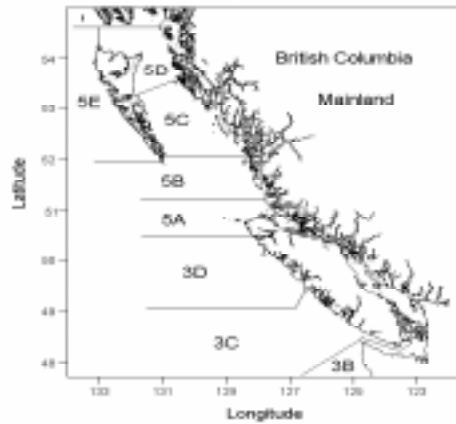




### English Sole Hecate Strait (Areas 5C/D)



#### Background

The English sole (*Parophrys vetulus*) is one of the important flatfishes caught in the commercial trawl fishery off British Columbia. English sole range from Baja California to the Bering Sea (Kramer et al. 1995). However, the species is near the northern limit of its commercial abundance off British Columbia.

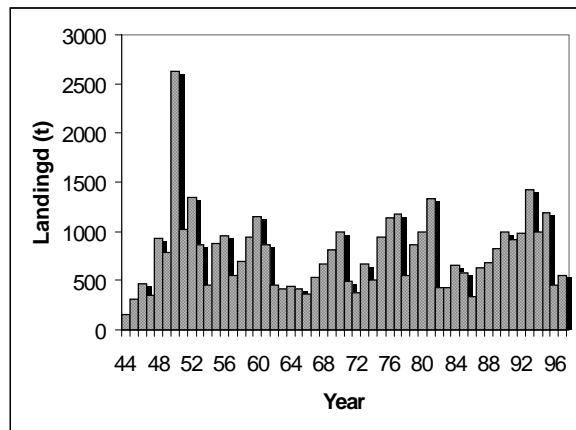
A single stock has been identified in Hecate Strait (Areas 5C/D). The species is migratory and shows preference for sand substrate. Young English sole occupy depths from 10-40 metres while adults occupy depths of 40-150 metres (Ketchen 1956).

English sole live as long as 21 years and recruit to the commercial fishery at about four years of age. They have evolved to spawn many times over the course of their lifetime. Males begin to spawn at about three years of age while females begin to spawn at about four years of age.

The commercial fishery for English sole was unregulated prior to 1990. In 1990, monthly vessel trip quotas were imposed and in 1997 individual vessel quotas were established. English sole abundance has fluctuated over time due to variation in recruitment, due largely to fluctuations in the ocean environment. Abundance in 1995 was near the long-term average for the last 40 years and has declined since that time due to poor recruitment.

#### The Fishery

Landings of English sole from the commercial fishery increased from around 100 t in the mid 1940s to over 1,000 t by the early 1950s. They have fluctuated between 500 and 1,500 t since that time. English sole are caught in a directed trawl fishery and are a minor component of the catch in the fishery for Pacific cod.



Annual landings of English sole in B.C. between 1944 and 1997.

The fishery for English sole involved vessels from both Canada and the United States until 1977, when Canada declared extended jurisdiction over its offshore resources. Subsequent to that time, the fishery has been exclusively Canadian. The most significant fishery for English sole occurs in Hecate Strait, but the species is also caught in Queen Charlotte Sound and off the West Coast of Vancouver Island.

In Hecate Strait, landings of English sole have been declining for the last five years. Fishing effort has gradually declined over the same period.

All stock indices show that a decline in abundance has occurred in recent years. This is attributed to both fishery and environmental effects. High ocean transport during the English sole spawning period in the early 1990s may have led to the loss of eggs and larvae due to advection. This, in turn, could have led to the decline in recruitment observed in recent years.

### ***Resource Status***

The Hecate Strait English sole stock is currently near the long-term average level for the last 40 years. However, recruitment has declined in recent years, leading to a decline in abundance.

The assessment for the Hecate Strait stock is based on analyses of age composition data and CPUE data from research surveys.

A biannual multispecies trawl survey has been conducted in Hecate Strait since the mid-1980s. The purpose of the survey is

to assess the abundance of English sole and other groundfish species in the region. Survey data indicate that there was an overall increase in the abundance of the English sole between the late 1980s and the early 1990s. This was followed by a decline between the early and mid 1990s. Biological data collected from the survey and the commercial fishery indicate that the proportion of young fish in the population has declined in recent years as well.

The abundance of the English sole stock in Hecate Strait has fluctuated cyclically over time. It is believed that these fluctuations are in response to the combined effects of the fishery and unfavourable ocean environment. This has led to poor recruitment in recent years.

### ***Outlook***

Abundance for this stock has declined in recent years, due to a combination of factors. Abundance is not expected to change significantly for at least three or four years. However, the stock is not at risk as commercial quotas have been significantly reduced over the last several years.

In Hecate Strait, high ocean transport in winter is expected to increase the loss of larvae due to advection, reducing the settlement of larval English sole (Fargo 1994). A decline from the influence of year classes recruiting in the early 1990s is coincident with a decrease in the research survey and catch-age indices for the stock. No significant change in stock status is forecast for the next several years.

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