

Commercial Fisheries – Krill

description

The krill (euphausiid) fishery began in the Strait of Georgia in 1970 as an experimental fishery. The number of licences issued increased annually from seven in 1983 to 56 in 1990, and then declined to 45 in 1991. This licence category became limited entry in 1993, and 19 fishers qualified. Under the precautionary management plan a coast wide total allowable catch (TAC) of 500 tonnes was established and divided amongst several inlet areas and the Strait of Georgia (area quotas). Quota Management Areas are comprised of Pacific Fishery Management Areas, Subareas, and/or a combination of portions of Subareas. The TAC for each Quota Management Area was based on historical commercial landings and density surveys conducted in the lower Strait of Georgia areas. The commercial fishery is currently managed through periodic openings, limited entry licensing, conservative harvest quotas, and a hail in and dockside validation program. (“Hail in” is the process of fishers calling a service bureau to advise of the commencement of fishing activity.) A euphausiid category “ZF” or communal commercial category “FZF” licence, renewed annually, is required to commercially harvest euphausiids (also known as krill) by trawl.

About twenty species of euphausiids occur in BC waters. Biomass is dominated by five species: *Euphausia pacifica*, *Thysanoessa spinifera*, *Thysanoessa inspinata*, *Thysanoessa longipes* and *Thysanoessa raschii*. *Euphausia pacifica* accounts for 70 to 100 % of the euphausiid biomass in the Strait of Georgia, where the commercial fishery occurs.

Krill are harvested commercially by fine meshed plankton trawl nets. Two types of vessels participate in this fishery: freezer vessels, whose daily catches are generally limited due to freezing capacity; and, fresh vessels, which tend to land large quantities of euphausiids for onshore processing and freezing. Most of the euphausiids are frozen for use in the manufacture of fish food for aquaculture. A small portion of the catch is freeze-dried and used as aquarium pet food.

The total estimated catch (pounds) for the euphausiid (krill) fishery was assembled by Fisheries and Oceans Canada (DFO) into 10 kilometre x 10 kilometre grid cells directly from the Shellfish Stock Assessment harvest log database located at the Pacific Biological Station (PBS) and provided as individual datasets by year for the 2000-2004 fishing seasons. All fishing locations were derived from coordinates provided by fishermen. The percentage of data with latitude and longitude coordinates varied by year and ranged between 96.4% and 100% from 2000 to 2004. BC Marine Conservation Analysis (BCMCA) merged the five datasets together and summed values across years to produce aggregate catch values. Information provided by DFO was modified to meet confidentiality requirements.

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

Permanent, year-round closures for the euphausiid (krill) fishery were compiled based on the Integrated Fisheries Management Plan (IFMP) for Euphausiid dated January 1, 2007 – December 31, 2012 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, Shellfish Stock Assessment Harvest Log Database, Pacific Biological Station
- Year-round commercial fishing closures: Living Oceans Society (see Robb *et al.*, 2010)

data resolution

- 10 kilometre by 10 kilometre grid cells

date compiled

- Fishery Data: 2000-2004
- Year-round commercial fishing closures: 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 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 shown for the fishery.
- Krill are widespread on the BC coast; the areas shown on the map are the only areas where fisheries are permitted.

caveats of use

- In the case of discrepancies, catch information from DFO takes precedence over commercial fisheries information portrayed by BCMCA.
- 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.
- Data on this fishery have been screened to meet confidentiality requirements. The count of commercial fishing vessels for each spatial unit the data are provided in must be greater than 2 for information to be made public. This screen was set for each year before data were binned across years. The percentage of data held by DFO that met confidentiality requirements varied by year and ranged between 95.9% and 97.7% from 2000 to 2004.
- 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

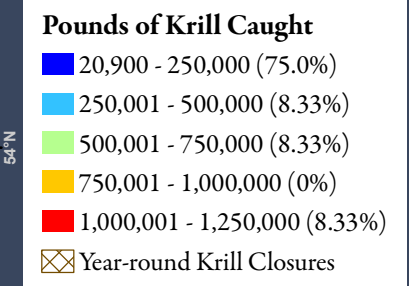
- Visit www.bcmca.ca/data for more information.

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
Krill 2000 - 2004

Legend



Notes:

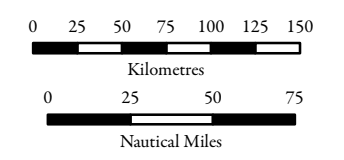
- The number in brackets in the legend above is the percent of polygons that fell into the given category.
- Between 0% and 3.6% (percent varies for each year) of data did not have coordinates and is not displayed.
- This map represents between 95.9% to 97.7% (percent varies for each year) of the data from this fishery that meet confidentiality requirements (minimum 3 vessels reporting).
- Krill closures obtained from the Jan. 1, 2007- Dec. 31, 2012 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

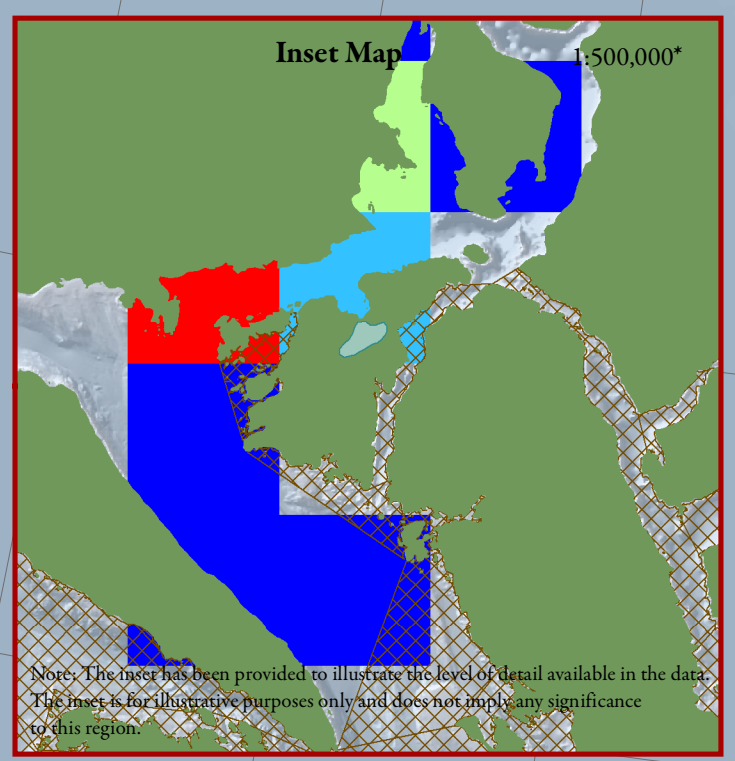
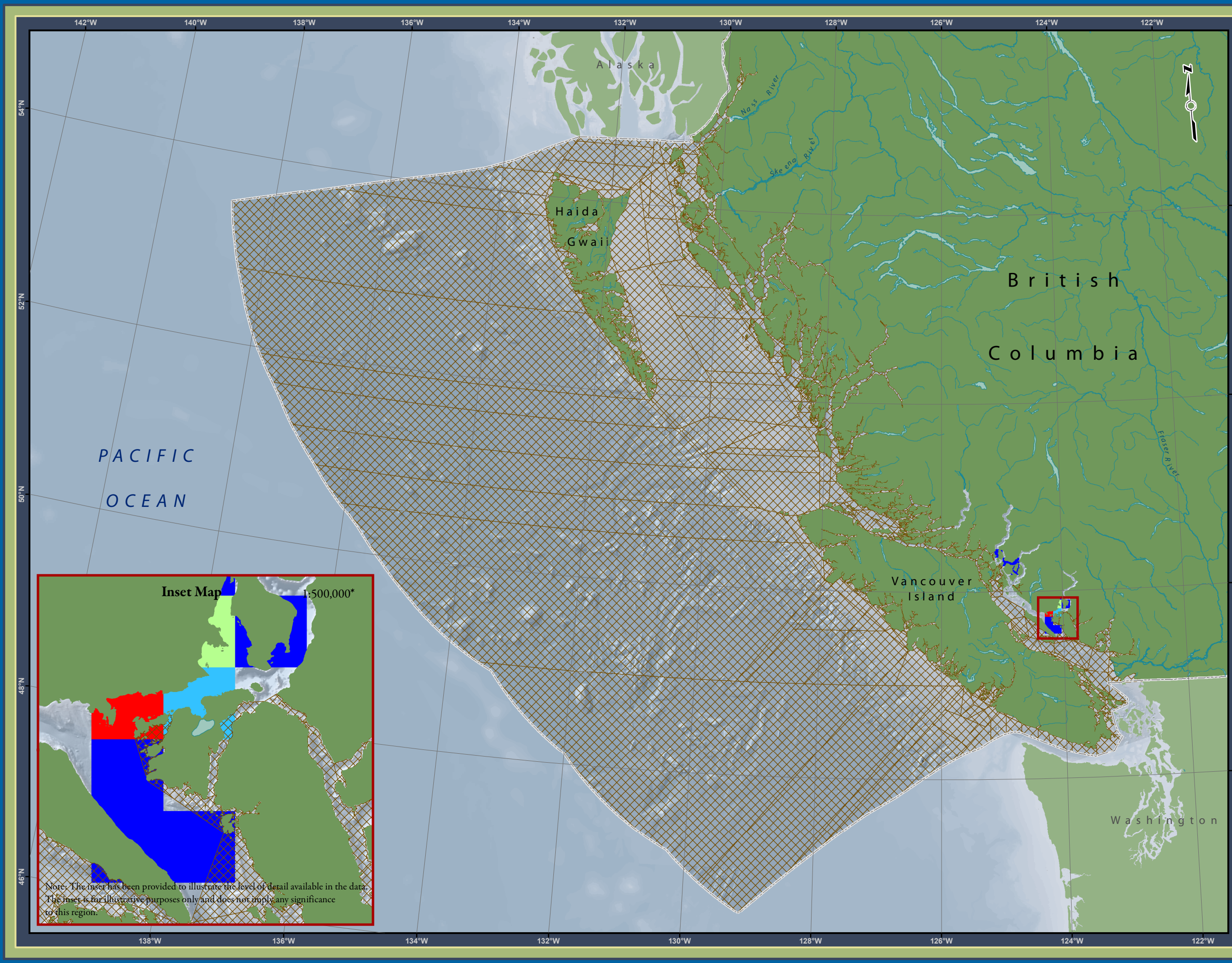


1:4,250,000 *
 * Written scales are approximate and are based on a 11 x 17 inch paper size.

Prepared for:



Map template by Caslys Consulting Ltd.
 November 24, 2010



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.