

## Vessel Transits Through Olympic Coast National Marine Sanctuary and Area to Be Avoided (ATBA) - 2013 Estimated Compliance

Designated in 1994, Olympic Coast National Marine Sanctuary (OCNMS or sanctuary) is a place of regional, national and global significance. The sanctuary, which is connected to both the Big Eddy Ecosystem and the California Current Large Marine Ecosystem, is the site of one of North America's most productive marine regions and spectacular, undeveloped shorelines. Potential release of oil or other hazardous material from a marine accident is regarded as the most serious threat to resources within and qualities of the sanctuary. Prevention of spills is therefore one of OCNMS's highest priorities. As a steward of these vitally important natural resources, OCNMS will continue to collaborate with other agencies and user groups to reduce the potential for oil spills and improve contingency planning for spill response.

The International Maritime Organization (IMO) has designated an Area to be Avoided (ATBA) off the coast of Washington to reduce the risk of marine casualties including oil spills, and the resulting environmental damage to Olympic Coast National Marine Sanctuary. See the attached informational flyer or visit <http://olympiccoast.noaa.gov/protect/incidentresponse/atba.html>.

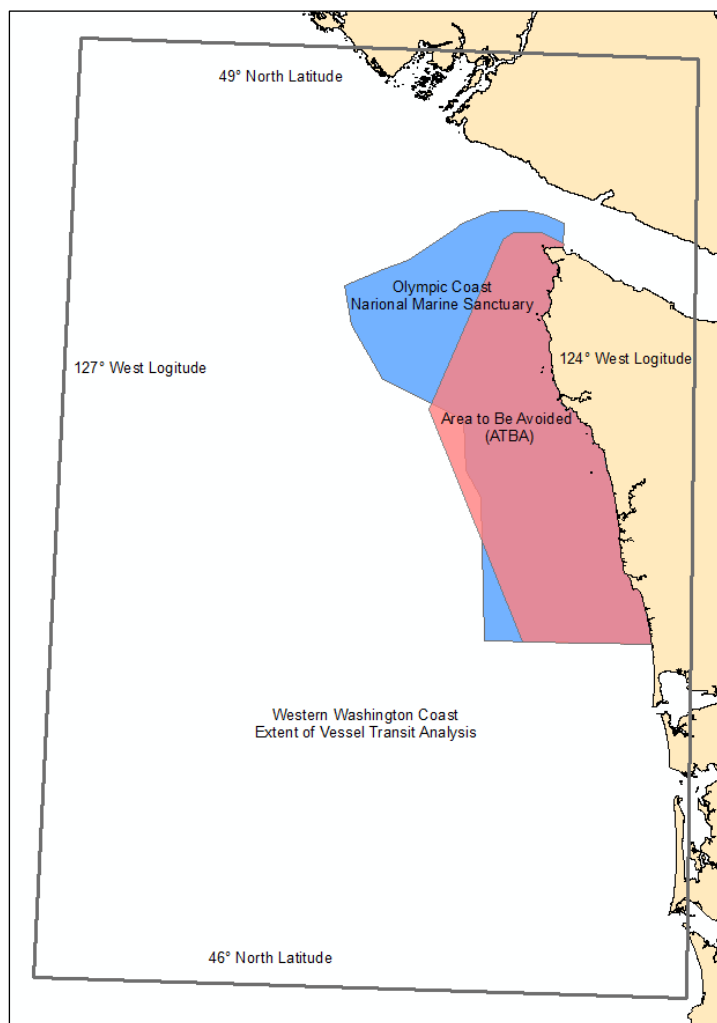


Figure 1: Vessel Transit Analysis Area

Certain vessels are advised to transit outside of this ATBA. OCNMS, in cooperation with the U.S. and Canadian coast guards, monitors vessel compliance under this voluntary program. From 2004 through 2011 the Washington State Department of Ecology published estimated ATBA compliance rates as part of their annual Vessel Entries and Transits for Washington Waters (VEAT) publication. Starting in 2012 OCNMS began producing an independent report. Both the VEAT and OCNMS reports can be downloaded at <http://olympiccoast.noaa.gov/protect/incidentresponse/vesseltraffic.html>

In 2012 the sanctuary changed data sources from Canadian Coast Guard radar data to data from vessel's Automatic Identification System transceivers received by satellite (S-AIS). This change in the data source provides both an improvement in spatial data coverage (the southern part of the sanctuary is now included), as well as a reduced number of positions describing transits (S-AIS data has occasional gaps in coverage), and a loss of some value-added information formerly provided by Canadian Coast Guard vessel traffic operators, such as information on tugs towing oil or chemical barges. For the initial analysis of

the S-AIS data, the geographic area from 46° to 49° North Latitude and from 124° to 127° West Longitude was selected, an area covering the entire outer coast of Washington state (see figure 1).

Due to the use of different data sources, OCNMS vessel classification has had some variation over the years. The move from Canadian vessel radar data to S-AIS resulted in some changes in vessel type categorization between 2011 and 2012, some additional minor modifications were made in 2013 (see table 1). When possible we are consistent with previous vessel type descriptions, as well as those vessel types that are in common usage, e.g., such as those used by Lloyd's Register. For certain types of analysis we group similar vessel types into one of six vessel classes.

2011 Vessel Types	2012-2013 Vessel Types	Vessel Classes
Bulk Carrier	Bulk Carrier	CARGO
Ore-Bulk-Oil Vessel (OBO)		
Cable Layer	Cable Layer	MISC
General Cargo Ship	Cargo Ship	CARGO
Heavy Load Carrier		
Non-oil Tanker		
Chemical Tanker	Chemical Carrier	TANKER
Container Ship	Container Ship	CARGO
	Dredger	MISC
	Drill Ship	MISC
Fishing Vessel	Fishing Vessel	FISHING
(LPG) and (LNG) Carrier	Liquefied Gas Carrier	TANKER
Oil Tanker	Oil Tanker	TANKER
Cruise Ship	Passenger Ship	PASSENGER
	Pollution Control	MISC
	Private Vessel	MISC
	Public Vessels <sup>1</sup>	MISC
Refrigerated Ship	Refrigerated Cargo	CARGO
	Research Ship	MISC
Roll-on Roll-off Vessel	RoRo Cargo Ship	CARGO
	Supply Ship	MISC
	Tug	TUG
Articulated Tank Barge		
Tugs with Chemical Barge		
Tugs with Oil Barge		
Vehicle Carrier	Vehicle Carrier	CARGO

Table 1: Changes to Vessel Types from 2011-2013

Another major change occurred on December 1, 2012, when the applicability of the ATBA changed from a minimal tonnage of 1,600 gross tons to 400 gross tons. In 2012 we reported two distinct periods, January-November 2012 and December 2012. 2013 is the first complete year under the new applicability. The following is the revised IMO language for the December 1, 2012 modification to the ATBA:

*In order to reduce the risk of a marine casualty and resulting pollution and damage to the environment of the Olympic Coast National Marine Sanctuary, all ships and barges that carry oil or hazardous materials in bulk as cargo or cargo residue, and all ships 400 gross tons and above*

<sup>1</sup> The IMO ATBA provisions do not apply to public vessels and they are not reported in the Estimated ATBA Compliance Rate table.

*solely in transit should avoid the area bounded by a line connecting the following geographical positions (see the attached flyer for coordinates).*

**January - December 2013<sup>2</sup>**  
**(vessels > 400 GT)**

Vessel Type	Outer Washington Coast Transits <sup>3</sup>	Transits passing through the Sanctuary <sup>4</sup>	Transits passing through the ATBA within the Sanctuary <sup>5</sup>	Estimated ATBA Compliance Rate <sup>6</sup>
	1	2	3	4
Bulk Carrier	4620	1306	11	99.2%
Cable Layer	13	4	0	100.0%
Cargo Ship	418	137	2	98.5%
Chemical Carrier	252	110	1	99.1%
Container Ship	2192	849	3	99.6%
Dredger	27	0	0	
Drill Ship	4	2	0	100.0%
Fishing Vessel	363	132	59	55.3%
Liquefied Gas Carrier	19	7	0	100.0%
Oil Tanker	973	553	3	99.5%
Passenger Ship	389	180	4	97.8%
Pollution Control	14	5	3	40.0%
Private Vessel	33	22	14	36.4%
Refrigerated Cargo	25	8	0	100.0%
Research Ship	58	33	10	69.7%
RoRo Cargo Ship	302	102	0	100.0%
Supply Ship	20	8	0	100.0%
Tug	661	375	17	95.5%
Vehicle Carriers	815	360	0	100.0%
<b>TOTAL</b>	<b>11,198</b>	<b>4,193</b>	<b>127</b>	<b>97.0%</b>

Table 2: Estimated ATBA Compliance Rates for 2013

<sup>2</sup> The provisions of the ATBA changed on December 1, 2012. This 2013 table includes the first complete calendar year with the additional vessels that are subject to the revised ATBA provisions. Care should be taken in comparing this year's data with previous years.

<sup>3</sup> The vessel transits in Column 1 are from S-AIS data and include commercial vessels greater than 400 gross tons. This is a larger geographic area than has been reported on prior to 2012.

<sup>4</sup> Column 2 includes a subset of the S-AIS vessel transits through the sanctuary.

<sup>5</sup> Column 3 includes a subset of the sanctuary vessel transits that also go through the ATBA. These are vessels potentially not complying with the provisions of the ATBA.

<sup>6</sup> Column 4 shows the percentage of vessels transiting through the sanctuary that stayed out of the ATBA. {Column 4 = 1 - (Column3/Column2)}. This is used as an estimate of compliance with ATBA provisions.

OCNMS is evaluating the utility of its S-AIS 2013 dataset in representing Washington Outer Coast vessel patterns. The following vessel density maps (Figures 2-8) represent an interim product. To facilitate ease in analysis we have used the six vessel classes as opposed to the twenty vessel types shown in Table 1. These density maps represent all vessels that have transited the Washington Outer Coast, that have an AIS transponder, regardless of tonnage. For this reason care should be taken in comparing the Estimated ATBA Compliance Rates (table 2) with the vessel density maps (Figures 2-8).

S-AIS data are provided as points along a vessel transit; the point data include vessel identification, vessel location and a date/time stamp for monitoring the vessel movement. The number of points included in any vessel transit is related to the number of satellites that capture the AIS signal from the vessel transponder and the speed of the vessel as it moves through the area of interest. In the current satellite configuration there are occasional data coverage gaps. To create the vessel density maps, the area of interest was divided into 1km<sup>2</sup> grid cells. The number of unique vessel transits, as represented by individual S-AIS points, was counted for each grid. The grid values were then classified by three classes, representing a relative measure of low, medium, and heavy traffic use zones. An advantage to displaying data in this way is that each class contains an equal number of grids, with no empty classes or classes with too few or too many grids.

Vessel patterns for the heavy use vessel traffic zones are readily visible in the density maps; however the medium and low density zones show the limitation of using intermittent or infrequent S-AIS data as the only source of vessel transit information. Vessel transits have ‘holes’ caused by some grids which do not have a recorded data point. Illustration of transit patterns could be improved by additional satellite coverage or terrestrial AIS stations, which would better represent transits in lower density areas. Denser point data would also allow the creation of line transits for vessel density tracking further improving compliance estimates and expand the utility of these products for coastwide applications.

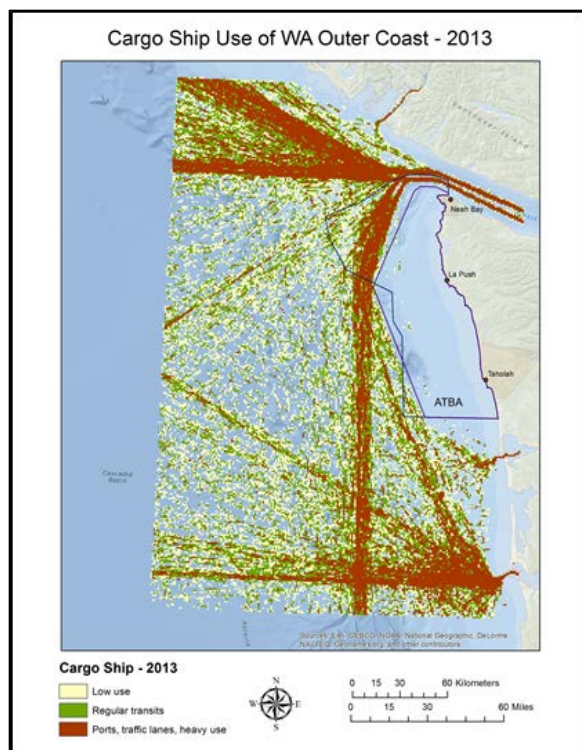


Figure 2: Cargo Ship use of WA outer coast, 2013

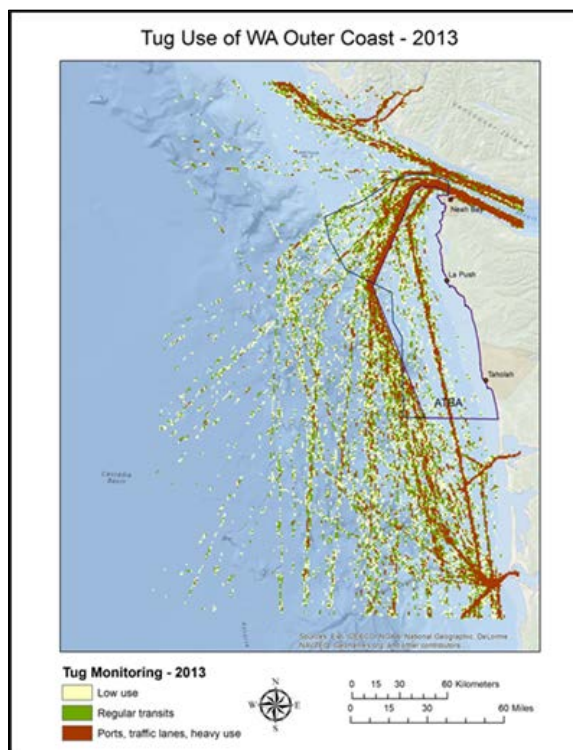


Figure 3: Tug use of WA outer coast, 2013



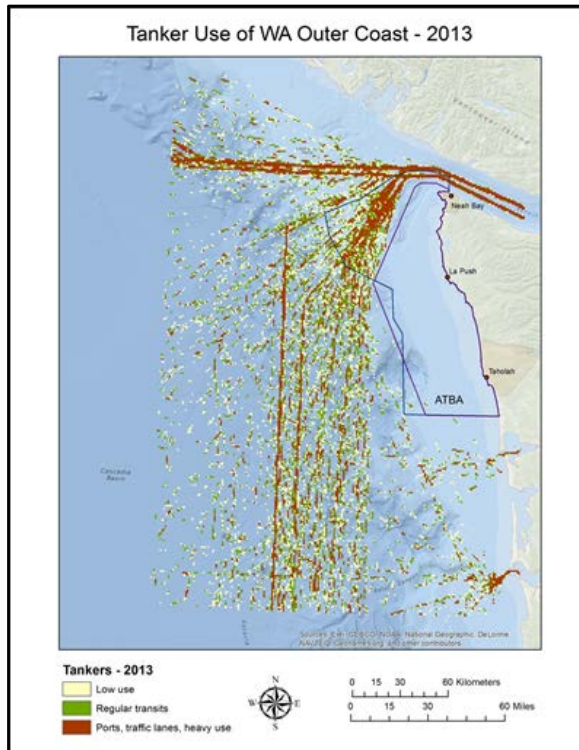


Figure 4: Tanker use of WA outer coast, 2013

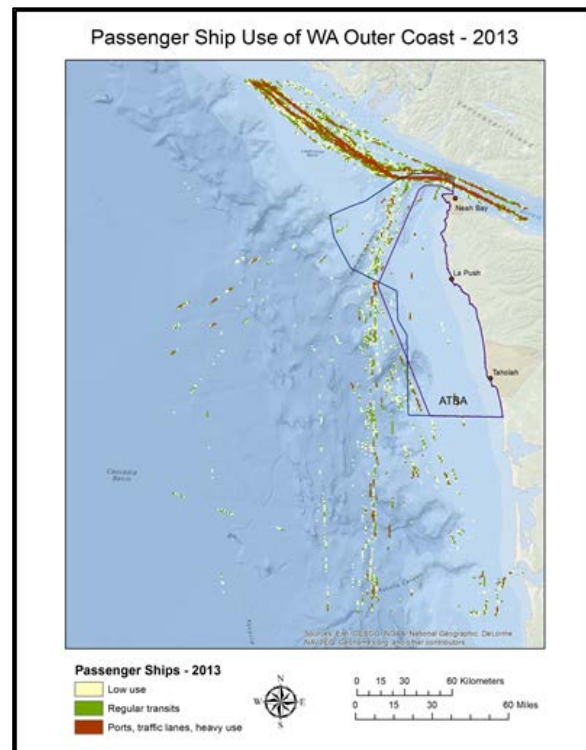


Figure 5: Passenger Ship use of WA outer coast, 2013

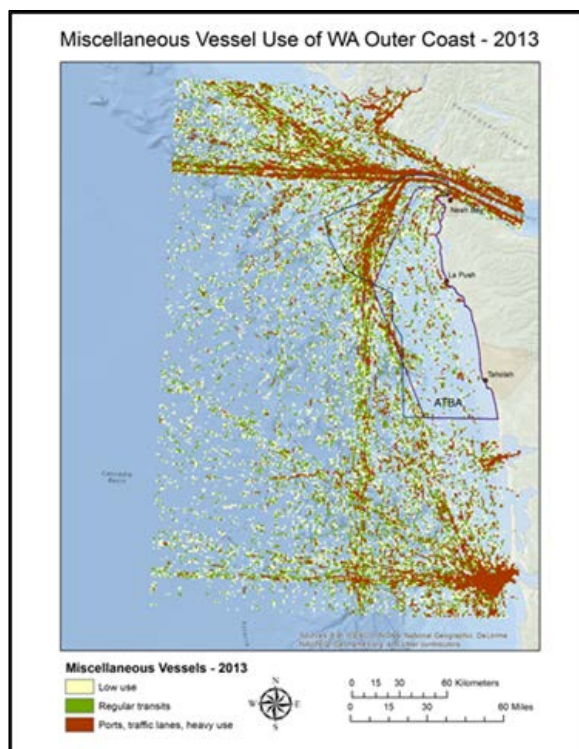


Figure 6: Miscellaneous vessel use of WA outer coast, 2013

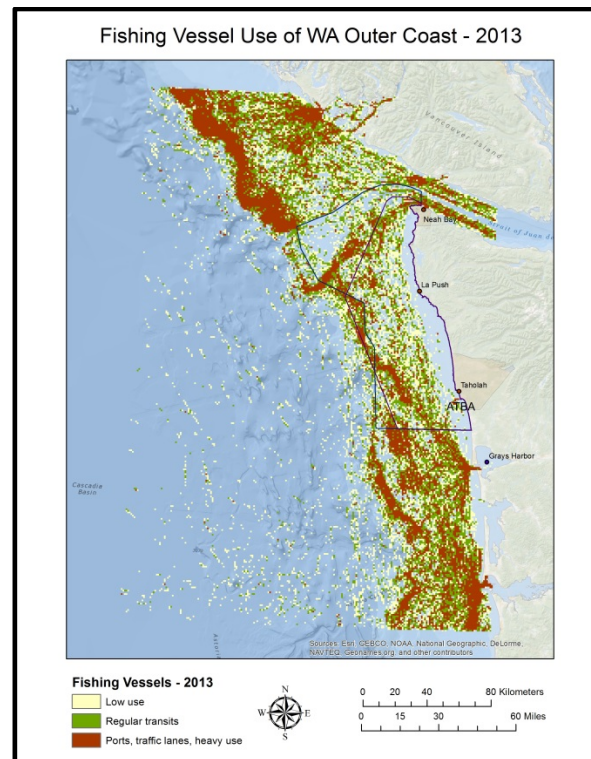


Figure 7: Fishing Vessel use of WA outer coast, 2013

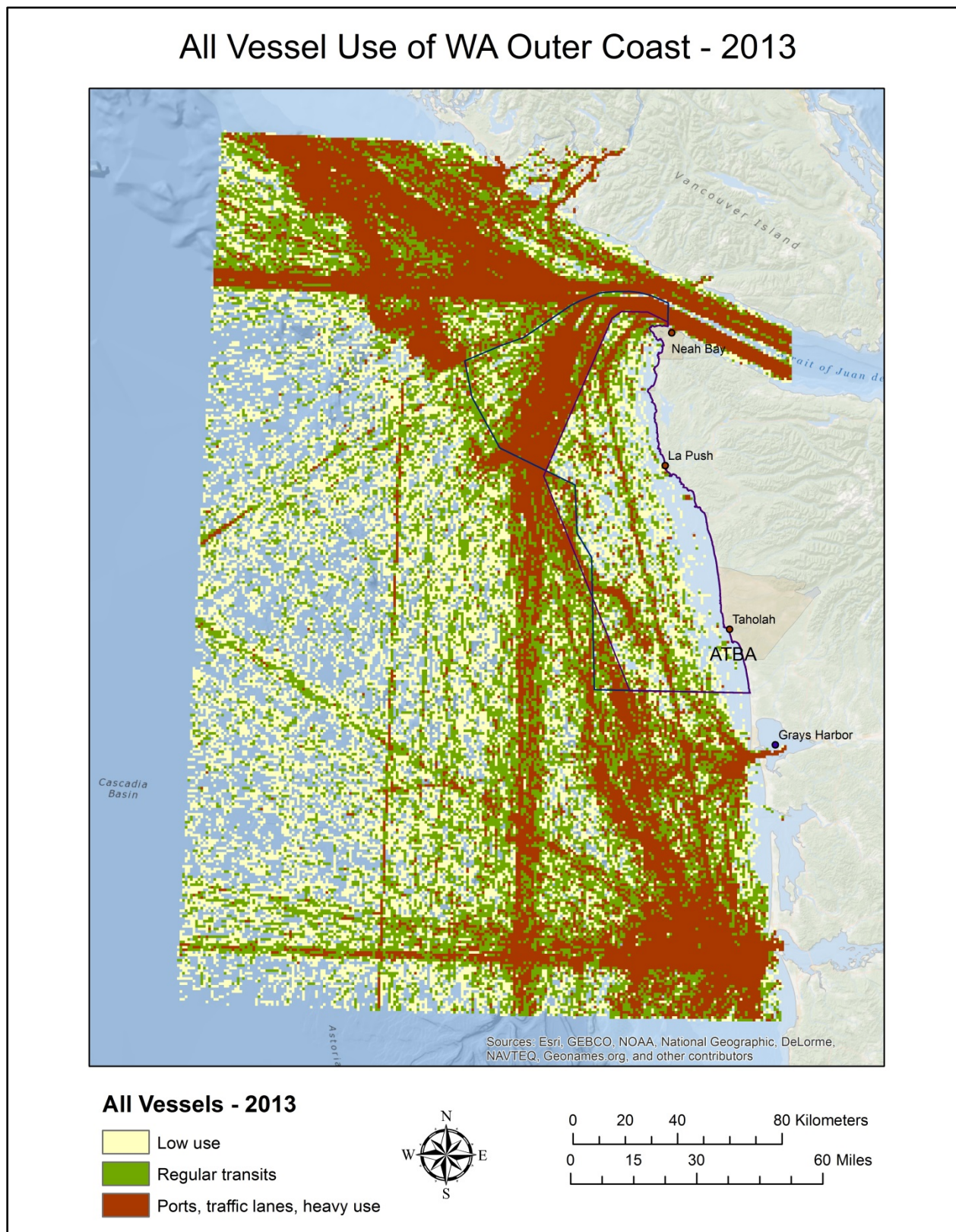
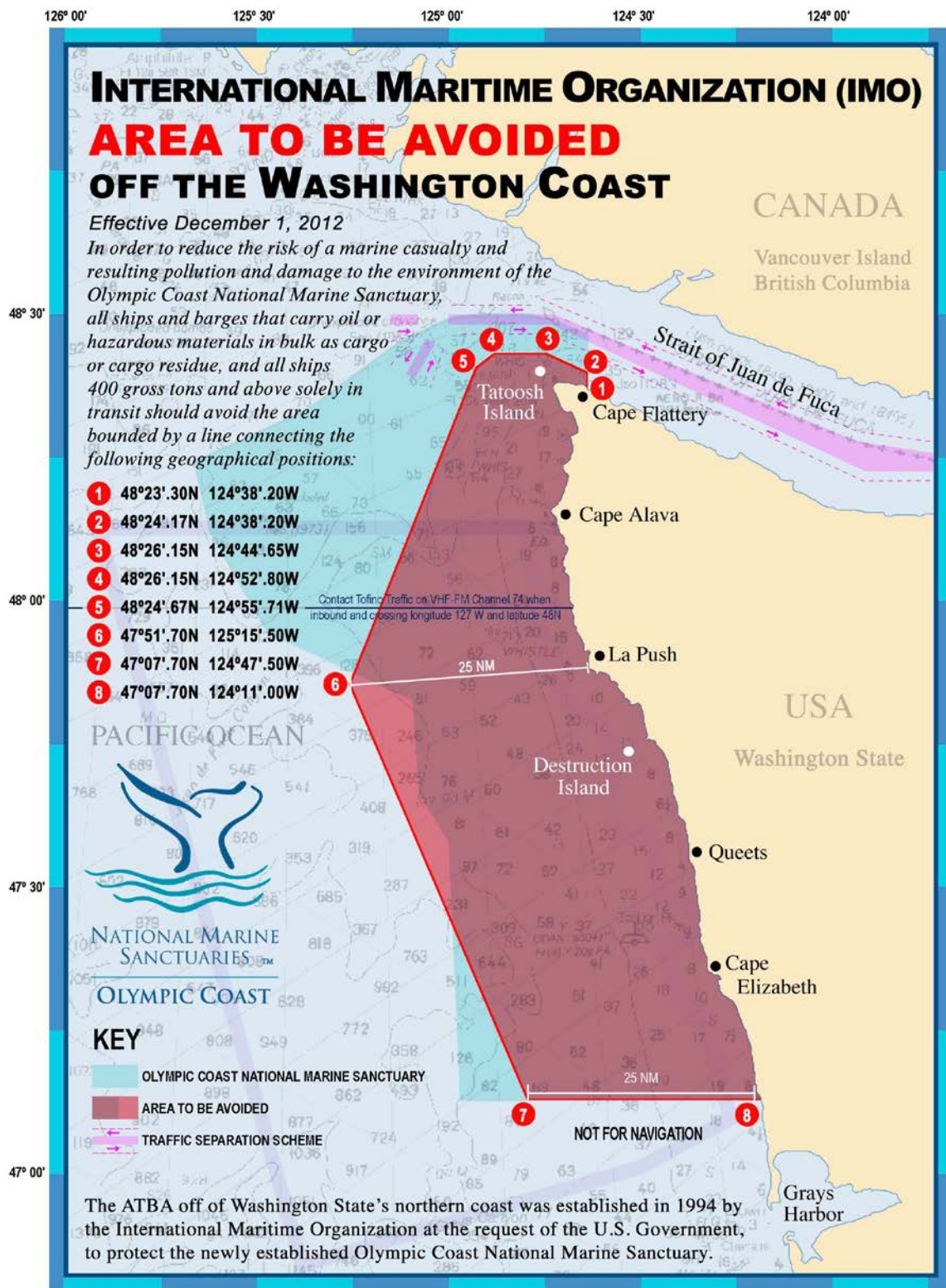


Figure 8: All vessel use of WA outer coast, 2013





11/27/2012

### Why does the IMO establish ATBAs?

- The IMO establishes ATBAs in defined areas where navigation is very hazardous or where it is important to avoid casualties.

### Why is it important for vessels to remain offshore and avoid this area?

- Reduces risk of vessel grounding on shore
- Reduces risk of collision with small vessels traveling close to shore
- Allows more time for assistance to arrive to help a disabled vessel
- Increases protection of coastal resources
- In the event of an oil spill:
  - Allows more time for spill cleanup and containment crews to arrive
  - Decreases the chance of spill impacts on the shoreline
  - Increases spill evaporation and degradation time

### How were the boundaries of the ATBA chosen?

- The boundaries were chosen to protect Sanctuary resources most at risk from vessel casualties.
- The boundaries are compatible with the Traffic Separation Scheme

### How was the vessel applicability chosen for the ATBA?

- Vessels greater than 400 gross tons were selected because of the substantial amount of bunker fuel that they carry and the risk that a spill would pose to sanctuary resources
- Vessels that carry oil or hazardous materials in bulk as cargo or cargo residue were selected due to the risk that a spill would pose to sanctuary resources
- The ATBA applies to vessels solely in transit and does not apply to vessels engaged in activities otherwise allowed in the sanctuary, such as fishing and research. The ATBA also does not apply to government vessels, although they are encouraged to avoid the area when solely in transit.

### Natural characteristics of the Olympic Coast National Marine Sanctuary:

- 128 species of seabirds within the Sanctuary
- 29 species of whales, dolphins, and other marine mammals reside or visit the area
- Washington State's only sea otter population
- Many species of fish and shellfish harvested for commercial, subsistence or recreational purposes
- Over 300 species of resident intertidal invertebrates, aquatic plants, and fish
- Diverse habitat types supporting complex food chains, including kelp communities, rocky intertidal zones, sand beaches, and offshore rocks
- Within the usual and accustomed fishing grounds of the Hoh, Makah, Quileute tribes and the Quinault Indian Nation
- Adjacent to Olympic National Park, Washington Islands National Wildlife Refuges, and Washington State Seashore Conservation Area

#### FOR MORE VESSEL TRAFFIC INFORMATION:

U.S.C.G. Sector Puget Sound, Waterways Management Division  
1519 Alaskan Way S, Seattle, WA 98134  
Phone: 206-217-6051  
e-mail: [SectorPugetSoundWWM@uscg.mil](mailto:SectorPugetSoundWWM@uscg.mil)  
<http://www.uscg.mil/d13/cvts/>

#### FOR MORE SANCTUARY INFORMATION OR COPIES OF THIS PUBLICATION:

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<http://olympiccoast.noaa.gov/protect/incidentresponse/atba.htm>

