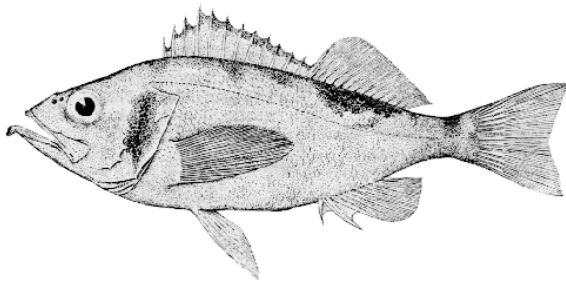
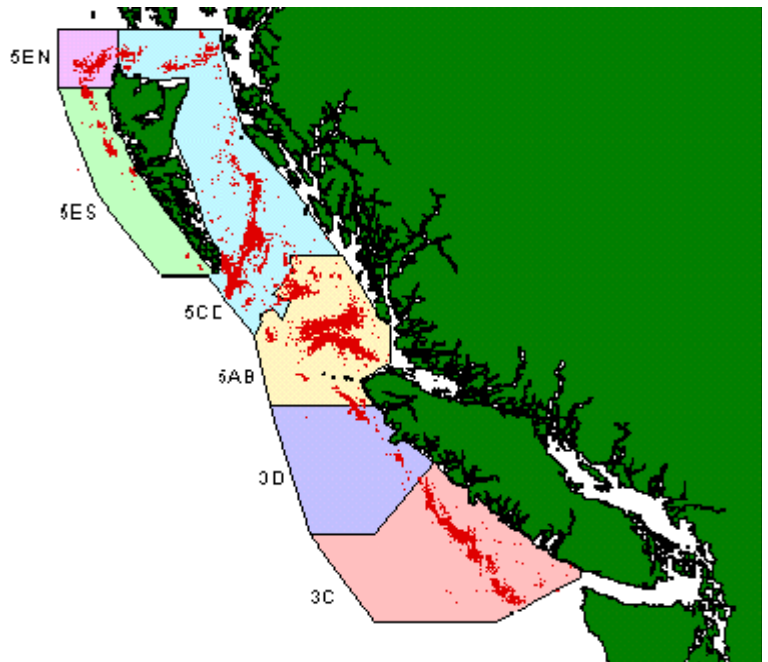


Pacific Region



Sebastes alutus

**Pacific Ocean Perch
British Columbia Coast**



Canadian trawl catch locations of Pacific ocean perch in British Columbia, 1996-98, and slope rockfish assessment areas.

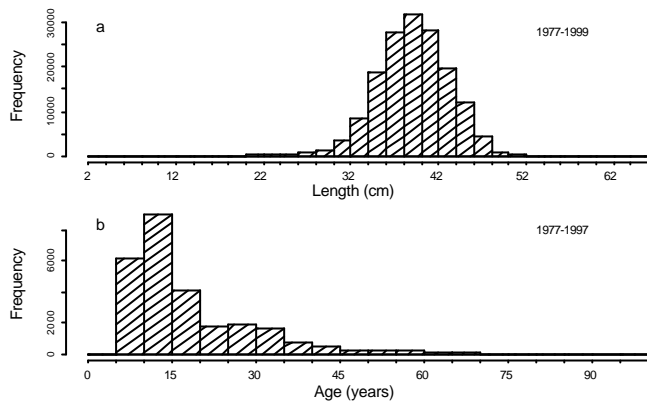
Background

Pacific ocean perch (*Sebastes alutus*) is the most important rockfish species in the British Columbia trawl fishery, in terms of total landed catch. The species occupies depths from 40 to 640 metres and ranges from southern California to the Bering Sea as far southwest as the Kurile Islands. It is generally captured by trawl gear over cobble substrate but may prefer rocky, high relief substrate.

Pacific ocean perch reach a maximum length of about 50 cm and a maximum age of close to 100 years. About half of females mature by the age of 8 years at a length of approximately 35 cm, while 50% of the males reach sexual maturity at an age of 6 to 8 years and a length of about 34 cm. Each female produces between 90,000 and 510,000 eggs. Fertilization is internal and the eggs, which obtain at least some of their nutrition from the parent during development, remain within the ovary until larval extrusion. Young are extruded in March off Vancouver Island and somewhat later further north in Queen Charlotte Sound. Juveniles may remain pelagic until the second or third year of life and are fully recruited to the fishery by age 16.

The Fishery

A trawl fishery for Pacific ocean perch and other slope rockfish has existed in B.C. since the 1940s. However, Canadian catches were relatively minor before the mid-1970s. A foreign fishery was active coastwide between 1956 and 1982, with the largest catches landed by Soviet and Japanese fleets between 1965 and 1970. The main areas targeted by the foreign fisheries were located in the westerly portions of Goose Island and Mitchell's Gullies. In 1971, Canada imposed a fishery closure inside (easterly of) a line from the southern tip of Moresby Island to the northern tip of Vancouver Island. This closure reduced, but did not entirely limit, further foreign fishing within Queen Charlotte Sound. The establishment of Canadian extended jurisdiction to the 200-mile limit in 1977 halted directed fishing on rockfish by Japanese and Soviet vessels, although incidental catches are still taken in the joint venture hake fishery. The U.S. trawl fleet continued to fish for rockfish in Canadian waters until 1982.

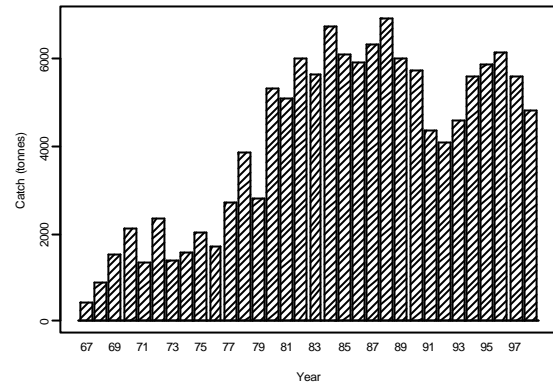


Frequency distributions in B.C. of (a) length: sample size = 158,436 (68% port landings, 27% observer, 4% other commercial), minimum = 3 cm, maximum = 65 cm, mean = 40 cm; and (b) age: sample size = 27,062 (94% port landings, 6% observer), minimum = 1 year, maximum = 100 years, mean = 18 years.

The Canadian trawl fishery began to target Pacific ocean perch about 1980, and since then the average annual catch has been 5,680 tonnes (1980-96). The major fishery occurs in Queen Charlotte Sound in three gullies: Goose Island, Mitchell's and Moresby. Goose Island Gully and to a lesser extent Mitchell's Gully were the main sites of the historical fishery, while Moresby Gully only became a target area in 1980. Large landings were also reported from the Langara Spit area off the northwest coast of Graham Island from 1983 to 1990 as a result of an open-fishing experiment.

Collection of catch statistics for Pacific ocean perch and other rockfish began in 1954 with the introduction of a voluntary trawl logbook program. In the early years, statistics were confounded by the practice of reporting the catch of several similar species under one category such as "ocean perch" or "red rockfish." By the late 1970s, as management efforts grew more restrictive, fishermen began to report an increasing number of species landed. This increase may reflect an effort to utilize some less restricted species, but misreporting may have also occurred. A mandatory dockside monitoring program implemented for the majority of the trawl fishery in 1994 has improved species identification and eliminated misreporting. In 1996 a mandatory on-board observer program was

introduced that was applied to the entire trawl fleet. The observer program provides detailed and timely catch information on a tow-by-tow basis and is necessary for management and stock assessment.



Coastwide Canadian trawl catch of Pacific ocean perch (data for 1998 are not complete).

Resource Status

i) West Coast of Vancouver Island:

This area was targeted by the foreign fishery in the mid 1960s, with large removals of Pacific ocean perch. Several analyses in the late 1970s indicated that stock biomass was substantially lower than the mid-1960 level. To gather more information on biomass levels and potential yield, an overfishing experiment, with a quota of 300 to 500 tonnes, was conducted from 1980 to 1984. Upon completion of the experiment, a research survey in 1985 estimated Pacific ocean perch biomass at 1,900 tonnes, a reduction of 51% from the 1979 estimate. In addition, the survey catch per unit effort for all rockfish fell by 68% between 1979 and 1985. More recently, U.S. assessments have projected a continued low biomass of Pacific ocean perch in U.S. waters.

Based on age-structure data collected during a 1996 survey, the 1984 year-class dominates the population. This year-class would not have been detected in the 1985 survey. The 1976 year-class, although still present in the 1996 samples, appears less dominant than in comparable samples from Goose Island and Moresby Gullies, and from

Langara Spit. The absence of strong year-classes after 1984 is consistent with other Pacific ocean perch stocks in B.C.

Without any incoming strong year-classes, the 1984 year-class continues to support the fishery, and biomass is declining. Between 1985-96, the reported average annual catch of 495 tonnes led to high total mortality rates. The 1995 survey biomass estimate for Goose Island and Mitchell's Gullies is 14 times greater than the 1996 estimate for the west coast of Vancouver Island.

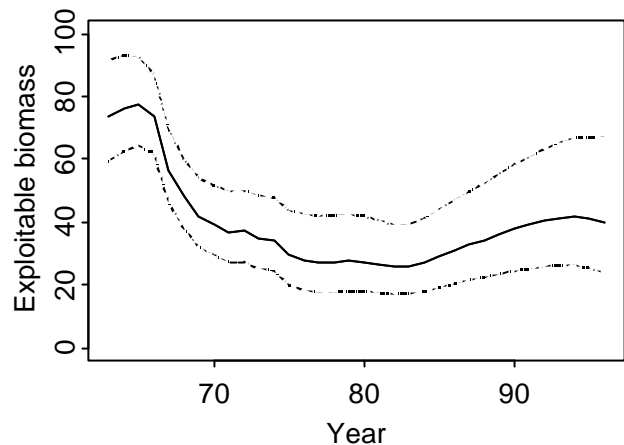
A 1996 survey of the west coast of Vancouver Island indicates that the estimated biomass of Pacific ocean perch may be close to 2,000 tonnes, similar to an estimate produced from a survey done in 1985. Thus, there is some indication that population numbers have been relatively stable off the southwest coast of Vancouver Island since 1985.

Limited information is available to assess the status of Pacific ocean perch off the northwest coast of Vancouver Island. A large foreign fishery was active in the mid-1960s but did not take significant quantities in this area. Reported catch from this area has been declining steadily since 1989 while effort has been constant. This decline suggests a continuing low biomass for this area.

ii) Goose Island and Mitchell's Gullies (Queen Charlotte Sound):

Regular trawl surveys to estimate Pacific ocean perch biomass were conducted in the Goose Island Gully between 1965 and 1984. After a 10-year gap, biomass surveys were again conducted in 1994 and by two vessels simultaneously in 1995. Relative biomass estimates from the 1995 surveys ranged from 18,179 to 31,369 tonnes. These estimates are the highest recorded since the surveys began in 1965. However, comparison of results from the 1995 and earlier surveys is complicated by differences in survey design. In particular, coverage of the survey area was more comprehensive in 1995 than in earlier surveys. The survey series since 1965 forms the basis of

the most recent catch-age analysis of Goose Island Gully. This analysis indicates that the foreign fishery reduced the Goose Island Gully stock of Pacific ocean perch to about a third of the 1965 exploitable biomass by 1977.



Goose Island Gully exploitable biomass trajectory (1000s tonnes) and 95% confidence interval estimated from model runs.

Between 1977-84, exploitable biomass remained relatively constant. It then increased to more than half of the 1965 level by 1995 as a result of above-average recruitment and low fishing mortality rates. A decrease in biomass is forecast for 1998 unless recruitment continues to be above average.

iii) Moresby Gully:

There have been no biomass surveys in Moresby Gully since 1981 and there is little fishery independent information available to assess the status of Pacific ocean perch in this area. Nevertheless, given the increase seen in Goose Island Gully, biomass in Moresby Gully may also have increased since the early 1980s. Moresby Gully was not targeted by the foreign fishery and the 1976, 1980, and 1984 year-classes were well-represented in an age-structured analysis performed in 1995.

iv) West coast of the Queen Charlotte Islands:

Trawl surveys have been conducted sporadically off the west coast of the Queen Charlotte Islands since 1966, the most recent in August of 1997.

This survey estimated Pacific ocean perch biomass at approximately 13,400 tonnes. A relatively strong 1990 cohort was identified.

iv) North of 54° (Langara Spit):

An over-fishing experiment took place in the Langara Spit region off the north west coast of Queen Charlotte Island between 1983 and 1990. This was followed by a period of closure between 1991 and 1996. Surveys to monitor the experiment were conducted in 1993, 1996 and 1997. The 1996/97 surveys suggest a modest rebuilding of the stock since 1993. Recruitment of recent cohorts appears lower than during the early to mid-1980s over most of the Langara Spit region, with the exception of one area showing a relatively strong 1990 year-class. The absence of significant recruitment of cohorts from the late 1980s suggests that increases in biomass over the next few years will be limited primarily to contributions from existing cohorts.

Outlook

Many fishermen report an increasing abundance of Pacific ocean perch recently. However, these perceived increases are likely due to the growth of individuals rather than an increase in recruitment. There has been no significant increase in recruitment over the past several years. Stocks are expected to decline slowly from current levels of abundance until recruitment increases.

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