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NORTH ATLANTIC RIGHT WHALE SIGHTING SURVEY (NARWSS)

The North Atlantic Right Whale Sighting Survey (NARWSS) is a NOAA Fisheries program that locates and records the seasonal distribution of North Atlantic right whales (*Eubalaena glacialis*) off the northeastern coast of the United States. NARWSS flights conducted in 2012 followed systematic track lines with randomized starting locations within 11 primary survey boxes: Cashes Ledge, Franklin Basin, Georges Basin, Georges Shoal, Great South Channel, Howell Swell, Jeffreys Ledge and Wildcat Knoll, Jordan Basin and Jeffreys Bank, Lindenkohl Basin and Truxton Swell, Stellwagen Bank and Wilkinson Basin, and Rhode Island Sound (Figure 1). During 2012, NARWSS flew 275 hours on 64 surveys including a survey of Roseway Basin and a directed survey to search for 2 mother-calf pairs reported south of Long Island NY. NARWSS detected 279 right whales (including repeats of the same individual), with 270 right whales sighted within survey blocks and 9 right whales sighted during transit to or from survey areas. No right whales were sighted on Roseway Basin or south of Long Island. Table 1 summarizes survey effort and right whale sightings by month. Figures 2a-d display the locations of right whales and survey effort by season. Table 2 provides a comparison of NARWSS flights, flight hours, and right whale sightings across years.

RIGHT WHALE SIGHTING ADVISORY SYSTEM (RWSAS)

In 2009, the Right Whale Sighting Advisory System (RWSAS) was re-engineered to support new regulations to reduce the threat of ship collisions with right whales (50 CFR Part 224). The regulations establish speed restrictions of 10 knots or less for all vessels 65 ft (19.8 m) or greater within Seasonal Management Areas (SMAs). The SMAs encompass high-risk vessel collision areas along the U.S. Atlantic seaboard where right whale sightings predictably and consistently occur each year [1]. When three or more right whales are sighted in close proximity outside of SMAs, a Dynamic Management Area (DMA) is established for 15 days (Clapham and Pace 2001 [2]). The size of the DMA depends on the number of right whales sighted in the area. Mariners are requested to either avoid the area around the DMA or travel through it at 10 knots or less. Unlike SMAs, compliance is voluntary for DMAs. Mariners are notified of DMAs via email, an interactive Google Map website [3], Broadcast Notices to Mariners (BNM), NOAA Weather Radio, the Mandatory Ship Reporting system (MSR), and the Whale Alert iPhone / iPad app. In 2012, there were 18 Dynamic Management Areas implemented (including extensions), 9 of which were triggered by NARWSS. The RWSAS continued collecting sighting reports from sources including aerial surveys, shipboard research surveys, commercial whale watch vessels, and opportunistic sources (Coast Guard, commercial ships, fishing vessels, and the general public). A report is defined as a unique sighting location or source, and may include multiple whales. The tally of reports therefore differs from a tally of individuals. The most common source of reports in 2012 was aerial surveys (288 reports - 50%; see Table 3). Most sightings were in the Northeast (New York through Maine), where the number of reports per month ranged from 116 in March to 2 in October (Table 3a). Most reports in the Mid-Atlantic (New Jersey through Virginia) were opportunistic (Table 3b and Figure 3b). Most reports in Canadian waters were from shipboard research surveys (Table 3c and Figure 3a). All data were entered into an Oracle database, with basic information available online. The website was updated with sightings and Management Area alerts on a daily basis (see [3] and [1] respectively). Logging acoustic detections was discontinued in 2009 due to their frequency. Instead, public and shipping interests were provided links to the automated acoustic detection websites maintained by the Bioacoustics Research Program at the Cornell Laboratory of Ornithology [4].

[1] <http://www.nmfs.noaa.gov/pr/shipstrike/>

[2] <http://www.nefsc.noaa.gov/publications/crd/crd0106/>

[3] <http://www.nefsc.noaa.gov/psb/surveys/>

[4] <http://www.listenforwhales.org/>

Table 1. Summary of North Atlantic Right Whale Sighting Survey (NARWSS) flights conducted in 2012 by month, including the survey block, number of flights, flight hours, and number of right whale sightings. All flights followed systematic track lines with randomized starting locations within survey blocks. Shaded cells indicate month and survey area in which a Dynamic Management Area (DMA) was in effect, triggered by a confirmed report of 3 or more right whales in close proximity outside of a Seasonal Management Area (SMA). These DMAs were triggered by reports from the NARWSS as well as other sources.

| Month | Total Number of Flights in each Survey Block | | | | | | | | | | | | Number of flights | Number of flight hours ¹ | Number of right whales ² | |
|---|--|----------------|---------------|---------------|---------------------|--------------|----------------|--------------|------------------|--------------------|---------------|----------------------|-------------------|-------------------------------------|-------------------------------------|-----------------|
| | Cashes Ledge | Franklin Basin | Georges Basin | Georges Shoal | Great South Channel | Howell Swell | Jeffreys Ledge | Jordan Basin | Lindenkohl Basin | Rhode Island Sound | Roseway Basin | South of Long Island | | | | Stellwagen Bank |
| January | 3 | | | | | | 2 | 2 | | 1 | | | | 8 | 31 | 49 |
| February | | | | | | | 1 | | | | | | | 1 | 5 | 18 |
| March | | | | | | | | | | | | | | | | |
| April | | | | | 2 | | | | | | | | | 2 | 10 | 53 |
| May | 1 | 1 | 1 | | 2 | | | | 1 | 1 | | | | 7 | 27 | 45 |
| June | | 1 | 2 | 1 | 4 | | 1 | | 1 | | | | | 10 | 42 | 37 |
| July | 2 | 1 | 1 | | 2 | 1 | 3 | 1 | | 1 | 1 | 1 | 2 | 16 | 73 | 64 |
| August | | | | | | | | | | | | | | | | |
| September | | | | | | | | | | | | | | | | |
| October | | | | | | | | | | | | | | | | |
| November | 1 | | | | | 1 | 1 | 2 | 1 | | | | 2 | 8 | 37 | 1 |
| December | 1 | 1 | 1 | | 2 | | 2 | 2 | | 2 | | | 1 | 12 | 50 | 3 |
| Number of flights | 8 | 4 | 5 | 1 | 12 | 2 | 10 | 7 | 3 | 5 | 1 | 1 | 5 | 64 | | |
| Number of flight hours¹ | 37 | 18 | 27 | 2 | 51 | 9 | 40 | 32 | 13 | 16 | 6 | 0 | 24 | | 275 | |
| Number of right whales² | 45 | 31 | 81 | 0 | 56 | 0 | 33 | 18 | 0 | 0 | 0 | 0 | 6 | | | 270 |

¹ Number of flight hours - includes time on transit, survey, and circling to photograph whales

² Number of right whales - includes duplicate individuals; does not include whales seen on transit

DMAs were also established in: Race Point in February; New Jersey, East of Boston and Vineyard Sound in April; Jeffreys Bank and Cape Cod Bay in December.

Table 2. Comparison of North Atlantic Right Whale Sighting Survey (NARWSS) flights conducted from 2002-2012 including the number of flights, flight hours, and the number of right whale sightings.

| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|------|------|------|------|------|------|------|------|------|------|------|
| Number of flights¹ | 103 | 101 | 82 | 129 | 86 | 62 | 53 | 66 | 59 | 55 | 64 |
| Number of flight hours² | 527 | 485 | 397 | 617 | 449 | 374 | 295 | 330 | 280 | 247 | 275 |
| Number of right whales³ | 798 | 453 | 294 | 831 | 411 | 841 | 639 | 584 | 476 | 473 | 270 |

¹Number of flights - includes various types of flights depending on the year (randomized systematic, directed and exploratory)

²Number of flight hours - includes time on transit, survey, and circling to photograph whales

Table 3. The total number of right whale sighting reports to the Right Whale Sighting Advisory System (RWSAS) in 2012 by reporting source and month within the (A) Northeast region (Maine through New York), (B) Mid-Atlantic region (New Jersey through Virginia), and (C) Canadian waters.

(a) Northeast

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total # | % |
|----------------------|-----------|-----------|------------|-----------|-----------|----------|-----------|----------|----------|----------|----------|-----------|------------|-------------|
| Aerial Survey | 33 | 69 | 72 | 50 | 5 | 5 | 12 | | | | 2 | 13 | 261 | 59% |
| Shipboard Survey | 6 | | 19 | 5 | 26 | | | | | | 2 | 7 | 65 | 14% |
| Whale Watch | | | 1 | 12 | | 1 | 1 | 3 | 3 | | | | 21 | 5% |
| Coast Guard | | 2 | 8 | 10 | 1 | | | | | | | | 21 | 5% |
| Commercial / Fishing | | | 2 | 2 | | 1 | 2 | | | 1 | | 1 | 9 | 2% |
| Opportunistic | 3 | 17 | 14 | 16 | 1 | 2 | 2 | 6 | 1 | 1 | | 4 | 67 | 15% |
| Total # | 42 | 88 | 116 | 95 | 33 | 9 | 17 | 9 | 4 | 2 | 4 | 25 | 444 | 100% |

(b) Mid-Atlantic

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total # | % |
|----------------------|----------|----------|----------|----------|----------|-----|-----|----------|----------|-----|----------|-----|-----------|-------------|
| Aerial Survey | | | | | | | | | | | | | | |
| Shipboard Survey | | | | | | | | | | | | | | |
| Whale Watch | | | | | | | | 2 | | | | | 2 | 10% |
| Coast Guard | | 2 | 2 | | | | | | 1 | | | | 5 | 25% |
| Commercial / Fishing | | | 1 | | 2 | | | | | | | | 3 | 15% |
| Opportunistic | 5 | | 1 | 2 | | | | 1 | | | 1 | | 10 | 50% |
| Total # | 5 | 2 | 4 | 2 | 2 | | | 3 | 1 | | 1 | | 20 | 100% |

(c) Canada

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total # | % |
|----------------------|-----|-----|-----|-----|-----------|-----------|----------|-----------|-----------|----------|----------|----------|------------|-------------|
| Aerial Survey | | | | | 4 | 14 | 8 | | | | 1 | | 27 | 25% |
| Shipboard Survey | | | | | 15 | 8 | | 30 | 23 | 1 | | | 77 | 73% |
| Whale Watch | | | | | | | | | | | | | | |
| Coast Guard | | | | | | | | | | | | | | |
| Commercial / Fishing | | | | | | | | | | | | | | |
| Opportunistic | | | | | | | | | | | 1 | 1 | 2 | 2% |
| Total # | | | | | 19 | 22 | 8 | 30 | 23 | 1 | 2 | 1 | 106 | 100% |

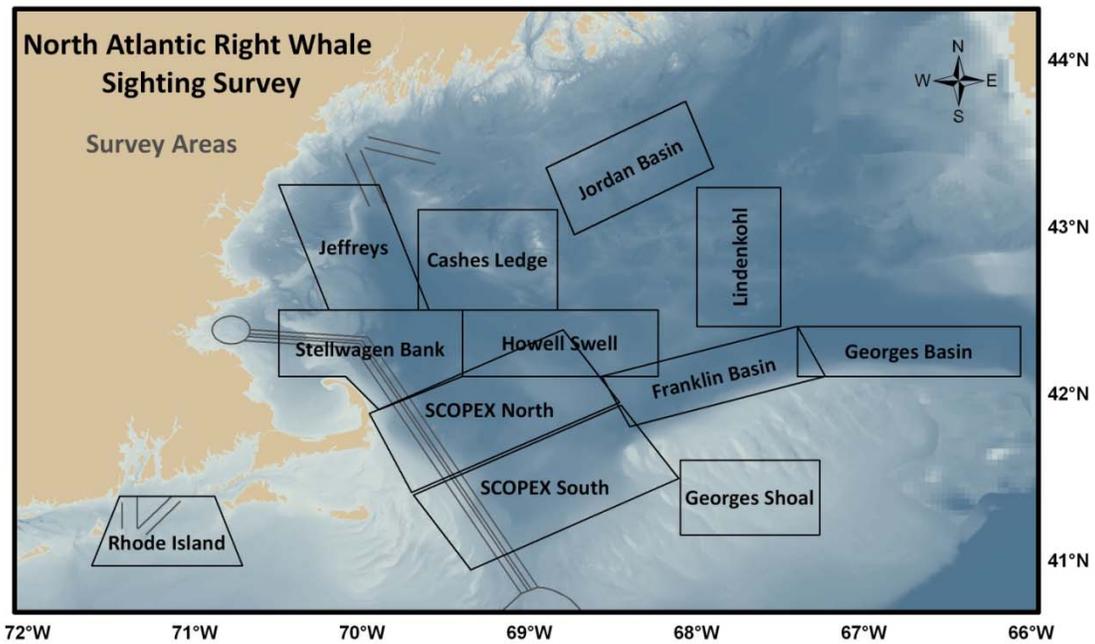


Figure 1. North Atlantic Right Whale Sighting Survey (NARWSS) blocks regularly surveyed in 2012. Shipping lanes are denoted in grey.

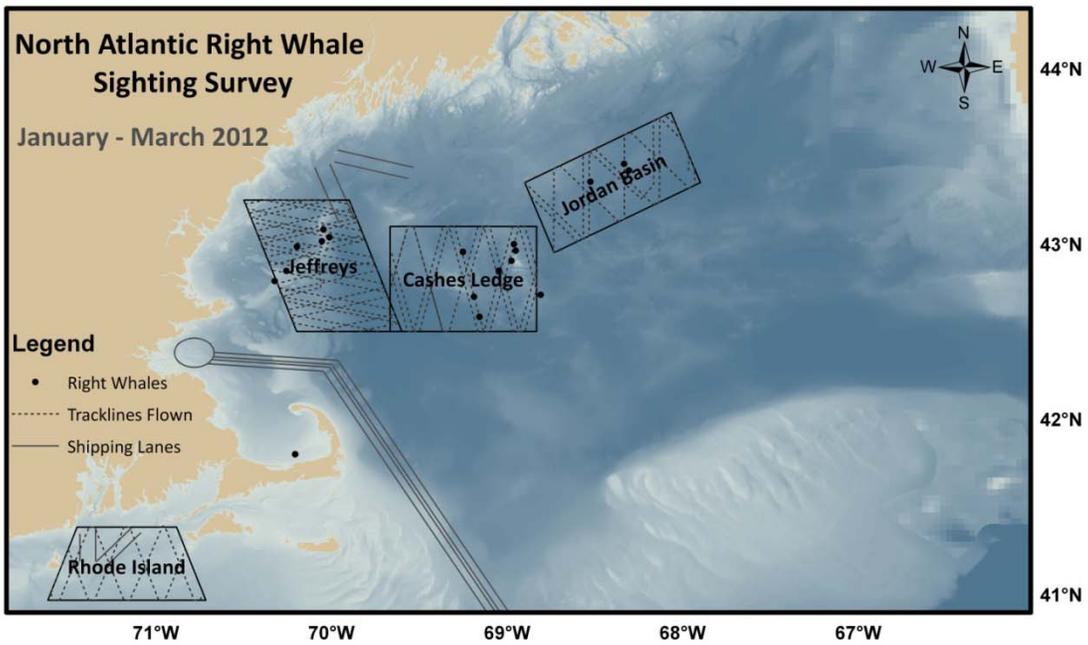


Figure 2a. North Atlantic Right Whale Sighting Survey (NARWSS) track lines and right whale sightings from January through March, 2012.

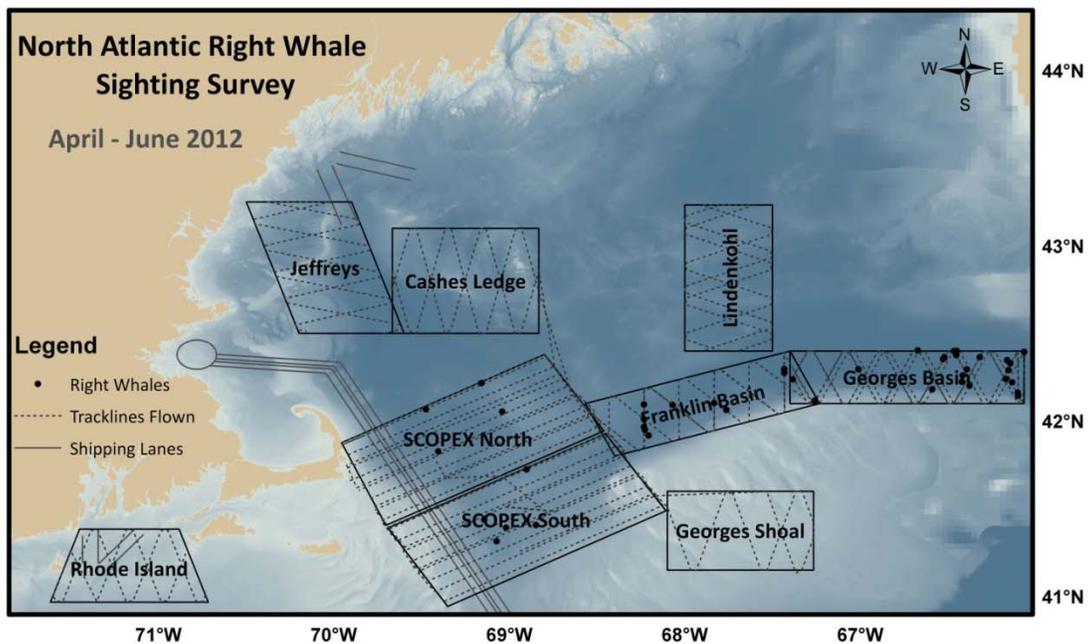


Figure 2b. North Atlantic Right Whale Sighting Survey (NARWSS) track lines and right whale sightings from April through June, 2012.

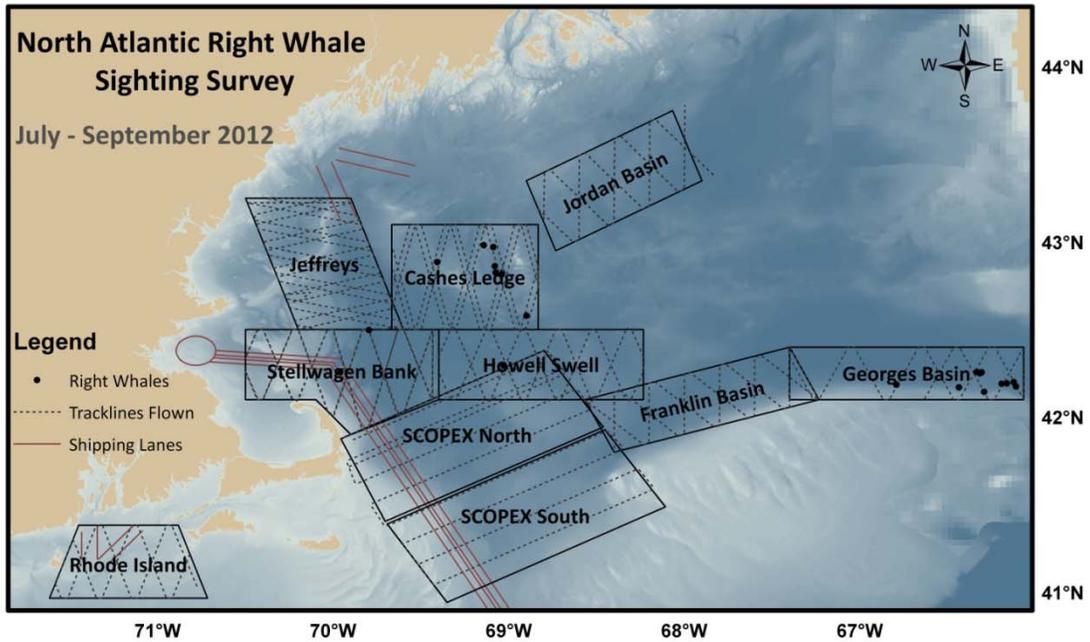


Figure 2c. North Atlantic Right Whale Sighting Survey (NARWSS) track lines and right whale sightings from July through September, 2012. Does not include July surveys of Roseway Basin and Long Island.

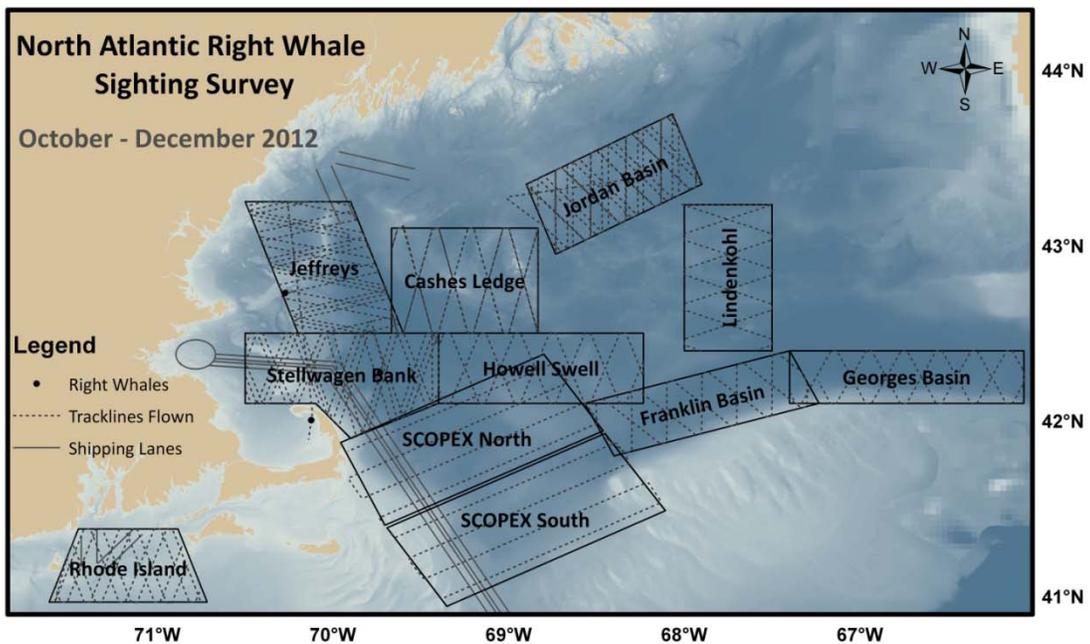


Figure 2d. North Atlantic Right Whale Sighting Survey (NARWSS) track lines and right whale sightings from October through December, 2012.

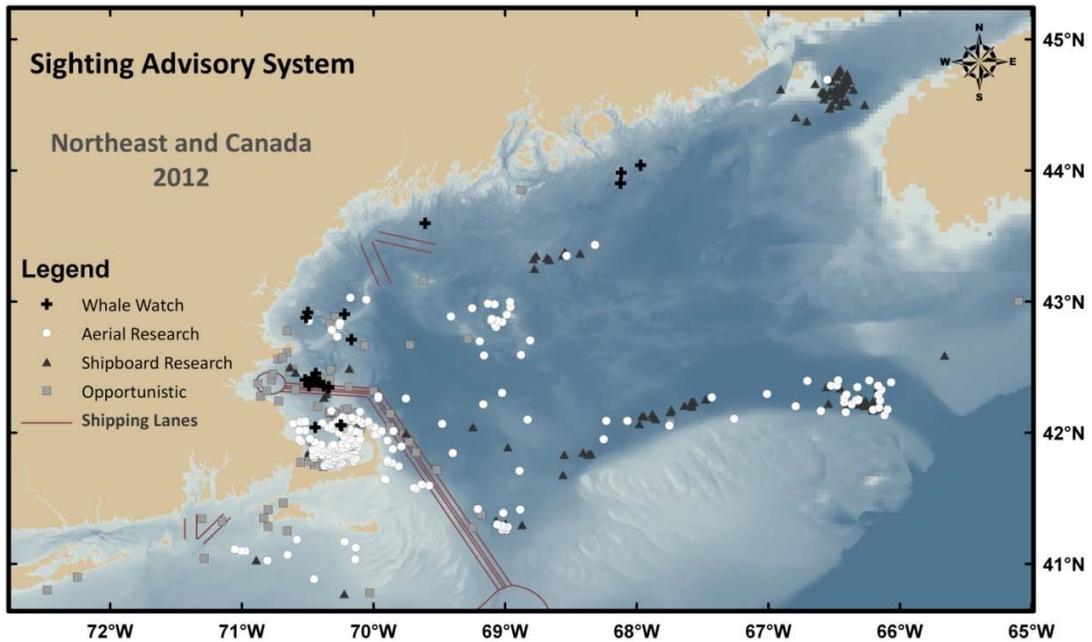


Figure 3a. Locations of all right whales reported to the Right Whale Sighting Advisory System (RWSAS) within Northeast US and Canadian waters in 2012, shown by reporting source. The category “Opportunistic” includes reports made by the general public, the Coast Guard, commercial ships, and fishing vessels. Unconfirmed reports were excluded from this figure.

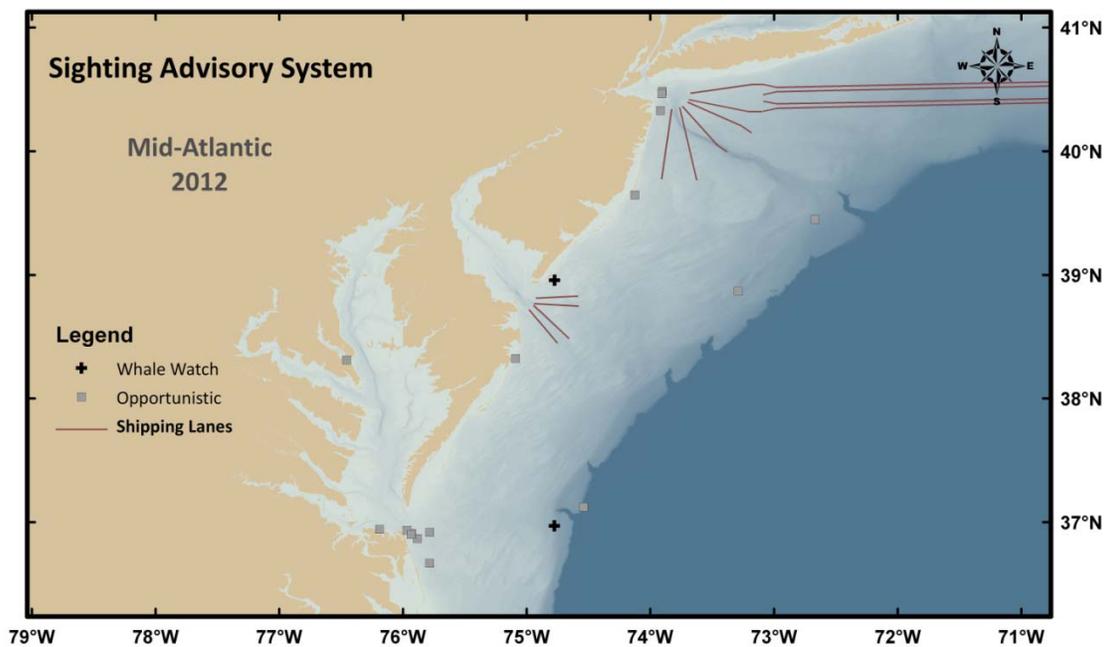


Figure 3b. Locations of all right whale sightings reported to the Right Whale Sighting Advisory System (RWSAS) within the Mid-Atlantic region in 2012, shown by reporting source. The category “Opportunistic” includes reports made by the general public, the Coast Guard, commercial ships, and fishing vessels. Unconfirmed reports were excluded from this figure.

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