Oregon Seafood Supply Sources
Interim Technical Report

from the project

Potential Economic Impact from Increasing Local Harvest Seafood Consumption on the Oregon Coast

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Glossary

Acronyms

ADFG	Alaska Department of Fish and Game
BC	British Columbia
CFS	community food systems
CSA	community-supported agriculture
CSF	community-supported fishery
CV	customs value
FAS	Free Along Ship
GDP	Gross Domestic Product comparable to value added equivalency measure
ITA	International Trade Administration
ITC	International Trade Commission of the United States
NAICS	North American Industry Classification System
NMFS	National Marine Fisheries Service
ODA	Oregon Department of Agriculture
OCVA	Oregon Coast Visitors Association
ODFW	Oregon Department of Fish and Wildlife
PacFIN	Pacific Coast Fisheries Information Network
PFMC	Pacific Fishery Management Council
PSMFC	Pacific States Marine Fisheries Commission
TRG	The Research Group, LLC

Data Provenances

Commercial fishing data from PacFIN and ODFW logbook programs via TRG (June 2021) and PFMC APEX.
Commercial and recreational fishing activity and economic contributions from TRG (June 2021).
Retail sales by NAICS code from U.S. Census Bureau Census of Retail Trade.
Foreign imports value and foreign exports value from U.S. Census Bureau, USA Trade Online; and International Trade Administration.
Alaska fishery landings from NOAA Fisheries, National Marine Fisheries Service, and from ADFG.
U.S. poultry and cattle prices from National Chicken Council.

I. Introduction

Oregon's supply of seafood products reaching Oregon consumers is from a variety of sources. Three categories are: 1) Oregon commercial harvests (including wild capture and aquaculture), 2) foreign country imports (including re-imports of harvested fish resources sent to another country for processing and returned to the U.S.), and 3) Other states' domestic harvests, aquaculture, and imported products that are transported to Oregon. Each category has product flow details that complicate consumers knowing the origin for what shows up in Oregon seafood markets and restaurant menus. The origin is important because: a) there are consumer expectations on origin that will affect seafood demand, and b) locally harvested and processed seafood will have higher economic impacts in local economies.

a) Consumer choice surveys have found higher demand for seafood where harvests are from sustainably managed fisheries (see the Marine Stewardship Council sponsored survey undertaken by Globalscan June 2020). Products from foreign fisheries are suspect to meeting this test while there is confidence of responsible management in domestic fisheries.
b) Economic impacts are higher when local harvests make their way to local markets. When local harvests drop out of the supply chain by being shipped out-of-state or exported to foreign countries, then there are less Oregon businesses participating in processing, distributing, and food preparation.

There are other reasons for knowing seafood source information. Seafood already has a smaller carbon footprint than other protein sources, but even among seafoods, fish and shellfish can have varying impacts (Nijdam et al. 2012). Transporting local catch to distant markets for retail end-use, and in reverse, getting seafood supplies into Oregon from out-of-state suppliers and foreign countries will increase greenhouse gas emissions (Madin and Macreadie 2015). Climate conscious consumers will want to minimize seafood sources that exacerbate emissions. Other reasons for source knowledge are buying local catch will encourage the consumption of healthier foods and increase engagement in and awareness for local food production (Bellows et al. 2013). Consumers seeking local catch origins will ultimately help harvesters and processors diversify their customer base and create more stable markets for their products.

The Oregon Coast Visitors Association (OCVA) has embarked on an Ocean Cluster Initiative project to assist in the development of local source seafood delivery systems and increase customer familiarity with local origin seafood availability. A research component of the project is to determine the potential economic impacts from increased local consumption of local commercial harvests. The economic analysis relied on data from an Oregon Coast distributor, food store and food service business survey. The economic impact model will be used to test the OCVA project derived solutions for their comparative successes so that best priority choices can be made and scheduled appropriately. The OCVA envisions projects and programs that target government policies and provide seafood industry support which address challenges in infrastructure, consumer awareness, workforce training, and fishery management.

This interim technical report purpose is to provide summary information about the major categories of Oregon seafood supply sources.[1] Mention is made of supply chain nodes in order to better understand the complexities of how seafood distribution occurs before its final retail sales to the public (Figure 1).

[1] Additional future research technical reports that will be available from the OCVA project describe an Oregon Coast distributor, food store, and food service business survey, explain an economic impact model with case examples, and provide findings about seafood distribution chain opportunities to increase economic impacts.

II. Supply Sources

A. Oregon Harvests

The Oregon commercial fishing industry has developed to generate about $550 million income annually (TRG June 2021). The generated income includes the "multiplier effect." Figure 2 shows a four-decade history of the economic contributions and the Year 2019 fisheries shares. This economic contribution is from harvesting and processing businesses that rely on ocean and Columbia River fishing grounds. The contributions are also from money returned and spent in Oregon from participating in distant water fisheries. Aquaculture is estimated to generate another $23 million income annually at the grower level (TRG 2022). There is additional seafood business economic activity associated with this basic activity such as businesses that distribute seafood products following processing, retail businesses that sell the products, and even tourism attracted to working waterfronts. Effects from management, enforcement, research, training and the like would be an addition. The basic activity includes vessel maintenance and provisioning, but commercial and recreational boat building would be a related addition.

In coastal communities the basic fishing industry activity generates 8.4 percent of total income in 2019 (Table 1). This varies widely along the Oregon Coast. The Tillamook County basic fishing industry economy contribution is 1.8 percent and the Lincoln County economy is 14.2 percent. The range varies from a number of operational factors: management restrictions, harvest seasonal successes, what and how much of the harvests are processed in Oregon, prevailing harvest and processor prices, changes in fishing ground locations, harvest buyer availability, delivery port fleet choice, inventory distribution schedules and carrying costs, etc. In general, Astoria, Newport, and Coos Bay are the regional processing and supply/provisioning service centers and will generate the highest fishing industry economic contributions in any given year.

There are three distinct categories of economic contributions generated by the commercial fishing industry. Their economic contributions and end-markets (commodity or local) are as follows.

1) Distant water fisheries (mostly in Alaska) contributed about 40 percent of the economic contributions in 2019. Nearly all harvests stay in the distant areas, but once-in-awhile the last trip's catch is saved for delivery in Oregon for those vessels that commute. The delivery price can be higher in Oregon than at the catch area. The distant water fisheries category also includes money returned from earnings on vessels that stay in the distant waters areas.
2) Pacific whiting, market squid, albacore tuna, pink shrimp, and Dungeness crab contributed about another 40 percent in 2019. These fish resources end up largely in commodity markets.
3) Salmon, groundfish, and other pelagic species contributed about 20 percent in 2019 and have potential for increasing product local utilization in local markets.

Oregon processed seafood products are sold locally or are shipped to high volume processing and distribution centers. The products enter niche or commodity markets, both domestic and international. The commodity markets include product substitutes that influence the price paid to

processors and distributors that buy from Oregon harvesters. For example, many of the species landed in Oregon also are landed in greater numbers in Alaska and British Columbia (BC). For a comparison, Oregon's harvest value (sometimes called ex-vessel value) in 2019 was only six percent of all U.S. West Coast, Alaska, and BC landings. Some Oregon fisheries have high harvest value proportion in this northern Pacific Ocean area, such as Dungeness crab at 23 percent and pink shrimp at 62 percent in 2019 (Table 2).

The processing sector has consolidated in recent years. One processor/distributor dominates several fisheries in Oregon. Production size lends itself to moving large quantities to specific markets such as institutions, casinos, and foreign export customers. Consolidation can be necessary in an increasingly price competitive world marketplace for adding efficiency and allowing large volume production to be competitive. The main opportunities to divert harvested species to local seafood consumption are for individual harvesters coordinating with smaller processors and direct buyers. Species in the above category 3 as well as minor amounts from the pink shrimp and Dungeness crab fisheries have the most potential for further penetration of local markets.

It was necessary in the TRG (June 2021) study to interview processor representatives and distributors to discern production information and markets. Unlike in Alaska where annual processor production reports are required by state statute, there is no serial data collection procedure at continental West Coast states that requires processors to reveal product forms or market information. The TRG (June 2021) study has estimates of production amounts by fisheries at a sufficient detailed level to show the value added by processors (Table 3). The total processor value (sometimes call ex-wholesale value) is about double the harvest value albeit there is variability by fishery that depends on the labor, packaging, and storage costs for the fishery's manufactured products.

Oregon harvest amounts are highly variable (Table 4, Figure 3, and Table A.1). Overall real prices are usually steady year-to-year with some exceptions. For example, Chinook salmon and Dungeness crab real prices has been increasing and sablefish and other groundfish real prices have been decreasing in recent years. The harvest volume and processor prices will affect local catch reaching local food store and service establishments. Processors and distributors need to keep relationships with their large accounts, so there is less incentive in low volume years to work with local market customers. While local food production can fetch premium prices when sold locally, there are price thresholds (Cowley and Coulon 2014, Nash et al. 2021).[2]

Obstacles to greater utilization of local catch discovered in the Oregon Coast distributor, food store and food service business survey are (TRG 2022):

[2] Xun Xu et al. (April 2015) criticized that earlier willingness to pay studies should not conclude the existence of price premiums for local products because there was no verification those surveyed actually made purchases. Also, attitudinal studies failed to collect data on and control for other relevant product features. Those omissions make it difficult to determine whether observed price variations originate from locality or from other product properties.

1. Purchasing momentum. The existing way of doing business means change will be difficult. What has always been somewhat generally profitable is not necessarily optimizing resource use and business success. Fishermen, already busy managing a full-time business, may not be aware of potential business opportunities in innovative sales models because they have built their business within the reality of existing models. Fishermen also don't necessarily want to run a consumer-facing business. Restaurant owners and chefs can be frustrated by the lack of consistency in local seafood (Cousart and Leaning June 2019).
2. Transportation costs. Large seafood distribution and warehouse centers are not on the Oregon Coast. Current logistics require transporting large amounts of raw and processed products to the centers. Then for seafood sold locally, products are transported back to the Oregon Coast. The Oregon Coast highway network is linear and does not lend itself to haulback shipping.
3. Warehousing facilities. Retail businesses and institution buyers have limited warehousing capacities themselves and cannot provide the annual or even seasonal flow of product necessary for their customer demand. Centralized refrigeration systems are expensive and have high maintenance equipment. They are difficult to manage for allocating costs to users on a profitable or break-even basis.
4. Consumer base. Population centers in Oregon are distant from seafood production origins. Increasing seafood market demand comes from expanding visitor counts and changing visitor purchase preferences.
5. Processor consolidation and centralization. Larger commercial fishing harvesting and primary processing businesses can hinder small-scale business introductions and success. Harvesting businesses do not have the time or desire to deal with multiple small purchasers at trip end.
6. Fisheries timing and quantities. Oregon fisheries are seasonable and highly variable due species reproduction cycles, ocean conditions (for example harmful algal bloom presence), management restrictions (for example avoiding whale migration corridors), and even weather.
7. Traditional fisheries management. Fisheries management is gear centric which prohibits switching to other gear in order to better harvest available fish resources. Other existing regulations proscribe most onboard processing and freezing.
8. Changing domestic and foreign consumer preferences and price sensitivities.

The OCVA project will be bringing information together and develop support and assistance projects/programs to address these obstacles.

B. Foreign Import/Exports

The International Trade Administration (ITA) tracks imports and exports to and from U.S. states. Figure 5 shows 2019-2021 trends by NAICS categories.[3] There are minor total export changes during the period despite changes in Oregon harvest amounts and seafood sales changes. The lack of correlation demonstrates the interplay that occurs between domestic and foreign market destinations for Oregon processed products (ITC February 2021). Given market conditions in any given year, more or less of some products can have domestic distribution while others will have higher and lower volumes in export markets. Processors and distributors will react to most compatible (volume scale, legal, packaging, duration, socially responsible, etc.) and higher profit markets they become available. Partitioning production among buyers that have different supplying requirements (portion controls, small volumes, high transportation costs, etc.) can be more expensive than having a few larger buyers.

Figure 6 illustrates problems with using ITA data for analysis at the fishery level. The highest fishery category of exports is "unspecified frozen products" Fishery products are declared by the shipping business who may not know details of the product being shipped other than it is seafood. The highest share of identified fisheries exported is Dungeness crab and Pacific whiting.

Figures 7 and 8 show import origin and export destination countries and trade amounts. There is a large Asian market for live Dungeness crab. However, export statistics will not show those market destinations. Delivery logistics include trucking to Vancouver, BC and air freight to Japan and China. Dungeness crab is also shipped frozen to China to be processed into picked meat and shipped back to the U.S. Pacific whiting fishery products are also an example of re-importing where China manufactures analog products with some shipped back to U.S. markets. Eastern European countries (such as Ukraine and Poland) have been large markets for Oregon manufactured products. There has also been a large Pacific whiting market for wholes being shipped to Nigeria in recent years.

The jump in Oregon imports between 2020 and 2021 would be related to seafood markets recovering from COVID-19 pandemic control shutdowns. India became the highest import country in 2021. Imports from India are mostly aquaculture warmwater shrimp. The US Department of Commerce imposes an anti-dumping duty of 7.15 percent on Indian shrimp (15th administrative review).

While the foreign trade data is good for revealing trends in seafood distribution, it has limited utility in measuring the degree to which area economies are impacted by import competition (Testa et al. 2003). To the extent that seafood processors outputs are sent to outside area markets, imports at the area level would not fully measure the degree of competition for higher utilization of local catch. This is because there are vagrancies in how import and export records are kept.

[3] North American Industry Classification System (NAICS) codes applicable to seafood products are explained in notes for Figure 7.

The value metric for imports is customs value (CV) which is price actually paid or payable for merchandise when sold for export to the US, excluding US import duties, freight, insurance, and other charges incurred in bringing the merchandise to the US. The value metric for exports is Free Along Ship (FAS) which is the transaction price, including inland freight, insurance, and other charges incurred in placing the merchandise alongside the carrier at the port of exportation. FAS excludes the cost of loading the merchandise aboard the exporting carrier and also excludes freight, insurance, and any charges or transportation costs beyond the port of exportation. This FAS and CV values have close definitions and are comparable. Exports include re-exports and imports include re-imports. The former involves export without further processing or transformation of a good that has been imported. The latter are goods that are exported to another country and the same goods are again imported back to the home country.

Import and export transactions are compiled with the state information recorded at time the goods enter or leave the United States. This means that export origin of movement may not always imply production origin and import destination may not always reflect where the goods are consumed or used. Given these conditions, the concept of calculating trade balances at the state level, using destination and origin state data is problematic.

Given consumer surveys show knowledge of origin is one of the highest influencing seafood buying preference characteristic, it would seem existing labeling laws would simply provide that information for seafood that is imported. Oceana (August 2012) found significant loopholes that make traceability difficult. Country-of-origin labeling has been required for seafood since 2005. However, seafood often takes a complicated path from where it is caught to where it is sold. The fish may undergo multiple processing stages, often in different countries, before being sold at market. And under current law, the requirements for labeling seafood with its country of origin are complex and often misleading. A fish is labeled a "product of the U.S." only if it was caught or harvested in U.S. waters or caught by a U.S. vessel and has not undergone a "substantial transformation" (such as filleting) outside the U.S. For fish caught or raised abroad but processed in the U.S., it is considered a product of both (or more) countries, yet the label could read "product of country X and the U.S." and it would be unclear where the fish was caught or raised. Furthermore, country-of-origin labeling is not required for seafood in more substantially processed products, such as fish sticks or canned tuna, nor is it required in restaurants or certain specialty retailers like fish markets. With confusing laws that contain significant exemptions, consumers often have limited information about the origins of the seafood they buy (Upton 2010).

Consumer preference for country-of-origin knowledge implies there is higher demand in local catch quality products. While the general economy is currently on an upswing, there will always be an inferior product demand for lowest cost seafood products.[4] The OCVA project will promote ways to re-direct Oregon harvested products to local customers. There should be ready market for seafood superior products. Given wide media coverage of mis-labeling and social injustice in foreign fishery products, awareness and certification programs for seafood

[4] An inferior product is an economic term that describes a good whose demand drops when people's incomes rise. These goods fall out of favor as incomes and the economy improve as consumers begin buying more costly substitutes instead. The term refers to affordability, rather than quality, even though some inferior goods may be of lower quality.

traceability can help provide customers with the preference information they are seeking (Bailey et al. 2016, Love et al. 2021).

C. Other Supply Sources and Issues

Another supply source is other states' domestic harvested, aquaculture, and imported products that are transported to Oregon. There is no serial data that tracks this supply source. There is not granularity in seafood product flow data sufficient to itemize how much of Oregon's harvest reaches Oregon retail offerings. Given the lack of information on the supply side, a substitute method was to survey seafood offering food store and food service establishments and their supply sources to find the coastwide average of non-local catch volumes on the demand side.[5] It was found across all establishment business types (grocery stores, schools, fast-food and family restaurants, etc.), about 90 percent of seafood supply was non-local catch (TRG 2022). The seafood market penetration potential for local catch utilization is huge given total food store and food service sales on the Oregon Coast is $1.1 billion in 2017 (Table 5). Nearly half of all consumers nationwide are trying to increase their seafood consumption. (Datasstential 2021).

[5] The survey was not designed to provide data for development of an econometric model that predicts consumer demand. Such a survey would solicit responses for factors such as new product introductions, market preferences, competing supplies (imports and aquaculture), and prices. The model would be important for distinguishing the competitiveness of local catch over substitutes from other states and imports. If it can be distinguished, then branding (e.g., labeling) and instituting traceability and marketing (including advertising) programs may prove successful. If otherwise, there may be futility for investing in such programs and sales would just continue to feed into commodity markets.

III. Discussion

There is optimism for Oregon's fishing industry as stated in TRG (June 2021). Goals for the industry would be to extract more value from the fishery resources that are available. Assisting the industry to address obstacles for greater utilization of local catch in local markets has the following opportunities:

- Consumer preferences about health and wholesomeness of wild cold-water fish is part of. marketing advantage for Oregon's fisheries. Help in solving product development/differentiation and logistics problems for local market distribution and sales is needed to benefit from the advantage.
- Fishery management regulations need to be scrutinized and adapted for allowing vessels to use different gear to better target species and take advantage of technology for initial onboard processing to make sales-ready deliveries to distributors and retailers. Modernization of vessels for better handling capabilities and modernization of processing plants will improve seafood products.
- Community based programs such as community supported fisheries and food hubs to promote directing market local catch to local consumers are examples of cooperative and collaborative initiatives to promote the industry.[6] Example Oregon Coast community based projects are Astoria Food Hub, #EatOregonSeafood, Positively Groundfish, Shop-at-the Docks, Yaquina Bay The Lab, and Port Orford Sustainable Seafood. There are other programs that can be investigated such as local ownership of fishery quotas and territorial user rights who will lease access rights to local fishermen.
- There are other fishing industry initiatives underway to address climate change and its corresponding effects on fisheries to best position fisheries and communities for a changing era (TNC May 2018).
- There is already assistance through industry trade associations, Oregon Department of Agriculture commodity commissions, Oregon State University Sea Grant and Extension Service, and other entities. The OCVA Ocean Cluster Initiative can find ways to complement and further the existing assistance.

Taking advantage of the opportunities will help gain market power for Oregon seafood products, and depending on how increased local catch revenues can be transmitted within the supply chain, can help the industry raise value at all levels within supply chain (Nielsen et al. 2018, Fernández-Polanco and Llorente 2019). However, the success of existing and new programs with goals of increasing local utilization of local catch can have varying supply and demand effects in which monitoring consumer response would be worthwhile. If greater local utilization is not accompanied with increased demand, then seafood supplies are a substitute for retailers reliance on other state and foreign imports. In this case, there will be a decrease in the economic activity associated with imports that should be included in overall economic impact accounting

[6] A community-supported fishery (CSF) is an alternative business model for selling fresh, locally sourced seafood. CSF programs are modeled after community-supported agriculture (CSA) programs. CSF and CSA offer members weekly shares of fresh seafood for a pre-paid membership fee. CSF and CSA can be associated with local food hubs where local production have a store outlet that serve as distribution centers. These cooperative arrangements are part of a nationwide movement to community food systems (CFS) (Gwin 2019).

Seafood imports do contribute to economies at a regional level (Ferreira et al. 2022). If programs do increase local demand for seafood products, then monitoring is needed to determine the proportion associated with local catch supplies. Local seafood supplies are from a limited resource and cannot be produced or substituted in an unlimited capacity. Until supply chain obstacles are resolved, in the short-term, increasing seafood demand may simply result in increasing levels of seafood imports.[7] The monitoring will help inform adaptation of local catch utilization programs for higher market penetration effectiveness.

[7] Shamshak et al. (2019) makes the argument at a national level that U.S. seafood consumption trends will require increases in seafood imports predominately sourced from aquaculture production. Also, despite the growth in movements for utilizing locally caught seafood, the report suggests there is no reason to expect existing seafood supply sources that have efficient logistics and are reliable for consistent quality, portions and timing will become weaker. The locally caught seafood market will remain niche oriented.

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Table 1
Representation of the Commercial and Recreational Fishing Industry by Port Groups in Statewide and Coastwide Economies in 2019

	Statewide		Coastwide		Astoria		Tillamook		Newport		Coos Bay		Brookings	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
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 non-resident 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. Coastwide jobs are based on the average of the earnings per job for each of the five port groups.
3. Onshore fishing income is based on landings during calendar year. Sometimes annual reporting for the ocean Dungeness crab fishery is for season totals. The ocean season is December 1 through August 14 and the bay season is after Labor Day exclusive of weekends, holidays, or if the adjacent ocean is closed.
4. The recreational inriver category includes ocean and bay crabbing and clamming.
5. Income and earnings data is from U.S. Department of Commerce, Bureau of Economic Analysis.

Source: TRG (June 2021).

Table 2
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.
6. Alaska harvest value from NOAA Fisheries (May 2021b), 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. British Columbia harvest value converted to U.S. dollars using Bank of Canada exchange rates.

Source: TRG (June 2021).

Table 3
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	1,060	$4.09	Gutted	83%		4.93	1.20	6.13	879	5,395	1,056
Dungeness crab	5,711	$3.57	Whole	92%	30%	3.88	1.22	5.10	5,254	26,787	6,410
	2,855	$3.57	Sections	58%	15%	6.15	1.42	7.57	1,656	12,540	2,352
	3,807	$3.57	Meat	25%	20%	14.27	5.17	19.44	952	18,505	4,921
	6,662	$3.77	Live	95%	35%	3.97	1.12	5.09	6,329	32,194	7,089
Pink shrimp	26,852	$0.74	Cooked	31%		2.40	1.40	3.80	8,324	31,594	11,654
Albacore tuna	6,567	$1.65	Mixed2	85%		1.94	1.06	3.00	5,582	16,763	5,917
Groundfish	48,764	$0.60	Mixed3	36%		1.68	1.25	2.93	17,476	51,202	21,855
Pacific whiting	45,655	$0.098	Surimi	25%	21%	0.39	0.62	1.01	11,414	11,539	7,077
	176,546	$0.098	H&G/etc.	61%	79%	0.16	0.56	0.72	107,693	77,565	60,308
Pacific halibut	252	$4.95	Mixed4	74%		6.70	1.08	7.78	187	1,451	201
Other	10,093	$0.62	Mixed4	60%		1.03	1.01	2.04	6,091	12,404	6,134
Fish meal	114,885			10%		-	0.33	0.33	11,488	3,791	3,791
Total									183,325	301,730	138,764

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 $3.9 million. 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 (June 2021).

Table 4
Harvest Volume and 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.
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.

Source: TRG (June 2021).

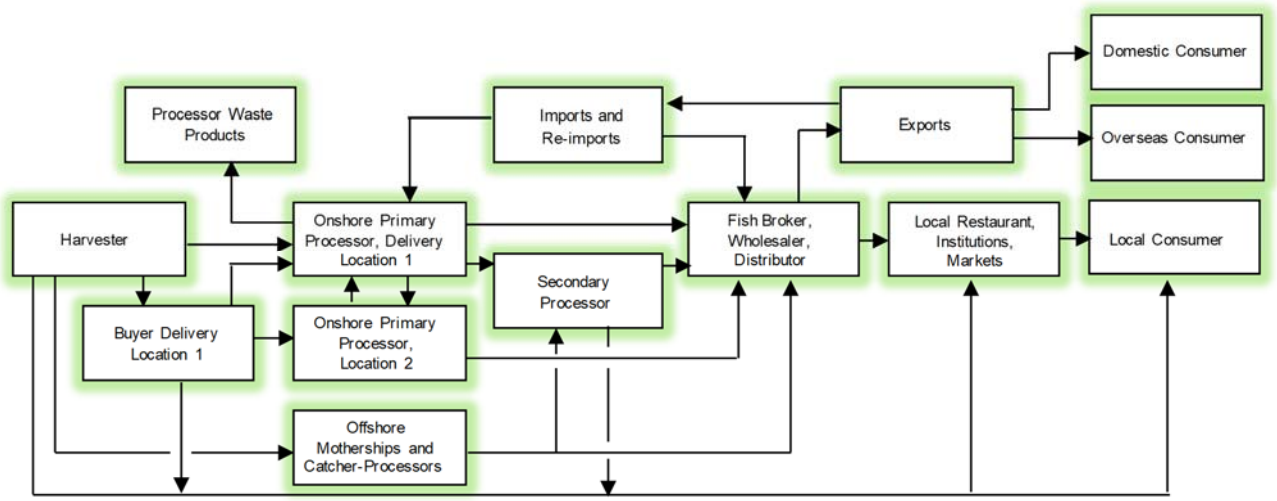
Table 5
Retail Sales at Oregon Coast Food Service and Food Stores in 2017

Region	Retail Sales	Region Share	Coast Share
North Coast	$ 402,606		36%
Food Service	$ 227,447	56%	
Food Stores	$ 175,159	44%	
Central Coast	$ 407,752		36%
Food Service	$ 203,646	50%	
Food Stores	$ 204,105	50%	
South Coast	$ 309,755		28%
Food Service	$ 128,078	41%	
Food Stores	$ 181,677	59%	
Coast Total	$ 1,120,113		100%
Food Service	$ 559,171	50%	
Food Stores	$ 560,941	50%	

Notes: 1. Sales are in thousands nominal dollars (not adjusted for inflation).
2. Areas: north coast Clatsop and Tillamook counties
central coast Lincoln, coastal Lane, coastal Douglas
south coast Coos and Curry counties
3. Coastal Lane and coastal Douglas counties are approximated using data by zip code locations.
4. Food service is NAICS code 722 and food stores are NAICS code 445.

Source: U.S. Census Bureau Census of Retail Trade.

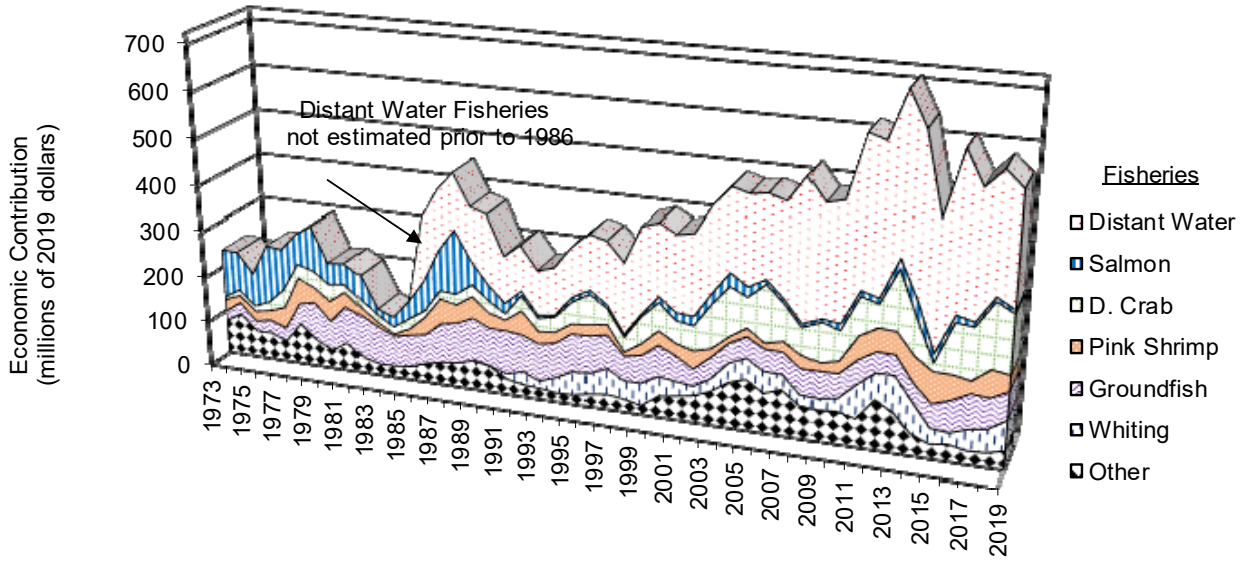
Figure 1
Seafood Supply Chain Idealized Nodes and Product Flow



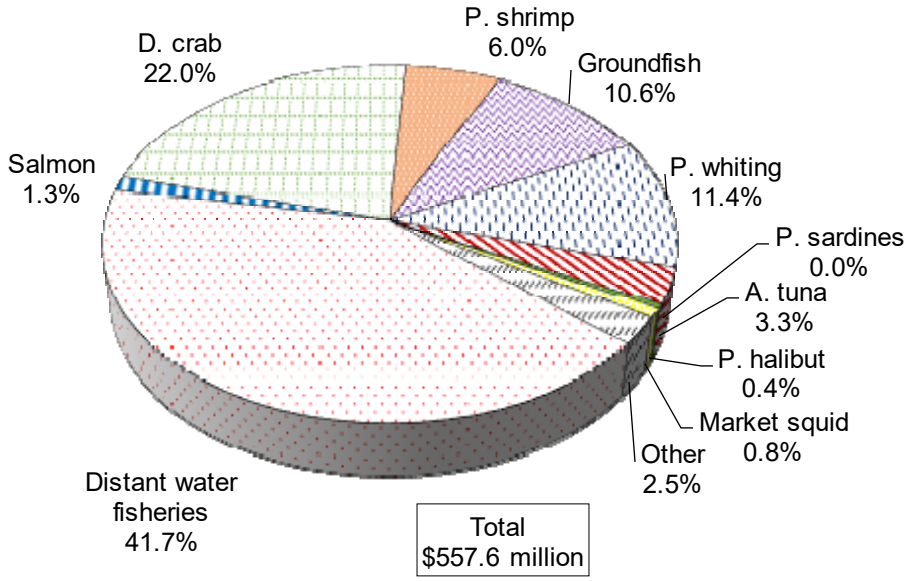
Source: Study.

Figure 2

Oregon Economic Contributions from Onshore Landings in 1973 to 2019
and Distant Water Fisheries in 1986 to 2019

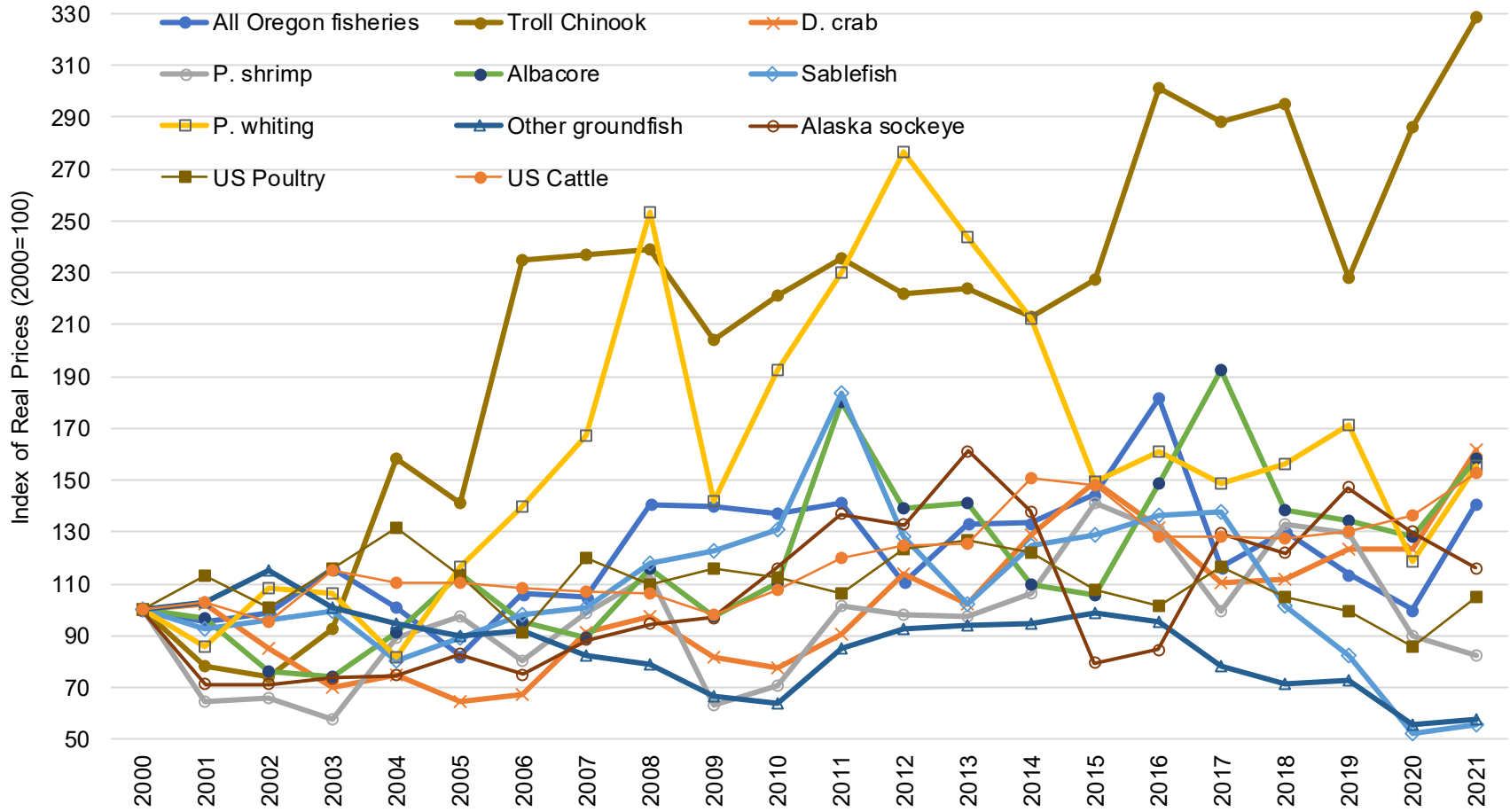


Economic Contributions by Major Fishery in 2019



Notes: 1. Economic contributions are expressed as statewide income in millions of 2019 dollars.
Source: TRG (June 2021).

Figure 3a
Fisheries Ex-vessel Price Index Trend and Other Protein Price Indexes in 1990 to 2021



Notes:
1. Prices are indexed to real 2021 ex-vessel dollars per round pound, adjusted using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
2. Oregon fisheries exclude offshore deliveries and aquaculture. For years prior to 2020 they also exclude non-sales disposition.
3. Fisheries except Dungeness crab are shown for calendar year. Dungeness crab is shown for December to August seasons.
4. "Other groundfish" fishery excludes Pacific whiting and sablefish.
5. U.S. poultry and cattle are based on wholesale prices for beef products and chicken broilers.

Sources:
1. U.S. West Coast fisheries from PacFIN reports.
2. Alaska sockeye up to 2020 from NOAA, National Marine Fisheries Service, commercial fisheries statistics, downloaded April 2022, and 2021 from ADFG, "Preliminary Alaska Commercial Harvest and Exvessel Values," downloaded April 2022.
3. U.S. poultry and cattle from National Chicken Council, "Wholesale and Retail Prices for Chicken, Beef, and Pork," downloaded April 2022.

Figure 3b
Fisheries (Separately) Ex-vessel Price Trend and Other Protein Prices in 1990 to 2021

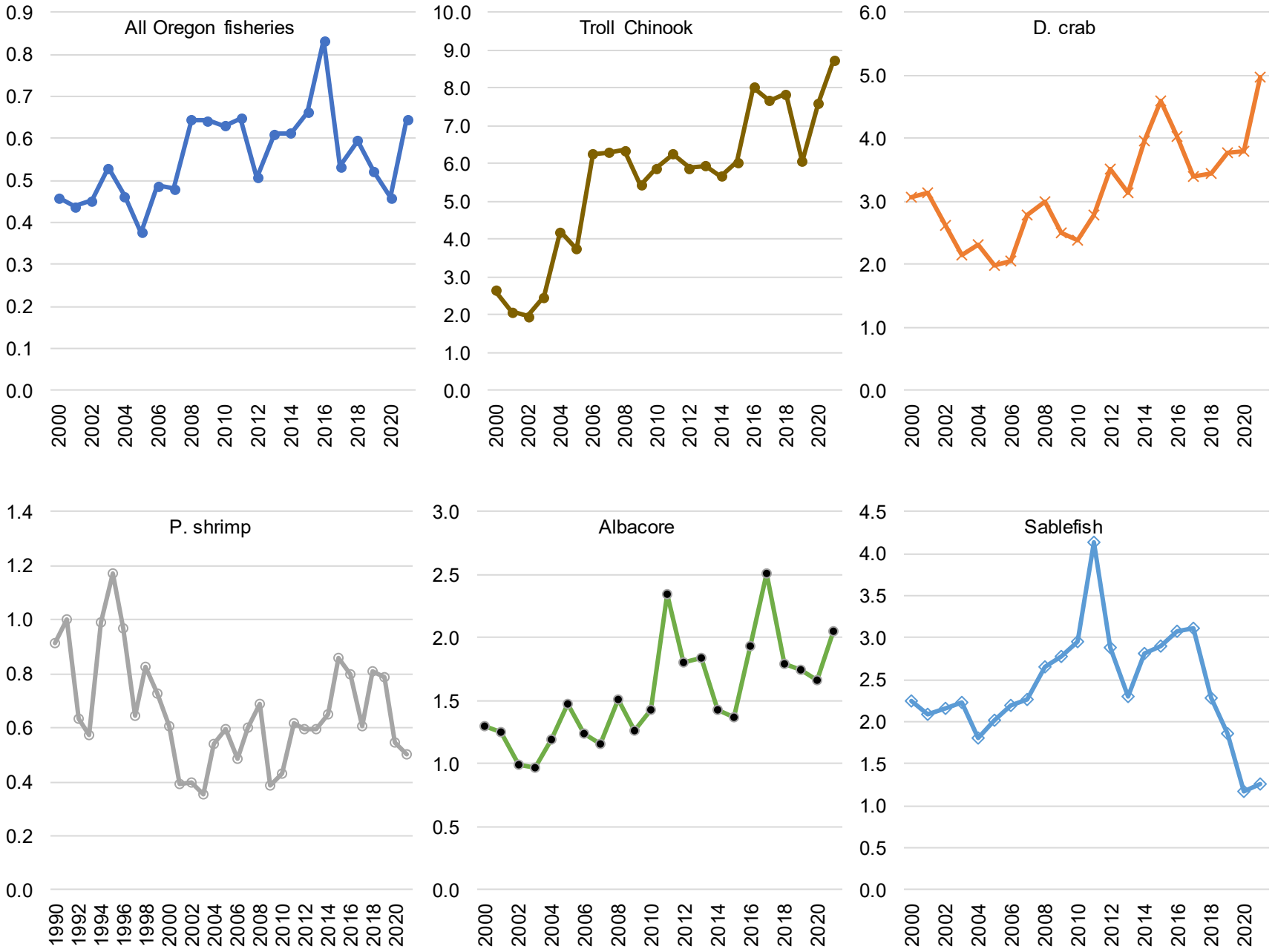
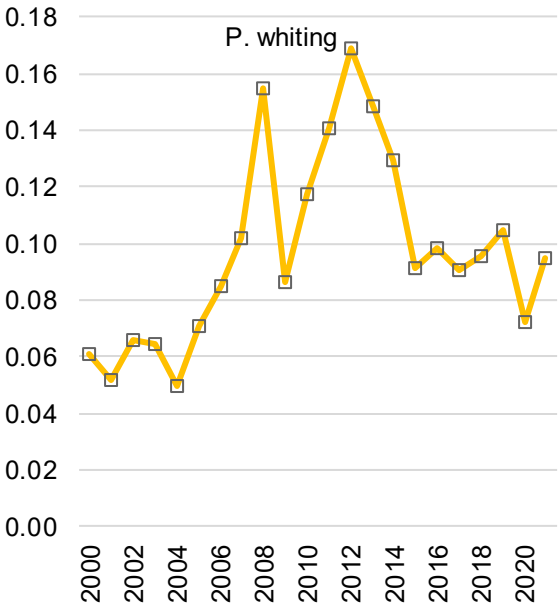
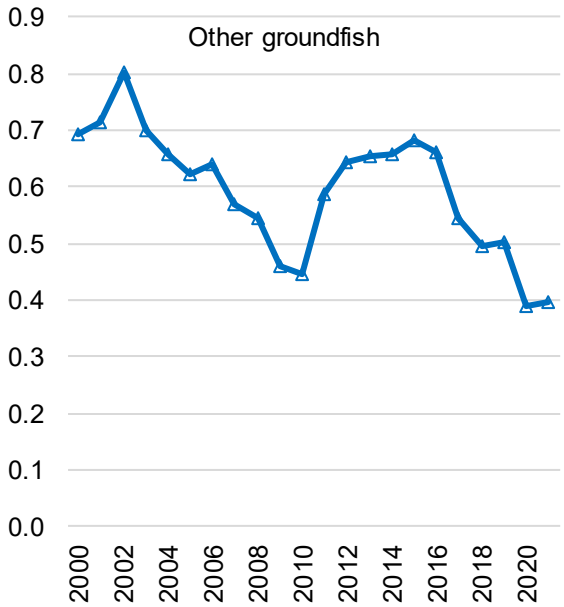
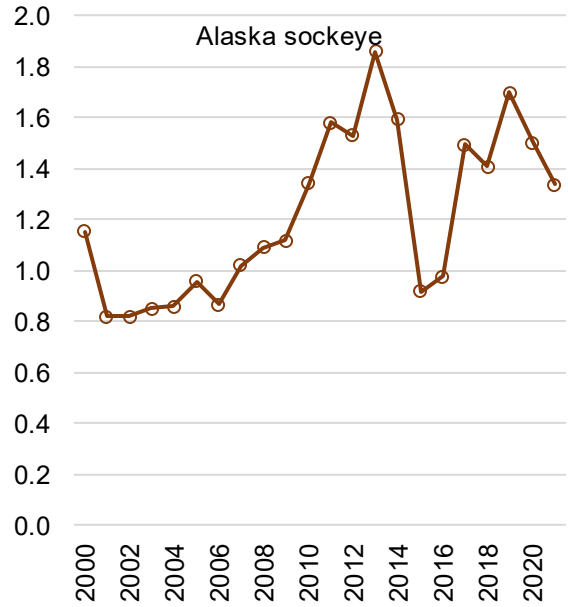
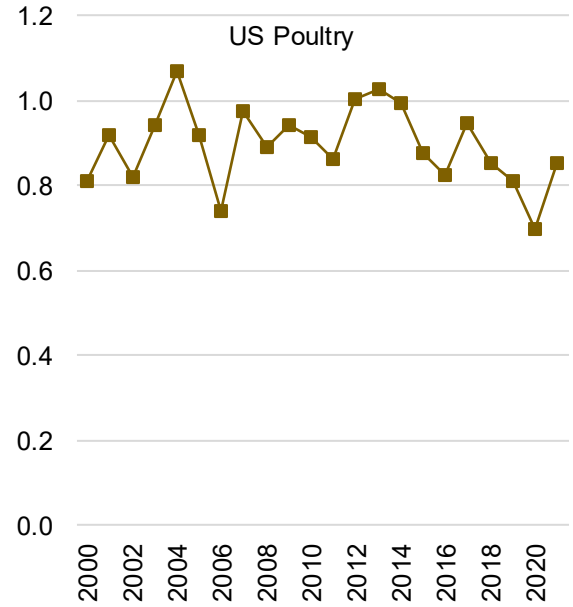


Figure 3b (cont.)









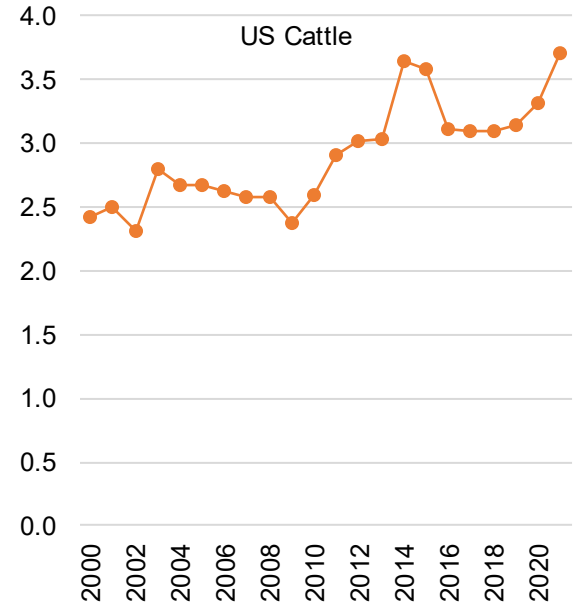
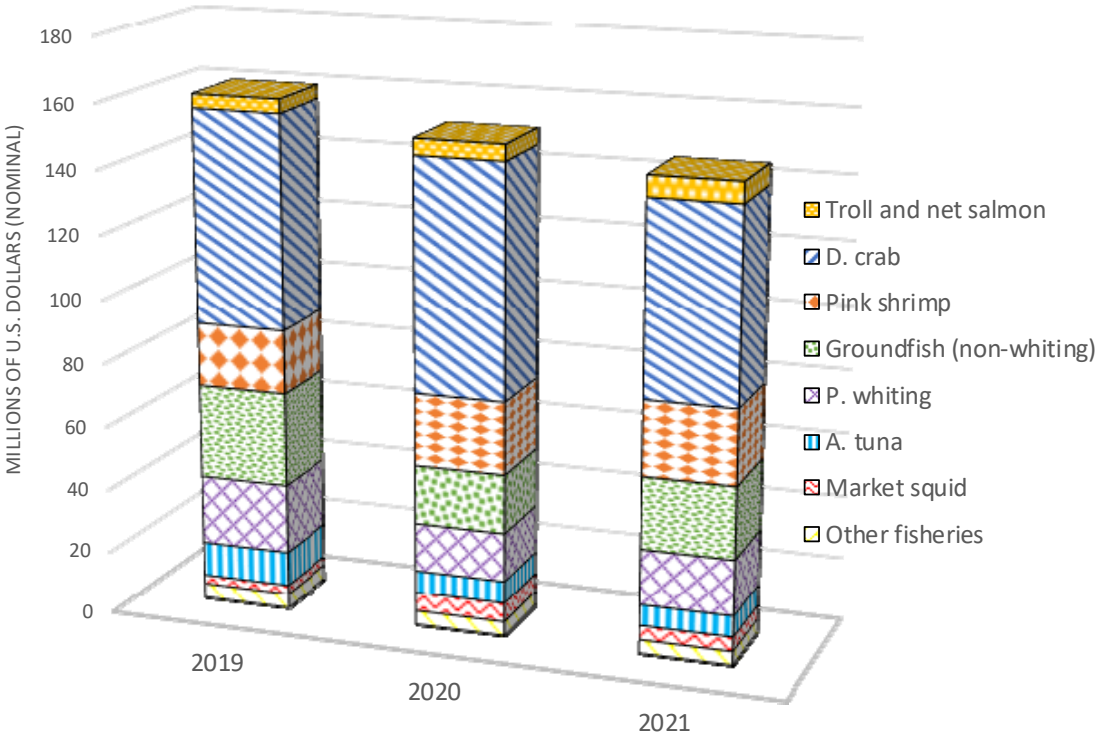
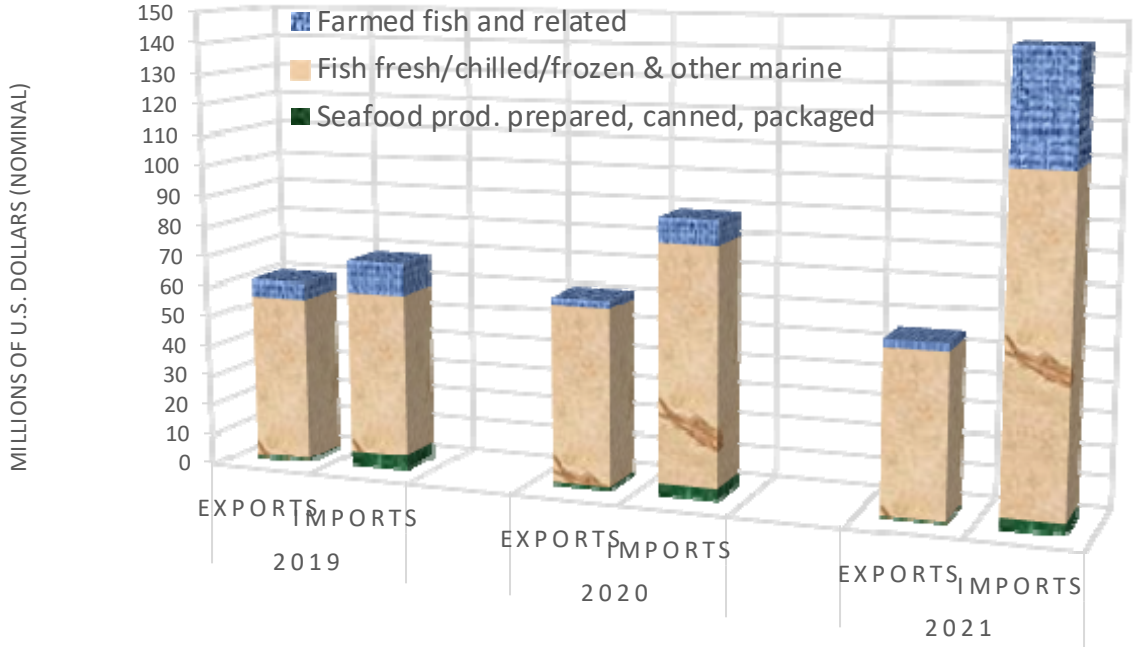


Figure 4
Oregon Onshore Fisheries Harvest Value 2019-2021



Notes:
1. Harvest value is nominal. Fisheries are shown for calendar year, except D. crab is shown for December to August seasons.
2. "Other fisheries" in 2021 are (in order of value) Pacific halibut, hagfish, basket cockle, butter clam, white sturgeon, and other species. Red sea urchin was third highest value in 2019.
3. Economic contribution for aquaculture is not included.

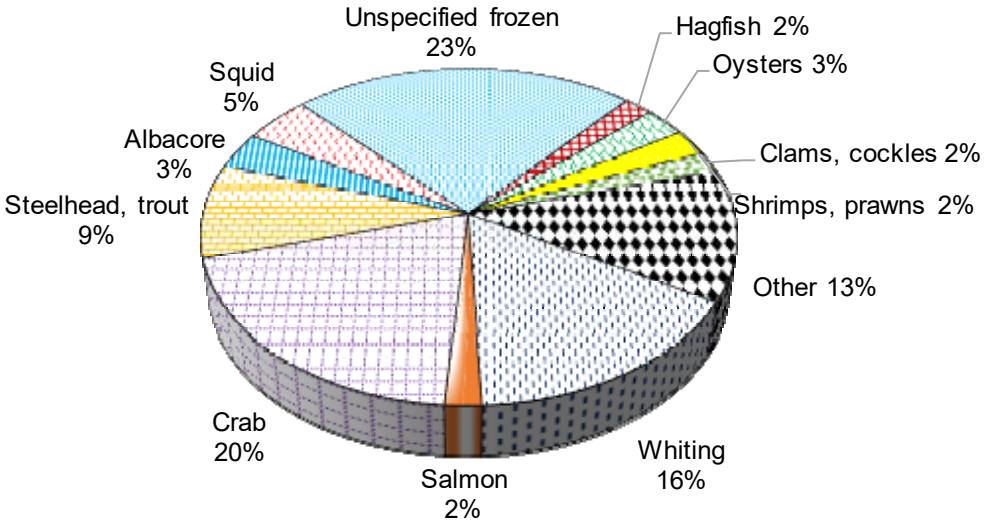
Figure 5
Oregon Seafood Foreign Imports Value and Foreign Exports Value 2019-2021



Notes: 1. Dollars are nominal.
2. The graphic bar stacks are the following NAICS category codes: 1125 Farmed fish and related products; 1141 Fish fresh/chilled/frozen and other marine products; and 3117 Seafood products prepared, canned and packaged

Source: U.S. Census Bureau, USA Trade Online, downloaded March 2022.

Figure 6
Oregon Export Shares of Seafood Fisheries and Product Forms Value in 2021

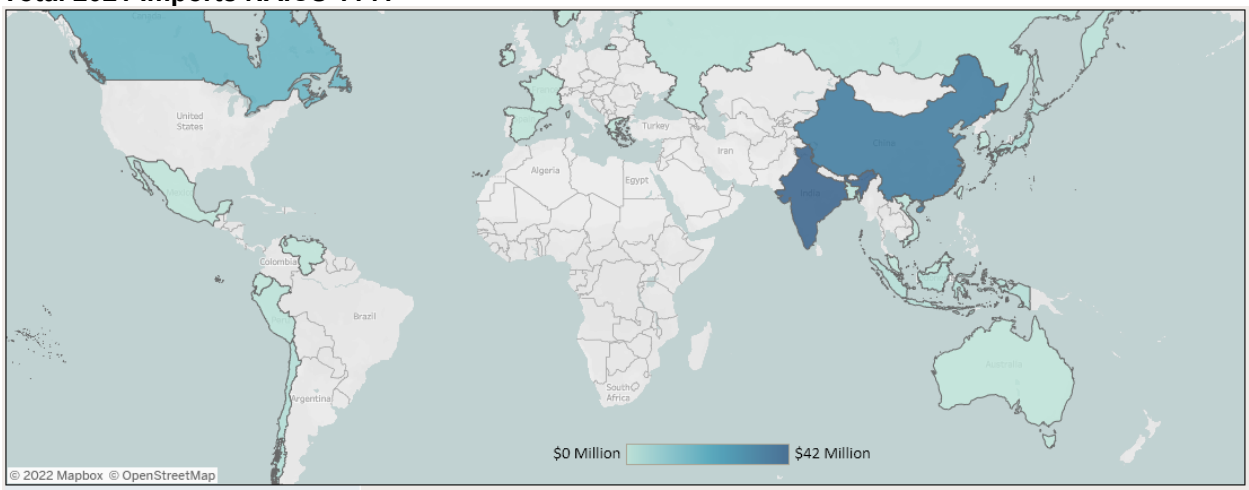


Notes: 1. Proportions shown on graphic are from export data harmonized codes. Not all Oregon harvested species that are known to have sizable foreign export markets are identified in the codes.
2. Some categories include farm products.

Source: U.S. Census Bureau, USA Trade Online, downloaded March 2022.

Figure 7
Oregon Import Value Total, Commodity, Top 10 Countries, and Transportation Mode in 2019-2021

Total 2021 Imports NAICS 1141



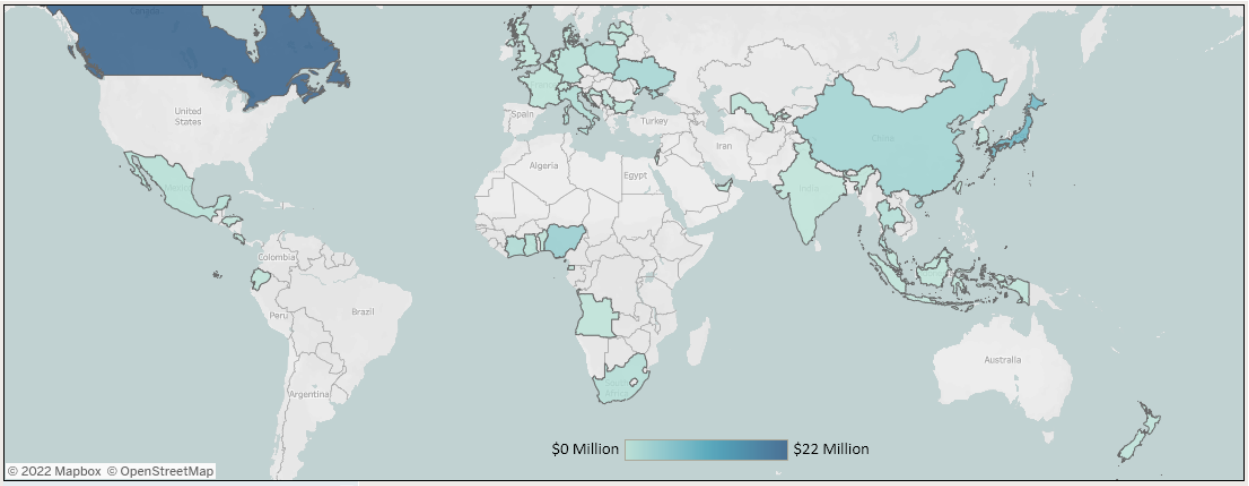
	2019			2020			2021		
	World Total	68,713,753	100%	World Total	88,916,880	100%	World Total	144,389,673	100%
	Commodity NAICS								
	1141	53,619,504	78%		76,691,802	86%		104,939,209	73%
	1125	10,177,109	15%		8,603,645	10%		35,944,039	25%
	3117	4,917,140	7%		766,445	1%		3,506,425	2%
	Top 10 Countries								
	China	24,544,668	36%	China	37,454,767	42%	India	65,826,567	46%
	Canada	20,877,433	30%	India	21,317,070	24%	China	34,532,535	24%
	India	10,118,267	15%	Canada	17,539,863	20%	Canada	28,446,975	20%
	Chile	3,800,609	6%	Indonesia	3,097,890	3%	Japan	3,568,837	2%
	Indonesia	2,469,178	4%	Chile	1,529,913	2%	Indonesia	2,928,328	2%
	Thailand	1,363,960	2%	Russia	1,417,649	2%	Chile	2,755,923	2%
	New Zealand	823,894	1%	Thailand	1,327,979	1%	Russia	1,299,141	1%
	Ecuador	748,441	1%	Peru	1,157,211	1%	Vietnam	1,280,596	1%
	Taiwan	698,229	1%	Japan	1,139,139	1%	Peru	783,198	1%
	Japan	656,442	1%	Vietnam	665,841	1%	Bangladesh	723,738	1%
	Other	2,612,632	4%	Other	2,269,558	3%	Other	2,243,835	2%
	Transportation Mode								
Total Customs Value		68,713,753	100%		88,916,880	100%		144,389,673	100%
Vessel Customs Value		46,486,331	68%		69,604,860	78%		113,119,556	78%
Air Customs Value		1,107,184	2%		1,459,107	2%		1,339,393	1%
Truck and Other Value		21,120,238	31%		17,852,913	20%		29,930,724	21%

Notes: 1. Export and import values are nominal US dollars.
2. NAICS: 1125 farmed fish and related products
1141 fish fresh/chilled/frozen and other marine products
3117 Seafood products, prepared, canned and packaged
3. The identified country may not be the origin of the product. For example, shrimp imported from Mexico could be a re-shipment of production from Asia. US labeling laws should reveal the product's country of origin, but import data will only reveal the last trans-shipment country.

Source: U.S. Census Bureau, USA Trade Online, downloaded March 2022.

Figure 8
Oregon Export Value Total, Commodity, Top 10 Countries, and Transportation Mode in 2019-2021

Total 2021 Exports NAICS 1141



	2019			2020			2021	
World Total	60,494,494	100%	World Total	61,643,230	100%	World Total	55,486,506	100%
Commodity NAICS								
1141	54,440,496	90%		57,883,509	94%		52,428,388	94%
1125	5,487,797	9%		2,993,276	5%		2,598,224	5%
3117	566,201	1%		766,445	1%		459,894	1%
Top 10 Countries								
Canada	21,719,294	36%	Canada	20,944,483	34%	Canada	23,390,999	42%
Korea, South	5,268,821	9%	Japan	7,159,745	12%	Japan	8,128,900	15%
Japan	4,170,503	7%	China	5,388,531	9%	Nigeria	3,943,244	7%
Ukraine	3,571,358	6%	Lithuania	4,524,886	7%	China	2,974,143	5%
Nigeria	3,348,913	6%	Nigeria	4,254,036	7%	Ukraine	2,545,721	5%
Lithuania	2,885,006	5%	Ukraine	3,000,767	5%	Poland	1,769,619	3%
South Africa	2,203,683	4%	Korea, South	2,476,799	4%	Cote d'Ivoire	1,676,338	3%
Ghana	1,960,811	3%	Poland	1,406,794	2%	Italy	1,416,210	3%
China	1,814,745	3%	South Africa	1,238,839	2%	Korea, South	1,310,901	2%
Denmark	1,641,668	3%	Italy	1,209,000	2%	Thailand	1,073,715	2%
Other	11,909,692	20%	Other	10,039,350	16%	Other	7,256,716	13%
Transportation Mode								
Total Exports Value	60,494,494	100%		61,643,230	100%		55,486,506	100%
Vessel Total Exports Value	30,575,475	51%		35,011,899	57%		24,243,801	44%
Air Total Exports Value	7,955,832	13%		4,792,877	8%		4,305,961	8%
Truck and Other	21,963,187	36%		21,838,454	35%		26,936,744	49%

Notes: 1. Export and import values are nominal US dollars.
2. NAICS: 1125 farmed fish and related products
1141 fish fresh/chilled/frozen and other marine products
3117 Seafood products, prepared, canned and packaged
3. The identified country may not be the final destination of the export product. The country may serve as an intermediary location for shipping convenience and advantageous tariff structures. For example, Oregon harvested live Dungeness crab can be trucked to Vancouver, British Columbia and flown to China.

Source: U.S. Census Bureau, USA Trade Online, downloaded March 2022.

Appendix A

Oregon Fisheries Annual Ex-Vessel Prices by Selected Species and Species Groups in 1971 to 2021

Table A.1
Oregon Fisheries Annual Ex-Vessel Prices by Selected Species and Species Groups in 1971 to 2021

Species	1971	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2005	2007	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Troll Chinook (ocean)	3.09	4.86	4.16	7.76	7.93	5.72	3.87	4.70	4.71	3.75	3.87	3.26	2.43	2.21	2.62	2.08	2.47	3.75	6.29	5.43	5.88	6.26	5.89	5.95	5.67	6.05	8.02	7.67	7.85	6.06	7.61	8.73
Troll coho (ocean)	1.88	3.71	3.09	4.77	6.97	3.71	1.94	2.85	3.12	1.79	1.55	1.69	-	-	1.39	1.02	1.06	2.20	2.12	2.21	2.39	2.10	2.27	2.59	1.99	1.83	-	2.90	3.41	2.43	2.92	3.58
Net Chinook (below Bonneville Dam)															2.19	2.10	1.21	2.27	4.25	2.53	3.41	2.98	3.12	3.00	2.12	3.05	4.13	4.73	6.34	4.31	2.83	3.61
Spring															4.40	4.35	4.02	4.73	7.13	6.00	6.10	5.94	7.00	7.40	6.12	6.44	8.03	8.32	11.32	12.12	7.54	9.36
Fall															1.73	0.96	0.94	2.06	3.30	2.42	2.53	2.58	2.52	2.74	1.97	2.48	3.38	3.35	3.47	2.73	2.68	3.03
Net Chinook (above Bonneville Dam)															0.84	0.61	0.37	0.82	2.61	1.66	2.34	1.67	2.71	2.44	2.08	2.56	3.26	3.87	4.38	3.13	2.72	3.15
Spring															-	1.90	1.57	2.30	4.79	3.83	4.76	4.24	5.69	5.38	5.41	4.53	6.06	6.10	7.83	5.89	5.87	6.55
Fall															0.89	0.36	0.27	0.78	2.64	1.34	1.54	0.95	2.18	2.24	1.69	2.18	2.76	3.54	3.76	2.91	2.48	2.62
Net coho (below Bonneville Dam)															1.30	0.42	0.77	1.44	2.08	1.48	1.68	1.94	1.92	2.13	1.32	1.74	2.07	2.24	2.06	1.84	1.74	1.89
Net steelhead (above Bonneville Dam)															0.65	0.23	0.11	0.38	0.84	0.77	1.04	1.36	1.44	1.25	1.27	1.50	1.58	2.37	2.37	3.02	n/a	n/a
Dungeness crab	1.49	2.70	3.18	1.94	2.27	2.46	3.06	3.43	2.97	2.22	2.85	1.80	2.72	3.02	2.77	3.14	2.15	1.99	2.79	2.50	2.38	2.78	3.51	3.13	3.97	4.60	4.04	3.39	3.44	3.78	3.79	4.97
Pink shrimp	0.64	1.04	0.53	0.82	1.17	1.29	1.66	0.77	1.41	0.70	1.00	0.57	1.17	0.65	0.73	0.39	0.35	0.59	0.60	0.39	0.43	0.62	0.60	0.59	0.65	0.86	0.80	0.61	0.81	0.79	0.55	0.50
Albacore tuna	1.44	1.68	1.26	0.92	1.61	2.22	1.29	1.17	1.53	1.59	1.40	1.40	1.33	1.28	1.29	1.25	0.97	1.48	1.16	1.26	1.43	2.34	1.81	1.83	1.43	1.37	1.93	2.50	1.80	1.74	1.66	2.05
Groundfish species group	0.43	0.57	0.56	0.74	0.83	0.45	0.55	0.59	0.75	0.60	0.64	0.61	0.95	0.87	0.81	0.96	0.98	0.92	0.87	0.87	0.88	1.23	1.03	0.86	0.92	1.03	1.05	0.85	0.70	0.68	0.47	0.50
Nearshore live fishery						-	-	-	-	-	-	-	-	2.28	4.20	4.58	4.21	3.79	3.63	3.24	3.47	3.50	3.72	3.51	3.30	3.15	3.21	3.30	3.45	3.29	n/a	n/a
Sablefish (black cod)						0.53	0.51	0.65	0.92	0.85	1.09	0.95	2.21	2.57	1.83	2.08	2.24	2.01	2.27	2.77	2.95	4.13	2.89	2.30	2.80	2.90	3.07	3.11	2.28	1.86	1.18	1.26
Trawl gear						0.38	0.40	0.49	0.70	0.72	0.78	0.74	2.03	2.03	1.53	1.80	1.84	1.57	1.94	2.38	2.39	2.90	2.06	1.89	2.26	2.24	2.26	2.15	1.39	1.02	0.60	0.69
Fixed gear						0.73	0.68	0.83	1.12	1.13	1.61	1.32	2.45	3.45	2.22	2.49	2.77	2.50	2.86	3.36	3.79	5.04	3.47	2.71	3.31	3.39	3.65	3.90	2.98	2.44	1.55	1.81
Widow rockfish						-	-	0.54	0.67	0.50	0.49	0.48	0.55	0.48	0.59	0.61	0.63	0.58	0.63	0.54	0.57	0.54	0.51	0.55	0.51	0.47	0.49	0.33	0.29	0.30	0.22	0.24
Yellowtail rockfish						-	-	0.55	0.67	0.52	0.54	0.54	0.61	0.59	0.61	0.68	0.69	0.68	0.66	0.58	0.62	0.63	0.63	0.60	0.58	0.55	0.52	0.39	0.37	0.39	0.22	0.23
Thornyhead, longspine						-	-	-	-	-	-	-	1.60	1.18	1.14	1.31	0.92	0.78	0.67	0.40	0.42	0.52	0.54	0.50	0.47	0.45	0.48	0.48	0.42	0.42	0.20	0.26
Thornyhead, shortspine						-	-	-	-	-	-	-	1.85	1.34	1.40	1.48	1.14	0.95	0.81	0.68	0.67	0.72	0.79	0.75	0.76	0.73	0.72	0.72	0.60	0.54	0.35	0.35
Thornyhead, mixed						-	-	0.54	0.68	0.71	0.82	0.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pacific Ocean perch						0.41	0.50	0.52	0.66	0.49	0.53	0.49	0.52	0.45	0.54	0.61	0.63	0.63	0.61	0.60	0.60	0.61	0.62	0.59	0.59	0.60	0.56	0.48	0.42	0.42	0.30	0.26
Lingcod						0.57	0.58	0.57	0.79	0.65	0.60	0.63	0.71	0.74	1.18	1.72	1.58	1.36	1.43	1.58	1.60	1.30	1.24	1.29	1.39	1.86	1.69	1.48	1.71	1.63	1.64	1.51
Arrowtooth flounder						0.23	0.24	0.22	0.31	0.19	0.21	0.17	0.19	0.16	0.15	0.18	0.17	0.14	0.13	0.12	0.12	0.12	0.15	0.13	0.11	0.11	0.11	0.11	0.11	0.10	0.08	0.09
Dover sole						0.56	0.53	0.55	0.65	0.54	0.55	0.51	0.58	0.50	0.53	0.55	0.53	0.51	0.49	0.41	0.38	0.51	0.51	0.54	0.54	0.53	0.50	0.48	0.48	0.46	0.39	0.40
English sole						0.74	0.75	0.72	0.85	0.71	0.60	0.55	0.61	0.52	0.53	0.53	0.49	0.44	0.40	0.36	0.37	0.38	0.41	0.36	0.37	0.35	0.36	0.35	0.30	0.27	0.20	0.13
Petrale sole						1.35	1.62	1.60	1.71	1.62	1.48	1.37	1.61	1.48	1.49	1.46	1.45	1.23	1.23	1.09	1.38	1.74	1.79	1.46	1.27	1.38	1.35	1.30	1.29	1.32	1.21	1.09
Cod, Pacific						0.54	0.58	0.55	0.68	0.50	0.54	0.57	0.65	0.64	0.70	0.87	0.86	0.62	0.68	0.57	0.62	0.69	0.71	0.66	0.62	0.68	0.67	0.66	0.68	0.68	0.45	0.35
Whiting, Pacific						0.179	0.151	0.193	0.177	0.145	0.085	0.052	0.080	0.070	0.062	0.052	0.065	0.071	0.102	0.087	0.117	0.140	0.169	0.149	0.129	0.091	0.098	0.091	0.095	0.104	0.072	0.095
Sardines						-	-	-	-	-	-	-	-	-	0.078	0.085	0.076	0.084	0.065	0.144	0.145	0.164	0.116	0.129	0.238	0.196	-	-	-	-	-	0.061
Halibut, Pacific						2.73	2.53	2.13	3.23	2.74	3.38	2.24	2.86	2.95	3.10	2.83	3.62	3.39	4.45	3.58	4.97	6.51	5.87	5.61	6.50	6.12	6.29	5.74	5.70	5.19	4.85	6.20
Sturgeon, white						2.67	2.63	3.17	3.47	3.72	3.54	2.36	2.90	1.72	2.10	2.59	2.47	2.38	2.70	2.43	2.58	3.09	3.18	3.73	4.05	3.67	4.55	3.79	3.96	3.75	3.88	3.26
Sea urchin, red						-	-	-	0.60	0.67	1.37	1.51	1.33	0.87	0.89	0.95	0.60	0.41	0.47	0.57	0.66	0.64	0.69	0.65	0.64	0.66	0.68	1.41	2.22	3.33	3.00	2.92
Market squid						-	0.62	0.40	-	0.15	-	0.41	0.28	0.30	-	0.29	0.37	0.31	-	-	-	-	-	-	-	-	0.46	-	0.48	0.58	0.61	0.58

Notes:
1. Prices are in 2021 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. Prices for years after 1980 and prior to 2020, other than inriver Chinook and coho, exclude landing volumes for non-sales delivery dispositions such as landings from research harvests. Prices in 2020 and 2021 are from PSMFC APEX which includes non-sale dispositions.
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, and 2020 and 2021 are not shown.
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). Years 2020 and 2021 are not shown.
7. Dungeness crab is shown for December to August seasons from season year ending 1982 to present.

Source: Oregon Department of Fish and Wildlife for years prior to 1981, and for sea urchin after 2019. PacFIN March 2008, April 2009, March 2010, July 2011, April 2013, March 2014, April 2015, November 2016, March 2017, June 2018, July 2019, and September 2020 extractions for 1981 to 2019. PacFIN website APEX report by species downloaded April 2022 for 2020-2021. PFMC "Review of Ocean Salmon Fisheries," annual in February, for inriver Chinook and coho.