for confidentiality reasons the economic contributions are included in the related and connected activity category. About two-fifths of the economic contribution is generated by distant water fisheries, such as the West Coast at-sea fishery and Alaska fisheries.

The commercial fishing industry represented about 14 percent of the area's earned income in 2019 (Table 6). The tourism share of total earned income when looking at 2012 data is 16 percent followed by timber at 12 percent (TRG August 2014). (Year 2012 data is referenced because it is the analysis year used in a study that defined composite and comparable local industry categories.) Figure 8 shows there is high assortment of onshore ocean fisheries that are making economic contributions in the Newport Area.

2. Recreational Fisheries

Commercial wild harvesting activities share natural resources with a large ocean and inriver recreational fisheries sector. Complex management by federal and state agencies ensure reasonable access by both sectors, yet conserve the resource to achieve sustainability.

There is scattered and disparate information available about the economic contributions from marine recreational finfish fisheries in Oregon's coastal areas. This report pulls together existing

economic information and provides additional economic analysis results so that magnitudes and trends can be discerned. Still, the accounting is selective leaving out trips targeting freshwater resident fish. A count of ocean touring trips included as an itemization (whale watching is one trip purpose in this category) is from OSMB (2013). The economic contributions from touring trips was not available in the data source publication.

Oregon trips for the selective fisheries increased in the late 2000's through 2015 (Figure C.2). There has been a downward trend since 2015 mostly due to decreased participation in the inriver fall salmon and steelhead fisheries. There was a slight uptick in ocean trips for 2019 probably due to increased success rates that year when salmon was the target fishery. Trips for ocean bottomfishing have ostensibly grown as replacement for decreased fishing opportunities for ocean salmon. There were about 951 thousand marine fishing total trips in Oregon during 2019.

Numerous ocean recreational fishing trips take place within the Newport Area:

	Areas				
Target Species	Yaquina Bay	Depoe Bay	Alsea Bay	Lower Rivers	All Areas
Finfish ocean	64	29			93
Ocean and bay crabbing and clamming	26	-	12		38
Ocean touring					9
Inriver				110	110

Notes: 1. Trips are in thousands. There is no updated serial data source for all trip categories. Data year for most trips are 2019, however some trip categories such as crabbing and clamming are mixed years.
2. Inriver trips are for non-resident fish on the lower Yaquina, Siletz, Alsea, and other rivers.
3. Ocean crabbing trips are not when combined with finfish as target species. Combination finfish and crabbing trips are over 90 percent of all trips when crabbing occurs.
4. Ocean touring trips includes trips whose purpose is whale watching.

Newport Area trip trends by purpose and mode are shown on Table 7 and Table 8.

Total Newport area originating ocean and lower river fishing trip spending in 2019 is estimated to be $23 million (includes finfish and ocean and bay crabbing and clamming). The economic contributions from the marine recreational fishing in 2019 were $21 million income, about 444 jobs, and $57 million output (Table 9).[1] The recreational fishing industry represented about 2 percent of the area's earned income in 2019 (Table 6).

Some recreational trip spending must be acknowledged for having substitution, i.e. local resident spending may occur for recreational pursuits if fishing opportunities were not available. This is in contrast to commercial fishing which is a true accounting of natural resource use, i.e. there is

1. Spending and economic contribution estimates from touring participants (including whale watching) and some trips in estuaries and ocean shore was not available.

not substitute spending if the harvesting opportunities from fish abundances or fleet/processor infrastructure were curtailed.

Recreational anglers make additional contributions to local economies in ways other than trip spending, such as purchasing fishing equipment and boats, and owning second homes. Vibrant and year-around fisheries access is an indicator of healthy natural resources and can be considered an economic development asset. Living in such an environment is attractive to entrepreneurs and prospective employees. The attraction will be an important business location decision variable, along with more straightforward considerations such as the markets and suppliers logistics, and labor costs.

B. Related and Connected Activity

Newport Area related and connected economic activity can be garnered from two fairly recent publications. The first was TRG et al. (January 2012) which discussed economic impacts for all Port of Newport dependent functions including the envisioned use of the renovated Port of Newport International Terminal. The second was TRG (August 2014) which had economic estimates for the MOC-P relocation in 2011, HMSC research and education services, Newport aquarium operations (not including visitation), enforcement (such as USCG), and other government services and business economic activity (gear manufacturing, ship building, and other marine supply and services establishments). The second publication's scope was applicable to all marine oriented Lincoln County economic activities except tourism. The International Terminal use included tie-ups from distant water fisheries fleet; waterborne commerce shipping activity prior to the closure in 2001; upcoming wave energy research, construction and servicing; and, other operations requiring transfer and dockage space.[1] It was estimated the MOC-P relocation initially added $20 million annual income and $35 million at full economic build-out.[2] The

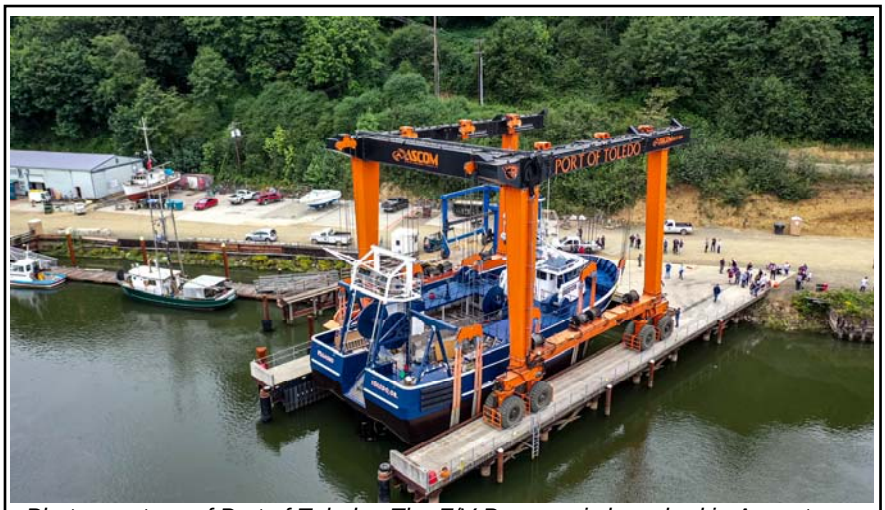


Photo courtesy of Port of Toledo. The F/V Pegasus is launched in August 2019 after a 10 month and $3 million retrofit.

1. A more recent study of the International Terminal potential economic activity is in Market Advisory Group, LLC (June 2016).
2. Full build-out assumes entire transfer of all NOAA MOC-P offices and personnel to Lincoln County and adjustment of the local economy for providing vendor support and provisioning services required by the transfer. Full build-out also assumes the HMSC researchers will secure additional projects given cooperative opportunities afforded by the MOC-P operations.

economic activity created by HMSC was estimated to annually contribute $35 million income to regional households. Adjusting for dissimilar referenced studies' time periods and adjusting dollars to 2019, the total related and connected economic contribution is estimated $170 million income which represent about 3,600 jobs.

C. Associated Activity

Visitors drawn by a working waterfront is an important tourism segment in Newport. Visitors are interested in the mix of production (seafood processors, shipping, and related businesses) and consumption (retail gift shops, restaurants, etc.) businesses. There are aquariums and visitor centers located at cities within the Newport Area. The visitors are attracted to witness and learn as well as observe and advance conservation efforts. In parlance of the tourism industry, visitor participation is in history, culture, culinary, and ecotourism segments. There are difficulties in quantifying the spending and economic contributions attributed to these tourism industry. It would be of interest to assess resident and visitor consumer spending on local harvest products, but a consumer survey and econometric modeling would be necessary. Study time and budget resources did not allow for the assessment.

D. Activity Summation

Using the 2019 fishing industry income and the 2012 related and connected activities income (expressed in 2019 dollars), the total income would be $346 million which represents about 7,400 jobs. (Total 2019 jobs in Lincoln County was 26,869.) Associated economic activity (such as visitors drawn to the area for maritime attractions), once investigated and modeled, would be extra economic contribution to these summation estimates.

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Table 1
Newport Area Commercial Deliveries and Landings by Communities in 2006 to 2019

	Deliveries				Volume				Value			
Year	Depoe Bay	Newport	Waldport	Newport Area	Depoe Bay	Newport	Waldport	Newport Area	Depoe Bay	Newport	Waldport	Newport Area
2006	168	4,855	268	5,291	157,572	93,603,707	24,485	93,785,764	173,843	40,702,339	81,563	40,957,745
2007	124	4,622	186	4,932	36,505	71,707,369	21,231	71,765,105	96,326	36,656,401	82,182	36,834,909
2008	160	3,891	209	4,277	128,076	61,084,511	21,397	61,234,106	108,845	38,719,691	78,595	38,907,233
2009	139	4,378	304	5,135	27,579	56,946,721	28,419	57,011,512	71,253	36,414,911	101,933	36,602,192
2010	145	4,497	497	5,482	35,781	62,589,132	44,146	62,679,016	84,476	35,796,297	157,148	36,063,584
2011	158	4,010	598	4,871	44,391	82,282,703	47,144	82,377,617	92,389	50,148,224	155,390	50,405,989
2012	286	4,515	521	5,476	217,049	82,695,037	43,535	82,961,136	210,833	41,742,382	160,400	42,130,118
2013	182	4,815	624	5,762	56,077	130,167,248	36,794	130,265,728	114,514	60,776,169	116,305	61,020,710
2014	131	5,227	630	6,033	27,121	127,064,139	39,280	127,131,761	69,966	56,969,668	127,461	57,169,212
2015	208	4,046	590	4,845	60,879	67,702,794	60,926	67,824,609	180,986	35,508,268	218,103	35,907,368
2016	96	4,531	862	5,489	43,437	84,886,398	64,596	84,994,431	165,185	51,018,930	232,356	51,416,472
2017	95	4,046	630	4,775	43,698	114,955,628	42,974	115,042,508	100,075	54,985,867	155,408	55,241,718
2018	136	4,063	617	4,816	31,172	124,884,288	34,524	124,949,984	112,487	63,322,721	123,089	63,558,298
2019	131	4,172	485	4,788	46,351	123,278,368	47,138	123,371,857	168,499	58,960,186	179,120	59,307,805

Notes:
1. Volume is in round pounds. Value is ex-vessel revenue adjusted to real 2019 dollars. Sablefish fixed gear round pounds are using landed pounds to estimate PacFIN data error correction for Year 2019, September 2020 extraction.
2. Deliveries are approximated using fish tickets. A fish ticket represents the landing of fish or shellfish product from one fishing trip. Ticket counts may not reflect fishing trips; multiple tickets can be issued for a single trip when a vessel delivers to more than one dealer after returning to port, and vessels issue tickets when a sale is made directly to the public. Trip undercounts could occur in the occasion when tendering services are used because more than one vessel's harvest could be combined onto a single fish ticket. Delivery counts are not additive across fisheries because a fish ticket may include more than one species.
3. Excludes aquaculture production.

Source: TRG (2021).

Table 2
Newport Area Commercial Vessel Counts by Length and Revenue Categories by Communities in 2019

Depoe Bay

Vessel Length	2019 Vessels	Oregon Revenue	2019 Vessels
1 to 21	5	<10,000	8
>21	14	>=10,000	11
Total	19	Total	19

Newport

Vessel Length	2019 Vessels	Oregon Revenue	2019 Vessels
1 to 36	63	<10,000	42
37 to 43	53	10,000 to 30,000	43
44 to 49	62	30,000 to 100,000	79
50 to 69	95	100,000 to 250,000	60
>=70	38	>=250,000	87
Total	311	Total	311

Waldport

Vessel Length	2019 Vessels	Oregon Revenue	2019 Vessels
1 to 21	7	<5,000	4
>21	4	>=5,000	7
Total	11	Total	11

Newport Area

Vessel Length	2019 Vessels	Oregon Revenue	2019 Vessels
1 to 36	83	<10,000	55
37 to 43	53	10,000 to 30,000	46
44 to 49	62	30,000 to 100,000	83
50 to 69	95	100,000 to 250,000	60
>=70	38	>=250,000	87
Total	331	Total	331

Notes: 1. Counts exclude deliveries with no uniquely identifiable vessel identification code. This identification includes vessel and non-vessel deliveries in non-treaty fisheries. Their revenue at Newport Area was 0.1 percent of all Newport Area revenue in 2019.
2. Vessels that landed at more than one port are counted at each.

Source: TRG (2021).

Table 3
Newport Area First Purchasers by Purchase Value and Species Categories in 2019

		Species Group Purchases at Port Group (thousands of dollars)								
Purchase Value	Count	Salmon	D. Crab	P. Shrimp	A. Tuna	Groundfish	Sablefish	P. Whiting	Other	Total
Less than $1 K	12	0.2	0.1	0.0	1.5	2.6	0.0	0.0	0.4	4.9
$1 K to $10 K	15	8.7	19.1	0.0	22.2	12.4	0.0	0.0	3.9	66.3
$10 K to $100 K	21	129.0	125.9	0.0	262.5	50.3	0.0	0.0	178.6	746.4
$100 K to $5 M	15	839.6	2,595.1	840.3	1,985.4	229.6	249.7	101.1	1,605.1	8,446.0
$5 M plus	6	481.2	22,231.2	6,110.8	2,666.9	4,664.2	4,695.9	8,438.6	755.4	50,044.3
Total	69	1,458.7	24,971.4	6,951.1	4,938.6	4,959.2	4,945.6	8,539.7	2,543.5	59,307.8

Notes: 1. Species group purchases are values in thousands of dollars.
2. Purchase values are amounts purchased at the Newport port group. Purchasers may also purchase from other port groups.
3. "Groundfish" excludes sablefish and Pacific whiting, which are shown separately.
4. Excludes aquaculture production.

Source: TRG (2021).

Table 4
Newport Area Processor Value Added by Species Groups in 2019

Species Group	Round Pounds (thousands)	Ex-Vessel Price	Product Analysis Form	Yield	Use	Processor Costs/Sales Price Per Finished Pound Raw	Other	Sales Price	Finished Pounds (thousands)	Ex-Processor Sales (thousands)	Value Added (thousands)
Salmon	260	$5.61	Gutted	87%		6.44	1.07	7.51	226	1,701	242
Dungeness crab	2,091	$3.58	Whole	92%	30%	3.90	1.22	5.12	1,923	9,838	2,346
	1,045	$3.58	Sections	58%	15%	6.18	1.42	7.60	606	4,607	861
	1,394	$3.58	Meat	25%	20%	14.33	5.17	19.50	348	6,796	1,801
	2,439	$3.78	Live	95%	35%	3.98	1.12	5.10	2,317	11,823	2,595
Pink shrimp	8,934	$0.78	Cooked	31%		2.51	1.40	3.91	2,770	10,829	3,877
Albacore tuna	2,980	$1.66	Mixed2	85%		1.95	1.06	3.01	2,533	7,624	2,685
Groundfish	14,319	$0.69	Mixed3	36%		1.93	1.25	3.18	5,132	16,322	6,417
Pacific whiting	42,995	$0.099	Surimi	25%	50%	0.40	0.62	1.02	10,749	10,934	6,664
	42,995	$0.099	H&G/etc.	61%	50%	0.16	0.56	0.72	26,227	18,957	14,687
Pacific halibut	82	$5.17	Mixed4	74%		6.99	1.08	8.07	61	492	66
Other	3,838	$0.55	Mixed4	60%		0.91	1.01	1.92	2,316	4,450	2,332
Fish meal	52,041			10%		-	0.33	0.33	5,204	1,717	1,717
Total									60,412	106,089	46,293

Notes: 1. Round pounds shown are net processed pounds, which is landed less haul-outs. Ex-processor sales include this effect.

2. Sales price is estimated using cost calculation from the FEAM model or using published market sales price information for the product form.

3. Ex-vessel prices are in round pound or round pound equivalents. Other costs include labor, taxes/fees, other production costs, and contribution to margin. Processor costs/sales price are per finished pound.

4. There are many final product forms manufactured within species groups. The following discusses how some of these forms affect species group yields.

D. Crab. Crab tends to start out "whole" during the year-end holidays and then move to "picked" meat later in the season. Over the last few years, "sections" have also become a product form. Distribution of pounds to product forms assumes 30% whole, 15% sections, 20% meat, and 35% live. Final product proportions for landed weight have a weighted average of 75% yield.

Mixed2. Albacore tuna assumes 75% "whole frozen" yield, 25% "fillet" yield, or about 85% mixed yield.

Mixed3. Groundfish generally is processed as a fillet; however, several species, such as sablefish and thornyheads are marketed fresh, whole. Example yields are lingcod and rockfish fillet yield 29%; sablefish and thornyheads H&G yield 55%; and sharks and skates fillet yield 60%. The shown mixed yield is a weighted average for all of these different products.

Mixed4. Other species have many end products, including frozen and fresh whole, fillets, and eggs for the species sea urchin. Example yields are sea urchins eggs yield 7%; other crab and shrimp, clams and mussels, other echinoderms, and shad whole yield 100%; mackerel, market squid, and herring frozen yield 99%; other sharks fillet yield 60%; octopus frozen yield 100%; sturgeon fillet yield 64%; and halibut fillet yield 72%. This category also includes oysters and other shellfish in 2003 at $773 thousand. Because "other" includes a variety of different products, the throughput is evaluated on an ex-vessel basis.

Pacific whiting. Primary products using Pacific whiting are headed and gutted, surimi, and frozen whole. Surimi processing requires expensive equipment and established marketing channels.

5. Fish meal volume is estimated from non-yield of groundfish and Pacific whiting landed volume, except cod/rockfish including sablefish non-yield goes to lobster bait instead of fish meal.

Source: TRG (2021).

Table 5
Newport Area Commercial and Recreational Fishing Economic Contributions in 2019

	Onshore			Distant Water			Total		
	Income	Jobs	Output	Income	Jobs	Output	Income	Jobs	Output
Commercial	86,620	1,842	182,775	68,786	1,463	145,145	155,407	3,305	327,920
	Ocean			Coastal Inriver					
	Income	Jobs	Output	Income	Jobs	Output			
Recreational	8,647	184	23,542	12,219	260	33,267	20,867	444	56,810
Total Commercial and Recreational							176,273	3,749	384,730

Notes:
1. Income and output are in thousands.
2. Economic contributions are at the local economic level.
3. The output calculation for distant water fisheries assumes the same spending patterns as onshore fisheries.
4. Jobs are computed by dividing all industry earnings estimates by total full-time and part-time jobs estimates. Average earnings per job within industries involving more part-time work is lower than industries involving more full-time work, although there could be little difference in the underlying wage of full-time workers. Average earnings per job would not account for variations in the distribution of earnings among high-pay vs. low-pay jobs.
5. Distant water fisheries income can be centered at coastal communities where businesses sell goods and services to participants and the business labor has residency in those communities. Some income for distant water fisheries is directly returned to Oregon via crewmember and permit/vessel owner participant earnings. Participants may live on the Oregon Coast or elsewhere in Oregon.
6. Onshore fishing income is based on landings during calendar year, including Dungeness crab.
7. Excludes aquaculture production.
8. Recreational includes ocean and bay crabbing and clamming in the inriver estimates.

Source: TRG (2021).

Table 6
Newport Area Representation of the Commercial and
Recreational Fishing Industry in Area Economies in 2019

	Amount	Share
All income	2,295.0	7.7%
Earned income	1,098.2	16.1%
Fishing income	176.3	
Commercial	155.4	14.2%
Onshore	86.6	
Distant water	68.8	
Recreational	20.9	1.9%
Ocean recreational fishing	8.6	
Ocean and bay crabbing and clamming	1.8	
Inriver non-resident fish fishing	10.4	

Notes: 1. Income is in millions. Earned income is the sum of wages and salaries, and proprietors' income. All income includes earnings, transfer payments (such as Social Security payments, etc.), and investment income (such as private pensions, etc.).
2. Earned income and all income estimates are adjusted for place of residence. Fishing income is for place of work. Fishing income comparison may overstate the calculated share since some of the income may accrue to places outside of the comparison location. Earned and all income is from households within Lincoln County for Newport Area.

Source: Income and earnings data is from U.S. Department of Commerce, Bureau of Economic Analysis.

Table 7
Newport Area Recreational Ocean Finfish Trips by Trip Purpose by Communities in 2019

	Salmon	Combination	Bottomfish	Halibut	Tuna	Total
Trips						
Depoe Bay	6,655	2,202	18,355	785	1,355	29,352
Newport	18,612	7,536	25,313	9,950	2,371	63,782
Coastwide	75,751	20,481	96,764	16,032	15,311	224,339
Shares of Coastwide Trips						
Depoe Bay	8.8%	10.8%	19.0%	4.9%	8.8%	13.1%
Newport	24.6%	36.8%	26.2%	62.1%	15.5%	28.4%

Notes: 1. A trip is one angler day.
2. Lincoln City, Waldport, and Yachats are not itemized in the data source.
3. Recreational crabbing and clamming are not included.
4. Dive trips were 41 for Depoe Bay and 18 for Newport in 2019.

Source: ODFW (ORBS).

Table 8
Newport Area Recreational Trips for Ocean and Bay Crabbing and Clamming by Communities

	Trip Type	Trips		Trips
Ocean Crabbing Trips by Trip Type in 2019			Bay Crabbing Trips in 2011	
			Yaquina	13,716
Depoe Bay	Private	2,399	Alsea	11,558
	Charter	13,798		
Newport	Private	14,149	Bay Clamming Trips in 2015	
	Charter	16,523	Yaquina	8,700

Notes: 1. Estimates for the number of crabbing trips is for boat mode and do not include trips when land or pier based. Over 90 percent of the ocean crabbing trips are in combination with other target species fishing trips or touring trips.

Source: ODFW (ORBS), Ainsworth et al. (2012), and Ainsworth (2016).

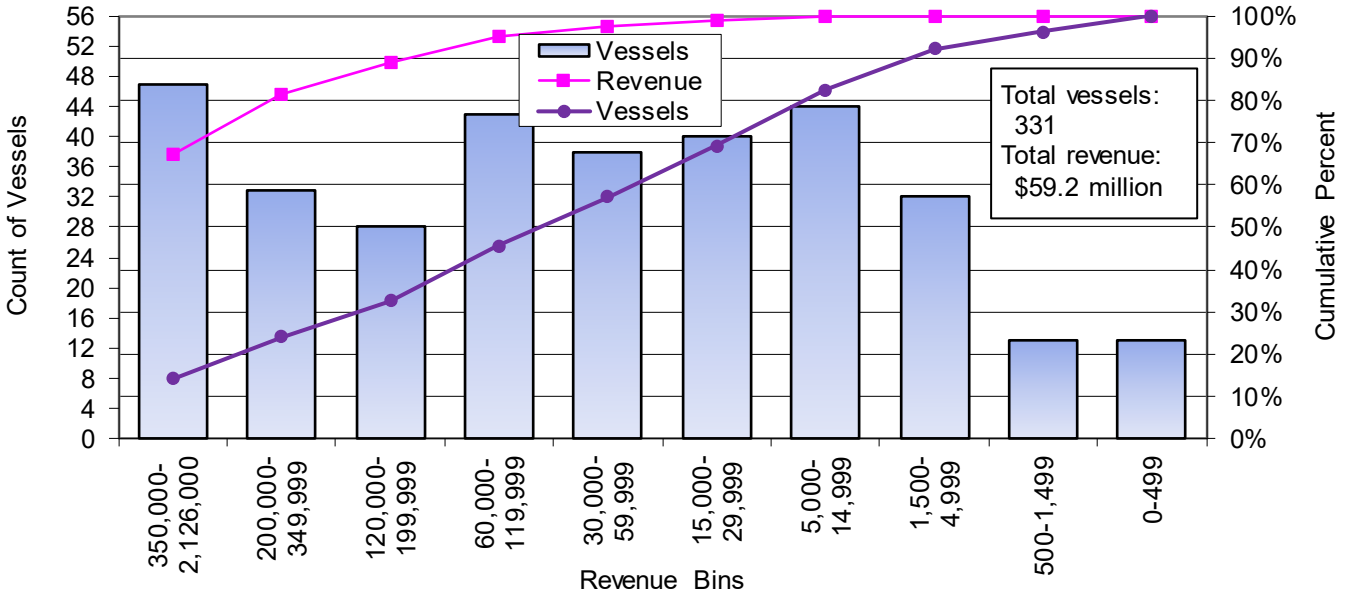
Table 9
Newport Area Ocean, Bay, and Inriver Recreational Economic Contribution in 2019

Target Species	Areas: Yaquina Bay	Depoe Bay	Alsea Bay	Lower Rivers	All Areas
			Income		
Finfish ocean	5.5	3.2			8.6
Ocean and bay crabbing and clamming	1.3	0.0	0.6		1.8
Inriver	0.5		2.0	7.9	10.4
Total	7.2	3.2	2.6	7.9	20.9
			Jobs		
Finfish ocean	116	68			184
Ocean and bay crabbing and clamming	27	0	12		39
Inriver	10		43	168	221
Total	153	68	54	168	444
			Output		
Finfish ocean	14.9	8.7			23.5
Ocean and bay crabbing and clamming	3.4	0.0	1.5		5.0
Inriver	1.3		5.5	21.5	28.3
Total	19.6	8.7	7.0	21.5	56.8

Notes:
1. Economic contribution expressed as income and output is in millions. Jobs are not in millions. The economic contributions are at the local economy level.
2. There are also angler trips taken when razor clams and bait shrimp are the target species probably numbering in the hundreds.
3. Estimates for the number of crabbing trips is for boat mode and do not include trips when land or pier based. Over 90 percent of the ocean crabbing trips are in combinatior with other target species fishing trips, and the economic contributions are already accounted for those other primary purpose trips.
4. Bay crab uses 2011 trips and clam uses 2015 trips.
5. Inriver trips include only the lower river or bay. Fishing trips in tributaries to rivers are not included.
6. Inriver trips are for non-resident fish on the lower Yaquina, Siletz, Alsea, and other rivers.

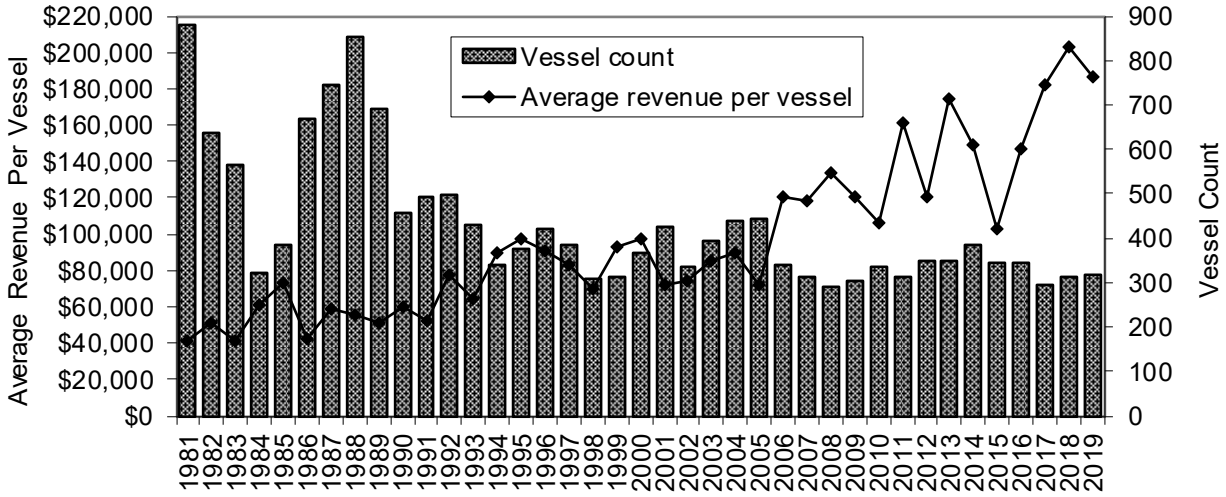
Sources:
Ocean finfish and crab trips: ODFW (ORBS) data, July 2020 and May 2021 extractions
Bay crab trips: Ainsworth et al. (2012).
Bay clam trips: Ainsworth (2016).
Freshwater anadromous catch: ODFW (SSHSTRP), accessed September 2020.
Economic contribution per day and anadromous success rates: Study.
Shellfish expenditures per trip: Dean Runyan Associates (May 2009).

Figure 1
Newport Area Onshore Landing Revenue Bins Showing Cumulative Revenue and Vessel Counts in 2019



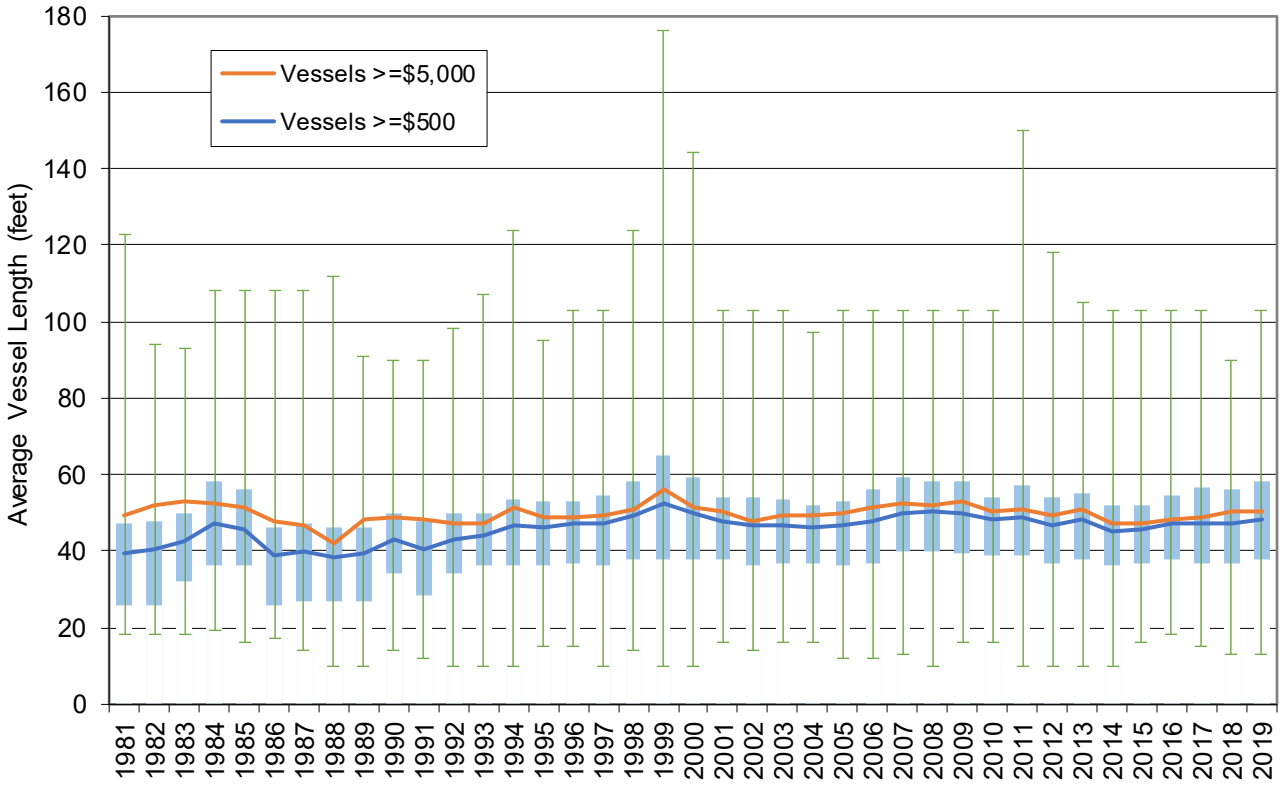
Notes: 1. Excludes vessels with identification "NONE" or starting with "ZZ". This identification is usually associated with vessels making tribal commercial fisheries deliveries.
2. Includes only landings at Newport Area.
Source: TRG (2021).

Figure 2
Newport Area Vessel Counts and Annual Average Revenue Per Vessel in 1981 to 2019



Notes: 1. Revenues adjusted to 2019 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
2. Excludes vessels with identifier codes "NONE" or "ZZ…," which are generally attributable to deliveries made in tribal fisheries.
3. Includes only vessels with at least $500 of ex-vessel revenue at Newport Area in a year, and any vessel length.
4. Average revenue per vessel is for onshore landings; distant water fisheries revenue is not included.
Source: TRG (2021).

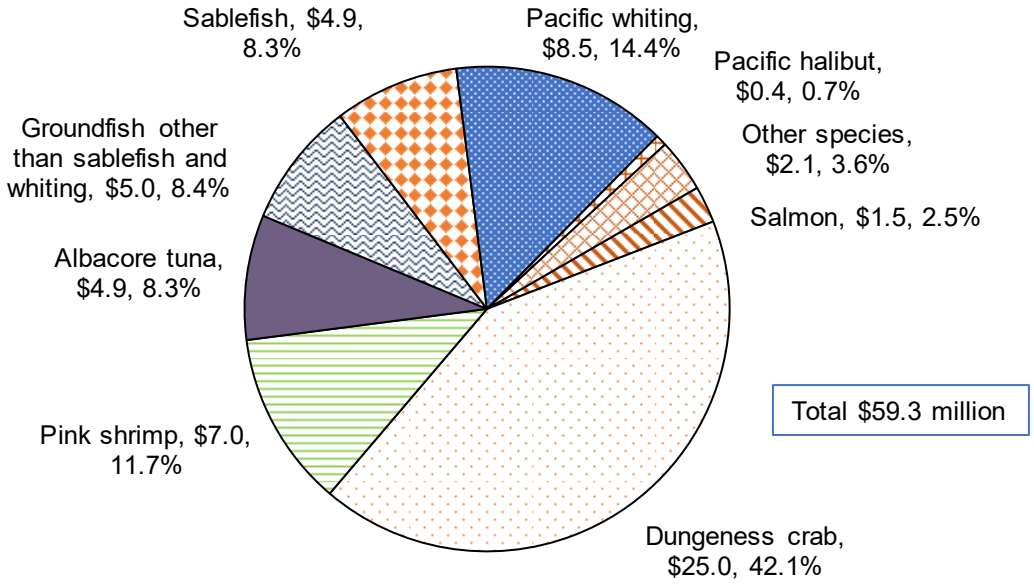
Figure 3
Newport Area Average Vessel Length Trends in 1981 to 2019



Notes: 1. Average vessel lengths exclude vessels with length of zero, and vessels with length over 200 ft.
2. Vessels included in the averages have at least the shown harvest value at Newport Area.
3. Lines are the mean. Dispersion bars are the maximum and minimum length included in the average, and boxes show the range between first and third quartiles for the >=$500 line.

Source: TRG (2021).

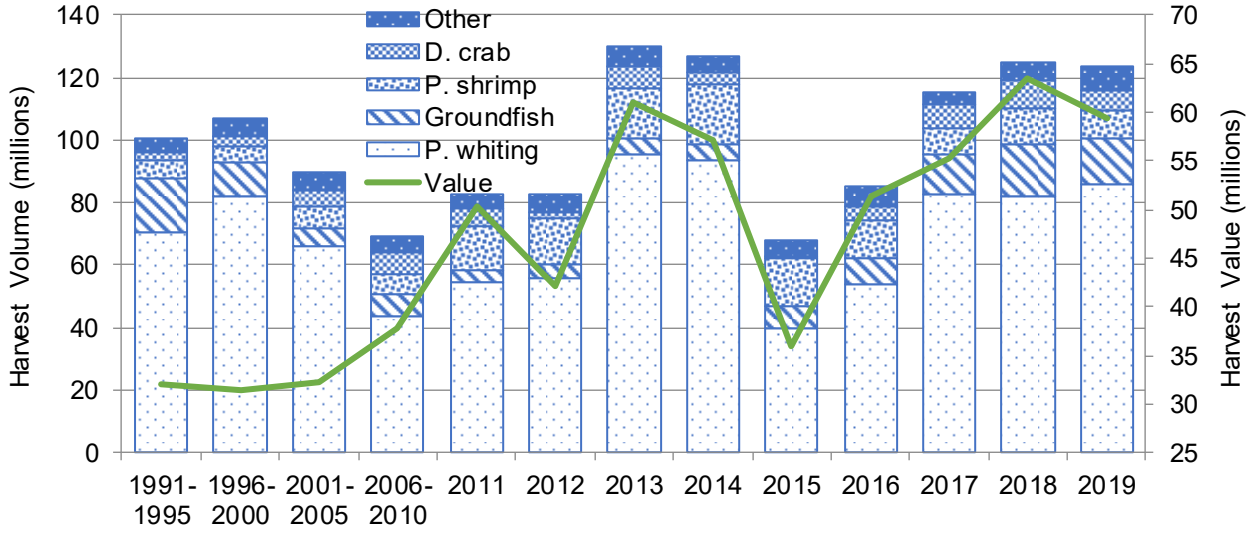
Figure 4
Newport Area Harvest Value by Fishery in 2019



Notes: 1. Harvest values are in millions.
2. Sablefish are itemized by gear groups used for harvesting. Fixed gear includes longline, fish pots, and other hook and line gear. Trawl gear includes roller trawl, midwater trawl, and selective flatfish trawl.
3. "Other species" includes $1.1 million of market squid and $0.9 million of hagfish.
4. Excludes aquaculture production.

Source: TRG (2021).

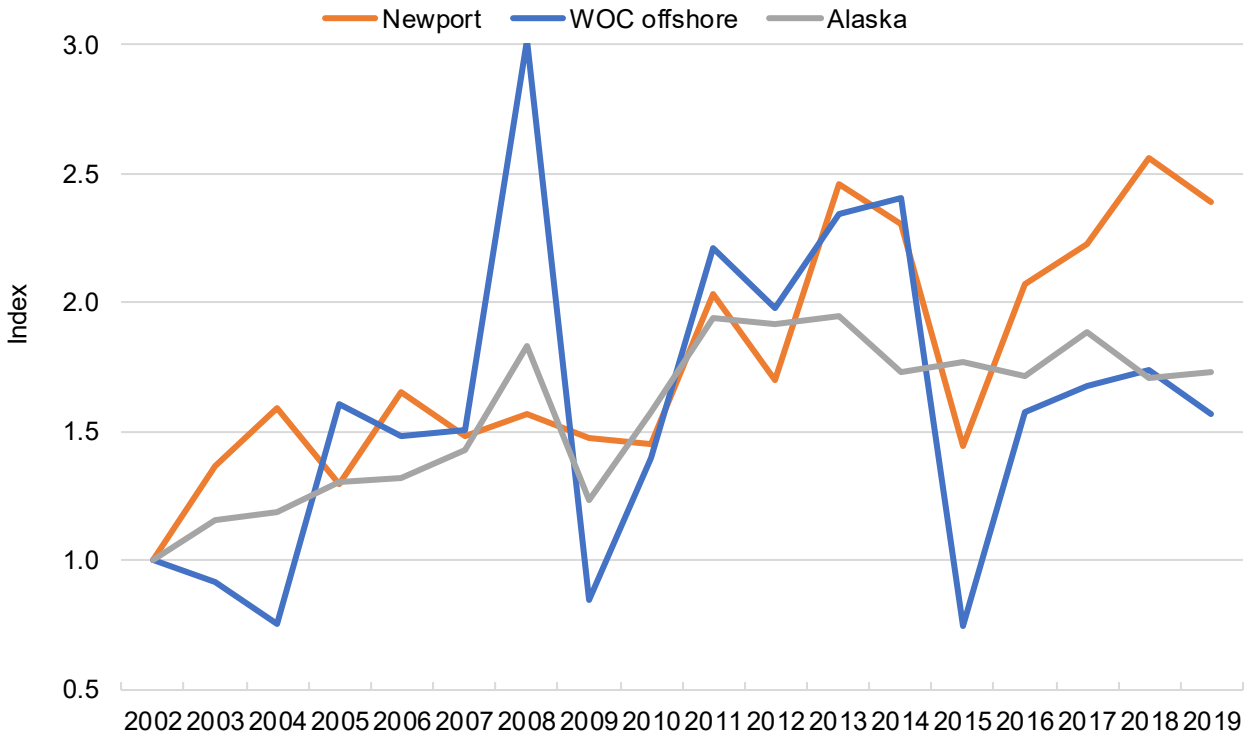
Figure 5
Newport Area Harvest Volume and Value Trends in 1991 to 2019



Notes: 1. Value is adjusted to 2019 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
2. Years are shown by five year averages for 1991 to 2010.
3. Stacked bars are showing harvest volume in round pounds by species groups. "Other" includes tuna, salmon, and other species.

Source: TRG (2021).

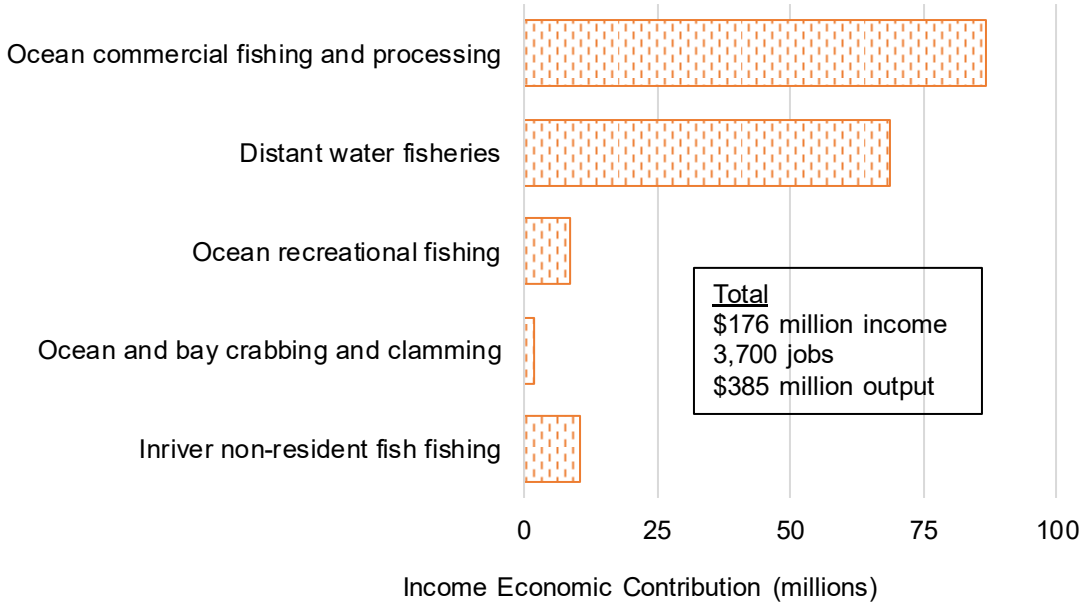
Figure 6
Newport Area, West Coast At-Sea, and Alaska Onshore and Offshore Ex-vessel Value Trends in 2002 to 2019



Notes: 1. Ex-vessel value is $59.3 million for Newport Area, $8.9 million for West Coast at-sea, and $1,909.5 million for Alaska onshore and offshore in 2019.
2. West Coast at-sea includes catcher vessels harvests delivered to motherships and excludes catcher-processor harvests. In 2016, Oregon homeport vessels were 47% of the vessels delivering Pacific whiting to at-sea motherships. (Of the 17 catcher vessels delivering in 2016 and based on U.S. West Coast onshore landings, eight homeport in Oregon and nine homeport in Washington or did not have U.S. West Coast onshore landings.)
3. West Coast at-sea ex-vessel value estimated using West Coast onshore prices less 15%.

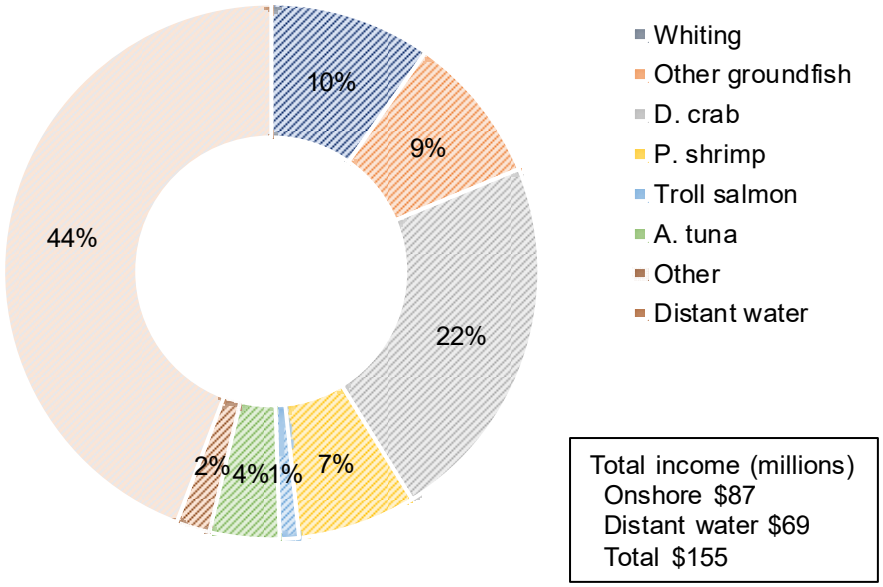
Sources: West Coast from TRG (2021) and PSMFC APEX (2020) reports "ALL001" downloaded September 18, 2020 and "IFQ001" downloaded November 11, 2020. Alaska from Alaska CFEC (2020).

Figure 7
Newport Area Economic Contribution from Commercial and Recreational Fishing Industry in 2019



Notes: 1. Economic contributions for port groups are at the local economic level.
2. Touring is not included.
Source: Study.

Figure 8
Newport Area Economic Contributions by Ocean Onshore
Commercial Fisheries and Distant Water Fisheries in 2019



Notes: 1. Economic contributions are measured by income at local economic level in millions of 2019 dollars.
2. Excludes aquaculture production.
3. Other in order of Newport Area economic contributions includes market squid, hagfish, P. halibut, and other species.

Source: Study.

Technical Appendix A

Lincoln County Commercial Landings by Fishery for Selected Communities in 2010 to 2019

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Table A.1
Commercial Landings (Round Pounds) by Fishery for Selected Communities in 2010 to 2019

	Trend	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Depoe Bay											
Cod/rockfish											
Lingcod		4,319	5,233	8,311	6,331	9,042	12,717	5,469	6,458	8,729	5,345
Black/blue rockfish		6,739	4,694	9,600	12,030	11,676	9,015	8,292	6,584	9,245	8,600
Other cod/rockfish		553	461	583	682	1,594	651	256	671	4,069	11,135
Sablefish		0	0	0	0	0	0	0	3	0	3,272
Other groundfish		0	0	0	0	0	5	0	0	0	79
Pacific whiting		0	0	0	0	0	0	0	0	0	0
Salmon											
Chinook		735	82	0	391	539	1,468	0	0	501	15
Coho		0	0	0	0	31	0	0	0	0	0
Dungeness crab		8,933	12,707	6,460	13,713	533	20,190	26,681	15,525	8,613	14,016
Albacore tuna		14,502	5,813	4,092	380	3,593	4,189	2,739	0	0	0
Sea urchins		0	15,160	187,881	22,504	0	12,503	0	14,457	0	1,802
Other		0	241	122	46	113	141	0	0	15	2,087
Total		35,781	44,391	217,049	56,077	27,121	60,879	43,437	43,698	31,172	46,351
Newport											
Cod/rockfish											
Lingcod		21,435	24,951	27,576	26,346	31,790	29,310	45,758	157,020	86,357	213,129
Black/blue rockfish		14,818	4,869	7,496	11,473	6,590	5,784	5,037	10,410	9,538	7,544
Widow rockfish		49,863	102,361	124,050	237,459	683,102	684,424	972,806	4,485,293	7,410,889	6,019,134
Other cod/rockfish		296,536	184,914	178,736	243,705	229,268	1,019,015	726,633	1,080,004	1,741,137	1,183,960
Thornyheads		900,129	199,512	223,273	299,145	271,748	438,531	381,769	314,688	310,186	238,933
Sablefish		2,042,263	1,730,197	1,632,405	1,236,881	946,092	1,789,490	2,293,744	2,097,904	2,222,850	2,548,777
Sharks/skates		647,077	167,330	266,309	269,975	218,420	284,596	352,241	377,854	412,445	279,489
Flatfish		3,506,282	1,405,850	1,706,949	2,657,706	2,283,080	3,116,761	3,566,381	4,337,094	4,124,616	3,799,636
Pacific whiting		38,148,554	54,501,684	55,803,036	95,698,228	93,759,411	39,503,171	53,789,403	82,803,259	82,104,786	85,989,306
Salmon											
Chinook		213,101	82,409	321,979	273,469	1,095,868	503,460	392,763	209,820	153,021	260,162
Chum		6	7	0	0	8	8	0	16	11	2
Coho		14	199	12	22	10,882	0	5	20	0	3
Pink		0	192	0	0	0	0	0	0	0	0
Dungeness crab		5,717,710	5,701,961	1,996,764	7,140,201	3,987,830	661,470	4,193,495	7,415,608	8,524,131	6,929,903
Pink shrimp		5,752,067	14,237,378	14,866,078	16,034,312	19,176,307	15,233,761	12,479,366	8,105,501	11,928,202	8,934,198
Albacore tuna		4,136,566	3,647,999	5,030,208	4,929,059	3,060,089	2,475,582	2,824,812	2,044,394	2,754,048	2,980,322
Pacific halibut		104,848	123,112	118,924	138,770	139,061	135,218	112,631	54,124	50,840	82,361
Hagfish		807,844	95,426	297,806	869,712	882,790	1,153,011	686,271	594,675	436,015	741,532
Other		230,019	72,352	93,436	100,785	281,803	669,202	2,063,283	867,944	2,615,216	3,069,977
Total		62,589,132	82,282,703	82,695,037	130,167,248	127,064,139	67,702,794	84,886,398	114,955,628	124,884,288	123,278,368

Table A.1 (cont.)

	Trend	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Waldport											
Salmon											
Chinook		0	0	0	0	0	0	0	0	0	0
Coho		0	0	0	0	0	0	0	0	0	0
Dungeness crab											
Bay		12,050	11,916	18,442	5,877	5,764	22,170	18,607	13,426	11,933	24,609
Ocean		0	275	0	0	0					
Ghost shrimp		31,911	34,097	25,093	30,917	33,459	37,120	45,989	29,539	22,591	22,529
Other		185	856	0	0	57	1,636	0	9	0	0
Total		44,146	47,144	43,535	36,794	39,280	60,926	64,596	42,974	34,524	47,138

Notes: 1. There is a Yachats port code which only shows landings from 1993 to 1997 (all California mussel) and misc. species in 2014 and 2015. The pounds ranged from four in 2014 to 22 thousand in 1995.
2. There is a Siletz Bay port code, with species mostly ghost shrimp and the rest D. crab in 2017, and no landings in 2018 or 2019.
3. Excludes aquaculture production.

Source: TRG (2021); ODFW Tables 15 and 53 for D. crab breakdown through 2014.

Table A.2
Commercial Ex-Vessel Value (Real 2019 Dollars) by Fishery for Selected Communities in 2010 to 2019

	Trend	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Depoe Bay											
Cod/rockfish											
Lingcod		12,922	15,464	27,130	19,569	26,784	39,282	16,465	19,519	27,427	16,776
Black/blue rockfish		11,768	8,026	17,321	22,127	25,053	16,894	15,411	12,259	18,963	16,827
Other cod/rockfish		1,107	996	1,457	1,589	5,908	1,371	595	1,522	19,223	50,109
Sablefish		0	0	0	0	0	0	0	4	0	8,164
Other groundfish		0	0	0	0	0	10	0	0	0	28
Pacific whiting		0	0	0	0	0	0	0	0	0	0
Salmon											
Chinook		4,068	285	0	2,149	2,971	9,467	0	0	4,199	78
Coho		0	0	0	0	132	0	0	0	0	0
Dungeness crab		34,049	47,876	27,068	52,958	3,340	97,433	129,218	51,701	42,583	62,933
Albacore tuna		20,562	9,604	6,977	419	5,047	8,336	3,496	0	0	0
Sea urchins		0	8,679	130,359	15,349	0	7,447	0	15,070	0	1,802
Other		0	1,460	522	353	731	746	0	0	93	11,782
Total		84,476	92,389	210,833	114,514	69,966	180,986	165,185	100,075	112,487	168,499
Newport											
Cod/rockfish											
Lingcod		41,869	49,081	48,647	31,891	28,595	59,530	88,877	188,539	131,279	258,868
Black/blue rockfish		25,290	8,484	13,872	20,368	12,088	11,904	9,505	19,246	17,072	13,845
Widow rockfish		24,060	45,375	52,986	111,770	306,992	294,378	449,386	1,513,014	2,199,917	1,733,039
Other cod/rockfish		155,984	109,250	107,826	147,823	118,221	489,615	344,553	334,518	458,266	367,556
Thornyheads		443,650	122,485	139,332	203,437	193,750	255,376	234,352	216,842	166,169	121,455
Sablefish		6,163,159	7,987,992	5,068,272	3,003,326	2,590,308	5,322,004	6,952,245	6,761,525	5,070,768	4,937,409
Sharks/skates		177,454	45,390	79,303	106,395	81,796	89,026	124,065	135,224	108,564	92,276
Flatfish		1,332,863	765,461	930,719	1,537,035	1,266,922	1,761,153	2,186,407	2,521,683	2,580,526	2,288,305
Pacific whiting		3,865,571	6,854,544	7,921,196	13,038,036	11,073,461	3,227,778	5,051,091	7,178,366	7,434,422	8,539,712
Salmon											
Chinook		1,165,280	469,997	1,721,059	1,618,587	5,678,231	2,711,208	3,005,069	1,472,659	1,043,525	1,458,603
Chum		0	0	0	0	9	0	0	0	0	2
Coho		0	0	0	0	22,196	0	0	0	0	0
Pink		0	80	0	0	0	0	0	0	0	0
Dungeness crab		13,761,716	16,583,290	7,568,074	21,870,098	17,716,070	3,849,363	16,351,571	23,844,582	28,399,819	24,793,884
Pink shrimp		2,422,732	8,684,260	8,551,196	9,138,968	12,106,157	12,389,420	9,156,641	4,811,779	8,996,291	6,951,110
Albacore tuna		5,316,407	7,582,877	8,637,192	8,400,538	4,136,175	3,229,730	5,045,028	5,038,193	4,737,830	4,938,588
Pacific halibut		452,967	753,410	653,056	725,756	847,046	776,278	678,636	322,576	286,820	426,216
Hagfish		426,056	71,189	232,972	814,353	770,622	958,958	576,079	588,894	477,632	864,781
Other		21,240	15,060	16,678	7,788	21,032	82,548	765,424	38,226	1,213,820	1,174,537
Total		35,796,297	50,148,224	41,742,382	60,776,169	56,969,668	35,508,268	51,018,930	54,985,867	63,322,721	58,960,186

Table A.2 (cont.)

	Trend	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Waldport											
Salmon											
Chinook		0	0	0	0	0	0	0	0	0	0
Coho		0	0	0	0	0	0	0	0	0	0
Dungeness crab											
Bay		51,905	44,505	80,306	25,233	33,514	113,240	90,432	66,271	57,625	114,560
Ocean		0	787	0	0	0					
Ghost shrimp		104,951	109,459	80,094	91,072	93,758	103,635	141,924	89,121	65,464	64,560
Other		292	638	0	0	189	1,228	0	17	0	0
Total		157,148	155,390	160,400	116,305	127,461	218,103	232,356	155,408	123,089	179,120

Notes: 1. There is a Yachats port code which only shows landings from 1993 to 1997 (all California mussel) and misc. species in 2014 and 2015. The value ranged from $4 in 2014 to $10 thousand in 1995.
2. There is a Siletz Bay port code, with species mostly ghost shrimp and the rest D. crab in 2017, and no landings in 2018 or 2019.
3. Excludes aquaculture production.

Source: TRG (2021); ODFW Tables 15 and 53 for D. crab breakdown through 2014.

Technical Appendix B

Alaska Licenses, U.S. Ports Landings, and Northeastern Pacific Ocean Commercial Harvests

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Table B.1
Oregon and Alaska Crewmember and Boat Licenses for Oregon Port Groups in Select Years

Crew Member Licenses

Oregon

Port Group	2012	2017	2019
Astoria	90	96	82
Tillamook	56	70	70
Newport	123	199	198
Depoe Bay	4	2	3
Newport	63	100	116
Waldport	2	8	5
Other	54	89	74
Coos Bay	156	174	171
Brookings	103	118	146
Coastwide	528	657	667
All Oregon addresses	658	771	778
All addresses	955	1,116	1,237

Notes: 1. Includes licenses with status "A."
Source: ODFW (Feb. 2013, Mar. 2018, and Dec. 2020).

Alaska

Port Group	2011	2017	2019
Astoria	160	97	99
Tillamook	4	5	8
Newport	115	126	110
Depoe Bay	3	2	2
Newport	45	55	41
Waldport	8	7	7
Other	59	62	60
Coos Bay	86	40	27
Brookings	8	9	12
Coastwide	373	277	256
All Oregon addresses	1,348	982	993
All addresses	23,755	21,244	20,505

Source: ADFG (Dec. 2012, Jan. 2019, and Nov. 2020

Boat Licenses

Oregon

Port Group	2012	2017	2019
Astoria	211	216	191
Tillamook	108	90	94
Newport	195	192	186
Depoe Bay	12	10	9
Newport	86	98	98
Waldport	12	10	12
Other	85	74	67
Coos Bay	217	206	201
Brookings	156	153	145
Coastwide	887	857	817
All Oregon addresses	1,148	1,112	1,058
All addresses	1,556	1,581	1,570

Notes: 1. Includes licenses with status "A."
Source: ODFW (Feb. 2013, Mar. 2018, and Dec. 2020).

Alaska

Port Group	2012	2017	2019
Astoria	70	56	53
Tillamook	0	1	1
Newport	34	27	23
Depoe Bay	3	2	1
Newport	24	20	18
Waldport	2	2	1
Other	5	3	3
Coos Bay	10	8	8
Brookings	4	3	2
Coastwide	118	95	87
All Oregon addresses	294	276	273
All addresses	9,995	9,200	8,813

Notes: 1. Vessels filtered by ADFG vessel number.
Source: Alaska CFEC (Feb. 2013, Jan. 2019, and Jan. 2021).

Table B.2
Top 30 Commercial Fishery Landings by Port Ranked by Dollars in 2019

Rank	Port	Millions of Pounds	Millions of Dollars
1	New Bedford, MA	115.8	450.8
2	Naknek, AK	206.1	288.8
3	Dutch Harbor, AK	763.0	190.3
4	Aleutian Islands (Other), AK	589.1	142.1
5	Bristol Bay (Other), AK	73.1	128.8
6	Kodiak, AK	397.2	119.9
7	Pago Pago, AS	164.6	92.6
8	Cape May-Wildwood, NJ	94.5	90.0
9	Honolulu, HI	28.9	89.7
10	Empire-Venice, LA	209.2	79.1
11	Alaska Penninsula (Other), AK	181.1	74.5
12	Point Judith, RI	48.1	65.9
13	Galveston, TX	18.8	65.0
14	Newport, OR	121.5	58.1
15	Gloucester, MA	50.2	56.6
16	Hampton Roads Area, VA	17.4	56.1
17	Cordova, AK	95.6	54.9
18	Key West, FL	14.2	54.5
19	Sitka, AK	49.9	53.6
20	Westport, WA	120.9	52.9
21	Bayou La Batre, AL	23.4	52.5
22	Stonington, ME	11.0	51.0
23	Dulac-Chauvin, LA	35.1	50.4
24	Brownsville-Port Isabel, TX	16.5	46.1
25	Astoria, OR	171.1	44.5
26	Pascagoula-Moss Point, MS	331.4	42.8
27	Palacios, TX	16.6	42.4
28	Vinalhaven, ME	8.1	39.8
29	Petersburg, AK	32.2	37.5
30	Reedville, VA	364.9	36.9

Source: NMFS Commercial Fisheries Statistics, downloaded February 2021.

Table B.3
Northeastern Pacific Ocean U.S. and Canada Harvest Value in 2019

			Selected Fisheries					
	All Fisheries		Salmon		Dungeness Crab		Trawl Shrimp	
Region	Amount	Share	Amount	Share	Amount	Share	Amount	Share
Alaska	1,754.1	68%	673.4	93%	22.8	8%	1.3	4%
British Columbia	299.9	12%	14.0	2%	73.8	24%	2.5	8%
Washington onshore	197.8	8%	14.3	2%	85.0	28%	6.7	21%
Oregon onshore	161.6	6%	4.3	1%	67.9	23%	19.9	62%
California onshore	149.3	6%	16.6	2%	51.9	17%	1.7	5%
West Coast at-sea	28.9	1%						
Total	2,591.6	100%	722.7	100%	301.5	100%	32.1	100%

Notes:
1. Values are in millions of U.S. dollars (nominal).
2. Alaska and Canadian at-sea fisheries harvest value are included in their respective table rows.
3. Alaska trawl shrimp is sidestriped shrimp harvested with beam trawl gear in southeast Alaska. The Alaska table's value is for harvest in the preliminary 2016-17 season using statewide price in 2019. Canadian trawl shrimp is mostly pink shrimp and sidestriped with some coonstripe shrimp and humpback shrimp. Table's values for Washington, Oregon, and California are all pink shrimp.
4. Aquaculture production is not shown in the table.
5. The all fisheries and selected fisheries harvest values except for Alaska trawl shrimp are for the calendar year.

Sources: Alaska harvest value from NOAA Fisheries (May 2021), except Alaska trawl shrimp from ADFG commercial fishing information by area and by fishery. British Columbia harvest value from Fisheries and Oceans Canada (DFO), Economic Analysis and Statistics, commercial fisheries landings. West Coast onshore and at-sea harvest value from PacFIN fish ticket data, September 2020 extraction, and APEX data, downloaded June 2021. British Columbia harvest value converted to U.S. dollars using Bank of Canada exchange rates.

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Technical Appendix C

Oregon Commercial and Recreational Fishing Activity and Economic Contributions

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Table C.1
Oregon Harvested Volume and Ex-Vessel Value by Fishery for Five-Year Average, 2018 and 2019

Fishery	2014-2019 Value	2014-2018 Five Year Average Volume	Value	Price	2018 Volume	Value	Price	2019 Volume	Value	Price
Salmon		2,719	10,964	4.03	980	5,663	5.78	1,060	4,339	4.09
Troll Chinook		1,113	6,592	5.92	331	2,461	7.44	404	2,320	5.74
Troll coho		24	36	1.52	1	2	3.23	8	19	2.30
Net Chinook		1,118	3,652	3.27	533	2,962	5.56	496	1,739	3.50
Net coho		430	634	1.47	81	162	2.00	132	224	1.70
Other species/gear		34	51	1.50	35	76	2.18	20	36	1.81
Dungeness crab		16,118	57,213	3.55	23,134	75,351	3.26	18,719	66,965	3.58
Pink shrimp		39,987	28,487	0.71	35,873	27,395	0.76	26,852	19,940	0.74
Albacore tuna		6,832	11,255	1.65	5,812	9,899	1.70	6,567	10,846	1.65
Groundfish (other than sablefish and whiting)		34,305	18,202	0.53	45,486	20,070	0.44	42,589	18,740	0.44
Trawl gear LE		33,603	16,530	0.49	44,649	18,120	0.41	41,786	16,816	0.40
Fixed gear LE		128	168	1.32	149	208	1.40	146	208	1.42
Fixed gear OA		553	1,482	2.68	623	1,707	2.74	650	1,702	2.62
Sablefish		5,016	13,380	2.67	5,681	12,143	2.14	6,176	10,607	1.72
Trawl gear LE		2,236	4,273	1.91	2,541	3,292	1.30	2,638	2,423	0.92
Fixed gear LE		2,534	8,361	3.30	2,875	8,204	2.85	3,321	7,744	2.33
Fixed gear OA		245	744	3.04	256	633	2.47	216	440	2.03
Pacific whiting		152,644	14,104	0.092	185,554	16,732	0.090	222,202	21,719	0.098
Pacific sardine		4,380	939	0.214	20	3	0.157	28	4	0.135
Pacific halibut		243	1,394	5.73	231	1,253	5.43	252	1,249	4.95
Other		8,807	4,158	0.47	10,446	6,531	0.63	10,065	6,266	0.62
Market squid		1,965	864	0.44	7,046	3,129	0.44	5,248	2,886	0.55
Hagfish		1,656	1,558	0.94	1,466	1,497	1.02	1,588	1,654	1.04
Red sea urchin		363	365	1.01	333	699	2.10	181	570	3.16
Pacific (chub) mackerel		591	74	0.125	155	2	0.013	202	11	0.053
Total		271,052	160,096	0.59	313,217	175,041	0.56	334,510	160,675	0.48

Notes:
1. Volume and value are in thousands. The harvest value and prices are in 2019 dollars. Sablefish fixed gear round pounds are using landed pounds to estimate PacFIN data error correction for Year 2019, September 2020 extraction.
2. Prices are annual and sometimes are averaged across harvests made using different gear types. Prices are expressed in round weight equivalents. Average prices for salmon are across seasons and sizes.
3. Acronyms: LE - limited entry, OA - open access.
4. D. crab is shown seasonally by December to November for each year, for example 2019 D. crab includes December 2018 to November 2019.
5. Starting in 2011 a small amount of sablefish in the LE trawl individual transferable quota (ITQ) program is harvested with fixed gear.
6. "Other" includes gaper clam (414 thousand pounds) and other species in 2018; and jack mackerel (1,008 thousand pounds, $31 thousand), basket cockle (334 thousand pounds, $416 thousand), and other species in 2019.
7. Excludes aquaculture production.

Source: TRG (2021).

Table C.2
Oregon Onshore Harvested Volume and Ex-vessel Value by Port Groups for 2018 and 2019

	2018			2019		
Port Group	Volume	Value	Share	Volume	Value	Share
Astoria	141,034	43,783	25%	178,229	46,829	29%
Tillamook	2,174	5,285	3%	2,045	4,756	3%
Newport	124,950	63,558	36%	123,372	59,308	37%
Coos Bay	30,045	40,793	23%	20,961	33,928	21%
Brookings	15,017	21,621	12%	10,218	16,813	10%
Port Orford	1,562	4,710	3%	1,594	4,909	3%
Total	313,219	175,040	100%	334,826	161,634	100%

Notes: 1. Volume and ex-vessel value are in thousands. Values are in 2019 dollars.
2. See Chapter II for which individual ports are included in the different port groups.
3. Onshore landings includes the Oregon side landings in the Columbia River non-Indian and tribal salmon fishery. All Columbia River landings are included in the Astoria port group.
4. Amounts are for landings during calendar year, including Dungeness crab.
5. Excludes aquaculture production.

Source: TRG (2021).

Table C.3
Oregon Onshore Landed Volume by Major Fishery in 1981 to 2019

Year	Salmon	D. Crab	P. Shrimp	A. Tuna	Groundfish	P. Whiting	P. Sardine	P. Halibut	Other	Total
1981	7,009	6,981	25,904	7,693	81,835	360	--	150	17,614	147,546
1982	8,572	7,020	18,429	1,855	90,084	3	--	234	2,581	128,779
1983	2,669	5,332	6,532	3,397	77,369	143	--	579	3,952	99,972
1984	3,595	4,999	4,844	1,594	61,309	746	--	1,055	5,702	83,844
1985	6,570	7,358	14,840	1,518	61,920	1,950	--	813	4,276	99,245
1986	13,792	4,658	33,884	2,461	54,883	927	--	1,314	1,599	113,517
1987	15,094	5,991	44,589	2,288	67,176	403	--	916	1,925	138,383
1988	17,789	9,417	41,846	3,967	70,495	543	--	582	3,486	148,126
1989	11,724	11,676	49,129	1,080	81,047	196	--	916	9,640	165,408
1990	5,412	9,510	31,883	2,079	73,305	5,058	--	622	11,033	138,903
1991	5,344	4,924	21,711	1,259	80,847	29,109	--	544	6,136	149,875
1992	2,364	11,908	48,033	3,896	75,215	107,939	9	712	6,744	256,820
1993	1,848	10,456	26,923	4,754	81,303	78,970	1	663	5,377	210,294
1994	1,285	10,638	16,386	4,698	64,265	143,563	0	540	4,226	245,602
1995	2,862	11,954	12,106	5,034	55,066	147,355	--	543	3,655	238,574
1996	2,842	19,302	15,727	8,948	57,002	155,590	0	310	2,731	262,452
1997	2,245	7,777	19,560	9,168	52,703	162,782	0	377	6,267	260,877
1998	1,978	7,410	6,096	10,603	41,806	157,895	2	237	4,375	230,402
1999	1,560	12,347	20,451	4,553	44,119	160,965	1,710	350	3,339	249,394
2000	3,142	11,180	25,462	8,757	39,311	151,461	21,005	331	2,774	263,423
2001	5,266	9,690	28,482	8,959	31,645	117,673	28,176	253	3,527	233,671
2002	6,119	12,444	41,584	4,362	21,102	71,220	50,069	529	2,684	210,112
2003	6,722	23,930	20,546	9,165	25,934	80,648	55,683	342	2,662	225,632
2004	5,936	27,273	12,207	10,754	25,590	130,238	79,610	345	2,264	294,217
2005	4,688	17,730	15,784	8,087	27,231	135,503	99,450	357	3,609	312,439
2006	1,814	33,316	12,195	8,536	27,395	135,186	78,634	251	3,216	300,543
2007	1,384	17,026	20,125	10,468	30,881	94,360	92,911	244	3,598	270,997
2008	1,923	13,888	25,520	8,864	37,922	61,466	50,593	243	4,345	204,765
2009	2,312	21,854	22,153	10,072	41,400	62,988	47,357	234	2,442	210,811
2010	2,774	15,868	31,463	10,700	36,855	69,530	45,971	186	3,270	216,618
2011	2,422	17,260	48,314	9,682	28,936	151,464	24,302	217	3,222	285,821
2012	1,927	8,666	49,144	9,886	28,475	107,652	93,957	197	6,811	306,716
2013	3,513	26,073	47,629	10,205	31,111	167,499	57,956	205	5,198	349,390
2014	6,414	11,915	51,960	8,777	28,375	168,226	17,171	206	7,319	300,362
2015	3,159	2,287	53,516	7,577	32,976	94,907	4,699	263	4,502	203,885
2016	1,844	15,716	35,528	7,250	35,716	113,035	9	248	17,572	226,918
2017	1,196	19,016	23,057	4,745	48,374	201,499	3	269	4,196	302,355
2018	980	23,137	35,873	5,812	51,167	185,554	20	231	10,446	313,219
2019	1,060	19,035	26,852	6,567	48,764	222,202	28	252	10,065	334,826
Avg14-18	2,719	14,414	39,987	6,832	39,321	152,644	4,380	243	8,807	269,348

Notes:
1. Landings are reported in thousands of round pounds. Landing data is preliminary for 2019. Sablefish fixed gear round pounds are using landed pounds to estimate PacFIN data error correction for Year 2019, September 2020 extraction.
2. Salmon includes landings of steelhead, which have come exclusively from the tribal fisheries since 1975.
3. D. crab includes only Dungeness crab; p. shrimp includes only pink shrimp; and a. tuna includes only albacore tuna.
4. Pacific whiting (also known as hake) did not emerge as a major fishery species until after 1990. Groundfish in 2019 includes (thousands of round pounds) flatfish (14,349), sablefish (6,176), thornyheads (1,068), rockfish other than thornyheads (24,406), cods other than sablefish (975), and other (1,791).
5. Biological studies have found the northern population of the Pacific sardine has a three decade or so abundance cycle, and did not emerge as a major fishery species until 2000 in the latest cycle.
6. 'Other' in 2019 includes landings (thousands of round pounds) of market squid (5,248), hagfish (1,588), jack mackerel (1,008), shad (491), and other species (1,730). Shellfish volume excludes aquaculture production.

Source: TRG (2021).

Table C.4
Oregon Onshore Landed Value by Major Fishery in 1981 to 2019

	Price	Salmon		Dungeness Crab		Pink Shrimp		Albacore Tuna		Groundfish		Pacific Whiting		Pacific Sardine		Pacific Halibut		Other		Total	
Year	Index	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal
1981	41.2	26,817	11,047	16,287	6,709	31,641	13,034	16,159	6,657	35,188	14,496	61	25	--	--	388	160	12,659	5,215	139,201	57,344
1982	43.7	28,247	12,356	17,221	7,533	21,190	9,269	2,813	1,230	45,869	20,064	0	0	--	--	609	266	2,247	983	118,197	51,702
1983	45.5	6,689	3,040	17,403	7,910	10,248	4,658	4,145	1,884	40,371	18,349	52	24	--	--	1,388	631	3,358	1,526	83,654	38,023
1984	47.1	10,869	5,118	16,448	7,746	4,571	2,153	1,885	888	31,812	14,981	125	59	--	--	1,725	813	4,829	2,274	72,264	34,031
1985	48.6	18,641	9,056	21,929	10,654	10,777	5,236	1,686	819	34,840	16,927	357	173	--	--	1,643	798	3,959	1,923	93,832	45,587
1986	49.6	30,628	15,181	13,289	6,587	36,578	18,131	2,673	1,325	35,009	17,353	121	60	--	--	3,791	1,879	2,733	1,355	124,823	61,871
1987	50.8	53,153	26,994	16,444	8,351	59,610	30,273	3,308	1,680	47,954	24,353	67	34	--	--	2,803	1,423	3,125	1,587	186,463	94,696
1988	52.6	74,213	39,020	21,454	11,280	32,617	17,150	6,330	3,328	45,709	24,033	78	41	--	--	1,668	877	3,582	1,883	185,651	97,612
1989	54.6	26,041	14,228	24,824	13,564	32,770	17,905	1,622	887	46,159	25,221	27	15	--	--	2,382	1,301	7,442	4,066	141,266	77,187
1990	56.7	16,886	9,573	25,672	14,554	27,568	15,629	3,111	1,764	40,830	23,147	387	220	--	--	1,965	1,114	10,070	5,709	126,490	71,710
1991	58.6	9,945	5,828	12,734	7,462	20,607	12,076	1,671	979	49,171	28,814	2,338	1,370	--	--	1,744	1,022	7,733	4,531	105,942	62,083
1992	59.9	6,151	3,687	22,336	13,388	28,674	17,187	6,621	3,969	44,622	26,745	8,473	5,078	--	--	1,381	828	5,380	3,225	123,638	74,106
1993	61.4	3,953	2,425	19,390	11,898	14,524	8,912	6,328	3,883	45,044	27,638	3,731	2,289	--	--	1,405	862	4,811	2,952	99,185	60,859
1994	62.7	2,329	1,459	23,078	14,462	15,361	9,626	5,984	3,750	45,908	28,769	6,858	4,298	--	--	1,619	1,015	3,642	2,282	104,780	65,662
1995	64.0	5,585	3,574	31,328	20,044	13,440	8,599	6,330	4,050	48,409	30,974	10,941	7,000	--	--	1,471	941	3,571	2,285	121,075	77,467
1996	65.2	5,047	3,288	40,182	26,180	14,369	9,362	11,404	7,430	46,468	30,275	6,365	4,147	--	--	1,080	704	1,901	1,239	126,814	82,623
1997	66.3	4,182	2,772	22,082	14,636	11,935	7,910	11,076	7,342	42,225	27,987	10,293	6,823	--	--	1,049	695	2,123	1,407	104,965	69,573
1998	67.0	3,865	2,590	18,682	12,519	4,759	3,189	9,760	6,540	29,086	19,491	5,606	3,756	1	1	483	323	2,380	1,595	74,621	50,005
1999	68.0	3,004	2,042	33,995	23,107	14,080	9,571	5,566	3,784	32,648	22,192	8,706	5,917	126	86	1,018	692	1,545	1,050	100,688	68,441
2000	69.5	5,797	4,029	34,111	23,709	14,664	10,192	10,774	7,489	35,065	24,373	8,749	6,081	1,653	1,149	1,004	698	2,895	2,012	114,710	79,732
2001	71.1	8,227	5,847	27,152	19,296	10,638	7,560	10,636	7,559	28,712	20,405	5,814	4,132	2,278	1,619	678	482	3,118	2,216	97,253	69,116
2002	72.2	9,609	6,933	28,774	20,761	15,734	11,353	4,091	2,952	19,695	14,210	4,462	3,219	3,907	2,819	1,404	1,013	2,618	1,889	90,295	65,149
2003	73.5	12,065	8,869	50,491	37,117	6,871	5,051	8,392	6,169	24,041	17,673	4,955	3,642	4,001	2,941	1,171	860	1,582	1,163	113,569	83,487
2004	75.5	17,217	12,995	56,908	42,954	6,280	4,740	12,115	9,145	21,651	16,342	6,148	4,641	6,452	4,870	1,159	875	1,547	1,168	129,478	97,730
2005	77.8	13,412	10,438	34,177	26,597	8,868	6,901	11,328	8,816	23,741	18,475	9,132	7,107	7,965	6,199	1,151	896	1,976	1,538	111,750	86,965
2006	80.2	6,160	4,940	67,094	53,807	5,604	4,494	10,059	8,067	24,855	19,933	9,943	7,974	4,667	3,743	956	766	1,504	1,206	130,844	104,931
2007	82.4	5,661	4,662	46,388	38,202	11,371	9,365	11,497	9,468	24,890	20,497	7,894	6,501	5,526	4,551	1,031	849	1,668	1,374	115,924	95,468
2008	83.9	5,052	4,240	34,749	29,164	16,609	13,939	12,691	10,651	32,104	26,943	8,138	6,830	6,750	5,665	1,078	905	2,397	2,012	119,568	100,349
2009	84.6	4,190	3,544	50,135	42,404	8,056	6,813	12,035	10,179	33,264	28,135	4,398	3,720	6,255	5,291	793	670	1,920	1,624	121,045	102,380
2010	85.6	8,996	7,698	38,269	32,746	12,835	10,982	14,518	12,422	29,952	25,629	6,327	5,414	6,138	5,252	865	740	2,466	2,111	120,366	102,996
2011	87.4	7,713	6,737	51,161	44,690	28,170	24,607	21,483	18,766	32,557	28,439	18,909	16,518	3,654	3,192	1,306	1,141	2,742	2,395	167,696	146,485
2012	89.0	7,777	6,925	32,700	29,114	27,726	24,685	16,934	15,077	26,770	23,834	16,410	14,611	10,083	8,977	1,083	965	2,452	2,183	141,936	126,370
2013	90.6	13,705	12,418	78,587	71,209	26,655	24,153	17,745	16,079	24,635	22,322	22,519	20,405	6,952	6,299	1,084	982	3,895	3,529	195,776	177,396
2014	92.3	21,808	20,124	52,003	47,988	31,779	29,326	11,946	11,023	23,634	21,810	19,802	18,274	3,816	3,522	1,245	1,149	3,155	2,911	169,188	156,127
2015	93.2	12,735	11,864	12,786	11,912	43,378	40,413	9,888	9,212	30,901	28,788	7,670	7,146	872	813	1,522	1,418	2,908	2,709	122,661	114,274
2016	94.1	8,825	8,308	59,204	55,735	26,655	25,093	13,280	12,502	33,979	31,988	9,235	8,694	0	0	1,479	1,392	5,123	4,823	157,782	148,536
2017	95.9	5,792	5,556	61,217	58,728	13,226	12,688	11,261	10,803	37,185	35,673	17,079	16,385	0	0	1,473	1,413	3,072	2,947	150,305	144,193
2018	98.2	5,663	5,562	75,351	74,012	27,395	26,909	9,899	9,723	32,213	31,640	16,732	16,435	3	3	1,253	1,230	6,531	6,415	175,040	171,929
2019	100.0	4,339	4,339	67,923	67,923	19,940	19,940	10,846	10,846	29,347	29,347	21,719	21,719	4	4	1,249	1,249	6,266	6,266	161,634	161,634
Avg14-18		10,964		52,112		28,487		11,255		31,582		14,104		939		1,394		4,158		154,995	

Notes
1. Nominal value is the revenue received by fishermen/harvesters in the landing year. Real value is in thousands of 2019 dollars adjusted using the GDP implicit price deflator developed by U.S. Bureau of Economic Analysis.
2. Groundfish in 2019 includes landings (real ex-vessel value in thousands) of sablefish ($10,607), flatfish ($8,472), thornyheads ($442), rockfish other than thornyheads ($7,808), cods other than sablefish ($1,631), and other ($387). 'Other' in 2019 includes (real ex-vessel value in thousands) market squid ($2,886), hagfish ($1,654), bay clams ($771 including basket, butter, gaper), red sea urchin ($570), razor clam ($135), white sturgeon ($103), ghost shrimp ($84), and other species ($62). Shellfish value excludes private lands harvest.
3. Notes and sources from volume table concerning species composition also apply to this table.

Table C.5
Oregon Fisheries Annual Ex-Vessel Prices by Selected Species and Species Groups in 1971 to 2019

Species	1971	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Troll Chinook (ocean)	2.92	4.60	3.94	7.36	7.51	5.42	3.67	4.45	4.47	3.55	3.67	3.09	2.30	2.09	2.49	1.97	2.34	3.56	5.94	5.98	6.03	5.15	5.58	5.93	5.59	5.64	5.37	5.73	7.60	7.27	7.44	5.74
Troll coho (ocean)	1.78	3.52	2.93	4.52	6.60	3.52	1.83	2.70	2.96	1.70	1.47	1.60	-	-	1.32	0.96	1.01	2.09	3.15	2.01	2.80	2.10	2.27	1.99	2.15	2.46	1.89	1.74	-	2.75	3.23	2.30
Net Chinook (below Bonneville Dam)															2.08	1.99	1.15	2.15	3.13	4.03	3.36	2.40	3.24	2.82	2.96	2.84	2.01	2.89	3.91	4.49	6.03	4.07
Spring															4.18	4.13	3.82	4.48	5.33	6.76	7.51	5.69	5.79	5.65	6.66	7.03	5.82	6.12	7.63	7.90	10.75	11.41
Fall															1.64	0.91	0.90	1.95	2.56	3.13	3.00	2.30	2.40	2.45	2.40	2.60	1.87	2.36	3.22	3.18	3.30	2.59
Net Chinook (above Bonneville Dam)															0.79	0.57	0.35	0.78	1.92	2.47	2.36	1.58	2.22	1.58	2.58	2.32	1.97	2.43	3.10	3.68	4.16	2.97
Spring															-	1.81	1.49	2.18	2.93	4.54	5.34	3.63	4.51	4.03	5.41	5.12	5.15	4.30	5.76	5.79	7.43	5.59
Fall															0.84	0.34	0.26	0.74	1.77	2.51	1.96	1.27	1.46	0.91	2.07	2.13	1.61	2.07	2.62	3.36	3.57	2.76
Net coho (below Bonneville Dam)															1.23	0.40	0.73	1.37	1.64	1.97	1.54	1.41	1.60	1.85	1.82	2.03	1.26	1.66	1.96	2.13	1.96	1.74
Net steelhead (above Bonneville Dam)															0.61	0.22	0.10	0.36	0.62	0.80	0.84	0.73	0.99	1.29	1.36	1.18	1.20	1.42	1.49	2.25	2.25	2.86
Dungeness crab	1.41	2.56	3.01	1.84	2.15	2.33	3.26	2.98	2.74	2.13	2.59	1.86	2.63	2.85	2.75	2.80	2.11	1.93	2.02	2.73	2.50	2.30	2.42	2.97	3.78	3.02	4.37	5.62	3.77	3.23	3.26	3.58
Pink shrimp	0.60	0.99	0.51	0.77	1.11	1.22	1.57	0.73	1.34	0.67	0.95	0.54	1.11	0.61	0.69	0.37	0.33	0.56	0.46	0.57	0.65	0.37	0.41	0.58	0.57	0.56	0.61	0.81	0.76	0.57	0.77	0.75
Albacore tuna	1.37	1.60	1.20	0.87	1.53	2.10	1.22	1.11	1.45	1.50	1.33	1.33	1.26	1.21	1.22	1.19	0.92	1.40	1.18	1.10	1.43	1.20	1.36	2.22	1.71	1.74	1.35	1.30	1.83	2.37	1.70	1.65
Groundfish species group	0.41	0.54	0.53	0.70	0.78	0.43	0.52	0.56	0.71	0.57	0.61	0.58	0.90	0.82	0.76	0.91	0.93	0.87	0.93	0.83	0.87	0.83	0.84	1.17	0.98	0.82	0.87	0.98	1.00	0.80	0.67	0.65
Nearshore live fishery						-	-	-	-	-	-	-	-	2.16	3.98	4.34	4.00	3.59	3.46	3.44	3.27	3.07	3.29	3.32	3.53	3.33	3.13	2.99	3.04	3.13	3.27	3.12
Sablefish (black cod)						0.50	0.49	0.61	0.87	0.81	1.03	0.90	2.09	2.43	1.74	1.98	2.12	1.91	2.09	2.16	2.51	2.63	2.80	3.91	2.74	2.18	2.66	2.75	2.91	2.94	2.16	1.76
Trawl gear						0.36	0.38	0.46	0.66	0.68	0.74	0.70	1.92	1.92	1.45	1.71	1.75	1.49	1.70	1.84	2.22	2.25	2.27	2.75	1.95	1.79	2.14	2.13	2.14	2.04	1.32	0.97
Fixed gear						0.69	0.64	0.79	1.07	1.07	1.52	1.25	2.32	3.26	2.10	2.36	2.63	2.38	2.65	2.72	3.10	3.19	3.60	4.78	3.29	2.57	3.14	3.22	3.46	3.69	2.82	2.31
Widow rockfish						-	-	0.52	0.63	0.47	0.46	0.45	0.52	0.46	0.56	0.58	0.59	0.55	0.59	0.60	0.53	0.51	0.54	0.51	0.49	0.52	0.48	0.44	0.46	0.31	0.28	0.28
Yellowtail rockfish						-	-	0.52	0.64	0.49	0.52	0.51	0.58	0.55	0.58	0.64	0.65	0.65	0.66	0.63	0.73	0.55	0.59	0.59	0.60	0.57	0.55	0.52	0.49	0.37	0.35	0.37
Thornyhead, longspine						-	-	-	-	-	-	-	1.52	1.12	1.08	1.24	0.88	0.74	0.86	0.64	0.57	0.38	0.40	0.49	0.51	0.48	0.45	0.43	0.46	0.45	0.39	0.39
Thornyhead, shortspine						-	-	-	-	-	-	-	1.75	1.27	1.33	1.41	1.08	0.91	0.97	0.77	0.80	0.64	0.64	0.68	0.75	0.71	0.72	0.70	0.69	0.68	0.57	0.51
Thornyhead, mixed						-	-	0.51	0.64	0.67	0.78	0.78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pacific Ocean perch						0.39	0.47	0.50	0.62	0.46	0.50	0.47	0.49	0.43	0.52	0.58	0.60	0.60	0.58	0.58	0.57	0.57	0.57	0.58	0.59	0.56	0.56	0.57	0.53	0.46	0.40	0.39
Lingcod						0.54	0.55	0.54	0.74	0.61	0.56	0.60	0.67	0.70	1.12	1.63	1.50	1.29	1.26	1.36	1.50	1.49	1.52	1.24	1.18	1.22	1.32	1.76	1.60	1.40	1.62	1.54
Arrowtooth flounder						0.22	0.22	0.21	0.29	0.18	0.20	0.16	0.18	0.15	0.15	0.17	0.16	0.13	0.14	0.12	0.12	0.12	0.12	0.11	0.14	0.12	0.11	0.11	0.11	0.10	0.10	0.09
Dover sole						0.53	0.50	0.52	0.62	0.51	0.52	0.48	0.55	0.47	0.50	0.52	0.51	0.48	0.48	0.46	0.45	0.39	0.36	0.48	0.49	0.51	0.51	0.50	0.48	0.46	0.45	0.43
English sole						0.70	0.71	0.68	0.80	0.67	0.57	0.52	0.58	0.50	0.50	0.50	0.47	0.42	0.40	0.38	0.38	0.35	0.35	0.36	0.39	0.35	0.35	0.33	0.34	0.33	0.28	0.25
Petrale sole						1.28	1.53	1.51	1.62	1.53	1.40	1.30	1.53	1.41	1.41	1.38	1.38	1.17	1.25	1.17	1.15	1.04	1.31	1.65	1.70	1.39	1.20	1.30	1.28	1.23	1.22	1.25
Cod, Pacific						0.52	0.55	0.52	0.65	0.48	0.51	0.54	0.61	0.60	0.67	0.82	0.82	0.59	0.61	0.65	0.64	0.54	0.58	0.66	0.67	0.63	0.58	0.64	0.64	0.62	0.64	0.64
Whiting, Pacific						0.170	0.143	0.183	0.167	0.137	0.080	0.049	0.075	0.066	0.059	0.049	0.061	0.067	0.081	0.097	0.147	0.082	0.111	0.133	0.160	0.141	0.123	0.086	0.093	0.086	0.090	0.099
Sardines						-	-	-	-	-	-	-	-	-	0.074	0.081	0.072	0.080	0.062	0.061	0.137	0.136	0.137	0.156	0.110	0.122	0.225	0.186	-	-	-	-
Halibut, Pacific						2.58	2.39	2.02	3.06	2.60	3.20	2.12	2.71	2.79	2.94	2.69	3.43	3.22	3.82	4.23	4.45	3.40	4.71	6.17	5.57	5.32	6.16	5.80	5.96	5.44	5.40	4.92
Sturgeon, white						2.53	2.50	3.00	3.28	3.53	3.36	2.23	2.74	1.63	1.99	2.46	2.34	2.26	2.51	2.56	2.54	2.31	2.45	2.93	3.01	3.54	3.84	3.48	4.31	3.59	3.76	3.55
Sea urchin, red						-	-	-	0.57	0.64	1.29	1.43	1.26	0.82	0.84	0.90	0.57	0.38	0.48	0.45	0.45	0.54	0.63	0.61	0.65	0.62	0.61	0.63	0.65	1.34	2.10	3.16
Market squid						-	0.59	0.37	-	0.15	-	0.39	0.26	0.28	-	0.27	0.35	0.30	0.33	-	-	-	-	-	-	-	-	-	0.43	-	0.45	0.55

Notes: 1. Annual prices are in 2019 dollars. Adjustment used GDP implicit price deflator developed by U.S. Bureau of Economic Analysis.
2. Prices are for onshore landings. There will be differences for the same species, such as Pacific whiting, when delivered offshore. Landings after 1980, other than inriver Chinook and coho, exclude harvests from research, discards, bait, personal use, seized, overages, live for aquariums, and unspecified disposition.
3. Prices are for round pound equivalents, except for troll Chinook and troll coho prior to 1981 which are based on dressed weight.
4. Prices where landings are less than $500 annually are shown with a dash.
5. Inriver salmon prices include Oregon and Washington side landings. Inriver steelhead includes only Oregon side in 2017 to 2019.
6. The nearshore live groundfish fishery includes seven indicator species that are typically landed live in Oregon. These include cabezon, lingcod, black and blue rockfish, greenling, and other unspecified rockfish (not uniquely identified on a fish ticket).

Source: TRG (2021).

Table C.6
Commercial Fishing Economic Contributions for Oregon Port Groups in 2019

	Onshore			Distant Water			Total		
Port Group	Income	Jobs	Output	Income	Jobs	Output	Income	Jobs	Output
Astoria	99,098	1,989	217,212	37,882	760	83,032	136,980	2,749	300,244
Tillamook	6,610	140	14,581	3,949	84	8,710	10,558	224	23,291
Newport	86,620	1,842	182,775	68,786	1,463	145,145	155,407	3,305	327,920
Coos Bay	54,393	1,090	112,426	6,123	123	12,655	60,516	1,213	125,082
Brookings	17,587	424	32,743	1,039	25	1,935	18,626	449	34,678
Coastwide	264,308	5,485	559,738	117,779	2,455	251,477	382,087	7,939	811,215
Statewide	325,199	5,337	680,594	232,386	3,814	486,350	557,584	9,151	1,166,944

Notes: 1. Income and output are in thousands.
2. Economic contributions for port groups are expressed at the coastwide economic level.
3. The output calculation for distant water fisheries assumes the same spending patterns as onshore fisheries.
4. Coastwide is the sum of the port groups.
5. Excludes aquaculture production.

Source: TRG (2021).

Table C.7
Recreational Fishing Economic Contributions for Oregon Port Groups in 2019

	Ocean			Coastal Inriver			Total		
Port Group	Income	Jobs	Output	Income	Jobs	Output	Income	Jobs	Output
Astoria	1,191	24	2,747	13,867	278	31,986	15,058	302	34,732
Tillamook	2,462	52	6,813	20,541	436	56,853	23,002	488	63,666
Newport	8,734	186	23,778	15,946	339	43,413	24,680	525	67,191
Coos Bay	2,738	55	7,041	16,988	340	43,679	19,726	395	50,720
Brookings	1,440	35	4,461	10,030	242	31,082	11,469	276	35,544
Coastwide	16,564	351	44,840	77,372	1,636	207,012	93,936	1,987	251,852
Statewide	24,024	394	57,780	111,333	1,827	267,739	135,357	2,222	325,519

Notes: 1. Income and output are in thousands.
2. Economic contributions for port groups are expressed at the coastwide economic level.
3. Coastal inriver includes lower Columbia River.
4. Includes ocean and bay crabbing and clamming in the inriver estimates.

Source: TRG (2021).

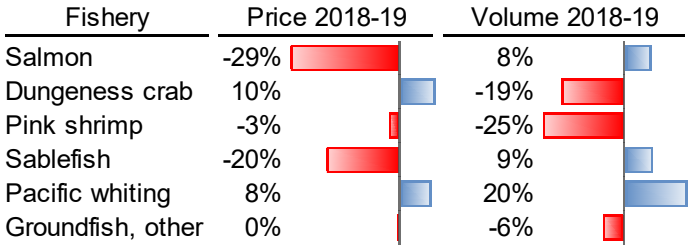
Table C.8
Representation of the Commercial and Recreational Fishing Industry in Area Economies for Oregon Port Groups in 2019

	Statewide		Coastwide		Astoria		Tillamook		Newport		Coos Bay		Brookings	
	Amount	Share	Amount	Share	Amount	Share	Amount	Share	Amount	Share	Amount	Share	Amount	Share
All income	224,346.4	0.3%	9,465.7	5.0%	1,893.8	8.0%	1,240.4	2.7%	2,295.0	7.8%	2,994.0	2.7%	1,042.5	2.9%
Earned income	134,693.4	0.5%	4,526.3	10.5%	1,023.5	14.9%	593.4	5.7%	1,098.2	16.4%	1,405.5	5.7%	405.6	7.4%
Fishing income	692.9		476.0		152.0		33.6		180.1		80.2		30.1	
Commercial	557.6	0.4%	382.1	8.4%	137.0	13.4%	10.6	1.8%	155.4	14.2%	60.5	4.3%	18.6	4.6%
Onshore	325.2		264.3		99.1		6.6		86.6		54.4		17.6	
Distant water	232.4		117.8		37.9		3.9		68.8		6.1		1.0	
Jobs	9,151		7,939		2,749		224		3,305		1,213		449	
Recreational	135.4	0.1%	93.9	2.1%	15.1	1.5%	23.0	3.9%	24.7	2.2%	19.7	1.4%	11.5	2.8%
Ocean recreational fishing	24.0		16.6		1.2		2.5		8.7		2.7		1.4	
Inriver nonresident fish fishing	111.3		77.4		13.9		20.5		15.9		17.0		10.0	
Jobs	2,222		1,987		302		488		525		395		276	

Notes:
1. Income is in millions. Earned income is the sum of wages and salaries, and proprietors' income. All income includes earnings, transfer payments (such as Social Security payments, etc.), and investment income (such as private pensions, etc.).
2. Earned income and all income estimates are adjusted for place of residence. Fishing income is for place of work. Fishing income comparison may overstate the calculated share since some of the income may accrue to places outside of the comparison location. Earned and all income is from households within Clatsop County for Astoria port group; Tillamook County for Tillamook port group; Lincoln County for Newport port group; Coos County for Coos Bay port group; and Curry County for Brookings port group. Fishing income is from commercial deliveries to and recreational trips at: Clatsop County for Astoria port group; Tillamook County for Tillamook port group; Lane (recreational only) and Lincoln County for Newport port group; Lane (commercial only), Douglas, and Coos County for Coos Bay port group; and Curry County for Brookings port group.
3. Jobs are computed by dividing all industry earnings estimates by total full-time and part-time jobs estimates. Coastwide jobs are based on the average of the earnings per job for each of the five port groups. Average earnings per job within industries involving more part-time work is lower than industries involving more full-time work, although there could be little difference in the underlying wage of full-time workers. Average earnings per job would not account for variations in the distribution of earnings among high-pay vs. low-pay jobs.
4. Distant water fisheries income can be centered at coastal communities where businesses sell goods and services to participants and the business labor has residency in those communities. Some income for distant water fisheries is directly returned to Oregon via crewmember and permit/vessel owner participant earnings. Participants may live on the Oregon Coast or elsewhere in Oregon.
5. Onshore fishing income is based on landings during calendar year, including Dungeness crab.
6. Fishing excludes commercial aquaculture production.
7. The recreational inriver category includes ocean and bay crabbing and clamming.

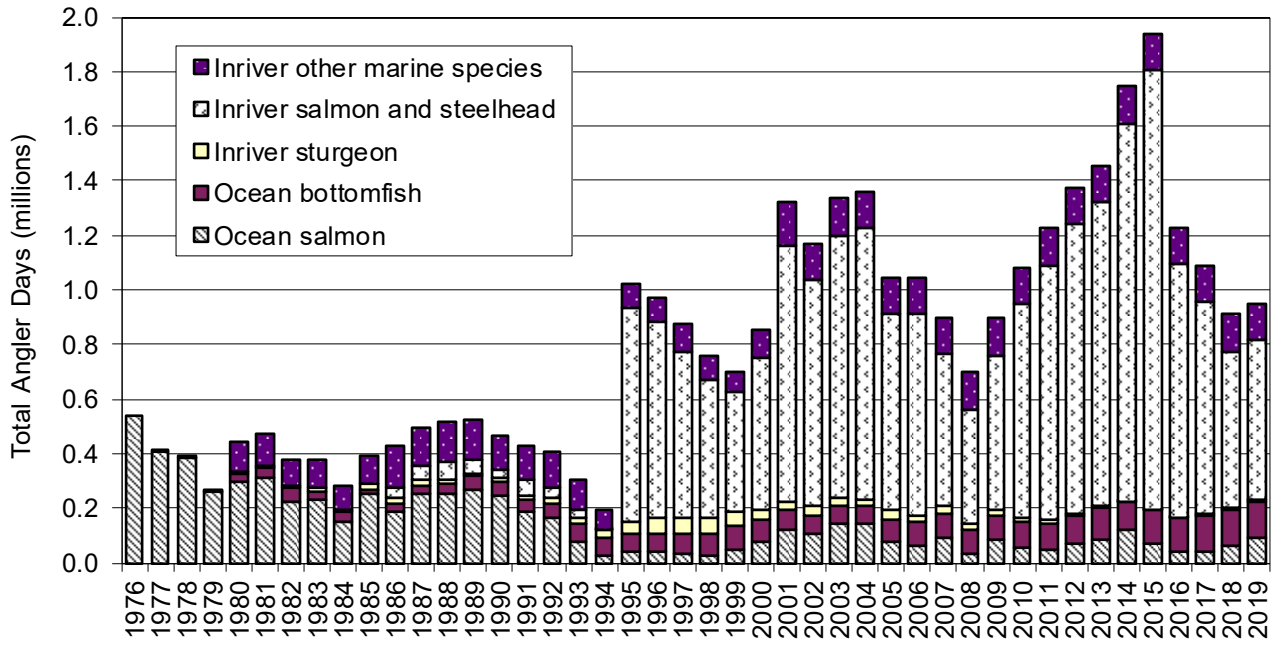
Source: Income and earnings data is from U.S. Department of Commerce, Bureau of Economic Analysis.

Figure C.1
Oregon Selected Fisheries Volume and Price Annual Change for 2018 and 2019



Note: The Dungeness crab fishery is for the 2018-2019 season and all other fisheries are calendar year.
Source: TRG (2021).

Figure C.2
Oregon Recreational Angler Days for the Study Selected Fisheries in 1976 to 2019



Notes: 1. Angler days are included when the fishing trip occurs in the ocean, inriver marine areas (estuaries), and when the trip purpose is for certain species in coastal area inriver locations. The ocean fisheries are separated by trip purpose being for salmon and bottomfish. If the trip purpose is for a combination of salmon and bottomfish, then it is classified as a salmon trip. The bottomfish fishery includes halibut and tuna trips. The only trips included at inriver locations are when the trip purpose is for anadromous fish (Chinook and coho salmon, steelhead, and sturgeon).

2. There are gaps in data for the included fisheries. Bottomfish angler days not available before 1980. Lower Columbia River fall salmon fishery trips are not included prior to 1982. Lower Columbia River estuary tributary and Coast estuaries are not included prior to 1995. Lower Columbia River sturgeon is not available prior to 1977. Lower Columbia River mainstem salmon and steelhead trips are in the Columbia River Section 10 zone and include the popular fall Buoy 10 fishery for 1982 to present. Coast inriver other marine species trips are only available for 1980-1989 and 1993-2002, with 1990-1992 estimated by 1989 and 1993, and 2003-present estimated by 2002. Coast estuary other marine species trips most complete recent year available from RecFIN is for year 2002. The counts include trips when anadromous fish are the target species. The anadromous fish trips in 2002 based on SSHSTRP data for "bay" waterway segments are subtracted from the RecFIN derived trip data in order to avoid double counting. It is assumed that other marine species trip counts after the subtraction do not change from 2002 in subsequent years. Lower Columbia River other marine species trips are only shown for 1993-1999, with 2000 to present estimated by 1997-1999 average.

Source: TRG (2021).

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Supplemental Information
Appendix

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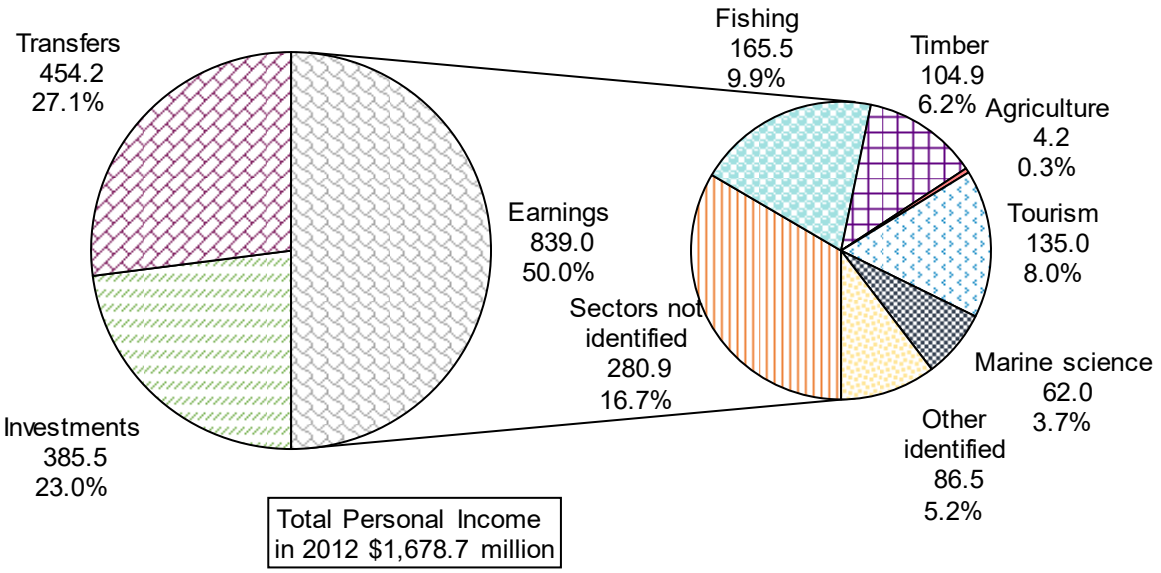
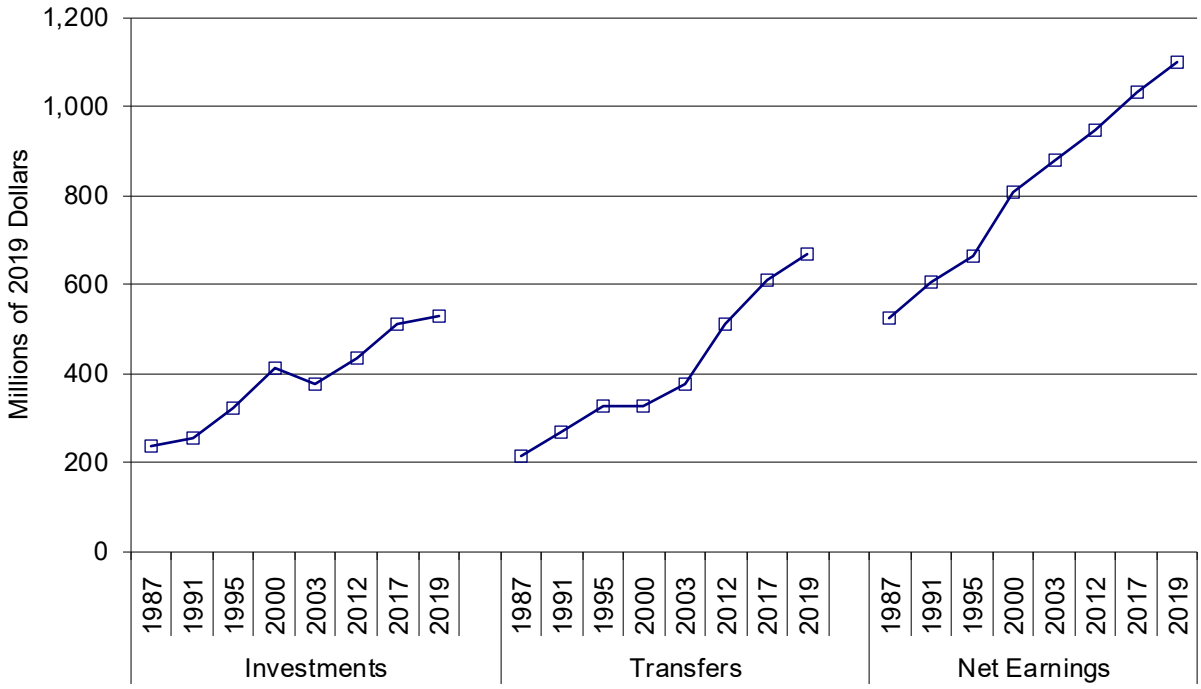
Figure S.1
Lincoln County Sources of Total Personal Income in 2012



Notes: 1. Economic contributions are measured as total personal income in millions of 2012 dollars. Adjustment to 2012 dollars made with the GDP price deflator developed by the U.S. Bureau of Economic Analysis.
2. Table ES.1 of TRG (2014) applies.
3. Fishing includes commercial aquaculture harvests.

Source: TRG (2014).

Figure S.2
Lincoln County Trends in Personal Income from Net Earnings,
Investments, and Transfers in 1987 to 2019

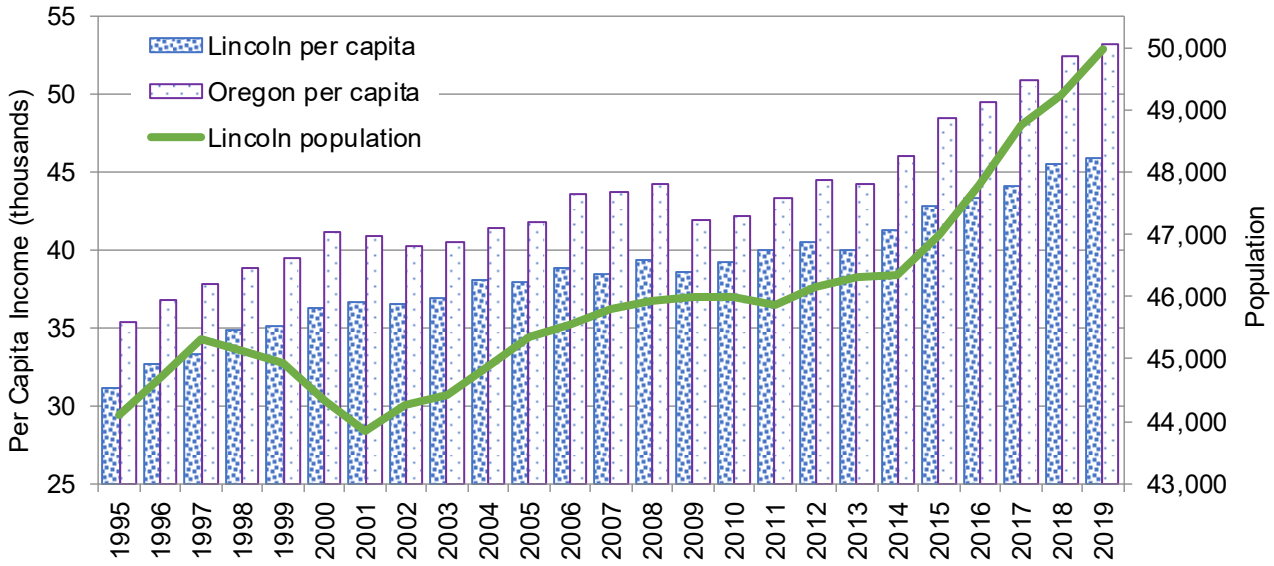


Notes: 1. Personal income in millions adjusted to 2019 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
Source: U.S. Bureau of Economic Analysis.

Figure S.3
Lincoln County Annual Covered Employment and Wages in 2003 to 2019

Notes: 1. Covered wages are adjusted to 2019 dollars using the GDP price deflator developed by the U.S. Bureau of Economic Analysis.
Source: U.S. Bureau of Labor Statistics.

Figure S.4
Lincoln County and Statewide Population and Per Capita Total Personal Income in 1995 to 2019



Notes: 1. Per capita total personal income in thousands of dollars adjusted to 2019 dollars using the GDP price deflator developed by the U.S. Bureau of Economic Analysis.

Source: U.S. Bureau of Economic Analysis, personal income summary CAINC1 downloaded January 2021.