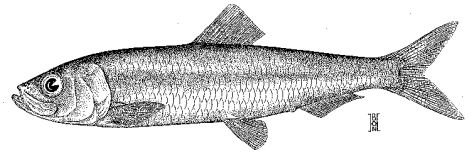
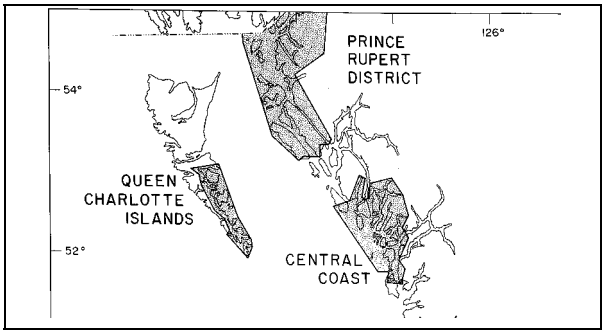


Central Coast Herring



Background

Pacific herring is a pelagic species which occurs in inshore and offshore waters 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 and 5. Within this range, age-at-recruitment tends to increase with latitude. The Central Coast (CC) herring stock is one of five major B.C. herring stocks. The fishery began here at the turn of the century, mainly for bait, but did not become extensive until the expansion of the dry-salted fishery in the late 1930s and reduction fishery in the 1940s. This stock declined as part of the coastwide collapse from overfishing in the early 1960s, and the commercial reduction fishery was closed in 1967. Following a combination of favorable environmental conditions and a low harvest rate, the stock recovered by the mid-1970s. The current roe fishery began in 1972. The target harvest rate of roe herring is fixed at 20% of the forecast mature stock biomass, when the stock size is sufficiently above the threshold or minimum spawning stock biomass (Cutoff). Recent assessments indicate that the mature herring biomass remains well above the fishing threshold (17,600 t), and should continue to sustain a modest fishery. Recent concerns about declining size at age have moderated with larger fish returning in most areas in 2002.

Summary

- The fishery is managed by setting a fixed quota based on a 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 fishing Cutoff threshold (17,600 t), the commercial fishery is closed to allow for stock recovery.
- For the current assessment a revised catch-at-age model was adopted as the best predictor of stock abundance.
- Assuming an average recruitment of the 2000 year-class in 2003, a forecast mature biomass of about 25,260 tonnes is anticipated yielding a harvestable surplus of 5,050 tonnes.

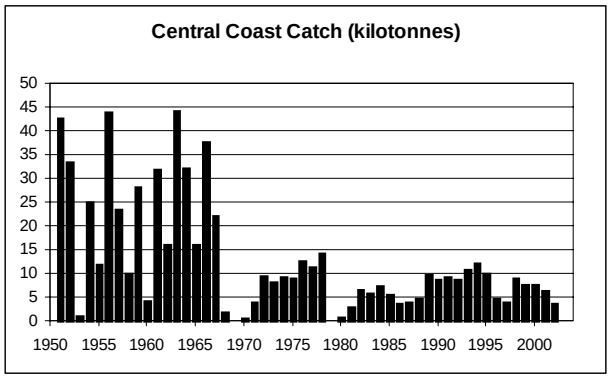
The Fishery

Average Central Coast Catch (ktonnes)

1951-60	1961-70	1971-80	1981-90	1991-00
22.1	20.0	7.6	5.6	8.1

All herring spawning in Kitasu Bay (Statistical Area 6), those in Statistical Area 7, and most of Area 8 are assumed to be part of a single Central Coast stock that migrates inshore in the late fall and leaves, after spawning, in late March and early April. From the mid-1940s until the late 1960s, these herring were harvested and processed (reduced) into relatively low value products such as fishmeal and oil. Catches increased dramatically in the early 1960s but were unsustainable. By 1965, most of the older fish had been removed from the spawning population, by a combination of overfishing, and a sequence of weak year-classes, attributed to unfavourable environmental conditions and a low spawning biomass. As a result, the commercial fishery collapsed in 1967, and was closed by the federal government to rebuild the stock.

Following the closure, a series of above average year-classes occurred in the early 1970s rebuilding the stock quickly and providing opportunities for a new fishery.



During the closure, the small traditional fisheries continued locally for food and bait (Hourston 1980). At this time there was a growing interest to harvest roe herring for export to Japan as their stocks became decimated. A small experimental roe harvest began in 1971, and expanded rapidly until 1983, when fixed quotas were introduced to regulate the catch. A significant quantity of Central Coast herring is also utilized for spawn-on-kelp, and aboriginal food fish.

The objective of the current herring fishery is to obtain a low volume, high-quality product that is economically profitable and ecologically sustainable. The fishery is managed by setting a fixed quota based on a 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 fishery Cutoff threshold (17,600 t) the commercial fishery is closed to allow for stock recovery. In response to reduced stock levels the Central Coast fishery was closed in 1979 and 1980. Subsequently, the stock has rebuilt to a peak abundance in 1992 and has sustained an average catch of 7,300 t over the past decade. Recent catches from this stock have been:

Central Coast catch (ktonnes)

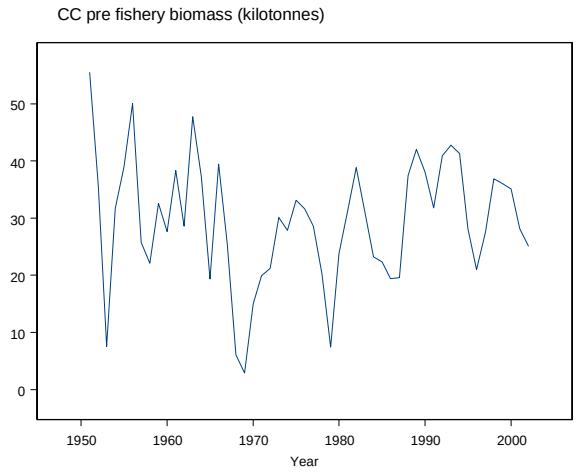
1998	1999	2000	2001	2002
8.6	7.5	7.4	6.1	3.3

Resource Status

Herring stock assessments utilize information from biological samples for determining the population age composition and average weight-at-age,

historical catch data, and an assessment of the distribution and intensity of egg deposition in the stock assessment area (Schweigert 2001). Prior to the 2002 assessment, the forecast of the pre-fishery biomass of mature herring was estimated by two assessment models: a catch-at-age and an escapement model. For the current assessment a revised catch-at-age model with two spawn conversion parameters (RASM-2q) was adopted as the best predictor of stock abundance (Schweigert 2001).

The Pelagics Assessment Subcommittee annually reviews decision criteria to provide advice on a recommended allowable catch. The RASM-2q model indicates that the CC herring stock declined in 2002 but remains at a healthy level. This stock experienced high levels of recruitment during the 1950s and early 1960s and reduced recruitment during the late 1960s and early 1970s. The fishery was closed in this area in 1979 and 1980 due to low abundance levels. Recent trends show that the Central Coast herring stock declined from 1994 to 1996, increased from 1997 to 1998, and declined over the past four years. Assuming an average recruitment of the 2000 year-class in 2003, a forecast mature biomass of about 25,260 tonnes is anticipated yielding a harvestable surplus of 5,050 tonnes based on the 20% target harvest rate.



Outlook

Since very little is known about the factors that affect recruitment in this stock, it is difficult to forecast future stock trends. The recent increase in abundance is due to the strong recruitment of the 1994 and 1995 year-classes. However, recent information suggests that abundance of the 1996 and 1998 year-classes is low, so the recent decline in abundance may be expected to continue in the short term.

For more Information

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References

Hourston, A.S. 1980. The decline and recovery of Canada's Pacific herring stocks. Rapp. P.-v. Reun. Cons. Int. Explor. Mer, 177: 143-153.

Schweigert, J.F. 2001. Stock assessments for British Columbia herring in 2001 and forecasts of the potential catch in 2002. Can. Sci. Adv. Secr. Res. Doc. 2001/140: 84p.

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