

Commercial Fisheries – Shrimp Trawl

description

The Pacific coast shrimp fishery developed in earnest in British Columbia in the 1960s with the use of trawl bottom gear. Prior to the 1990s, the fishery was open year round and few management and assessment programs were in place. In the mid 1990s a rapid increase in effort and landings in the shrimp trawl fishery was the result of a number of coinciding factors: changes in the management of groundfish fisheries, poor salmon returns and retirement of salmon licences, a peak abundance of offshore shrimp, and high shrimp prices. In addition, shrimp landings increased significantly in 1996 as fishermen expanded their fishing areas to include previously unexploited areas, including the offshore areas of the central coast. Significant changes in management strategies were implemented in 1997 with the establishment of a total allowable catch (TAC) for most areas, the development of industry-funded programs to monitor catches and a stock assessment program.

More than 87 species of shrimp occur in BC waters, but only seven of these are commercially harvested in the shrimp trawl industry. These include: coonstripe (or dock) shrimp (*Pandalus danae*), flexed pink shrimp (*Pandalus goniurus*), humpback (or king) shrimp (*Pandalus hypsinotus*), sidestripe (or giant) shrimp (*Pandalopsis dispar*), smooth (or ocean) pink shrimp (*Pandalus jordani*), spiny (or northern) pink shrimp (*Pandalus borealis*), and prawn (spot shrimp) (*Pandalus platyceros*). In the shrimp trawl fishery, landings are a mix of pink shrimp (>90%, including smooth pink and spiny pink) and the larger sidestripe shrimp. To a lesser extent, humpback, coonstripe and flexed pink shrimp are caught, along with a small (permitted) incidental catch of prawns.

Management and assessment of this fishery is complicated because it is a multiple-species fishery and a variety of gear types are used to harvest shrimp. Generally, the opening of the fishery follows the completion of a spawning cycle in order to ensure egg-bearing female shrimp are not impacted. A vessel based “S” licence or communal commercial “FS” licence is required to participate in the commercial shrimp by trawl fishery. The licence year for commercial shrimp trawl licences is from April 1 to March 31 of the following year.

Shrimp are harvested in the Pacific region by two means, trawl nets and traps. The trawl and trap fisheries area essentially two separate fisheries since not all shrimp species appear to be attracted to baited traps or reside in trawlable habitats. Shrimp in the trawl fishery are harvested by a type of trawl called a “beam trawl”. The beam (or pole) is held horizontally across the mouth of the net while the trawl net is being towed by means of either ‘doors’ or ‘beams’ attached to a vessel. ‘Selectivity Devices’ or ‘Bycatch Reduction Devices (BRDs)’ are mandatory in the shrimp trawl fishery: these may include an exclusion grate or “excluder” inserted into a trawl net to reduce the amount of nontarget species in the catch (e.g. eulachon).

The total estimated catch (pounds) for the shrimp trawl fishery (all species) was assembled by Fisheries and Oceans Canada (DFO) into 4 kilometre x 4 kilometre grid cells directly from the Shellfish Stock Assessment harvest log database located at the Pacific Biological Station (PBS) and includes the 1996-2004 fishing seasons. 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 shrimp trawl fishery were compiled based on the Integrated Fisheries Management Plan (IFMP) for Shrimp Trawl dated April 1, 2008 – March 31, 2009 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.)



PHOTO: SAMANTHA POINT

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

- 4 kilometre by 4 kilometre grid cells

date compiled

- Fishery data: 1996 - 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 (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 shown for the fishery.

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. This map represents 93.39% of the data from this fishery that met confidentiality requirements.
- 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. Bodtker, 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
Shrimp Trawl 1996 - 2004

Legend

Pounds of Shrimp Caught by Trawl

- 2 - 400,000 (99.04%)
- 400,001 - 800,000 (0.64%)
- 800,001 - 1,200,000 (0%)
- 1,200,001 - 1,600,000 (0.21%)
- 1,600,001 - 2,000,000 (0.11%)

Year-round Shrimp Trawl Closures

Notes:

- The number in brackets in the legend above is the percent of polygons that fell into the given category.
- This map represents 93.4% of the data from this fishery that meet confidentiality requirements (minimum 3 vessels reporting).
- Trawl closures obtained from the Apr. 1, 2008-Mar. 31, 2009 Integrated Fisheries Management Plan and from 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

0 25 50 75 100 125 150

Kilometres

0 25 50 75

Nautical Miles

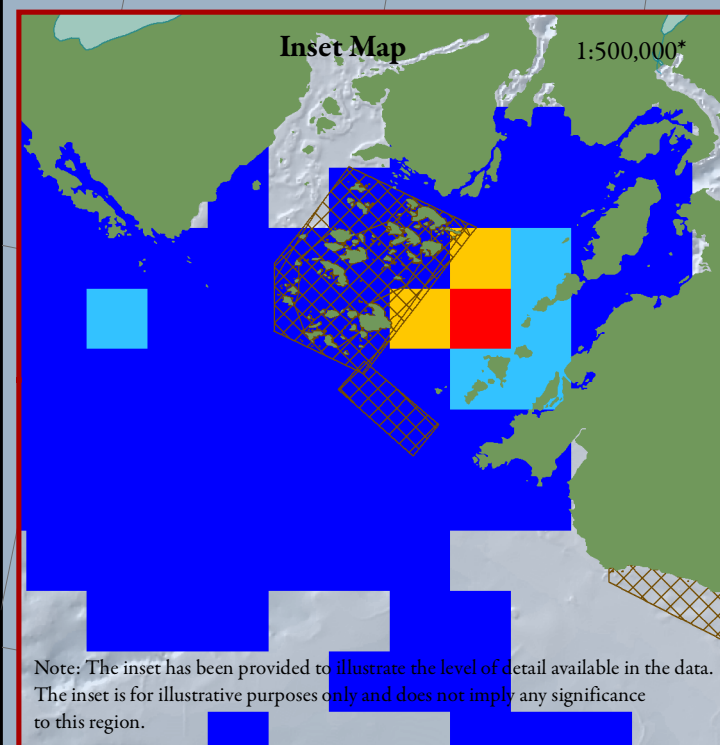
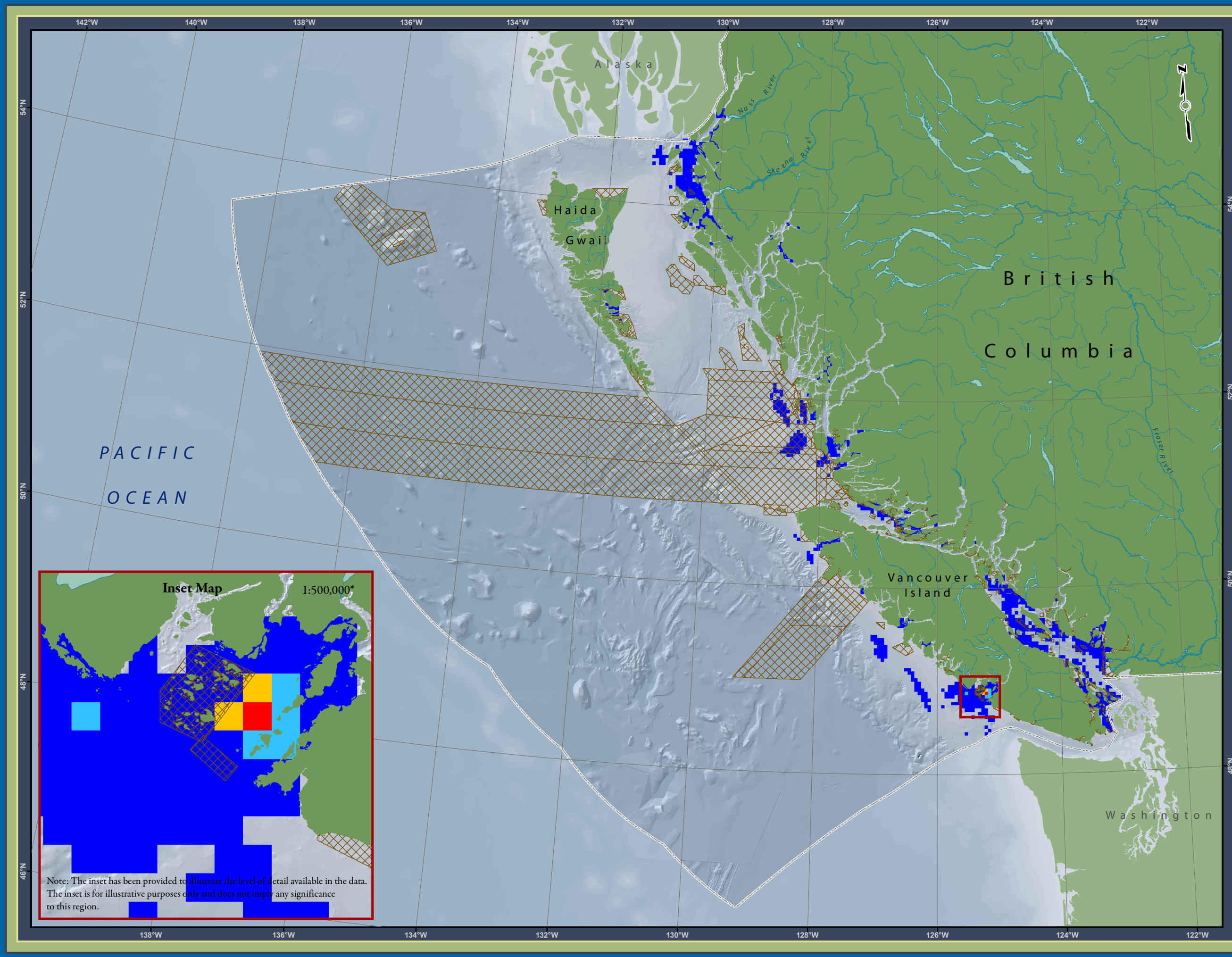
1:4,250,000 *

* 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.