

Commercial Fisheries – Sockeye Salmon (gillnet)

description

Pacific salmon (*Oncorhynchus spp.*) have been an important part of the diet and culture of First Nations on Canada's west coast for thousands of years, and since the late 1800s, following the arrival of Europeans in British Columbia, salmon have been the target of a large-scale commercial fishery.

Canada's Pacific salmon management is based on integrated plans that focus on conservation, allocation, sustainable use, improved decision making, and obligations to First Nations and international treaties. These integrated plans are guided by legislative mandates and policy and operational initiatives, including the Pacific Salmon Commission, established by treaty between Canada and the United States in 1985, and the Wild Salmon Policy, approved in 2005.

Best known of the Pacific salmon, sockeye salmon (*Oncorhynchus nerka*) occur throughout the temperate North Pacific Ocean, and are the most sought after commercial salmon. The majority of sockeye salmon spawn in rivers that feed into lakes, or in the outlets and spring-fed beaches of lakes, sometimes as far as 1,600 kilometres from the sea. In BC, major spawning runs of sockeye salmon are found in the watersheds drained by the Fraser, Skeena and Nass rivers, and those of Smith and Rivers inlets. These far-ranging fish exhibit remarkable variation in life history. However, they typically emerge from nests in gravel as free-swimming fry in the spring, spend one or two years rearing in a freshwater nursery lake, and then migrate to the ocean where they spend another two or three years before returning to their natal stream to spawn and die. An attractive fish, adults have silvery bodies and blue-green backs, faintly speckled with black. As adults returning to spawn approach their natal streams, they turn varying shades of red with a green head, and the males develop large teeth and hooked jaws.

In BC, commercial salmon fishing by gillnet is authorized by one of three licence types: category "A" (issued to a vessel); category "N" (party based and only issued to the Northern Native Fishing Corporation for vessels designated by the corporation); or category "F" (party based and issued under the Aboriginal Communal Fishing Licences Regulations). Salmon may be commercially fished by gillnet in Salmon Area C (north coast), Salmon Area D (portion of south coast) and Salmon Area E (portion of south coast and the Fraser River) (see Figure 1 below). Not all areas are open in a given year. Gillnets are rectangular nets that hang in the water and are set from either the stern or bow of the vessel. Fish are caught when they swim into the net and their gills become entangled in the webbing. Altering mesh size and the way in which nets are suspended in the water allows nets to selectively target certain species and sizes of fish. Floats are attached to the upper edge of the net and a lead line is used to keep the lower edge of the net down. As the net comes in the fishermen physically pull out the salmon.

The salmon catch data are displayed in a geographic unit called a Salmon Catch Estimate Area (SCEA). DFO started to use SCEAs in 2001 to represent areas that can be open for commercial salmon fishing, recognizing that salmon openings are not static and can vary over time. SCEAs have been refined over time to exclude areas that are consistently not opened for any gear type (e.g., ribbon boundary around a creek mouth, protected area etc.).

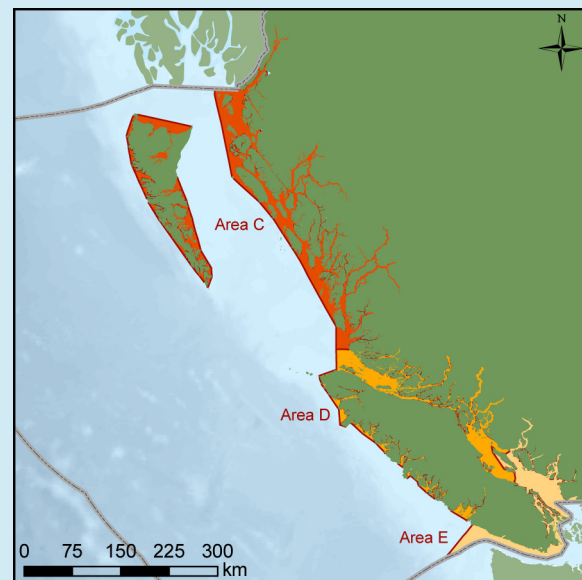


FIGURE 1: LICENCE AREAS

This map is one of a series that represents the spatial distribution of commercial salmon fishing by different gear types. Source data were provided by Fisheries and Oceans Canada (DFO) for each gear type (gillnet, troll, and seine) and year (2001-2007) and included information on total effort (boat days) and total salmon catch by species. BCMCA aggregated the data by SCEAs for each gear type and species, summing all years of available data as recommended by participants in the BCMCA Commercial Fisheries Workshop (March 2010). The data are displayed on the main map using equal interval categories, meaning that the data are divided into five equally spaced classes where each class may contain a different number of SCEAs. The inset map shows the same data, but uses quantiles for display, meaning each class contains roughly the same number of SCEAs.



PHOTO: STEPHANIE AKLE

data sources

- Fisheries and Oceans Canada

data resolution

- Data was provided by Salmon Catch Estimate Area

date collected

- 2001-2007

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 Human Use Data Working Group.
- Fisheries and Oceans Canada data providers.

reviewer comments

- Reviewers at the BCMCA Commercial Fisheries Workshop (March 2010) felt the information shown was too coarse to be a useful representation of the fishery. They suggest that data be presented by Fishery Management Subareas, which DFO indicated was not possible since the data was not collected using those areas.
- It is more important to separate the maps by gear type used than by species caught.
- Number of boat days is less relevant than catch information.
- Generally reviewers wanted to see catch for longer time periods and closures that matched the time periods displayed on the map.
- Reviewers recommended using catch statistics for consecutive years in multiple of 4 years (4, 8 or 12) for salmon to match the spawning cycle. DFO responded, "Although some species have a 4 year cycle, other don't (Pink and Chum). Also 3 year and 5 year olds are common in both Chinook and Sockeye."
- Information from earlier (e.g. the mid/early 1990s) would be useful as more salmon were caught in that time period. DFO responded that data were only collected in this format starting in 2001.
- For allocation purposes, DFO uses an average weight per fish. This could be requested from DFO and used to calculate a cumulative weight caught by species, therefore creating a similar metric to other commercial fisheries.
- 2001 was the first year data were compiled in the SCEA format; 2001 data should be discarded since many refinements to collection methods and the SCEA have since been made.

caveats of use

- This map shows only where fishing has taken place; it does not represent economic valuations or biological trends. The catch and effort shape files provided by DFO for the BCMCA are not to be used as a proxy for stock health or dynamics or to infer any biological trends.
- Data displayed should not be assumed to match current or future conditions due to ongoing changes in the environment and management.
- Catch is influenced by seasonal and annual closures, which are not displayed on the map due to a lack of available spatial data.
- This map represents numbers of fish reported as caught; some catch may not have been reported. In the case of discrepancies, catch information from DFO takes precedence over commercial fisheries information portrayed by the BCMCA.
- SCEA boundaries have changed over time, and are generally smaller after 2001. The BCMCA combined data for multiple years within SCEAs only when boundaries matched.
- Some areas within a SCEA are more heavily fished than others; and not every SCEA contains reported catch for each year between 2001 and 2007. Where SCEAs overlap, the one with the highest value is displayed on the map.
- Data on this fishery have been screened to meet confidentiality requirements. The count of commercial fishing vessels for each spatial unit within which data are provided must be greater than 2 for information to be made public. This screen was set for each year before data were binned across years. The number of years each SCEA had an active fishery that met privacy standards varies from 1 to 6.
- 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

BCMCA Atlas
Commercial Fisheries
Sockeye Salmon (gillnet)
2001-2007

Legend

Number of Sockeye Salmon Caught by Gillnet

- 1 - 500,000 (89.83%)
- 500,001 - 1,000,000 (6.78%)
- 1,000,001 - 1,500,000 (1.69%)
- 1,500,001 - 2,000,000 (0%)
- 2,000,001 - 2,500,000 (1.69%)

Notes:

- The number in brackets in the legend above is the percent of Salmon Catch Estimate Areas (SCEA) that fell into this category.
- When SCEAs overlap, the areas with the highest catch are displayed on top.
- The main map shows the data classified in 5 equal intervals. The inset map shows the same data classified in 5 quantiles.

Data Sources:

Fisheries and Oceans Canada

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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