

# **Oregon Commercial and Recreational Fishing Industry Economic Activity Coastwide and in Proximity to Marine Reserve Sites for Years 2018 and 2019**

## **Executive Summary**



*F/V Excalibur loaded trawl net. Newport, Oregon. Photo credit NOAA Fisheries.*

**Oregon Department of Fish and Wildlife**

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**Oregon Commercial and Recreational Fishing Industry  
Economic Activity Coastwide and in Proximity to Marine  
Reserve Sites for Years 2018 and 2019**

**Executive Summary**

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Oregon Department of Fish and Wildlife  
Marine Reserve Program and Marine Resource Program

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## Executive Summary

### Background

This report was prepared for the Oregon Department of Fish and Wildlife (ODFW), Marine Reserve Program (MR Program) and Marine Resource Program (MRP). The MR Program is responsible for monitoring the effects from establishing five marine reserve areas (MR's) in the Oregon Territorial Sea (TS). The MRP provides management and research services for ocean and estuary fish, wildlife, and habitat resources. The information in this report updates information about overall trends in the Oregon fishing industry, and more specifically, describes the nearshore fisheries that would most likely be affected by MR management.

The following three summary sections respectively discuss trends and economic contributions for Oregon commercial, marine recreational, and nearshore fisheries. A last section gives an outlook of challenges facing the fishing industry.

The economic contributions are measured by annual income, jobs, and output. *Income* is household earnings and includes wages/salaries as well as proprietorship income. *Jobs* are equivalent full and part-time positions that would be spread across all sectors of the economy. 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 economic contribution estimates include the "multiplier effect." Estimates are reported for the statewide and coastwide economy level. All prices, harvest revenue, and economic contributions are expressed in 2019 dollars, except where noted otherwise.

Landing volume is expressed in round pound equivalents. This is an adjusted weight to account for some fish being partially processed (such as headed and gutted) prior to making a delivery (selling to a processor or selling directly to the public). There was an unresolved data issue whereby sablefish caught with fixed gear volume is landed pounds rather than being adjusted for a small amount of catch being partially processed at-sea.

### Commercial Fisheries

The Oregon commercial fishing industry economic contribution trends for major fisheries from 1973 through 2019 are shown on Figure ES.1. The fisheries generated an estimated \$558 million income to the statewide economy in 2019 which is equivalent to about 9,200 jobs (Table ES.1). Output is estimated to be \$1.2 billion. The previous five-year (2014-2018) average annual income was \$581 million with range of \$485 million in 2015 to \$652 million in 2014. About two-fifths of the income in 2019 is generated by distant water fisheries (such as the West Coast at-sea fishery and Alaska fisheries). The proportion from distant water fisheries economic contribution trends has been decreasing in recent years. There are ups and downs in specific

fisheries and in fishing dependent communities, but the consistency in industry activity overall has allowed related businesses (provisioning, repair, gear manufacturing, etc.) to develop.

The Oregon commercial fishing industry onshore landings in 2019 were 334.8 million pounds worth \$161.6 million in harvest value. The harvest value was a decrease over 2018 (\$175.0 million), but was still above the previous five-year (2014-2018) average (\$155.0 million). Figure ES.2 shows percent change in landing volumes and prices between years 2018 and 2019 for selected fisheries. Some notable fisheries trends are:

- Salmon volumes remained at low levels in 2019. Aggregate real salmon prices eroded (down 29 percent) in 2019 in 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 and Dungeness crab volumes were down in 2019 at minus 25 percent and minus 19 percent respectively as compared to 2018. Pink shrimp prices remained high at \$0.74 per pound and Dungeness crab prices increased by 10 percent between 2018 and 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 sectors allocated sablefish (also called black cod) fisheries comprise about half the harvest value of the overall non-whiting groundfish fishery. Sablefish volume was up slightly in 2019 as compared to 2018, while the two-gear harvested average price was about 20 percent less over this one-year period. The sablefish price has not returned to the record level prices received in 2011. Sablefish harvest size in six categories sets the ex-vessel price with fish up to 4 pounds fetching higher prices. Most sablefish harvests are exported to Japan, however there is some resurgence in domestic food service markets. A current management issue is considering placing limits on the proportion of the limited entry 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 constrained if quota pounds are not available to cover the sablefish bycatch.
- 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 species catch quotas in this mixed stock fishery. Dover sole is one example of a higher volume, lower price species that was harvested far below the allowable quota due to low availability of sablefish quota as well as some market issues. It is harvested by bottom trawl gear which also catches sablefish. Sablefish quotas typically have high attainment when targeted using fixed gear. Still, the other groundfish 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 using purse seine gear with 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 Oregon Dungeness crab fishery.
- Oregon coast aquaculture is principally Pacific oysters. The Oregon Department of Agriculture estimated farm-gate value was about \$8 million in 2019. This estimate may understate actual sales by growers. The estimate may be closer to a \$15-\$20 million range.

Economic contribution due to the commercial fishing industry may also be generated from many activities other than just harvesting and seafood processing – for example, visitors attracted to food service and retail markets selling local harvests, and tourists drawn to working waterfronts. There are boat building and gear manufacturing businesses at some ports. Management, enforcement/safety, research, education, and training are related economic contributors. The commercial fishing industry is one component in a larger context maritime industry that would include these additional economic contribution activities.

### 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 and shellfish 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. The accounting is selective leaving out trips targeting freshwater resident fish. Figure ES.4 shows the included finfish fisheries.

Total trips for the selective finfish fisheries increased in the late 2000's through 2015 (Figure ES.3). Trips for years 2016 through 2018 were in a downward trend mostly due to decreased participation in the inriver fall salmon and steelhead fisheries. There was a slight increase in 2019 due to an increase in ocean trips for salmon. Trips for ocean bottomfishing have grown ostensibly as replacement for decreased success rates and fishing opportunities for ocean salmon. There were about 911 thousand total trips in 2018 and 951 thousand total trips in 2019. The resulting trip spending for finfish target species trips was \$90.0 million in 2019. The spending generated an estimated \$120 million income to the statewide economy in 2019 which is equivalent to about 2,000 jobs (Table ES.1). Output is estimated to be \$289 million.

Accounting for recreational shellfish fisheries (defined to be ocean and bay crabbing and shore and bay clamming) activity is difficult because there is no serial data collection for all trips. Moreover, the activities will occur in combination with other finfish and shellfish fisheries so double counting is a concern. Ocean crabbing trips are reported in the ODFW Ocean Recreational Boat Survey (ORBS) results. Bay crabbing and clamming are from other ODFW pressure studies that have single year counts. It is assumed the various years apply to 2019. Ocean crabbing trips not in combination with trips where finfish are targeted had 6.4 thousand angler days. (Ocean crabbing angler days total estimate when not controlling for ocean combination trips is 91.1 thousand.) It was assumed bay crabbing angler days are 70.1 thousand. Bay clamming angler days are 48.5 thousand and razor clamming at ocean beaches (Clatsop County beaches are 95 percent of the effort) is 92.0 thousand. Crabbing (not combination trips) and clamming angler days are 217.0 thousand and the resulting spending is \$20.5 million. The spending generates an estimated \$15 million income to the statewide economy in 2019 which is equivalent to about 250 jobs (Table ES.1). Output is estimated to be \$37 million.

Economic contribution summation from both finfish and shellfish trip spending generated \$135 million income to the statewide economy in 2019 which is equivalent to about 2,200 jobs (Table ES.1). Output is estimated to be \$325 million. The economic contribution of commercial fishing in relation to the select recreational fishing is shown on Figure ES.5.

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.

### Nearshore Fisheries

Economic activity descriptions are provided for nearshore fisheries, i.e. commercial and recreational fisheries that take place within the TS and adjacent bays. The descriptions are provided to assist in characterizing the potential economic impact from marine reserve management. The nearshore fisheries commercial and recreational statewide economic contribution was \$280 million income to the statewide economy in 2019 which is equivalent to about 3,400 jobs (Table ES.1). The estimated output is \$476 million. The nearshore commercial and recreational fisheries economic contribution share was 30 percent of the total fishing industry income in 2019 (Figure ES.6).

A spatial model was developed in another ODFW sponsored project to estimate the economic contributions from fisheries within alternative marine reserve boundary designs. The model informed decision making in the geographic shaping and fisheries management plan formulation process that ultimately led to the existing system of marine reserves. The model shows, based on average 2017-2019 harvesting, that the maximum potential economic impact (i.e. no displaced fishing would occur elsewhere) from marine reserve management is 3.8 percent of all nearshore



commercial and recreational fishing economic contributions annual income which take place in the TS (Table ES.2). Since the marine reserve system area is about 10 percent of the TS area, it would seem likely that the 90 percent area commercial harvesting and recreation angling area opportunities would provide satisfactory substitute fishing grounds for most species. (Salmon and crabbing are only restricted in the MR portion which is about 3 percent of the TS.) However, some individual fishermen may have experience with the bottom features and water conditions at these sites and decide not to fish elsewhere given management closures. The fishing costs may rise from increased transit distances and changed catch per effort. If recreational fishers do not fish in new areas, they may instead spend the same trip expenditures in non-fishing activities in the local economy. Not included in the displaced fisheries estimates are potential biological spillover effects resulting from possible increased stock abundances that might raise catch per effort in the new fishing area.

There are other MR Program human dimension investigative projects both concluded and planned that address the extent of effort shift and leaving fisheries brought about by MR establishment. The problem is finding the degree and outcome of any influence from marine reserve implementation given that fishers are also responding to such factors as fish resource conditions, other regulations, economic and market conditions, personal investment choices, and even weather.

### Outlook

Total fishing industry generated economic contribution is \$693 million income in 2019 for the statewide economy which is equivalent to about 11,400 jobs. Output is estimated to be \$1.5 billion. (The total includes commercial onshore, distant water fisheries, recreational ocean fisheries, recreational selective finfish fisheries that are located in bays and lower rivers, and recreational ocean and bay crabbing and clamming.) The economic contribution income measure allows comparison to other Oregon industries and gives a sense of the size of the fishing industry within the Oregon Coast and statewide economies. The fishing industry share of the coastwide economy is 10.5 percent and statewide economy is 0.5 percent. The local share varies between 5.7 percent (Tillamook County) and 16.4 percent (Lincoln County). Maintenance of this level of commercial and recreational fishing economic activity will depend on the ability of the fishing industry and management agencies to cope with market trends, inter-industry structure challenges, and environmental conditions change.

Commercial and recreational fishing participants have always been subject to catch and access variability due to changing environmental conditions. Increasing biophysical effects from climate change are predicted to exacerbate the variability. Businesses within the fishing industry need to be resilient to downturns and take advantage of favorable stock sizes. Fisheries diversification is key to commercial fisheries businesses success. Recreational fisherman need stability in fishing opportunity that may require allocation transferability when abundances are low. Management also needs to have the adaptive capacity to nimbly fit conservation and development measures to different conditions. Vigilance on how stocks are responding to conditions is required for long term fisheries species conservation. Flexible management processes and techniques need to be built into fishery management plans to deliver desired social, ecological, and economic outcomes.

Challenges facing the fishing industry include shifting stocks due to climate change. Change includes extreme weather and ecological surprises the nature, location, and effect are difficult to predict. There will be other conflicting spatial uses of the ocean, such as wave/wind energy generation, telecommunication seabed cables, and whale migration routes. Also facing the industry are foreign agile market competitors, increased regulation, changes in consumer tastes, new technologies, and changing societal values toward natural resources protection. Fewer vessels are participating in commercial fisheries and those that do participate require higher annual revenues to be a viable business. The trend in processor ownership consolidation and centralization of operations continues. Some landings are hauled out-of-state, precluding the need for local labor and support businesses. These are efficiency moves by industry, but can hurt small fishing communities.

Goals for the industry would be to extract more value from the fishery resources that are available. Raising resource value has obstacles. There will be continuing price pressures on seafood products from substitute aquaculture products. Consumer concerns about quality (freshness, inclusions of toxics, etc.) will affect seafood product demands. Considerations about health and wholesomeness of natural coldwater fish could be a marketing advantage to Oregon's industry. Modernization of vessels for better handling capabilities and initial onboard processing, and modernization of processing plants will improve seafood products. Community based programs to own and lease access rights to fisheries and programs to direct market local catch to consumers are examples of cooperative and collaborative initiatives to promote the industry. Assistance through industry trade associations, Oregon Department of Agriculture commodity commissions, Oregon State University Sea Grant and Extension Service, and other entities for developing marketing strategies that will gain market power for Oregon seafood products should help the industry raise value at all levels of seafood production.

There are pressures from fish resource users to shift management specifications for making operations more efficient and alter opportunities for fisheries access. Fishery managers are often presented with economic effects information from different user groups wanting more favorable access to fisheries. There are different ways to measure economic effects and misuse of information can occur. Economic information can be valuable to decision making when there is forethought in proper data collection, economic modeling, and tradeoff discussions.

This report should prove helpful to understand the challenges facing the fishing industry. Contents characterize the social and economic importance of the different fishing industry sectors. When it becomes necessary, results can be used by stakeholders and management agencies to shape and prioritize conservation and allocation decisions. Communities and others will be able to better plan for infrastructure necessary to gain access to the resources. Finally, contents will help design regulatory and promotional material for users and the public.

Table ES.1  
Commercial and Recreational Fishing and Nearshore Fisheries  
Coastwide and Statewide Economic Contributions in 2019

	Onshore				Distant Water			Total				
	Ex-vessel	Income	Jobs	Output	Income	Jobs	Output	Income	Jobs	Output		
Commercial												
Coastwide		264.3	5,485	559.7	117.8	2,455	251.5	382.1	7,939	811.2		
Statewide	161.6	325.2	5,337	680.6	232.4	3,814	486.3	557.6	9,151	1,166.9		
	Ocean				Coastal Inriver				Total			
	Spending	Income	Jobs	Output	Spending	Income	Jobs	Output	Spending	Income	Jobs	Output
Recreational finfish												
Coastwide		16.6	351	44.8		65.6	1,394	177.8		82.1	1,746	222.6
Statewide	49.5	24.0	394	57.8	197.5	95.9	1,574	230.7	247.0	119.9	1,968	288.4
Recreational ocean and bay crabbing and clamming												
Coastwide										11.8	241	29.3
Statewide									20.5	15.4	253	37.1
Total recreational												
Coastwide										93.9	1,987	251.9
Statewide									267.5	135.4	2,222	325.5
Total commercial and recreational												
Coastwide										476.0	9,926	1,063.1
Statewide										692.9	11,373	1,492.5
						Ex-vessel/ Spending				Total		
							Income	Jobs	Output			
Nearshore fisheries (coastwide economic level)												
Commercial							62.5	1,299	132.7			
Recreational finfish							80.2	1,704	217.3			
Recreational ocean and bay crabbing and clamming							11.8	241	29.3			
Commercial and recreational							154.5	3,244	379.3			
Nearshore fisheries (statewide economic level)												
Commercial						74.9	77.7	1,275	162.5			
Recreational finfish						236.7	114.9	1,887	276.4			
Recreational ocean and bay crabbing and clamming						20.5	15.4	253	37.1			
Commercial and recreational							208.0	3,414	476.0			

- Notes: 1. Ex-vessel value, trip spending, income, and output are in millions of 2019 dollars.  
2. While income and output absolute values may increase at the statewide economy level due to reduced trade leakage, the calculation for the number of equivalent jobs may decrease. This is because average earnings per job are much higher in the statewide economy level.  
3. Trip spending is regardless of where (trip origin, enroute, or destination) purchases occurred nor is spending differentiated for residents and non-residents.

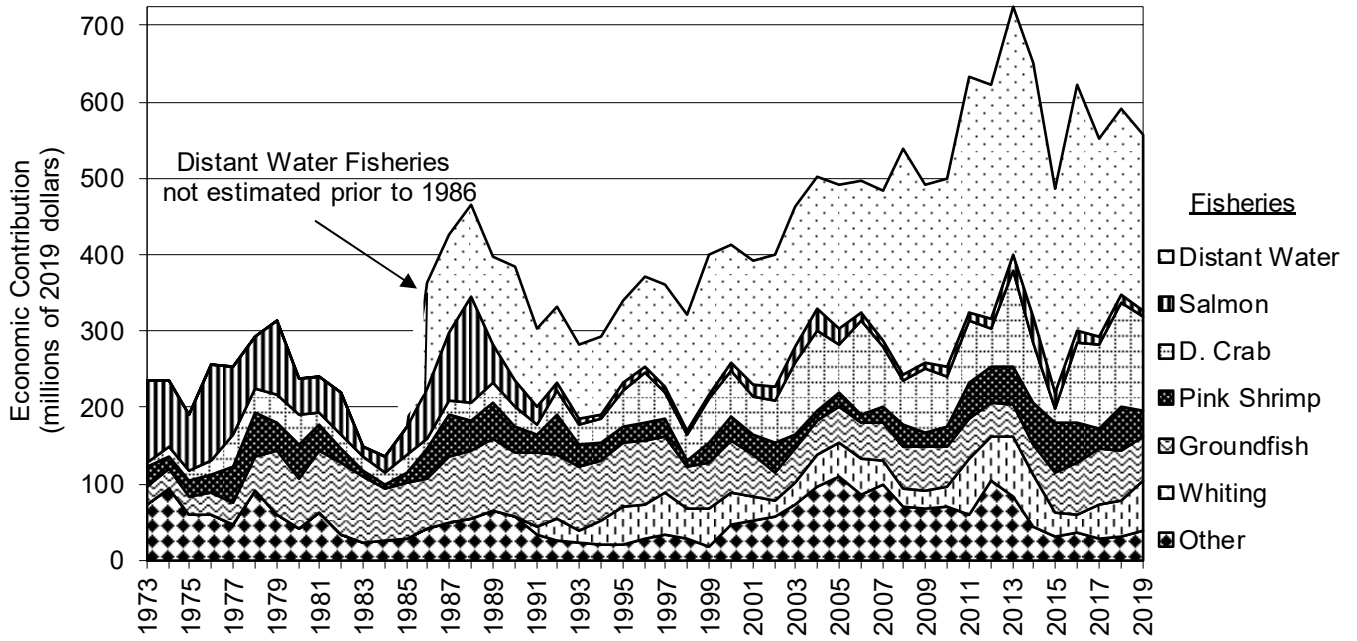
Table ES.2  
 Marine Reserve Sites Annual Average Regional Economic Impacts From  
 Assessed and Displaced Commercial and Recreational Fisheries for 2017-2019

Harvest Area	Area Share of Territorial Sea	Assessed Fisheries REI			Displaced Fisheries REI		
		Comm.	Rec.	Total	Comm.	Rec.	Total
<u>Marine Reserve Sites</u>							
Cape Falcon	1.6%	1,144	79	1,223	760	64	824
Cascade Head	2.6%	1,802	486	2,288	550	149	698
Otter Rock	0.1%	62	24	87	62	24	86
Cape Perpetua	4.4%	3,101	234	3,335	728	105	833
Redfish Rocks	<u>0.6%</u>	<u>255</u>	<u>52</u>	<u>307</u>	<u>121</u>	<u>49</u>	<u>170</u>
Total	9.3%	6,365	874	7,239	2,220	392	2,612
		<u>REI</u>			<u>Assess.</u>		<u>Displ.</u>
<u>Comparison Areas</u>		<u>Comm.</u>	<u>Rec.</u>	<u>Total</u>	<u>Share</u>	<u>Share</u>	
Territorial Sea	100.0%	63,179	5,976	69,155	10.5%	3.8%	
Onshore landed commercial fisheries		252,518					
Ocean recreational fisheries			14,972				
Ocean commercial and recreational fisheries				267,490	2.7%	1.0%	

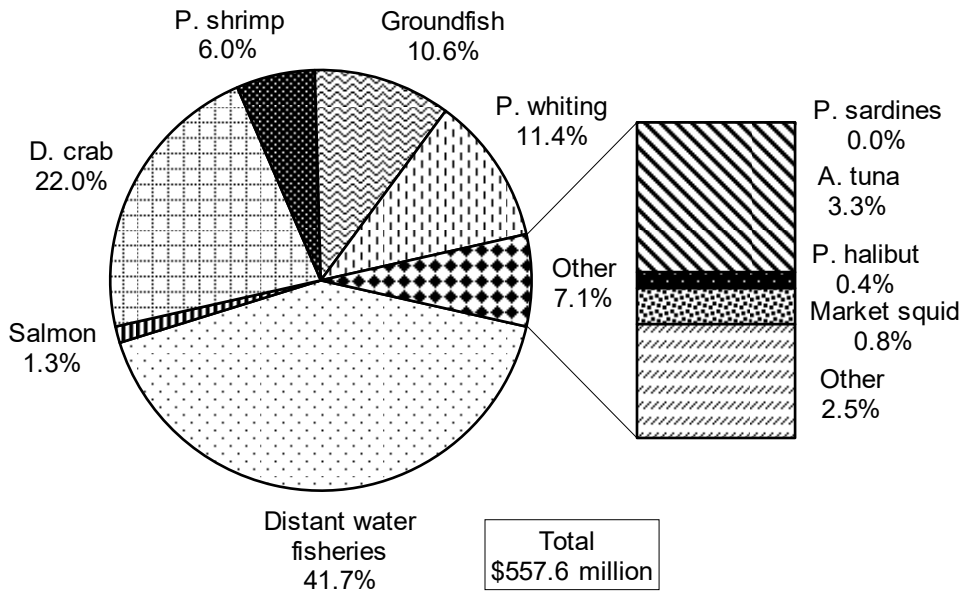
- Notes:
1. Economic impacts are expressed as coastwide income in millions of 2019 dollars.
  2. REI is regional economic impacts.
  3. Assessed fisheries are all of those that took place in the marine reserve and marine protected area portions. Displaced fisheries are those that are closed due to marine reserve management. Closed fisheries are all fisheries in the marine reserve portion, and only certain fisheries in the marine protected area portion. For example, salmon and Dungeness crab fishing is allowed within the marine protected area portion. Exceptions are the commercial market squid fishery and ocean and bay crabbing and clamming.
  4. The economic impacts for displaced fisheries should be considered the maximum potential effects from marine reserve management. Fishermen may elect to use other locations for same fisheries or participate in other fisheries as substitutes for the marine reserve management closures.

Figure ES.1

Economic Contributions From Onshore Landings in 1973 to 1919  
and Distant Water Fisheries in 1986 to 2019



Economic Contributions by Major Fishery in 2019



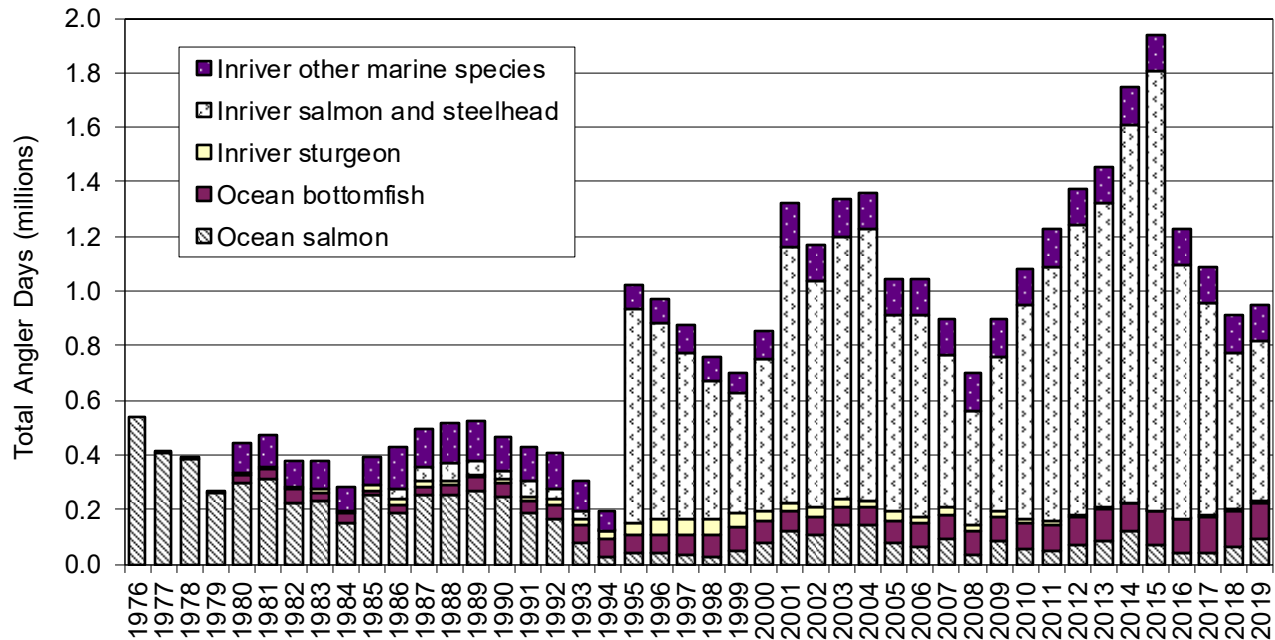
Notes: 1. Economic contributions are expressed as statewide income in millions of 2019 dollars.

Figure ES.2  
Selected Commercial Fisheries Volume and Price Annual Change for 2018 and 2019

Fishery	Price 2018-19	Volume 2018-19
Salmon	-29%	8%
Dungeness crab	10%	-19%
Pink shrimp	-3%	-25%
Sablefish	-20%	9%
Pacific whiting	8%	20%
Groundfish, other	0%	-6%

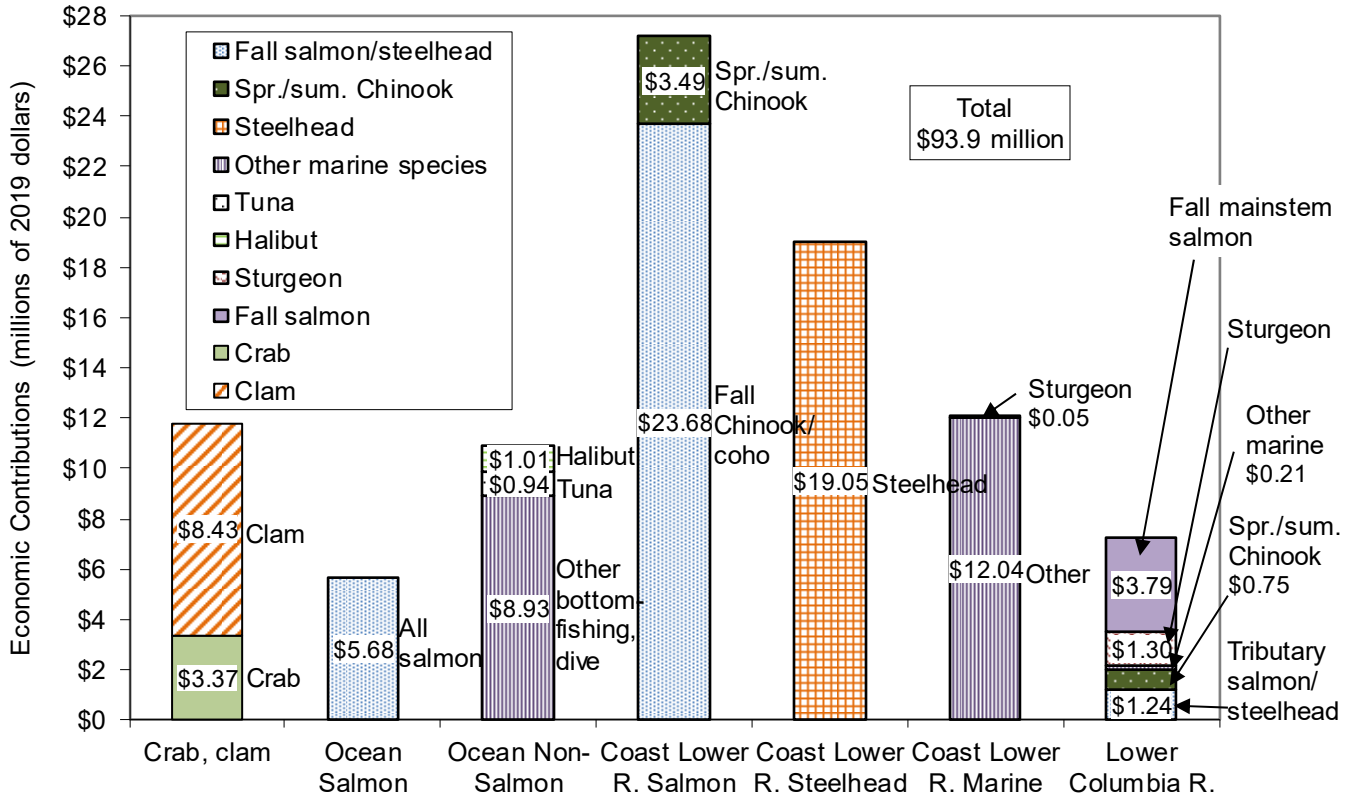
Note: The Dungeness crab fishery is for the 2018-2019 season and all other fisheries are calendar year.

Figure ES.3  
Recreational Angler Days for the Study Selected Finfish Fisheries in 1976 to 2019



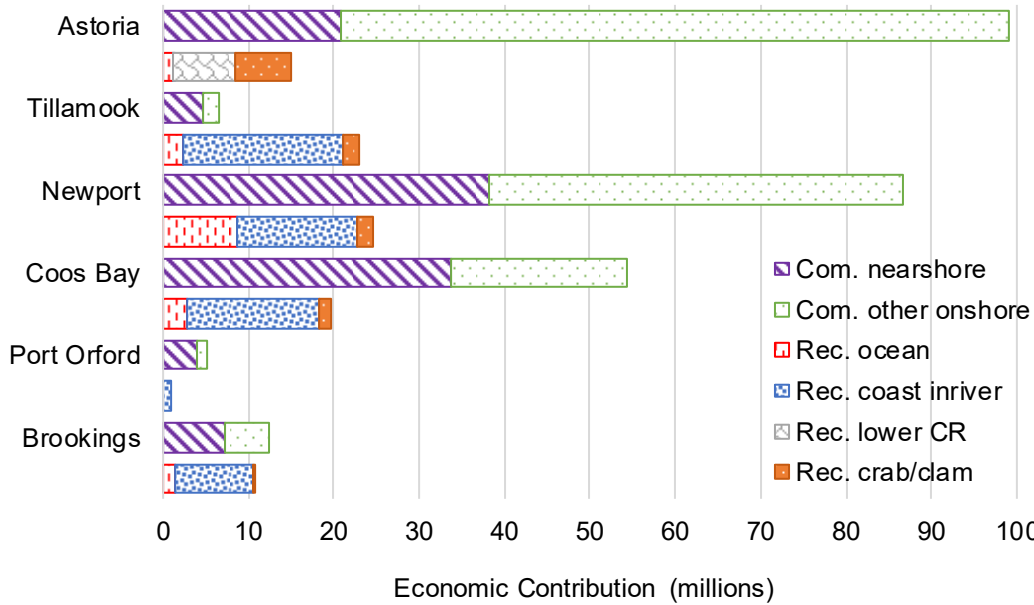
- Notes:
1. Angler days are included when the fishing trip occurs in the ocean, inriver marine areas (estuaries), and when the trip purpose is for certain species in coastal area inriver locations. The ocean fisheries are separated by trip purpose being for salmon and bottomfish. If the trip purpose is for a combination of salmon and bottomfish, then it is classified as a salmon trip. The bottomfish fishery includes halibut and tuna trips for display purposes.
  2. Trips do not include ocean and bay crabbing and clamming.

Figure ES.4  
Recreational Marine Fisheries Economic Contributions in 2019



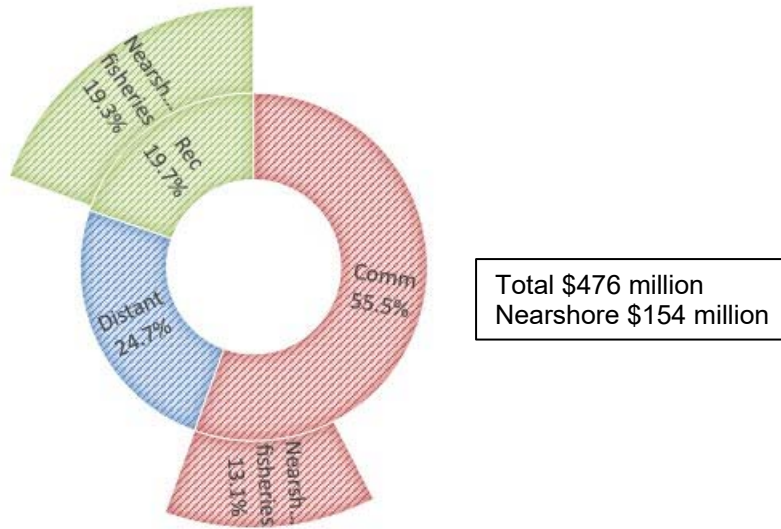
Notes: 1. Economic contributions are expressed as coastwide income in millions of 2019 dollars.

Figure ES.5  
Commercial and Recreational Fisheries Engagement at Port Groups in 2019



Notes: 1. Economic contribution is expressed as coastwide income in millions of 2019 dollars.

Figure ES.6  
Oregon Fishing Industry Economic Contribution and Nearshore Fisheries Component in 2019



Notes: 1. Economic contributions are expressed as coastwide income in millions of 2019 dollars.