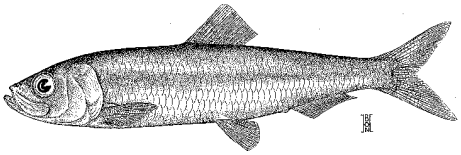
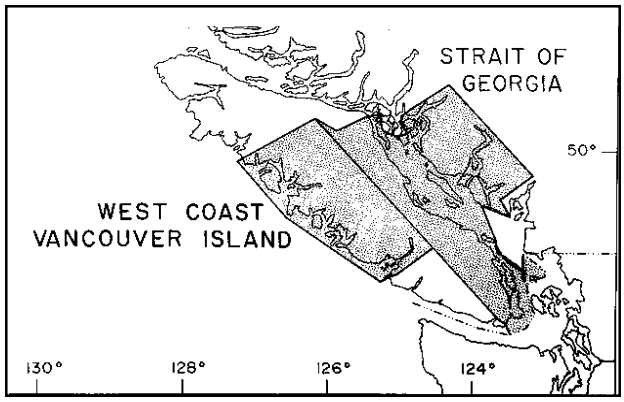


Strait of Georgia Herring



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 (SoG) herring stock is one of five major B.C. herring stocks. The fishery began here at the turn of the century to become extensive with 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 modest 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 2000.

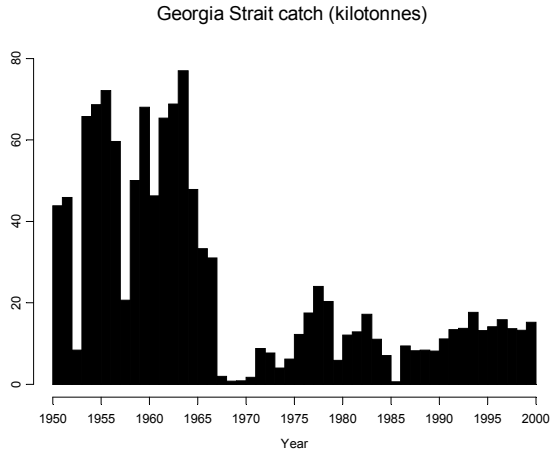
The Fishery

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 Strait in the late fall and leaves, after spawning, in March and April. 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 fish meal and oil. The largest catch, 72,000 t was taken in 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 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.

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 14,000 t over the past decade. Recent catches from this stock have been:

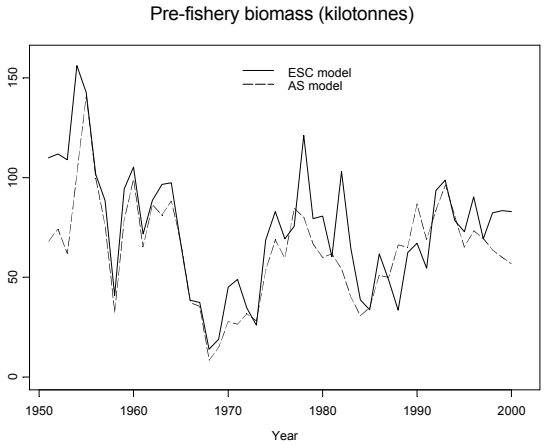
Strait of Georgia catch (ktonnes)

1996	1997	1998	1999	2000
13.2	14.1	15.8	13.6	14.8

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 et al. 1998). The forecast of the pre-fishery biomass of mature herring is estimated by two assessment models: a catch-at-age and an escapement model. The catch-at-age model relies on data on population age-structure and total catch to estimate stock abundance while the escapement model determines total spawning escapement from an estimate of the total egg deposition.

Since 1970 the two assessment models have displayed similar trends in stock abundance. The PSARC Pelagic Subcommittee uses decision criteria to assess each model thereby determines the current stock level, projected future run size, and recommended allowable catch. For 2001, the assessment and forecast based on the escapement model was adopted by the Subcommittee.



In response to reduced stock levels the Strait of Georgia fishery was closed in 1986. Since then, the stock rebuilt to a recent high abundance in

1992-93. The stock remains near historical high abundance levels. Assuming an average recruitment of the 1998 year-class in 2001 a forecast mature biomas of about 82,600 tonnes is anticipated yielding a harvestable surplus of 16,500 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 throughout the 1980's and early 1990's which have increased the abundance to near historically high levels. Given the current large biomass, the stock should continue to support moderate fisheries over the next few years. However, the 1996 year-class was poor and the 1997 average which may result in decreasing abundance over the longer term.

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