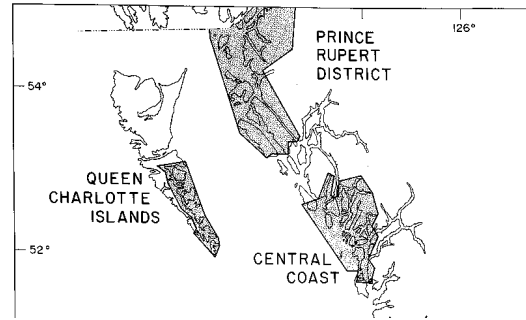


Queen Charlotte Islands Herring



The Fishery

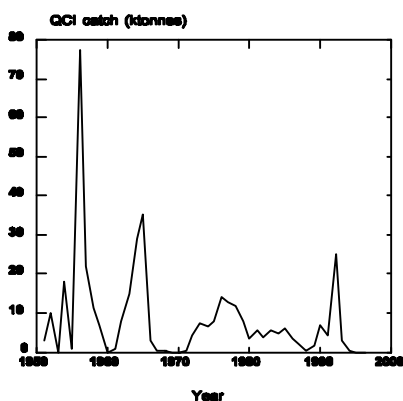
Average QCI herring catch (thousands of tonnes)

1951-60	1961-70	1971-80	1981-90
13.2	9.0	7.5	4.1

The QCI assessment region extends from Cumshewa Inlet in the north to Louscoone Inlet in the south. From the mid-1940s until the late 1960s, B.C. herring were harvested and primarily reduced into fish meal and oil. As the fishery expanded, commercial harvest rates increased sharply and were unsustainable by the late 1950s. A record high catch of 77,500 tonnes was removed from the QCI stock in 1956. This fishery was closed in 1953, and disrupted in 1958, by labour disputes. Although the stock wasn't fished commercially in 1960, when it was fished it was harvested as heavily as the other major stocks. (Taylor 1964). By 1965, most of the older fish had been removed from the spawning population by a combination of overfishing, and a run of poor year-classes (born between 1954 to 1957). Consequently, the commercial fishery collapsed in 1967, and was closed by the federal government to allow the stock to rebuild.

Background

Pacific herring is a pelagic species which occurs in inshore and offshore waters on both sides of the North Pacific. In the eastern Pacific it ranges from California to the Beaufort Sea. Herring mature and recruit to the spawning stock predominantly between ages 2 to 5. Within this range, recruitment tends to occur at younger ages in the south, and older ages in northern waters. The Queen Charlotte Islands (QCI) stock is one of five major B.C. herring stocks. Catches were first reported from this area in 1937. Because of its remote location, QCI herring were fished intermittently until the early-1950s, as the B.C. commercial herring fishery approached its historical peak. By the mid-1960s, the stock had collapsed from overfishing, and the commercial fishery was closed in 1967. Following the advantageous combination of a low harvest rate, and favourable environmental conditions the stock had recovered by the mid-1970s. The modern roe fishery began in 1972. The target harvest rate of roe herring is fixed at 20% of the forecast mature stock biomass. The 1977 year-class was the largest in the last 40 yrs, and supported the fishery until the late-1980s. Since then, recruitment has been generally poor and the stock has declined. Because of conservation concerns the commercial roe herring fishery has been closed since 1994. A small Aboriginal food fishery, and a limited spawn-on-kelp fishery are anticipated in 1997.



The commercial fishery remained closed for four years. During this period, only small, traditional harvests for local food and bait were permitted (Hourston 1980). Fortuitously, while the fishery was closed, there was a run of five above-average strength recruitments, which enabled the stock to recover, and the fishery to reopen in 1972. At that time, there was a growing interest in harvesting B.C. roe herring for export to Japan. Small quantities of herring were also utilized for spawn-on-kelp, and Aboriginal food and ceremonial fish (Section 35 fishery). The objective of the modern roe herring fishery is to obtain a low volume, high-quality product that is economically profitable and ecologically sustainable.

The fishery is currently managed by setting a fixed target harvest rate of 20% of the forecast mature stock biomass. To meet conservation objectives, the management strategy also enforces a minimum spawning stock biomass. If the forecast biomass falls below the Cutoff threshold (10,700 t) the commercial fishery is closed until the stock rebuilds. Low stock levels caused the QCI roe fishery to be closed in 1988. In 1994 the forecast run was close to the Cutoff, so fishing was restricted to Aboriginal food fish and commercial spawn on kelp only. In 1995 and 1996, the forecast abundance was below Cutoff so only the

Section 35 harvest was permitted (Schweigert et al 1996).

Average catch (thousands of tonnes)

1992	1993	1994	1995	1996
3.6	3.9	1.4	0	0

Climatic Factors

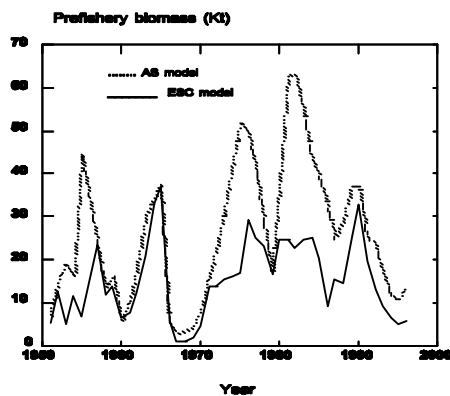
Various studies have suggested that herring recruitment is determined by variations in the size of the parent stock, and environmental conditions during the first year of life. Recruitment variability in the QCI stock has been correlated with March sea surface salinities and sea levels in the stock area during the year of birth (Schweigert and Noakes, 1990). Although there is a risk that these correlations might be spurious (i.e. not meaningful), they could also have a biological basis. For example, variations in surface salinity and sea level reflect differences in wind induced upwelling and mixing, freshwater runoff and nutrient supply. These factors could directly affect the planktonic food supply of the young herring, and indirectly alter juvenile herring losses to predators. However, these possibilities must remain completely speculative until more research is done.

Resource Status

Herring stock assessments are based on biological samples of the population age composition, average weight-at-age, historical catch data, and assessments of spawn distribution and intensity in the stock assessment area (Schweigert et al 1996). The prefishery biomass of mature adult herring is estimated by two models: an age-structured model and an escapement model. The latter relies predominantly on the spawn data. The average of the estimates from both models is

used to assess the current stock level, project future run size, and establish an allowable catch.

Historically, the 1977 year-class was exceptional. It produced the largest recruitment to the QCI stock in the last 40 years. The 1951 year-class was also very strong. However, since 1977, ten of the last 16 year-classes have been of below average strength. The current low productivity of the stock is apparent from the fact that in spite of low harvest rates, the commercial fishery has been closed for four of the last nine years.



In 1995, the stock biomass was estimated to be at a 26 year low. In 1996, the stock assessment models indicated a slight increase in stock biomass. An above average recruitment (of the 1993 year-class) increased the weighted stock size to about 11,000 t, (Schweigert et al 1996). This forecast brings the stock just above the Cutoff, suggesting that a modest yield of about 310 tonnes is available in the QCI stock area in 1997. This small quota will be allocated to meet Aboriginal Section 35 requirements, and to the spawn-on-kelp fishery. There will be no commercial roe herring fishery in the Queen Charlotte Islands in 1997.

Outlook

All assessment criteria indicate that the QCI stock is at low abundance levels. The recruitment trend also shows that the stock is in a poor productivity state, so a precautionary harvest policy is warranted until the productivity increases. Since very little is known about the factors that affect recruitment, it is not possible to forecast when it will improve. Until it does, the population will only be able to support a small harvest, and may have to be closed periodically if the biomass falls below the Cutoff.

Coastal ocean temperatures returned to a near-normal state in the fall of 1996. If this condition persists for a few years, it may provide more favourable recruitment conditions that will allow the stock to increase.

For More Information

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