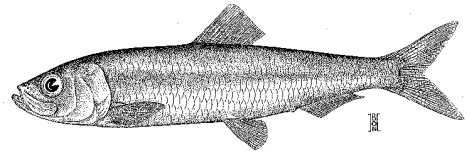
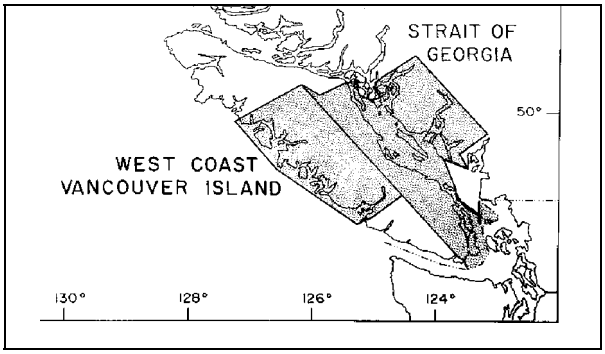


# Strait of Georgia Herring




## *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 Strait of Georgia (SG) herring stock is one of five major B.C. herring stocks. The fishery began here at the turn of the century but did not become extensive until the expansion of the dry-salted fishery in the late 1920s 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 favourable 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 (21,200 t), and should continue to sustain a substantial fishery. The stock achieved recent high abundance levels in the late 1970s, declined until the mid-1980s, and is now near peak levels. Recent concerns about declining size at age have moderated with larger fish returning in most areas in 2002.*

## *Summary*

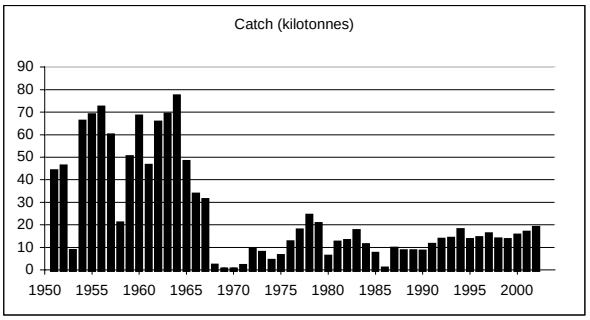

- The fishery is managed by setting a fixed quota based on a harvest rate of 20% of the forecast mature stock biomass.
- To meet conservation objectives, the management strategy also enforces a minimum spawning stock biomass. If the forecast biomass falls below the fishing Cutoff threshold (21,200 t), 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 a good recruitment of the 2000 year-class in 2003, a forecast mature biomass of about 130,010 tonnes is anticipated yielding a harvestable surplus of 26,000 tonnes.

## *The Fishery*

Average Strait of Georgia Catch (ktonnes)

| 1951-60 | 1961-70 | 1971-80 | 1981-90 | 1991-00 |
|---|---|---|---|---|
| 49.5 | 37.3 | 20.8 | 9.5 | 14.0 |

All herring spawning within the Strait are assumed to belong to a single stock that migrates into the SG in the late fall and leaves, after spawning, in March. Many areas in the Strait retain some resident or non-migratory herring throughout the summer, but the distribution and abundance of non-migratory fish changes among years. For stock assessment purposes these fish are considered as part of the Strait of Georgia herring stock. 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. The largest catch, 72,000 t was taken in the Strait of Georgia in 1956 and the fishery was curtailed in 1953 due to industrial disputes. 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, and was closed by the federal government in 1967 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.

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 (21,200 t) the commercial fishery is closed to allow for stock recovery.

In response to reduced stock levels, the Strait of Georgia fishery was closed in 1986. Subsequently, the stock has rebuilt and sustained an average catch of 14,600 t over the past decade.

Recent catches from this stock have been:

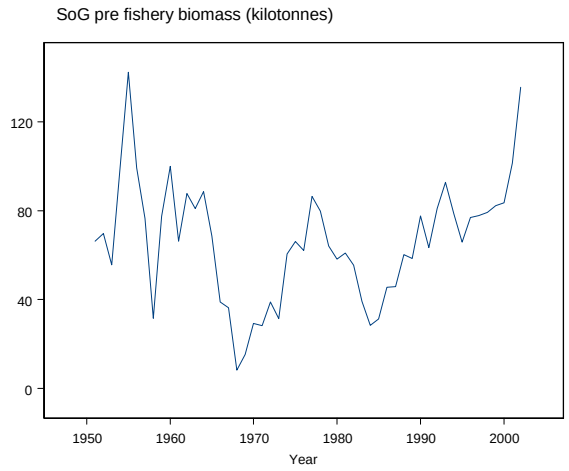
Strait of Georgia Catch (ktonnes)

| 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|
| 13.6 | 13.3 | 15.2 | 16.4 | 18.6 |

## *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 SG herring stock increased again in 2002 and remains near a historically high level of abundance. Since the closure of the fishery in 1986, due to low stock levels, abundance has increased dramatically to the present level. The Strait of Georgia has enjoyed an extended period of good herring recruitment with all but three year-classes since 1986 being of average or above average abundance.




Assuming a good recruitment of the 2000 year-class in 2003, a forecast mature biomass of about 130,010 tonnes is anticipated yielding a harvestable surplus of 26,000 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. However, the Strait of Georgia stock has enjoyed a series of strong recruitments over the past two decades that have increased the abundance to near historically high levels. Given the current large biomass, the stock should continue to support subtantial fisheries over the next few years.

## *For more Information*

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