

# Shipping & Transport – Tug Vessel Density Winter 2007

## description

This atlas page illustrates the relative density of tug vessels in transit in the winter months (January to April and October to December) of 2007. It is based on ship monitoring data from the Canadian Coast Guard's Marine Communications and Traffic Services (MCTS). Tugs, or tow boats, are vessels which tow or propel barges. These vessels are estimated to account for 29% of the annual vessel movements in Canada's Pacific waters (BC Ministry of Environment et al. 2006).

All ships operating in Canadian waters must obtain Vessel Traffic Services (VTS) clearance before beginning a voyage from a Canadian location or before entering Canadian waters. The Coast Guard monitors ship traffic using radio communication, radar detection and an Automatic Identification System. The Coast Guard documents ship position, direction and speed approximately every 4 minutes with ship-identification (Lloyd's Register name and number), flag-state (country of registry), type of ship and size. All ships over 20 metres in length, and ships engaged in towing or pushing any vessel or object more than 20 metres in length (other than fishing gear) that had a combined length of more than 45 metres are required to report their position to the VTS. Vessels towing or pushing inside a log booming ground, pleasure yachts less than 30 metres, or fishing vessels less than 24 metres and 150 tons gross are not required to report their position to the VTS.

Vessel observations were reduced to one uniquely identifiable vessel observation per hour per 5 kilometre by 5 kilometre grid cell. For each grid cell, data were summarised by calculating total number of uniquely identifiable ship observations per hour that either moved into or out of the focal cell (i.e., ensuring ships were moving).

The data is displayed on the main map using equal interval categories, meaning that the data is divided into nine equally spaced classes where each class may contain a different number of grid cells. The inset map shows the same information as nine quantiles, meaning each classification contains the same number of grid cells.



PHOTO: DAN BLONDAL

## data sources

- Canadian Coast Guard - Marine Communications and Traffic Services vessel tracking database.
- Analysis of Canadian Coast Guard data by Patrick O'Hara (Canadian Wildlife Service).

## data resolution

- 5 kilometre by 5 kilometre grid cells

## date collected

- Winter 2007

## reviewers

- Brian Simms and Captain Phillip Nelson, Council of Marine Carriers

## reviewer comments

- The map does not show tug traffic in the Fraser River. In fact the North Arm of the Fraser River alone experiences in excess of 21,000 tug trips per year carrying over 29 million tonnes of cargo.
- Much of the offshore traffic is either outside of the MCTS reporting area or outside their radar coverage. The volume of offshore traffic, possibly from vessels on the commencement or termination from the Asian great circle routes, does not seem typical of tug traffic.
- There are many tugs on the BC coast less than 20 metres in length, and many of these run light (without a tow) from one place to another. These vessels may or may not report to MCTS, since they are not required to by the regulations, and therefore this map likely under represents tug traffic. (The likelihood of under representation of tug vessel density also exists, to an even greater extent, in the summer.)
- The industry has been depressed for the past 2 to 3 years and the 2007 information is probably on the high side compared to 2010, but lower than when the forest industry (the main tug vessel customer) is going full strength.

## caveats of use

- This map shows only the relative density of tug vessel movements for the winter of 2007. Other maps from the vessel density series showing the same vessel type in a different season or different vessel types cannot be compared directly to this map since the range in number of vessel movements will vary from season to season and vessel type to vessel type.
- The information used to create this map does not include vessels transiting the portion of the Juan de Fuca Strait which is the responsibility of the US Coast Guard. The information also underestimates vessel traffic west of Haida Gwaii for two reasons: 1) there is no Coast Guard radar coverage of this area and 2) many of the vessels transiting the area are not bound for Canadian destinations and therefore not required to report to the Coast Guard. Thus, the map provides minimum estimates of vessel traffic densities for the various traffic types included here.
- Recommended date of expiry for use of these data in a marine planning context: Data should be refreshed every 4 to 5 years.

## map, feature data and metadata access

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

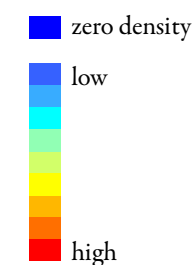
## references

- BC Ministry of Environment, Fisheries and Oceans Canada, University of Victoria, University of British Columbia, and Environment Canada. *Alive and Inseparable: British Columbia's Coastal Environment*. 2006. [www.env.gov.bc.ca/soe/bcce/](http://www.env.gov.bc.ca/soe/bcce/)

**BCMCA Atlas**  
**Shipping & Transport**  
**Tug Vessel Density**  
**Winter 2007**

**Legend**

**Tug Vessel Density**  
(# of vessel movements)



Notes:

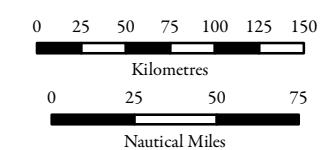
- The number of vessel movements in a 5 km x 5 km grid cell ranges from 0 to 7,006.
- The main map shows the data classified in 9 equal intervals.
- The inset map shows the same data classified in 9 quantiles.

**Data Sources:**  
Canadian Coast Guard

**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



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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