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NORTH ATLANTIC RIGHT WHALE SIGHTING SURVEYS (NARWSS)

The North Atlantic Right Whale Sighting Survey (NARWSS) is a NOAA Fisheries program which 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 2010 followed randomized systematic track lines within ten primary survey blocks: Cashes Ledge, Franklin Basin, Georges Basin, Georges Shoal, Great South Channel, Howell Swell, Jeffreys Ledge, Jordan Basin, Lindenkohl Basin, and Stellwagen Bank. An additional survey block was added this year in Rhode Island Sound. During 2010, there were 59 surveys totaling 280 flight hours, including assistance in several disentanglement operations, a modified sawtooth survey over the NOPP acoustic buoy array in the Stellwagen Bank National Marine Sanctuary, and a directed flight over autonomous gliders in the Great South Channel. There were 476 right whales detected within survey blocks, and an additional 32 right whales sighted during transits to or from survey areas. Table 1 summarizes survey effort and right whale sightings by month. Figures 1a-c display the locations of right whales and survey effort by season. There were no surveys flown from June through September, as the aircraft was redirected to assist protected species surveys in the Gulf of Mexico following the Deepwater Horizon oil spill. 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 length 65 ft (19.8 m) or greater within Seasonal Management Areas (SMAs). The SMAs encompass high-risk areas along the US Atlantic seaboard where right whale sightings predictably and consistently occur each year¹. When three or more right whales are sighted outside of SMAs, Dynamic Management Areas (DMAs) are put in place for two weeks and encompass an area commensurate to the number of whales present. Mariners are notified of DMAs via email, the internet, Broadcast Notice to Mariners (BNM), NOAA Weather Radio, and the Mandatory Ship Reporting system (MSR), and are requested to reduce their speed when transiting through DMAs. Unlike SMAs, compliance is voluntary for DMAs. In 2010, 30 DMAs (including extensions) were triggered by validated reports, of which 20 came from NARWSS. The RWSAS continued collecting sighting reports from sources including aerial surveys, shipboard surveys, whale watch vessels, and opportunistic sources (Coast Guard, commercial ships, fishing vessels, and the general public). The most common source of reports in 2010 was aerial surveys (348 reports - 59%; Table 3). Most sightings were in the Northeast (New York through Maine), where the number of reports per month ranged from 11 in July to 224 in April (Figure 2a and Table 3a). All reports in the Mid-Atlantic (New Jersey through North Carolina) were from opportunistic sources (Figure 2b and Table 3b). Most reports in Canadian waters were from shipboard surveys (Figure 2a and Table 3c). Due to the frequency of acoustic detections, logging them as part of the RWSAS was discontinued in 2009. Instead, public and shipping interests were provided links to the automated acoustic detection websites maintained by the Bioacoustics Research Program at the Cornell Lab of Ornithology².

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

² <http://www.listenforwhales.org/>

Table 1. Summary of NARWSS flights conducted in 2010 by month, including the survey block, number of flights, flight hours, and right whale sightings. All flights followed randomized systematic track lines within survey blocks. Shaded cells indicate month and survey area in which a Dynamic Management Area (DMA) was triggered by a confirmed report of 3 or more right whales outside of a Seasonal Management Area (SMA). These DMAs were triggered by reports from the NARWSS as well as other sources.

Total Number of Flights in each Survey Block														
Month	Cashes Ledge	Franklin Basin	Georges Basin	Georges Shoal	Great South	Howell Swell	Jeffreys Ledge	Jordan Basin	Lindenkohl Basin	Rhode Island Sound	Stelwagen Bank	# Flights	Flight Hours ¹	#Egs ²
January	1						3	2			1	7	30.2	128
February	1						1	1			1	4	15.4	0
March	1			1	4				1		1	8	36.6	12
April				1	4	2			1	1	2	11	44.9	113
May	1				5	1	1			1		9	48.0	108
June												0	0.0	0
July												0	0.0	0
August												0	0.0	0
September												0	0.0	0
October	1	1		1	1	1	1	1	1		1	9	44.7	17
November	1						1	3			1	6	32.1	55
December	2						2	1				5	28.4	43
# Flights	8	1	0	3	14	4	9	8	3	2	7	59	280	476
Flight Hours¹	37	4.4	0.0	13.1	67.3	16.7	41.8	46.8	12.9	9.5	30.7	280		
# Egs²	73	0	0	1	96	15	32	153	0	102	4	476		

¹ Flight Hours - number of flight hours (includes time on transit, survey, and circling to photograph whales)

² # Egs - number of right whales sighted (includes duplicate individuals; does not include whales seen on transit)

There were also DMAs in Nantucket during the months of February, March, and April of 2010.

Table 2. Comparison of NARWSS flights conducted from 2002-2010 including the number of flights, flight hours, and the number of right whale sightings.

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010
# Flights ¹	103	101	82	129	86	62	53	66	59
Flight Hours ²	527	485	397	617	449	374	295	330	280
# Egs ³	798	453	294	831	411	841	639	584	476

¹# Flights – includes various types of flights depending on the year (randomized systematic, directed and exploratory)
²Flight Hours - number of flight hours (includes time on transit, survey, and circling to photograph whales)
³# Egs - number of right whales sighted (includes duplicate individuals; does not include whales seen on transit)

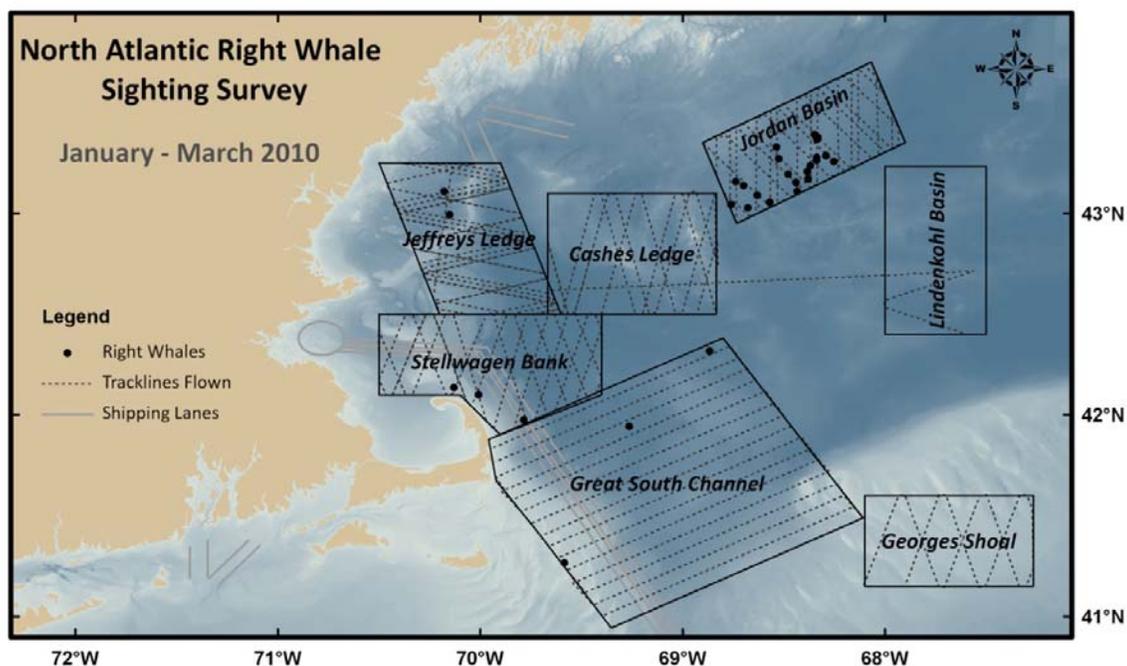


Figure 1a. NARWSS track lines and right whale sightings from January through March, 2010.

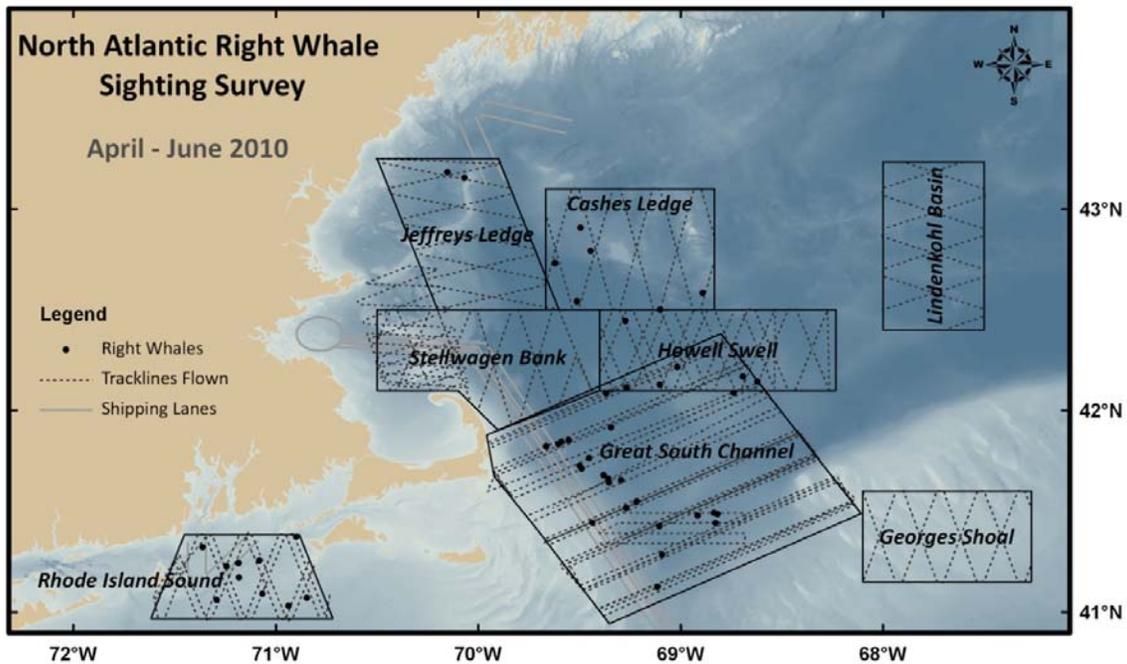


Figure 1b. NARWSS track lines and right whale sightings from April through June, 2010. Lines to the northwest of Stellwagen Bank were a modified sawtooth to cover the NOPP acoustic buoy array. East-west lines in the Great South Channel were a directed flight over an autonomous glider.

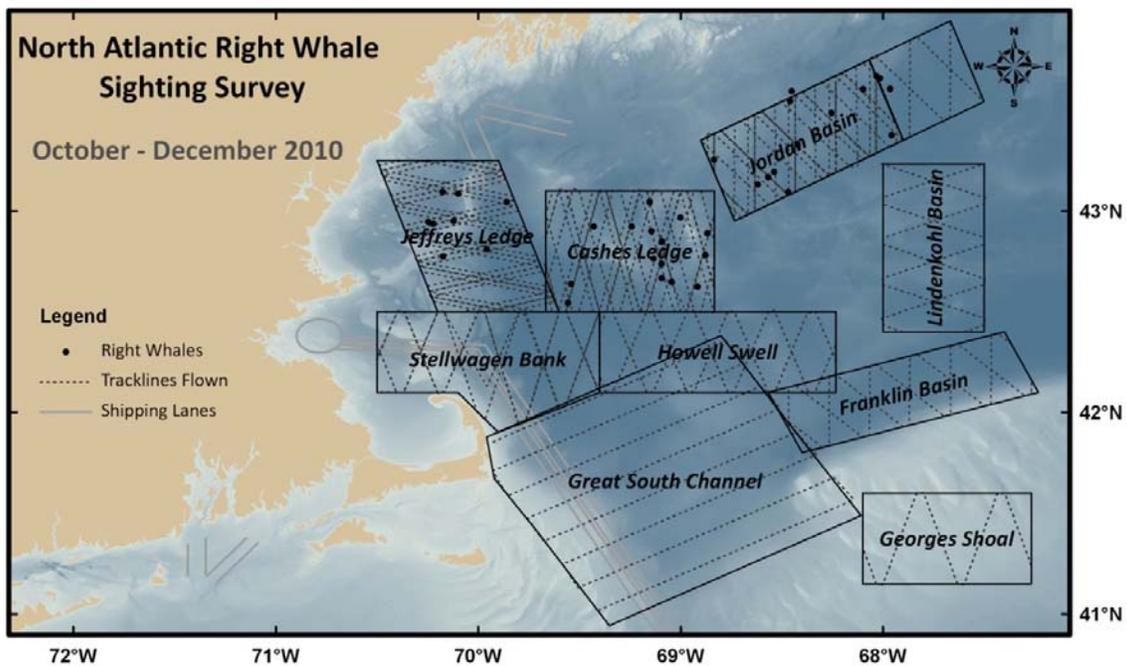


Figure 1c. NARWSS track lines and right whale sightings from October through December, 2010.

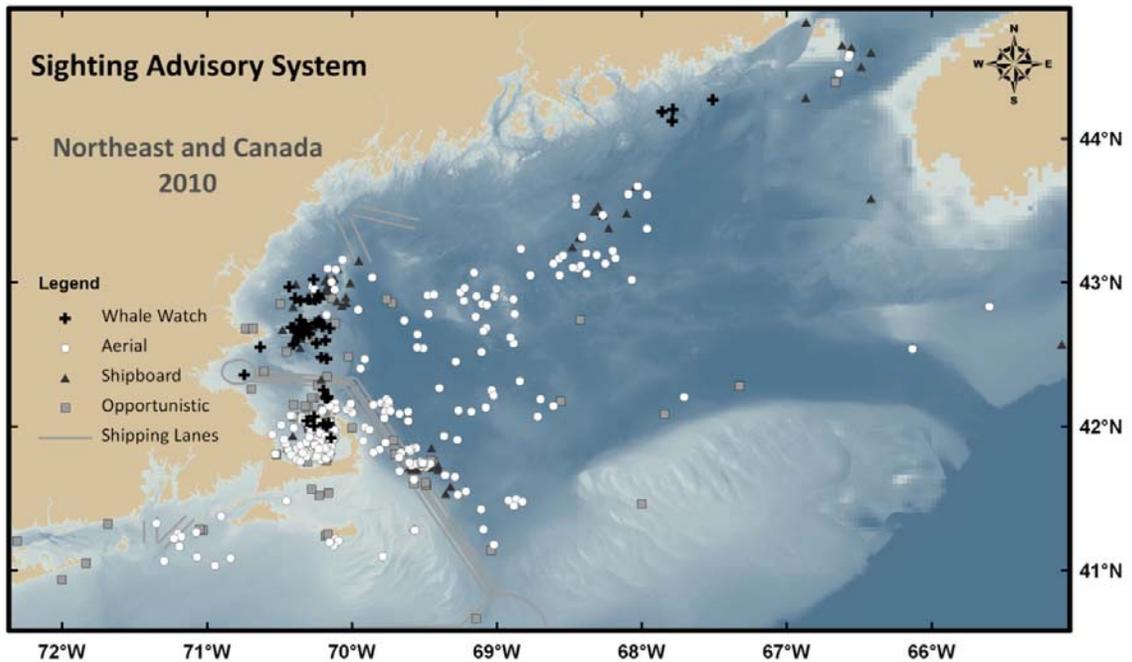


Figure 2a. Locations of all right whale sightings reported to the RWSAS within Northeast US and Canadian waters in 2010, shown by reporting source. The category 'Opportunistic' includes reports made by the general public, the Coast Guard, commercial ships, and fishing vessels. Unconfirmed reports were excluded from this figure.

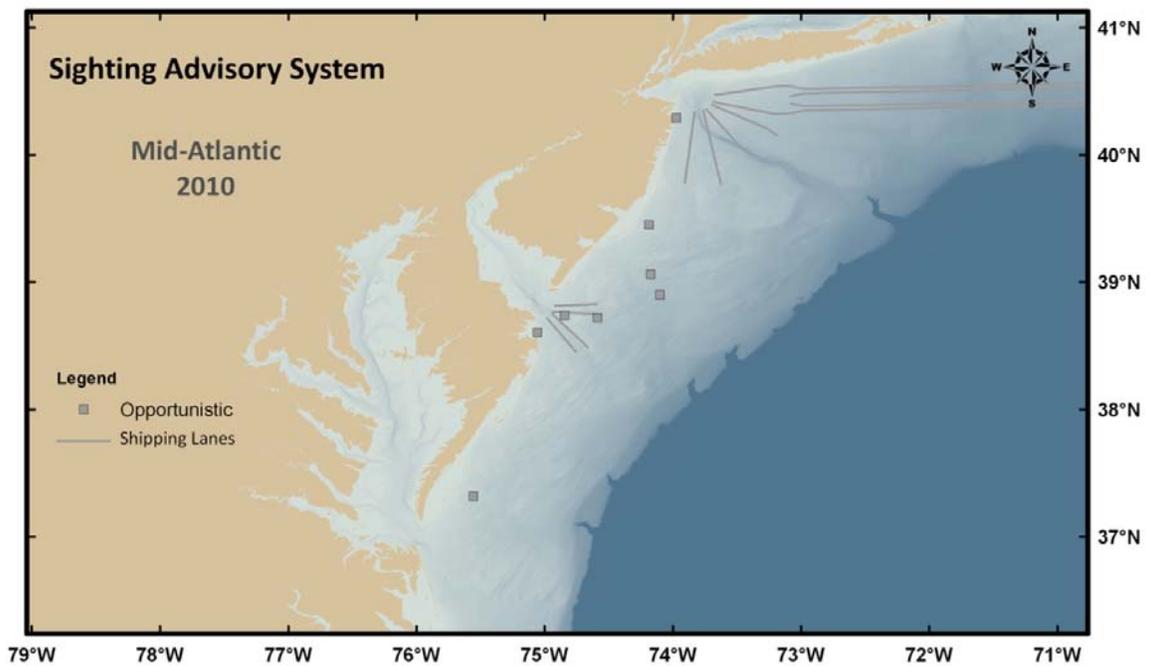


Figure 2b. Locations of all right whale sightings reported to the RWSAS within the Mid-Atlantic region in 2010, shown by reporting source. The category 'Opportunistic' includes reports made by the general public, the Coast Guard, commercial ships, and fishing vessels. Unconfirmed reports were excluded from this figure.

Table 3. The total number of right whale sighting reports to the RWSAS in 2010 by reporting source and month within the (A) Northeast region- Maine through New York, (B) Mid-Atlantic region- New Jersey through North Carolina, and (C) Canadian waters.

(A) Northeast

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total #	%
Aerial	16	16	55	161	54	1		3	2	6	20	14	348	61%
Shipboard		1	3	31	11			4	6	19	11	2	88	15%
Whale Watch				7		2	7	12	15	9			52	9%
Coast Guard			1	5	6	5			2				19	3%
Commercial / Fishing	1	1			6		1	3					12	2%
Opportunistic	3	3	8	20	2	5	3	2	1	3	2		52	9%
Total #	20	21	67	224	79	13	11	24	26	37	33	16	571	100%

(B) Mid-Atlantic

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total #	%
Aerial														0%
Shipboard														0%
Whale Watch														0%
Coast Guard	1			1	1								3	43%
Commercial / Fishing														0%
Opportunistic	1		2									1	4	57%
Total #	2		2	1	1							1	7	100%

(C) Canada

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total #	%
Aerial														0%
Shipboard								6	1				7	88%
Whale Watch														0%
Coast Guard														0%
Commercial / Fishing					1								1	13%
Opportunistic														0%
Total #					1			6	1				8	100%

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