

## Marine Fish and Invertebrates – Groundfish Fishery Observer Data – Mean CPUE, January 2004 - February 2010

### description

The commercial groundfish trawl fishery employs both midwater and bottom trawl gear. All biota caught in the nets are recorded by government certified observers. This atlas page illustrates the mean catch per unit of effort (CPUE), in kilograms per hour, calculated for each planning unit, where a minimum of three boats was recorded within the time period represented.

This map illustrates a relative index of total observed catch across the region fished. Catch in this case includes all biota, both fishes and invertebrates, from both midwater and bottom trawl gear. Areas of high observed CPUE may correspond to areas of ecological importance.

Data were provided by Fisheries and Oceans Canada (DFO) as mean CPUE values for BC Marine Conservation Analysis (BCMCA) planning units where a minimum of three boats was recorded within the time period represented. Data were provided for a total of 3,270 planning units and excluded for 4,196 planning units, where fewer than 3 boats fished, meaning that the data illustrated represents about 44% of the planning unit area with fishery effort and 80% of the total number of tows. Tows were omitted due to confidentiality requirements and filtering criteria (e.g. valid fishing dates and tow locations). CPUE values are classified for illustration into 6 classes based on Jenks natural breaks classification. 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 CPUE values among planning units (Figure 1) is quite skewed such that the majority of planning units with data have CPUE averaging less than 3,254 kilograms per hour.

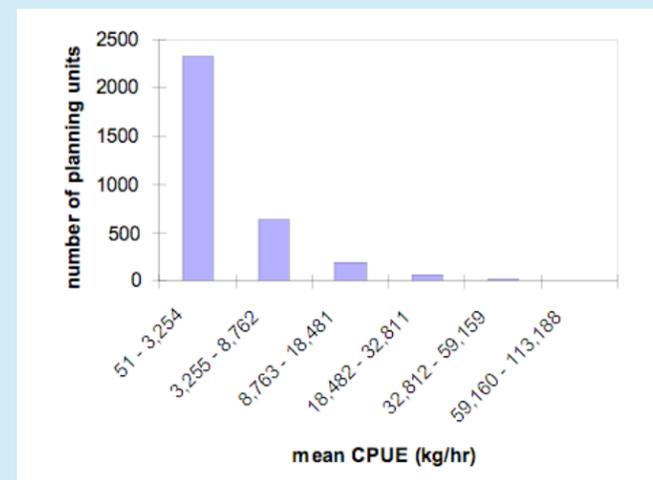


FIGURE 1. DISTRIBUTION OF MEAN CPUE VALUES ACROSS PLANNING UNITS ILLUSTRATED.



PHOTO: GEANINA BECHEA

### 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

- January 2004 – February 2010

### reviewers

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

### reviewer comments

- None provided.

### caveats of use

- Data illustrated do not represent the entire spatial extents of trawl fishery effort. Areas without data should not be interpreted as lack of fish and invertebrate biota, or as lack of fishery effort.
- Catch data represents a limited view of reality. Species caught and recorded are partly a function of the fishing gear used. Each type of fishing gear has limitations and therefore the size of individuals caught varies, as does the net efficiency. Tow duration is not standardized so catch recorded is standardized by effort.
- Catch data represents only the seasons when the fishery operated. Many species do migrate with season.
- Recommended date of expiry for use of these data in a marine planning context: None provided.

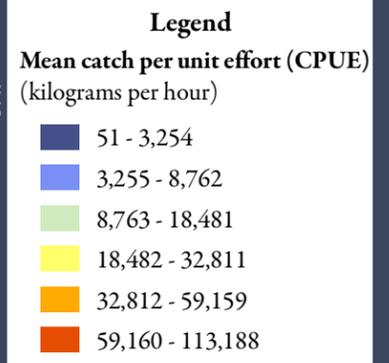
### map, feature data and metadata access

- Visit [www.bcmca.ca/data](http://www.bcmca.ca/data) for more information.

### references

- 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 Fish and Invertebrates**  
**Groundfish Fishery**  
**Observer Data - Mean CPUE**  
**January 2004 - February 2010**



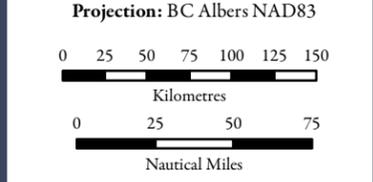
**Depth (m)**  
 \ / 100 \ / 200

**Note:**  
 - Only planning units with 3 or more fishing vessels recorded were available for display, i.e. 44% of all planning units with fishing effort and 80% of all tows.

**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

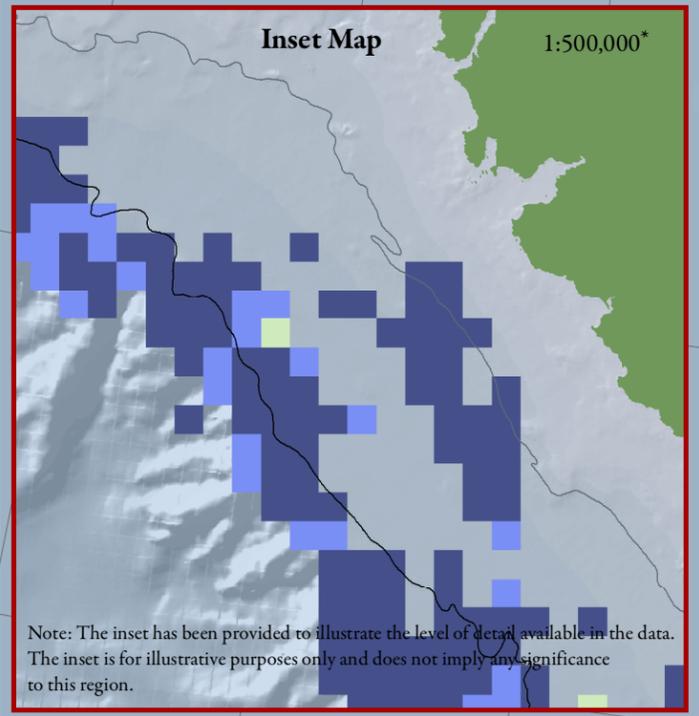
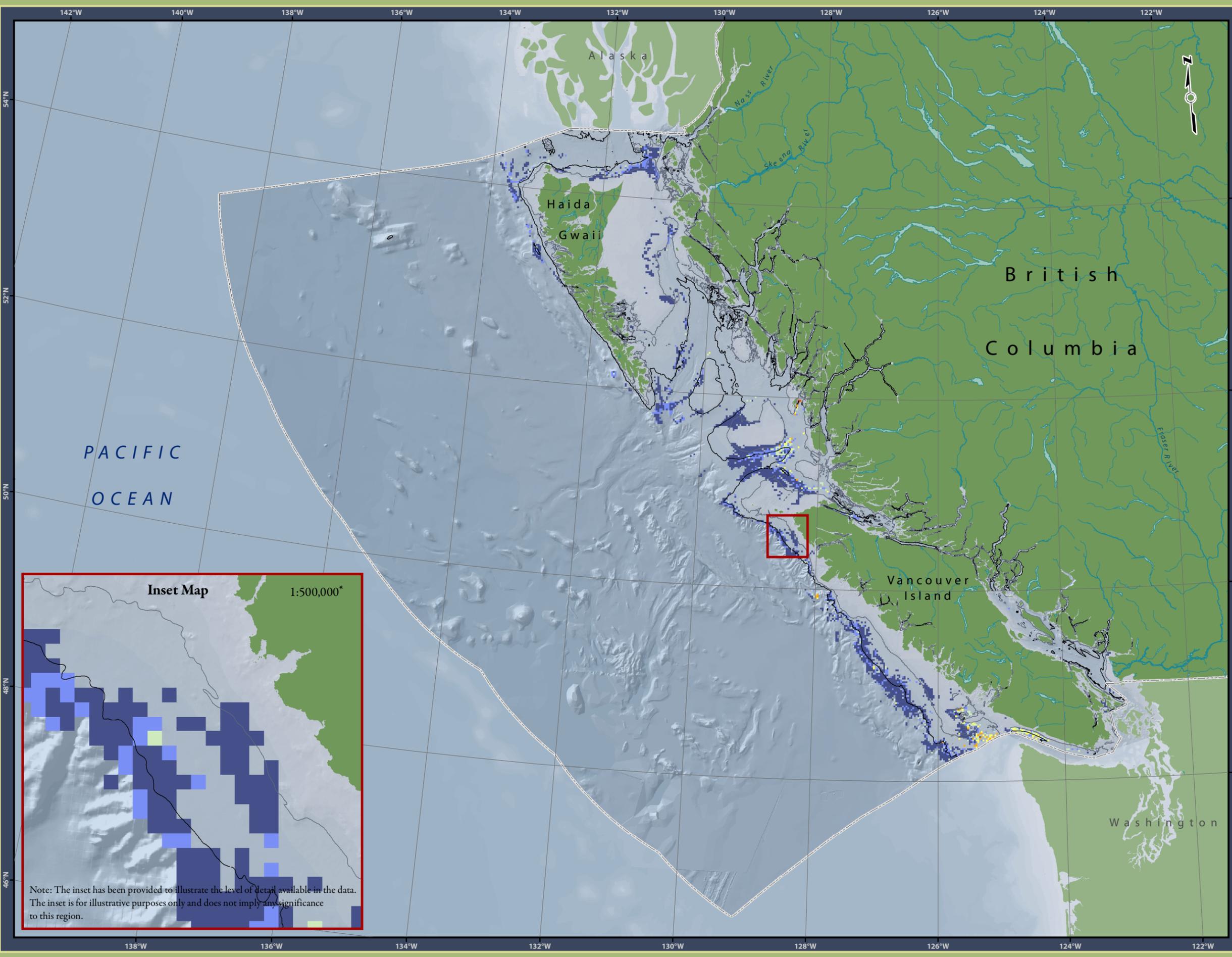


1:4,250,000\*  
 \* Written scales are approximate and are based on a 11 x 17 inch paper size.

Prepared for:

**BC MARINE CONSERVATION ANALYSIS**

Map template by Caslys Consulting Ltd.  
 December 6, 2010



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.