

# NOAA Fisheries Service

## Alaska Fisheries Science Center

### Pacific ocean perch

*Sebastes alutus*

**Length** 70 cm (27.5 in)\*  
**Weight** 2 kg (4.4 lbs)\*  
**Age** 114 years old\*  
\*maximum



#### Range/Habitat

The geographic range of Pacific ocean perch (POP) is from Southern California to the Bering Sea and the Sea of Okhotsk to Southern Japan. The majority of the population occurs along the outer continental shelf and upper slope region at depths from 100 m – 300 m.

#### Diet/Role in Ecosystem

POP are mainly planktivorous. Juveniles feed on an equal mix of zooplankton and small shrimp (krill). Larger juveniles and adults feed primarily on krill, and to a lesser degree, zooplankton. In the Aleutian Islands, myctophids (a small pelagic fish) have increasingly made up a substantial portion of the POP diet.

#### Reproduction

About half of female POP mature at 29 cm or about 7 years old. POP appear to be viviparous (the eggs develop internally and receive at least some nourishment from the mother) with internal fertilization. Mating occurs in the fall, and sperm are retained within the female until fertilization takes place ~2 months later. Eggs hatch internally and parturition (release of live young) occurs in April-May in the Gulf of Alaska (GOA); timing is unknown for the Bering Sea/Aleutian Islands (BSAI).

#### Population

##### Fishery and Catch History

*From 1960s - early 1980s:*

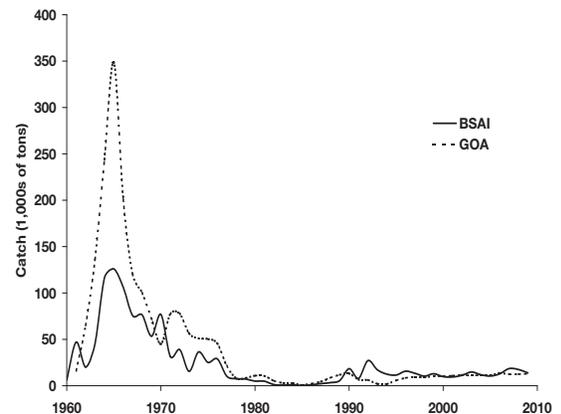
Pacific ocean perch supported major Soviet and Japanese trawl fisheries in the early 1960s. This fishery developed rapidly and in 1965 the peak catches were 350,000 metric tons (t) in the GOA and 109,000 t in the BSAI. This apparent overfishing resulted in a precipitous decline in catches in the late 1960s. Catches continued to decline in the 1970s, and by 1978 catches were only 8,000 t in the GOA.

*1980-1989:*

Catches reached a minimum in 1985, after foreign trawling in Alaskan waters was prohibited. The domestic fishery first became important in 1985 and expanded each year until 1991.

*Since 1990:*

In the 1990s restrictions were made to the domestic fishery to assist in the rebuilding of POP populations. Since 1996, catches of POP have risen, as good recruitment and increasing biomass have resulted in larger total allowable catch (TAC). Recently, catches on average have been 14,000 t in the BSAI and 12,000 t in the GOA.



Protecting  
Conserving  
Managing  
Marine Resources  
in  
Alaska

The Alaska Fisheries Science Center is a scientific research organization responsible for the development and implementation of NOAA's scientific research on marine resources in Alaska waters. Our research focuses on more than 250 fish and 42 marine mammal stocks off the coasts of the Bering Sea, Gulf of Alaska and Aleutian Islands.



National Marine Fisheries Service  
National Oceanic and Atmospheric Administration  
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## RESEARCH

Current research on Pacific ocean perch (POP) focuses on three main areas: Improving biomass estimates, increasing our understanding of POP population structure, and improving information on the early life history of POP.

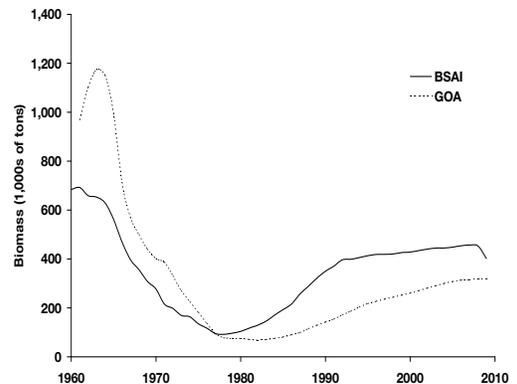
The distribution of POP across Alaskan waters is patchy. Because of this patchiness, estimates of biomass are highly variable when calculated from data collected using traditional bottom trawl surveys where sampling is uniformly distributed. To reduce variability, scientists have been collecting acoustic "Echosign" data concurrent with the AFSC bottom trawl research surveys since 2002. With funding from the North Pacific Research Board scientists are analyzing vast amounts of data to determine if improved understanding of POP distributions is gained by comparing the acoustic data with the trawl data. The trawl survey design could then be modified to reduce the variability of the biomass estimates.

To increase our understanding of POP population structure, the AFSC has ongoing genetic research projects that are revealing fine-scale spatial structure of POP populations. Results of this research will be used to further explore movement and life history patterns.

To improve our information on POP early life history, juvenile POP have been live-captured using a surface trawl equipped with an aquarium codend, and transferred to wet laboratory aquaria. Habitat utilization and predation trials will be conducted to reveal previously unknown early life history traits.

## Resource Status

Pacific ocean perch in Alaska waters are not overfished and are not approaching overfished levels. The estimate of total biomass for BSAI POP increased rapidly from 94,000 t in 1977 to 397,000 t in 1992, and increased more gradually to 459,000 t in 2007. A similar pattern of rebuilding has occurred for GOA POP, which has increased from approximately 100,000 t in 1980 to 300,000 t in 2005.



## Stock Assessment

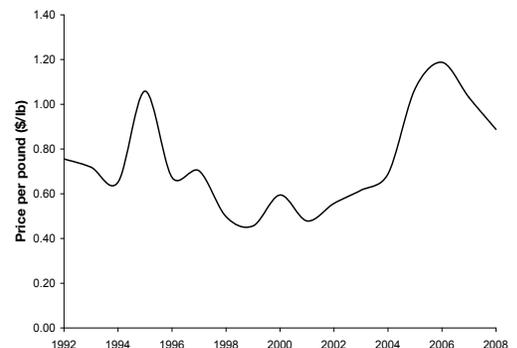
Information used in POP stock assessments include fishery catch, trawl survey biomass estimates, and age and length composition of the fishery catch and survey biomass estimates. POP are relatively "data rich" compared to other Alaska rockfish, and these data are used in statistical catch-at-age models for the BSAI and GOA areas. Briefly, model estimates of age-structure and population size are generated, and deviations between observed and estimated quantities are assumed to follow statistical distributions. Model parameters are then chosen to minimize the deviations between the observed and estimated quantities.

## Management

POP are caught primarily by trawl gear, fished both pelagically and on the bottom, and total allowable catch (TAC) limits are set by area. In the BSAI, POP is allocated among the three Aleutian Island districts and the eastern Bering Sea, based on biomass distribution. No directed fishery is allowed in the eastern Bering Sea. As of 2008, the Aleutian Islands TACs were primarily allocated to a subsector of the trawl fleet, known as the Amendment 80 sector, within which many vessels have formed cooperatives. In the GOA, POP was allocated by management subarea. Most of the biomass is in the Central GOA, and as of 2007, POP in that area was mostly allocated to a subsector of the trawl fleet, within which sector harvesters and processors have formed cooperatives. The program also allows for an entry-level POP fishery for trawl and longline gear.

## Economics

Prices of Pacific ocean perch peaked in 1995 (\$1.38/lb). Prices in 2008 were \$0.89/lb. The average product price from 1992 to 2005 is \$0.74/lb. Primary products produced in order of volume are headed and gutted, whole fish, surimi, and skinless boneless fillets.



The inflation-adjusted prices shown in the graph are 1st wholesale (2008 U.S. currency). Numbers are from NMFS and ADF&G price data.

## For more information

### Most recent stock assessment:

<http://www.afsc.noaa.gov/REFM/Stocks/assessments.htm>

### Research at AFSC:

[http://www.afsc.noaa.gov/ABL/MESA/mesa\\_sa\\_pp.php](http://www.afsc.noaa.gov/ABL/MESA/mesa_sa_pp.php)

### Management:

<http://www.alaskafisheries.gov/npfmc>

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## Questions or Comments?

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