

Commercial Fisheries – Roe Herring (seine)

description

Herring have long been one of the most important components of British Columbia's commercial fisheries, with catch records dating back to 1877. 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 precautionary harvest rate of 20% of the forecasted biomass of mature stock, ensuring that 80% of the adult population is available to predator species and future production. A number of conditions must be met for each fishery type.

HERRING FISHERIES AND THEIR LICENCE CONDITIONS

Herring Fishery	Fishing Gear	Licence Codes	Notes
Roe	Seine	HS FS	Limited entry; Party Based; pools of 8 licences min.
	Gill Net	HG FHG	Limited entry; Party Based; pools of 4 licences min.
Spawn-on-Kelp (SOK)	Seine Trap Net	J FJ	Limited entry Party Based
Food & Bait	Seine	ZM	Annual lottery draw Party Based
Special Use	Gill Net Seine	ZX	Personal Use Party Based
	Dip Net/Hoop Net Hook & Line – Jigging only	ZY	Commercial Use Party Based



PHOTO: BRUCE CHRISTIANSON

The roe herring fishery takes place just prior to spawning as the herring gather in late February to early March in southern BC, and mid-March to mid-April in northern BC. The fishery may only last a few days and is conducted on, or adjacent to, spawning grounds. Specific fishing locations are determined by major concentrations of fish and the potential for the highest roe yield. Roe herring are fished primarily for their eggs. The fish are caught, roe are stripped from them, and the fish are salted and shipped to markets. Opening dates and times for the commercial fishery are announced on the fishing grounds when stock distribution, fish size, and roe quality allow for optimal fishing opportunities.

The herring Spawn-on-Kelp fishery runs from the beginning of February until April, extending to late June in exceptional years. In this fishery spawn-covered kelp fronds are harvested, trimmed, brined, and packaged for transportation to markets after herring have attached their eggs to them. The kelp fronds may be suspended in open waters (open ponding), or fish may be captured by a seine vessel and placed in an enclosure containing suspended kelp fronds (closed ponding).

Herring harvested in the Herring Special Use Fishery are utilized for personal use, food, sport bait, commercial bait, zoo and aquarium food, and for charity sales of herring. The fishery takes place year round, with a seasonal closure in place for the herring spawning season.

Pacific herring (*Clupea harengus pallasii*) are a pelagic species found in inshore and offshore waters of the North Pacific. They are a relatively short-lived forage fish species, with a maximum recorded age of 15 years, although most live only 7 to 8 years. Herring mature and recruit to the spawning stock between ages 2 and 5, however the majority of recruiting takes place at age 3.

When fishing by purse seining, a seine net is set over the stern of the vessel with one end secured to a skiff. The skiff moves a short distance from the vessel until a few fathoms (one fathom is 1.8 metres) of net have entered the water. The seiner then runs in a large circle around the school of herring, returning to the skiff where the two ends of the net are joined. When put into position, the seine net stands like a fence in the water and when hauled by the vessel, the bottom of the net is drawn together forming a huge purse under the fish. Once the net is pursed, herring are generally brought aboard the vessel by means of a hydraulic pump.

Fisheries and Oceans Canada (DFO) provided points locations of catch in metric tonnes by gear type and polygons representing openings by year for the herring roe fishery. Openings were identified through review of information published in fisheries notices. Data were separated by gear types (gillnet and seine) and then aggregated to the nearest opening by year. If catch points (landing locations) did not fall within an opening, they were assigned to the nearest opening for each year of data.

The data are displayed on the main map using equal interval categories, meaning that the data are divided into 5 equally spaced classes where each class may contain a different number of opening areas. The percent of opening areas that fall in a given category is shown in the legend.

Permanent, year-round closures for the herring fishery were compiled based on the Integrated Fisheries Management Plan for Roe Herring dated Feb. 10-Apr. 30, 2008 and 2008 Fisheries Notices (up to Oct. 2, 2008). Areas identified as closures may also include areas not licensed for this fishery. (Please read caveats of use for more information on closures.)

data sources

- Fishery data: Fisheries and Oceans Canada, Conservation Biology Section, Pacific Biological Station
- Year-round commercial fishing closures: Living Oceans Society (see Robb *et al.*, 2010)

data resolution

- None provided.

date collected

- 1989-2008

reviewers

- Commercial fishing industry representatives (who may or may not be experts for this specific fishery), assembled with the support of the commercial fisheries representatives on the BC Marine Conservation Analysis (BCMCA) Human Use Data Working Group.
- Fisheries and Oceans Canada data providers.

reviewer comments

- Generally reviewers wanted to see catch for longer time periods and closures that matched the time periods displayed on the map.
- If the intent is to observe areas of catch, there is no need to separate catch by seine and gillnet as it doesn't matter which gear type caught the fish. However mapping them separately is OK too.
- The 20 year time series and scale of mapping has resulted in many areas important for fishing in earlier years, especially prior to 1998, not showing on the map. This includes areas on the west coast, Haida Gwaii, Cape Mark and central Price Island on the west side of Weetaam Bay. Data should be represented by a time series longer than 20 years.

caveats of use

- In the case of discrepancies, catch information from DFO takes precedence over commercial fisheries information portrayed by BCMCA.
- These data represent herring openings. This map should be interpreted as showing only where fishing has taken place; it does not represent economic valuations or biological trends. Neither should it be inferred that species are more abundant where fished and less abundant in areas closed to commercial harvest.
- Data displayed should not be assumed to match current or future conditions due to ongoing changes in the environment and management.
- Not all of the information held by DFO can be shown spatially on this map. Data from 1989-1997 (pre-pool roe fishery) were filtered to meet confidentiality requirements (minimum 3 vessels reporting). DFO has incomplete licence information from 1998-2008. However it is assumed that more than 3 licences were fishing per pool during that period.
- The effort expended to capture targeted species differs among fisheries. Therefore it is difficult to compare weight caught for a low volume fishery versus a high volume fishery.
- Closures illustrated are permanent, year-round closures. Seasonal, temporary and voluntary closures were not included, all of which may impact catch. Areas identified as closures may also include areas not licensed for this fishery.
- Due to a lack of available spatial data regarding fisheries closures, the time period for closures does not match the time period for catch illustrated on the map. Many of the closures were implemented after the period for which catch is shown. As a result, the map may show harvesting in the closed areas, while in reality they did not overlap in time. Because the closure data are compiled in irregular polygons, closures may overlap the square grid cells delineating areas of commercial harvesting. Harvesting does not occur consistently throughout each grid cell and may not have occurred within the closure.
- Recommended date of expiry for use of these data in a marine planning context: None provided.

map, feature data and metadata access

- Visit www.bcmca.ca/data for more information.

references

- BC Marine Conservation Analysis. *Workshop Report on Commercial Fisheries Data Review*. March 2010. www.bcmca.ca/document-library
- Fisheries and Oceans Canada. *Annual Integrated Fisheries Management Plans*. www-ops2.pac.dfo-mpo.gc.ca/xnet/content/MPLANS/MPlans.htm?lang=en
- Robb C.K., K.M. Bodtger, K. Wright and J. Lash. "Commercial fisheries closures in marine protected areas on Canada's Pacific coast: The exception, not the rule." *Marine Policy* (2010), doi:10.1016/j.marpol.2010.10.010

BCMCA Atlas
Commercial Fisheries
Roe Herring (seine) 1989-2008

Legend

Metric Tonnes of Roe Herring Caught by Seine

- 47 - 10,000 (83.33%)
- 10,001 - 20,000 (6.25%)
- 20,001 - 30,000 (6.25%)
- 30,001 - 40,000 (0%)
- 40,001 - 50,000 (4.17%)

Year-round Roe Herring Closures for Gillnet and Seine

Notes:

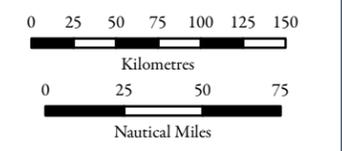
- The number in brackets in the legend above is the percent of polygons that fell into the given category.
- Data from 1989-1997 was filtered to meet confidentiality requirements (minimum 3 vessels reporting). DFO has incomplete license information for 1998-2008 and it is assumed that more than 3 licenses were fishing per pool. The percentage of the data shown for this fishery is unknown.
- Closures obtained from the Feb. 10-Apr. 30, 2008 Integrated Fisheries Management Plan and from the 2008 Fisheries Notices to Oct. 2, 2008.

Data Sources:
 Fisheries and Oceans Canada,
 Living Oceans Society

Base Data:
 ESRI Base Data, GeoBase, GeoBC,
 NOAA, Natural Resources Canada,
 USGS, Washington State Government

Thematic Data:
 For more information on data sources and methods please refer to the facing page to this map

Projection: BC Albers NAD83

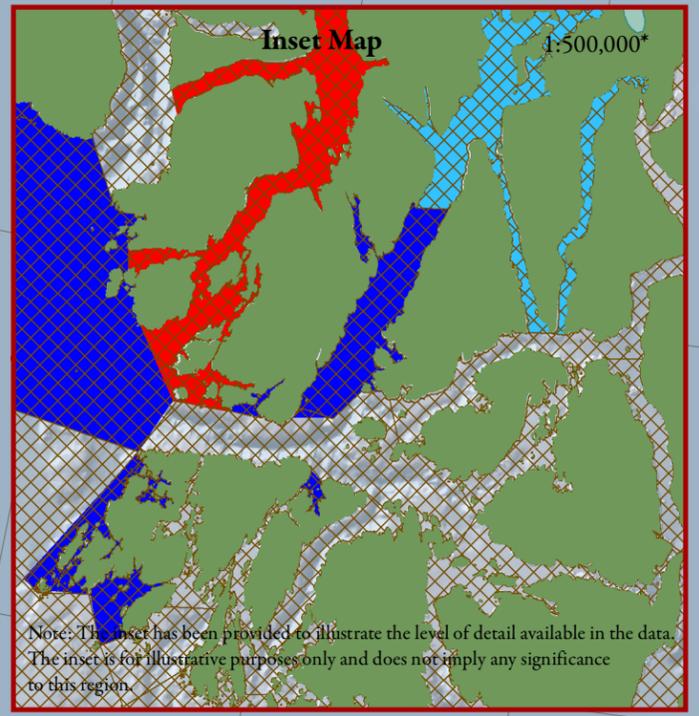
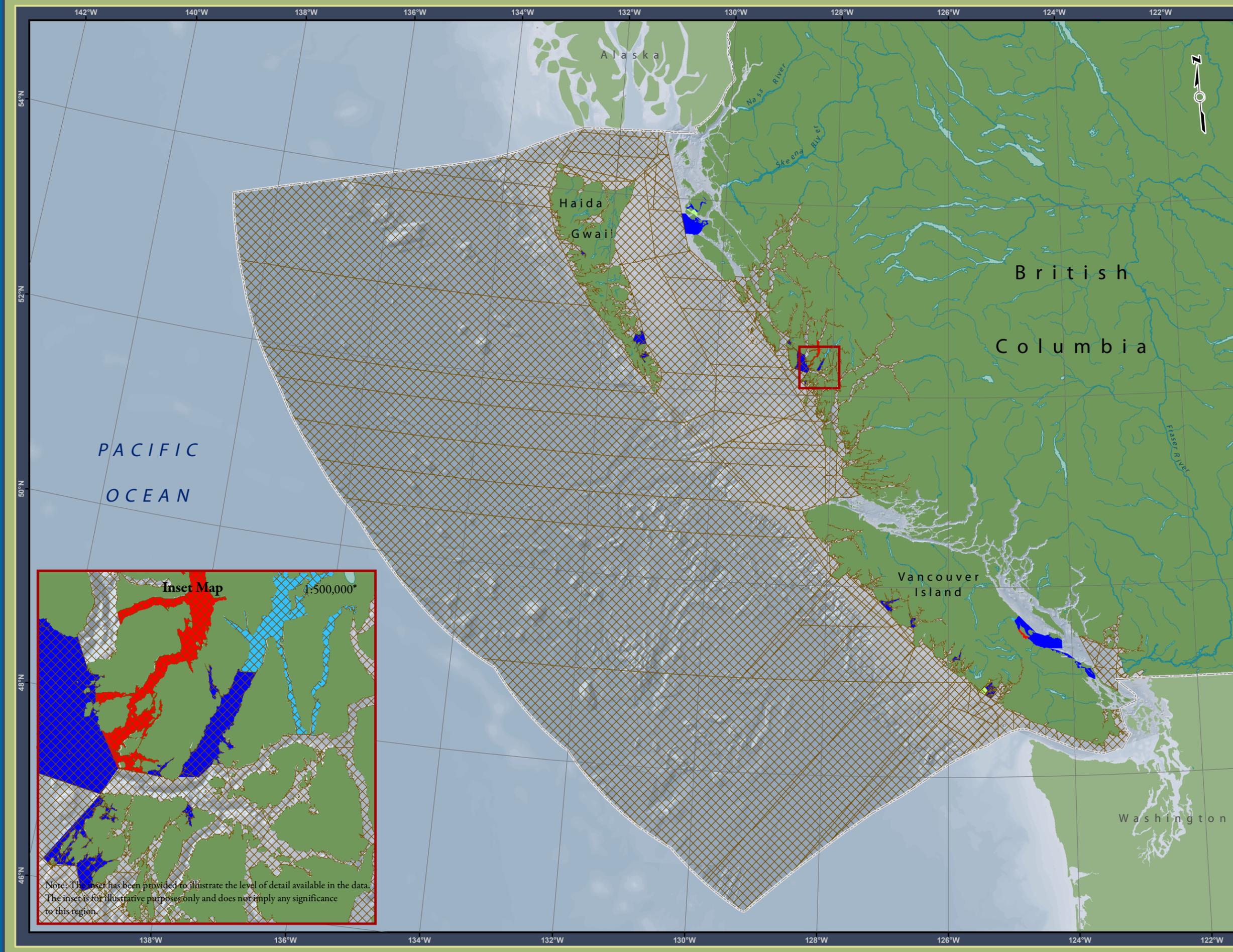


1:4,250,000 *
 * Written scales are approximate and are based on a 11 x 17 inch paper size.

Prepared for:



Map template by Caslys Consulting Ltd.
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Note: The inset has been provided to illustrate the level of detail available in the data. The inset is for illustrative purposes only and does not imply any significance to this region.