

Commercial Fisheries – Green Sea Urchin

description

The commercial green sea urchin (*Strongylocentrotus droebachiensis*) dive fishery began in British Columbia in 1987 and experienced steady increases in effort up to 1992. Landings peaked in 1992, when 49 vessels reported 1,042 tonnes for a landed value of \$4.4 million. Since 1992, landings have decreased as a result of Fisheries and Oceans Canada's (DFO) more conservative approach to establishing quotas. Beginning in 1995, a program of individual quotas (IQ's) was implemented in the green sea urchin fishery. Quotas since 1995 have remained relatively constant, however commercial catch has declined in recent years because of increased competition in the markets, primarily from Russia (See the Integrated Fisheries Management Plan for Green Sea Urchin).

The green sea urchin fishery is managed by a minimum size limit of 55 millimetres ("test" diameter), precautionary quotas, and time and area openings. The minimum size limit is precautionary and is intended to allow green sea urchins several years of spawning before becoming available for the commercial fishery. The number of licenses were limited in 1991 due to concerns over increasing fishing effort and there are currently 49 licence eligibilities. Green sea urchins are fished commercially under authority of a limited-entry licence, category "ZA", or communal commercial licence, category "FZA". A vessel may be designated for a maximum of five active licences at a time.

Green sea urchins are found throughout BC coastal waters. They are commonly found along rocky shores, with some species preferring kelp beds, areas with moderately strong surf, and open waters. Green sea urchins are often found with red urchins, though their distribution tends to be patchy. They are thought to be more mobile than red urchins and may make seasonal migrations between deep and shallow waters. Typically, green sea urchins spawn sometime between February and March. The exact timing varies depending on local environmental conditions such as temperature and food availability.

The commercial green sea urchin dive fishery limits harvesting to hand picking only. Green sea urchins are harvested for their roe but remain whole while being shipped live to market. Green sea urchins are harvested only during the winter months, when they command their highest market value. The product quality, demand and perishability has restricted the fishery primarily to accessible South Coast areas. The fishing season runs from November to March.

The total estimated catch (pounds) for the green sea urchin fishery was assembled by 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 2000-2005 fishing seasons. The database is based on fishing events provided by fishermen. 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 green sea urchin fishery were compiled based on the Integrated Fisheries Management Plan (IFMP) for Green Sea Urchin dated September 1, 2008 – August 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: NATUREDIVER

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: 2000-2005
- 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. For example a 20 year time-frame would show the decrease in areas available to harvest urchin due to expansion of the sea otter range.
- Dive fisheries that target sedentary species (e.g. geoduck, urchins and sea cucumber) cannot be spatially compared to fisheries for species which are more mobile.

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 89.3% 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.

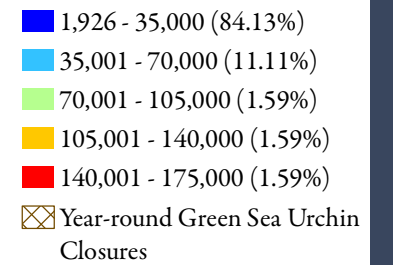
references

- 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. 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
Green Sea Urchin 2000 - 2005

Legend

Pounds of Green Sea Urchin Caught



Notes:

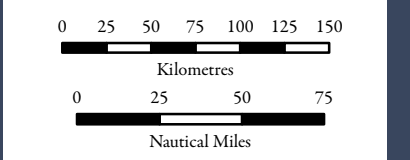
- The number in brackets in the legend above is the percent of polygons that fell into the given category.
- This map represents 89.3% of the data from this fishery that meet confidentiality requirements (minimum 3 vessels reporting).
- Urchin closures obtained from the Sept. 1, 2008-Aug. 31, 2009 Integrated 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

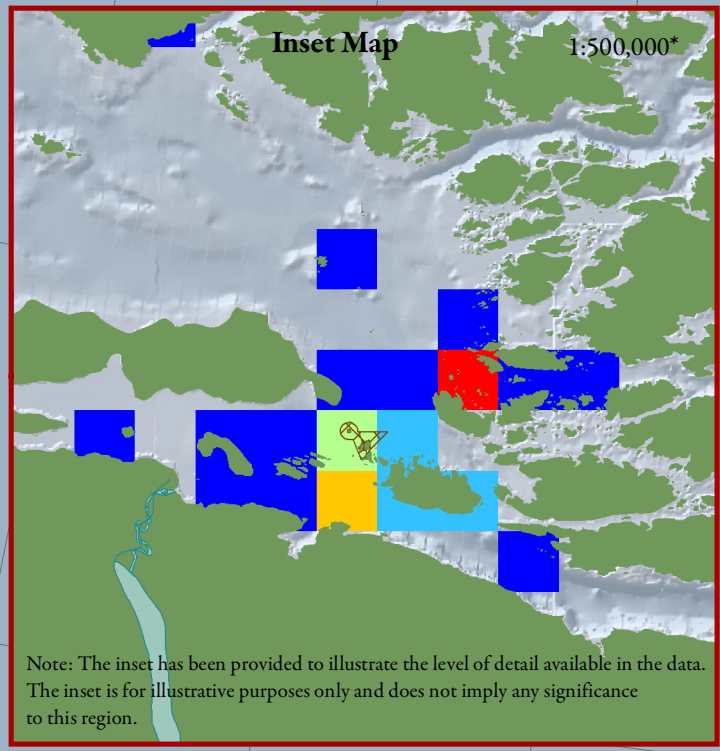
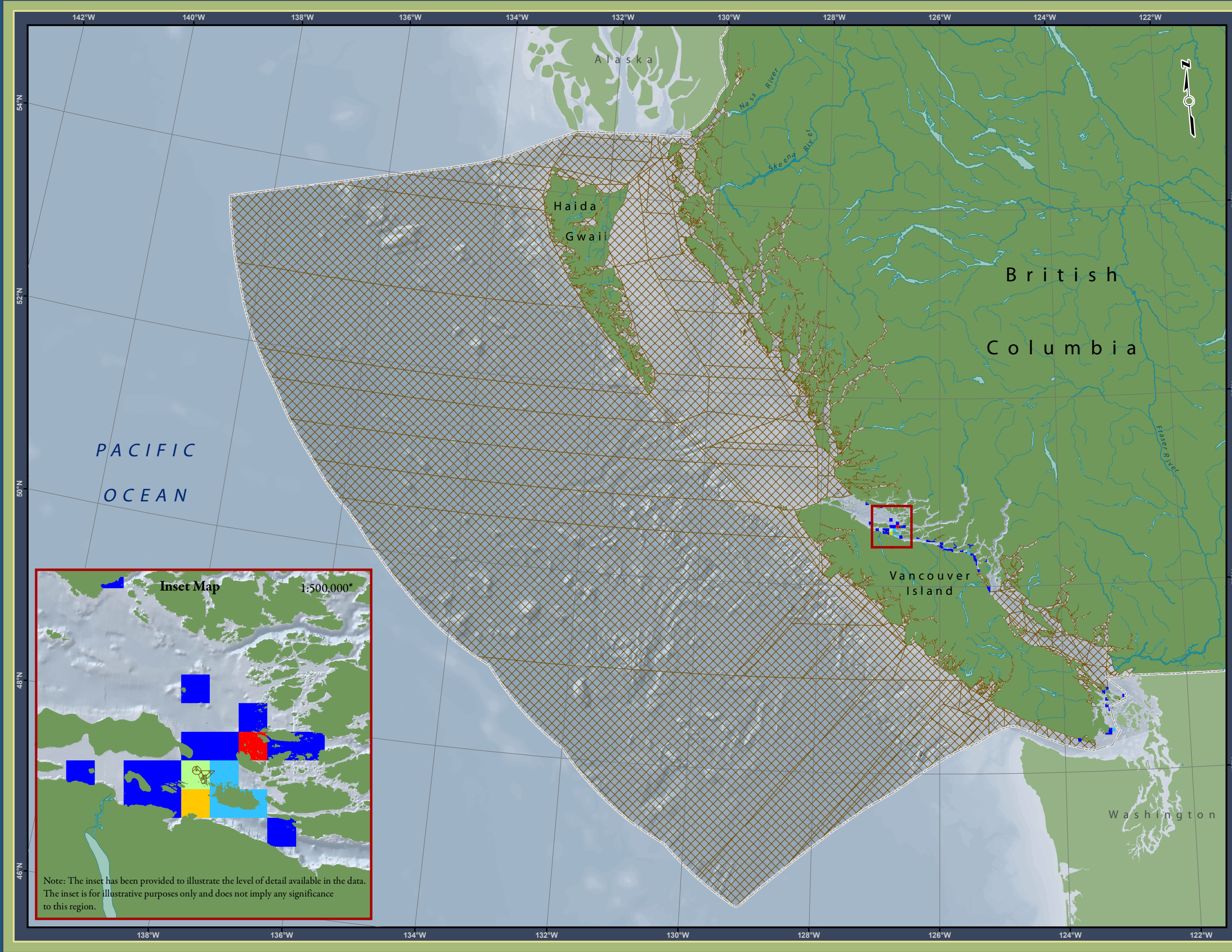


1:4,250,000*
 * Written scales are approximate and are based on a 11 x 17 inch paper size.

Prepared for:



Map template by Caslys Consulting Ltd.
 November 19, 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.