

**Groundfish**

Groundfish dwell at or near the seafloor. Trawling is one of four groundfish fisheries conducted in the Pacific region.<sup>1</sup>

**The Groundfish Trawl Fishery**

As of 2005, groundfish trawl was the largest fishery by volume on Canada's west coast. The trawl fishery exhibits a high degree of diversity in its landings, with roughly 35 species making up 95 percent of the landings. More than 200 species are caught, with approximately 70 landed. Trawlers may catch, retain, and land species for which total allowable catches (TACs) are set, as well as non-targeted species.<sup>2</sup> To date, 27 groundfish stocks have been assessed with established annual allocations in eight management areas.<sup>1</sup>

In BC this fishery uses an otter trawl, a large bag-shaped net that is dragged either along the ocean floor or through the water column. Bottom trawling covers a distance of 4.5 to 5 km, while mid-water trawling covers 12 to 13 km.<sup>2</sup>

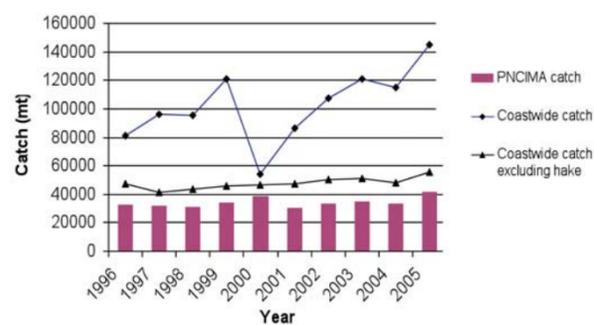
In 2010, following a three-year pilot program designed by the Commercial Industry Caucus with input from the Commercial Groundfish Industry Advisory Committee, the Commercial Groundfish Integration Program was implemented. It includes 100 percent at-sea and dockside monitoring, individual vessel accountability for retained and released catch, individual vessel quotas (IVQs) and reallocation of IVQs between vessels and fisheries to cover catch of non-directed species.<sup>3</sup> Other management measures include catch limitations by species and area, licence limitations, TACs, time and area closures, and vessel trip limits.<sup>1</sup>

Management measures are described using units known as Groundfish Management Areas (GMAs) and Pacific Fishery Management Areas (PFMAs). Of the eight Pacific GMAs, seven are entirely or partially within PNCIMA (see table).

**Fishery Effort**

The fishery effort map, which uses four by four km gridded data, represents 97.71 percent of the data available for PNCIMA after screening for confidentiality (minimum three vessels reporting per grid cell).<sup>2</sup> In PNCIMA, groundfish trawl effort (measured in hours of fishing) appears to be highly aggregated. The five data classes presented on the map are based on groupings inherent in the data such that similar values are grouped and differences between classes are maximized (Natural Break or Jenks

**Trawl Catch (mt) 1996-2005**



statistical method). The proximity of fishing to the coast makes the gridded data appear to overlap land, an artifact of applying the data to a standard grid. The fishing data were layered above the land only to make the data more visible. Data presentation does not take into account variations in fishing activity over time due to fisheries management measures, individual vessel behaviour, or changes in technology or fishing practices.<sup>4</sup> The data on the map may not represent current effort, as they predate the establishment of Rockfish Conservation Areas, IVQs and groundfish integration.

Groundfish typically concentrate in areas with steep bank sides and across troughs in shelf areas where there are strong tidal currents, high nutrient supply and currents that retain zooplankton. Hence, groundfish trawl effort has been concentrated around bank edges and troughs in Queen Charlotte Sound, Hecate Strait and the eastern waters of Dixon Entrance.<sup>2</sup>

The total catch by trawl (including by-catch) in PNCIMA was fairly consistent from 1996 to 2005 (see graph). When hake catches are omitted from coastwide figures, the PNCIMA catch makes up the majority of the coastwide catch. The hake fishery primarily takes place off the west coast of Vancouver Island,<sup>2</sup> but also occurs in Queen Charlotte Sound.<sup>5</sup>

Map data are viewable online through DFO Mapster at [www-heb.pac.dfo-mpo.gc.ca/maps/maps\\_data\\_e.htm](http://www-heb.pac.dfo-mpo.gc.ca/maps/maps_data_e.htm)  
 Material presented is drawn from the following literature reviews, which include primary references:  
 1 Lucas, B.G., Verrin, S. and Brown, R. (Editors). 2007. Ecosystem overview: Pacific North Coast Integrated Management Area (PNCIMA). Can. Tech. Rep. Fish. Aquat. Sci. 2667: xiii + 104p.  
 2 MacConnachie, S., Hillier, J. and Butterfield, S. 2007. Marine use analysis of the Pacific North Coast Integrated Management Area. Can. Tech. Rep. Fish. Aquat. Sci. 2677: viii + 188p.  
 3 Fisheries and Oceans Canada. 2010. Pacific region integrated fisheries management plan: groundfish, February 21, 2010 to February 20, 2011, 185 pp.  
 4 Temporal trends in groundfish trawl activity, and related data limitations, are discussed in more detail in Sinclair, A. 2007. Trends in groundfish bottom trawl fishing activity in BC. CSAS Research Document 2007/006.  
 5 British Columbia Marine Conservation Analysis Project Team. 2011. Marine atlas of Pacific Canada: a product of the British Columbia Marine Conservation Analysis. Available from [www.bcmca.ca](http://www.bcmca.ca) (Accessed March 2011).

**GMAs within PNCIMA, as defined by PFMAs/Subareas**

GMA	PFMAs and/or Subareas
3D	Subareas 27-2 to 27-11, 127-1 and 127-2
4B	Area 13 and Subareas 12-1 to 12-13, 12-15 to 12-48
5A	Areas 11, 111 and Subareas 12-14, 27-1, 127-3, 127-4 and 130-1
5B	Areas 7 to 10, 108 to 110 and Subareas 102-3, 107-2, 107-3, 130-2 and that portion of 130-3 that lies south of the parallel passing through 51 degrees, 56 seconds north latitude
5C	Areas 6, 106 and Subareas 2-1 to 2-19, 102-2 and 105-2 and 107-1
5D	Areas 3 to 5, 103, 104 and Subareas 1-2 to 1-5 and 101-4 to 101-10, 102-1 and 105-1
5E	Area 142 and Subareas 1-1 and 2-31 to 2-100 and 101-1 to 101-3 and that portion of Subarea 130-3 that lies north of the parallel passing through 51 degrees, 56 seconds north latitude

