Shipping & Transport – Research Vessel Traffic 2010

description

This atlas page illustrates hours that research vessels spent in transit in 2010. It is based on ship monitoring data from the Canadian Coast Guard's Marine Communications and Traffic Services (MCTS). Carrier vessels are defined as bulk cargo (e.g. cars, grain, ore, etc.) and container vessels. These vessels are estimated to account for 7% 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 (VTOSS) 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 VTOSS. 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 VTOSS.

The vessel traffic data displayed on the main map are shown in hours and classified according to Jenks natural breaks*, which minimizes variance within classes and maximizes variance between classes. The inset map displays the same data, also using Jenks natural breaks, but the data were log-transformed to ensure a more normal distribution.
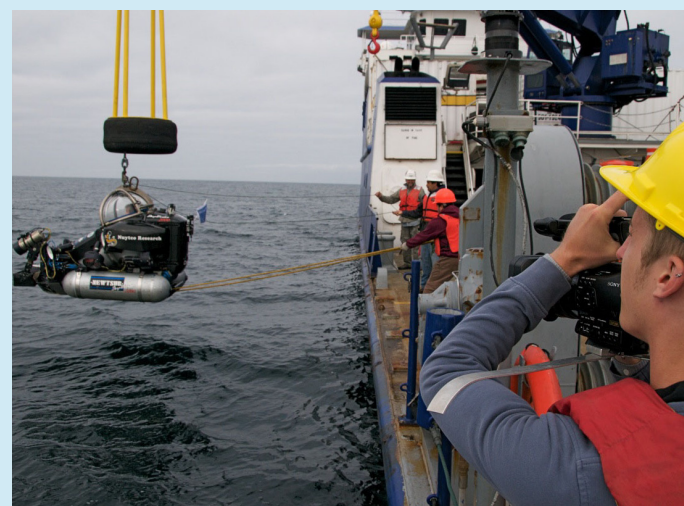

PHOTO: LIVING OCEANS SOCIETY

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data sources

- Canadian Coast Guard - Marine Communications and Traffic Services vessel tracking database.
- Processing/analyses were done by Dr. Ron Pelot (MARIN - Dalhousie University) as part of the Oil in Canadian Waters Research Working Group

data resolution

- 5 kilometre by 5 kilometre grid cells

date collected

- 2010

reviewers

- None

reviewer comments

- None provided.

caveats of use

- This map shows only research vessel traffic in 2010. Other maps showing a different vessel type cannot be compared directly to this map since the range in number of vessel movements will vary from vessel type to vessel type.z

- There is radar coverage of most of Georgia Strait and a radar station with 90 nautical mile range in the vicinity of Tofino. The radar coverage extends from Juan de Fuca in the south to an area just north of Kyuquot Sound on the west coast of Vancouver Island. All the other areas are tracked by vessels using the established call-in points indicated on the charts. This means that all of the northern area off Vancouver Island, both coasts of Haida Gwaii and the North Coast mainland are without radar coverage.

- 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 map provides minimum estimates of vessel traffic for the various traffic types included here and likely underestimates vessel traffic, particularly west of Haida Gwaii. Reasons for this include: 1) limited extents of Coast Guard radar coverage; 2) many of the vessels transiting the area west of Haida Gwaii are not bound for Canadian destinations and therefore not required to report to the Coast Guard; and 3) the Automatic Identification System is still in process of being brought in by VTOSS.

- 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* 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/*

* The Jenks' natural breaks classification scheme (automated in ESRI ArcGIS software) 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. See:
- Fisher, W. D. 1958. On grouping for maximum homogeneity. Journal of the American Statistical Association, 53, 789-798.
- Jenks, G. F. 1977. Optimal data classification for choropleth maps. Occasional paper No. 2. Lawrence, Kansas: University of Kansas, Department of Geography.

Alaska

Nass River

Skeena River

Haida Gwaii

B r i t i s h

C o l u m b i a

Fraser River

PACIFIC

OCEAN

Vancouver Island

Washington

BCMCA Atlas

Shipping & Transport
Pleasure Vessels & Yachts

Legend

Hours of Traffic (2010)

- 0
- < 1
- 1 - 5
- 5 - 9
- 9 - 15
- 15 - 28
- 28 - 45
- 45 - 82
- 82 - 219

Notes:
- Hours of Traffic are mapped showing 8 natural breaks (zeros are separate)
- Inset map shows hours of traffic mapped using natural breaks of log normalized data.

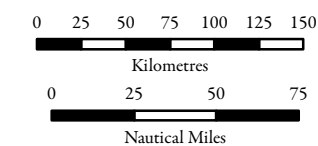**Data Sources:**
Oil in Canadian Waters
Research Working Group

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 an 11 x 17 inch paper size.

Prepared for:

BC MARINE CONSERVATION ANALYSIS

Map template by Caslys Consulting Ltd.

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Inset Map

1:9,000,000*

Legend
Hours of traffic (2010)
on a log normal scale

Low

High

Note: See facing page for more information