Commercial Fisheries – Groundfish Trawl

description

Groundfish is a broad term that includes over 452 unique species of demersal or benthic fish (fish that dwell at or near the bottom of the ocean) as well as some pelagic fish (fish found in the upper water column). The fishery exhibits a high degree of diversity in its landings, with roughly 35 species making up 95% of the landings. Trawlers target many groundfish species, with the exception of inshore rockfish species, halibut and some elasmobranches (sharks, skates and rays).

The groundfish trawl fishery in British Columbia has existed since the 1900s. Although trawl fishing by Canadians began in earnest in the mid 1940s, until 1977 most fishing was conducted by foreign vessels operating outside the 12 mile limit off the west coast. Since 1979, Fisheries and Oceans Canada (DFO) has introduced measures to manage the trawl fishery and control the harvest of groundfish stocks. These measures include licence limitation, establishment of total allowable catches (TACs), imposed species-area closures, area/time closures, vessel trip limits, dockside and at-sea monitoring, and Individual Vessel Quotas (IVQs).

In 1997 DFO implemented an IVQ system, developed through consultations with industry, that resulted in fully transferable quotas set out for 25 different species in 55 different species area groups. Since 2003, DFO has focused on working with the commercial groundfish harvesters and others to address management and sustainability issues in the commercial groundfish fisheries. In 2006, a three year pilot was introduced to integrate the management of all seven commercial groundfish sector groups consistent with the objectives of improving stock management through improved bycatch monitoring, reducing discarded catch, and requiring harvesters to be accountable and responsible for all species harvested.

A groundfish trawl licence is a vessel-based licence that corresponds to the harvesting year of the fishery as set out in the Integrated Fisheries Management Plan (IFMP). A vessel-based licence is defined as being attached to a vessel and remains attached to that vessel upon any change of vessel ownership. Since 1997 in BC, licensed trawl fishermen have had IVQs in the Option A fishery, in which each vessel receives a fixed portion of the allowable annual catch. Prior to issuance of a licence, each groundfish trawl vessel owner(s) is required to choose a fishing option for the current fishing year; "Option A" or "Option B". Those choosing Option A are selecting to fish by trawl in outside waters and may not change their selection for the remainder of the fishing year. Option A licence holders are, however, allowed to fish by mid-water trawl coastwide. Bottom trawl fishing in the Strait of Georgia is regulated under the Option B licence category and subject to limitations on the number of landings, monthly limits, trip limits and species exclusions.

In BC, Pacific groundfish are caught using an otter trawl, a large bag-shaped net that is pulled either along the ocean floor or through the water column. The trawl net, made of synthetic webbing, is long and wedge-shaped, narrowing into a funnel shaped bag called the "cod-end". The mouth of the net is kept open during trawling by water pressure on two "otter doors" which are generally made of iron-clad wood or metal. As the trawl is towed along, fish entering the net are forced into the cod-end. Mesh sizes are regulated according to the type of fishery or area, allowing for smaller fish to escape.

The total estimated catch (kilograms) for the groundfish trawl fishery was assembled by DFO into 4 kilometre x 4 kilometre grid cells directly from the Groundfish Stock Assessment harvest log database and includes the 1996-2004 fishing seasons. It does not include "observer" data. 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 groundfish trawl fishery were compiled based on the Amended Integrated Fisheries Management Plan (IFMP) for Groundfish dated March 8, 2008 – February 20, 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.)

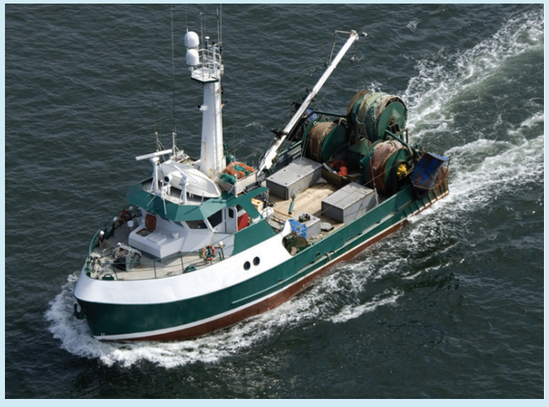

PHOTO: GARY BLAKELEY

data sources

- Fishery data: Fisheries and Oceans Canada, Groundfish 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 collected

- 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.
- Groundfish integration in 2006 resulted in a fundamental shift for specific fisheries such as dogfish, lingcod and rockfish. The move to IVQs and creation of Rockfish Conservation Areas also created fundamental shifts in people's behaviour. These management actions likely had a significant impact on fishing patterns. It is important to note that the data shown on the map are pre-IVQ, pre-groundfish integration, and pre-RCA closures. They are unlikely to represent current catch or catch locations.
- The groundfish trawl data should be broken out by gear type (mid-water vs bottom gear). Hake should be separated from the rest of the datasets because hake has distinct fishery patterns and the amount of hake catch makes up a large portion of the total groundfish catch annually. In the last 3 to 4 years the hake distribution has changed resulting in some of the fishery occurring in Queen Charlotte Sound.

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 97.71% 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 verses 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
- The 2008 Amended IFMP for groundfish can be accessed here: *http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/MPLANS/plans08/2008_Groundfish_IFMP_Complete_Amendment_12.pdf*

BCMCA Atlas

Commercial Fisheries Groundfish Trawl 1996 - 2004

Legend

Kilograms of Groundfish Caught by Trawl

- 215 - 1,800,000 (96.82%)
- 1,800,001 - 3,600,000 (2.37%)
- 3,600,001 - 5,400,000 (0.52%)
- 5,400,001 - 7,200,000 (0.26%)
- 7,200,001 - 9,000,000 (0.04%)

Year-round Closures:

- Groundfish Midwater Trawl
- Groundfish Bottom Trawl

Notes:
- The number in brackets in the legend above is the percent of polygons that fell into the given category.
- This map represents 97.7% of the data from this fishery that meet confidentiality requirements (minimum 3 vessels reporting).
- Trawl closures obtained from the Mar. 8, 2008-Feb. 20, 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

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:

BC Marine Conservation Analysis

Map template by Caslys Consulting Ltd.

January 31, 2011

Inset Map 1:500,000*

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.