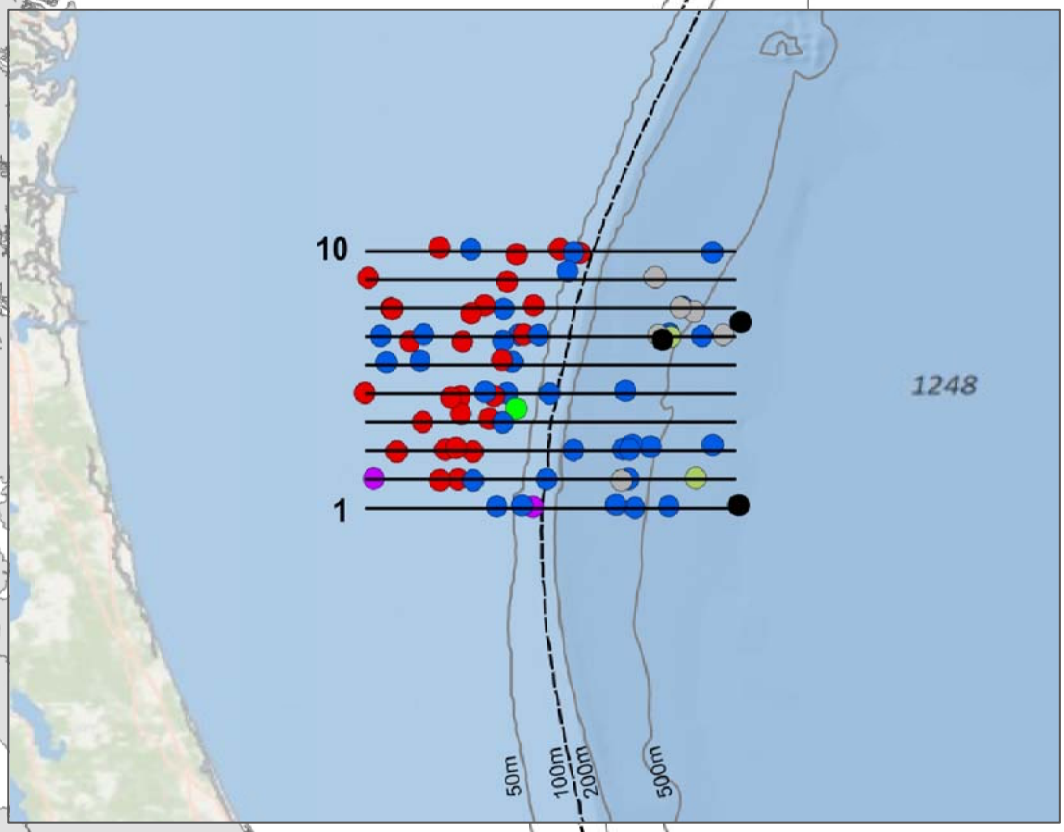
Jacksonville Aerial Surveys
Annual Report to the US NAVY



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Summary of JAX Aerial Surveys

This document is an annual progress report to the U.S. Department of the Navy on aerial surveys conducted in the offshore waters of Jacksonville, Florida between January 2012 and December 2012. The goal was to survey the entire site (10 tracklines) twice per calendar month, which was achieved in January, April, May and July. In September and November 16 tracklines were flown while in March 8 lines were surveyed. During the months of February, June, August, October and December of 2012 no surveys were conducted due to unfavorable weather conditions. A total of 120 tracklines covering 9853 km were surveyed across seven months.

A total of 75 sightings of 1153 cetaceans were recorded while on effort in the study area (Table 1, Figure 1). Six species of cetaceans were observed including: bottlenose dolphins (*Tursiops truncatus*; 35 sightings of 351 individuals), Atlantic spotted dolphins (*Stenella frontalis*; 28 sightings of 657 individuals), Risso's dolphins (*Grampus griseus*; six sightings of 75 individuals), rough-toothed dolphins (*Steno bredanensis*; two sightings of 63 individuals), short-finned pilot whales (*Globicephala macrorhynchus*; one sightings of 2 individuals), and a single humpback whale (*Megaptera novaeangliae*). During two sightings (totaling four individuals) dolphin species identity could not be established with 100 percent certainty (*i.e.* "unidentified delphinids"). Also two off effort sightings short-finned pilot whales were observed just offshore of the survey site while transiting between tracklines. Cetacean sighting rates varied across months with peaks in January and July.

A total of 319 sea turtles were recorded during the study period. Of these turtle sightings, 274 were identified as loggerheads (*Caretta caretta*), 17 as leatherbacks (*Dermochelys coriacea*), and 28 as "unidentified sea turtles" (Tables 10 and 11, Figure 12 and 13). Sea turtles were detected during each day of survey effort, with higher abundances observed in March and July (Figures 14a-c).

As has been demonstrated in our earlier reports and in other aerial survey studies, sightings drop off dramatically as the Beaufort Sea State increases (e.g. Gómez de Segura *et al*. 2006, DeMaster *et al.* 2001, McAlarney *et al.* 2011). Effort corrected cetacean and sea turtle sightings were higher in sea states of 1 or 2 than in sea states $\geq$ 3 (Figures 4b & 14b).

In addition to cetaceans and sea turtles, other pelagic marine vertebrates including ocean sunfish and multiple species of sharks and rays were observed (Tables 12-16, Figure 15). Military, commercial, and recreational vessel traffic was also recorded inside the survey area (Tables 17-19, Figures 16-18).

Table 1. Total number of sightings and individuals for each species by month from January 2012 to December 2012 for the Jacksonville, Florida survey area.

		2012												Total
		January	February	March	April	May	June	July	August	September	October	November	December	
Tursiops truncatus	# of Sightings	14		2	3	1		7		5		3		35
	# of Individuals	185		12	39	20		36		49		10		351
Stenella frontalis	# of Sightings	5		4	3	6		5		4		1		28
	# of Individuals	150		66	108	131		90		84		28		657
Grampus griseus	# of Sightings	1						3		1		1		6
	# of Individuals	5						49		13		8		75
Globicephala macrorhynchus	# of Sightings					1								1
	# of Individuals					2								2
Steno bredanensis	# of Sightings							1				1		2
	# of Individuals							35				28		63
Megaptera novaeangliae	# of Sightings	1												1
	# of Individuals	1												1
Unidentified delphinid	# of Sightings									1		1		2
	# of Individuals									2		2		4
	Total sightings	21	0	6	6	8	0	16	0	11	0	7	0	75
	Total individuals	341	0	78	147	153	0	210	0	148	0	76	0	1153

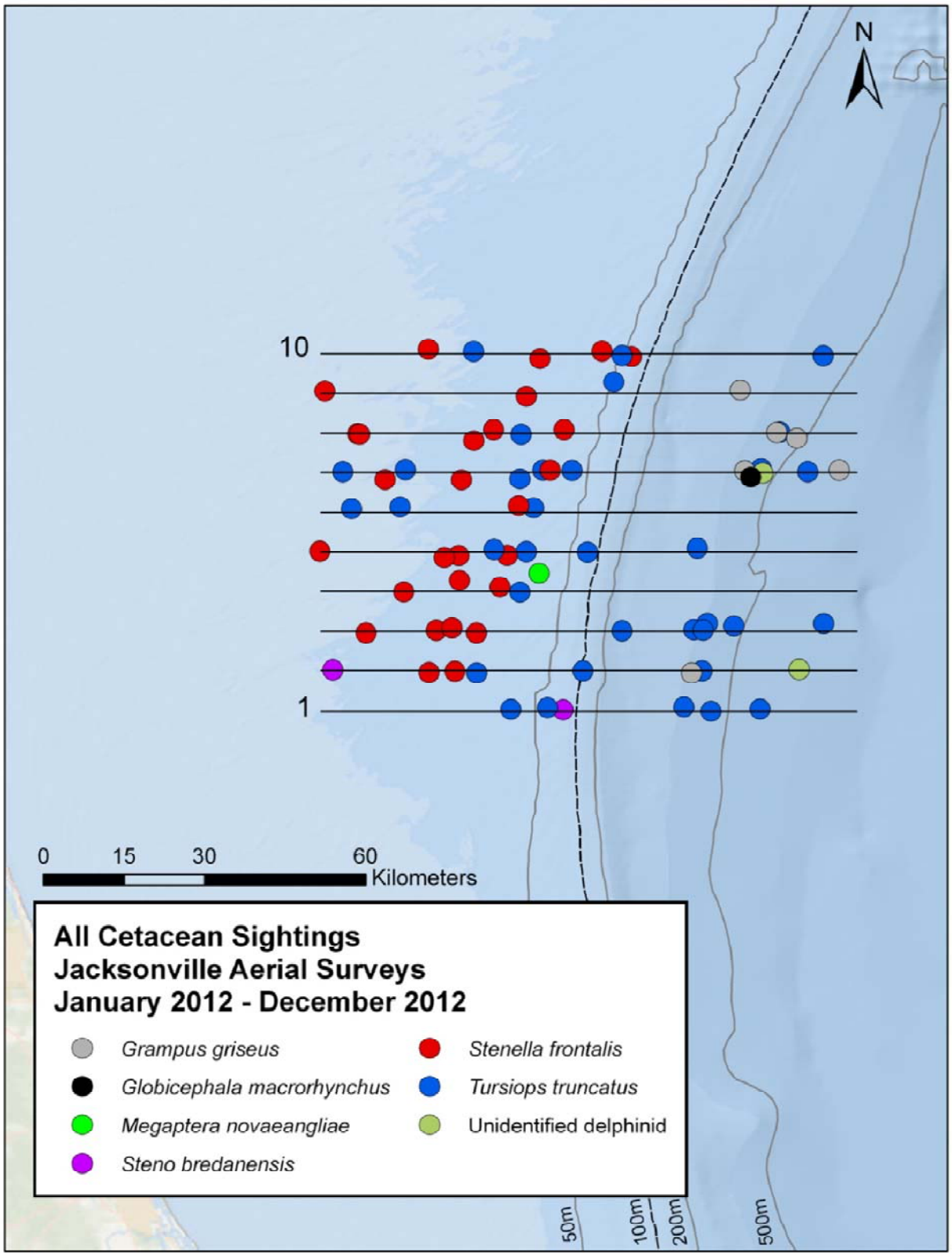


Figure 1. All cetacean sightings during aerial surveys conducted in Jacksonville, Florida from January 2012 to December 2012.

Methodology

Survey design and logistics

The Jacksonville offshore survey area consists of ten 86 km long tracklines spaced 7.4 km apart covering 5727 km². (Table 2, Figure 2). The site is located offshore of the primary calving grounds for the highly endangered North Atlantic right whale (*Eubalaena glacialis*), which is located off the coast of the southeastern US (reviewed in Waring *et al.* 2010, but see Foley *et al*. 2011). Aerial Early Warning System (EWS) surveys have been conducted in northern Florida and southern Georgia for the past 16 years to warn mariners in real time about the presence of right whales in the region. These surveys are conducted on a daily basis, weather permitting, from December through March. Aerial survey effort in the Jacksonville offshore survey area provided additional coverage, both of the surrounding geographic region and during the months preceding and following the EWS surveys.

Safety and communication protocols for transiting through the EWS areas were established in January 2009 when offshore survey effort began. The offshore survey team met with researchers from the Florida Wildlife Service prior to the start of EWS surveys. The protocols outlined: coordination between survey team leaders on the morning of a survey, plane to plane communication at the start of an aerial survey and the maintenance of a 1000 m altitude for the offshore survey plane while transiting through the EWS area between December and March. The protocols also established the 9.3 km "buffer zone" between the western margin of the offshore survey area and the eastern margin of the EWS surveys (Figure 2). We have maintained these safety and communication protocols throughout the reporting period.

All aerial surveys were based out of the local Fixed-base Operator (FBO) in Fernandina Beach, Florida. Prior to an aerial survey, pilots with Orion aviation would contact SeaLord at FACFASJAX in Jacksonville, Florida, to get event codes for passage out of and into U.S. territorial waters.

Table 2. Coordinates for trackline end points for the Jacksonville, Florida survey area.

Transect Line	Eastern Waypoint		Western Waypoint	
Line	Latitude	Longitude	Latitude	Longitude
1	29.965011	-79.801416	29.965011	-80.700000
2	30.031263	-79.801416	30.031263	-80.700000
3	30.099694	-79.801416	30.099694	-80.700000
4	30.165763	-79.801416	30.165763	-80.700000
5	30.232227	-79.801416	30.232227	-80.700000
6	30.299477	-79.801416	30.299477	-80.700000
7	30.365152	-79.801416	30.365152	-80.700000
8	30.432797	-79.801416	30.432797	-80.700000
9	30.498866	-79.801416	30.498866	-80.700000
10	30.566233	-79.801416	30.566233	-80.700000

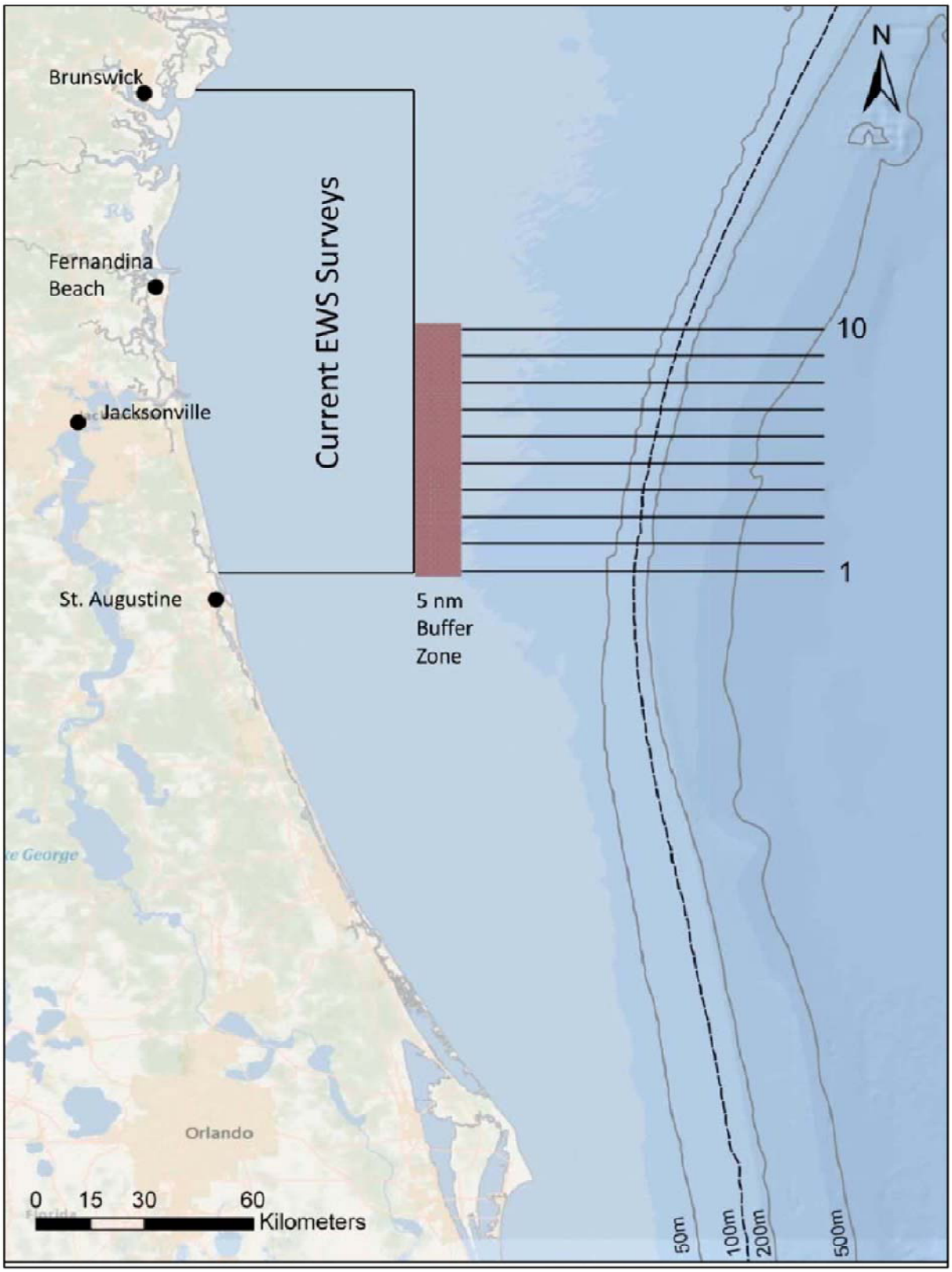


Figure 2. Tracklines 1-10 that compose the Jacksonville, Florida survey site.

Results

A total of 120 tracklines comprising 9853 km were surveyed during the 12 month reporting period from January 2012 through December 2012. Minimum coverage of ten tracklines was achieved in 6 of 12 months, and in March eight tracklines were flown. Unfavorable survey conditions precluded surveys from being conducted during the other five months (Table 3).

An average Beaufort Sea State (BSS) value was calculated each survey month to compare conditions across time. The average was calculated by taking the distance flown at each sea state multiplied by the BSS number (*i.e.* BSS 1 distances would be multiplied by 1). These values were summed and divided by the total distance flown that month. Survey effort was terminated when BSS values persisted above a 4. Survey conditions ranged from a BSS 1 to 5, with the majority of the surveys flown in a BSS 3 (51.1%) (Figures 3a-c). Cetacean sighting rates dropped off dramatically at sea state greater than two. Low sighting rates in BSS 1 is likely a result of limited survey time spent in these conditions rather than decreased detection of cetaceans (Figures 4a-c).

The mean sighting distance for all cetacean sightings was 0.68 km with greater than 75% of sightings occurring within 1 km of the trackline (Figure 5a). The mean sighting distance varied less than 0.3 km across the BSS values recorded (Figure 5b). Average sighting distances were calculated after removing outliers and excluded the single sighting where a sighting distance was not obtained. An outlier was defined as a value in excess of three standard deviations from the mean. Three sighting distances were removed from these calculations as outliers (*i.e.* sighting distances calculated at 2.09, 2.41 and 4.07 km from the trackline).

Table 3. Tracklines, km flown and Hobbs hours during aerial surveys of the Jacksonville, Florida survey area from January 2012 to December 2012. Trackline numbers are listed in the order in which they were flown.

Date	Tracklines Flown AM	Tracklines Flown PM	Total km Flown	Hobbs Hours
23-Jan-2012	NA	10 to 5	478.68	4.5
24-Jan-2012	1 to 6	7, 8, 9, 6	850.97	7.9
25-Jan-2012	5 to 8	N/A	328.30	4.4
29-Mar-2012	8 to 5	4 to 1	551.50	6.0
18-Apr-2012	10 to 5	1 to 4	861.15	6.9
19-Apr-2012	1 to 6	7 to 10	862.00	6.4
16-May-2012	10 to 5	4 to 1	751.75	6.3
17-May-2012	5 to 10	4 to 1	847.55	7.7
6-Jul-2012	10 to 5	4 to 1	858.70	7.6
7-Jul-2012	1 to 6	7 to 10	841.05	7.4
22-Sep-2012	5 to 10	4 to 1	769.60	7.5
23-Sep-2012	5 to 10	N/A	514.70	4.1
4-Nov-2012	1 to 6	10 to 7	844.15	7.2
5-Nov-2012	10 to 5	N/A	493.25	3.4
		Total	9853.35	87.3

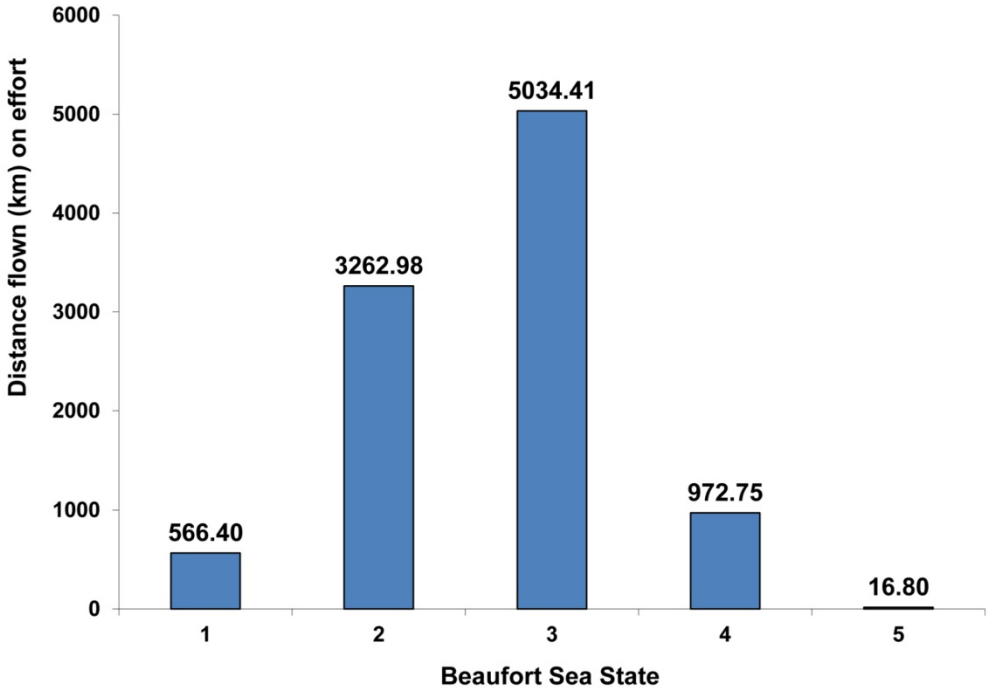


Figure 3a. Total distance surveyed per Beaufort Sea State from January 2012 to December 2012 during aerial surveys in the Jacksonville, Florida survey area.

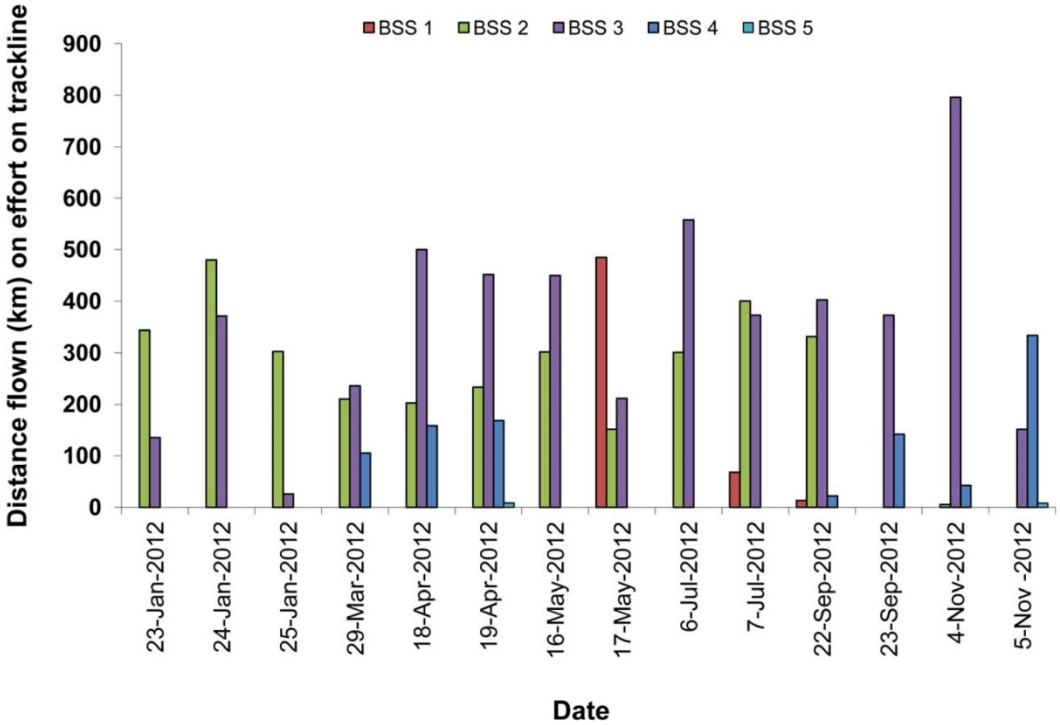


Figure 3b. Effort by Beaufort Sea State for each day from January 2012 to December 2012 during aerial surveys in the Jacksonville, Florida survey area.

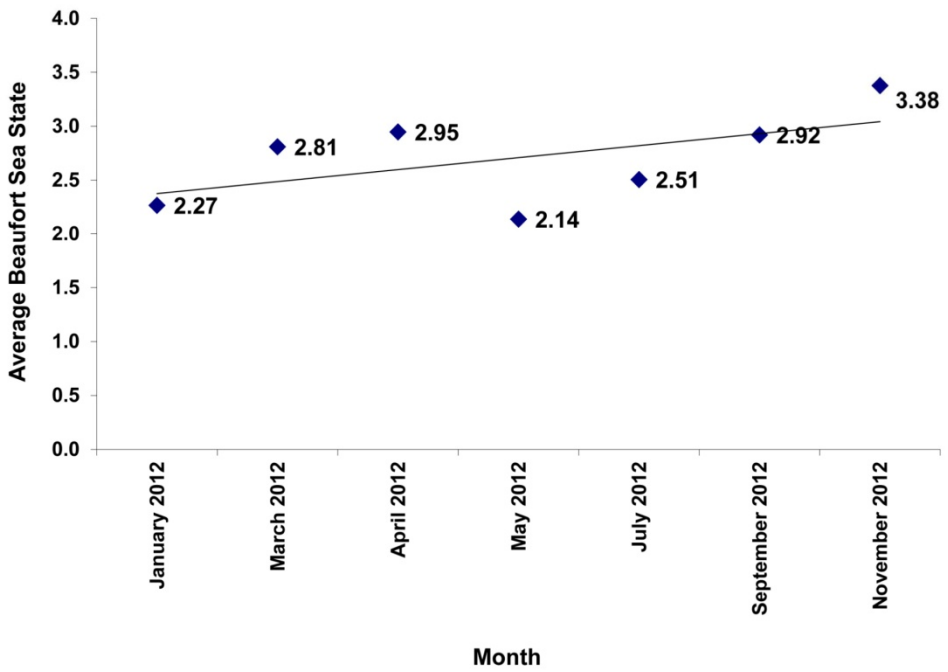


Figure 3c. Average Beaufort Sea State for each month from January 2012 to December 2012 during aerial surveys in the Jacksonville, Florida survey area. Values were calculated using the formula AvgBSS = [(Distance @ BSS 1*1)+…/Total distance flown that day].

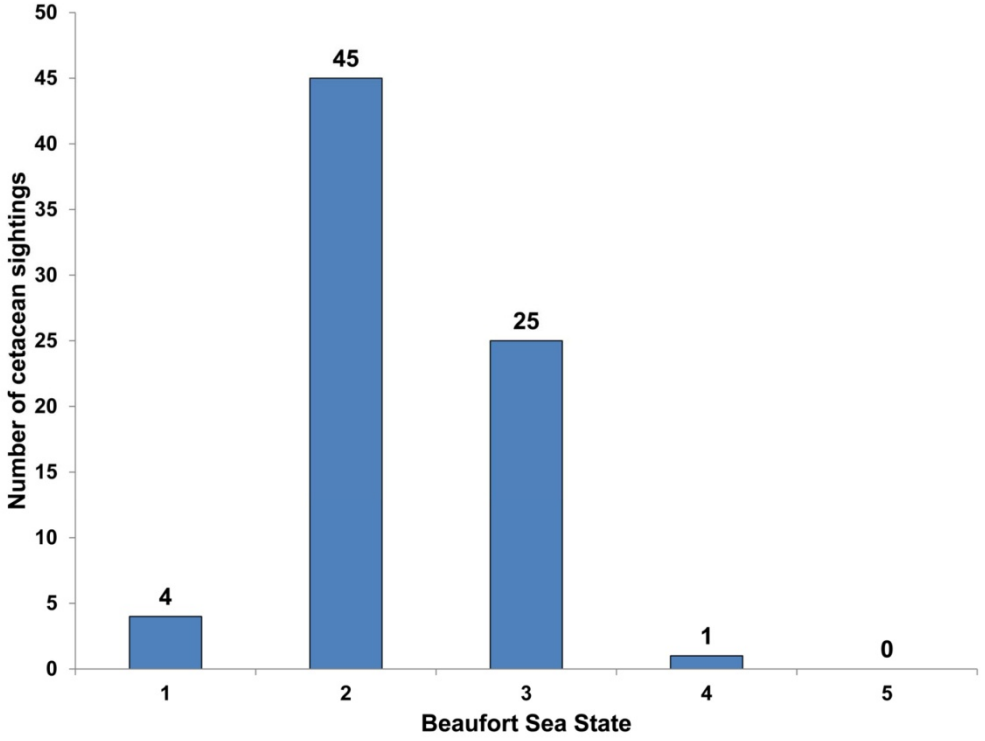


Figure 4a. Number of cetacean sightings per Beaufort Sea State from January 2012 to December 2012 during aerial surveys in the Jacksonville, Florida survey area.

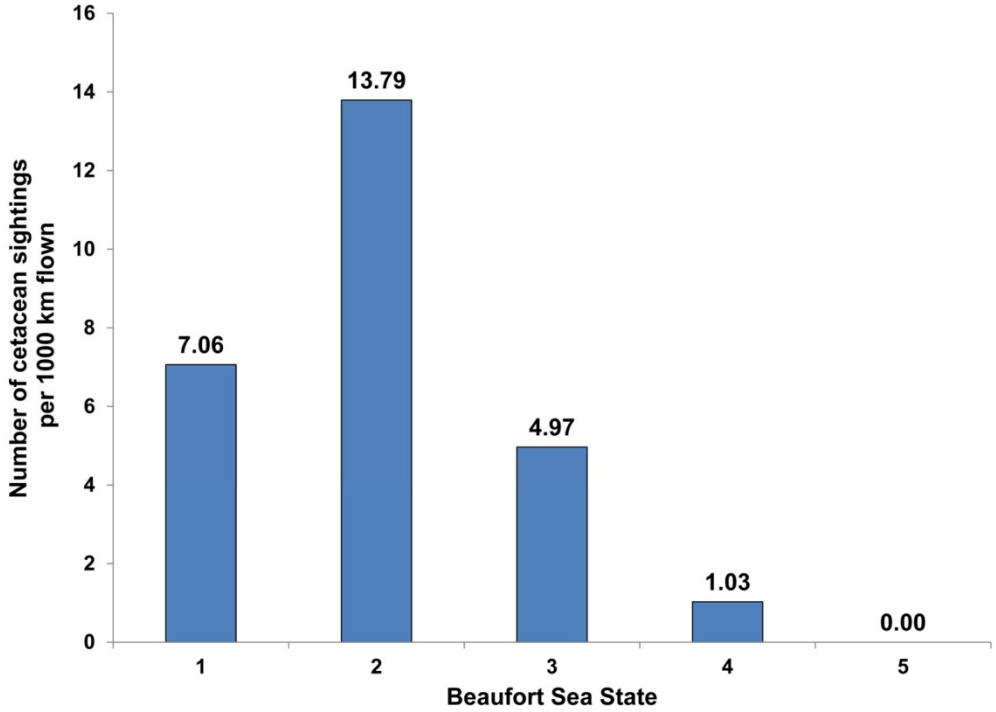


Figure 4b. Cetacean sightings per 1000 km flown by Beaufort Sea State from January 2012 to December 2012 during aerial surveys in the Jacksonville, Florida survey area.

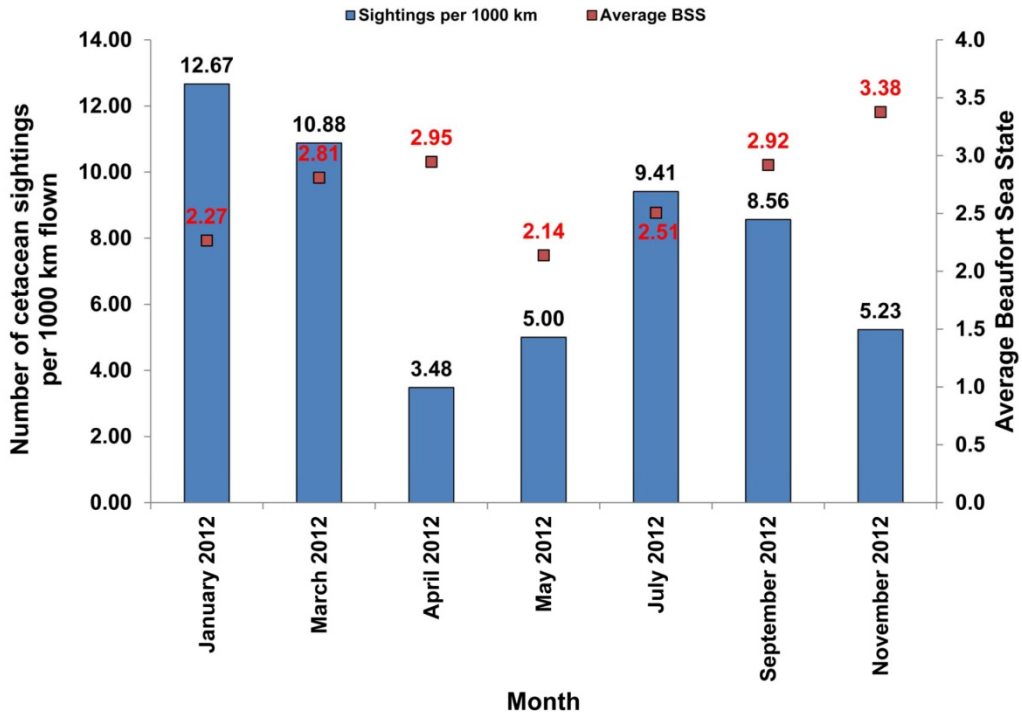


Figure 4c. Cetacean sightings per 1000 km surveyed and the average Beaufort Sea State per month from January 2012 to December 2012 during aerial surveys in the Jacksonville, Florida survey area.

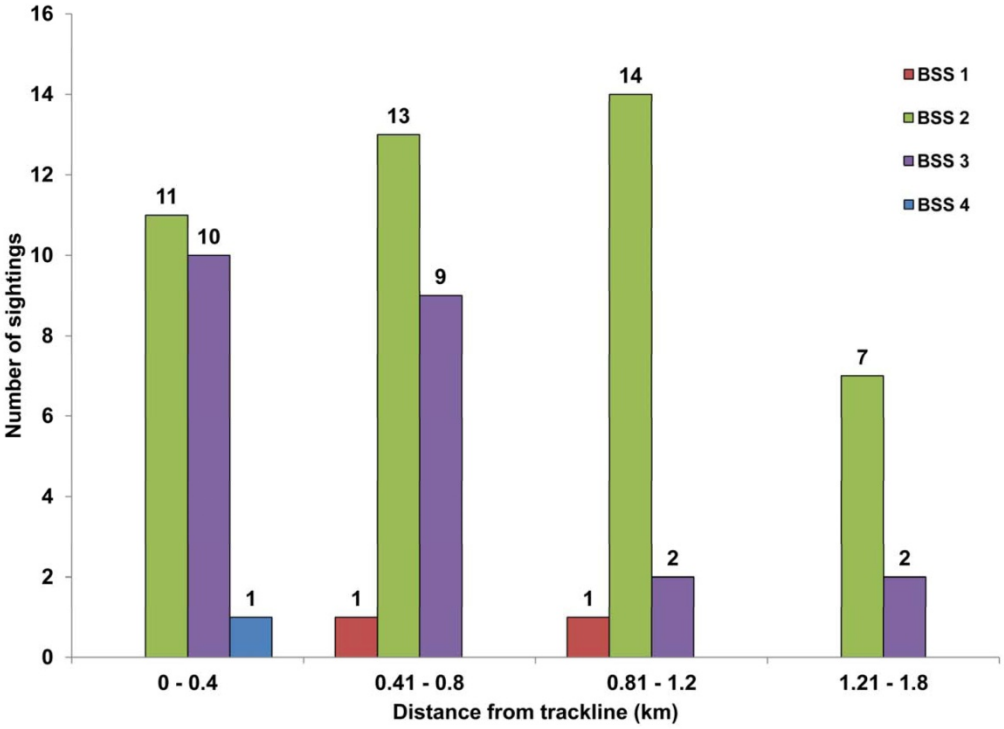


Figure 5a. Sighting distances by Beaufort Sea State for 71 of 75 cetacean sightings (one without sighting distance & three outliers) from January 2012 to December 2012 during aerial surveys in the Jacksonville, Florida survey area.

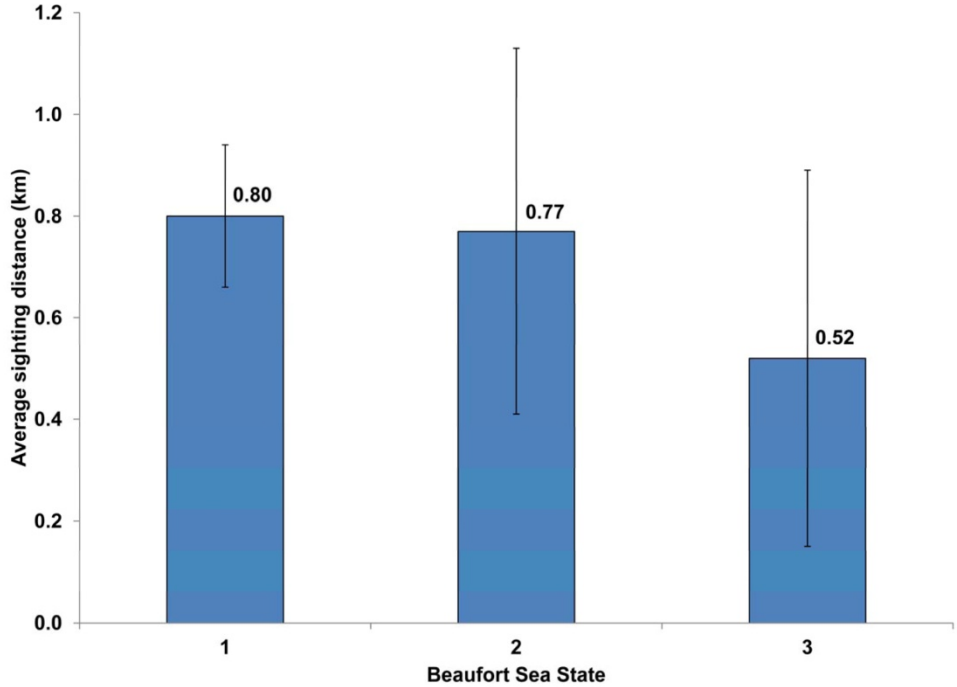


Figure 5b. Average sighting distances by Beaufort Sea State for 70 of 75 cetacean sightings (one without sighting distance, three outliers & only single sighting in BSS 4 which is not shown here) from January 2012 to December 2012 during aerial surveys in the Jacksonville, Florida survey area. Error bars denote standard deviation for each category.

Marine Mammal Sightings

A total of 75 sightings of 1153 individual cetaceans, representing six species were observed while on effort during the reporting period. The only endangered species encountered inside the study area was a single humpback whale observed in January. All identified species encountered are listed below in order of decreasing number of sightings (*i.e.* most commonly sighted species first). Total number of individuals is based upon the best estimate of group size. Summaries for individual sightings are in Appendix E. Daily sightings are summarized in Appendix G.

Bottlenose dolphin (*Tursiops truncatus*) (Table 4, Figure 6)

Bottlenose dolphins were the most frequently encountered cetacean (35 sightings for a total of 351 individuals). While group size ranged from 1 to 85 (mean=10), over 77% of sightings contained 10 or fewer individuals. Based on the distance from shore (*e.g*. greater than 34 km), the bottlenose dolphins observed in this study are most likely of the offshore ecotype (Torres *et al.* 2003). Bottlenose dolphins were encountered throughout the study area and there was no obvious relationship between group size and bathymetry (Figure 6). This species was encountered during each month surveyed. The current best estimate of offshore bottlenose dolphins in the Western Atlantic Ocean, between central Florida and Canada, is 81588 (CV=0.17) (NOAA Stock Assessment Report; Waring *et al*. 2008). The status of the offshore bottlenose dolphins stock in the Northwest Atlantic is unknown (Waring *et al.* 2008).

Table 4. Bottlenose dolphin (*Tursiops truncatus*) sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #
23-Jan-12	13:21	5	30.569777	-80.445247	E	10	2	90°	1
23-Jan-12	14:16	20	30.518887	-80.210413	W	9	2	90°	5
23-Jan-12	15:23	45	30.369298	-80.280478	W	7	2	90°	30
23-Jan-12	16:25	61	30.233261	-80.356791	W	5	3	45°	85
24-Jan-12	9:56	6	29.965240	-80.047545	E	1	2	100°	10
24-Jan-12	10:36	15	30.032596	-80.062563	W	2	1	90°	10
24-Jan-12	13:02	46	30.308654	-80.568021	W	6	1	90°	1
24-Jan-12	14:50	54	30.367200	-80.664158	E	7	2	100°	1
24-Jan-12	15:01	61	30.369999	-80.329043	E	7	2	100°	1
24-Jan-12	15:19	67	30.367006	-79.885305	E	7	1	100°	20
24-Jan-12	16:52	90	30.306925	-80.344782	W	6	1	90°	8
25-Jan-12	10:20	105	30.232391	-80.254267	E	5	1	90°	7
25-Jan-12	10:32	111	30.238935	-80.070583	E	5	1	100°	4
25-Jan-12	11:31	125	30.355313	-80.367444	E	7	1	100°	2
29-Mar-12	15:57	54	30.029261	-80.439651	E	2	2	60°	4
29-Mar-12	16:20	60	29.971966	-80.092957	W	1	2	60°	8
18-Apr-12	13:22	32	29.968271	-80.382697	E	1	2	100°	3
18-Apr-12	14:42	46	30.102057	-80.076377	E	3	2	90°	8
19-Apr-12	9:34	10	30.032347	-80.262068	W	2	2	90°	28
17-May-12	15:24	68	30.112312	-79.858667	W	3	3	90°	20
6-Jul-12	14:08	43	30.100361	-80.196561	W	3	2	90°	7
6-Jul-12	15:54	74	29.970666	-80.321597	W	1	1	90°	6
7-Jul-12	10:45	15	30.164944	-80.367496	W	4	1	60°	8
7-Jul-12	12:08	41	30.305426	-80.649478	W	6	3	60°	3
7-Jul-12	13:42	49	30.370784	-80.559474	E	7	2	90°	2
7-Jul-12	14:02	56	30.372047	-79.963499	E	7	1	90°	8
7-Jul-12	14:28	66	30.434672	-79.932294	W	8	1	90°	2
22-Sep-12	9:25	13	30.236453	-80.410724	E	5	2	60°	12
22-Sep-12	11:32	41	30.430898	-80.365577	W	8	2	90°	11
22-Sep-12	14:58	71	30.108173	-80.009283	W	3	2	90°	6
22-Sep-12	15:03	75	30.112812	-80.053932	W	3	1	90°	12
22-Sep-12	15:57	89	29.968701	-79.965453	W	1	1	90°	8
4-Nov-12	10:12	20	30.101503	-80.060750	E	3	1	90°	5
4-Nov-12	13:30	37	30.563090	-80.196563	E	10	1	90°	3
4-Nov-12	13:54	42	30.563003	-79.859421	E	10	1	90°	2

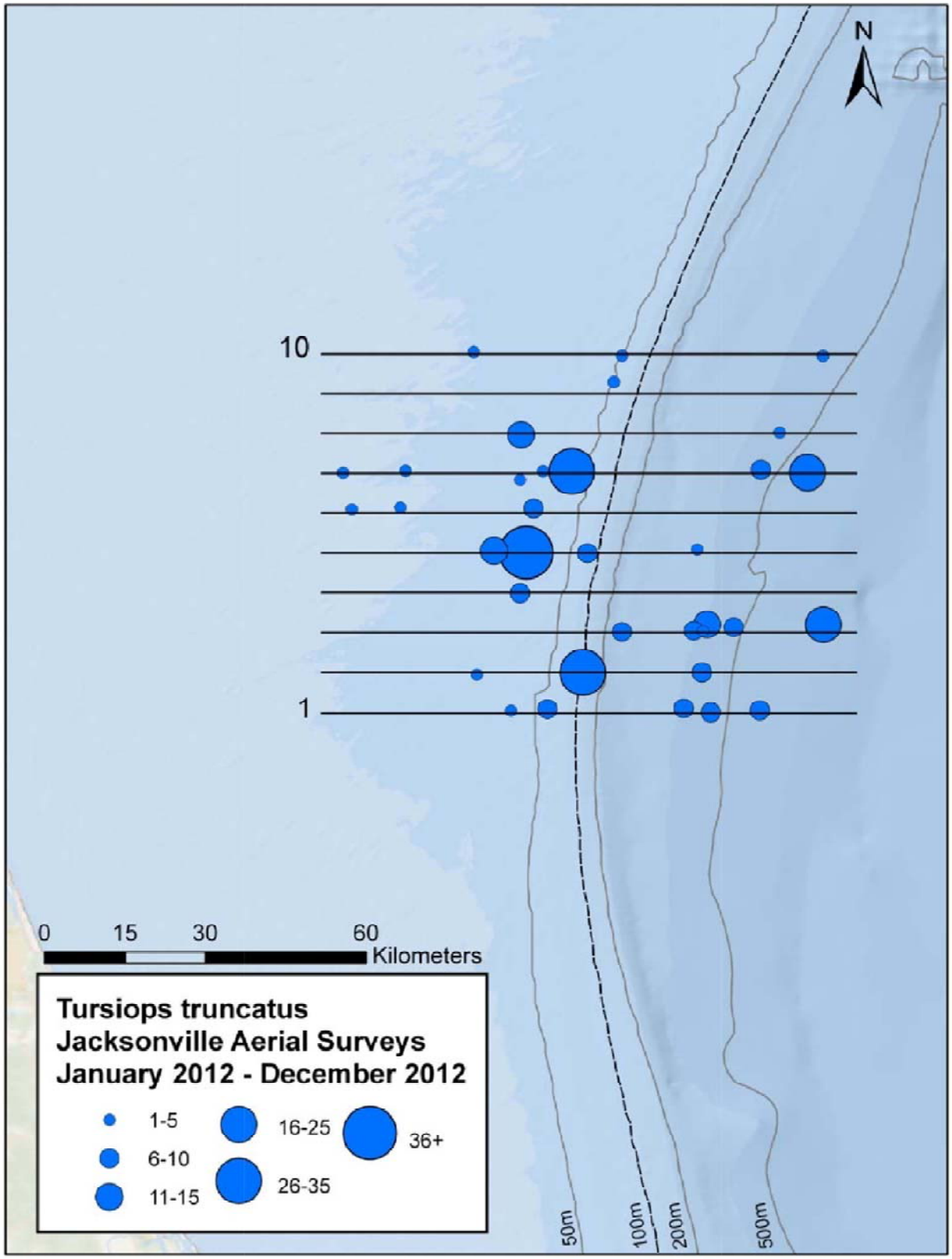


Figure 6. Bottlenose dolphin (*Tursiops truncatus*) sightings indicating group size.

Atlantic Spotted Dolphin (*Stenella frontalis*) (Table 5, Figure 7)

The Atlantic spotted dolphin was the second most frequently sighted, and numerically most abundant, species encountered in the survey area and were seen in every month surveyed (28 sightings for a total of 657 individuals). Group size ranged from 2 to 75 (mean=23.4). This species was encountered exclusively in shallow water over the continental shelf (Figure. 7). There are two distinct forms, or ecotypes, of the Atlantic spotted dolphin in the western North Atlantic: a heavily spotted form that typically occurs on the continental shelf and is most often encountered at or within the 200 m isobath, and a less spotted, smaller form that occurs further offshore and around deep island archipelagoes (Perrin *et al*. 1987, 1994). It is likely, based upon the features observed, that the spotted dolphins seen during the present study belong to the continental shelf variety. The abundance estimate for *S. frontalis* (both the inshore and the offshore forms) in the western North Atlantic is 26798 (CV=0.66) and was determined by aerial and vessel observations; the status of the stock(s) is/are unknown (Waring *et al.* 2011).

Table 5. Atlantic spotted dolphin (*Stenella frontalis*) sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #
23-Jan-12	13:36	11	30.557850	-80.333953	E	10	2	90°	75
23-Jan-12	14:30	25	30.494180	-80.356793	W	9	1	120°	4
24-Jan-12	15:56	77	30.431846	-80.639311	W	8	2	90°	4
25-Jan-12	11:40	130	30.370021	-80.316988	E	7	1	90°	15
25-Jan-12	12:37	142	30.438325	-80.293544	W	8	2	90°	52
29-Mar-12	15:10	33	30.096882	-80.440277	W	3	2	100°	44
29-Mar-12	15:28	37	30.101111	-80.507489	W	3	1	100°	6
29-Mar-12	15:47	46	30.029672	-80.519755	E	2	3	90°	3
29-Mar-12	15:51	50	30.031855	-80.476396	E	2	2	90°	13
18-Apr-12	15:23	52	30.173850	-80.401034	W	4	2	90°	50
19-Apr-12	11:33	32	30.310782	-80.369910	W	6	3	90°	20
19-Apr-12	14:56	63	30.573341	-80.520768	W	10	2	90°	38
16-May-12	8:57	6	30.570136	-80.230107	E	10	2	90°	37
16-May-12	9:48	15	30.430951	-80.635714	E	8	2	90°	7
16-May-12	10:08	20	30.419954	-80.444755	E	8	2	100°	15
17-May-12	9:08	6	30.226719	-80.469996	E	5	1	90°	14
17-May-12	10:15	22	30.354373	-80.593331	E	7	2	90°	28
17-May-12	14:55	59	30.185141	-80.468611	E	4	2	100°	30
6-Jul-12	14:25	50	30.105186	-80.481128	W	3	3	90°	30
6-Jul-12	14:37	54	30.096958	-80.625291	W	3	3	60°	12
7-Jul-12	10:54	21	30.165538	-80.562010	W	4	1	90°	2
7-Jul-12	11:15	29	30.227034	-80.388729	E	5	2	90°	8
7-Jul-12	14:52	70	30.438204	-80.411598	W	8	1	90°	38
22-Sep-12	9:13	7	30.223389	-80.494131	E	5	2	90°	26
22-Sep-12	10:39	27	30.353680	-80.465409	E	7	3	90°	22
22-Sep-12	12:21	55	30.561522	-80.180946	W	10	2	90°	26
23-Sep-12	12:10	25	30.233932	-80.702387	W	5	2	90°	10
4-Nov-12	14:32	52	30.503127	-80.694210	W	9	3	90°	28

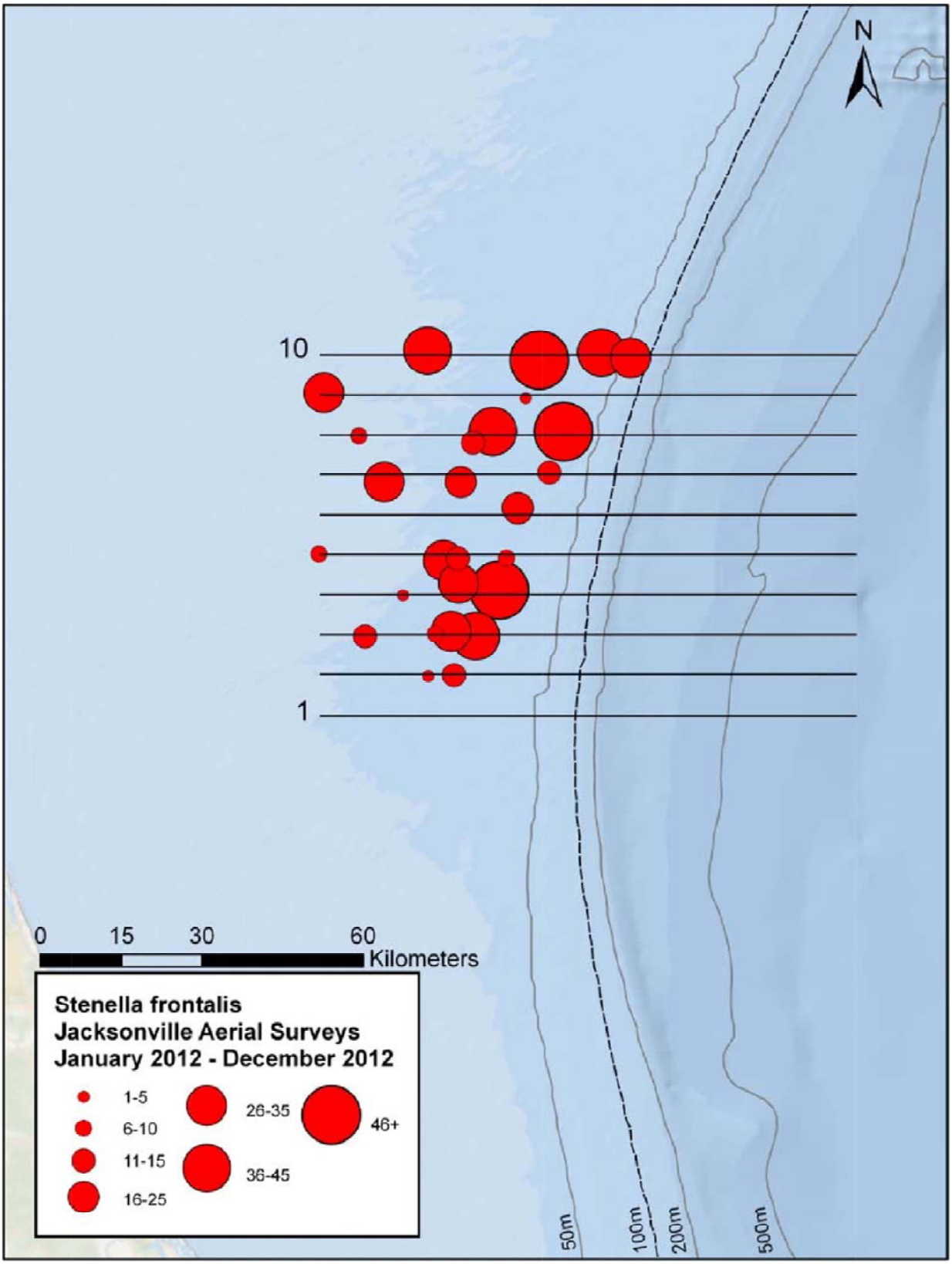


Figure 7. Atlantic spotted dolphin (*Stenella frontalis*) sightings indicating group size.

Risso's Dolphin (*Grampus griseus*) (Table 6, Figure 8)

This species was encountered six times for a total of 75 individuals (Figure 8). Group size for this species ranged from 5 to 18 individuals (mean=12.5). Risso's dolphins were recorded in four of the seven months surveyed, and were only observed in deeper, offshore waters. Risso's dolphin have been found along the mid-Atlantic continental shelf edge year round, with some movement north during spring, summer and fall, and into the mid-Atlantic bight during winter (Waring *et al.* 2011). The best available estimate for Risso's dolphins, based on results from two US Atlantic surveys conducted in 2004, is 20479 (CV=0.59) (Waring *et al.* 2011). The status of this species in the western Atlantic is unknown (Waring *et al.* 2011).

Table 6. Risso's dolphin (*Grampus griseus*) sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #
25-Jan-12	12:06	136	30.369693	-79.833103	E	7	2	90°	5
6-Jul-12	9:32	8	30.504503	-79.998388	W	9	2	90°	17
6-Jul-12	15:20	68	30.029203	-80.080207	E	2	3	90°	18
7-Jul-12	14:17	62	30.424355	-79.903836	W	8	3	110°	14
22-Sep-12	11:03	33	30.368550	-79.990999	E	7	2	90°	13
4-Nov-12	15:02	59	30.433770	-79.937191	E	8	2	60°	8

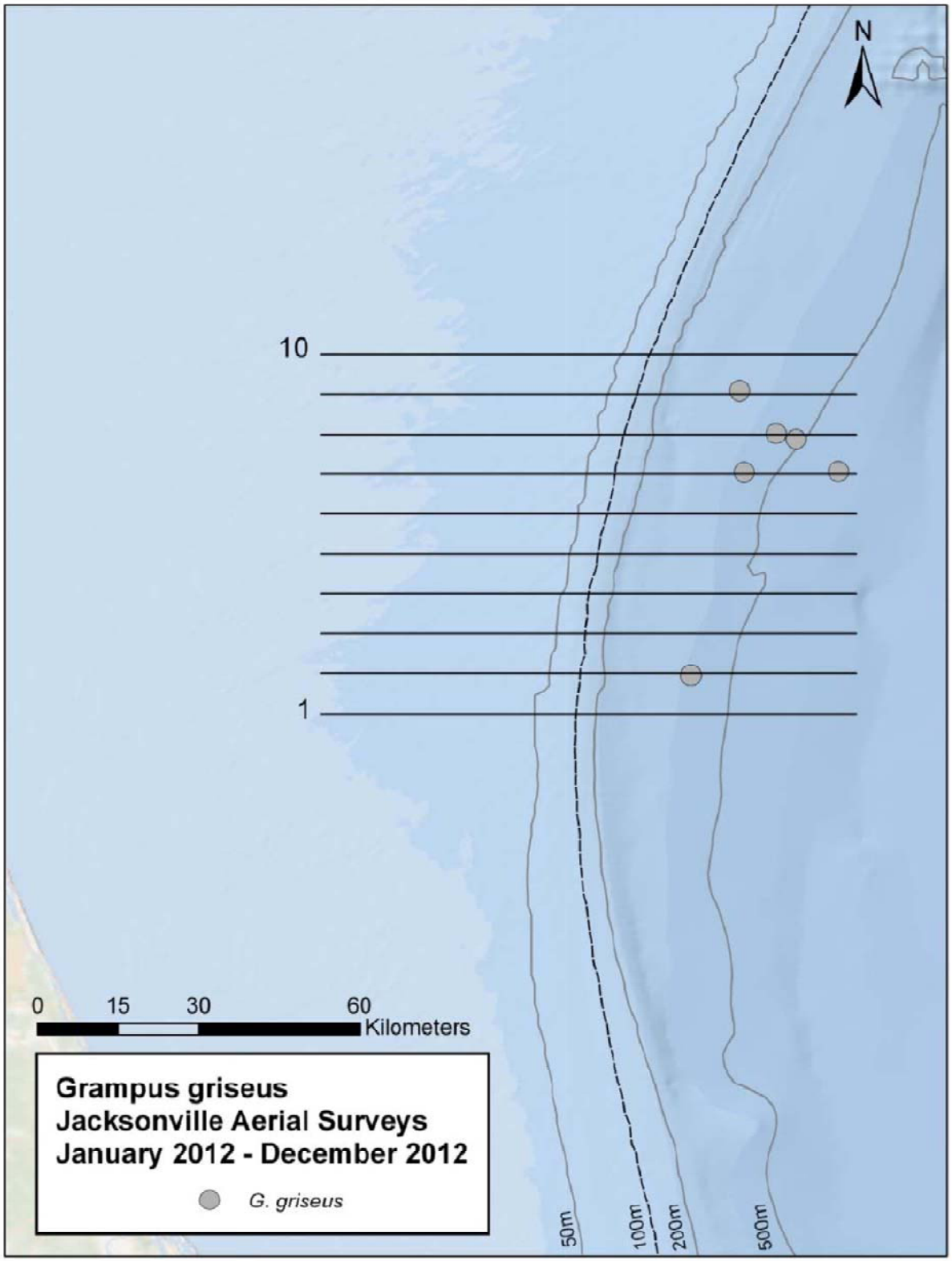


Figure 8. Risso's dolphin (*Grampus griseus*) sightings.

Short-finned Pilot Whale (*Globicephala macrorhynchus*) (Table 7, Figure 9)

A single pair of short-finned pilot whales were encountered while on effort. There were two additional off effort sightings of this species on the eastern end of the range that were encountered while transiting between tracklines. Group sizes ranged from 2 to 8 individuals with a mean group size of four. Sightings of pilot whales in the western North Atlantic occur primarily near the continental shelf break (Waring *et al*. 2010) as is the case with our sightings (Figure 9). Due to the difficulty of differentiating short-finned and long-finned pilot whales (*Globicephala melas*) at sea, NMFS reports stock numbers and status as *Globicephala* spp. (Waring *et al.* 2010). The abundance estimate of *Globicephala* spp. (24674, CV=0.45) is based upon shipboard surveys along the outer continental shelf of the U.S. Atlantic between Florida and Maryland in 2004 (Waring *et al*. 2010). These estimates were combined with spatial distribution analysis as well as genetic analyses to generate the current value of 24,674. The status of short-finned pilot whales in the U.S. Atlantic is currently unknown (Waring *et al.* 2011).

Table 7. Short-finned pilot whale (*Globicephala macrorhynchus*) sightings in the Jacksonville, Florida survey area from January 2012 to December 2012. Asterisk denotes off effort sightings.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #	
17-May-12	10:38	28	30.358238	-79.981219	E	7	2	90°	2	
17-May-12	11:00	33	30.399736	-79.790061			2	90°	2	*
17-May-12	16:22	83	29.971244	-79.795325	E	2	3	100°	8	*

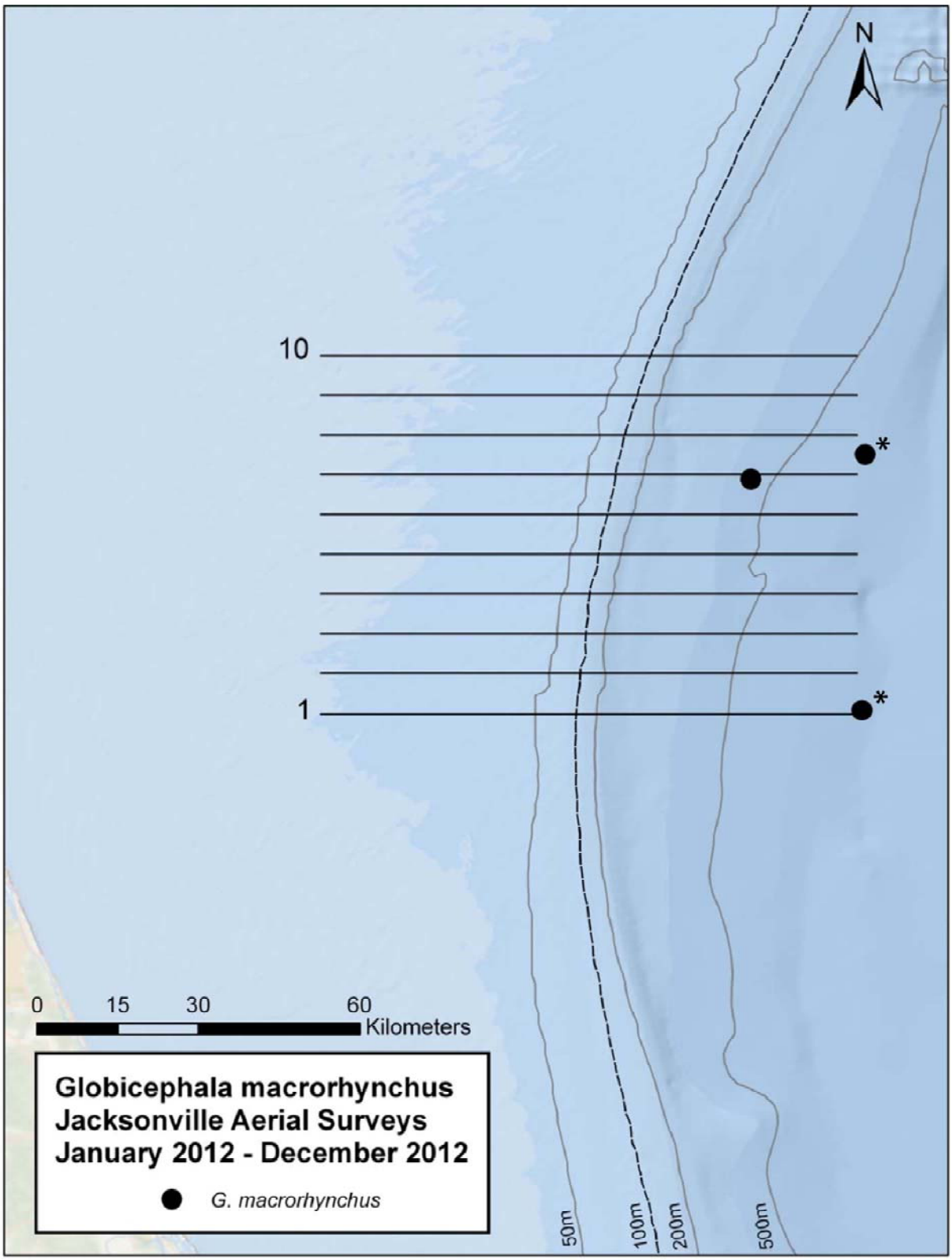


Figure 9. Short-finned pilot whale (*Globicephala macrorhynchus*) sightings. Asterisk denotes off effort sightings.

Rough-toothed Dolphin (*Steno bredanensis*) (Table 8, Figure 10)

A single sighting of this species occurred in each of two months (July and November) for a total of 63 individuals (Table 8). As in past years, sightings occurred inside of the 100m isobath in the continental shelf waters (Figure 10). This species is rarely observed off the U.S. east coast and the current best abundance estimate (n=274, CV=1.03) is based on a ship board survey conducted in waters south of Maryland in 1998. The status of rough-toothed dolphins in the western North Atlantic is currently unknown (Waring *et al.* 2008).

Table 8. Rough-toothed dolphin (*Steno bredanensis*) sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #
6-Jul-12	14:49	60	30.033889	-80.680810	E	2	2	90°	35
4-Nov-12	8:54	5	29.967288	-80.295223	E	1	3	100°	28

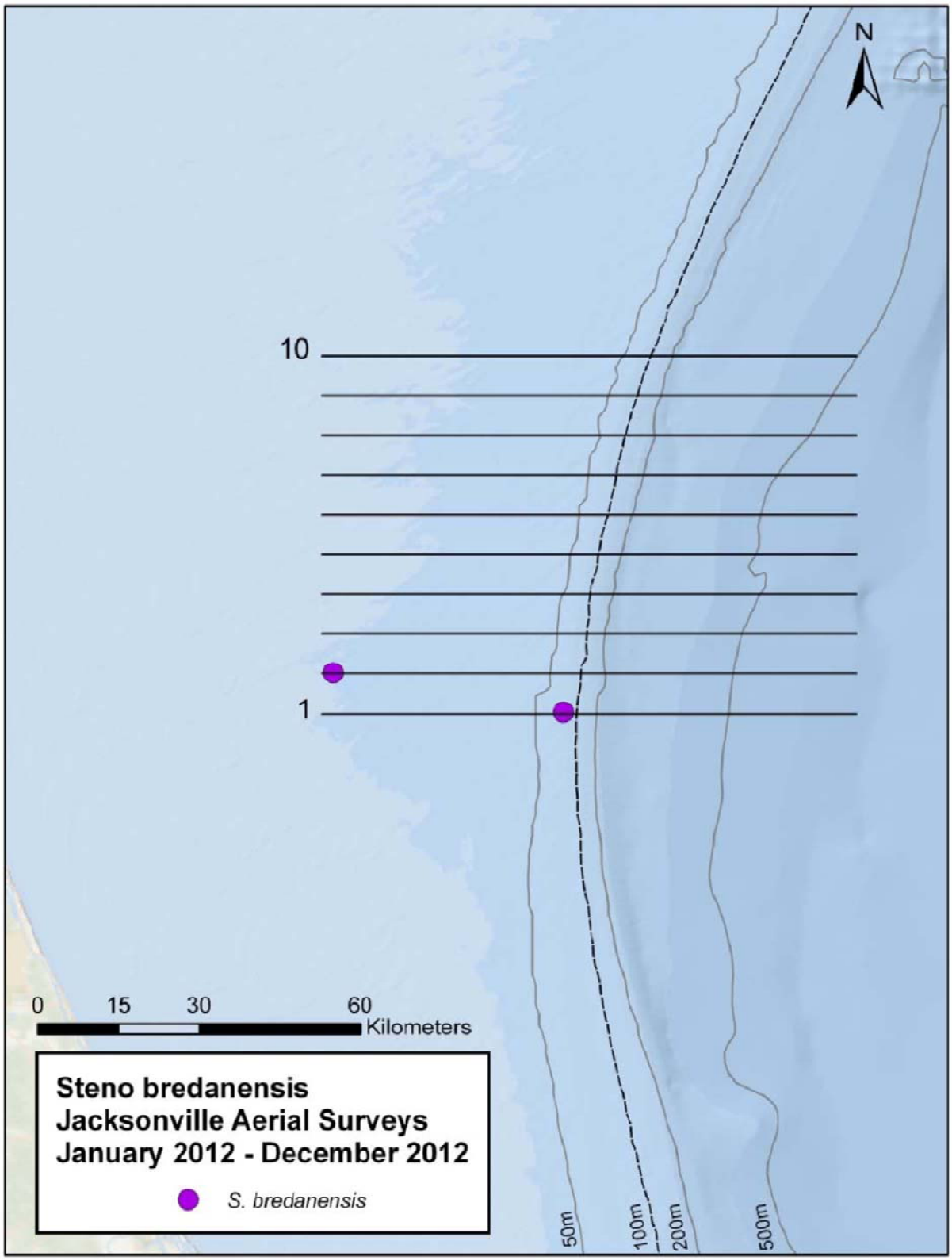


Figure 10. Rough-toothed dolphin (*Steno bredanensis*) sightings.

Humpback whale *(Megaptera novaeangliae)* (Table 9, Figure 11)

A single adult humpback whale was sighted over the continental slope; this is only the second sighting of this species in the survey area. Currently, humpback whales in the western North Atlantic are treated as a single stock despite genetic evidence identifying smaller sub-stocks (Waring *et al.* 2012). Population estimates vary depending upon methods utilized, and range between 7698 (genetic tagging methods) and 11570 (photographic mark-recapture methods) (reviewed in Waring *et al.* 2012). This species is listed as endangered under the Endangered Species Act.

Table 9. Humpback whale (*Megaptera novaeangliae*) sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #
25-Jan-12	9:50	101	30.196954	-80.335528	E	5	3	110°	1

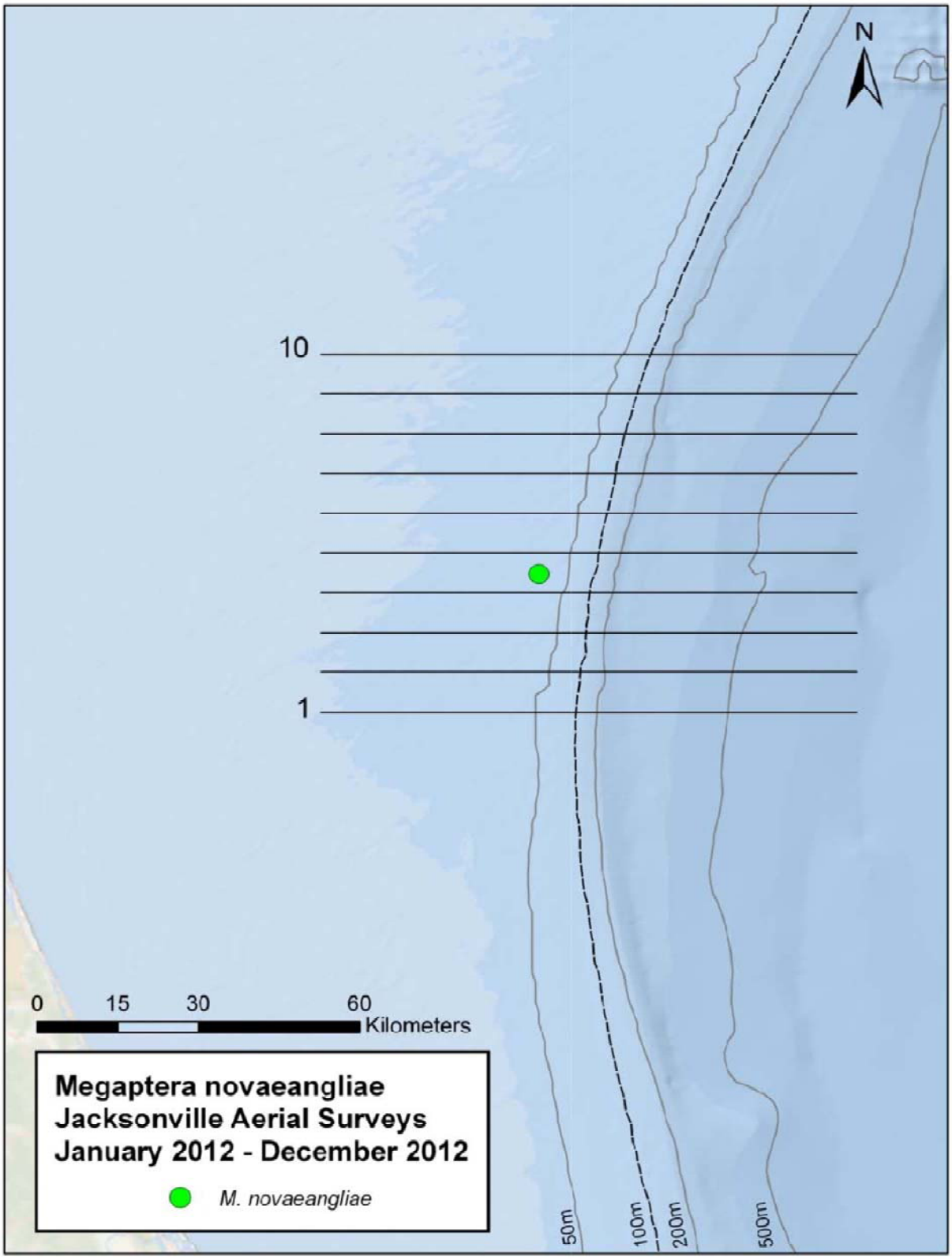


Figure 11. Humpback whale (*Megaptera novaeangliae*) sighting.

Sea Turtles (Tables 10 and 11, Figures 12a – 14)

A total of 319 sea turtles were observed during the reporting period. Sighting rates were negatively correlated with Beaufort Sea State, with rates declining at higher sea states (Figure 12b). Sea turtles were observed every day of survey effort with the highest sighting rates occurring in January, March and July (Figure 12c). Observation rates ranged from a low of 8.22 /1000 km flown in November to 67.09 /1000km in March (Figure 12c). Loggerhead sea turtles (*Caretta caretta*) constituted the majority of sea turtle sightings (85.9%), followed by leatherback sea turtles (*Dermochelys coriacea*) (5.3%). Turtles labeled as unidentified were typically either of small size, submerged, or too far away for the observers to make an accurate identification to species (accounted for 8.8% of sightings). Sea turtle species are listed below in order of decreasing number of sightings (*i.e.* most commonly sighted species first).

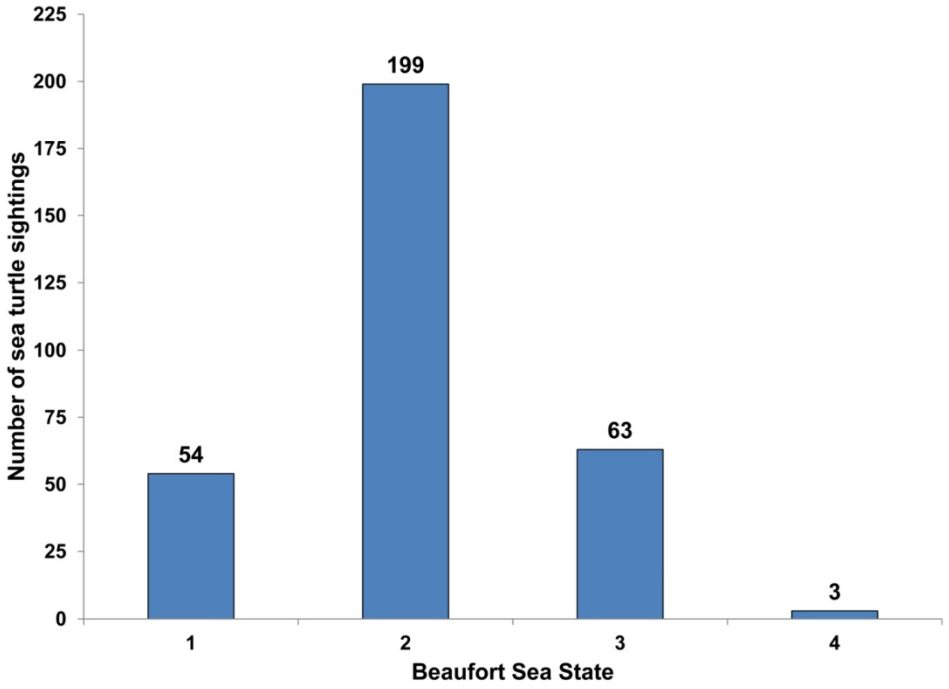


Figure 12a. Total number of sea turtle sightings by Beaufort Sea State in the Jacksonville, Florida survey area from January 2012 to December 2012.

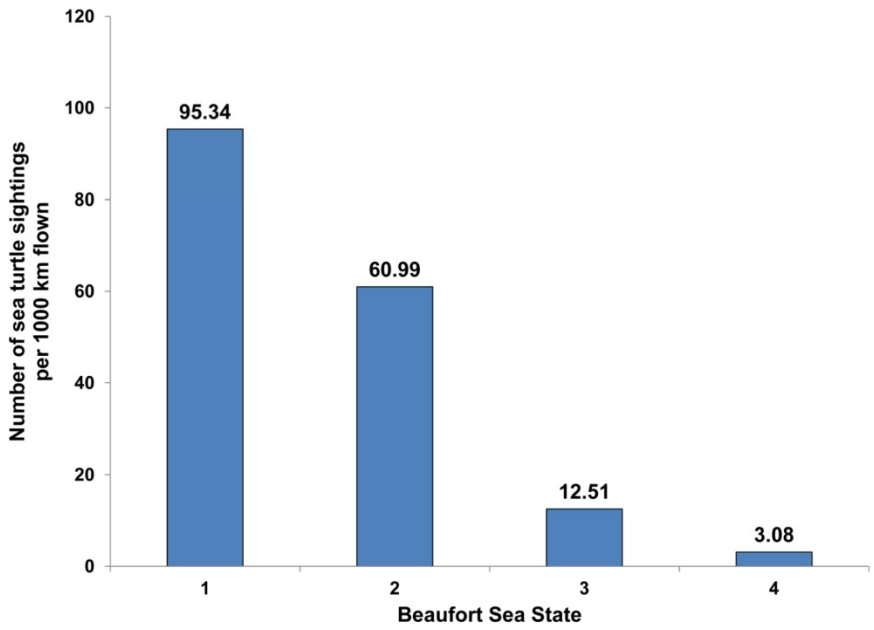


Figure 12b. Sea turtle sightings per 1000 km flown by Beaufort Sea State in the Jacksonville, Florida survey area from January 2012 to December 2012.

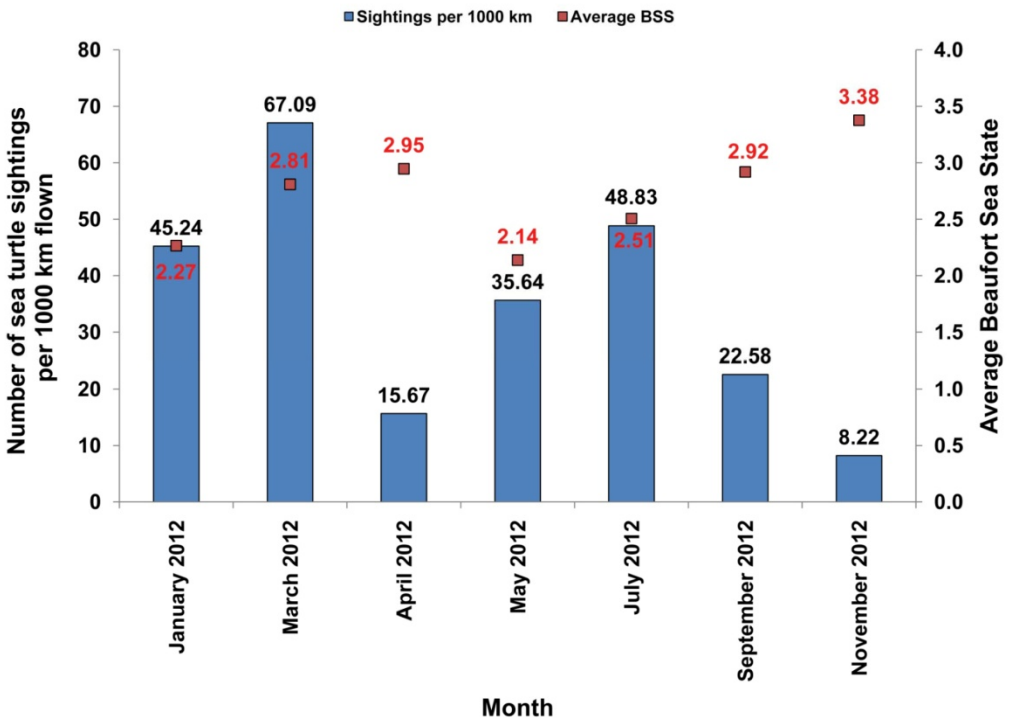


Figure 12c. Sea turtle sightings per 1000 km surveyed and the average Beaufort Sea State per month in the Jacksonville, Florida survey area from January 2012 to December 2012.

Loggerhead Sea Turtle (*Caretta caretta*) (Table 10, Figure 13)

A total of 274 loggerhead sea turtles were observed and this species was encountered on every day of survey effort. Loggerheads were predominantly recorded in the shallower waters over the continental shelf, although a small number of individuals occurred beyond the shelf break (Figure 12). For management purposes, loggerheads along the U.S. Atlantic east coast fall into the Northwest Atlantic Ocean distinct population segment (DPS), which is separated into five separate recovery units (NOAA 2011). The current best estimate for nests in the Peninsular Florida Recovery Unit (defined as loggerheads originating from nests between the Georgia/Florida border south to, but not including, the Florida keys) is 64513 annually from 1989 to 2007. Results from index nesting beach surveys show a decline in nesting (NMFS 2008). Loggerhead sea turtles are currently listed as threatened under the Endangered Species Act (NMFS 2008).

Table 10. Loggerhead sea turtle (*Caretta caretta*) sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #
23-Jan-12	13:14	2	30.567502	-80.655764	E	10	1	90°	2
23-Jan-12	13:15	4	30.567293	-80.600892	E	10	1	90°	1
23-Jan-12	13:44	14	30.567855	-80.255747	E	10	1	60°	1
23-Jan-12	14:11	15	30.500095	-80.196812	W	9	2	90°	1
23-Jan-12	14:24	18	30.499981	-80.264428	W	9	2	90°	1
23-Jan-12	14:39	29	30.501364	-80.506400	W	9	2	90°	1
23-Jan-12	14:41	22	30.500220	-80.577427	W	9	2	90°	1
23-Jan-12	14:45	32	30.436019	-80.529695	E	8	2	90°	1
23-Jan-12	14:47	25	30.435744	-80.433259	E	8	2	90°	2
23-Jan-12	14:50	35	30.432806	-80.326035	E	8	3	60°	3
23-Jan-12	14:52	36	30.431819	-80.266100	E	8	1	90°	2
23-Jan-12	14:54	26	30.432589	-80.178342	E	8	2	90°	1
23-Jan-12	15:43	51	30.301246	-80.659971	E	6	1	90°	1
23-Jan-12	15:45	36	30.301034	-80.568405	E	6	1	90°	1
23-Jan-12	15:48	37	30.299538	-80.477207	E	6	2	90°	1
23-Jan-12	15:50	52	30.298970	-80.378227	E	6	1	90°	4
23-Jan-12	16:21	59	30.231086	-80.258395	W	5	1	90°	1
23-Jan-12	16:36	49	30.231915	-80.462334	W	5	2	90°	1
24-Jan-12	11:43	31	30.168955	-80.140984	W	4	2	90°	1
24-Jan-12	11:47	35	30.167342	-80.269580	W	4	1	90°	1
24-Jan-12	12:45	46	30.302269	-80.322899	W	6	1	60°	1
24-Jan-12	14:54	57	30.365028	-80.537089	E	7	1	90°	1
24-Jan-12	14:57	58	30.366003	-80.433005	E	7	1	90°	2
24-Jan-12	14:59	59	30.367510	-80.366139	E	7	2	90°	1
24-Jan-12	15:47	74	30.432687	-80.380116	W	8	2	60°	2
24-Jan-12	15:53	75	30.432309	-80.597609	W	8	2	60°	1
24-Jan-12	16:06	75	30.500034	-80.609319	E	9	2	90°	3
24-Jan-12	16:11	77	30.500316	-80.398078	E	9	1	90°	2
24-Jan-12	16:15	78	30.500405	-80.281196	E	9	2	90°	2
24-Jan-12	16:16	79	30.500446	-80.213089	E	9	2	60°	2
24-Jan-12	16:39	88	30.299314	-79.959830	W	6	1	90°	1
24-Jan-12	16:50	88	30.299740	-80.328559	W	6	2	60°	1
25-Jan-12	11:10	113	30.298853	-80.597509	W	6	2	60°	1
25-Jan-12	11:21	123	30.367364	-80.486713	E	7	1	90°	2
25-Jan-12	11:23	117	30.366807	-80.422319	E	7	2	90°	1
29-Mar-12	11:13	6	30.433357	-80.051229	E	8	2	90°	1
29-Mar-12	11:42	11	30.365938	-80.489748	W	7	1	90°	1
29-Mar-12	11:59	11	30.300099	-80.342932	E	6	2	100°	1
29-Mar-12	12:31	17	30.232872	-80.380188	W	5	1	90°	1
29-Mar-12	14:45	24	30.165577	-80.650119	E	4	2	90°	1
29-Mar-12	14:46	25	30.165806	-80.600523	E	4	2	60°	1
29-Mar-12	14:48	26	30.165917	-80.526160	E	4	1	60°	1
29-Mar-12	14:52	27	30.166364	-80.392297	E	4	2	90°	1
29-Mar-12	14:52	24	30.166338	-80.413665	E	4	2	90°	2
29-Mar-12	15:07	28	30.100611	-80.371715	W	3	2	90°	3
29-Mar-12	15:09	30	30.100615	-80.418746	W	3	2	90°	1
29-Mar-12	15:33	34	30.103228	-80.543958	W	3	1	90°	1
29-Mar-12	15:35	40	30.100198	-80.628695	W	3	2	90°	1

Table 10 (Continued). Loggerhead sea turtle (*Caretta caretta*) sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #
29-Mar-12	15:36	35	30.100125	-80.652350	W	3	1	60°	2
29-Mar-12	15:37	36	30.100052	-80.685309	W	3	1	90°	3
29-Mar-12	15:42	43	30.030844	-80.631153	E	2	2	90°	1
29-Mar-12	15:44	44	30.031357	-80.574786	E	2	2	60°	1
29-Mar-12	15:44	39	30.031343	-80.566586	E	2	2	90°	3
29-Mar-12	16:28	50	29.966036	-80.321870	W	1	1	90°	2
29-Mar-12	16:29	63	29.966042	-80.350415	W	1	1	60°	1
29-Mar-12	16:31	64	29.965974	-80.413241	W	1	2	90°	2
29-Mar-12	16:33	51	29.965862	-80.497539	W	1	2	90°	2
29-Mar-12	16:34	52	29.965774	-80.536903	W	1	1	90°	2
29-Mar-12	16:37	53	29.965533	-80.632278	W	1	2	90°	2
18-Apr-12	9:08	4	30.566413	-80.158997	E	10	1	90°	1
18-Apr-12	9:56	12	30.434294	-80.422103	E	8	2	100°	1
18-Apr-12	10:29	18	30.367434	-80.310509	W	7	2	90°	1
18-Apr-12	10:51	22	30.300563	-80.400465	E	6	2	90°	1
18-Apr-12	11:24	26	30.234374	-80.300022	W	5	1	90°	1
18-Apr-12	11:24	27	30.234844	-80.312213	W	5	2	60°	1
18-Apr-12	14:37	44	30.099307	-80.189720	E	3	1	100°	1
19-Apr-12	9:48	14	30.030832	-80.490290	W	2	2	90°	1
19-Apr-12	10:03	17	30.101364	-80.435450	E	3	2	90°	1
19-Apr-12	10:50	24	30.234347	-80.677805	E	5	1	90°	1
19-Apr-12	11:45	25	30.302725	-80.657434	W	6	2	90°	1
19-Apr-12	13:17	42	30.367870	-80.602153	E	7	2	90°	1
19-Apr-12	13:55	36	30.434085	-80.342227	W	8	1	45°	1
19-Apr-12	14:01	52	30.432040	-80.548825	W	8	2	90°	1
19-Apr-12	14:10	40	30.499120	-80.618707	E	9	1	90°	2
19-Apr-12	14:11	41	30.499802	-80.575189	E	9	1	90°	2
19-Apr-12	14:13	42	30.500468	-80.519810	E	9	2	90°	3
19-Apr-12	14:19	56	30.498441	-80.309270	E	9	2	60°	1
19-Apr-12	14:54	49	30.567464	-80.489518	W	10	2	90°	2
16-May-12	8:52	3	30.565342	-80.337144	E	10	2	90°	1
16-May-12	9:36	10	30.501056	-80.472982	W	9	1	90°	1
16-May-12	10:01	18	30.432699	-80.466753	E	8	2	90°	1
16-May-12	10:17	18	30.432621	-80.363945	E	8	2	90°	1
16-May-12	10:19	23	30.433801	-80.295960	E	8	1	90°	1
16-May-12	10:54	30	30.367082	-80.508822	W	7	1	90°	1
16-May-12	10:55	22	30.363639	-80.546786	W	7	2	90°	1
16-May-12	10:57	23	30.364427	-80.596790	W	7	1	90°	1
16-May-12	12:36	28	30.297614	-80.631316	E	6	2	90°	1
16-May-12	12:37	29	30.297417	-80.595427	E	6	2	90°	2
16-May-12	12:46	32	30.297945	-80.349245	E	6	2	90°	2
16-May-12	13:20	35	30.228100	-80.314516	W	5	1	90°	1
16-May-12	13:21	42	30.228676	-80.344261	W	5	1	90°	1
16-May-12	13:29	45	30.229697	-80.637862	W	5	1	90°	1
16-May-12	13:34	39	30.168005	-80.661515	E	4	1	90°	2
17-May-12	9:00	3	30.235181	-80.635436	E	5	1	90°	1
17-May-12	9:22	6	30.228812	-80.405995	E	5	2	60°	1
17-May-12	9:23	9	30.230042	-80.359900	E	5	1	90°	1

Table 10 (Continued). Loggerhead sea turtle (*Caretta caretta*) sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #
17-May-12	9:23	7	30.230417	-80.370395	E	5	2	60°	1
17-May-12	9:26	8	30.226601	-80.267142	E	5	1	90°	1
17-May-12	10:00	18	30.298737	-80.489108	W	6	2	90°	2
17-May-12	10:02	16	30.297698	-80.561244	W	6	2	90°	1
17-May-12	10:23	24	30.361843	-80.510286	E	7	2	90°	1
17-May-12	11:17	38	30.432772	-80.268854	W	8	1	90°	1
17-May-12	11:34	42	30.499232	-80.588332	E	9	1	90°	2
17-May-12	11:36	43	30.499051	-80.527044	E	9	1	90°	2
17-May-12	12:16	50	30.565321	-80.501261	W	10	1	90°	1
17-May-12	14:50	55	30.164664	-80.608910	E	4	1	90°	1
17-May-12	14:50	46	30.164973	-80.597396	E	4	3	90°	2
17-May-12	14:51	56	30.165238	-80.566838	E	4	2	90°	2
17-May-12	15:04	62	30.167013	-80.406862	E	4	2	90°	3
17-May-12	15:50	59	30.100949	-80.612361	W	3	2	90°	1
17-May-12	15:57	75	30.030055	-80.621409	E	2	1	90°	2
17-May-12	16:03	76	30.031578	-80.422592	E	2	2	90°	1
17-May-12	16:07	78	30.031786	-80.277553	E	2	1	60°	1
17-May-12	16:46	68	29.967269	-80.513122	W	1	1	90°	1
17-May-12	16:50	69	29.965518	-80.686161	W	1	2	90°	2
6-Jul-12	8:58	3	30.572256	-80.621994	E	10	2	90°	1
6-Jul-12	9:03	3	30.568260	-80.461366	W	10	2	90°	1
6-Jul-12	9:44	8	30.493900	-80.250708	E	9	1	60°	1
6-Jul-12	9:54	11	30.499530	-80.594548	W	9	1	90°	2
6-Jul-12	10:06	12	30.434664	-80.440908	W	8	1	90°	1
6-Jul-12	11:41	27	30.232727	-80.479206	W	5	2	90°	1
6-Jul-12	11:44	29	30.232016	-80.600842	W	5	1	60°	1
6-Jul-12	11:46	30	30.231544	-80.645421	W	5	1	90°	2
6-Jul-12	13:27	36	30.160331	-80.679757	E	4	1	90°	2
6-Jul-12	13:30	37	30.165447	-80.587993	E	4	2	60°	1
6-Jul-12	13:34	38	30.169242	-80.433571	E	4	3	90°	2
6-Jul-12	14:22	48	30.098936	-80.445747	W	3	2	90°	1
6-Jul-12	15:03	63	30.027378	-80.608809	E	2	1	90°	1
6-Jul-12	15:06	47	30.033238	-80.492129	E	2	2	90°	1
6-Jul-12	15:08	65	30.034275	-80.392864	E	2	2	90°	3
6-Jul-12	15:09	48	30.034470	-80.366432	E	2	3	60°	1
6-Jul-12	16:10	77	29.966835	-80.527848	W	1	2	90°	2
6-Jul-12	16:10	57	29.966723	-80.514699	W	1	2	90°	1
7-Jul-12	9:55	12	30.031347	-80.589141	W	2	1	90°	1
7-Jul-12	10:03	11	30.101067	-80.617521	E	3	2	90°	1
7-Jul-12	10:07	15	30.101840	-80.491498	E	3	1	90°	1
7-Jul-12	10:51	18	30.166494	-80.469591	W	4	2	90°	1
7-Jul-12	11:01	24	30.166454	-80.625526	W	4	2	90°	1
7-Jul-12	11:02	25	30.165657	-80.664484	W	4	1	90°	1
7-Jul-12	11:13	28	30.233423	-80.447272	E	5	2	90°	1
7-Jul-12	11:56	36	30.300029	-80.288361	W	6	2	90°	1
7-Jul-12	12:01	37	30.300649	-80.480022	W	6	2	60°	1
7-Jul-12	12:01	34	30.300646	-80.470605	W	6	1	90°	1
7-Jul-12	12:03	35	30.300630	-80.555378	W	6	2	90°	2

Table 10 (Continued). Loggerhead sea turtle (*Caretta caretta*) sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #
7-Jul-12	12:05	36	30.300186	-80.630821	W	6	1	90°	1
7-Jul-12	13:39	43	30.370364	-80.608476	E	7	1	90°	1
7-Jul-12	13:46	52	30.371259	-80.509841	E	7	2	90°	1
7-Jul-12	13:52	53	30.366664	-80.268908	E	7	2	90°	1
7-Jul-12	14:42	56	30.430130	-80.308014	W	8	1	60°	3
7-Jul-12	14:58	61	30.434524	-80.479283	W	8	2	90°	4
7-Jul-12	15:00	62	30.431395	-80.567943	W	8	1	90°	3
7-Jul-12	15:01	75	30.430466	-80.612538	W	8	2	90°	1
7-Jul-12	15:02	63	30.431078	-80.639977	W	8	1	60°	5
7-Jul-12	15:03	76	30.431631	-80.659447	W	8	2	90°	1
7-Jul-12	15:03	64	30.432398	-80.685624	W	8	1	90°	3
7-Jul-12	15:04	77	30.433585	-80.707478	W	8	1	90°	1
7-Jul-12	15:10	68	30.501522	-80.572115	E	9	1	90°	4
7-Jul-12	15:11	80	30.502444	-80.540985	E	9	2	90°	1
7-Jul-12	15:52	77	30.566451	-80.404868	W	10	2	90°	3
7-Jul-12	15:55	78	30.565841	-80.517845	W	10	1	90°	3
22-Sep-12	9:07	4	30.229617	-80.623165	E	5	1	90°	1
22-Sep-12	9:08	4	30.229290	-80.607476	E	5	2	60°	1
22-Sep-12	9:09	6	30.228946	-80.566670	E	5	2	90°	2
22-Sep-12	9:10	7	30.231372	-80.513109	E	5	2	60°	2
22-Sep-12	9:11	5	30.230729	-80.494103	E	5	2	90°	1
22-Sep-12	9:22	11	30.230605	-80.440167	E	5	1	90°	1
22-Sep-12	9:23	11	30.229873	-80.430054	E	5	1	60°	1
22-Sep-12	9:36	16	30.230755	-80.350533	E	5	2	60°	1
22-Sep-12	10:13	20	30.300265	-80.392016	W	6	2	90°	1
22-Sep-12	10:18	18	30.298483	-80.566926	W	6	1	90°	1
22-Sep-12	10:28	24	30.364167	-80.612878	E	7	2	60°	1
22-Sep-12	10:48	25	30.362579	-80.342022	E	7	2	90°	2
22-Sep-12	11:50	47	30.497636	-80.662401	E	9	1	90°	1
22-Sep-12	12:00	49	30.495850	-80.315575	E	9	1	90°	1
22-Sep-12	14:26	63	30.163569	-80.600266	E	4	2	90°	2
22-Sep-12	14:28	65	30.168136	-80.515547	E	4	1	90°	1
22-Sep-12	15:28	82	30.031341	-80.586391	E	2	2	90°	1
22-Sep-12	15:29	62	30.031646	-80.567155	E	2	1	90°	1
22-Sep-12	15:30	83	30.029498	-80.524238	E	2	2	90°	2
23-Sep-12	9:51	5	30.501049	-80.300105	W	9	2	90°	1
23-Sep-12	11:02	17	30.364979	-80.374079	W	7	2	90°	1
23-Sep-12	11:24	19	30.299003	-80.293353	E	6	1	90°	1
23-Sep-12	11:57	25	30.233180	-80.421077	W	5	2	90°	1
4-Nov-12	10:20	23	30.101534	-79.967499	E	3	3	90°	1
4-Nov-12	10:45	20	30.166320	-80.500509	W	4	1	90°	1
4-Nov-12	10:47	21	30.166902	-80.541631	W	4	1	90°	1
4-Nov-12	11:37	28	30.300051	-80.458720	W	6	1	90°	1
4-Nov-12	13:28	35	30.566241	-80.200771	E	10	2	90°	1
4-Nov-12	14:46	57	30.435825	-80.507166	E	8	2	90°	2
4-Nov-12	14:48	51	30.436392	-80.418131	E	8	2	90°	1
5-Nov-12	10:10	13	30.364232	-80.566537	W	7	1	90°	1
5-Nov-12	11:01	21	30.232797	-80.492333	W	5	1	90°	1

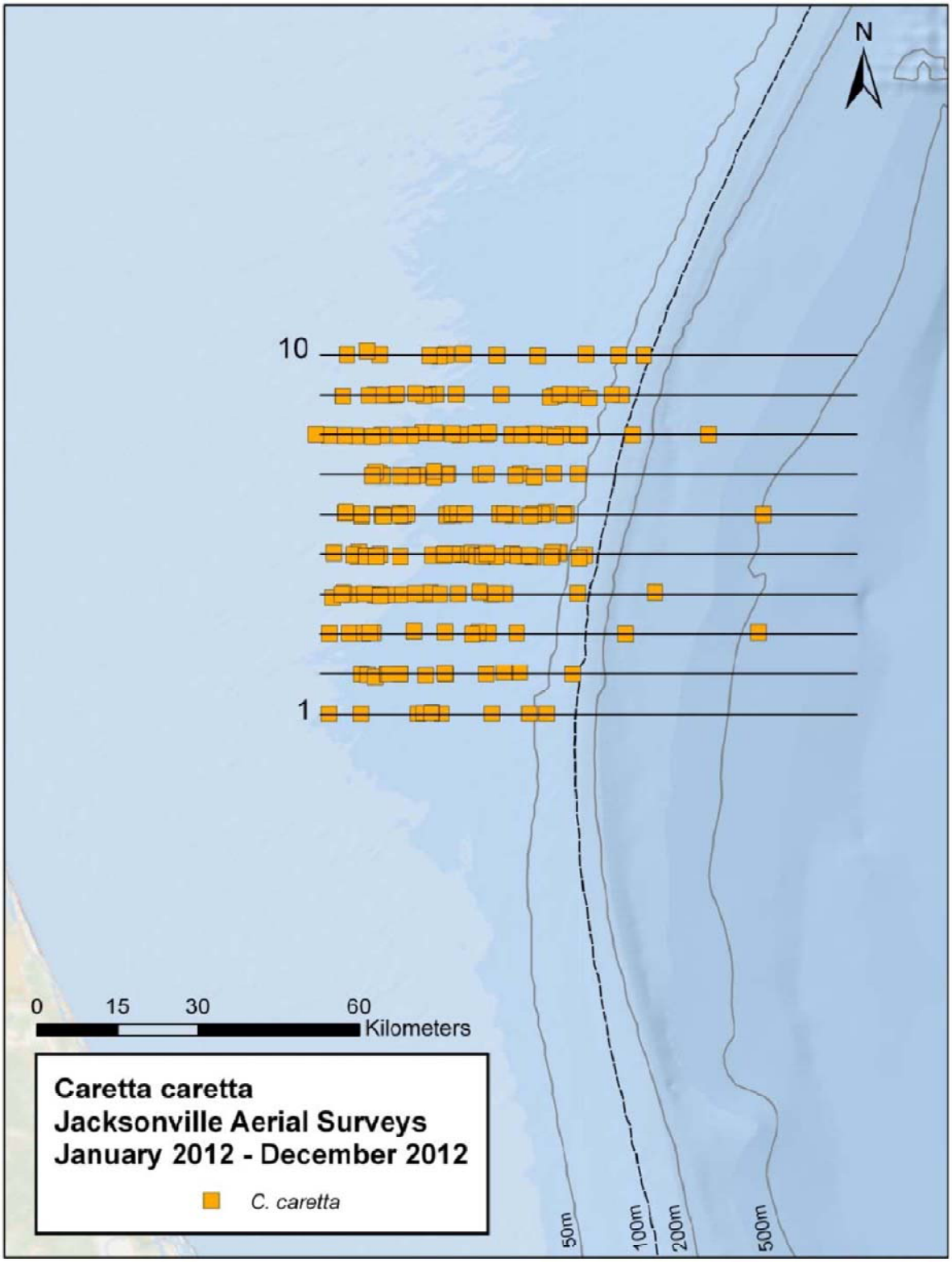


Figure 13. Loggerhead sea turtle (*Caretta caretta*) sightings.

Leatherback Sea Turtle (*Dermochelys coriacea*) (Table 11, Figure 14)

A total of 17 leatherback sea turtles were recorded inshore of the 100m shelf break. This species was observed in six of the seven months surveyed (absent in March). The most recent population estimates for the North Atlantic is a range of 34,000 to 94,000 adult leatherbacks (Turtle Expert Working Group 2007). Leatherback nesting beaches in the Atlantic, as well as worldwide, have experienced severe to moderate declines over the past several decades and this species is listed as endangered under the Endangered Species Act (NMFS 1992).

Table 11. Leatherback sea turtle (*Dermochelys coriacea*) sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #
23-Jan-12	14:36	28	30.504147	-80.409327	W	9	2	100°	1
19-Apr-12	11:45	36	30.303089	-80.674046	W	6	1	90°	1
19-Apr-12	14:02	37	30.433067	-80.592436	W	8	2	90°	1
19-Apr-12	14:12	55	30.500773	-80.533136	E	9	1	90°	1
17-May-12	10:04	17	30.298184	-80.617778	W	6	1	90°	1
17-May-12	10:10	21	30.362356	-80.650883	E	7	2	90°	1
17-May-12	14:51	57	30.165384	-80.550295	E	4	2	90°	1
17-May-12	15:51	72	30.099994	-80.630689	W	3	1	90°	1
6-Jul-12	11:00	21	30.300662	-80.504112	E	6	2	90°	1
6-Jul-12	11:42	28	30.232834	-80.499869	W	5	1	90°	1
7-Jul-12	11:08	26	30.232266	-80.644050	E	5	2	90°	1
7-Jul-12	12:04	38	30.300176	-80.609426	W	6	1	90°	1
7-Jul-12	15:01	74	30.430744	-80.586973	W	8	2	90°	1
7-Jul-12	15:13	69	30.500747	-80.466550	E	9	1	90°	1
7-Jul-12	15:14	82	30.499485	-80.438705	E	9	1	90°	1
22-Sep-12	11:41	33	30.433164	-80.544823	W	8	2	90°	1
5-Nov-12	9:35	9	30.432880	-80.308620	E	8	2	90°	1

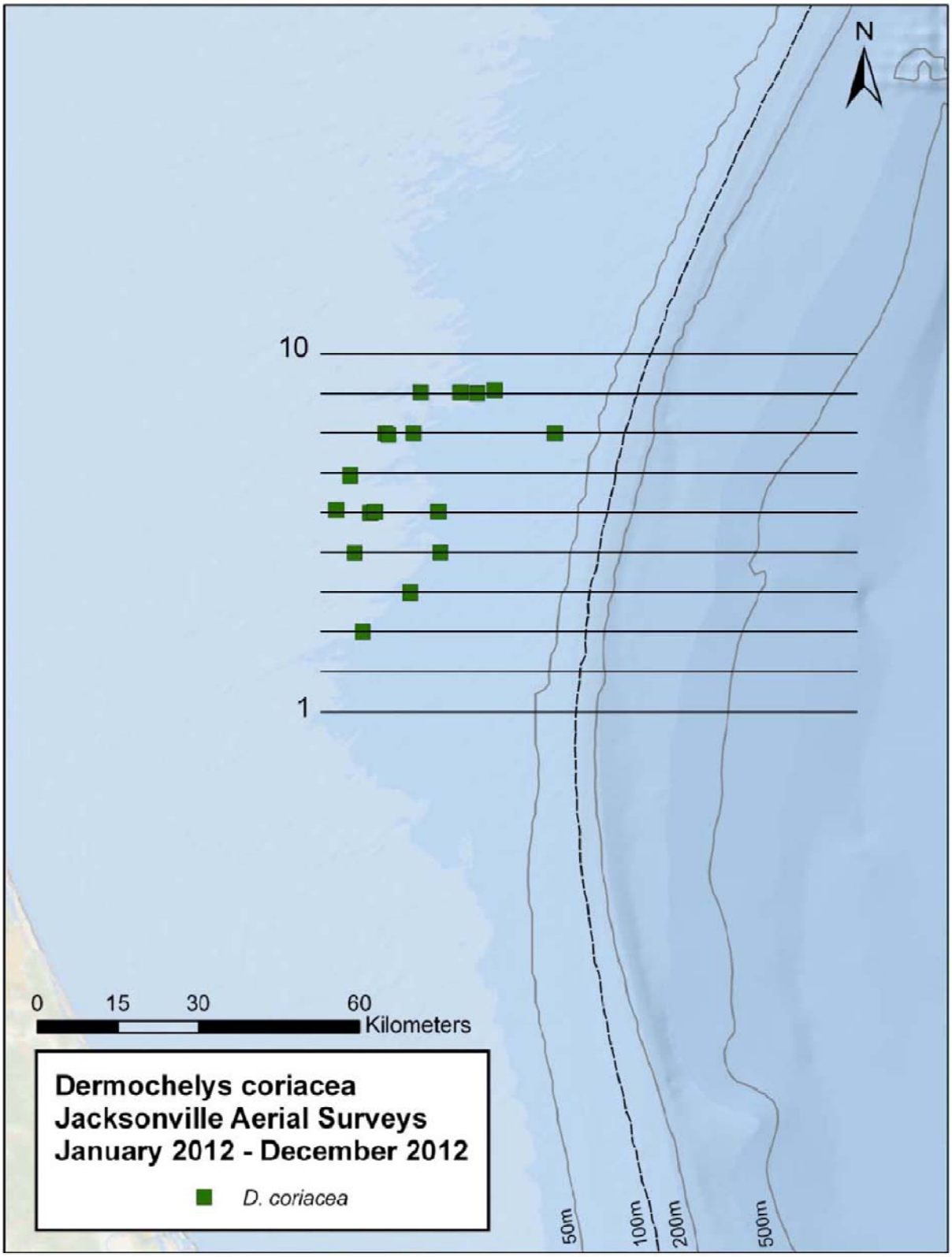


Figure 14. Leatherback sea turtle (*Dermochelys coriacea*) sightings.

Pelagic Bony Fishes *Osteichthyes* (Table 12, Figure 15).

Two ocean sunfish (*Mola mola)* were recorded over the continental shelf in January.

Table 12. Ocean sunfish (*Mola mola*) sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #
24-Jan-12	16:04	82	30.504214	-80.680173	E	9	1	90°	1
25-Jan-12	12:50	136	30.432914	-80.489350	W	8	1	90°	1

Cartilaginous Fishes *Chondrichthyes* (Tables 13-16, Figure 15).

Eighteen manta rays (*Manta birostris*) occurred throughout the survey site with 39% of sightings occurring in January (Table 13). One large group of cownose rays (*Rhinoptera bonasus*) was recorded over the continental shelf in January (Table 14). A single whale shark (*Rhincodon typus*) was recorded in January over the continental shelf (Table 15). A total of 35 sharks were recorded during the reporting period (Table 16), twenty-six were identified as hammerhead sharks (*Sphyrna* spp.) all others listed as unidentified sharks. Sharks were seen throughout the study period with no discernable spatial or temporal trends.

Table 13. Manta ray (*Manta birostris*) sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #
24-Jan-12	9:51	6	29.966337	-80.185537	E	1	1	90°	1
24-Jan-12	12:41	44	30.303067	-80.194575	W	6	2	60°	1
24-Jan-12	16:19	82	30.500272	-80.103493	E	9	1	90°	1
25-Jan-12	9:30	98	30.233192	-80.458395	E	5	2	90°	2
25-Jan-12	10:58	118	30.299283	-80.169524	W	6	1	90°	1
25-Jan-12	12:31	129	30.432693	-80.138629	W	8	2	60°	1
18-Apr-12	10:27	17	30.369542	-80.234487	W	7	2	90°	1
7-Jul-12	9:03	3	29.965952	-80.654093	E	1	1	90°	1
7-Jul-12	15:44	86	30.568077	-80.108742	W	10	2	90°	2
22-Sep-12	9:06	3	30.229617	-80.656144	E	5	1	90°	3
22-Sep-12	9:09	5	30.228720	-80.583081	E	5	2	100°	2
23-Sep-12	11:06	18	30.366531	-80.512814	W	7	1	90°	1
4-Nov-12	9:16	8	29.966455	-79.818108	E	1	3	90°	1

Table 14. Cownose ray (*Rhinoptera bonasus*) sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #
25-Jan-12	11:18	122	30.364823	-80.618180	E	7	2	90°	200

Table 15. Whale shark (*Rhincodon typus*) sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #
23-Jan-12	16:37	64	30.232296	-80.484114	W	5	1	90°	1

Table 16. Shark sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #
23-Jan-12	14:48	34	30.435159	-80.400088	E	8	2	45°	1
24-Jan-12	10:18	10	29.979389	-80.041315	E	1	3	110°	3
24-Jan-12	10:44	18	30.034628	-80.159377	W	2	1	90°	1
24-Jan-12	12:11	41	30.233052	-80.370209	E	5	1	90°	1
24-Jan-12	14:59	58	30.367441	-80.370900	E	7	2	90°	1
24-Jan-12	15:47	69	30.432671	-80.374307	W	8	1	90°	1
24-Jan-12	16:11	84	30.500327	-80.396119	E	9	1	90°	1
24-Jan-12	16:11	76	30.500283	-80.427712	E	9	2	90°	1
24-Jan-12	16:18	81	30.500311	-80.136378	E	9	1	90°	1
24-Jan-12	16:47	87	30.299769	-80.225074	W	6	1	90°	1
25-Jan-12	10:26	108	30.233780	-80.205890	E	5	2	90°	1
25-Jan-12	11:04	111	30.299510	-80.376364	W	6	2	90°	1
25-Jan-12	11:52	134	30.366741	-80.243632	E	7	1	90°	2
25-Jan-12	12:51	149	30.432742	-80.543400	W	8	1	90°	1
19-Apr-12	11:23	21	30.298135	-80.076020	W	6	2	90°	1
19-Apr-12	13:23	43	30.366195	-80.352732	E	7	2	90°	1
16-May-12	14:20	56	30.030674	-80.212296	E	2	1	90°	1
17-May-12	9:04	4	30.231024	-80.486094	E	5	1	90°	2
17-May-12	16:02	62	30.029216	-80.448767	E	2	2	90°	1
17-May-12	16:17	79	30.029267	-79.881078	E	2	2	90°	1
17-May-12	16:44	89	29.969028	-80.464167	W	1	1	90°	1
17-May-12	16:50	90	29.966468	-80.661594	W	1	2	90°	1
6-Jul-12	11:17	21	30.299004	-79.868178	W	6	1	45°	1
7-Jul-12	9:39	7	30.034304	-80.013150	W	2	3	90°	1
7-Jul-12	10:09	16	30.101024	-80.422142	E	3	2	90°	1
7-Jul-12	14:40	55	30.427521	-80.256848	W	8	1	90°	1
7-Jul-12	15:27	73	30.499691	-79.995348	E	9	1	90°	1
22-Sep-12	16:05	69	29.966282	-80.059059	W	1	2	90°	1
4-Nov-12	11:32	27	30.300121	-80.274071	W	6	2	90°	1
4-Nov-12	14:13	42	30.499841	-80.195566	W	9	2	60°	1
5-Nov-12	9:39	10	30.436082	-80.135957	E	8	2	90°	1

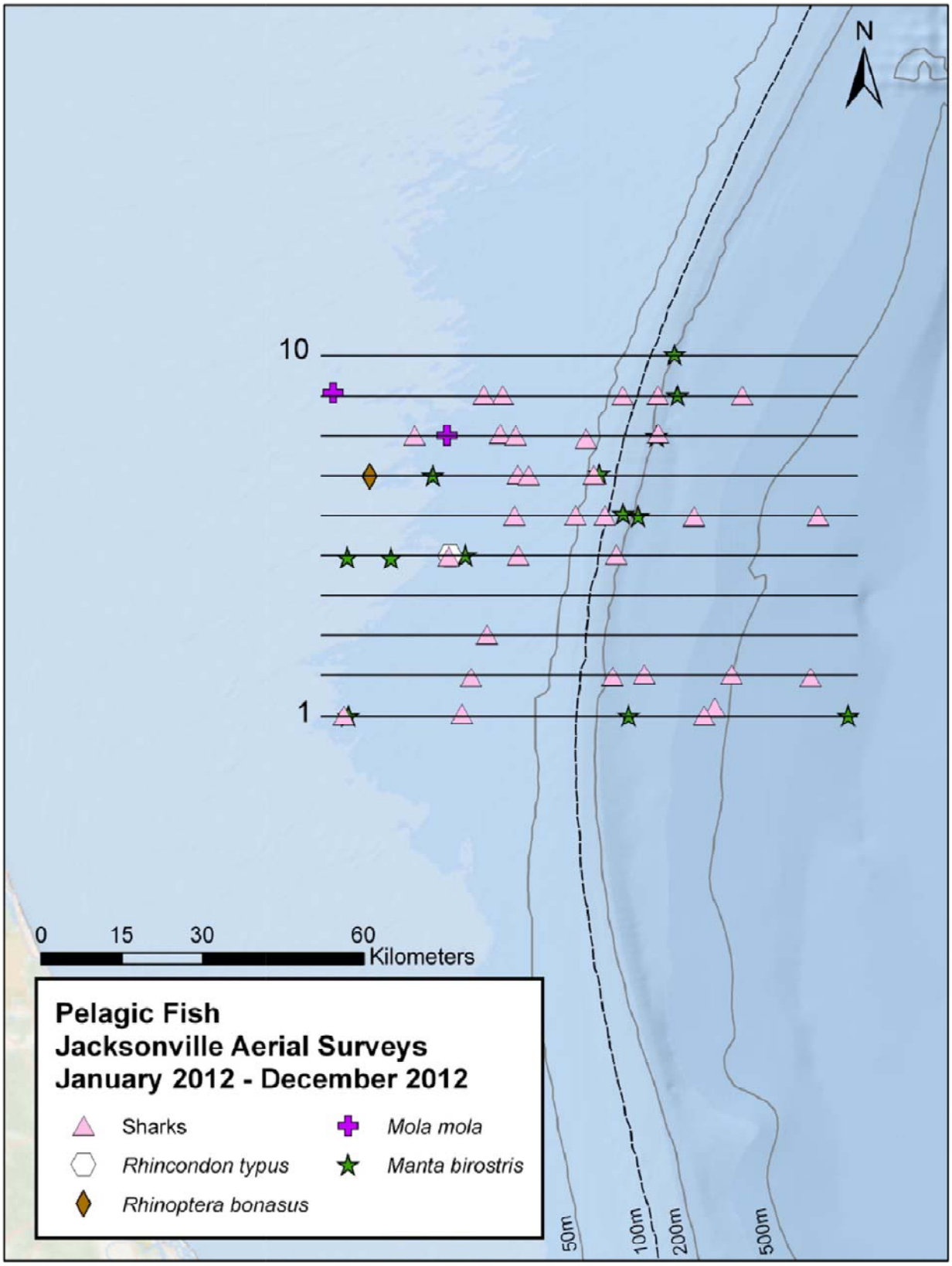


Figure 15. Manta ray (*Manta birostris*), ocean sunfish (*Mola mola*), cownose ray (*Rhinoptera bonasus*), whale shark (*Rhincodon typus*), and shark sightings.

Vessel Sightings

Commercial (Table 17, Figure 16)

A total of 28 commercial vessels (*e.g*. tankers, car carriers, and container vessels) were observed in the study site.

Table 17. Commercial vessel sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #	Comments
23-Jan-12	16:19	46	30.229589	-80.156253	W	5	1	90°	2	Tug and barge
24-Jan-12	9:48	4	29.967778	-80.268901	E	1	3	90°	1	Tanker
24-Jan-12	11:54	34	30.167814	-80.494194	W	4	3	60°	1	Stellwagon
24-Jan-12	12:52	48	30.300393	-80.544813	W	6	1	45°	1	Car carrier
25-Jan-12	11:24	118	30.366660	-80.394635	E	7	2	45°	1	Research vessel
29-Mar-12	11:02	3	30.432191	-80.510916	E	8	3	60°	1	Cargo vessel
29-Mar-12	11:35	8	30.366138	-80.263142	W	7	3	45°	1	Tanker
29-Mar-12	11:58	14	30.300118	-80.354200	E	6	2	60°	1	Cargo vessel
18-Apr-12	10:44	21	30.300159	-80.678809	E	6	2	90°	1	Tug and barge
18-Apr-12	13:59	37	30.034488	-79.979186	W	2	1	30°	1	Tanker
18-Apr-12	14:17	40	30.033739	-80.599601	W	2	1	45°	1	Container vessel
19-Apr-12	11:27	29	30.301685	-80.212470	W	6	3	60°	1	Tanker (resight)
19-Apr-12	11:39	35	30.301336	-80.425903	W	6	2	90°	1	Frigate (resight)
16-May-12	9:11	6	30.566277	-79.920413	E	10	3	60°	1	NOAA Research vessel
17-May-12	9:53	16	30.297197	-80.192377	W	6	3	30°	1	Tanker
17-May-12	11:26	39	30.431628	-80.610217	W	8	2	45°	2	Tug and barge
6-Jul-12	9:11	4	30.567219	-80.128155	E	10	2	45°	1	Container vessel
6-Jul-12	10:48	18	30.365021	-80.567687	W	7	4	45°	1	Car carrier
6-Jul-12	10:56	19	30.302323	-80.677700	W	6	3	60°	1	Car carrier
7-Jul-12	10:16	17	30.100116	-80.132641	E	3	4	45°	1	Tanker
7-Jul-12	13:53	54	30.366729	-80.239834	E	7	2	60°	1	Research vessel
7-Jul-12	15:47	87	30.566993	-80.213809	W	10	3	60°	1	Cargo vessel
22-Sep-12	10:51	30	30.364349	-80.248851	E	7	2	60°	1	Research vessel
23-Sep-12	9:15	3	30.566849	-80.491128	E	10	2	60°	1	Commercial fishing vessel
4-Nov-12	10:03	14	30.100615	-80.303637	E	3	2	90°	1	Salvage boat
4-Nov-12	14:08	41	30.498237	-79.992369	W	9	3	60°	1	Barge

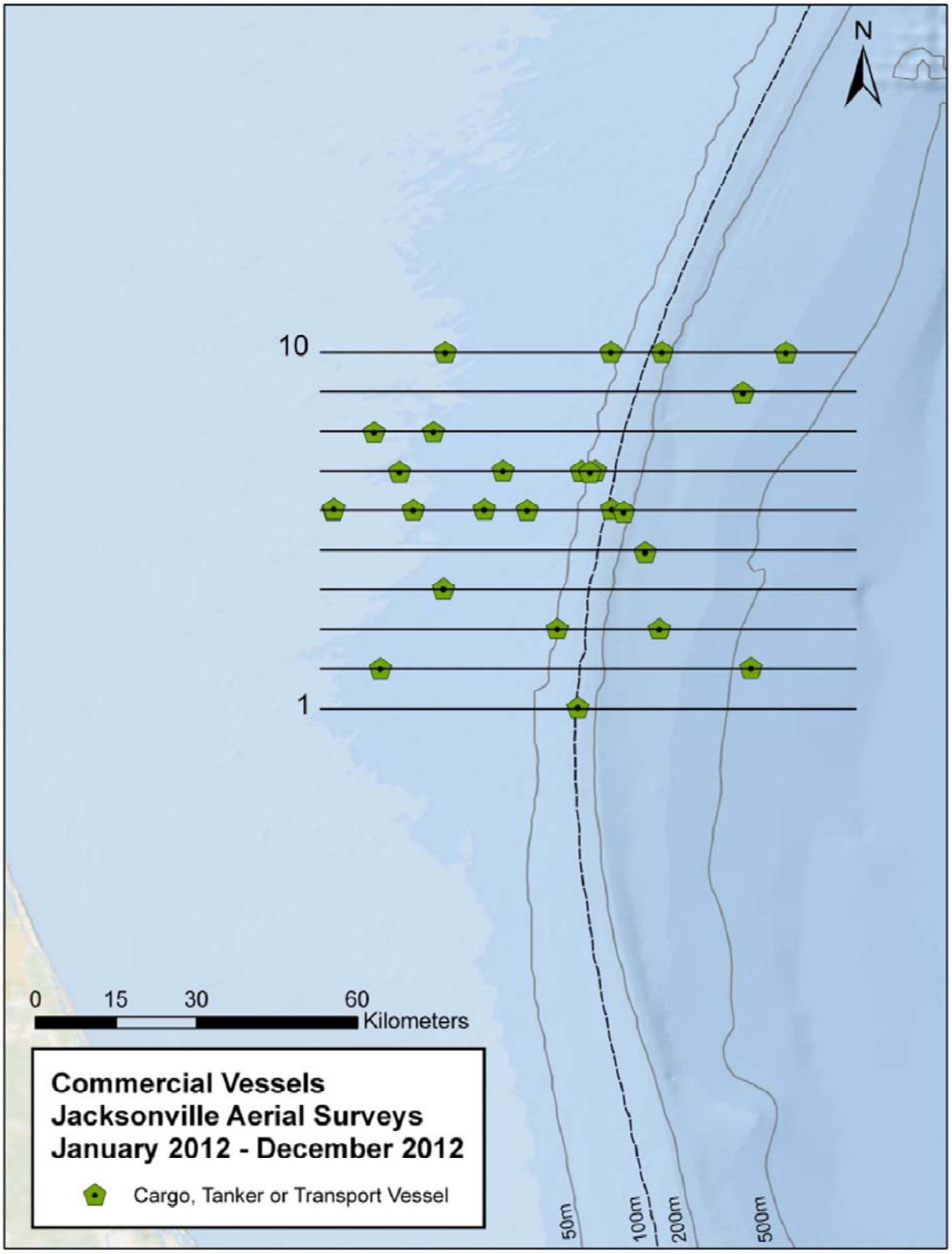


Figure 16. Large commercial shipping vessel sightings.

Military (Table 18, Figure 17)

A total of 9 U.S. military vessels were seen during the reporting period.

Table 18. Military vessel sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #	Comments
24-Jan-12	10:30	14	30.037247	-79.920285	W	2	2	60°	1	Warship
24-Jan-12	11:25	30	30.095146	-79.964526	E	3	3	45°	4	3 warships, 1 carrier
25-Jan-12	10:39	114	30.233041	-80.030458	E	5	2	90°	1	Warship
19-Apr-12	10:56	25	30.233724	-80.426002	E	5	3	60°	2	Military tanker and frigate
16-May-12	9:30	9	30.501480	-80.274758	W	9	1	90°	1	Warship

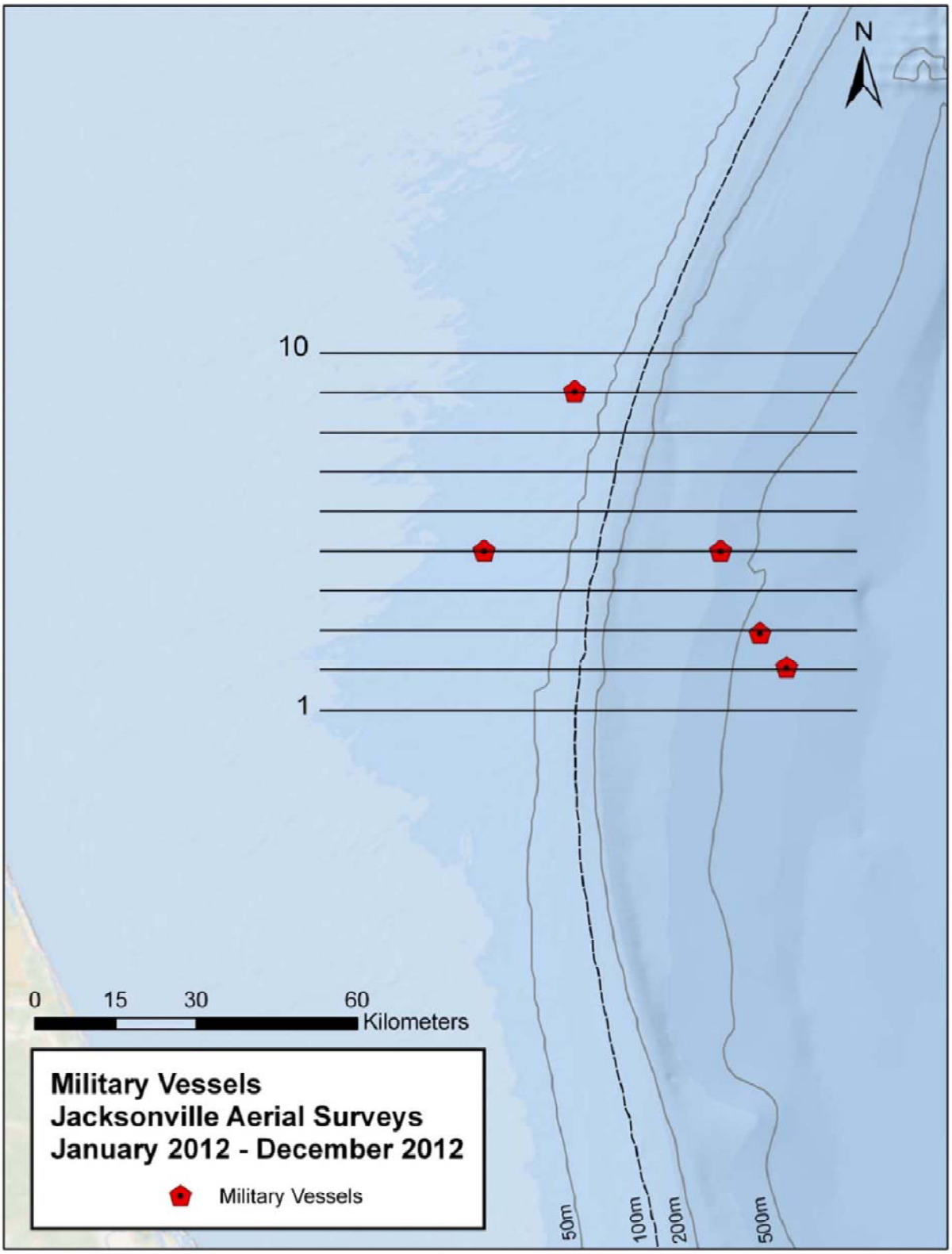


Figure 17. Military vessel sightings.

Other Vessels (Table 19, Figure 18)

A total of 104 other vessels were recorded in the survey area with all but three classified as recreational fishing vessels.

Table 19. Other vessel sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #	Comments
23-Jan-12	15:50	38	30.298830	-80.372947	E	6	2	45°	4	Recreational fishing vessel
23-Jan-12	15:51	53	30.299744	-80.337044	E	6	1	100°	1	Sailboat
23-Jan-12	15:53	54	30.300407	-80.295180	E	6	2	45°	1	Recreational fishing vessel
24-Jan-12	11:16	26	30.101270	-80.296678	E	3	3	30°	1	Recreational fishing vessel
24-Jan-12	11:46	34	30.167618	-80.240891	W	4	2	60°	1	Recreational fishing vessel
24-Jan-12	11:56	35	30.168351	-80.549916	W	4	3	45°	4	Recreational fishing vessel
24-Jan-12	12:14	43	30.231582	-80.257070	E	5	1	45°	1	Recreational fishing vessel
24-Jan-12	15:45	73	30.432762	-80.307390	W	8	3	90°	1	Recreational fishing vessel
24-Jan-12	17:00	91	30.299582	-80.391955	W	6	3	45°	1	Recreational fishing vessel
25-Jan-12	9:31	99	30.233221	-80.440978	E	5	2	45°	1	Recreational fishing vessel
25-Jan-12	10:16	100	30.231403	-80.295746	E	5	3	90°	1	Recreational fishing vessel
25-Jan-12	11:00	110	30.299451	-80.247276	W	6	1	90°	2	Recreational fishing vessel
25-Jan-12	11:01	119	30.299278	-80.287074	W	6	3	45°	1	Recreational fishing vessel
25-Jan-12	11:51	123	30.366643	-80.277565	E	7	2	60°	2	Recreational fishing vessel
25-Jan-12	12:47	148	30.433556	-80.398768	W	8	1	90°	1	Recreational fishing vessel
29-Mar-12	11:09	3	30.433368	-80.217917	E	8	1	90°	1	Recreational fishing vessel
29-Mar-12	12:27	15	30.233157	-80.257175	W	5	1	60°	1	Recreational fishing vessel
29-Mar-12	12:32	19	30.233007	-80.438675	W	5	2	60°	1	Recreational fishing vessel
29-Mar-12	15:09	31	30.100616	-80.430067	W	3	1	60°	1	Recreational fishing vessel
18-Apr-12	10:55	24	30.297753	-80.257373	E	6	3	60°	1	Recreational fishing vessel
19-Apr-12	8:53	3	29.965140	-80.658403	E	1	3	45°	1	Recreational fishing vessel
19-Apr-12	9:43	13	30.034167	-80.302580	W	2	1	90°	1	Recreational fishing vessel
19-Apr-12	11:03	18	30.233202	-80.189901	E	5	1	90°	1	Recreational fishing vessel
19-Apr-12	13:43	49	30.430909	-79.908398	W	8	3	110°	1	Recreational fishing vessel
16-May-12	10:21	25	30.432848	-80.206163	E	8	3	90°	1	Recreational fishing vessel
16-May-12	10:40	28	30.363830	-79.996099	W	7	2	60°	1	Recreational fishing vessel
16-May-12	13:44	48	30.160967	-80.267361	E	4	3	90°	1	Recreational fishing vessel
17-May-12	9:01	3	30.233500	-80.606840	E	5	2	90°	1	Recreational fishing vessel
17-May-12	9:58	17	30.297832	-80.383691	W	6	3	60°	1	Recreational fishing vessel
17-May-12	10:09	20	30.363597	-80.666132	E	7	3	90°	1	Recreational fishing vessel
17-May-12	10:30	25	30.363111	-80.228834	E	7	2	45°	1	Recreational fishing vessel
17-May-12	11:14	36	30.432466	-80.155239	W	8	2	90°	1	Recreational fishing vessel
17-May-12	11:44	37	30.499269	-80.222547	E	9	2	60°	1	Recreational fishing vessel
17-May-12	15:41	58	30.098994	-80.278285	W	3	3	90°	1	Recreational fishing vessel
17-May-12	16:03	63	30.031277	-80.428463	E	2	2	30°	1	Recreational fishing vessel
6-Jul-12	10:06	11	30.435035	-80.463697	W	8	3	60°	1	Recreational fishing vessel
6-Jul-12	11:12	20	30.300629	-80.076464	W	6	1	30°	1	Sailboat
6-Jul-12	11:46	31	30.231536	-80.655667	W	5	1	90°	1	Recreational fishing vessel
6-Jul-12	14:18	47	30.100957	-80.293182	W	3	3	90°	1	Recreational fishing vessel
6-Jul-12	14:23	37	30.099484	-80.469860	W	3	2	60°	1	Recreational fishing vessel

Table 19 (Continued). Other vessel sightings in the Jacksonville, Florida survey area from January 2012 to December 2012.

Date	Time	Way Point	Latitude	Longitude-1	Heading	Track Number	Angle out	Degree Forward	Best #	Comments
6-Jul-12	15:02	46	30.025366	-80.641235	E	2	3	90°	1	Recreational fishing vessel
6-Jul-12	15:05	64	30.031941	-80.523089	E	2	3	45°	1	Recreational fishing vessel
6-Jul-12	16:05	55	29.963605	-80.355815	W	1	2	60°	1	Recreational fishing vessel
7-Jul-12	9:08	4	29.965374	-80.456601	E	1	2	45°	1	Recreational fishing vessel
7-Jul-12	9:08	3	29.965383	-80.457234	E	1	3	90°	1	Recreational fishing vessel
7-Jul-12	9:15	5	29.965445	-80.186785	E	1	2	45°	1	Recreational fishing vessel
7-Jul-12	9:52	10	30.031746	-80.463290	W	2	3	45°	2	Recreational fishing vessel
7-Jul-12	9:53	11	30.031191	-80.531220	W	2	2	60°	1	Recreational fishing vessel
7-Jul-12	14:56	60	30.431075	-80.426484	W	8	3	90°	1	Recreational fishing vessel
7-Jul-12	14:59	73	30.432935	-80.522654	W	8	2	90°	2	Recreational fishing vessel
7-Jul-12	15:09	67	30.500788	-80.626404	E	9	2	90°	4	Recreational fishing vessel
7-Jul-12	15:13	81	30.500980	-80.469588	E	9	2	60°	1	Recreational fishing vessel
22-Sep-12	9:06	3	30.231007	-80.682574	E	5	1	90°	1	Recreational fishing vessel
22-Sep-12	9:22	10	30.232518	-80.466608	E	5	1	90°	1	Recreational fishing vessel
22-Sep-12	9:22	10	30.232734	-80.469390	E	5	2	90°	1	Research vessel
22-Sep-12	10:26	23	30.363355	-80.687434	E	7	3	60°	2	Recreational fishing vessel
22-Sep-12	10:26	21	30.363629	-80.676464	E	7	3	60°	1	Recreational fishing vessel
22-Sep-12	10:29	22	30.362974	-80.555979	E	7	2	90°	2	Recreational fishing vessel
22-Sep-12	10:30	25	30.363846	-80.538328	E	7	3	60°	1	Recreational fishing vessel
22-Sep-12	11:38	44	30.432827	-80.435163	W	8	3	60°	3	Recreational fishing vessel
22-Sep-12	11:52	48	30.496698	-80.577983	E	9	1	90°	1	Recreational fishing vessel
22-Sep-12	12:03	36	30.496989	-80.209667	E	9	3	60°	1	Recreational fishing vessel
23-Sep-12	10:00	6	30.498816	-80.592780	W	9	1	90°	1	Recreational fishing vessel
23-Sep-12	10:00	6	30.498840	-80.596719	W	9	2	60°	1	Recreational fishing vessel
23-Sep-12	10:12	9	30.433118	-80.470260	E	8	3	90°	1	Recreational fishing vessel
23-Sep-12	10:14	10	30.432807	-80.394764	E	8	3	90°	1	Recreational fishing vessel
4-Nov-12	8:46	3	29.964476	-80.434357	E	1	1	60°	1	Recreational fishing vessel
4-Nov-12	8:47	3	29.964981	-80.392535	E	1	2	60°	1	Recreational fishing vessel
4-Nov-12	9:38	10	30.031702	-80.259775	W	2	2	90°	3	Sailboat and 2 Recreational fishing vessels
4-Nov-12	9:42	11	30.032839	-80.402781	W	2	2	90°	1	Recreational fishing vessel
4-Nov-12	9:57	17	30.101223	-80.531273	E	3	2	90°	2	Recreational fishing vessel
4-Nov-12	10:03	18	30.100539	-80.295554	E	3	3	60°	1	Recreational fishing vessel
4-Nov-12	10:39	19	30.167787	-80.261798	W	4	2	90°	1	Recreational fishing vessel
4-Nov-12	11:00	28	30.233832	-80.437756	E	5	2	60°	2	Recreational fishing vessel
4-Nov-12	11:05	24	30.232548	-80.266400	E	5	1	90°	1	Recreational fishing vessel
4-Nov-12	13:27	33	30.566555	-80.235968	E	10	2	60°	1	Recreational fishing vessel
4-Nov-12	14:26	50	30.500599	-80.513790	W	9	2	60°	1	Recreational fishing vessel
4-Nov-12	14:28	45	30.499688	-80.574130	W	9	2	60°	1	Recreational fishing vessel
4-Nov-12	14:47	50	30.436727	-80.487093	E	8	2	60°	3	Recreational fishing vessel
5-Nov-12	9:19	7	30.497883	-80.602257	W	9	1	60°	1	Recreational fishing vessel
5-Nov-12	9:34	8	30.434591	-80.356064	E	8	2	90°	1	Recreational fishing vessel

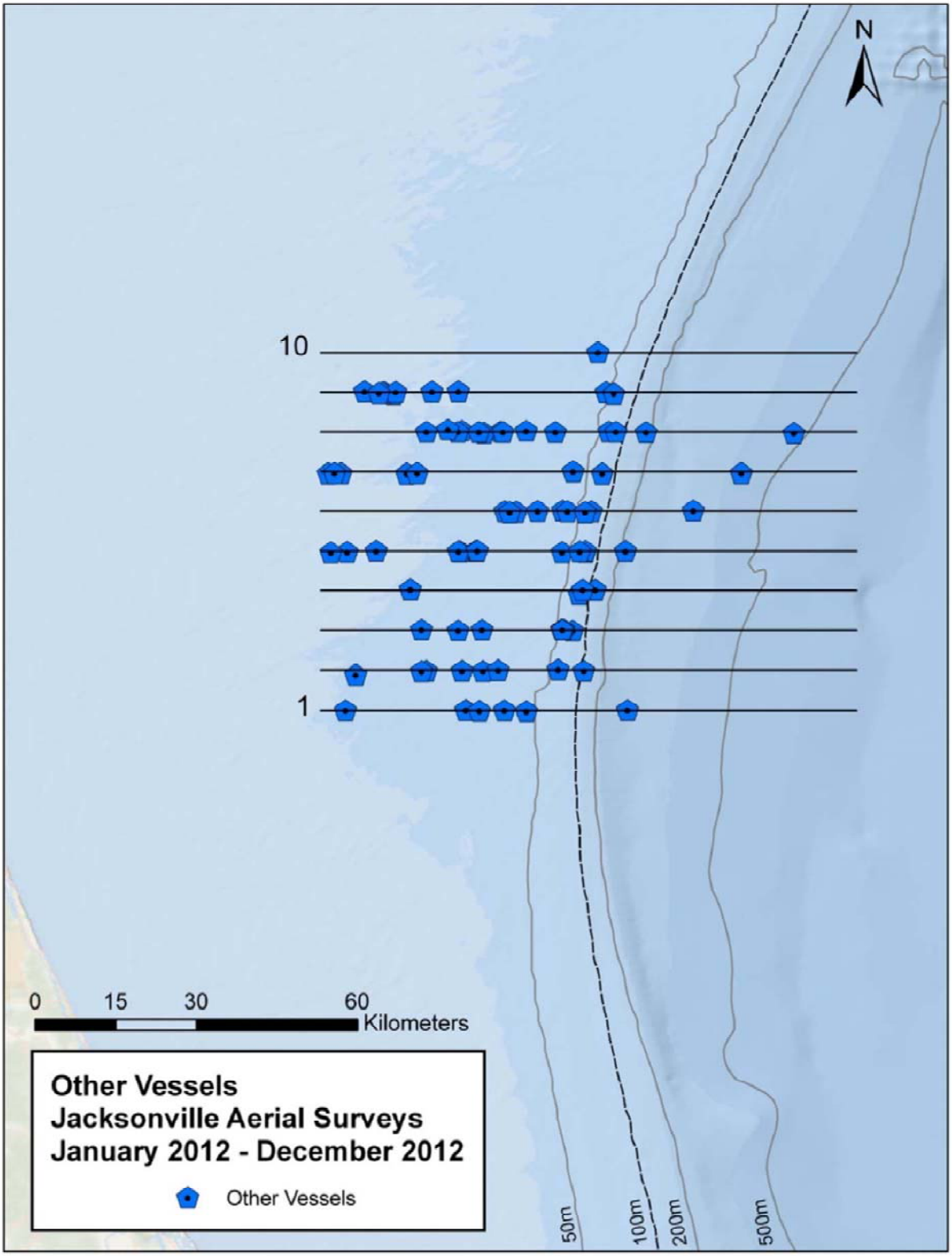


Figure 18. Other vessel sightings.

Literature Cited

DeMaster, D. P., Lowry, L. F., Frost, K. J., and R. A. Bengtson. 2001. The effect of sea state on estimates of abundance for beluga whales (*Delphinapterus leucas*) in Norton Sound, Alaska. Fisheries Bulletin 99: 197-201.

Gómez de Segura, A., Crespo, E. A., Pedraza, S. N., Hammond., P. S., and J. A. Raga. 2006. Abundance of small cetaceans in waters of the central Spanish Mediterranean. Marine Biology, 150: 149-160.

McAlarney, R.J., Cummings, E.E., Pabst, D.A., McLellan, W.A., Aerial Surveys of the proposed Undersea Warfare Training Range (USWTR) in Jacksonville, Florida, July 2010 to December 2011. Submitted to The Department of the Navy Norfolk, VA. March 20, 2012.

Perrin, W F., Mitchell, E. D., Mead, J. G., Caldwell, D. K., Caldwell, M. C., van Bree, P. J. H., and W. H. Dawbin. 1987. Revision of the spotted dolphins, *Stenella* sp. Marine Mammal Science 3(2): 99-170.

Perrin, W. F., Caldwell, D. K., and M. C. Caldwell. 1994. Atlantic spotted dolphin. pp. 173-190. *In*: S. H. Ridgeway and R. Harrison (eds). Handbook of marine mammals, Volume 5: The first book of dolphins. Academic Press, San Diego, 418 pp.

Torres, L. G., Rosel, P. E., D'Agrosa, D., and A. J. Read. 2003. Improving management of overlapping bottlenose dolphin ecotypes through spatial analysis and genetics. Marine Mammal Science, 19(3): 502-514.

National Marine Fisheries Service and U.S. Fish and Wildlife Service. 2008. Recovery Plan for the Northwest Atlantic Population of the Loggerhead Sea Turtle (*Caretta caretta*), Second Revision. National Marine Fisheries Service, Silver Spring, MD.

National Marine Fisheries Service and U.S. Fish and Wildlife Service. 1992. Recovery Plan for Leatherback Turtles in the U.S. Caribbean, Atlantic and Gulf of Mexico. National Marine Fisheries Service, Washington, D.C.

National Marine Fisheries Service and U.S. Fish and Wildlife Service. 1992. Recovery Plan for the Kemp's Ridley Sea Turtle (*Lepidochelys kempii*). National Marine Fisheries Service, St. Petersburg, Florida.

NOAA 2011. Endangered and Threatened Species; Determineation of Nine Distinct population Segments of Loggerhead Sea Turtles as Endangered or Threatened. Federal Register. Vol. 76 No. 184.

Waring GT, Josephson E, Fairfield-Walsh CP, Maze-Foley K, editors. 2007. U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments -- 2007. NOAA Tech Memo NMFS NE 205; 415 p.

Waring GT, Josephson E, Fairfield-Walsh CP, Maze-Foley K, editors. 2008. U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments -- 2008. NOAA Tech Memo NMFS NE 210; 440 p.

Waring GT, Josephson E, Maze-Foley K, Rosel, PE, editors. 2011. U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments -- 2010. NOAA Tech Memo NMFS NE 219; 598 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026.

Waring GT, Josephson E, Maze-Foley K, and Rosel, PE, editors. 2012. U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments – 2012. NOAA Tech Memo NMFS NE

Appendix A

AERIAL SURVEY DATA SHEET

Date:_____ **Observer Side:**_____ **GPS#:**_____ **Page**__ **of**___

Pilot/Co-Pilot_____ **Observers Left/Right:**_____ **Hobbs:**_____

Time	Waypoint #	Event	Heading	Track #	Observer R / L	Visibility	BSS	Cloud	Glare L	Glare R	Vertical Angle	Horizontal degree	Sighting Cue	Species	Reliability	Min #	Max #	Best Est	Comments

Codes for Variables on USWTR Aerial Survey Data Sheet

Date: Month, Day, Year **Track#:** opportunistic track line=99

Event:

1.1 = On effort/on track
1.2 = Off effort

3.1 = Change in environmental conditions

10.0 = Opportunistic sighting(s)
PF = Preflight
XB = Cross Beach
WU = Wheels Up
WD = Wheels Down
TE = Transit Leg on Effort

2.0 = Sighting-breaking track/off effort (real time)
2.3 = Vessel sighting

2.4 = Sighting of marine mammal (real location)
2.41 = Location of Sighting Cue, No Animals sighted
2.42 = Break from sighting

2.7 = Sighting of sea turtle (real location)
2.8 = Sighting of large vessel (Military, commercial, etc.)
2.9 = Unidentified sighting, requires comments

Confidence of cue
1 = definite
2 = probable
3 = possible/unsure

Beaufort Sea State:
0 = slick, calm, mirror-like
1 = small waves
2 = whitecaps 0-33%, waves 1-2 feet
3 = whitecaps 33-50%, waves 2-3 feet
4 = whitecaps 50-65%, waves 3-5 feet
5 = whitecaps >65%, waves >5 feet
6 = too rough too survey

Cloud Cover:
01 = clear
02 = partly cloudy
03 = continuous layer of clouds
04 = rain
05 = haze
99 = other, requires comments

Glare
0 = No glare 1 = 0-25 %
2 = 25 -50 % 3 = >50%

Visibility:
1 = clear to horizon
2 = half the distance to the horizon
3 = less than half the distance to the horizon

Sighting Cues:
1 = Blow
2 = Splash
3 = Body Part
4 = Breach
5 = Other (needs comments)

Vertical Angle is given in rough increments of 20 degrees with 1 being directly on the trackline and 4 being anything outside of survey wide to horizon

Horizontal Angle is given assuming the nose of the plane is 0 degrees and directly off the wing is 90 degrees – measurements are taken from 1-180 on each side of the plane.

Appendix B

Species List for Aerial Surveys		
Common Name	**Scientific Name**	**Species Code**
Cetaceans		
North Atlantic right whale	*Eubalaena glacialis*	Egl
Minke whale	*Balaenoptera acutorostrata*	Bac
sei whale	*Balaenoptera borealis*	Bbo
fin whale	*Balaenoptera physalus*	Bph
Brydes whale	*Balaenoptera edeni*	Bed
humpback whale	*Megaptera novaeangliae*	Mno
unidentified balaenopterid	Family *Balaenopteridae*	BALA
sperm whale	*Physeter macrocephalus*	Pma
pygmy sperm whale	*Kogia breviceps*	Kbr
dwarf sperm whale	*Kogia sima*	Ksi
unidentified Kogia	*Kogia* spp.	KOGI
Northern bottlenose whale	*Hyperoodon ampullatus*	Ham
Cuvier's beaked whale	*Ziphius cavirostris*	Zca
Mesoplodon beaked whale	Genus *Mesoplodon*	MESO
unidentified beaked whale	Family *Ziphiidae*	ZIPH
harbor porpoise	*Phocoena phocoena*	Pph
killer whale	*Orcinus orca*	Oor
melon-headed whale	*Peponocephala electra*	Pel
pygmy killer whale	*Feresa attenuata*	Fat
false killer whale	*Pseudorca crassidens*	Pcr
Risso's dolphin	*Grampus griseus*	Ggr
long-finned pilot whale	*Globicephala melas*	Gme
short-finned pilot whale	*Globicephala macrorhynchus*	Gma
unidentified pilot whale	Genus *Globicephala*	GLOB
rough-toothed dolphin	*Steno bredanensis*	Sbr
Atlantic white-sided dolphin	*Lagenorhynchus acutus*	Lac
Fraser's dolphin	*Lagenodelphis hosei*	Lho
common dolphin	*Delphinus delphis*	Dde
bottlenose dolphin	*Tursiops truncatus*	Ttr
spotted dolphin	*Stenella frontalis*	Sfr
striped dolphin	*Stenella coeruleoalba*	Sco
spinner dolphin	*Stenella longirostris*	Scl
unidentified *Stenella*	Genus *Stenella*	STEN
unidentified delphinid	Family *Delphinidae*	DELP
unidentified cetacean		CETA
Pinnipeds		
gray seal	*Halichoerus grypus*	Hgr
harbor seal	*Phoca vitulina*	Pvi
harp seal	*Phoca groenlandica*	Pgr
hooded seal	*Cystophora cristata*	Ccr
unidentified phocid	Family *Phocidae*	PHOC
Sea Turtles		
loggerhead	*Caretta caretta*	Cca
leatherback	*Dermochelys coriacea*	Dco
green	*Chelonia mydas*	Cmy
Kemp's ridley	*Lepidochelys kempii*	Lke
hawksbill	*Eretmochelys imbricata*	Eim
unidentified sea turtle		TURT
Other interesting sightings		
ocean sunfish	*Mola mola*	Mmo
basking shark	*Cetorhinus maximus*	Cma
whale shark	*Rhincodon typus*	Rty
manta ray	*Manta birostris*	Mbi
cownose rays	*Rhinoptera bonasus*	Rbo

Appendix B

Sighting

Initial sighting on Track

Time: _____ WP#: _____ Lat: _____ Long: _____
Vertical Angle: _____ Horizontal Bearing in Degrees: _____ Sighting Cue: _____
On/Off Effort: _____ Trackline: _____ Beaufort Sea State: _____
Observer: _____ Observer side: _____

Actual Time and Position of Sighting

Time: _____ WP#: _____ Lat: _____ Long: _____
Species: Numbers (Low/High/Best): _____
Features used in Species ID: _____
_____
Representative images used for Species ID: _____
Photographer: _____ Frame numbers: _____ Spacer: _____
Calculated distance from Trackline: _____

Final Time and Position of Sighting

Time: _____ WP#: _____ Lat: _____ Long: _____
Calculated Distance Traveled: _____

Behavior and Additional Comments

_____
_____
_____
_____

Date: Jan 23, 2012

USWTR Daily Plane Log Sheet

Pilot in Command: Cameron Second in Command: Stan Plane: N1353L
Observers: Erin - Left, Ryan - Right
Time take off: 12:54 HOBBS Start: 1810.4
Land for lunch: NA
Track Lines and Direction (e.g. N to S) Flown: 10 to 5

Take off after lunch: NA HOBBS Stop: 1814.9
Land: 17:12 HOBBS Total: 4.5
Track Lines and Direction (e.g. N to S) Flown: NA
Overall weather: AM flights fogged in, PM clearing with moderate seas

General Observations

Calm winds, fog persisting throughout the morning restricting visibility. Afternoon flights covered six lines and recorded six sighting consisting of bottlenose and spotted dolphins. A single whale shark was also observed inside the range. Thick fog inshore caused us to truncate six miles from lines eight and nine.

Transit effort leg: NO

Date: Jan 24, 2012

USWTR Daily Plane Log Sheet

Pilot in Command: Cameron Second in Command: Stan Plane: N1353L
Observers: Ryan - Left, Erin - Right
Time take off: 9:11 HOBBS Start: 1814.9
Land for lunch: 13:34
Track Lines and Direction (e.g. N to S) Flown: 1 to 6

Take off after lunch: 14:28 HOBBS Stop: 1822.8
Land: 17:30 HOBBS Total: 7.9
Track Lines and Direction (e.g. N to S) Flown: 7 to 9, 6
Overall weather: Hazy, continuous layers of clouds, BSS 2-3

General Observations

Nice day out with BSS between 2-3 and winds 10 knt or less. Nine sightings of bottlenose and spotted dolphins. The Duke crew was out on a vessel survey and HARP deployment.

Transit effort leg: NO

Date: Jan 25, 2012

USWTR Daily Plane Log Sheet

Pilot in Command: Cameron Second in Command: Stan Plane: N1353L
Observers: Erin - Left, Ryan - Right
Time take off: 9:02 HOBBS Start: 1822.8
Land for lunch: 13:15
Track Lines and Direction (e.g. N to S) Flown: 5 to 8

Take off after lunch: NA HOBBS Stop: 1827.2
Land: NA HOBBS Total: 4.4
Track Lines and Direction (e.g. N to S) Flown: NA
Overall weather: Overcast but calmer seas

General Observations

Flew four lines in the morning with seven sightings including bottlenose and spotted dolphins as well as a small group of Risso's dolphin and a single humpback whale.

Transit effort leg: NO

Date: Mar 29, 2012

USWTR Daily Plane Log Sheet

Pilot in Command: Cameron Second in Command: Stan Plane: N1314S
Observers: Ryan - Left, Erin - Right
Time take off: 10:02 HOBBS Start: 902.6
Land for lunch: 13:01
Track Lines and Direction (e.g. N to S) Flown: 8 to 5

Take off after lunch: 14:22 HOBBS Stop: 908.6
Land: 16:56 HOBBS Total: 6
Track Lines and Direction (e.g. N to S) Flown: 4 to 1
Overall weather: Hazy, BSS 2-4

General Observations

No sightings in the morning, rough seas. Had to skip lines 10 and 9 due to Naval activity. In the afternoon BSS was 2 and we had six sightings of bottlenose and spotted dolphins. Lines 4 to 1 had to be truncated 20 miles on the east end due to Naval activity.

Transit effort leg: NO

Date: Apr 18, 2012

USWTR Daily Plane Log Sheet

Pilot in Command: Bob Second in Command: Greg Plane: N1275M
Observers: Erin - Left, Ryan - Right
Time take off: 8:35 HOBBS Start: 657.9
Land for lunch: 11:55
Track Lines and Direction (e.g. N to S) Flown: 10 to 5

Take off after lunch: 12:44 HOBBS Stop: 664.8
Land: 4:00 HOBBS Total: 6.9
Track Lines and Direction (e.g. N to S) Flown: 1 to 4
Overall weather: AM - fair, PM - better

General Observations

Winds 10-15knts overcast, chance of showers

AM - BSS 3-4 better offshore and subsiding as the day went on - no cetacean sightings

PM - BSS 2-3, three sightings: 2 bottlenose & 1 spotted dolphins

Transit effort leg: NO

Date: Apr 19, 2012

USWTR Daily Plane Log Sheet

Pilot in Command: Bob Second in Command: Greg Plane: N1275M
Observers: Ryan - Left, Erin - Right
Time take off: 8:30 HOBBS Start: 664.8
Land for lunch: 12:08
Track Lines and Direction (e.g. N to S) Flown: 1 to 6

Take off after lunch: 12:56 HOBBS Stop: 671.2
Land: 15:25 HOBBS Total: 6.4
Track Lines and Direction (e.g. N to S) Flown: 7 to 10
Overall weather: Cloudy and windy, some rain, BSS 2-4

General Observations

Two sightings in the morning and 1 in the afternoon. Survey conditions improved in the afternoon.

Transit effort leg: NO

Date: May 16, 2012

USWTR Daily Plane Log Sheet

Pilot in Command: Bob Second in Command: Josh Plane: N337CH
Observers: Ryan - Left, Erin - Right
Time take off: 8:27 HOBBS Start: 3528.9
Land for lunch: 11:18
Track Lines and Direction (e.g. N to S) Flown: 10 to 7

Take off after lunch: 12:17 HOBBS Stop: 3535.2
Land: 15:21 HOBBS Total: 6.3
Track Lines and Direction (e.g. N to S) Flown: 6 to 1
Overall weather: Cloudy, hazy BSS 2-3

General Observations

Three sightings of spotted dolphins in the morning. Weather turned bad in the afternoon with showers and thunderstorms. Lines were truncated early. No sightings in the afternoon.

Transit effort leg: NO

Date: May 17, 2012

USWTR Daily Plane Log Sheet

Pilot in Command: Josh Second in Command: Bob Plane: N337CH
Observers: Erin - Left, Ryan - Right
Time take off: 8:38 HOBBS Start: 3535.2
Land for lunch: 12:39
Track Lines and Direction (e.g. N to S) Flown: 5 to 10

Take off after lunch: 14:28 HOBBS Stop: 3542.9
Land: 17:22 HOBBS Total: 7.7
Track Lines and Direction (e.g. N to S) Flown: 4 to 1
Overall weather: Very nice, only fewer sightings than expected.

General Observations

AM - low sea states with last 10-15 miles increasing to BSS 2-3
PM - delayed start because of storms moving through, seas remained mainly BSS 1

Three species observed: bottlenose and spotted dolphins, and Short-finned pilot whales

Incoming storms forced landing at Craig airport. ~1.5 hrs before returning to Fernandina Beach FBO

Transit effort leg: NO

Date: Jul 6, 2012

USWTR Daily Plane Log Sheet

Pilot in Command: Dave Second in Command: Josh Plane: N1275M
Observers: Erin - Left, Ryan - Right
Time take off: 8:39 HOBBS Start: 677.0
Land for lunch: 12:09
Track Lines and Direction (e.g. N to S) Flown: 10 to 5

Take off after lunch: 13:06 HOBBS Stop: 684.6
Land: 16:44 HOBBS Total: 7.6
Track Lines and Direction (e.g. N to S) Flown: 4 to 1
Overall weather: Fair to good, clear skies

General Observations

BSS 3 most of the morning conditions offshore slightly better. Tracklines 5 more BSS 2, seas improving. One sighting of Risso's dolphins on trackline 9. Inshore portion of box with large lines of algal blooms (Trichodesmium).
In the PM BSS decreased to mainly 2 with 6 sightings: 2 Sfr, 2Ttr, 1 Ggr, 1 Sbr

Transit effort leg: NO

Date: Jul 7, 2012

USWTR Daily Plane Log Sheet

Pilot in Command: Dave Second in Command: Josh Plane: N1275M
Observers: Ryan - Left, Erin - Right
Time take off: 8:38 HOBBS Start: 684.6
Land for lunch: 12:32
Track Lines and Direction (e.g. N to S) Flown: 1 to 6

Take off after lunch: 13:18 HOBBS Stop: 691.9
Land: 16:20 HOBBS Total: 7.3
Track Lines and Direction (e.g. N to S) Flown: 7 to 10
Overall weather: BSS 3 most of the morning, hazy

General Observations

Four sightings before lunch of bottlenose, spotted and Risso's dolphins. Sea states improving in the afternoon BSS 1 to 2.

Transit effort leg: NO

Date: Sep 22, 2012

USWTR Daily Plane Log Sheet

Pilot in Command: Dave Second in Command: Josh Plane: N1375L
Observers: Ryan - Left, Erin - Right
Time take off: 8:45 HOBBS Start: 2709.9
Land for lunch: 13:02
Track Lines and Direction (e.g. N to S) Flown: 5 to 10

Take off after lunch: 14:03 HOBBS Stop: 2717.4
Land: 16:47 HOBBS Total: 7.5
Track Lines and Direction (e.g. N to S) Flown: 4 to 1
Overall weather: Overcast, BSS 1-3, showers on the east end of lines

General Observations

Transit effort leg:

Date: _____

USWTR Daily Plane Log Sheet

Pilot in Command: _____ Second in Command: _____ Plane: _____
Observers: _____
Time take off: _____ HOBBS Start: _____
Land for lunch: _____
Track Lines and Direction (e.g. N to S) Flown: _____

Take off after lunch: _____ HOBBS Stop: _____
Land: _____ HOBBS Total: _____
Track Lines and Direction (e.g. N to S) Flown: _____
Overall weather: _____

General Observations

Transit effort leg:

Date: Nov 4, 2012

USWTR Daily Plane Log Sheet

Pilot in Command: Bob Second in Command: Sam Plane: N1275M
Observers: Erin - Left, Ryan - Right
Time take off: 8:17 HOBBS Start: 705.9
Land for lunch: 12:02
Track Lines and Direction (e.g. N to S) Flown: 1 to 6

Take off after lunch: 12:58 HOBBS Stop: 713.1
Land: 16:02 HOBBS Total: 7.2
Track Lines and Direction (e.g. N to S) Flown: 10 to 7
Overall weather: BSS 3 the entire day, winds increasing throughout

General Observations

AM - 3 sightings in 6 lines (Sbr, Ttr & Unid)
PM - 4 sightings in 4 lines (Ttr, Sfr, & Ggr)

Transit effort leg: NO

Date: Nov 5, 2012

USWTR Daily Plane Log Sheet

Pilot in Command: Bob Second in Command: Sam Plane: N1275M
Observers: Ryan - Left, Erin - Right
Time take off: 8:15 HOBBS Start: 713.1
Land for lunch: 11:28
Track Lines and Direction (e.g. N to S) Flown: 10 to 5

Take off after lunch: NA HOBBS Stop: 716.5
Land: NA HOBBS Total: 3.4
Track Lines and Direction (e.g. N to S) Flown: NA
Overall weather: Windy, hazy, BSS 3-5

General Observations

No sightings. Seas were rough with gusty winds. Ended surveys after lunch.

Transit effort leg: NO

Monday, January 23, 2012 Sighting # 1

Initial sighting on Track

Time: 13:30 WP#: 4 Lat: 30.566819 Long: -80.442981
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Splash
On/Off Effort: On Trackline: 10 Beaufort Sea State: 2
Observer: Erin Observer side: Left

Actual Time and Position of Sighting

Time: 13:21 WP#: 5 Lat: 30.569777 Long: -80.445247
Species: *Tursiops truncatus* Numbers (Low/High/Best): 1 / 1 / 1
Features used in Species ID: Large uniform grey, robust body

Representative images used for Species ID: 6198
Photographer: Ryan Frame numbers: 6195-6199 Spacer: 6200
Calculated distance from Trackline: 0.39 km

Final Time and Position of Sighting

Time: 13:36 WP#: 6 Lat: 30.576074 Long: -80.451381
Calculated Distance Traveled: 0.91 km

Behavior and Additional Comments

Avoidance behavior
Deep dives as soon as we flew over. Otherwise just hung below the surface.

Monday, January 23, 2012 Sighting # 2

Initial sighting on Track

Time: 13:36 WP#: 9 Lat: 30.566549 Long: -80.344838
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 10 Beaufort Sea State: 2
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 13:36 WP#: 10 Lat: 30.557850 Long: -80.333953
Species: *Stenella frontalis* Numbers (Low/High/Best): 65 / 80 / 75
Features used in Species ID: Alternating light and dark pattern down body, white tip on rostrum spotting
Representative images used for Species ID: 6266, 6242, 6219, 6215
Photographer: Ryan Frame numbers: 6201 - 6281 Spacer: 6282
Calculated distance from Trackline: 1.42 km

Final Time and Position of Sighting

Time: 13:41 WP#: 11 Lat: 30.563291 Long: -80.330106
Calculated Distance Traveled: 0.71 km

Behavior and Additional Comments

5 groups, lots of splashing, jumping, clumping together and circling

Monday, January 23, 2012 Sighting # 3

Initial sighting on Track

Time: 14:11 WP#: 19 Lat: 30.499605 Long: -80.221808
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Splash
On/Off Effort: On Trackline: 9 Beaufort Sea State: 3
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 14:16 WP#: 20 Lat: 30.518887 Long: -80.210413
Species: *Tursiops truncatus* Numbers (Low/High/Best): 5 / 5 / 5
Features used in Species ID: Uniform grey body, robust

Representative images used for Species ID: 6297, 6296, 6290
Photographer: Ryan Frame numbers: 6283 - 6309 Spacer: 6310
Calculated distance from Trackline: 2.41 km

Final Time and Position of Sighting

Time: 14:22 WP#: 21 Lat: 30.513436 Long: -80.224197
Calculated Distance Traveled: 1.45 km

Behavior and Additional Comments

Staying tight together, circling, splashing. Swimming just below the surface and doing deeper dives.

Monday, January 23, 2012 Sighting # 4

Initial sighting on Track

Time: 14:27 WP#: 24 Lat: 30.499874 Long: -80.365288
Vertical Angle: 1 Horizontal Bearing in Degrees: 120 Sighting Cue: Body
On/Off Effort: On Trackline: 9 Beaufort Sea State: 2
Observer: Erin Observer side: Left

Actual Time and Position of Sighting

Time: 14:30 WP#: 25 Lat: 30.494180 Long: -80.356793
Species: *Stenella frontalis* Numbers (Low/High/Best): 4 / 4 / 4
Features used in Species ID: Alternating light and dark pattern down body, white tip on rostrum spotting

Representative images used for Species ID: 6311, 6321, 6322
Photographer: Ryan Frame numbers: 6311 - 6322 Spacer: 6323
Calculated distance from Trackline: 1.03 km

Final Time and Position of Sighting

Time: 14:34 WP#: 26 Lat: 30.491148 Long: -80.360411
Calculated Distance Traveled: 0.48 km

Behavior and Additional Comments

Traveling very fast, doing deeper dives.

Monday, January 23, 2012 Sighting # 5

Initial sighting on Track

Time: 15:22 WP#: 44 Lat: 30.365508 Long: -80.278413
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 7 Beaufort Sea State: 3
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 15:23 WP#: 45 Lat: 30.369298 Long: -80.280478
Species: *Tursiops truncatus* Numbers (Low/High/Best): 25 / 34 / 30
Features used in Species ID: Grey uniform, robust body

Representative images used for Species ID: 6324-6326, 6332, 6333, 6338
Photographer: Ryan Frame numbers: 6324 - 6357 Spacer: 6358
Calculated distance from Trackline: 0.47 km

Final Time and Position of Sighting

Time: 15:27 WP#: 46 Lat: 30.377736 Long: -80.280670
Calculated Distance Traveled: 0.94 km

Behavior and Additional Comments

Animals spaced out, hanging just below the surface. Some deeper dives.

Monday, January 23, 2012 Sighting # 6

Initial sighting on Track

Time: 16:24 WP#: 60 Lat: 30.232001 Long: -80.352978
Vertical Angle: 3 Horizontal Bearing in Degrees: 45 Sighting Cue: Body
On/Off Effort: On Trackline: 5 Beaufort Sea State: 2
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 16:25 WP#: 61 Lat: 30.233261 Long: -80.356791
Species: *Tursiops truncatus* Numbers (Low/High/Best): 70 / 90 / 85
Features used in Species ID: Uniform grey, robust animals

Representative images used for Species ID: 6364
Photographer: Ryan Frame numbers: 6359 - 6395 Spacer: 6396
Calculated distance from Trackline: 0.39 km

Final Time and Position of Sighting

Time: 16:33 WP#: 62 Lat: 30.238022 Long: -80.348604
Calculated Distance Traveled: 0.95 km

Behavior and Additional Comments

5 main groups with some scattered. Animals jumping, darting, hanging just below the surface.

Tuesday, January 24, 2012 Sighting # 1

Initial sighting on Track

Time: 9:54 WP#: 5 Lat: 29.965144 Long: -80.05041
Vertical Angle: 2 Horizontal Bearing in Degrees: 100 Sighting Cue: Splash
On/Off Effort: On Trackline: 1 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 9:56 WP#: 6 Lat: 29.965240 Long: -80.04755
Species: *Tursiops truncatus* Numbers (Low/High/Best): 10 / 10 / 10
Features used in Species ID: Robust body appearance, lighter blaze to behind the dorsal fin. Animals with lighter grey peduncle area.
Representative images used for Species ID: 6425 & 6427
Photographer: Erin Frame numbers: 6410 - 6431 Spacer: 6431
Calculated distance from Trackline: 0.28 km

Final Time and Position of Sighting

Time: 10:10 WP#: 7 Lat: 29.971732 Long: -80.08658
Calculated Distance Traveled: 3.82 km

Behavior and Additional Comments

Small group splashing at the surface. Multiple quick resights but could not track group consistently.

Tuesday, January 24, 2012 Sighting # 2

Initial sighting on Track

Time: 10:35 WP#: 14 Lat: 30.032932 Long: -80.06428
Vertical Angle: 1 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 2 Beaufort Sea State: 3
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 10:36 WP#: 15 Lat: 30.032596 Long: -80.06256
Species: *Tursiops truncatus* Numbers (Low/High/Best): 9 / 11 / 10
Features used in Species ID: Robust body appearance, lighter blaze to behind the dorsal fin. Animals with lighter grey peduncle area.
Representative images used for Species ID: 6434, 6442, 6444
Photographer: Erin Frame numbers: 6432 - 6448 Spacer: 6449
Calculated distance from Trackline: 0.17 km

Final Time and Position of Sighting

Time: 10:40 WP#: 16 Lat: 30.038843 Long: -80.06533
Calculated Distance Traveled: 0.74 km

Behavior and Additional Comments

A densely packed group of animals that would surface regularly causing noticeable disturbance at the surface.

Tuesday, January 24, 2012 Sighting # 3

Initial sighting on Track

Time: 12:52 WP#: 45 Lat: 30.301212 Long: -80.56538
Vertical Angle: 1 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 6 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 13:02 WP#: 46 Lat: 30.308654 Long: -80.56802
Species: *Tursiops truncatus* Numbers (Low/High/Best): 1 / 1 / 1
Features used in Species ID: No images collected

Representative images used for Species ID: No images collected
Photographer: Erin Frame numbers: NA Spacer: NA
Calculated distance from Trackline: 0.86 km

Final Time and Position of Sighting

Time: 13:02 WP#: 47 Lat: 30.307609 Long: -80.57010
Calculated Distance Traveled: 0.23 km

Behavior and Additional Comments

Single animal that was difficult to relocate as it spent an increased amount of time submerged with only a few quick surfacings.

Tuesday, January 24, 2012 Sighting # 4

Initial sighting on Track

Time: 14:47 WP#: 53 Lat: 30.371280 Long: -80.66022
Vertical Angle: 2 Horizontal Bearing in Degrees: 100 Sighting Cue: Splash
On/Off Effort: On Trackline: 7 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 14:50 WP#: 54 Lat: 30.367200 Long: -80.66416
Species: *Tursiops truncatus* Numbers (Low/High/Best): 1 / 1 / 1
Features used in Species ID: Robust body appearance lighter blaze to behind dorsal fin.
More uniform grey coloration to body - no white peduncle.
Representative images used for Species ID: 6463 & 6464
Photographer: Erin Frame numbers: 6462 - 6468 Spacer: 6469
Calculated distance from Trackline: 0.59 km

Final Time and Position of Sighting

Time: 14:50 WP#: 55 Lat: 30.369528 Long: -80.66037
Calculated Distance Traveled: 0.44 km

Behavior and Additional Comments

Single animal traveling at moderate pace.

Tuesday, January 24, 2012 Sighting # 5

Initial sighting on Track

Time: 14:59 WP#: 60 Lat: 30.367333 Long: -80.34124
Vertical Angle: 2 Horizontal Bearing in Degrees: 100 Sighting Cue: Spalsh
On/Off Effort: On Trackline: 7 Beaufort Sea State: 2
Observer: Ryan Observer side: Left

Actual Time and Position of Sighting

Time: 15:01 WP#: 61 Lat: 30.369999 Long: -80.32904
Species: *Tursiops truncatus* Numbers (Low/High/Best): 1 / 1 / 1
Features used in Species ID: Uniform grey coloration with robust body appearance.

Representative images used for Species ID: 6480
Photographer: Erin Frame numbers: 6469 - 6483 Spacer: 6484
Calculated distance from Trackline: 1.21 km

Final Time and Position of Sighting

Time: 15:04 WP#: 62 Lat: 30.37097 Long: -80.33933
Calculated Distance Traveled: 1.0 km

Behavior and Additional Comments

Single animal, may have been splashing at surface before circling began.

Tuesday, January 24, 2012 Sighting # 6

Initial sighting on Track

Time: 15:17 WP#: 66 Lat: 30.363874 Long: -79.87699
Vertical Angle: 1 Horizontal Bearing in Degrees: 100 Sighting Cue: Body
On/Off Effort: On Trackline: 7 Beaufort Sea State: 3
Observer: Ryan Observer side: Left

Actual Time and Position of Sighting

Time: 15:19 WP#: 67 Lat: 30.367066 Long: -79.88531
Species: *Tursiops truncatus* Numbers (Low/High/Best): 18 / 20 / 20
Features used in Species ID: Robust body appearance, lighter grey blaze to behind dorsal fin.

Representative images used for Species ID: 6488 & 6504
Photographer: Frame numbers: 6485 - 6510 Spacer: 6511
Calculated distance from Trackline: 0.87 km

Final Time and Position of Sighting

Time: 15:24 WP#: 68 Lat: 30.368616 Long: -79.88122
Calculated Distance Traveled: 0.43 km

Behavior and Additional Comments

Two groups with nine individuals in each, both groups appear to have white peduncles. Animals showing slow travel below the surface with few surfaceings. Animals spread out through the course of the sighting.

Tuesday, January 24, 2012 Sighting # 7

Initial sighting on Track

Time: 15:55 WP#: 76 Lat: 30.432181 Long: -80.64016
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 8 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 15:56 WP#: 77 Lat: 30.431846 Long: -80.63931
Species: *Stenella frontalis* Numbers (Low/High/Best): 4 / 4 / 4
Features used in Species ID: Light grey coloration on lateral surface with blaze terminating at dorsal fin. White tip to rostrum, some animals with spotting pattern across body.
Representative images used for Species ID: 6513, 6516 & 6524
Photographer: Erin Frame numbers: 6512 - 6529 Spacer: 6530
Calculated distance from Trackline: 0.08 km

Final Time and Position of Sighting

Time: 15:58 WP#: 78 Lat: 30.434285 Long: -80.63994
Calculated Distance Traveled: 0.28 km

Behavior and Additional Comments

Animals just traveling.

Tuesday, January 24, 2012 Sighting # 8

Initial sighting on Track

Time: 16:51 WP#: 89 Lat: 30.299694 Long: -80.3500
Vertical Angle: 1 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 6 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 16:52 WP#: 90 Lat: 30.306925 Long: -80.34478
Species: *Tursiops truncatus* Numbers (Low/High/Best): 8 / 8 / 8
Features used in Species ID: Robust body appearance, light blaze to behind dorsal fin.
Representative images used for Species ID: 6533
Photographer: Erin Frame numbers: 6531 - 6536 Spacer: 6537
Calculated distance from Trackline: 0.95 km

Final Time and Position of Sighting

Time: 16:59 WP#: 91 Lat: 30.309161 Long: -80.34943
Calculated Distance Traveled: 0.51 km

Behavior and Additional Comments

Two groups with three animals and one with two animals. Traveling just below the surface slowly.

Wednesday, January 25, 2012 Sighting # 1

Initial sighting on Track

Time: 9:34 WP#: 100 Lat: 30.233385 Long: -80.339319
Vertical Angle: 3 Horizontal Bearing in Degrees: 110 Sighting Cue: Body
On/Off Effort: On Trackline: 5 Beaufort Sea State: 2
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 9:50 WP#: 101 Lat: 30.196954 Long: -80.335528
Species: *Megaptera novaeangliae* Numbers (Low/High/Best): 1 / 1 / 1
Features used in Species ID: Large black animal with white pectoral fins and a large fluke

Representative images used for Species ID: 6541, 6543
Photographer: Ryan Frame numbers: 6541 - 6547 Spacer: 6548
Calculated distance from Trackline: 4.07 km

Final Time and Position of Sighting

Time: 10:13 WP#: 102 Lat: 30.195471 Long: -80.360804
Calculated Distance Traveled: 2.44 km

Behavior and Additional Comments

Doing long deep dives, has poor body condition with grey, slothing skin and a scared fluke. Breaching short duration surfacing. Surfaced at 9:34 then dove 30 seconds later. Then didn't surface again till 9:50 and dove 1 minute later. At 10:13 we left the area because there was no resurface.

Wednesday, January 25, 2012 Sighting # 2

Initial sighting on Track

Time: 10:17 WP#: 104 Lat: 30.233846 Long: -80.257617
Vertical Angle: 1 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 5 Beaufort Sea State: 2
Observer: Erin Observer side: Left

Actual Time and Position of Sighting

Time: 10:20 WP#: 105 Lat: 30.232391 Long: -80.254267
Species: *Tursiops truncatus* Numbers (Low/High/Best): 6 / 10 / 7
Features used in Species ID: Uniform grey, robust animals

Representative images used for Species ID: 6558, 6570
Photographer: Ryan Frame numbers: 6549 - 6572 Spacer: 6573
Calculated distance from Trackline: 0.36 km

Final Time and Position of Sighting

Time: 10:25 WP#: 106 Lat: 30.233304 Long: -80.251855
Calculated Distance Traveled: 0.25 km

Behavior and Additional Comments

Tail slap, staying just below the surface, spaced out, breaching.

Wednesday, January 25, 2012 Sighting # 3

Initial sighting on Track

Time: 10:30 WP#: 110 Lat: 30.233482 Long: -80.067473
Vertical Angle: 1 Horizontal Bearing in Degrees: 100 Sighting Cue: Splash
On/Off Effort: On Trackline: 5 Beaufort Sea State: 3
Observer: Erin Observer side: Left

Actual Time and Position of Sighting

Time: 10:32 WP#: 111 Lat: 30.238935 Long: -80.070583
Species: *Tursiops truncatus* Numbers (Low/High/Best): 4 / 4 / 4
Features used in Species ID: Large robust animals with uniform grey color

Representative images used for Species ID: 6589
Photographer: Ryan Frame numbers: 6574 - 6601 Spacer: 6602
Calculated distance from Trackline: 0.68 km

Final Time and Position of Sighting

Time: 10;38 WP#: 112 Lat: 30.231433 Long: -80.075357
Calculated Distance Traveled: 0.95 km

Behavior and Additional Comments

White peduncle, swimming just below the surface, regular surfacing, swimming in a V. 1 calf

Wednesday, January 25, 2012 Sighting # 4

Initial sighting on Track

Time: 11:25 WP#: 124 Lat: 30.366791 Long: -80.366897
Vertical Angle: 1 Horizontal Bearing in Degrees: 100 Sighting Cue: Body
On/Off Effort: On Trackline: 7 Beaufort Sea State: 2
Observer: Erin Observer side: Left

Actual Time and Position of Sighting

Time: 11:31 WP#: 125 Lat: 30.355313 Long: -80.367444
Species: *Tursiops truncatus* Numbers (Low/High/Best): 2 / 2 / 2
Features used in Species ID: Robust grey bodied animals with white peduncles

Representative images used for Species ID: 6605
Photographer: Ryan Frame numbers: 6603 - 6607 Spacer: 6608
Calculated distance from Trackline: 1.28 km

Final Time and Position of Sighting

Time: 11:37 WP#: 126 Lat: 30.360571 Long: -80.378397
Calculated Distance Traveled: 1.20 km

Behavior and Additional Comments

Avoidance behavior

Wednesday, January 25, 2012 Sighting # 5

Initial sighting on Track

Time: 11:39 WP#: 129 Lat: 30.366954 Long: -80.314845
Vertical Angle: 1 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 7 Beaufort Sea State: 3
Observer: Erin Observer side: Left

Actual Time and Position of Sighting

Time: 11:40 WP#: 130 Lat: 30.370021 Long: -80.316988
Species: *Stenella frontalis* Numbers (Low/High/Best): 11 / 16 / 15
Features used in Species ID: Alternating light and dark pattern down body, spotting

Representative images used for Species ID: 6623, 6638, 6643, 6644, 6655
Photographer: Ryan Frame numbers: 6609 - 6658 Spacer: 6659
Calculated distance from Trackline: 0.40 km

Final Time and Position of Sighting

Time: 11:50 WP#: 131 Lat: 30.365154 Long: -80.319550
Calculated Distance Traveled: 0.59 km

Behavior and Additional Comments

Traveling fast, in a tight group, regular surfacing

Wednesday, January 25, 2012 Sighting # 6

Initial sighting on Track

Time: 12:04 WP#: 135 Lat: 30.365913 Long: -79.831357
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 7 Beaufort Sea State: 2
Observer: Erin Observer side: Left

Actual Time and Position of Sighting

Time: 12:06 WP#: 136 Lat: 30.369693 Long: -79.833103
Species: *Grampus griseus* Numbers (Low/High/Best): 5 / 5 / 5
Features used in Species ID: Large grey bodies with blunt, white heads.

Representative images used for Species ID: 6661, 6671, 6684, 6687
Photographer: Ryan Frame numbers: 6660 - 6696 Spacer: 6697
Calculated distance from Trackline: 0.45 km

Final Time and Position of Sighting

Time: 12:20 WP#: 137 Lat: 30.383790 Long: -79.836739
Calculated Distance Traveled: 1.61 km

Behavior and Additional Comments

A group of Ggr with 1 Ttr mixed in. Moving fast with quick breaths on the surface. Spread out but then came together.

Wednesday, January 25, 2012 Sighting # 7

Initial sighting on Track

Time: 12:35 WP#: 141 Lat: 30.433013 Long: -80.28848
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Splash
On/Off Effort: On Trackline: 8 Beaufort Sea State: 3
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 12:37 WP#: 142 Lat: 30.438325 Long: -80.293544
Species: *Stenella frontalis* Numbers (Low/High/Best): 40 / 55 / 52
Features used in Species ID: Alternating light and dark pattern down body, white tip to nose, spotting
Representative images used for Species ID: 6698, 6704, 6707, 6713,
Photographer: Ryan Frame numbers: 6698 - 6725 Spacer: 6726
Calculated distance from Trackline: 0.76 km

Final Time and Position of Sighting

Time: 12:41 WP#: 143 Lat: 30.423128 Long: -80.290206
Calculated Distance Traveled: 1.72 km

Behavior and Additional Comments

4+ groups with 5-7 individuals in each. 1 large group of 20+ animals. Each group is swimming close together. Some groups are traveling fast while others are hardly moving.

Thursday, March 29, 2012 Sighting # 1

Initial sighting on Track

Time: 15:10 WP#: 32 Lat: 30.100599 Long: -80.447042
Vertical Angle: 2 Horizontal Bearing in Degrees: 100 Sighting Cue: Body
On/Off Effort: On Trackline: 3 Beaufort Sea State: 2
Observer: Ryan Observer side: Left

Actual Time and Position of Sighting

Time: 5:10 WP#: 33 Lat: 30.096882 Long: -80.440277
Species: *Stenella frontalis* Numbers (Low/High/Best): 40 / 47 / 44
Features used in Species ID: Alternating light and dark pattern down body, spotting

Representative images used for Species ID: 8546, 8556
Photographer: Erin Frame numbers: 8542 - 8563 Spacer: 8564
Calculated distance from Trackline: 0.77 km

Final Time and Position of Sighting

Time: 15:24 WP#: 34 Lat: 30.088721 Long: -80.432966
Calculated Distance Traveled: 1.15 km

Behavior and Additional Comments

2 groups of animals, one of 20+ and the other slightly smaller. Hanging at the surface.

Thursday, March 29, 2012 Sighting # 2

Initial sighting on Track

Time: 15:27 WP#: 36 Lat: 30.100505 Long: -80.516793
Vertical Angle: 1 Horizontal Bearing in Degrees: 100 Sighting Cue: Splash
On/Off Effort: On Trackline: 3 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 15:28 WP#: 37 Lat: 30.101111 Long: -80.507489
Species: *Stenella frontalis* Numbers (Low/High/Best): 6 / 6 / 6
Features used in Species ID: Alternating light and dark pattern down body, spotting

Representative images used for Species ID: 8567, 8571, 8576
Photographer: Erin Frame numbers: 8565 - 8588 Spacer: 8589
Calculated distance from Trackline: 0.90 km

Final Time and Position of Sighting

Time: 15:31 WP#: 36 Lat: 30.100362 Long: -80.509758
Calculated Distance Traveled: 0.23 km

Behavior and Additional Comments

Mom calf pair, moving fast, lots of jumping, spread out in pairs

Thursday, March 29, 2012 Sighting # 3

Initial sighting on Track

Time: 15:45 WP#: 45 Lat: 30.031461 Long: -80.524573
Vertical Angle: 3 Horizontal Bearing in Degrees: 90 Sighting Cue: Blow
On/Off Effort: On Trackline: 2 Beaufort Sea State: 2
Observer: Ryan Observer side: Left

Actual Time and Position of Sighting

Time: 15:47 WP#: 46 Lat: 30.029672 Long: -80.519755
Species: *Stenella frontalis* Numbers (Low/High/Best): 2 / 3 / 3
Features used in Species ID: Alternating light and dark pattern down body, spotting

Representative images used for Species ID: 8591
Photographer: Erin Frame numbers: 8590 - 8600 Spacer: 8601
Calculated distance from Trackline: 0.50 km

Final Time and Position of Sighting

Time: 15:49 WP#: 47 Lat: 30.032896 Long: -80.513971
Calculated Distance Traveled: 0.66 km

Behavior and Additional Comments

Pair of animals on initial sighting, 3rd observed once circling

Thursday, March 29, 2012 Sighting # 4

Initial sighting on Track

Time: 15:50 WP#: 42 Lat: 30.031551 Long: -80.475763
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 2 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 15:51 WP#: 50 Lat: 30.031855 Long: -80.476396
Species: *Stenella frontalis* Numbers (Low/High/Best): 9 / 15 / 13
Features used in Species ID: Alternating light and dark pattern down body, spotting

Representative images used for Species ID: 8615, 8626
Photographer: Erin Frame numbers: 8602 - 8628 Spacer: 8629
Calculated distance from Trackline: 0.07 km

Final Time and Position of Sighting

Time: 15:54 WP#: 51 Lat: 30.026656 Long: -80.479940
Calculated Distance Traveled: 0.67 km

Behavior and Additional Comments

Milling and circling in a tight ball, fast moving

Thursday, March 29, 2012 Sighting # 5

Initial sighting on Track

Time: 15:56 WP#: 44 Lat: 30.031707 Long: -80.441709
Vertical Angle: 2 Horizontal Bearing in Degrees: 60 Sighting Cue: Splash
On/Off Effort: On Trackline: 2 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 15:57 WP#: 54 Lat: 30.029261 Long: -80.439651
Species: *Tursiops truncatus* Numbers (Low/High/Best): 4 / 4 / 4
Features used in Species ID: Uniform grey, robust animals, white peduncle

Representative images used for Species ID: 8632, 8635, 8638
Photographer: Erin Frame numbers: 8630 - 8643 Spacer: 8644
Calculated distance from Trackline: 0.34 km

Final Time and Position of Sighting

Time: 16:03 WP#: 55 Lat: 30.025501 Long: -80.430537
Calculated Distance Traveled: 0.97 km

Behavior and Additional Comments

Animals spread out, singles dove from surface upon initial sighting, single calf, spending more time below surface

Thursday, March 29, 2012 Sighting # 6

Initial sighting on Track

Time: 16:17 WP#: 48 Lat: 29.964709 Long: -80.094097
Vertical Angle: 2 Horizontal Bearing in Degrees: 60 Sighting Cue: Splash
On/Off Effort: On Trackline: 1 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 16:20 WP#: 60 Lat: 29.971966 Long: -80.092957
Species: *Tursiops truncatus* Numbers (Low/High/Best): 8 / 8 / 8
Features used in Species ID: Robust, uniform grey animal with white peduncle

Representative images used for Species ID: 8651
Photographer: Erin Frame numbers: 8645 - 8655 Spacer: 8656
Calculated distance from Trackline: 0.81 km

Final Time and Position of Sighting

Time: 16:20 WP#: 61 Lat: 29.970229 Long: -80.091120
Calculated Distance Traveled: 0.26 km

Behavior and Additional Comments

Well spaced singles, some breaching, slow travel

Wednesday, April 18, 2012 Sighting # 1

Initial sighting on Track

Time: 13:18 WP#: 31 Lat: 29.968803 Long: -80.375806
Vertical Angle: 2 Horizontal Bearing in Degrees: 100 Sighting Cue: Body
On/Off Effort: On Trackline: 1 Beaufort Sea State: 3
Observer: Erin Observer side: Left

Actual Time and Position of Sighting

Time: 13:22 WP#: 32 Lat: 29.968271 Long: -80.382697
Species: *Tursiops truncatus* Numbers (Low/High/Best): 2 / 3 / 3
Features used in Species ID: Uniform grey with a blaze extending to mid dorsal fin

Representative images used for Species ID: 8657, 8658
Photographer: Ryan Frame numbers: 8657 to 8669 Spacer: 8670
Calculated distance from Trackline: 0.67 km

Final Time and Position of Sighting

Time: 13:33 WP#: 33 Lat: 29.972933 Long: -80.388536
Calculated Distance Traveled: 0.76 km

Behavior and Additional Comments

Traveling on surface or just below, swimming close together.

Wednesday, April 18, 2012 Sighting # 2

Initial sighting on Track

Time: 14:41 WP#: 45 Lat: 30.100902 Long: -80.070416
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 3 Beaufort Sea State: 3
Observer: Erin Observer side: Left

Actual Time and Position of Sighting

Time: 14:42 WP#: 46 Lat: 30.102057 Long: -80.076377
Species: *Tursiops truncatus* Numbers (Low/High/Best): 5 / 10 / 8
Features used in Species ID: Uniform grey body, white peduncle

Representative images used for Species ID: 8673-74, 8676-77, 8682-83, 8690, 8700-01
Photographer: Ryan Frame numbers: 8671 to 8703 Spacer: 8704
Calculated distance from Trackline: 0.59 km

Final Time and Position of Sighting

Time: 14:52 WP#: 47 Lat: 30.115168 Long: -80.072746
Calculated Distance Traveled: 1.50 km

Behavior and Additional Comments

Traveling just below the surface with some deep dives. Regular surfacings, moving fast heading west.

Wednesday, April 18, 2012 Sighting # 3

Initial sighting on Track

Time: 15:21 WP#: 51 Lat: 30.166573 Long: -80.402430
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 4 Beaufort Sea State: 2
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 15:23 WP#: 52 Lat: 30.173850 Long: -80.401034
Species: *Stenella frontalis* Numbers (Low/High/Best): 35 / 60 / 50
Features used in Species ID: Alternating light and dark pattern down body, white tip to rostrum
Spotting across animals body.
Representative images used for Species ID: 8711 & 8740
Photographer: Ryan Frame numbers: 8705 to 8757 Spacer: 8758
Calculated distance from Trackline: 0.82 km

Final Time and Position of Sighting

Time: 15:27 WP#: 53 Lat: 30.176140 Long: -80.408881
Calculated Distance Traveled: 0.80 km

Behavior and Additional Comments

Lots of splashing and circling, jumping followed by fast travel. Group heading southeast.

Wednesday, April 18, 2012 Sighting # 1

Initial sighting on Track

Time: 9:32 WP#: 9 Lat: 30.032204 Long: -80.263339
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Splash
On/Off Effort: On Trackline: 2 Beaufort Sea State: 3
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 9:34 WP#: 10 Lat: 30.032347 Long: -80.262068
Species: *Tursiops truncatus* Numbers (Low/High/Best): 25 / 32 / 28
Features used in Species ID: Robust body appearance, uniform grey coloration

Representative images used for Species ID: 8769
Photographer: Erin Frame numbers: 8761-8781 Spacer: 8782
Calculated distance from Trackline: 0.12 km

Final Time and Position of Sighting

Time: 9:41 WP#: 11 Lat: 30.034963 Long: -80.258055
Calculated Distance Traveled: 0.48 km

Behavior and Additional Comments

Splashing at the surface. Multiple groups of 4-5 stretched out in a line. After initial sighting of a splash animals began traveling subsurface followed by more breaching.

Wednesday, April 18, 2012 Sighting # 2

Initial sighting on Track

Time: 11:31 WP#: 31 Lat: 30.299254 Long: -80.366984
Vertical Angle: 3 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 6 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 11:33 WP#: 32 Lat: 30.310782 Long: -80.369910
Species: *Stenella frontalis* Numbers (Low/High/Best): 16 / 22 / 20
Features used in Species ID: Alternating light and dark coloration on body with variable spotting across animals. White tip to rostrum.
Representative images used for Species ID: 8785 & 8793
Photographer: Erin Frame numbers: 8783 - 8803 Spacer: 8803
Calculated distance from Trackline: 1.31 km

Final Time and Position of Sighting

Time: 11:37 WP#: 33 Lat: 30.305201 Long: -80.369004
Calculated Distance Traveled: 0.68 km

Behavior and Additional Comments

Traveling as one larger, densely packed group.

Thursday, April 19, 2012 Sighting # 3

Initial sighting on Track

Time: 14:54 WP#: 62 Lat: 30.567918 Long: -80.516678
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 2 Beaufort Sea State: 10
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 14:56 WP#: 63 Lat: 30.573341 Long: -80.520768
Species: *Stenella frontalis* Numbers (Low/High/Best): 34 / 40 / 38
Features used in Species ID: Alternating light and dark coloration along body with variable spotting across individuals. White tip to rostrum.
Representative images used for Species ID: 4699, 4700, 8810, 8821
Photographer: Erin Frame numbers: 4698-4700 & 8804-8832 Spacer: 8833
Calculated distance from Trackline: 0.71 km

Final Time and Position of Sighting

Time: 14:59 WP#: 64 Lat: 30.569479 Long: -80.521251
Calculated Distance Traveled: 0.43 km

Behavior and Additional Comments

Large group traveling below the surface.

Wednesday, May 16, 2012 Sighting # 1

Initial sighting on Track

Time: 8:55 WP#: 5 Lat: 30.566904 Long: -80.229653
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Splash
On/Off Effort: On Trackline: 10 Beaufort Sea State: 2
Observer: Ryan Observer side: Left

Actual Time and Position of Sighting

Time: 8:57 WP#: 6 Lat: 30.570136 Long: -80.230107
Species: *Stenella frontalis* Numbers (Low/High/Best): 30 / 40 / 37
Features used in Species ID: White tip to rostrum, light blaze to dorsal fin, spotting pattern observed inside lighter area of animals body.
Representative images used for Species ID: 7 & 23
Photographer: Erin Frame numbers: 1 to 24 Spacer: 25
Calculated distance from Trackline: 0.36 km

Final Time and Position of Sighting

Time: 9:02 WP#: 7 Lat: 30.569444 Long: -80.23321
Calculated Distance Traveled: 0.31 km

Behavior and Additional Comments

Moderate sized group traveling just below the surface, traveling at a slow rate of speed and interacting with other members of the group. Sub groups of 6-7 animals apart from main group. Group spent lots of time submerged with infrequent surfacings.

Wednesday, May 16, 2012 Sighting # 2

Initial sighting on Track

Time: 9:46 WP#: 14 Lat: 30.431462 Long: -80.634551
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 8 Beaufort Sea State: 3
Observer: Ryan Observer side: Left

Actual Time and Position of Sighting

Time: 9:48 WP#: 15 Lat: 30.430951 Long: -80.635714
Species: *Stenella frontalis* Numbers (Low/High/Best): 6 / 8 / 7
Features used in Species ID: White tip to rostrum, alternating light and dark pattern along body.
Representative images used for Species ID: 37
Photographer: Erin Frame numbers: 26 to 38 Spacer: 39
Calculated distance from Trackline: 0.13 km

Final Time and Position of Sighting

Time: 9:56 WP#: 16 Lat: 30.437549 Long: -80.651385
Calculated Distance Traveled: 1.67 km

Behavior and Additional Comments

Small dense group interacting with one another, belly up swimming. Groups behavior was elusive, staying below the surface for much of the encounter.

Wednesday, May 16, 2012 Sighting # 3

Initial sighting on Track

Time: 10:01 WP#: 19 Lat: 30.434139 Long: -80.445756
Vertical Angle: 2 Horizontal Bearing in Degrees: 100 Sighting Cue: Spalsh
On/Off Effort: On Trackline: 3 Beaufort Sea State: 8
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 10:08 WP#: 20 Lat: 30.419954 Long: -80.444755
Species: *Stenella frontalis* Numbers (Low/High/Best): 14 / 16 / 15
Features used in Species ID: White rostrum tip, alternating light and dark coloration along body highly spotted across body.
Representative images used for Species ID: 47, 65 & 68
Photographer: Erin Frame numbers: 40 to 70 Spacer: 71
Calculated distance from Trackline: 1.58 km

Final Time and Position of Sighting

Time: 10:14 WP#: 21 Lat: 30.423226 Long: -80.454834
Calculated Distance Traveled: 1.03 km

Behavior and Additional Comments

One group of nine plus a sub group of five to six animals. Groups moving quickly at the surface.

Thursday, May 17, 2012 Sighting # 1

Initial sighting on Track

Time: 9:05 WP#: 5 Lat: 30.231632 Long: -80.465393
Vertical Angle: 1 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 5 Beaufort Sea State: 1
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 9:08 WP#: 6 Lat: 30.226719 Long: -80.469996
Species: *Stenella frontalis* Numbers (Low/High/Best): 13 / 16 / 14
Features used in Species ID: Alternating light and dark pattern down the body, white tip on rostrum. Spotting.
Representative images used for Species ID: 5, 18, 25, 30, 43, 48
Photographer: Ryan Frame numbers: 1 to 69 Spacer: 70
Calculated distance from Trackline: 0.70 km

Final Time and Position of Sighting

Time: 9:20 WP#: 7 Lat: 30.215192 Long: -80.474462
Calculated Distance Traveled: 1.35 km

Behavior and Additional Comments

Slow travel at the surface, regular surfacing. Some deeper dives. Subgroup of 4

Thursday, May 17, 2012 Sighting # 2

Initial sighting on Track

Time: 10:11 WP#: 21 Lat: 30.362497 Long: -80.593152
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 7 Beaufort Sea State: 1
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 10:15 WP#: 22 Lat: 30.354373 Long: -80.593331
Species: *Stenella frontalis* Numbers (Low/High/Best): 22/29/28
Features used in Species ID: Alternating light and dark coloration down body, white tip on rostrum. Spotting
Representative images used for Species ID: 79, 97
Photographer: Ryan Frame numbers: 71 to 107 Spacer: 108
Calculated distance from Trackline: 0.90 km

Final Time and Position of Sighting

Time: 10:19 WP#: 23 Lat: 30.356256 Long: -80.587949
Calculated Distance Traveled: 0.56 km

Behavior and Additional Comments

Milling around in a tight group hanging on the surface or just below. Went on a deep dive after a couple circles.

Thursday, May 17, 2012 Sighting # 3

Initial sighting on Track

Time: 10:37 WP#: 27 Lat: 30.363616 Long: -79.977440
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Blow
On/Off Effort: On Trackline: 7 Beaufort Sea State: 3
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 10:38 WP#: 28 Lat: 30.358238 Long: -79.981219
Species: *Globicephala macrorhynchus* Numbers (Low/High/Best): 2 / 2 / 2
Features used in Species ID: Dark grey to black robust body with a blunt head

Representative images used for Species ID: NA
Photographer: Ryan Frame numbers: NA Spacer: NA
Calculated distance from Trackline: 0.70 km

Final Time and Position of Sighting

Time: 10:51 WP#: 29 Lat: 30.354204 Long: -79.970525
Calculated Distance Traveled: 1.12 km

Behavior and Additional Comments

No photos, assumed last location.

Thursday, May 17, 2012 Sighting # 4

Initial sighting on Track

Time: 10:59 WP#: 32 Lat: 30.406022 Long: -79.784975
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Blow
On/Off Effort: Off Trackline: 6 & 7 Beaufort Sea State: 3
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 11:00 WP#: 33 Lat: 30.399736 Long: -79.790061
Species: *Globicephala macrorhynchus* Numbers (Low/High/Best): 2 / 2 / 2
Features used in Species ID: Dark grey to black robust body with a blunt head

Representative images used for Species ID: 113
Photographer: Ryan Frame numbers: 109 - 121 Spacer: 122
Calculated distance from Trackline: 0.85 km

Final Time and Position of Sighting

Time: WP#: 34 Lat: 30.390251 Long: -79.787567
Calculated Distance Traveled: 1.08 km

Behavior and Additional Comments

Swimming just below the surface with medium rate of travel.

Thursday, May 17, 2012 Sighting # 5

Initial sighting on Track

Time: 14:54 WP#: 58 Lat: 30.166547 Long: -80.465703
Vertical Angle: 2 Horizontal Bearing in Degrees: 100 Sighting Cue: Body
On/Off Effort: On Trackline: 4 Beaufort Sea State: 1
Observer: Erin Observer side: Left

Actual Time and Position of Sighting

Time: 14:55 WP#: 59 Lat: 30.185141 Long: -80.468611
Species: *Stenella frontalis* Numbers (Low/High/Best): 25 / 40 / 30
Features used in Species ID: Alternating light and dark pattern down body, white tip on rostrum spotting
Representative images used for Species ID: 143, 147
Photographer: Ryan Frame numbers: 134 to 156 Spacer: 157
Calculated distance from Trackline: 2.09 km

Final Time and Position of Sighting

Time: 15:02 WP#: 60 Lat: 30.189904 Long: -80.468297
Calculated Distance Traveled: 0.53 km

Behavior and Additional Comments

Lots of small groups spaced out, some groups milling on the surface and some traveling fast.

Thursday, May 17, 2012 Sighting # 6

Initial sighting on Track

Time: 15:24 WP#: 67 Lat: 30.100482 Long: -79.859117
Vertical Angle: 3 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 3 Beaufort Sea State: 2
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 15:24 WP#: 68 Lat: 30.112312 Long: -79.858667
Species: *Tursiops truncatus* Numbers (Low/High/Best): 18 / 22 / 20
Features used in Species ID: Uniform grey bodies
Representative images used for Species ID: 171, 179, 180, 186, 193, 194
Photographer: Ryan Frame numbers: 158 to 198 Spacer: 199
Calculated distance from Trackline: 1.32 km

Final Time and Position of Sighting

Time: 2:42 WP#: 69 Lat: 30.103957 Long: -79.853351
Calculated Distance Traveled: 1.06 km

Behavior and Additional Comments

2 Groups, milling in a very tight group almost on top of each other.

Thursday, May 17, 2012 Sighting # 7

Initial sighting on Track

Time: 16:21 WP#: 82 Lat: 29.971333 Long: -79.793833
Vertical Angle: 3 Horizontal Bearing in Degrees: 100 Sighting Cue: Body
On/Off Effort: Off Trackline: 1 & 2 Beaufort Sea State: 1
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 16:22 WP#: 83 Lat: 29.971244 Long: -79.795325
Species: *Globicephala macrorhynchus* Numbers (Low/High/Best): 8 / 8 / 8
Features used in Species ID: Large uniform grey to black animals with lighter colored suspenders and a blunt head
Representative images used for Species ID: 200, 211, 213, 214, 221, 225, 239
Photographer: Ryan Frame numbers: 200 to 248 Spacer: 249
Calculated distance from Trackline: 0.14 km

Final Time and Position of Sighting

Time: 16:27 WP#: 84 Lat: 29.978218 Long: -79.789998
Calculated Distance Traveled: 0.93 km

Behavior and Additional Comments

Regular surfacing. Traveling just below the surface. Coming up from a deeper dive.

Friday, July 6, 2012 Sighting # 1

Initial sighting on Track

Time: 9:29 WP#: 7 Lat: 30.502612 Long: -79.994580
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 9 Beaufort Sea State: 3
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 9:32 WP#: 8 Lat: 30.504503 Long: -79.998388
Species: *Grampus griseus* Numbers (Low/High/Best): 12 / 20 / 17
Features used in Species ID: Grey bodied animals with blunt head with a cleft in the middle. Body appears white due to scarring
Representative images used for Species ID: 12, 18, 29
Photographer: Ryan Frame numbers: 1 to 30 Spacer: 31
Calculated distance from Trackline: 0.42 km

Final Time and Position of Sighting

Time: 9:36 WP#: 9 Lat: 30.511965 Long: -79.997398
Calculated Distance Traveled: 0.84 km

Behavior and Additional Comments

Tight group staying just below the surface while traveling.

Friday, July 6, 2012 Sighting # 2

Initial sighting on Track

Time: 14:05 WP#: 42 Lat: 30.100675 Long: -80.199794
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 3 Beaufort Sea State: 3
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 14:08 WP#: 43 Lat: 30.100361 Long: -80.196561
Species: *Tursiops truncatus* Numbers (Low/High/Best): 7 / 7 / 7
Features used in Species ID: Uniform grey animals.
Representative images used for Species ID: 34, 37, 38
Photographer: Ryan Frame numbers: 32 to 42 Spacer: 43
Calculated distance from Trackline: 0.31 km

Final Time and Position of Sighting

Time: 14:14 WP#: 44 Lat: 30.108641 Long: -80.190848
Calculated Distance Traveled: 1.07 km

Behavior and Additional Comments

Hanging just below the surface not traveling too fast. Staying a bodies length or two away form one another.

Friday, July 6, 2012 Sighting # 3

Initial sighting on Track

Time: 14:23 WP#: 49 Lat: 30.099839 Long: -80.492303
Vertical Angle: 3 Horizontal Bearing in Degrees: 90 Sighting Cue: Splash
On/Off Effort: On Trackline: 3 Beaufort Sea State: 2
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 14:25 WP#: 50 Lat: 30.105186 Long: -80.481128
Species: *Stenella frontalis* Numbers (Low/High/Best): 25 / 35 /30
Features used in Species ID: Grey bodied animals with white spotting.

Representative images used for Species ID: 58, 63, 65, 70, 71, 73, 76
Photographer: Ryan Frame numbers: 44 to 82 Spacer: 83
Calculated distance from Trackline: 1.23 km

Final Time and Position of Sighting

Time: 14:30 WP#: 51 Lat: 30.110019 Long: -80.480511
Calculated Distance Traveled: 0.54 km

Behavior and Additional Comments

One group with multiple individuals spaced out a good distance, traveling fast.

Friday, July 6, 2012 Sighting # 4

Initial sighting on Track

Time: 14:35 WP#: 53 Lat: 30.097992 Long: -80.632411
Vertical Angle: 3 Horizontal Bearing in Degrees: 60 Sighting Cue: Splash
On/Off Effort: On Trackline: 3 Beaufort Sea State: 2
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 14:37 WP#: 54 Lat: 30.096958 Long: -80.625291
Species: *Stenella frontalis* Numbers (Low/High/Best): 8 / 15 / 12
Features used in Species ID: Grey bodied animals with white spotting

Representative images used for Species ID: 94, 97, 101
Photographer: Ryan Frame numbers: 84 to 106 Spacer: 107
Calculated distance from Trackline: 0.69 km

Final Time and Position of Sighting

Time: 14:42 WP#: 55 Lat: 30.106012 Long: -80.623462
Calculated Distance Traveled: 1.02 km

Behavior and Additional Comments

Two groups traveling towards each other, when they met they stopped traveling and started milling. Combined group did a deeper dive followed by splashing at surface, circling and a number of animals showing their bellies.

Friday, July 6, 2012 Sighting # 5

Initial sighting on Track

Time: 14:48 WP#: 59 Lat: 30.034973 Long: -80.679949
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Splash
On/Off Effort: On Trackline: 2 Beaufort Sea State: 2
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 14:49 WP#: 60 Lat: 30.033889 Long: -80.680810
Species: *Steno bredanensis* Numbers (Low/High/Best): 25 / 40 / 35
Features used in Species ID: Dark grey to brown, long rostrum with white jaw.

Representative images used for Species ID: 119, 128, 129, 135, 144, 155
Photographer: Ryan Frame numbers: 108 to 180 Spacer: 181
Calculated distance from Trackline: 0.15 km

Final Time and Position of Sighting

Time: 15:00 WP#: 61 Lat: 30.025235 Long: -80.679278
Calculated Distance Traveled: 0.97 km

Behavior and Additional Comments

Milling around, circling, belly flashing, some animals in a tight group jumping.

Friday, July 6, 2012 Sighting # 6

Initial sighting on Track

Time: 15:17 WP#: 67 Lat: 30.032283 Long: -80.072312
Vertical Angle: 3 Horizontal Bearing in Degrees: 90 Sighting Cue: Splash
On/Off Effort: On Trackline: 2 Beaufort Sea State: 3
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 15:20 WP#: 68 Lat: 30.029203 Long: -80.080207
Species: *Grampus griseus* Numbers (Low/High/Best): 14 / 19 / 18
Features used in Species ID: Robust grey animals with blunt head and cleft in the middle. Bodies appear white due to scarring.
Representative images used for Species ID: 192, 194, 203, 220, 227
Photographer: Ryan Frame numbers: 182 to 228 Spacer: 229
Calculated distance from Trackline: 0.83 km

Final Time and Position of Sighting

Time: 15;26 WP#: 69 Lat: 30.028759 Long: -80.073897
Calculated Distance Traveled: 0.61 km

Behavior and Additional Comments

Traveling fast just below the surface and spaced out.

Friday, July 6, 2012 Sighting # 7

Initial sighting on Track

Time: 15;52 WP#: 73 Lat: 29.966045 Long: -80.318246
Vertical Angle: 1 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 1 Beaufort Sea State: 3
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 15:54 WP#: 74 Lat: 29.970666 Long: -80.321597
Species: *Tursiops truncatus* Numbers (Low/High/Best): 6 / 6 / 6
Features used in Species ID: Uniform grey animals.

Representative images used for Species ID: 234, 241, 248, 264
Photographer: Ryan Frame numbers: 230 to 268 Spacer: 269
Calculated distance from Trackline: 0.61 km

Final Time and Position of Sighting

Time: 16:04 WP#: 75 Lat: 29.965686 Long: -80.311166
Calculated Distance Traveled: 1.15 km

Behavior and Additional Comments

Staying in a tight group just below the surface.

Saturday, July 7, 2012 Sighting # 1

Initial sighting on Track

Time: 10:44 WP#: 14 Lat: 30.166448 Long: -80.365756
Vertical Angle: 1 Horizontal Bearing in Degrees: 60 Sighting Cue: Body
On/Off Effort: On Trackline: 4 Beaufort Sea State: 3
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 10;45 WP#: 15 Lat: 30.164944 Long: -80.367496
Species: *Tursiops truncatus* Numbers (Low/High/Best): 8 / 8 / 8
Features used in Species ID: Uniform grey animals.

Representative images used for Species ID: 3, 6, 7, 13
Photographer: Erin Frame numbers: 1 to 16 Spacer: 17
Calculated distance from Trackline: 0.24 km

Final Time and Position of Sighting

Time: 10:48 WP#: 16 Lat: 30.172508 Long: -80.365015
Calculated Distance Traveled: 0.87 km

Behavior and Additional Comments

Group of four at the surface upon initial observation. Slow travel with regular surfacings, staying close to the surface between breaths.

Saturday, July 7, 2012 Sighting # 2

Initial sighting on Track

Time: 10:54 WP#: 20 Lat: 30.165131 Long: -80.565466
Vertical Angle: 1 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 4 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 10:54 WP#: 21 Lat: 30.165538 Long: -80.562010
Species: *Stenella frontalis* Numbers (Low/High/Best): 2 / 2 / 2
Features used in Species ID: Grey bodied animals with white spotting.

Representative images used for Species ID: 19 - 21
Photographer: Erin Frame numbers: 18 to 23 Spacer: 24
Calculated distance from Trackline: 0.34 km

Final Time and Position of Sighting

Time: 10:59 WP#: 22 Lat: 30.162868 Long: -80.570643
Calculated Distance Traveled: 0.88 km

Behavior and Additional Comments

Mom/ Calf pair traveling fast along the trackline. Traveling just subsurface with few surfacings.

Saturday, July 7, 2012 Sighting # 3

Initial sighting on Track

Time: 11:15 WP#: 28 Lat: 30.233144 Long: -80.386308
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Splash
On/Off Effort: On Trackline: 5 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 11:15 WP#: 29 Lat: 30.227034 Long: -80.388729
Species: *Stenella frontalis* Numbers (Low/High/Best): 8 / 8 / 8
Features used in Species ID: Grey bodied animals with white spotting.

Representative images used for Species ID: 28, 31, 33, 34, 38
Photographer: Erin Frame numbers: 25 to 42 Spacer: 43
Calculated distance from Trackline: 0.72 km

Final Time and Position of Sighting

Time: 11:24 WP#: 30 Lat: 30.225214 Long: -80.399151
Calculated Distance Traveled: 1.02 km

Behavior and Additional Comments

Widely spaced in a horizontal line, staying close to the surface with definite direction of travel, moving at a moderate pace. Calf present.

Saturday, July 7, 2012 Sighting # 4

Initial sighting on Track

Time: 12:05 WP#: 40 Lat: 30.300245 Long: -80.649433
Vertical Angle: 3 Horizontal Bearing in Degrees: 60 Sighting Cue: Body
On/Off Effort: On Trackline: 6 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 12:08 WP#: 41 Lat: 30.305426 Long: -80.649478
Species: *Tursiops truncatus* Numbers (Low/High/Best): 2 / 3 / 3
Features used in Species ID: Uniform grey animals

Representative images used for Species ID: 44, 47, 53
Photographer: Erin Frame numbers: 44 to 54 Spacer: 55
Calculated distance from Trackline: 0.58 km

Final Time and Position of Sighting

Time: 12:10 WP#: 42 Lat: 30.301761 Long: -80.642364
Calculated Distance Traveled: 0.80 km

Behavior and Additional Comments

Animals swimming in Trichodesmium bloom.

Saturday, July 7, 2012 Sighting # 5

Initial sighting on Track

Time: 13:40 WP#: 48 Lat: 30.368092 Long: -80.551645
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 7 Beaufort Sea State: 2
Observer: Ryan Observer side: Left

Actual Time and Position of Sighting

Time: 13:42 WP#: 49 Lat: 30.370784 Long: -80.559474
Species: *Tursiops truncatus* Numbers (Low/High/Best): 2 / 2 / 2
Features used in Species ID: Uniform grey animals.

Representative images used for Species ID: 59, 62
Photographer: Erin Frame numbers: 56 to 63 Spacer: 64
Calculated distance from Trackline: 0.81 km

Final Time and Position of Sighting

Time: 13:44 WP#: 50 Lat: 30.372170 Long: -80.549738
Calculated Distance Traveled: 0.95 km

Behavior and Additional Comments

Up at the surface then diving out of view.

Saturday, July 7, 2012 Sighting # 6

Initial sighting on Track

Time: 14:00 WP#: 55 Lat: 30.366070 Long: -79.973995
Vertical Angle: 1 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 7 Beaufort Sea State: 2
Observer: Ryan Observer side: Left

Actual Time and Position of Sighting

Time: 14:02 WP#: 56 Lat: 30.372047 Long: -79.963499
Species: *Tursiops truncatus* Numbers (Low/High/Best): 7 / 8 / 8
Features used in Species ID: Uniform grey animals with white peduncles.

Representative images used for Species ID: 65, 68
Photographer: Erin Frame numbers: 65 to 70 Spacer: 71
Calculated distance from Trackline: 1.21 km

Final Time and Position of Sighting

Time: 14:05 WP#: 57 Lat: 30.373806 Long: -79.953938
Calculated Distance Traveled: 0.94 km

Behavior and Additional Comments

Multiple groups spread across a large area.

Saturday, July 7, 2012 Sighting # 7

Initial sighting on Track

Time: 14:15 WP#: 61 Lat: 30.434673 Long: -79.907477
Vertical Angle: 3 Horizontal Bearing in Degrees: 110 Sighting Cue: Splash
On/Off Effort: On Trackline: 8 Beaufort Sea State: 2
Observer: Ryan Observer side: Left

Actual Time and Position of Sighting

Time: 14:17 WP#: 62 Lat: 30.424355 Long: -79.903836
Species: *Grampus griseus* Numbers (Low/High/Best): 12 / 16 / 14
Features used in Species ID: Grey animals with blunt head with a cleft present. Bodies appear white due to scarring.
Representative images used for Species ID: 73, 74, 80
Photographer: Erin Frame numbers: 72 to 86 Spacer: 87
Calculated distance from Trackline: 1.20 km

Final Time and Position of Sighting

Time: 14:25 WP#: 63 Lat: 30.432743 Long: -79.898833
Calculated Distance Traveled: 1.05 km

Behavior and Additional Comments

Two groups of four close together, a third group of ~five joined after initial observation.

Saturday, July 7, 2012 Sighting # 8

Initial sighting on Track

Time: 14:27 WP#: 65 Lat: 30.434168 Long: -79.941997
Vertical Angle: 1 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 8 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 14:28 WP#: 66 Lat: 30.434672 Long: -79.932294
Species: *Tursiops truncatus* Numbers (Low/High/Best): 2 / 2 / 2
Features used in Species ID: Uniform grey animals with white peduncles.
Representative images used for Species ID: 89
Photographer: Erin Frame numbers: 88 to 90 Spacer: 91
Calculated distance from Trackline: 0.93 km

Final Time and Position of Sighting

Time: 14:31 WP#: 67 Lat: 30.437604 Long: -79.930588
Calculated Distance Traveled: 0.36 km

Behavior and Additional Comments

Animals well spaced traveling fast just below the surface. Quick surfacings.

Saturday, July 7, 2012 Sighting # 9

Initial sighting on Track

Time: 14:44 WP#: 69 Lat: 30.432911 Long: -80.403440
Vertical Angle: 1 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 8 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 14:52 WP#: 70 Lat: 30.438204 Long: -80.411598
Species: *Stenella frontalis* Numbers (Low/High/Best): 30 / 40 / 38
Features used in Species ID: Grey animals with white spotting

Representative images used for Species ID: 99, 107, 108
Photographer: Erin Frame numbers: 92 to 108 Spacer: 109
Calculated distance from Trackline: 0.98 km

Final Time and Position of Sighting

Time: 14:53 WP#: 71 Lat: 30.431493 Long: -80.413344
Calculated Distance Traveled: 0.76 km

Behavior and Additional Comments

One small group of animals separated from larger group. Animals swimming through algal bloom.

Saturday, September 22, 2012 Sighting # 1

Initial sighting on Track

Time: 9:11 WP#: 06 Lat: 30.23054 Long: -80.489852
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 5 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 9:13 WP#: 07 Lat: 30.22339 Long: -80.494131
Species: *Stenella frontalis* Numbers (Low/High/Best): 25 / 27 / 26
Features used in Species ID: White tip to rostrum, spotting pattern across body.

Representative images used for Species ID: 6
Photographer: Erin Frame numbers: 1 to 6 Spacer: 7
Calculated distance from Trackline: 0.91 km

Final Time and Position of Sighting

Time: 9:20 WP#: 08 Lat: 30.23028 Long: -80.483510
Calculated Distance Traveled: 1.27 km

Behavior and Additional Comments

2 subgroups ~ 10 animals in the first and 15 in the second. Densely packed with a few animals on their own, both groups densely packed spending extended time below the surface making them difficult to photograph.

Saturday, September 22, 2012 Sighting # 2

Initial sighting on Track

Time: 9:23 WP#: 12 Lat: 30.22966 Long: -80.410632
Vertical Angle: 2 Horizontal Bearing in Degrees: 60 Sighting Cue: Body
On/Off Effort: On Trackline: 5 Beaufort Sea State: 2
Observer: Ryan Observer side: Left

Actual Time and Position of Sighting

Time: 9:25 WP#: 13 Lat: 30.23645 Long: -80.410724
Species: *Tursiops truncatus* Numbers (Low/High/Best): 11 / 13 / 12
Features used in Species ID: Robust body appearance, broad based dorsal fin. Uniform grey coloration.
Representative images used for Species ID: 17 & 24
Photographer: Erin Frame numbers: 8 - 26 Spacer: 27
Calculated distance from Trackline: 0.76 km

Final Time and Position of Sighting

Time: 9:34 WP#: 14 Lat: 30.23324 Long: -80.417244
Calculated Distance Traveled: 0.72 km

Behavior and Additional Comments

Diffuse group traveling at the surface - some splashing possibly tail slapping. Single group with a few outliers. Calves present.

Saturday, September 22, 2012 Sighting # 3

Initial sighting on Track

Time: 10:32 WP#: 26 Lat: 30.36304 Long: -80.474359
Vertical Angle: 3 Horizontal Bearing in Degrees: 90 Sighting Cue: Splash
On/Off Effort: On Trackline: 7 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 10:39 WP#: 27 Lat: 30.35368 Long: -80.46541
Species: *Stenella frontalis* Numbers (Low/High/Best): 20 / 24 / 22
Features used in Species ID: White rostrum tip, spotting pattern across body on larger individuals.

Representative images used for Species ID: 28 & 35
Photographer: Erin Frame numbers: 28 to 36 Spacer: 37
Calculated distance from Trackline: 1.35 km

Final Time and Position of Sighting

Time: 10:44 WP#: 28 Lat: 30.35116 Long: -80.47153
Calculated Distance Traveled: 0.65 km

Behavior and Additional Comments

Two groups of animals and a few outliers. Calf present.

Saturday, September 22, 2012 Sighting # 4

Initial sighting on Track

Time: 10:58 WP#: 32 Lat: 30.36442 Long: -79.987997
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 7 Beaufort Sea State: 3
Observer: Ryan Observer side: Left

Actual Time and Position of Sighting

Time: 11:03 WP#: 33 Lat: 30.36855 Long: -79.99099
Species: *Grampus griseus* Numbers (Low/High/Best): 10 / 14 / 13
Features used in Species ID: Square head with slight point at snout, crease in center of melon
Body coloration varied with degree of scarring. Tall falcate dorsal fin.
Representative images used for Species ID: 43
Photographer: Erin Frame numbers: 38 to 47 Spacer: 48
Calculated distance from Trackline: 0.54 km

Final Time and Position of Sighting

Time: 11:09 WP#: 35 Lat: 30.36183 Long: -79.99911
Calculated Distance Traveled: 1.08 km

Behavior and Additional Comments

A few single animals plus two groups of 2-3. Animals very spread out, diving from the surface frequently

Saturday, September 22, 2012 Sighting # 5

Initial sighting on Track

Time: 11:32 WP#: 40 Lat: 30.43536 Long: -80.371983
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 8 Beaufort Sea State: 2
Observer: Ryan Observer side: Left

Actual Time and Position of Sighting

Time: 11:32 WP#: 41 Lat: 30.43090 Long: -80.365577
Species: *Tursiops truncatus* Numbers (Low/High/Best): 9 / 12 / 11
Features used in Species ID: Uniform grey coloration, robust body appearance.

Representative images used for Species ID: 53 & 54
Photographer: Erin Frame numbers: 49 to 55 Spacer: 56
Calculated distance from Trackline: 0.78 km

Final Time and Position of Sighting

Time: 11:36 WP#: 42 Lat: 30.42538 Long: -80.367358
Calculated Distance Traveled: 0.64 km

Behavior and Additional Comments

Single dense group hanging at the surface - no direction of travel initially (milling)
Group dove and not relocated after circling them 3 times.

Saturday, September 22, 2012 Sighting # 6

Initial sighting on Track

Time: 12:20 WP#: 54 Lat: 30.56595 Long: -80.186632
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Splash
On/Off Effort: On Trackline: 10 Beaufort Sea State: 2
Observer: Ryan Observer side: Left

Actual Time and Position of Sighting

Time: 12:21 WP#: 55 Lat: 30.56152 Long: -80.192404
Species: *Stenella frontalis* Numbers (Low/High/Best): 24 / 28 / 26
Features used in Species ID: White tip to rostrum, spotting pattern across bodies of larger individuals.
Representative images used for Species ID: 58 & 59
Photographer: Erin Frame numbers: 57 to 71 Spacer: 72
Calculated distance from Trackline: 0.74 km

Final Time and Position of Sighting

Time: 12:27 WP#: 56 Lat: 30.56304 Long: -80.192404
Calculated Distance Traveled: 0.17 km

Behavior and Additional Comments

Hanging at surface upon initial observations, then group showed rapid acceleration for short period followed by more hanging at the surface ~300 yards from initial location.

Saturday, September 22, 2012 Sighting # 7

Initial sighting on Track

Time: 14:56 WP#: 70 Lat: 30.09923 Long: -80.009916
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Spalsh
On/Off Effort: On Trackline: 3 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 14:58 WP#: 71 Lat: 30.10817 Long: -80.009283
Species: *Tursiops truncatus* Numbers (Low/High/Best): 6 / 6 / 6
Features used in Species ID: Uniform grey coloration, robust body appearance.

Representative images used for Species ID: 73 & 75
Photographer: Erin Frame numbers: 73 to 82 Spacer: 83
Calculated distance from Trackline: 1.00 km

Final Time and Position of Sighting

Time: 15:00 WP#: 72 Lat: 30.10809 Long: -80.008155
Calculated Distance Traveled: 0.11 km

Behavior and Additional Comments

Pair of animals seen first then additional four joined.

Saturday, September 22, 2012 Sighting # 8

Initial sighting on Track

Time: 15:01 WP#: 74 Lat: 30.10171 Long: -80.055867
Vertical Angle: 1 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 3 Beaufort Sea State: 2
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 15:03 WP#: 75 Lat: 30.11281 Long: -80.053932
Species: *Tursiops truncatus* Numbers (Low/High/Best): 11 / 13 / 12
Features used in Species ID: Uniform grey coloration, robust body appearance

Representative images used for Species ID: 87, 88 & 89
Photographer: Erin Frame numbers: 84 - 91 Spacer: 92
Calculated distance from Trackline: 1.25 km

Final Time and Position of Sighting

Time: 15:04 WP#: 76 Lat: 30.10998 Long: -80.051413
Calculated Distance Traveled: 0.40 km

Behavior and Additional Comments

Animals traveling predominantly subsurface.

Saturday, September 22, 2012 Sighting # 9

Initial sighting on Track

Time: 15:56 WP#: 88 Lat: 29.96487 Long: -79.96208
Vertical Angle: 1 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 2 Beaufort Sea State: 1
Observer: Erin Observer side: Right

Actual Time and Position of Sighting

Time: 15:57 WP#: 89 Lat: 29.96487 Long: -79.965453
Species: *Tursiops truncatus* Numbers (Low/High/Best): 8 / 8 / 8
Features used in Species ID: Uniform grey coloration, robust body appearance

Representative images used for Species ID: 95
Photographer: Erin Frame numbers: 93 - 99 Spacer: 100
Calculated distance from Trackline: 0.32 km

Final Time and Position of Sighting

Time: 16:02 WP#: 90 Lat: 29.96796 Long: -79.959296
Calculated Distance Traveled: 0.69 km

Behavior and Additional Comments

Four pairs of animals distributed well apart from one another. Each pair would surface quickly then dive back below the surface out of sight.

Sunday, September 23, 2012 Sighting # 1

Initial sighting on Track

Time: 10:37 WP#: 11 Lat: 30.364971 Long: -79.959244
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 7 Beaufort Sea State: 3
Observer: Ryan Observer side: Left

Actual Time and Position of Sighting

Time: 10:40 WP#: 12 Lat: 30.365325 Long: -79.960759
Species: *Unidentified Delphinid* Numbers (Low/High/Best): 2 / 2 / 2
Features used in Species ID: NA
Representative images used for Species ID: NA
Photographer: Ryan Frame numbers: NA Spacer: NA
Calculated distance from Trackline: 0.15 km

Final Time and Position of Sighting

Time: 10:50 WP#: 13 Lat: 30.365326 Long: -79.970036
Calculated Distance Traveled: 0.89 km

Behavior and Additional Comments

Pair of animals, no photos.

Sunday, September 23, 2012 Sighting # 2

Initial sighting on Track

Time: 12:05 WP#: 24 Lat: 30.231380 Long: -80.700927
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 5 Beaufort Sea State: 3
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 12:10 WP#: 25 Lat: 30.233932 Long: -80.702387
Species: *Stenella frontalis* Numbers (Low/High/Best): 8 / 12 / 10
Features used in Species ID: Alternating light and dark pattern down body and spotting, white tip on rostrum
Representative images used for Species ID: 119, 122, 126
Photographer: Ryan Frame numbers: 110 to 136 Spacer: 137
Calculated distance from Trackline: 0.32 km

Final Time and Position of Sighting

Time: 12:23 WP#: 26 Lat: 30.238178 Long: -80.697993
Calculated Distance Traveled: 0.63 km

Behavior and Additional Comments

Bow riding on small recreational fishing boat, not surfacing for extended periods. Initially one animal then joined by a larger group.

Tuesday, September 4, 2012 Sighting # 1

Initial sighting on Track

Time: 8:50 WP#: 4 Lat: 29.968608 Long: -80.289670
Vertical Angle: 3 Horizontal Bearing in Degrees: 100 Sighting Cue: Body
On/Off Effort: On Trackline: 1 Beaufort Sea State: 3
Observer: Erin Observer side: Left

Actual Time and Position of Sighting

Time: 8:54 WP#: 5 Lat: 29.967288 Long: 80.295223
Species: *Steno bredanensis* Numbers (Low/High/Best): 20 / 35 / 28
Features used in Species ID: Cone shaped head with small melon, larger pectoral fins, triangular shaped dorsal fin.
Representative images used for Species ID: 27, 39
Photographer: Ryan Frame numbers: 1 to 44 Spacer: 45
Calculated distance from Trackline: 0.55 km

Final Time and Position of Sighting

Time: 9:03 WP#: 6 Lat: 29.965913 Long: -80.294987
Calculated Distance Traveled: 0.15 km

Behavior and Additional Comments

Densely packed group on the surface, dove when plane passed overhead, evasive. Only a few animals would come to the surface at a time.

Tuesday, September 4, 2012 Sighting # 2

Initial sighting on Track

Time: 9:22 WP#: 11 Lat: 30.034665 Long: -79.899919
Vertical Angle: 2 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 2 Beaufort Sea State: 3
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: NA WP#: NA Lat: NA Long: NA
Species: *Unidentified Delphinid* Numbers (Low/High/Best): 2 / 2 / 2
Features used in Species ID: NA
Representative images used for Species ID: No photos
Photographer: Ryan Frame numbers: NA Spacer: NA
Calculated distance from Trackline: NA

Final Time and Position of Sighting

Time: 9:28 WP#: 12 Lat: 30.040575 Long: -79.896119
Calculated Distance Traveled: NA

Behavior and Additional Comments

No resight, assumed final location of animals.

Sunday, November 4, 2012 Sighting # 3

Initial sighting on Track

Time: 10:10 WP#: 19 Lat: 30.100644 Long: -80.063345
Vertical Angle: 1 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 3 Beaufort Sea State: 3
Observer: Erin Observer side: Left

Actual Time and Position of Sighting

Time: 10:12 WP#: 20 Lat: 30.101503 Long: -80.060750
Species: *Tursiops truncatus* Numbers (Low/High/Best): 5 / 5 / 5
Features used in Species ID: Uniform grey, robust animals.

Representative images used for Species ID: 46, 54
Photographer: Ryan Frame numbers: 46 to 61 Spacer: 62
Calculated distance from Trackline: 0.27 km

Final Time and Position of Sighting

Time: 10:18 WP#: 21 Lat: 30.107968 Long: -80.062028
Calculated Distance Traveled: 0.73 km

Behavior and Additional Comments

Rolling around in pairs, heading in different directions.

Sunday, November 4, 2012 Sighting # 4

Initial sighting on Track

Time: 13:28 WP#: 36 Lat: 30.570174 Long: -80.186847
Vertical Angle: 1 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 10 Beaufort Sea State: 3
Observer: Erin Observer side: Left

Actual Time and Position of Sighting

Time: 13:30 WP#: 37 Lat: 30.563090 Long: -80.196563
Species: *Tursiops truncatus* Numbers (Low/High/Best): 3 / 3 / 3
Features used in Species ID: No photos

Representative images used for Species ID: NA
Photographer: Ryan Frame numbers: NA Spacer: NA
Calculated distance from Trackline: 1.22 km

Final Time and Position of Sighting

Time: 13:44 WP#: 38 Lat: 30.578326 Long: -80.200129
Calculated Distance Traveled: 1.73 km

Behavior and Additional Comments

Assumed last location. Animals evasive, running the current line quickly with long periods out of sight below the surface.

Sunday, November 4, 2012 Sighting # 5

Initial sighting on Track

Time: 13:52 WP#: 41 Lat: 30.567729 Long: -79.861466
Vertical Angle: 1 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 10 Beaufort Sea State: 4
Observer: Erin Observer side: Left

Actual Time and Position of Sighting

Time: 13:54 WP#: 42 Lat: 30.563003 Long: -79.859421
Species: *Tursiops truncatus* Numbers (Low/High/Best): 2 / 2 / 2
Features used in Species ID: Uniform grey, robust animals.

Representative images used for Species ID: 63
Photographer: Ryan Frame numbers: 63 to 66 Spacer: 67
Calculated distance from Trackline: 0.56 km

Final Time and Position of Sighting

Time: 13:58 WP#: 43 Lat: 30.573507 Long: -79.862835
Calculated Distance Traveled: 1.21 km

Behavior and Additional Comments

Traveling, with subsets of the group diving deeper below the surface.

Sunday, November 4, 2012 Sighting # 6

Initial sighting on Track

Time: 14:31 WP#: 51 Lat: 30.498636 Long: -80.694708
Vertical Angle: 3 Horizontal Bearing in Degrees: 90 Sighting Cue: Body
On/Off Effort: On Trackline: 9 Beaufort Sea State: 3
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 14:32 WP#: 52 Lat: 30.503127 Long: -80.694210
Species: *Stenella frontalis* Numbers (Low/High/Best): 25 / 30 / 28
Features used in Species ID: Grey animals with spotting and a white tip to their rostrum.

Representative images used for Species ID: 72, 79, 83, 99, 132
Photographer: Ryan Frame numbers: 68 to 133 Spacer: 134
Calculated distance from Trackline: 0.50 km

Final Time and Position of Sighting

Time: 14:38 WP#: 53 Lat: 30.508343 Long: -80.695659
Calculated Distance Traveled: 0.60 km

Behavior and Additional Comments

Tightly packed group, traveling, some doing deeper dives, a few swimming belly to belly.

Sunday, November 4, 2012 Sighting # 7

Initial sighting on Track

Time: 15:01 WP#: 58 Lat: 30.433611 Long: -79.938619
Vertical Angle: 2 Horizontal Bearing in Degrees: 60 Sighting Cue: Body
On/Off Effort: On Trackline: 8 Beaufort Sea State: 3
Observer: Ryan Observer side: Right

Actual Time and Position of Sighting

Time: 15:02 WP#: 59 Lat: 30.433770 Long: -79.937191
Species: *Grampus griseus* Numbers (Low/High/Best): 7 / 10 / 8
Features used in Species ID: Grey animals with white scarring, blunt heads with cleft in center.

Representative images used for Species ID: 135, 140, 148, 155
Photographer: Ryan Frame numbers: 135 to 156 Spacer: 157
Calculated distance from Trackline: 0.14 km

Final Time and Position of Sighting

Time: 15:12 WP#: 60 Lat: 30.431680 Long: -79.940824
Calculated Distance Traveled: 0.42 km

Behavior and Additional Comments

Traveling close together, deep diving and changing course.

The Sighting Summary Sheet

The Sighting Summary, adapted from the Sighting Data Sheet used in the field, integrates data gathered in the field with results from lab analyses to provide a full summary of each marine mammal sighting (note – this sheet only deals with marine mammal sightings). A Sighting Summary is to be completed for all sightings, including sightings made while off-effort during transits between survey legs, as well as sighting cues that never led to a sighting that was relocated.

The Sighting Summary sheet is broken into four sections; "Initial Sighting on Track", "Time and Position of Sighting", "Final Time and Position of Sighting", and "Behavior and Additional Comments". Each section and sub-heading will be detailed below.

Initial Sighting on Track

Time*:* The time the "break track" GPS way-point was taken.
WP#: GPS way-point number of the break track.
Lat/Long: The latitude and longitude associated with the break track way-point.
Track Line: The track line surveyed when the sighting was made.
On/Off Effort: Whether the sighting was made during an active survey track line (*i.e*. on effort) or during transit BETWEEN track lines (*i.e*. off effort). Sightings made during off effort transit to and from the range are NOT included in the sighting summaries.
Sighting Cue: Whether the initial sighting was a splash, a breach or body part.
Vertical Angle: Vertical "angle" between 1 and 4, the lower edge of view ("1") to the horizon ("4"). A subjective and relative measure of how far away from the track line the initial sighting occurred.
Horizontal Bearing in Degrees: The horizontal degrees from front to back (0 to 180) at which the sighting occurred.
Observer: Three lettered initial of the observer who made the sighting.
Observer Side: On which side of the plane in the direction of travel the sighting occurred.

Time and Position of Sighting

Time*:* The time the GPS way-point was taken while relocating animals and circling above.
WP#: GPS way-point number of the sighting.
Lat/Long: The latitude and longitude associated with the way point obtained while circling over animals.
Beaufort Sea State: The sea state observed during the sighting.
Species: Scientific binomial name of the marine mammal species involved in the sighting. When species identity could not be established unequivocally, the next higher taxonomic level to which identity could be established was used. If a cetacean was identified as a dolphin but images obtained during the encounter were not sufficient to establish species ID, the designation "unidentified delphinid" or "*T. truncatus*/*S. frontalis*" is used. If the animal could be ID'd as a cetacean only, then "unidentified cetacean" is used. If a large body was observed but it could not be established whether a cetacean, fish/shark or turtle was involved in the sighting, the designation "unidentified marine vertebrate" is used.
Criteria used to identify species: Which species specific diagnostic features were used in classifying a sighting to species (see information on diagnosis of species).
Best images used for species ID: The images obtained during the sighting that best displayed the features used to establish species.
Numbers (Low/ High/ Best): Low, high, and best estimate of number of animals involved in the sighting.
Calves observed? Whether any calves were observed during the encounter. A conservative measure is used, in that only animals roughly half the size of the associated larger animal (the presumed mother) are designated as calves.
Calculated Distance from Track Line: The distances between the break track waypoint (2.0) and the initial position of each sighting (2.4) is calculated using the online software Scripts Movable

Type (http://www.movable-type.co.uk/scripts/latlong.html). Since there is a bias in estimating the location of a group of mobile marine mammals from a fast moving airplane, the distances calculated between break track and sighting are rounded to 0.1 km.
Photographer: Three lettered initials of observer seated in the right camera seat.
Card #: Memory card on which the photos from the particular sighting was made.
Frame Numbers: Starting and ending frame number.
Spacer: Image used to separate sighting to clarify when one sighting ends and the next begins. Image typically of interior of plane or a 45 degree angle shot of the horizon. If taking a shot of the interior of the plane, put the camera focus setting on "manual", take the picture, then immediately set it back to "automatic".

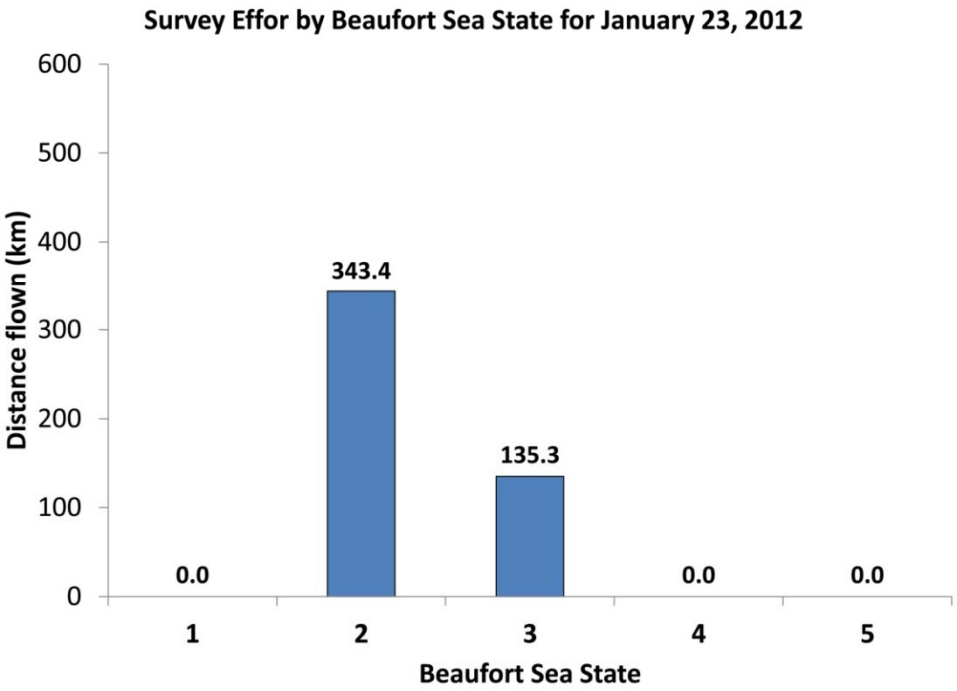
Final Time and Position of Sighting

Time: WP#: Lat: Long: Calculated Distance traveled: ➔ see section above.

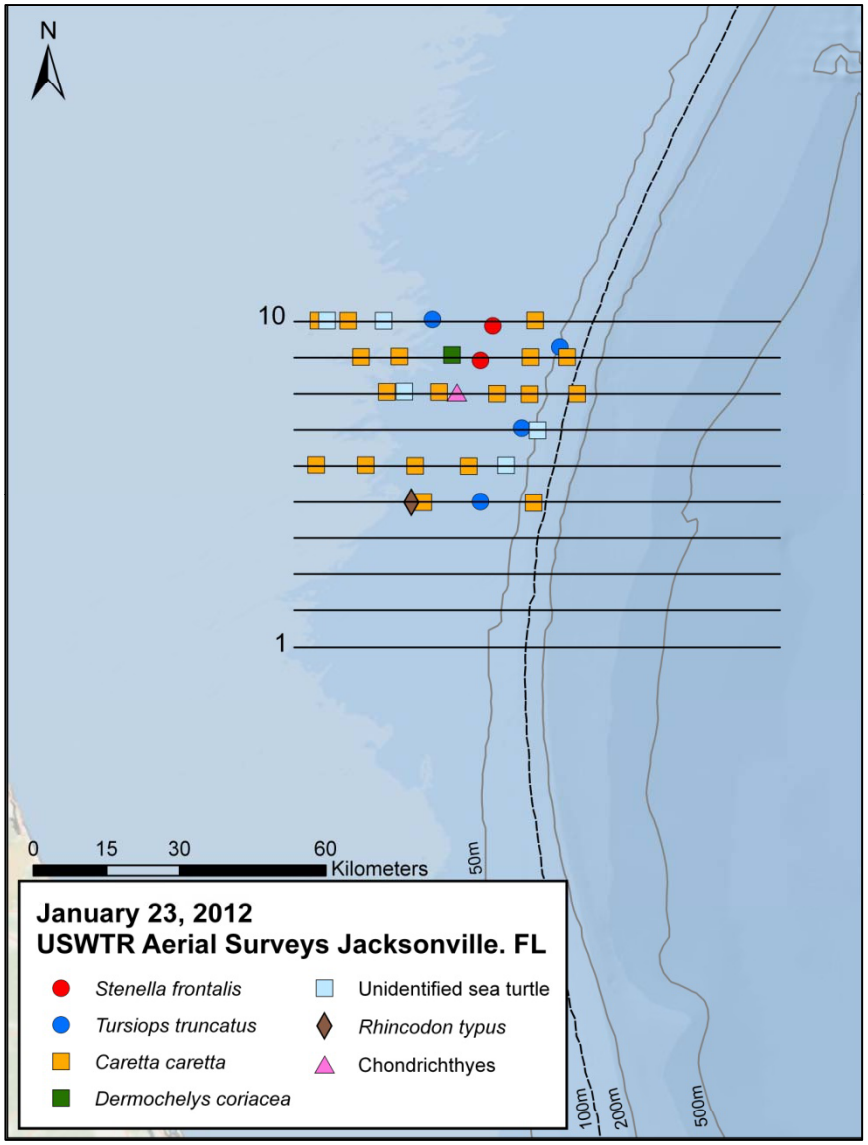
Behavior and Additional Comments

Any behavioral notes obtained during the sighting (*e.g.* group formation, relative travel speed, feeding events or presumed copulation attempts, presence of other cetaceans or sharks in or around the animal(s) in the sighting, interaction with inanimate objects such marine debris). This section also includes notes on altitude of the survey plane during the encounter as well as any indications (or lack thereof) of the animal(s) reacting to the presence of the plane.

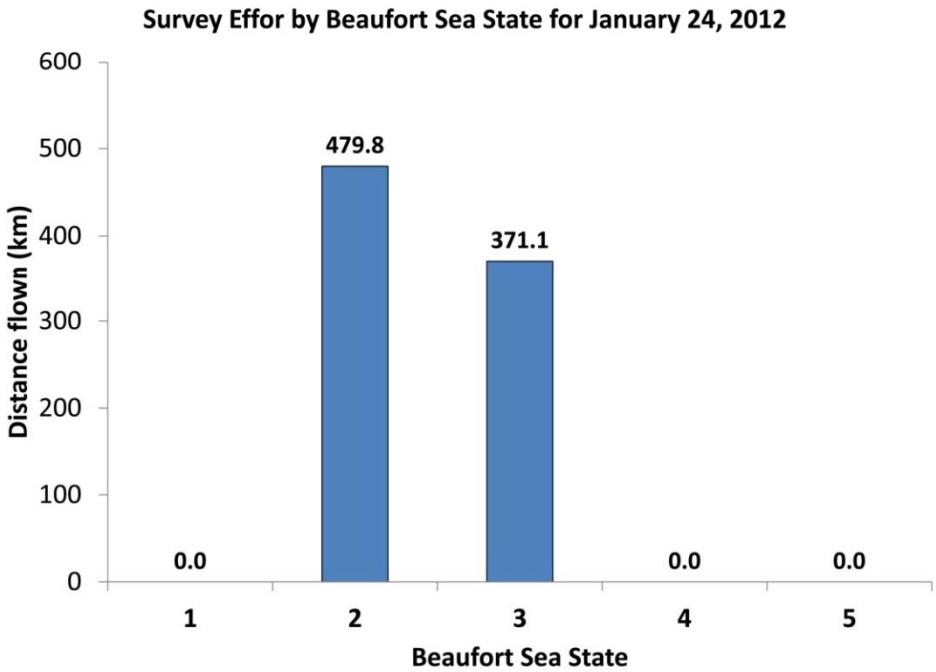
January 23, 2012

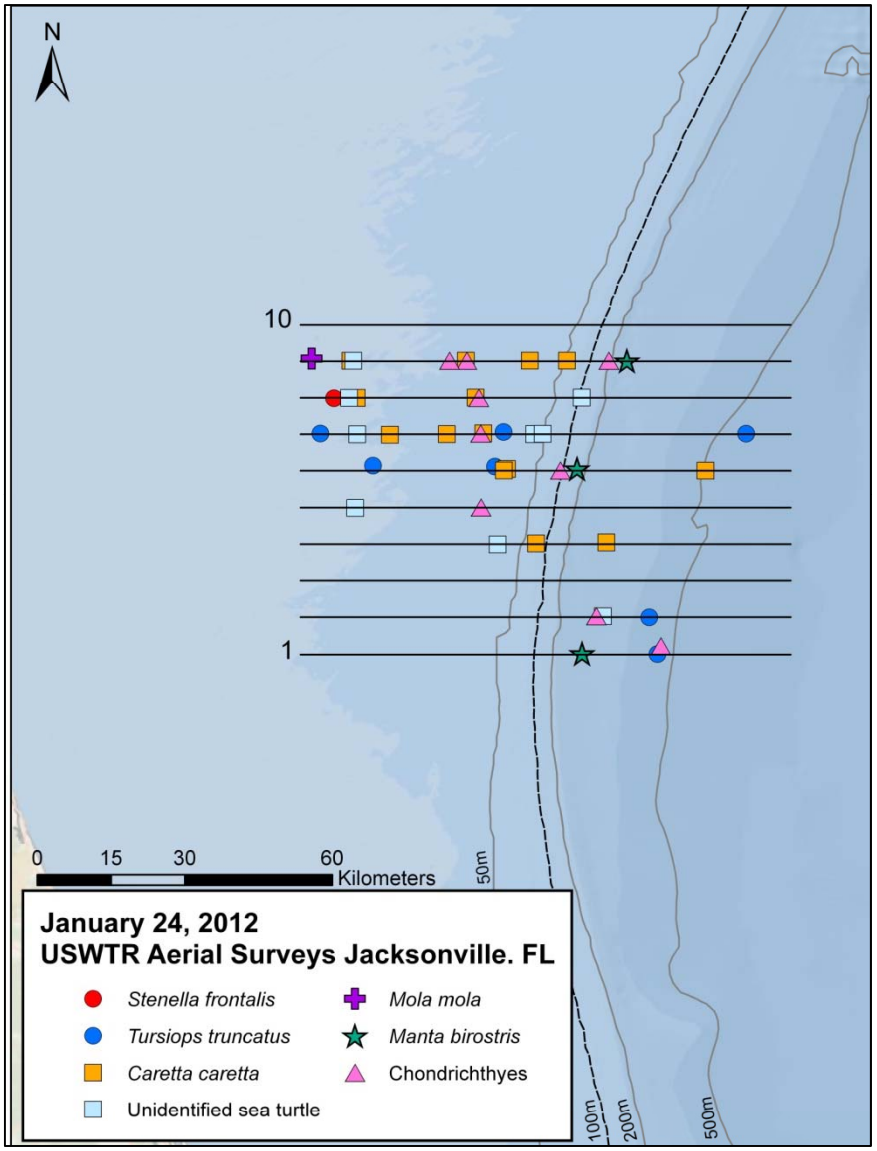


Species	Number of Sightings	Number of Individuals	Beaufort Sea State	Line Number
Stenella frontalis	1	4	2	9
Stenella frontalis	1	75	2	10
Tursiops truncatus	1	85	2	5
Tursiops truncatus	1	30	3	7
Tursiops truncatus	1	5	3	9
Tursiops truncatus	1	1	2	10
Caretta caretta	18	26	2 to 3	-
Dermochelys coriacea	1	1	2	9
Unidentified Sea Turtle	5	9	2 to 3	-
Rhincodon typus	1	1	2	5
Unidentified Chondrichthyes	1	1	2	8



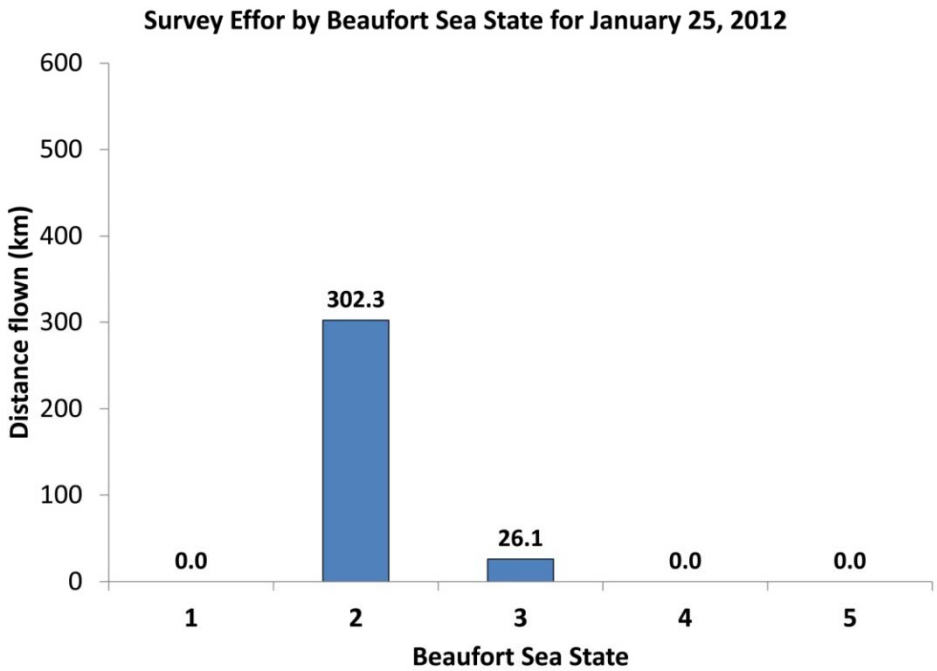
January 24, 2012



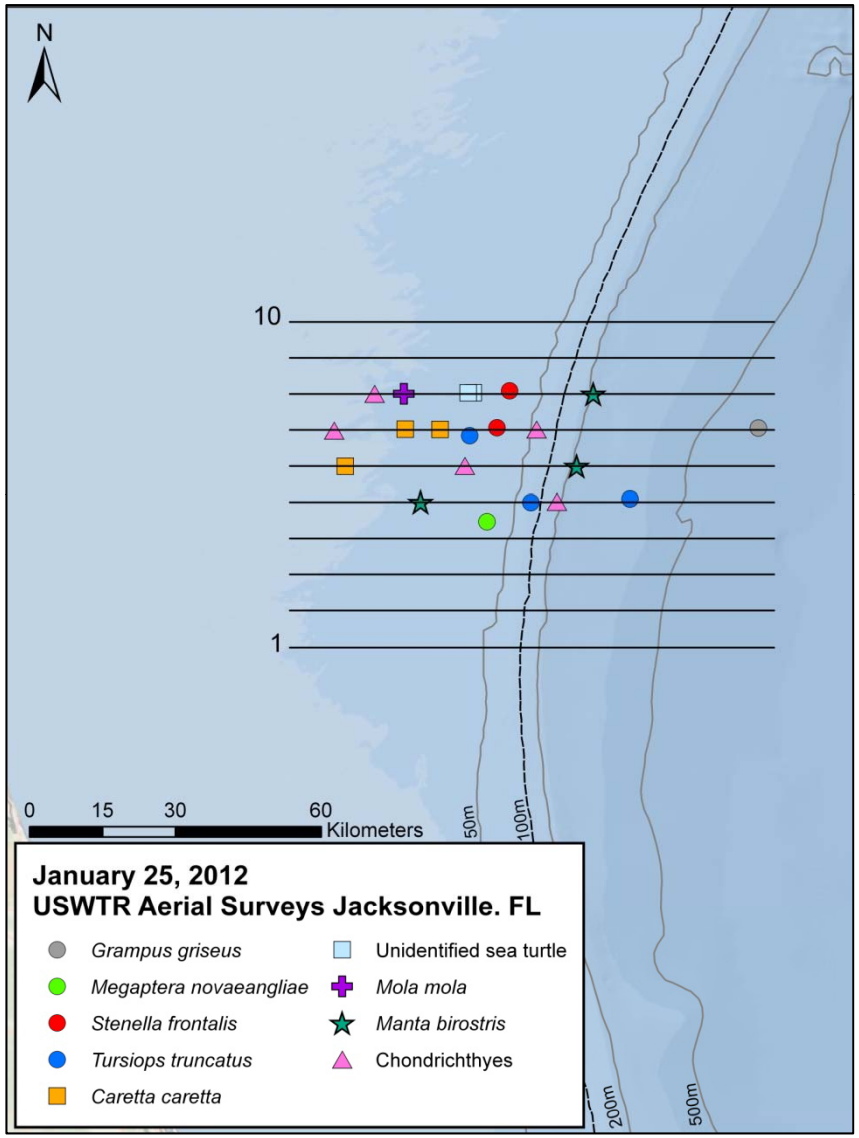


Species	Number of Sightings	Number of Individuals	Beaufort Sea State	Line Number
Stenella frontalis	1	4	2	8
Tursiops truncatus	1	10	2	1
Tursiops truncatus	1	10	3	2
Tursiops truncatus	1	1	2	6
Tursiops truncatus	1	8	2	6
Tursiops truncatus	1	1	2	7
Tursiops truncatus	1	1	2	7
Tursiops truncatus	1	20	3	7
Caretta caretta	14	21	2 to 3	-
Unidentified Sea Turtle	9	11	2 to 3	-
Mola mola	1	1	2	9
Manta birostris	3	3	2 to 3	-
Unidentified Chondrichthyes	9	11	2 to 3	-

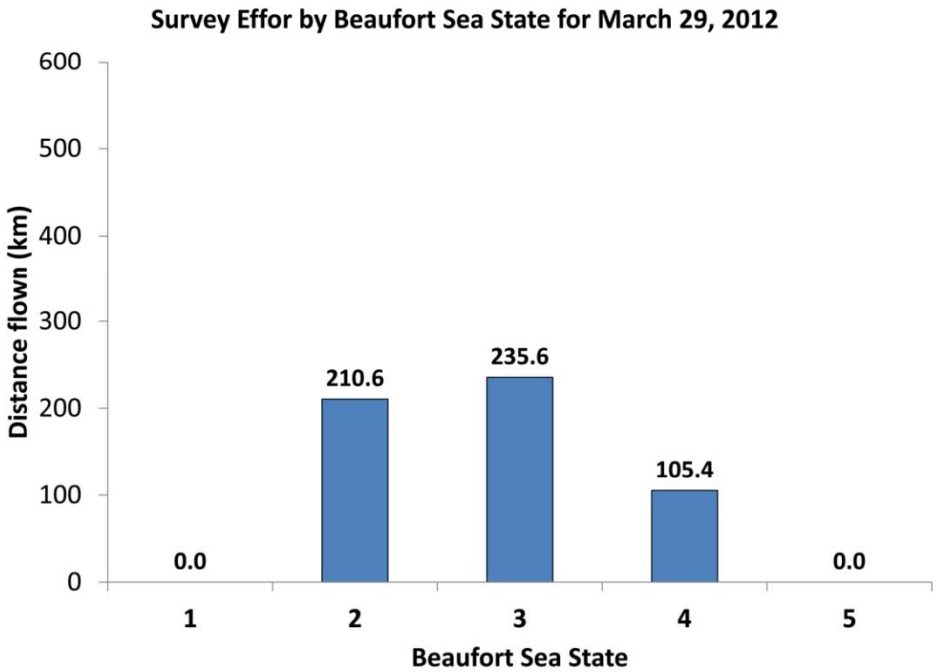
January 25, 2012



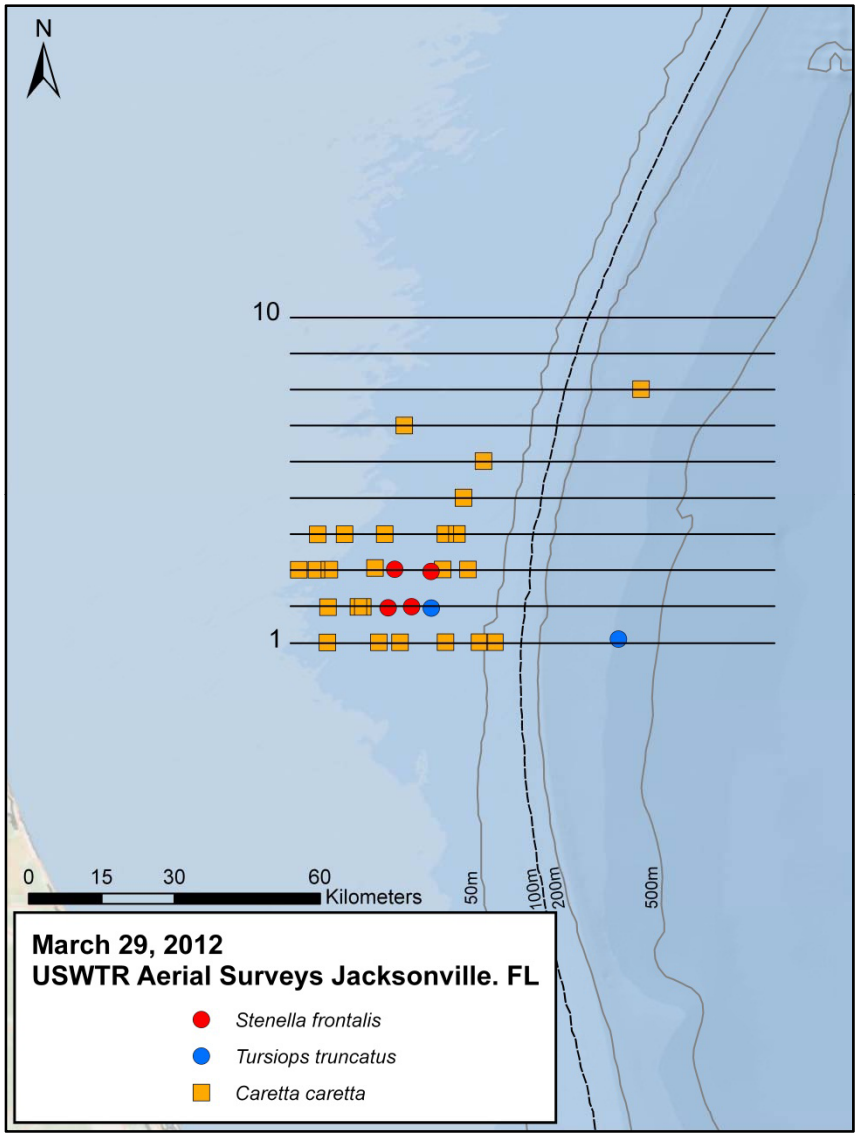
Species	Number of Sightings	Number of Individuals	Beaufort Sea State	Line Number
Grampus griseus	1	5	2	7
Megaptera novaeangliae	1	1	2	5
Stenella frontalis	1	15	3	7
Stenella frontalis	1	52	2	8
Tursiops truncatus	1	7	2	5
Tursiops truncatus	1	4	3	5
Tursiops truncatus	1	2	2	7
Caretta caretta	3	4	2	-
Unidentified Sea Turtle	2	3	2	8
Mola mola	1	1	2	8
Manta birostris	3	4	2	-
Rhinoptera bonasus	1	200	2	7
Unidentified Chondrichthyes	4	5	2 to 3	-



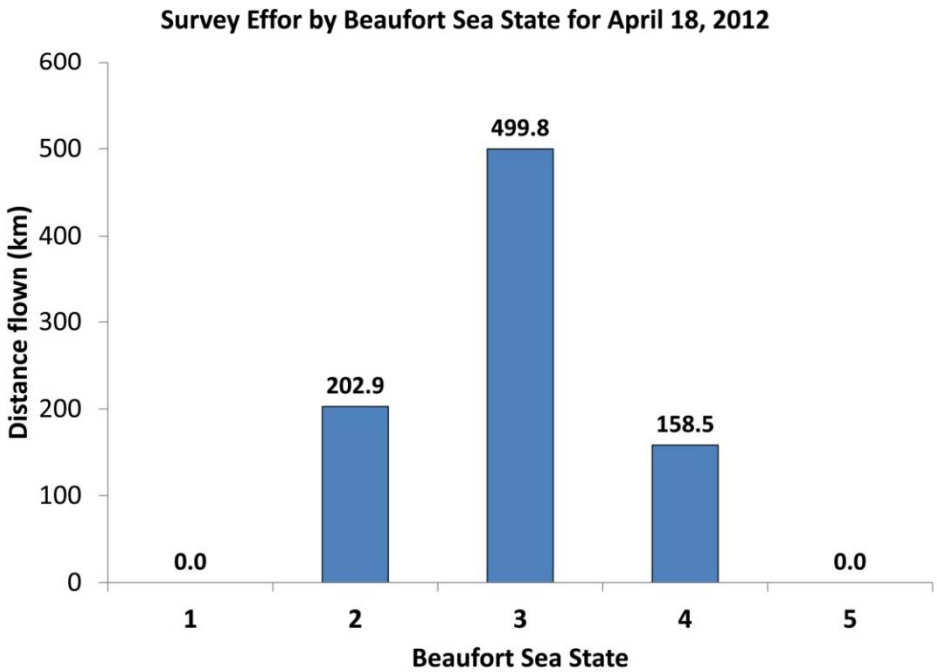
March 29, 2012



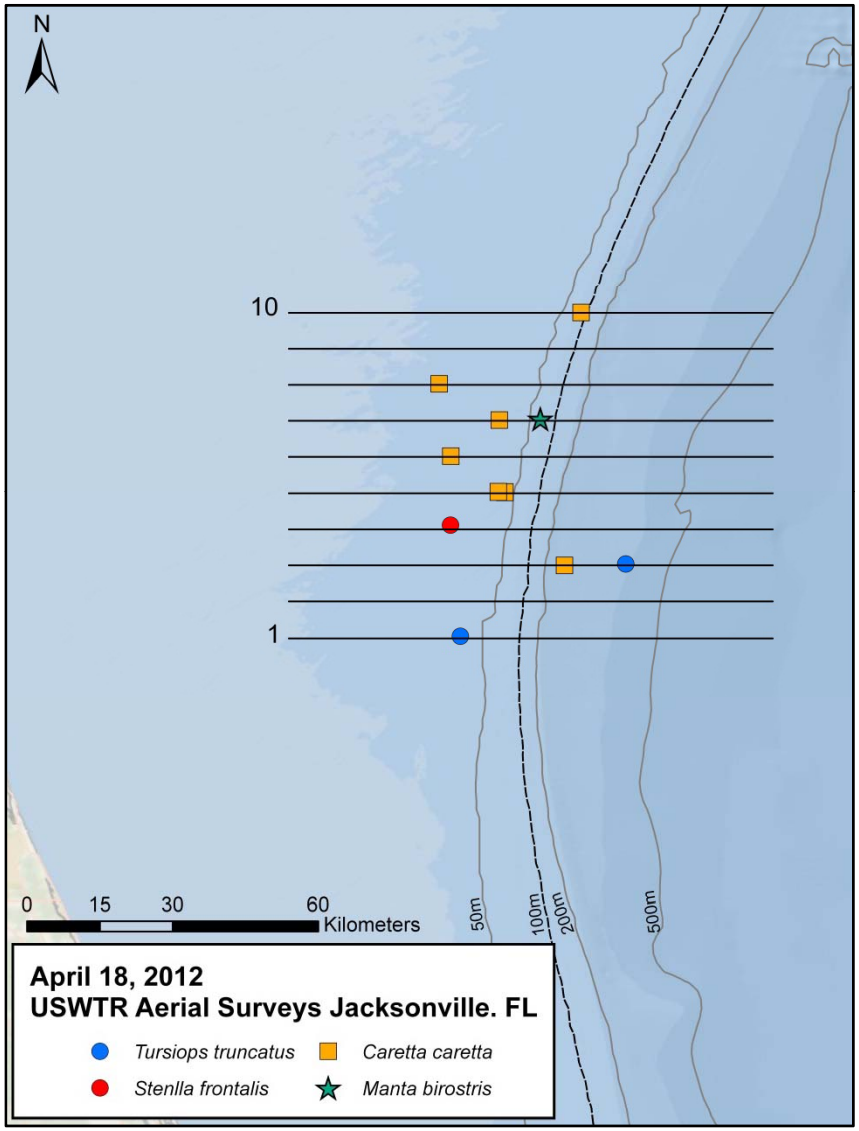
Species	Number of Sightings	Number of Individuals	Beaufort Sea State	Line Number
Stenella frontalis	1	3	2	2
Stenella frontalis	1	13	2	2
Stenella frontalis	1	44	2	3
Stenella frontalis	1	6	2	3
Tursiops truncatus	1	8	2	1
Tursiops truncatus	1	4	2	2
Caretta caretta	24	37	2 to 3	-



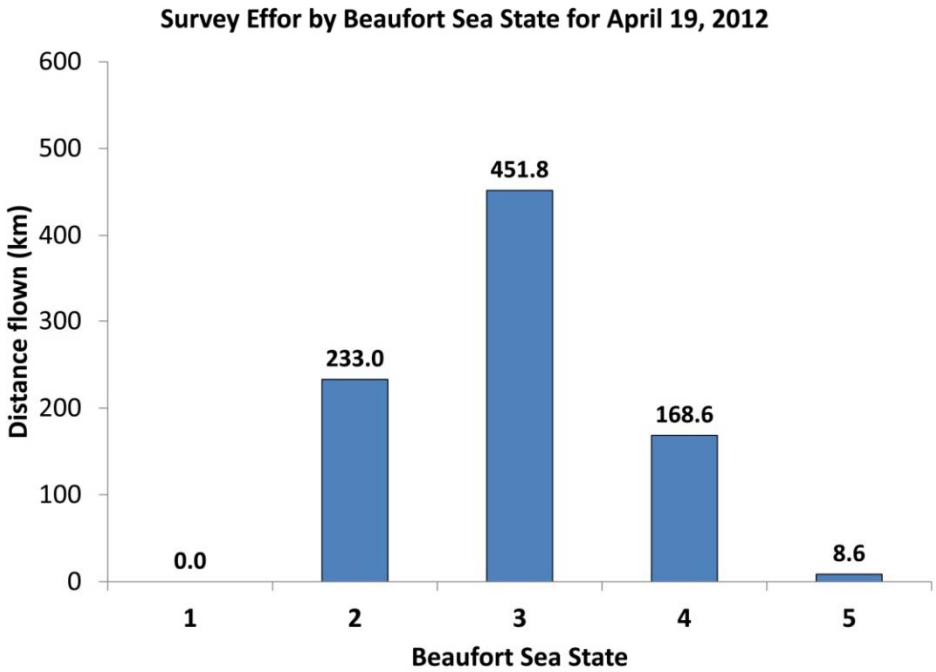
April 18, 2012



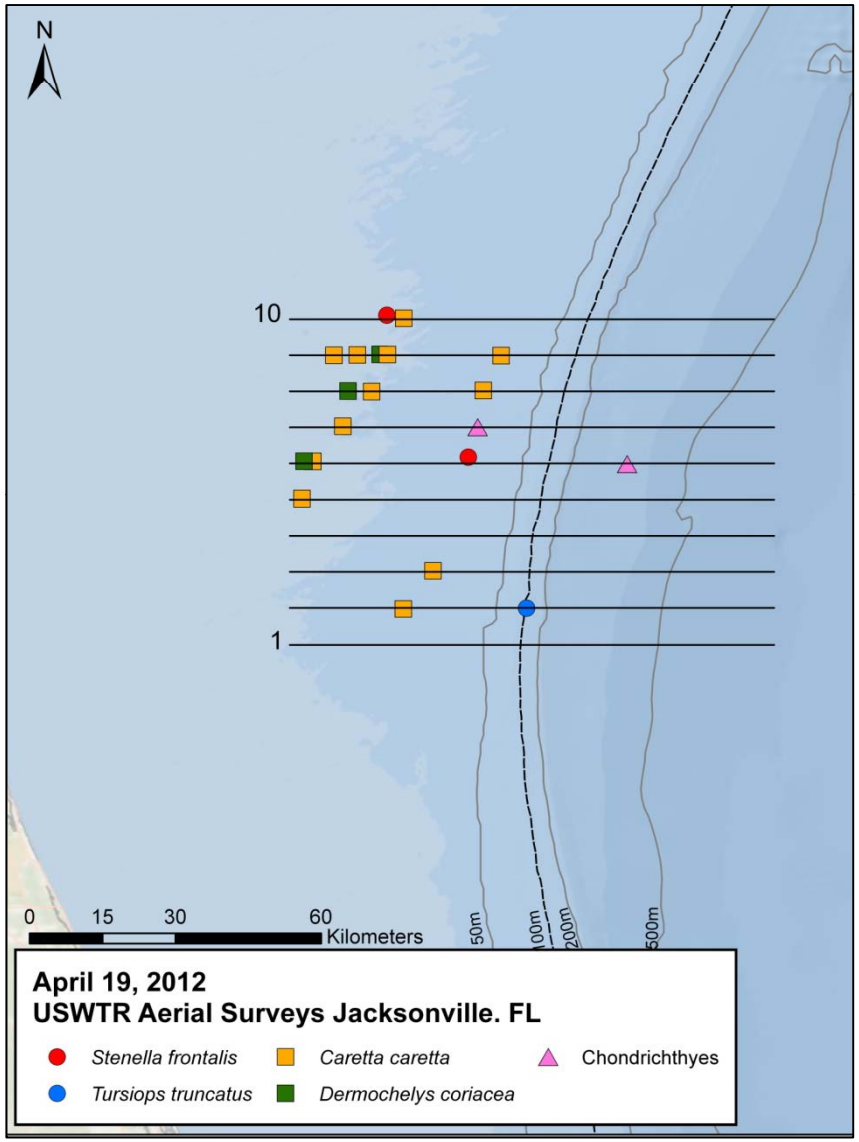
Species	Number of Sightings	Number of Individuals	Beaufort Sea State	Line Number
Stenella frontalis	1	50	2	4
Tursiops truncatus	1	3	3	1
Tursiops truncatus	1	8	2	3
Caretta caretta	7	7	2 to 4	-
Manta birostris	1	1	4	7



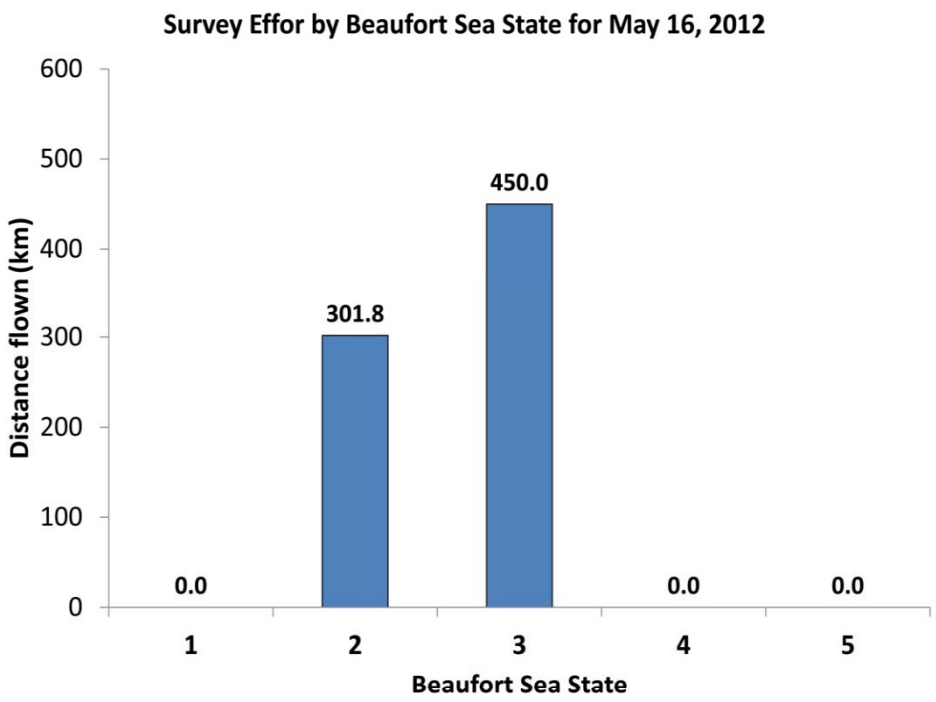
April 19, 2012



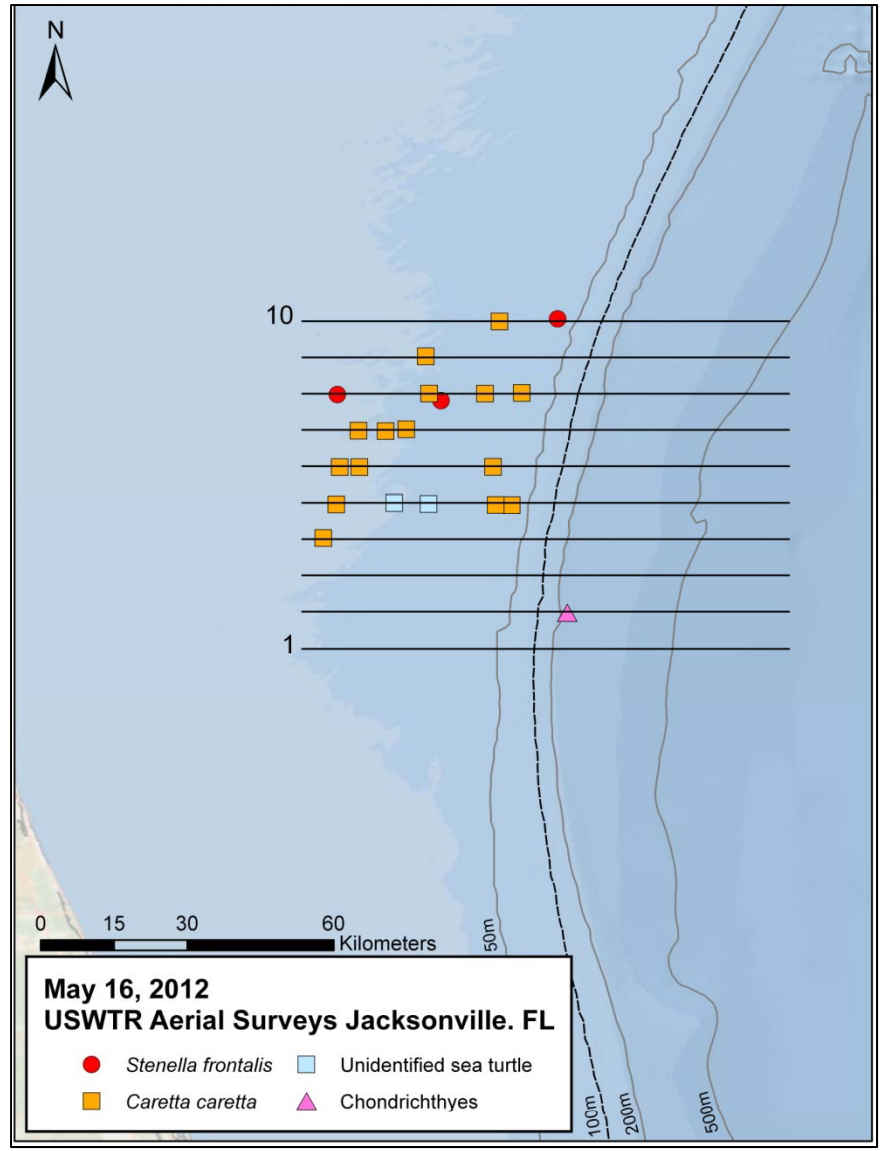
Species	Number of Sightings	Number of Individuals	Beaufort Sea State	Line Number
Stenella frontalis	1	20	2	6
Stenella frontalis	1	38	2	10
Tursiops truncatus	1	28	3	2
Caretta caretta	12	17	2 to 3	-
Dermochelys coriacea	3	3	2	-
Unidentified Chondrichthyes	2	2	2 to 3	-



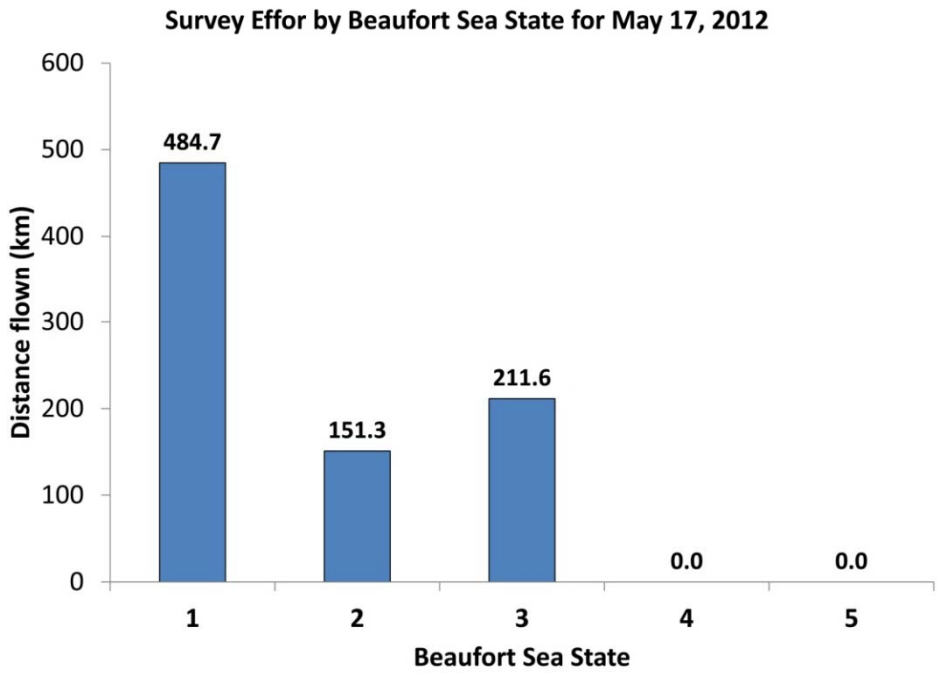
May 16, 2012



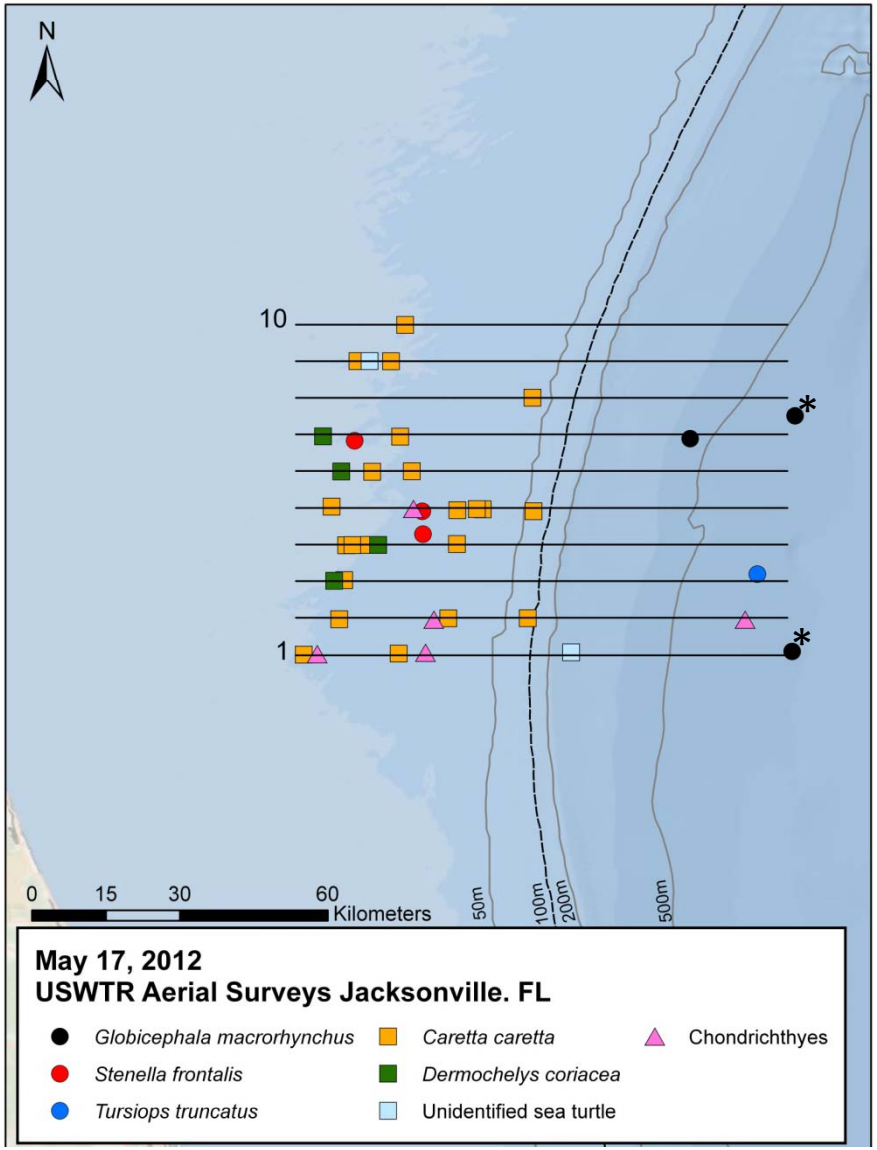
Species	Number of Sightings	Number of Individuals	Beaufort Sea State	Line Number
Stenella frontalis	1	7	3	8
Stenella frontalis	1	15	3	8
Stenella frontalis	1	37	2	10
Caretta caretta	15	18	2 to 3	-
Unidentified Sea Turtle	2	2	2	5
Unidentified Chondrichthyes	1	1	2	2



May 17, 2012

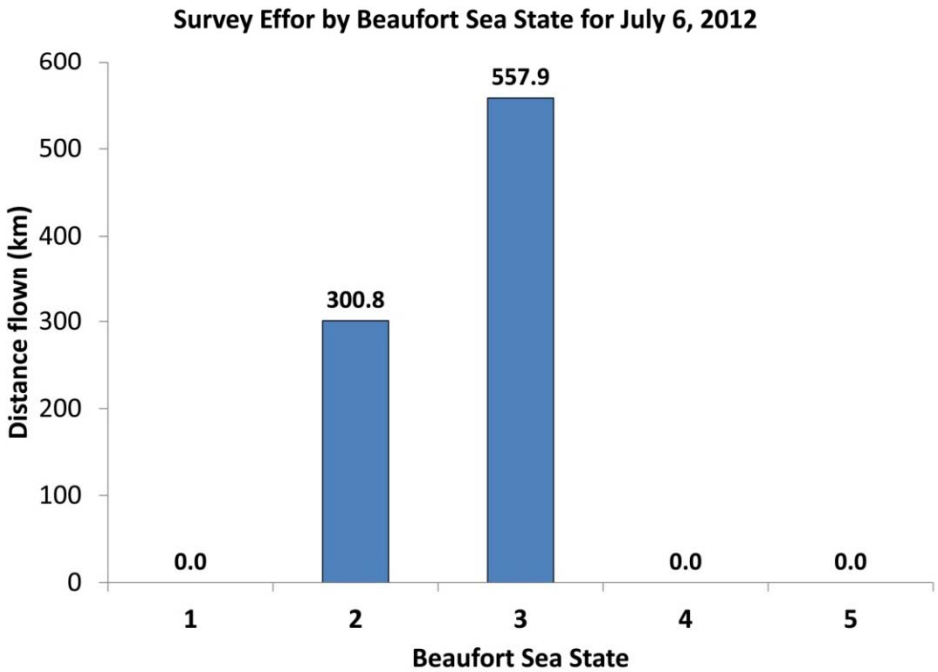


Species	Number of Sightings	Number of Individuals	Beaufort Sea State	Line Number
Globicephala macrorhynchus	1	2	3	7
Globicephala macrorhynchus	1	2	3	off effort
Globicephala macrorhynchus	1	8	1	off effort
Stenella fronatlis	1	30	2	4
Stenella fronatlis	1	14	2	5
Stenella fronatlis	1	28	1	7
Tursiops truncatus	1	20	2	3
Caretta caretta	22	31	1 to 2	-
Dermochelys coriacea	4	4	1	-
Unidentified Sea Turtle	2	2	1	-
Unidentified Chondrichthyes	5	6	1 to 2	-

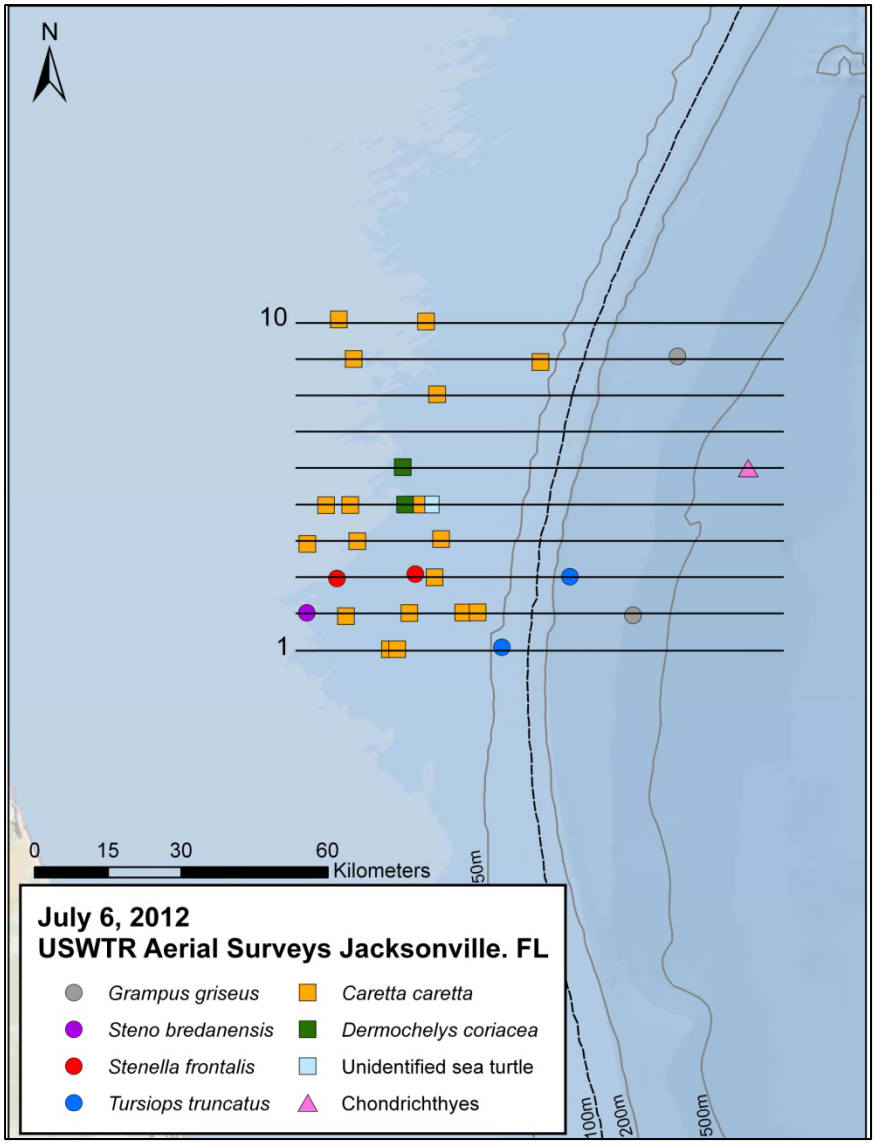


* Denotes off effort sighting

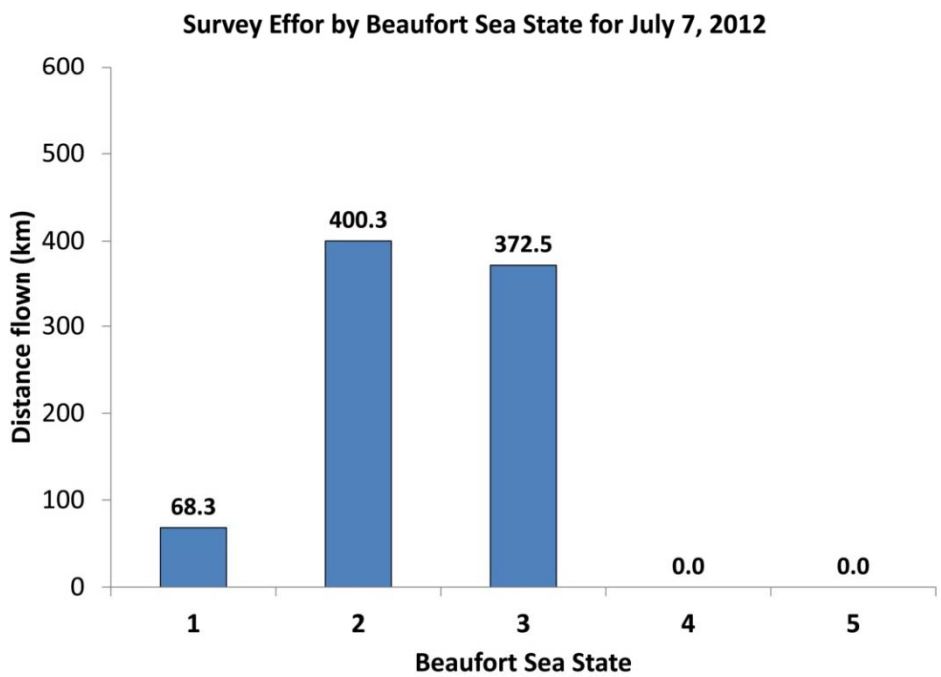
July 6, 2012

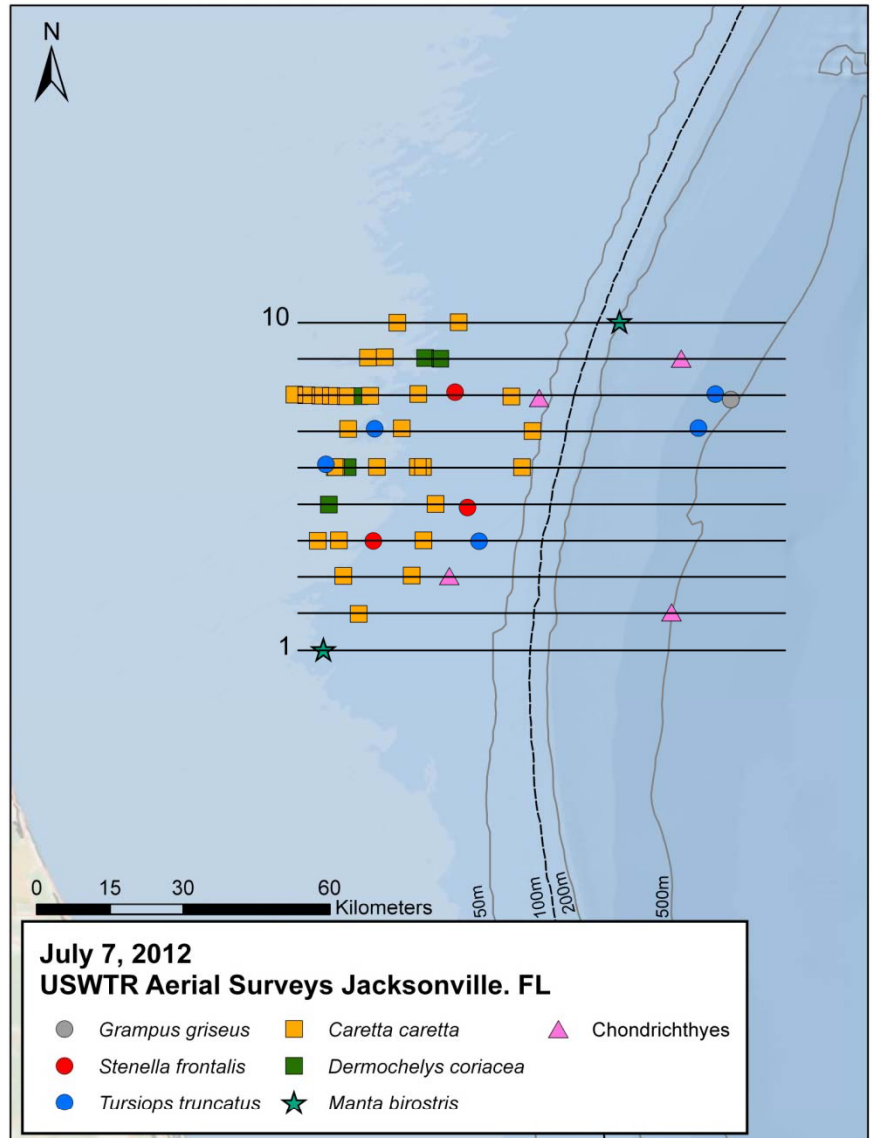


Species	Number of Sightings	Number of Individuals	Beaufort Sea State	Line Number
Grampus griseus	1	18	3	2
Grampus griseus	1	17	3	9
Stenella frontalis	1	30	2	3
Stenella frontalis	1	12	2	3
Steno bredanensis	1	35	2	2
Tursiops truncatus	1	6	3	1
Tursiops truncatus	1	7	3	3
Caretta caretta	18	25	2 to 3	-
Dermochelys coriacea	2	2	2 to 3	-
Unidentified Sea Turtle	1	1	2	5
Unidentified Chondrichthyes	1	1	3	6



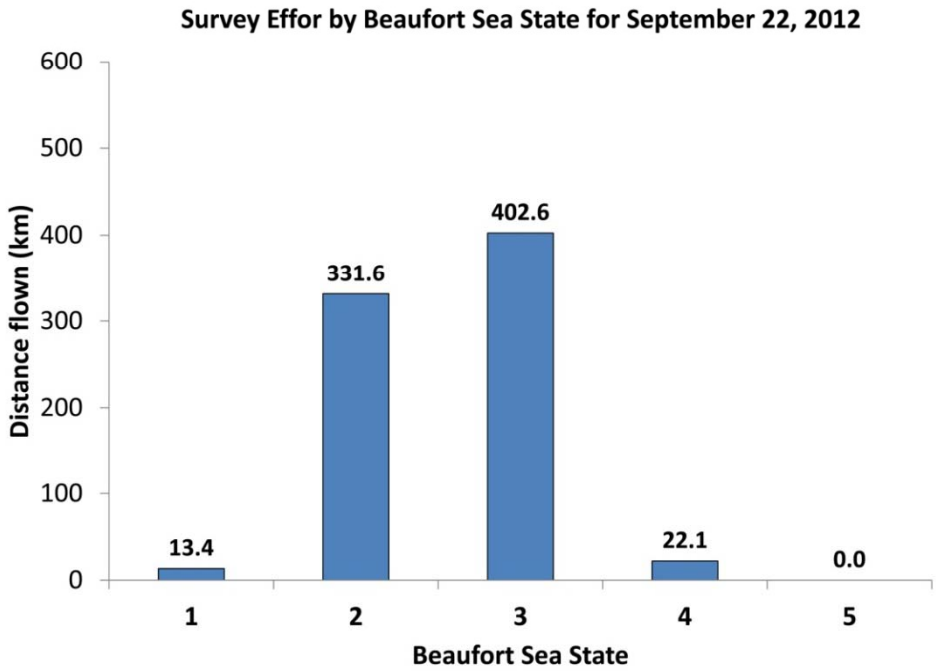
July 7, 2012



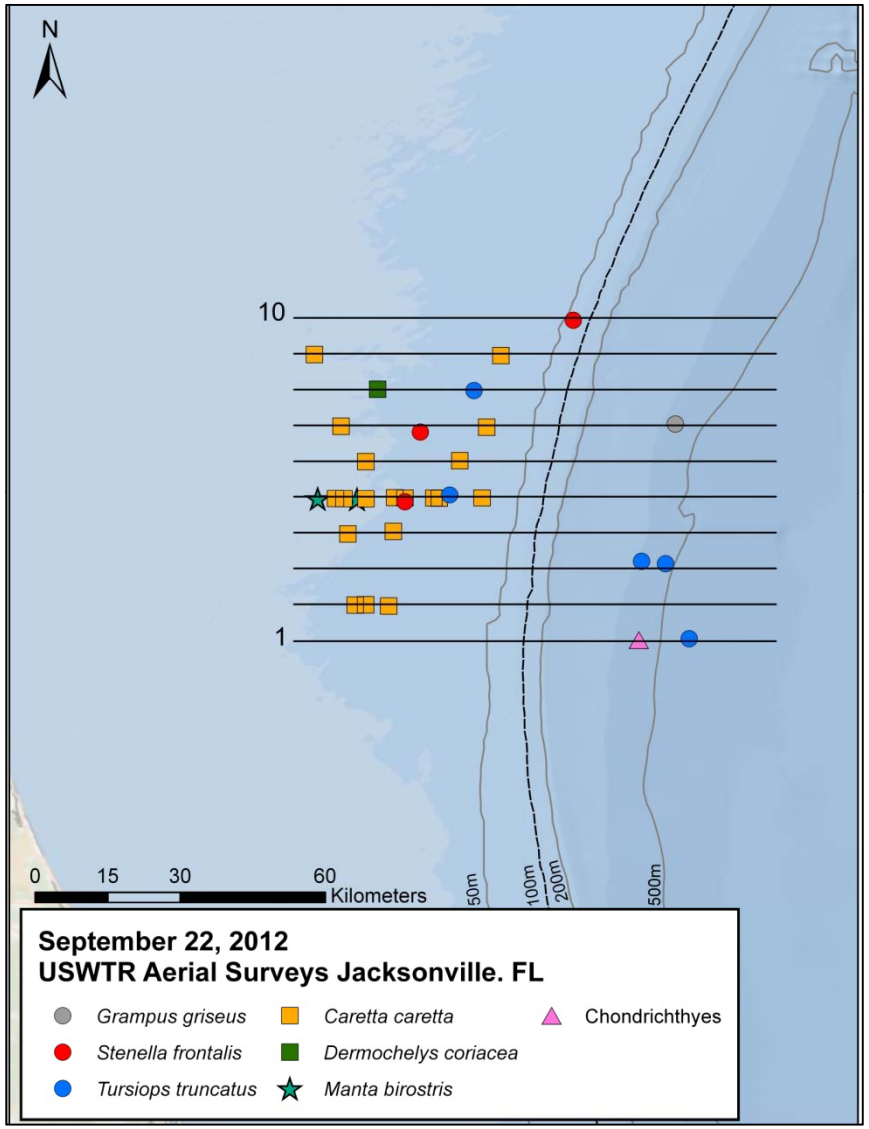


Species	Number of Sightings	Number of Individuals	Beaufort Sea State	Line Number
Grampus griseus	1	14	2	8
Stenella frontalis	1	2	2	4
Stenella frontalis	1	8	2	5
Stenella frontalis	1	38	2	8
Tursiops truncatus	1	8	3	4
Tursiops truncatus	1	3	2	6
Tursiops truncatus	1	2	2	7
Tursiops truncatus	1	8	2	7
Tursiops truncatus	1	2	2	8
Caretta caretta	28	50	1	-
Dermochelys coriacea	5	5	1 to 2	-
Manta birostris	2	3	2 to 3	-
Unidentified Chondrichthyes	4	4	2 to 3	-

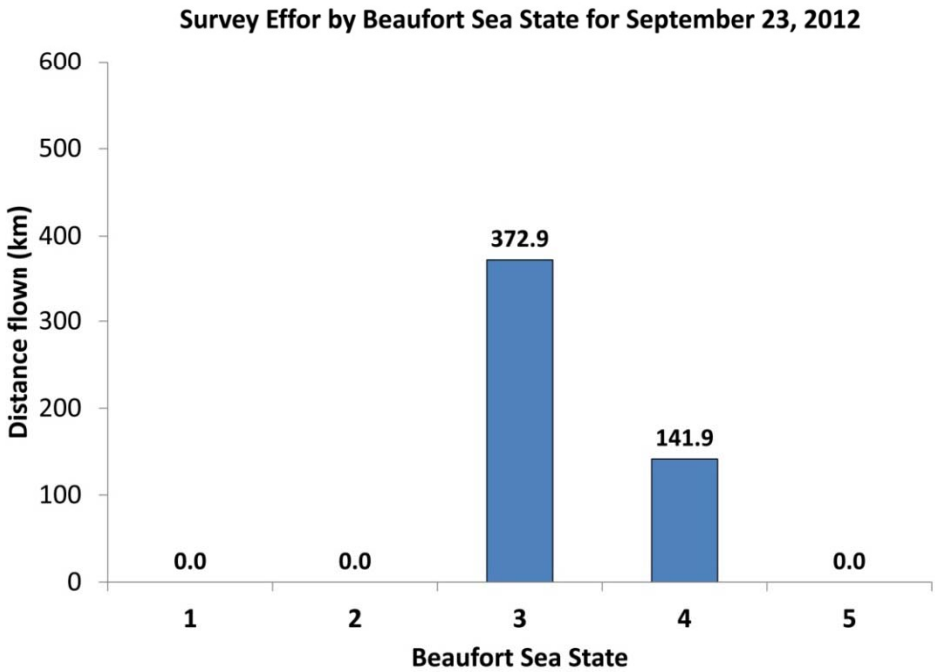
September 22, 2012



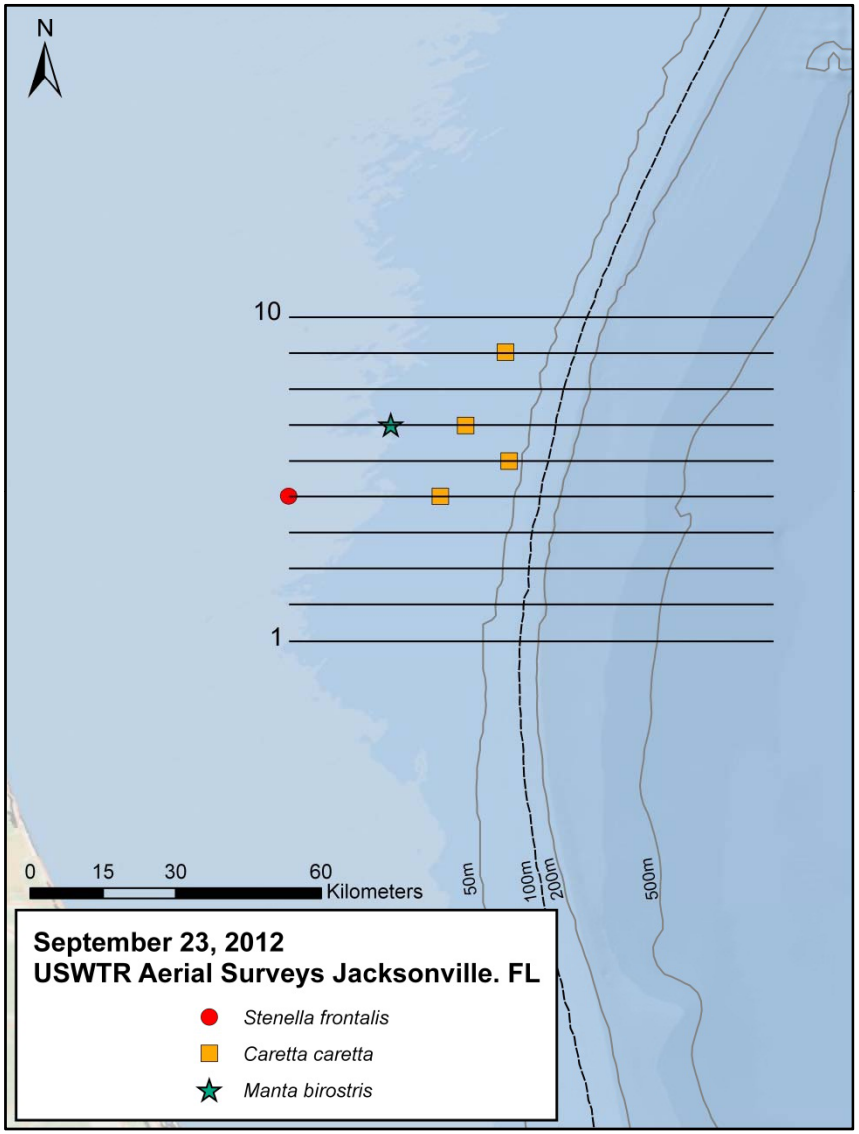
Species	Number of Sightings	Number of Individuals	Beaufort Sea State	Line Number
Grampus griseus	1	13	3	7
Stenella frontalis	1	26	2	5
Stenella frontalis	1	22	2	7
Stenella frontalis	1	26	2	10
Tursiops truncatus	1	8	2	1
Tursiops truncatus	1	6	2	3
Tursiops truncatus	1	12	2	3
Tursiops truncatus	1	12	2	5
Tursiops truncatus	1	11	2	8
Caretta caretta	19	24	1 to 3	-
Dermochelys coriacea	1	1	2	8
Manta birostris	2	5	1	5
Unidentified Chondrichthyes	1	1	2	1



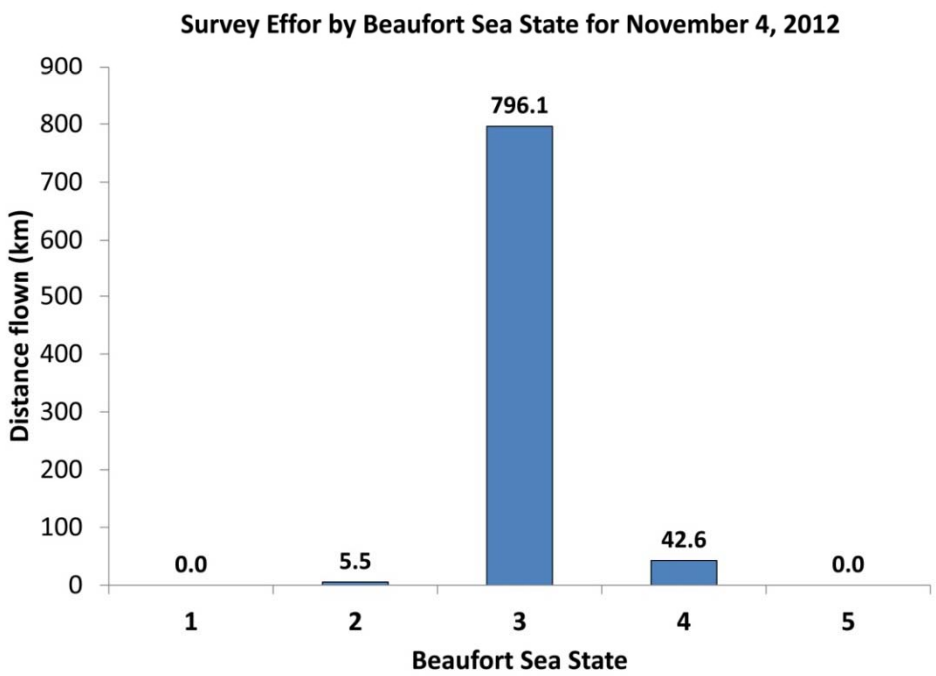
September 23, 2012



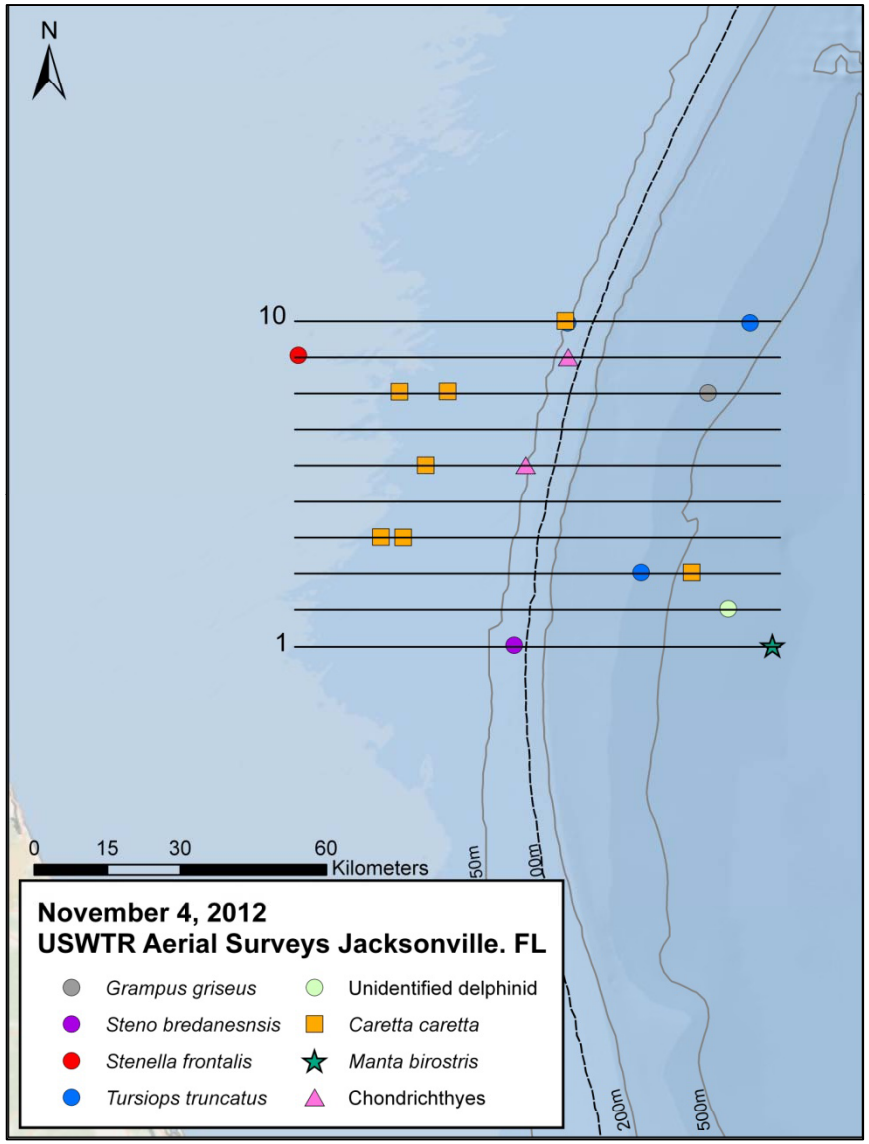
Species	Number of Sightings	Number of Individuals	Beaufort Sea State	Line Number
Grampus griseus	1	8	3	8
Stenella frontalis	1	28	3	9
Steno bredanensis	1	28	3	1
Tursiops truncatus	1	5	3	3
Tursiops truncatus	1	3	3	10
Tursiops truncatus	1	2	4	10
Unidentified delphinid	1	2	3	2
Caretta caretta	9	10	3 to 4	-
Dermochelys coriacea	1	1	4	8
Manta birostris	1	1	3	1
Unidentified Chondrichthyes	3	3	3 to 4	-



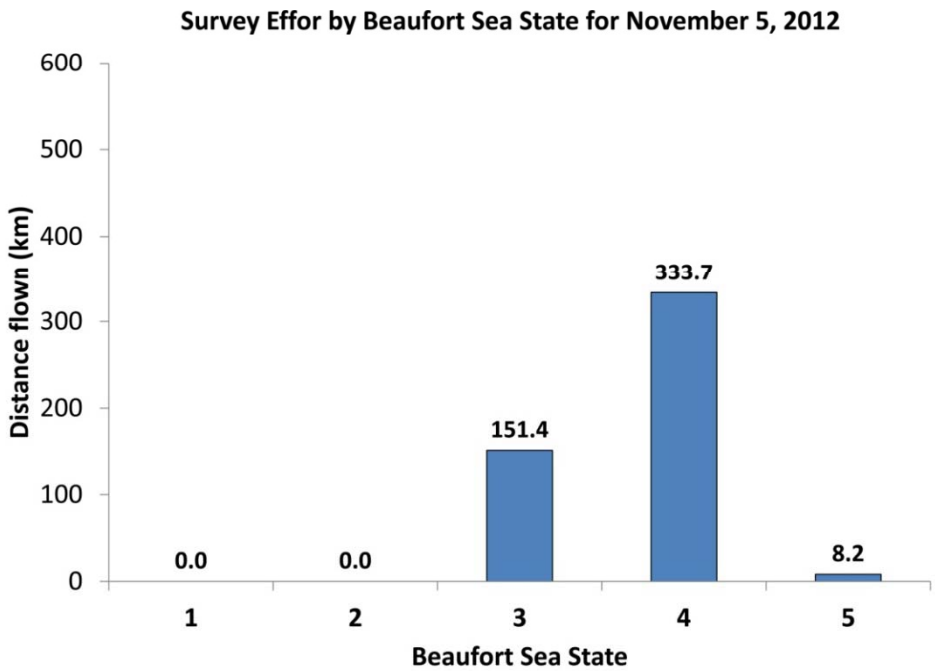
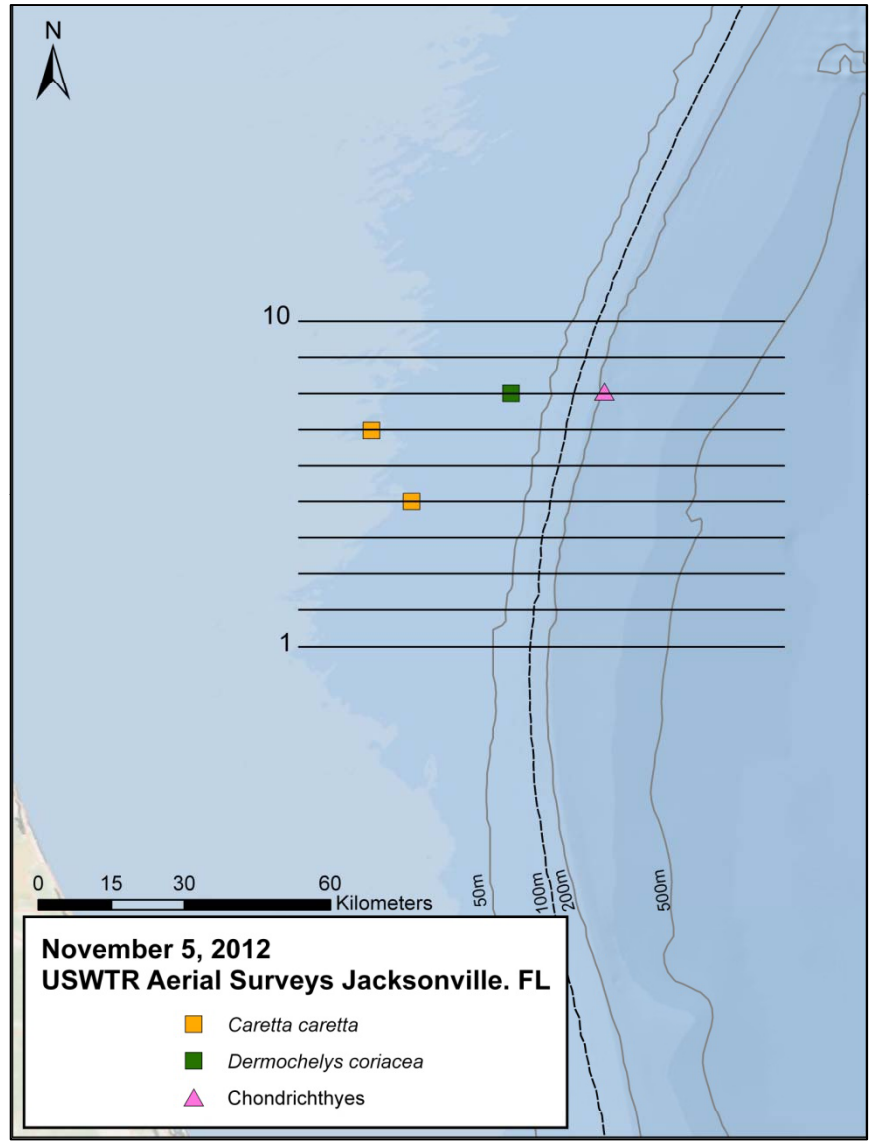
November 4, 2012



Species	Number of Sightings	Number of Individuals	Beaufort Sea State	Line Number
Grampus griseus	1	8	3	8
Stenella frontalis	1	28	3	9
Steno bredanensis	1	28	3	1
Tursiops truncatus	1	5	3	3
Tursiops truncatus	1	3	3	10
Tursiops truncatus	1	2	4	10
Unidentified delphinid	1	2	3	2
Caretta caretta	7	8	3	-
Manta birostris	1	1	3	1
Unidentified Chondrichthyes	2	2	3	-



November 5, 2012



Species	Number of Sightings	Number of Individuals	Beaufort Sea State	Line Number
Caretta caretta	2	2	3 to 4	-
Dermochelys coriacea	1	1	4	8
Unidentified Chondrichthyes	1	1	4	8