

Commercial Fisheries – Geoduck

description

The British Columbia commercial dive fishery for geoduck clams (*Panopea generosa*), and horse clams (*Tresus spp*) began in 1976. The fishery expanded rapidly until 1979 when licences were limited and harvest quotas were set for conservation. In 1980, the fishery opened up in the North Coast, resulting in rapid growth and increased landings through the late 1980s and into the mid 1990s when a little over half of the coastwide catch came from this area. In 1989, with the support of the commercial industry, Fisheries and Oceans Canada (DFO) initiated a management program with individual vessel quotas (IQ or IVQ) for geoducks. As part of this initiative, area licensing and a three-year rotational fishery was introduced in which only 1/3 of the coast is fished in any one year, but at three times the previous annual rate. Additional measures include a fixed exploitation rate (based on estimates of virgin biomass), where annual quotas are determined by applying an annual harvest rate of a maximum of 1.8% to the current biomass estimate on a bed-by-bed basis. Horse clams, which are generally harvested incidentally to geoducks, are not included in the IQ system.

Geoducks and horse clams are harvested commercially by divers using high-pressure water delivered through a nozzle about the size of a garden hose, known as a “stinger”. This tool loosens the substrate around the clam allowing the harvesters to grasp the neck and lift the clams out live. This gear is only permitted for commercial geoduck fishing. The recreational fishery is limited to hand digging only.

The geoduck clam (*Panopea generosa*) otherwise known as the king clam, occurs from Alaska to the Gulf of California and is widespread throughout BC’s coastline. It is the largest burrowing clam in the world, with an average landed weight of 1 kilogram. The geoduck clam lives in the low intertidal zone to depths of 110 metres where they bury themselves up to a metre deep in sand, silt, gravel and other soft substrates.

There are two species of horse clam in BC: *Tresus nutallii* and *T. capax*. The horse clam is the second largest bivalve in British Columbia and is similar in appearance to the geoduck clam but with a much smaller siphon. Like the geoduck, horse clams burrow to a depth of 1 metre, and can inhabit similar habitat types. Horse clams are smaller than geoducks and may be often found in eelgrass beds (*Zostera marina*).

The location of fishing grounds and/or known geoduck stocks are described using Pacific Fisheries Management Areas (PFMAs) while geoduck quotas are assigned to smaller area units known as Geoduck Management Areas (GMAs). The commercial geoduck licence, category “G” is required in order to harvest geoducks in subtidal areas. Commercial fishing is restricted to below 10 feet below lowest low tide (to protect eel grass) and to a maximum depth of about 70 feet.

The total estimated catch (pounds) for the geoduck clam 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, 80% of which had latitude and longitude information and could be mapped. 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 geoduck clam fishery were compiled based on the Integrated Fisheries Management Plan (IFMP) for Geoduck and Horse Clam dated January 1, 2008 – December 31, 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.)



PHOTO: UNDERWATER HARVESTERS ASSOCIATION

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.
- 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 95.3% of the data that had spatial coordinates from this fishery that also 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
Geoduck 2000 - 2005

Legend

Pounds of Geoduck Caught

- 52 - 250,000 (98.82%)
- 250,001 - 500,000 (0.79%)
- 500,001 - 750,000 (0.12%)
- 750,001 - 1,000,000 (0%)
- 1,000,001 - 1,250,000 (0.12%)
- Year-round Geoduck Closures

Notes:

- The number in brackets in the legend above is the percent of polygons that fell into the given category.
- 20% of the catch data did not have coordinates and is not displayed.
- This map represents 95.3% of the data from this fishery that have coordinates and that meet confidentiality requirements (minimum 3 vessels reporting).
- Geoduck closures obtained from the Jan. 1-Dec. 31, 2008 Integrated Fisheries Management Plan and from the 2008 Fisheries Notices to Oct. 2, 2008.

Data Sources:

Fisheries and Oceans Canada,
 Living Oceans Society

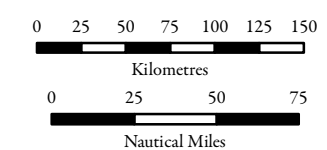
Base Data:

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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