Marine Invertebrates – Coral Occurrences II - Trawl Fishery Observer Data

description

Corals are sessile (immobile) benthic organisms that generally filter feed on material as it passes by in the bottom current. Corals are composed of tiny polyps joined into colonies and select cold-water coral species can form large, tree-like structures. Corals found in the Canadian Pacific are called cold-water corals, and there are over 80 species in our study area (Fisheries and Oceans Canada, 2009). Some species inhabit shallow waters and others live in great depths. Corals in this region can exist as solitary individuals, but they often form communities called groves, forests, or reefs. In any of these forms, corals can provide habitat for a wide range of other organisms, and are referred to as a foundation species for this reason. Their role as rich and protective habitats for other organisms makes them hotspots of biodiversity and, therefore, ecologically important. Few data are available to map the full extents of their habitat.

Occurrences illustrated here are cumulative observations from Trawl Fishery Observer data from 2004 to February 2010. Data were provided by Fisheries and Oceans Canada (DFO) as tallied observations for BC Marine Conservation Analysis (BCMCA) planning units and are classified for illustration into 6 classes based on Jenks natural breaks classification. Although all biota from each tow is recorded in observer data, corals are generally not identified to species level and thus all coral observations are lumped together here for illustration.

The Jenks' natural breaks classification scheme (automated in ESRI ArcGIS software) (Jenks, 1977 and Fisher, 1958) determines the best arrangement of values into classes by iteratively comparing sums of the squared difference between observed values within each class and class means. The "best" classification identifies breaks in the ordered distribution of values that minimizes within-class sum of squared differences, and thus identifies classes that are most homogenous within.

The distribution of observations per planning unit in which coral was observed is highly skewed (Figure 1) and the vast majority recorded 1 coral observation over the last six years.

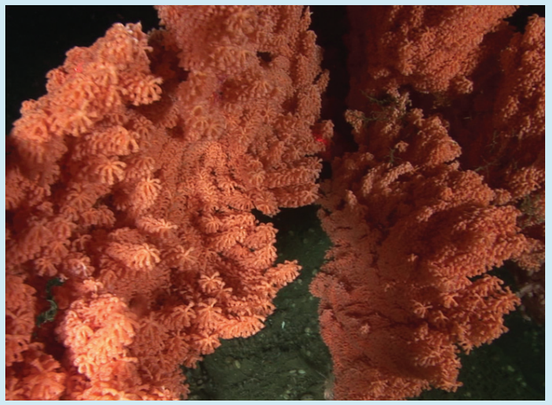

PHOTO: LIVING OCEANS SOCIETY

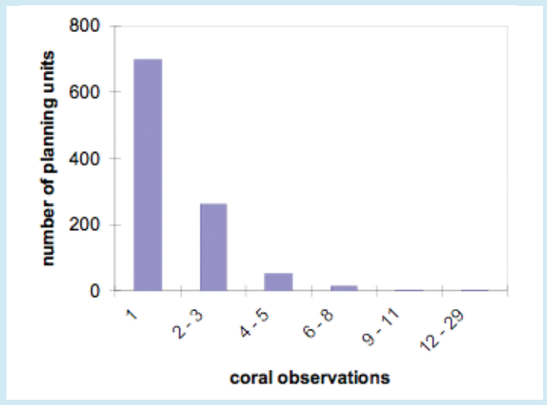

FIGURE 1. DISTRIBUTION OF CORAL OBSERVATIONS BY PLANNING UNIT.

data sources

- Fisheries and Oceans Canada, Pacific Region, Science Branch, Groundfish Section

data resolution

- Source data is collected by tow and GPS locations are recorded. DFO summarized the data illustrated here into 2 kilometre by 2 kilometre planning units.

date collected

- 2004 – Feb. 2010

reviewers

- Reviewed for accuracy and presentation by data providers and industry representative.

reviewer comments

- Information on the total number of tows performed in each planning unit would help to give context to the number of coral observations in each planning unit.

caveats of use

- Spatial extents of the trawl fishery are limited. Lack of data outside these areas should not be interpreted as absence of corals.
- Data were compiled for the BCMCA by planning unit and are illustrated as such. However, coral observations recorded within a planning unit should not be interpreted as meaning that the entire area of that planning unit is habitat for coral.
- 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

- Fisheries and Oceans Canada (DFO). Seamounts, Cold-water Corals, Hydrothermal Vents and Sponges. 2009. 11 May 2010. *www.dfo-mpo.gc.ca/international/media/bk_20090720-01-eng.htm*
- Fisher, W. D. On grouping for maximum homogeneity. *Journal of the American Statistical Association*. 1958. 53, 789-798.
- Jenks, G. F. Optimal data classification for choropleth maps. Occasional paper No. 2. Lawrence, Kansas: *University of Kansas, Department of Geography*. 1977.

BCMCA Atlas

Marine Invertebrates

Coral Occurrences II

Legend

Number of Coral Observations in Observer Data from the Trawl Fishery 2004 - Feb. 2010

- 1
- 2 - 3
- 4 - 5
- 6 - 8
- 9 - 11
- 12 - 29

Depth (m)

100 200

Note:
- Represents the number of tows in which coral was recorded in each 2 km x 2 km planning unit.
- Classification based on 6 natural breaks.

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:

BC Marine Conservation Analysis

Map template by Caslys Consulting Ltd.

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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.