

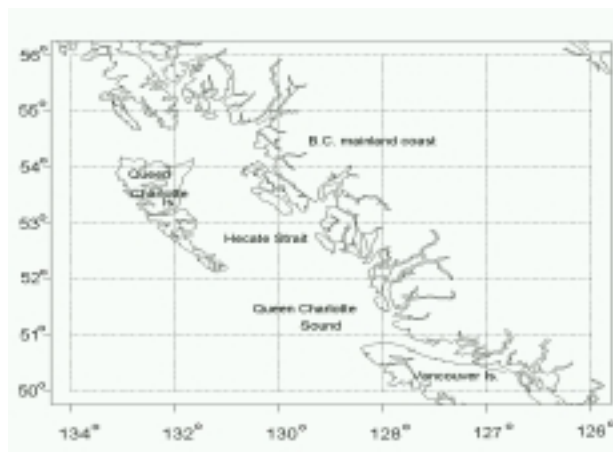
Rock Sole Queen Charlotte Sound (Areas 5A/B) and Hecate Strait (Areas 5C/D)

Background

There are three species of rock sole in the north Pacific, but only two are found off the coast of British Columbia, *Lepidopsetta bilineata* and *Lepidopsetta petraborealis*. *L. petraborealis*, the southern species, is the most common. The range of *L. bilineata* extends from Baja California to the southeastern Bering sea, while *L. petraborealis* can be found from Puget Sound to the southern Sea of Okhotsk. Four discrete populations have been identified off the B.C. coast – two in Queen Charlotte Sound (Areas 5A/5B) and two in Hecate Strait (Areas 5C/D).

Life histories are similar among the species. They live as long as 21 years and recruit to the commercial fishery at about 4 years of age. They have evolved to spawn annually over the course of their lifetime. Males begin to spawn at 3 years of age, while females begin to spawn at 4.

Directed fishing for rock sole off British Columbia takes place at trawling grounds in Queen Charlotte Sound and Hecate Strait. The commercial fishery was unregulated prior to 1980. Since that time monthly vessel trip quotas have been imposed. Rock sole abundance increased significantly in the late 1980s and reached a 50-year peak in the early 1990s. Abundance has declined since that time due to a decline in recruitment.



Summary

- Hecate Strait rock sole biomass increased significantly in the late 1980s and is currently above the long-term average for the last 50 years. The status of the Queen Charlotte Sound stocks is not known.
- Fishing mortality for the Hecate Strait stock has been below $F_{0.1}$ since 1996.
- There is negligible risk of overfishing the Hecate Strait stock at this time.
- There is a high probability that the spawning stock biomass for this stock will be maintained with the current fishing rate.

The Fishery

Landings of rock sole from the commercial fishery increased from 100 tonnes in the mid 1940s to over 3,000 tonnes in the early 1990s. The average annual coastwide landings of rock sole between 1945 and 1998 was about 1,500 tonnes. Rock sole are caught in a directed trawl fishery and as a bycatch in the Pacific cod fishery. The rock sole fishery involved both Canadian and United States vessels until 1977, when Canada declared extended jurisdiction over its offshore

resources. Subsequently, the fishery has been exclusively Canadian. The most significant fisheries for rock sole occur in Hecate Strait and Queen Charlotte Sound.

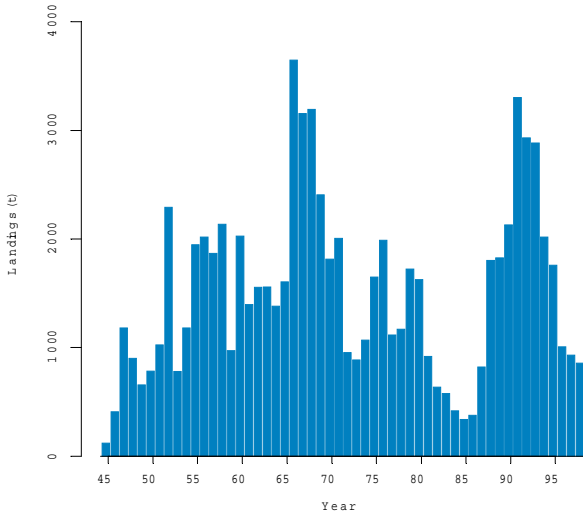


Figure 1: Annual landings of rock sole from the Canadian Pacific coast trawl fishery, 1945-98

Annual coastwide landings of rock sole have fluctuated regularly over time. Low recruitment rates in recent years have led to cuts in quotas. As a result, fishing effort has also declined.

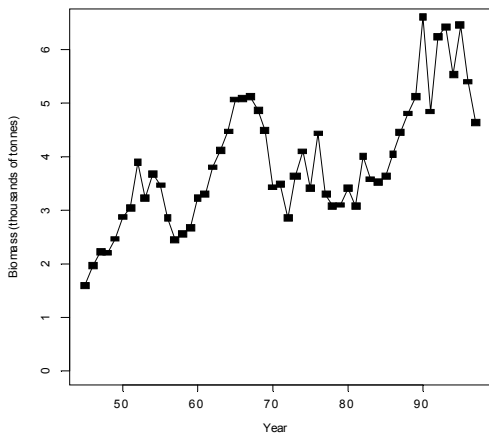


Figure 2: Rock sole biomass in Hecate Strait, 1945 to 1997

Resource Status

Rock sole abundance in 1998 was near the long-term average for the last 50 years but is declining. Cyclical abundance for this species is mainly a

response to variability in the ocean environment. The proportion of young fish recruiting to the population has declined in recent years and warmer ocean temperature during the recent El Niño event has led to lower survival of young fish.

Since the mid-1980s a biannual trawl survey has been conducted in Hecate Strait to assess the abundance of rock sole and other groundfish species in the region. Results indicate there was an overall increase in the abundance of the species between 1984 and 1991 while a decline occurred between the early and late 1990s.

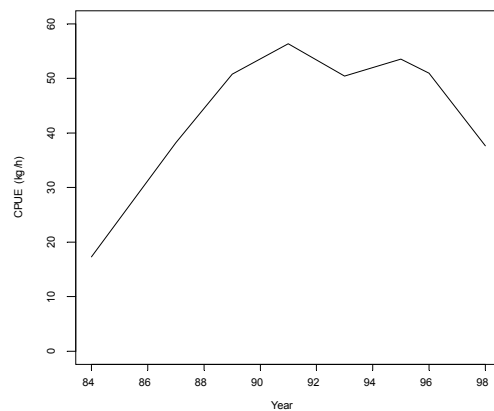


Figure 3: Research trawl survey index (CPUE) for Hecate Strait Rock sole (1984-98).

Rock sole abundance is not expected to increase significantly in the near future because of unfavourable conditions in the ocean environment. The total allowable catch of rock sole will remain relatively low to protect these stocks until abundance increases.

Management Considerations

Management is based on a yield corresponding to a fishing mortality reference point of $F_{0.1}$. The stock should be able to maintain its spawning biomass with fishing at this rate, which will increase the probability of good recruitment. In addition, the establishment of a mesh regulation in 1995 will help to minimize mortality of the juveniles. This will have a positive effect on recruitment for the stock in the long term.

For More Information contact:

Jeff Fargo
Pacific Biological Station
Nanaimo, B.C. Canada V9R5K6
Tel. (250)756-7165
Fax. (250)756-7053
email: fargoj@pac.dfo-mpo.gc.ca

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PSARC Secretariat
Pacific Biological Station
Nanaimo, BC V9R 5K6
Phone: (250) 756-7208
Fax: (250) 756-7209
E-Mail: psarc@pac.dfo-mpo.gc.ca
Internet Address: (www.dfo-mpo.gc.ca/csas)

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