

**Aerial Surveys for Ship Strike Mitigation and Other Field Observations of North Atlantic  
Right Whales (*Eubalaena glacialis*) off the East Coast of Florida  
December 2009-April 2010**

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## INTRODUCTION

The North Atlantic right whale (*Eubalaena glacialis*) is among the rarest of all large whales with an estimated population of 400-450 individuals (Right Whale Consortium, 2009). Hunted to near extinction, the population has shown little or no signs of recovery since receiving international protection from commercial whaling in 1935 and federal protection under the Endangered Species Conservation Act in 1970 and, subsequently, the Marine Mammal Protection Act in 1972 and Endangered Species Act in 1973 (NMFS, 2005). This lack of recovery is principally attributed to deaths from human related activities, mainly ship collisions and fishing gear entanglements (NMFS, 2005). Since the completion of the first recovery plan in 1991, efforts to protect right whales in the western North Atlantic have increased substantially to include Regional Recovery Plan Implementation Teams and the Atlantic Large Whale Take Reduction Team (ALWTRT). The National Marine Fisheries Service (NMFS), in collaboration with the Southeastern U.S. Right Whale Recovery Plan Implementation Team (SEIT) and ALWTRT, is continually assessing right whale regulations and developing new recommendations and management strategies (NMFS, 2005). Despite these efforts, the number of right whales in the western North Atlantic stock is considered to be extremely low (NMFS, 2009). The mean annual mortality and serious injury rate for western North Atlantic right whales was 3.8 from 2002-2006 and among large whale species, right whales had the highest proportion of entanglements and ship strikes relative to the number of reports for a species (Glass et al., 2008).

Ship strikes are a major contributor to the overall mortality of North Atlantic right whales (Knowlton and Kraus, 2001). From 2003-2007 an average of 2.2 right whales per year were reportedly killed or seriously injured by ship strike (NMFS, 2009). Only a small number of whales in the catalog of identified right whales have scars from ship propellers; however, a large number of carcasses have ship propeller wounds (Kraus, 1990). According to Kraus (1990), this indicates that a high proportion of collisions between right whales and vessels are fatal. Pace and Silber (2005) reported the probability of serious injury or death caused by a collision increases rapidly with increasing vessel speed. The majority of vessel collisions where speed of the vessel is known occurred at speeds greater than or equal to 13 knots (Jensen and Silber, 2003) and Laist et al. (2001) reported most severe and lethal injuries caused by ship strikes occur when vessels are traveling at speeds greater than or equal to 14 knots. Right whale mother/calf pairs in the Southeast U.S. (SEUS) are likely particularly susceptible to ship collisions because they spend a large amount of time near the surface and they may be limited by the calf's ability to dive and maneuver through the water (Ward-Geiger et al., 2005). There are four major ports within the SEUS calving area off Georgia and Florida: Brunswick, Fernandina, Jacksonville, and Canaveral. The total number of vessel calls at Jacksonville Port Authority facilities in the St. Johns River has increased 9% from fiscal year\* 2005 to 2009 (JAXPORT, 2010).

The SEUS is one of six major habitats identified for North Atlantic right whales (NMFS, 2009). The coastal waters of Georgia and northeastern Florida are the only known calving area (Kraus et al., 1993) though recent aerial survey data suggests that calving may occur as far north as Cape Fear, NC (NMFS, 2009). Calving occurs primarily from December through March (Kraus et al., 1986) and the SEUS wintering population consists of mother/calf pairs, juveniles, and a few adult males and non-calving adult females. In 1994, NMFS designated the waters

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\* JAXPORT's fiscal year begins on October 1.

from 31°15N to 30°15N from the shoreline out to 15 nautical miles (27.8 km) and the waters from 30°15N to 28°00N from the shoreline out to five nautical miles (9.3 km) as critical habitat for the northern right whale. In addition, NMFS published the Right Whale Minimum Approach Regulation in 1997, prohibiting all approaches (vessel, aircraft, or other means) within 500 yards of any right whale (NMFS, 2005). A Mandatory Ship Reporting System (MSRS) was federally implemented in the SEUS in 1999. The MSRS is endorsed by the International Maritime Organization (IMO) and requires all commercial vessels 300 gross tons or greater to report into a shore-based station when entering the designated right whale reporting area. In return, the vessels are provided with the latest right whale sighting locations (provided by the aerial survey teams) and information on how to avoid collisions with right whales (NMFS, 2005). According to Ward-Geiger et al. (2005), the average reported speed of vessels entering the MSRS WHALESSOUTH area from 1999-2002 was 15.7 knots (29.1km/h). In order to reduce the likelihood of vessel collisions with right whales, NMFS, in cooperation with the U.S. Coast Guard (USCG), instituted recommended vessel routes in November 2006 for three major ports in the SEUS: Brunswick, GA; Fernandina, FL; and Jacksonville, FL. The voluntary routes were printed on NOAA charts, described in NOAA's U.S. Coast Pilots, and published in the USCG's Local Notice to Mariners. On October 10, 2008 the Right Whale Ship Strike Reduction Rule (50 CFR Part 224), originally proposed by NMFS in 2006, was finalized and it became effective on December 9, 2008. The rule established a seasonal speed restriction of 10 knots for all vessels 65 ft (19.8 km) in length or greater traveling in designated management areas along the U.S. East Coast. Additionally, NMFS may implement temporary Dynamic Management Areas (DMA) to protect right whale aggregations outside the designated seasonal management areas (SMA). The Southeast U.S. SMA and MSRS are in effect from November 15<sup>th</sup> through April 15<sup>th</sup>: the time frame when right whales are typically found in the SEUS. The purpose of the rule is to decrease the number of deaths and serious injury cases resulting from vessel collisions with right whales. The effectiveness of the rule will be evaluated by NMFS prior to its expiration on December 9, 2013 (50 CFR Part 224, October 10, 2008).

During the 1993-1994 calving season, several agencies, including the Florida Fish and Wildlife Conservation Commission (FWC), began an extensive aerial survey network known as the Early Warning System (EWS) to reduce or eliminate ship strikes (NMFS, 2005). The EWS quickly provided valuable right whale sighting information (whale alerts) to the U.S. Navy, USCG, U.S Army Corps of Engineers, harbor pilots, port authorities, and other maritime organizations. The EWS was improved with the dissemination of information to the general public through USCG Broadcast Notices to Mariners (BNTM) and broadcasts over NOAA Weather Radio. With the incorporation of the Navy's Fleet Area Control and Surveillance Facility Jacksonville (FACSFACJAX) as the sighting collection and dissemination center for all aerial survey aircraft, whale alerts were processed and transmitted to mariners in near real-time. Further refinements to the EWS network during the 2007-2008 calving season allowed the aerial survey teams to send whale alerts direct to recipients in select geographic regions or "bins"; thus, providing vessel operators with the most applicable whale sighting information for their area of operation (Appendix 1). Presently, aerial surveys remain the best available method to locate right whales and alert mariners about the presence of right whales in the SEUS in order to reduce the risk of ship collisions with whales (NMFS, 2005). The FWC's Fish and Wildlife Research Institute (FWRI) has been conducting right whale aerial surveys in the SEUS with varied coverage and effort since the late 1980's. The current three-plane EWS survey format was implemented during the 2002-2003 calving season (Figure 1). The FWRI provides aerial survey coverage of the southern portions of the EWS, SEUS critical habitat, MSRS WHALESSOUTH, and SEUS SMA. Although ship strike mitigation remains the focal objective, the EWS surveys collect photo-documentation of right whales; monitor whale distribution and vessel activity;

report and document dead, injured, and entangled whales; and provide assistance for the biopsy sampling effort and critical right whale events (such as disentanglements and strandings). The photographic data collected in the SEUS are used to determine demographics and estimate survival rates of North Atlantic right whales.

This report summarizes FWRI's aerial survey data and other field observations for the 2009-2010 calving season. Funding for the FWRI aerial surveys was provided by NMFS.

## METHODS

### Aerial Surveys

FWRI conducted daily right whale aerial surveys, weather permitting, during the period December 1, 2009 to April 15, 2010. The FWRI survey consisted of the ten southernmost east/west tracklines (lines #25-34) within the EWS framework (Table 1) and was referred to as the Southern EWS (SEWS). The SEWS survey tracklines covered the area between Ponte Vedra (30°14.0N) and Crescent Beach (29°47.0N) from approximately 0.5 nautical miles (0.9 km) East of the shoreline out to 080°47.0W (Figure 1). One and two plane contingency plan surveys of varying coverage were flown from Brunswick, GA (31°20.0N) to Jacksonville Beach (30°17.0N) as needed. Contingency plan surveys included east/west tracklines #3-24 within the EWS framework: lines typically flown by the Northern EWS and Central EWS survey teams (Figure 1). The SEWS and contingency plan survey configurations were consistent with previous EWS surveys carried out since the winter of 2003-2004. FWRI also conducted coastal surveys from Crescent Beach (29°47.0N) to Jupiter (27°00.0N) targeting areas with predicted sea-surface temperature (SST) near 15.7°C – the average whale-sighting SST for nearshore Florida waters (Keller et al., 2006). These surveys consisted of north/south transects flown parallel to the coast at varying distances from shore as well as east/west tracklines of varying lengths. The majority of these coastal surveys were flown in conjunction with SEWS surveys. FWRI extended surveys into April 2010 due to the continued presence of right whale mother/calf pairs through March 31, 2010 (the standard end date for the EWS surveys) and favorable SST ( $14.3^{\circ}\text{C} \pm 2.1^{\circ}\text{C}$ ) for right whales in the SEUS (Keller et al., 2006).

The survey aircraft were twin engine Cessna 337s operated and maintained by Orion Aviation under provisions of FAA 14 CFR Part 135. In accordance with FAA 14 CFR Part 135 and additional NOAA requirements, the aircraft were equipped with: IFR certification, yoke mounted GPS unit, Emergency Locator Transmitter (ELT), Automatic Flight Following (AFF) transponder, 2-B:C rating fire extinguisher, primary and secondary VHF radios, marine band radio with linkage to intercom system, DC power for observer tablet PC, additional GPS with direct linkage to the tablet PC, and extended over water operations emergency equipment as listed in 14 CFR Part 135.167 including a registered 406 MHz emergency position indicator radio beacon (EPIRB) and an inflatable life raft. Aerial observers were required to wear a Nomex flight suit and an aviation style personal flotation device (PFD) equipped with a safety knife, signaling mirror, high-pitch safety whistle, strobe light, streamer, and a 406 MHz personal EPIRB with built in GPS receiver. Prior to the start of the season aerial observers were required to attend an aircraft ditching course and complete an online NOAA aircraft safety course. Surveys were flown under visual flight rules (VFR) conditions and a flight plan was filed with the FAA for each day of survey. Aircraft typically departed the airport at 0900 hrs and returned before sunset. In addition, flights were required not to extend beyond 45 minutes of reserve fuel. Environmental conditions necessary to conduct a survey included visibility greater than two nautical miles (3.7 km), winds less than seventeen knots, and a minimum cloud ceiling of 1200 ft (365.8 m) over the survey area and airport. A sea state of three or less in the Beaufort scale was targeted and preferred because the detectability of whales has been shown to decrease in sea states greater than a Beaufort sea state value of three (Hain et al., 1999).

Survey personnel included a pilot-in-command (PIC), pilot-second-in-command (SIC), and two observers. One observer sat on each side of the aircraft and visually scanned the survey area out to approximately two nautical miles (3.7 km). Typically, the observer seated in the left

rear seat recorded data and the observer seated in the right rear seat conducted photo-identification during a sighting. The aircraft flew at a target speed of 100 kn (185.2 km/h) and 1000 ft (304.8 m) altitude. In order to take into account aircraft fluctuations a speed threshold of 200 kn (370.4 km/h) and an allowable altitude range of 800 ft-1200 ft (243.8-365.8 m) were set.

## Data Collection

### *Aerial Survey Data*

The survey crew used a Fujitsu ST5000 tablet PC to collect electronic data while in the aircraft. The tablet PC was small enough to comfortably sit in an observer's lap without obscuring his/her field of vision or presenting a safety hazard. Survey data were recorded at 10 second time intervals in Logger 2000, a computer-based data logging program, which automatically retrieved locations, headings, and altitudes from the GPS and stored them in a Microsoft Access database. The use of the tablet PC and several drop-down options in Logger 2000 allowed for swift data entry and minimized the time spent looking away from the water. If the primary GPS or computer malfunctioned, survey plane GPS locations, headings, and altitudes were hand recorded at intervals of five minutes on hard copy datasheets and later entered into an Excel spreadsheet.

Environmental data entered into the database consisted of weather, visibility, cloud cover, Beaufort sea state, and the severity of the glare on both sides of the plane. Environmental data were updated throughout the survey when conditions changed and four weather checkpoints per trackline were utilized to ensure environmental data was accurate throughout survey. Species recorded were limited to large whales (i.e. right whale and humpback whale (*Megaptera novaeangliae*) and leatherback turtle (*Dermochelys coriacea*). Large whale sighting observations included the initial and final sighting locations, number of whales per sighting, number of calves per sighting, heading, behaviors, observer reliability (measure of certainty of whale identification) and confidence (measure of certainty of number of whales observed.) Observed vessel information included type of vessel, location, heading, length, and speed. Commercial vessels 65 ft (19.8 km) or larger, tugs, and military/USCG vessels sighted within 2 nautical miles (3.7 km) of the tracklines were recorded. The position of these vessels was mainly recorded by flying directly over the vessel to obtain a specific GPS location. If the aircraft was unable to fly directly over a vessel the distance from trackline was estimated visually by the observers. The heading, length, and speed of large vessels were estimated visually and verified using AIS (Automatic Identification System) data when available. All small vessels (less than 65 ft (19.8 km) in length) within 1 nautical mile (1.8 km) of the trackline were recorded. These vessels were entered into Logger when the vessel was perpendicular to the trackline; specific GPS locations were not obtained unless the vessel was involved in a whale/vessel interaction. Heading, length, and speed of small vessels were recorded only during whale/vessel interactions or if the vessel was observed at anchor.

A set of Access queries and macros developed by FWRI staff were used to scan the survey data for errors and compliance with the guidelines set by the North Atlantic Right Whale Consortium Database (NARWD) Manager and NOAA Fisheries. The daily survey tables were combined into one Access database file for final submission to the NARWD Manager. A spreadsheet developed to track the sighting distance between the aircraft and whale(s) was maintained throughout the season and archived by FWRI staff. In addition to the electronic survey data collected, hard copy data sheets were compiled. Cover sheet information included the survey crew, flight hours, nautical miles flown, environmental data, and summary of the day's sightings and events. Whale sighting sheets included a drawing of the callosity patterns of

whale(s) seen, initial and final sighting times and locations, field letters and preliminary whale identifications, behaviors, SEWS whale alert number, and ancillary photography information (e.g. image frames).

The EWS network facilitated the near real-time transmission of right whale sighting information (whale alerts) via email and text message to the U.S. Navy, USCG NAVTEX, harbor pilots, commercial shipping interests, aerial survey teams, NOAA, state agencies, and volunteer networks. The FWRI aerial survey team used satellite phone or marine band VHF radio to relay the date, final sighting time and position, number of whales, number of calves, and heading to the FWRI ground contact. The ground contact was then responsible for sending the whale alert via email to the EWS network and following up with any reporting errors. Whale sighting location details were kept to a minimum when using marine band VHF radio in order to avoid potential harassment of whales by vessel operators in the surrounding area. The FWRI ground contact was also responsible for: entering FWRI sightings into the MSRS WHALESSOUTH database within an hour of each sighting; fielding whale sighting reports from citizens and non-aerial survey team members of the EWS network (e.g. Navy, USCG, and harbor pilots); maintaining a near real time knowledge of the position and maneuvers of the aircraft during survey; and acting as a liaison between ground crews and the aircraft during entanglement, stranding, or other events.

FWRI staff prepared and submitted weekly performance reports to NOAA Fisheries. The weekly reports consisted of a survey activities report and a right whale sightings report. The survey activities report included: survey date, survey file name, completed tracklines, aircraft Hobbs time elapsed, total trackline nautical miles flown, total trackline nautical miles flown in sea state  $\leq 3$ , number of whales seen, and any other pertinent right whale related information. The right whale sightings report included: survey date, time (local), survey name, latitude (in decimal degrees), longitude (in decimal degrees), RIWH letter (from photography datasheets), NARWC ID number (as this information becomes available from the NARWC manager), time sightings were reported the EWS network, whale alert ID number, and comments.

#### *Photo-identification*

Individual right whales were mainly identified by analyzing the location, shape, and topography of the callosities that occur along the rostrum (Crone and Kraus 1990). Callosities on the upper margins of the lower jaw (known as lip callosities), behind the blowholes, on the chin, along the mandible, and above the eye were also used to help identify individual whales as described by Hamilton and Martin (1999). Additionally, white scars from past entanglements, vessel strikes, and other causes rarely fade over time and become unique characteristics that aid in identification (Hamilton and Martin 1999). The callosity patterns of calves are not fully developed until they are 7-12 months old; however, distinctive crenations along the lower lip (also called lip ridges) can be used in the identification of calves (Hamilton and Martin 1999).

During the 2009-2010 calving season, FWRI aerial photographs were taken with a Canon EOS 40D Digital SLR camera equipped with a Canon EF 100-400mm f/4.5-5.6L IS USM lens. A Canon EF 300mm f/4L IS USM lens was utilized as a backup lens. Digital format cameras allowed for expeditious image review in the aircraft and also allowed FWRI to easily share image files with the New England Aquarium (NEAq), NOAA Fisheries, Provincetown Center for Coastal Studies (PCCS) disentanglement team, and other collaborators throughout the calving season.

When right whale sightings occurred the survey plane would immediately break from trackline and fly directly over the whale(s) to obtain an accurate GPS position. The observer on the right side of the aircraft photographed the whale(s) through the opened, right rear window. Photographs were taken on shutter priority mode (Cannon Tv function) with a shutter speed of 1/1000 s (decreased in low light). Whenever feasible, priority was given to obtain a full top view head shot of the whale(s) in order to document a full set of callosities. Photographs of the body, peduncle, fluke, and pectoral flippers were also obtained when possible in order to document any scars and the overall body condition of the whale. A twenty minute time limit was set to photograph small groups of whales in order to ensure adequate time to finish the survey. Larger (less common) groups of whales were allotted more time as long as it did not jeopardize the completion of the survey.

The aerial survey images were reviewed by FWRI staff throughout the season and preliminary matches to the catalog of identified right whales and known intermatch whales were made. Representative images and preliminary identifications for each whale were forwarded to NEAq for preliminary confirmation or assistance with identification if needed. During the 2005-2006 season FWRI created and has since maintained a website that combines images and preliminary whale identifications from all SEUS aerial survey teams. Information and photographs contributed to the website in recent years by the SEUS aerial survey teams, NEAq, and volunteer sighting networks have facilitated the ability of survey teams to make more preliminary whale identifications (especially of juvenile whales not yet cataloged). The website has also helped to enhanced communication among SEUS aerial survey teams, biopsy crew members, and volunteer sighting networks as well as right whale research programs in the Northeast U.S.

At the end of the season photographs and sighting data were submitted to NEAq in accordance with photographic submission guidelines set by the NARWC manager and NOAA Fisheries. According to these guidelines, two sets of photographs were submitted: a complete archive of all images taken by FWRI during the 2010 season and a subset of representative images for each lettered whale. The latter was intended for inclusion in the North Atlantic Right Whale Identification Database – the central repository for archiving and maintaining images and sighting data on right whales. As the curator of the North Atlantic Right Whale Catalog, NEAq will confirm the final identification of each whale photographed.

#### *Sighting Distance*

Sighting or ‘radial’ distance (Buckland et al. 2001) was estimated by recording the aircraft location and altitude when the observer first detected a whale or group of whales and the initial location of the whale or group of whales recorded by the observer during the first pass (flyby). Geodetic distance between both locations was then calculated accounting for plane altitude at the time of first detection. Aircraft heading at the time of detection was obtained from the aircraft trackline (locations recorded automatically by the GPS every 10 seconds) and used to estimate the sighting angle and perpendicular distance (i.e. the distance from the whale sighting location to the closest point on the survey trackline). Only sightings observed while on trackline were used to calculate the average sighting distance. Distance was not calculated for sightings when more than five minutes elapsed between initial detection and first pass over the whale. For the sightings recorded during surveys flown in a north-south direction (e.g. during coastal surveys), sighting distance was only calculated if the sightings occurred east of the trackline.

## **Whale/Vessel Interaction Documentation**

Prior to the beginning of the 2005-2006 season, FWRI staff in collaboration with all aerial survey teams, NOAA Fisheries, and NOAA Office of Law Enforcement created a whale/vessel interaction (WVI) form and Access database. Since the 2006-2007 calving season, this updated form has been used by all aerial survey teams in the SEUS to record observed co-occurrences of right whales and vessels including 500 yard rule violations. The enhanced form standardized the data collection for WVIs among survey teams and facilitated a detailed account of these incidents. All WVI forms were forwarded to NOAA Fisheries and FWRI where they are compiled into a single database and entered into a geographic information system (GIS).

## RESULTS

### Aerial Survey

#### *SEWS Surveys*

The FWRI aerial survey team flew 60 surveys of varying coverage out of an available 121 days between December 1, 2009 and March 31, 2010 (Table 2). Twenty-one full SEWS surveys (281.6 nautical miles/521.5 km each), twenty-six partial SEWS surveys, and thirteen one and two-plane contingency plan surveys were completed for a total of 14,952 nautical miles (27,691 km) of trackline flown. Twelve of the thirteen one and two-plane contingency plan surveys were also partial SEWS surveys. Thus, the FWRI team flew at least a portion of the SEWS survey 49% of the available days (Figure 2) and 95% percent of FWRI surveys were flown during favorable sea state conditions of Beaufort sea state 3 or less (Figure 3). Full SEWS aerial surveys were completed 17% of the available days. The majority of partial SEWS surveys resulted from poor weather conditions; however, two surveys were shortened because of disentanglement support, one due to USCG live-fire exercises, and eight due to contingency surveys. Thirteen coastal surveys of varying distance, totaling 2,239 nautical miles (4147 km), were flown in conjunction with the SEWS survey (Figure 4). All together, FWRI flew 331.1 hours and 17,190 nautical miles (31,836 km) of trackline between December 1, 2009 and March 31, 2010 (Figures 5 and 6).

Surveys were hampered by inclement weather conditions in early to mid December; survey effort was down 17% during December 2009 compared to December 2008. The first right whale sighting in the SEWS occurred on December 26, 2009 and the last was on March 31, 2010. The FWRI aerial survey team had 237 sightings<sup>†</sup> consisting of 601 whales (not unique individuals) and sighted 15 of the 19 females observed with calves in the SEWS (Table 3). Of the 237 sightings, 36 were mother/calf pairs, one was a mother/yearling pair, 83 were single adults or juveniles (including pregnant females), 38 were pairs, and 79 were groups of three or more whales (Figures 7 and 8). The FWRI team also documented 40 leatherback turtles and 11 humpback whales including one severely entangled juvenile (Figure 9; also see EVENTS - Humpback). The number of right whales observed increased dramatically the second week of January, peaked during the second week of February, declined considerably during the last week in February, and gradually tapered off by the end of the first week in April (Figures 10 and 11). The FWRI team had 5 sightings of 16 whales in December, 85 sightings of 221 whales in January, 105 sightings of 264 whales in February, and 42 sightings of 100 whales in March (Figure 12). The number of right whale sightings per day ranged from zero to twenty (February 19<sup>th</sup>) with an average of 3.8 sightings per survey day. As many as 53 right whales (not unique individuals) were sighted on a single day (February 19<sup>th</sup>); an average 9.6 whales were sighted per survey day. For the SEWS surveys and coastal surveys combined (n=75), the average sighting distance from the survey plane break track position was 1.4 km (0.8 nmi) (Figure 13). The average perpendicular distance<sup>‡</sup> was 0.6 km (1.5 nmi) (Figure 14).

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<sup>†</sup> A sighting is defined as any observed whale or group of whales at a given time and location. A sighting may consist of one or many whales. An individual whale may not be counted more than once during a sighting; however, an individual whale may be part of more than one sighting per day and/or more than one sighting throughout the calving season.

<sup>‡</sup> See description of sighting distance provided in the *Methods* section.

### *April 2010 Surveys*

The FWRI aerial survey team flew three surveys from April 1, 2010 through April 15, 2010 (Table 2). A total of 19.9 hours and 1,507 nautical miles (2,791 km) of survey were flown from Port Canaveral, FL to Brunswick, GA (Figure 15). The April surveys were conducted in a Beaufort sea state 3 or less (Figure 3). The survey team documented one mother/calf pair on April 5, 2010 during these surveys (Figure 2, also see EVENTS – Catalog #2360 “Derecha”). Including totals from April, the FWRI team flew a sum of 351.2 hours and 18,697 nautical miles (34,627 km) and had 238 sightings consisting of 603 right whales (not unique individuals) during the 2009-2010 season.

### *Photo Analysis*

Preliminary photo analysis indicates FWRI documented 162 individual right whales (excluding calves) of which 25 could be unique to the FWRI survey. The demographics of unique individual whales documented are: 9 % (n=15) moms, 2% (n=3) adult non-calving females, 50% (n=81) juveniles<sup>§</sup>, 19% (n=31) adult males, 4% (n=7) adults of unknown age, and 16% (n=25) individuals of unknown age not known to be at least 9 years old (Figure 16). Of the 162 individual whales sighted, 148 cataloged or known intermatch whales have been preliminarily matched to the North Atlantic Right Whale Catalog (Figure 17); the remaining 14 whales were matched to 2009 SEUS season code<sup>\*\*</sup> whales or given 2010 SEUS season codes (e.g. S041). Whales assigned season codes are likely juveniles or yearlings and account for the majority of unknown age whales documented by FWRI.

### **Whale/Vessel Interaction Documentation**

During the 2009-2010 season, the FWRI aerial survey team documented 13 whale/vessel interactions involving 11 groups of whales (Table 4). The types of vessels involved consisted of four commercial fishing (three shrimp, one crab), seven recreational (including a parasail), one tug and barge, and one aircraft carrier (Figure 18). The groups of whales involved consisted of one mother/calf pair (swimming), two surface active groups (SAG), 7 singles and groups of whales (milling and swimming), and one juvenile whale (logging alone). Nine vessels were observed within 500 yards (457.2 m) of the whale(s) and the closest observed distance between the whale(s) and the vessel was 17 yards (15.5 m). A behavioral reaction to the presence of the vessel was observed in four interactions and involved spinning, sinking, swimming away from the vessel, and ceasing of SAG behavior. In the four interactions where a behavioral reaction was observed the vessel approached within 200 yards (182.9 m) or less of the whale(s). Analysis of apparent vessel actions determined that two vessels intentionally approached whales. Observations that lead to this conclusion included an abrupt change in vessel heading towards a whale or group of whales and/or repeated alternations of vessel speed between idle and forward motion that coincided with the surfacings and direction of travel of the whale(s). Both of these interactions involved recreational vessels.

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<sup>§</sup> Whales less than 9 years of age are considered juveniles; whales with an unidentified birth year that are known to be greater than 8 years old are considered adults of unknown age.

<sup>\*\*</sup> Season codes are assigned to whales without a known catalog number to assist in recognition of individuals and photo identification within a season

## EVENTS

### Disentanglement and Health Assessment Responses

#### *2009 Calf of Catalog #1151 “Mavynne”*

The FWRI aerial survey team sighted the yearling of Catalog #1151 (intermatch code 2009CalfOf1151) on December 26, 2009 a little more than 0.5 nautical miles (0.9 km) East of Ponte Vedra, FL. Catalog #1151 was sighted severely entangled and subsequently disentangled by PCCS on September 4, 2009 near Jeffreys Ledge. During and after disentanglement operations, there were no observations of #1151’s calf even though the pair had been sighted together seven days earlier in the Bay of Fundy on August 28, 2009 by NEAq. FWRI’s December 2009 sighting of the lone yearling was the first since it was last seen with its mom in August 2009. It is presumed the calf (approximately nine months old) was separated during or just prior to #1151’s entanglement event. The 2009CalfOf1151 was sighted by the FWRI survey team six more times in January and February 2010; the yearling appears in good health and was associated with other whales in all subsequent sightings.

#### *2008 Calf of Catalog #1208*

On January 13, 2010 the FWRI aerial survey team reported a possibly entangled two year old right whale of unknown gender, intermatch code 2008CalfOf1208, approximately 18 nautical miles (33.3 km) ESE of the St. Augustine Inlet. The whale was observed with a linear wound and possibly embedded rope exiting the right side of the mouth, crossing behind the blowholes, and trailing down the left side of the body; another wound or rope could be seen beneath the surface of the water exiting the left side of the mouth and trailing down the left side of the body (Figure 19). Staff members from FWRI and NOAA responded aboard *R/V Orion* to document and determine the entanglement status of the whale. The aerial survey team remained on scene until the vessel arrived due to increased sea state and the travel rate of the group; the survey team continued to document the possibly entangled whale as well as the 14 other right whales in the vicinity. Once the vessel arrived on scene the aerial survey team departed to refuel. The aerial team returned after refueling, but continued on survey shortly after arrival once aerial support was no longer needed. The vessel response team determined the whale was gear-free and collected photo-documentation of the wounds/scars for analysis of the entanglement configuration and health assessment. The 2008CalfOf1208 was first documented to be entangled off North Carolina on November 26, 2009 by a boater. FWRI’s January sighting was the first time it was documented to be gear-free and to date there are no confirmed sightings of this whale between November 26, 2009 and January 13, 2010. All photographs and sighting data were submitted to NOAA Fisheries, NEAq, and the Atlantic Large Whale Disentanglement Network (ALWDN).

#### *2009 Calf of Catalog #1240*

On January 25, 2010 the FWRI aerial survey team sighted an injured male right whale yearling, intermatch code 2009CalfOf1240, approximately one nautical mile (1.9 km) off South Ponte Vedra Beach, FL. The whale was head down in the water and lobtailing ventral-up with intermittent periods of surface resting. Severe wounds at the fluke insertion were visible during the ventral-up lobtailing behavior (Figure 20) and the whale was observed “twisting” its body side-to-side (like one would wring a towel out to dry) during periods of surface resting. No other whales were sighted in the vicinity. FWRI staff responded by vessel to document the wounds and assess the whale’s behavior. The vessel response team observed the same body twisting behavior and noted the whale was swimming “gingerly”, but was active. Prior to this sighting,

the 2009CalfOf1240 was last seen on August 9, 2009 in the Bay of Fundy by NEAq. During the August 2009 sighting, the dorsal portion of the fluke insertion wounds were documented, but the extent of the ventral wounds was unknown. Photographs, sighting data, and an account of the aerial survey and vessel response teams' observations were submitted to NOAA Fisheries, NEAq, and ALWDN for analysis of the entanglement configuration and health assessment. The 2009CalfOf1240 was subsequently sighted by the FWRI survey team on January 27, 2010 and February 8, 2010. In both these sightings he was associated with other right whales and was active.

### *Humpback*

On March 7, 2010 the FWRI aerial survey team sighted an entangled juvenile humpback whale approximately 20 nautical miles (37.0 m) SE of the St. Johns River entrance. The whale was observed with deeply embedded rope exiting the right side of the mouth, crossing over the back behind the blowholes, and joining with an embedded line exiting the left side of the mouth near the left flipper (Figure 21). All trailing rope from the entanglement ended forward of the peduncle. FWRI staff responded aboard *R/V Orion* to document the entanglement, assess the whale's condition, and attempt disentanglement. The aerial survey team remained on scene until the disentanglement team arrived due to the low probability the whale could be relocated. The survey team assisted the disentanglement crew upon their initial arrival and documentation approaches and then departed to refuel. After refueling, the survey team continued on survey, but returned later in the afternoon to assist in the disentanglement operation after the whale's behavior become more evasive. Disentanglement efforts were eventually called off due to the whale's behavior and approaching sunset. Photographs, sighting data, and an account of the aerial survey and vessel response teams' observations were submitted to NOAA Fisheries, NEAq, and ALWDN for entanglement configuration analysis and health assessment. The same humpback was subsequently sighted off St. Lucie Inlet on March 19, 2010 and Miami on March 25, 2010, but it was not re-sighted in the EWS survey area and is presumed to still be entangled to date.

### *Catalog #3346 "Kingfisher"*

Since his birth during the 2002-2003 calving season, Catalog #3346 "Kingfisher" has been sighted each winter in the SEUS calving ground. He was the target of a large scale, multi-agency disentanglement effort during the 2003-2004 calving season and since then has been observed with a portion of the entangling rope wrapped around his right flipper. The FWRI aerial survey team sighted #3346 in the SEWS 15 times on 12 separate days during the 2009-2010 season. Sighting data and photographs were forwarded to NOAA Fisheries, NEAq, and the ALWDN. Photographs of the entanglement show that the section of rope that used to be visible trailing from the flipper entanglement back towards the peduncle is gone or has been significantly shortened (Figure 22). No major changes in the flipper wraps are apparent from the photographs and his entanglement status continues to be classified by the ALWDN as "monitor."

## **Stranding Responses**

No right whale carcasses were detected by the FWRI survey team during the 2009-2010 season.

## Other Events

### *Coastal Surveys 20-21 February 2010*

The FWRI aerial survey team flew coastal surveys to Jupiter (February 20, 2010) and Lake Worth Inlet (February 21, 2010) with east/west tracklines offshore between St. Augustine and Daytona Beach and around Cape Canaveral (Figure 23). These surveys were designed in response to dispersed whale distribution south of the SEWS and SST measurements south of Canaveral near the average whale-sighting SST for EWS survey waters (14.0°C) (Keller et al., 2006). Due to time constraints it would not have been possible to complete these coastal surveys in combination with SEWS survey; as a result, two-plane contingency surveys were implemented for the EWS area. These two coastal surveys combined were 18.5 hours. Four humpback whales and 47 individual right whales were documented during these surveys: five mother/calf pairs, four yearlings, seventeen juveniles, seven adult males, three adults of unknown gender, and six whales of unknown age (Figures 9 and 24). Five of these whales had not been previously sighted in the SEUS during the 2010 season: Catalog #1620 “Mantis” and calf; Catalog #1033 and #1427 (adult males >32 and 26 years old, respectively); and one juvenile male, Catalog #3442 “Armada”.

### *Biopsy Effort*

The FWRI aerial survey team assisted the biopsy effort by providing real-time location information and preliminary identifications of mother/calf pairs and unsampled adults and juveniles to biopsy teams. Whenever time allowed, the FWRI team also provided on-water crews with updated whale locations or assisted with relocations if necessary. Biopsy cruises were a collaborative effort between FWRI, GDNR, NEAq, NOAA Fisheries, and Wildlife Trust with assistance from the Marineland Right Whale Project. During the 2010 season, biopsy teams collected samples from 10 calves and several previously unsampled juvenile and adult whales.

### *Catalog #3260 “Skittle”*

The FWRI aerial survey team sighted Catalog #3260 on February 23, 2010 approximately 11 nautical miles (20.4 km) off Ponte Vedra, FL. The survey team noted she appeared to be deliberately swimming subsurface in various directions without a net movement in any one direction; a behavior not commonly observed in the SEUS. The following day she was photographed with a very young calf by the Central EWS survey team. A comparison of sighting times between teams revealed that FWRI observed the pregnant female no more than 18 hours prior to her giving birth.

### *Catalog #2360 “Derecha”*

On March 20, 2010 the FWRI aerial survey team recorded behavioral observations and photographed a mother/calf pair approximately four nautical miles (7.4 km) East of the eastern end of the SEWS survey tracklines and 32 nautical miles (59.3 km) ENE of the St. Augustine Inlet. This mom, Catalog #2360 “Derecha”, was observed giving birth by the JAX USWTR survey team approximately one hour prior to our arrival (Right Whale News, 2010). The calf was a solid dark gray color and it did not have apparent cyamids on its head or body (Figure 25). Its flukes were curled under and “floppy” in the water and although it was active and swimming it appeared to lack overall coordination. The mother and calf remained within approximately 50ft (15.2 m) of each other during the entire observation and there was frequent body contact between the two; at times #2360 would submerge underneath the calf, but the calf remained at or near the surface of the water (Figure 26). Both mom and calf were observed swimming in circles at the surface and towards the end of our observation the calf appeared to be resting on the

mom's peduncle while both were at the surface of the water. The pair remained in the same general location during the 31 minutes we were on scene. The FWRI survey team sighted #2360 and calf on three subsequent occasions when the calf was five, eleven, and sixteen days old (Figures 27 and 28).

#### *Vessel Related Injuries*

The FWRI aerial survey team documented four juvenile whales with resolving wounds on the dorsal and/or dorso-lateral portions of their bodies and head (Figures 29, 30, 31, and 32). Three of these whales have been preliminarily identified: Catalog #3745 (3 year old male), intermatch code 2008CalfOf1703 (2 year old of unknown gender), and intermatch code 2009CalfOf1608 (yearling of unknown gender). The fourth whale was assigned season code S038 because it could not be matched to available photographs; however, based on the size of this whale it is not likely to be more than 3 years old. The wounds observed on all four whales vary in size, shape, and location; but, all are similar to injuries caused by a vessel's propeller, skeg, keel, or rudder observed on Florida manatees (*Trichechus manatus latirostris*) (Wright et al., 1995, Rommel et. al., 2007).

## DISCUSSION and RECOMMENDATIONS

There are approximately 71,000 registered pleasure-craft vessels 16ft (4.9 m) in length or greater in Nassau, Duval, St. Johns, Flagler, Volusia, and Brevard Counties in Florida (Florida DMV, 2010). During the 2009-2010 season 65% (n=26) of the observed whale/vessel interaction in the SEUS involved recreational vessels and 53% (n=21) occurred off the coast of Florida (Figure 33). A variety of educational tools and materials have been developed and implemented in an effort to provide information about right whales to recreational boaters: USCG BNTM and LNTM, NOAA's Coast Pilot, NOAA Weather Radio, NOAA weather buoy websites, awareness signs for ocean-going boat ramps and marinas, brochures, and talks presented to local interest groups, etc. Unfortunately, the recreational boater target audience is expansive and encompasses people from broad personal and professional backgrounds; so, although outreach methods for this group may be effective, the advancement of information throughout the community is slow. The proportion of whale/vessel interactions involving recreational vessels (65%) was higher during the 2010 season than that observed by aerial survey teams over the last four seasons (53 % on average from 2005-2006 through 2008-2009) and collisions with whales are likely occurring (see EVENTS: Vessel Related Injuries). FWRI staff will continue to collaborate with NOAA Fisheries on the development and implementation of outreach materials and programs for recreational boaters; concordantly, a greater overall understanding of how right whale habitat and recreational boaters' use of coastal waters overlap would be helpful to accomplish our outreach goals.

Nearly 500 whale alerts were disseminated over the EWS network during the 2009-2010 season (Figure 34). The majority (79%) of these sightings came from aerial survey teams. Of the remaining 21%, just over 5% (n=27) were generated by sources other than aerial survey teams and volunteer sighting networks (e.g. U.S. Navy, USCG, commercial vessels, citizens, etc.). This percent is down from the 12% (n=108) reported in 2008-2009 (Figure 35). Efforts by FWRI staff to field these reports of "other" sightings and verify information remained consistent between 2009 and 2010, so the decline in sightings are likely related to a decrease in reporting from these sources; a breakdown in reporting procedures (i.e. sighting information did not reach FWRI staff); and/or a shift in right whale distribution to waters less frequented by these reporting sources.

The FWRI survey team documented a total of 601 right whales (not unique individuals) in 237 sightings between December 1, 2009 and March 31, 2010 compared to 384 whales in 169 sightings during the 2008-2009 season and 218 whales in 86 sightings during the 2007-2008 season; this is the equivalent of a 57% increase in whales and a 40% increase in sightings since the 2009 season and a 176% increase in whales and sightings since the 2008 season. Additionally, the number of individually unique right whales documented increased by 36% from 2008-2009 (n=119) and 64% from 2007-2008 (n=99) to 162 whales in 2009-2010. The number of adult males documented by FWRI increased from 24 individuals in 2008-2009 to 31 individuals in 2009-2010; however, the percent of adult males sighted was down slightly in 2010 from the estimated 23% in the SEUS demographic analyses for the 2008-2009 season (Taylor et al., 2009) (Figure 16). Conversely, the percent of juvenile whales is considerably higher than the estimated 37% in 2008-2009 provided by Taylor et al. (2009); the number of individual juvenile whales documented by FWRI nearly doubled from 45 whales in 2008-2009 to 81 in 2009-2010. It should be noted that the percent of unknown age whales also increased from the 2009 season to the 2010 season, so it is unlikely that the high number of juveniles identified is due to better photo analysis. Fifteen of the 162 individual whales (9%) documented by FWRI were calving

females; thus, the vast majority (91%) of the whales seen by FWRI in the SEUS were present for reasons other than calving. Since it is presumed right whales are not feeding while in the SEUS, the time these whales spend in the calving area likely serves an important social and/or developmental function, especially for juveniles. The number of sightings of pairs and groups of whales documented by FWRI increased from 56 sightings in 2008-2009 and 32 in 2007-2008 to 117 sightings in 2009-2010. The percent of Surface Active Group (SAG) behavior observed in these groups has increased as well: 38% SAG in 2008, 48% SAG in 2009, and 51% SAG in 2010. SAGs did not vary from non-SAGs temporally throughout the season nor spatially throughout the SEWS except one cluster of non-SAG sightings offshore between EWS lines #29-31 (Figure 36). The SAGs documented by FWRI were composed of whales from a variety of ages and gender. Additional analysis of the demographics of the individual whales in SAG and non-SAG groups in the SEUS and the distributions of these groups would likely inform right whale management strategies and conservation initiatives.

Aerial surveys have proven to be an efficient tool for: documenting right whale distribution and understanding right whale habitat use, demographics, and life history; detecting dead, injured, and entangled whales; and ship strike mitigation on days with favorable weather conditions. Despite being limited by weather and available daylight, the EWS surveys, throughout many seasons, have raised awareness of right whales among vessel operators, harbor pilots, and military personnel in the SEUS and provided consistent, extensive, and comprehensive monitoring data for right whales in the calving area. During the 2009-2010 season, survey teams and managers were faced with an apparent shift in right whale distribution. A comparison of water temperature measurements from NOAA's National Data Buoy Center C-MAN Station in St. Augustine (SAUF1) suggests the whale distribution shifted south due to cooler waters in the EWS area than observed in recent seasons: average temperature at SAUF1 in the winter of 2009 was 16.6°C and the average temperature in 2010 was 13.9°C (Station SAUF1, 2010). According to Keller et. al. (2006) the average SST for right whale sightings in the SEUS is 14.3°C ± 2.1°C. A concerted effort was made by FWRI and NOAA Fisheries to respond to this shift in whale distribution by flying surveys south of the SEWS area when practical. These surveys generated whale sightings which triggered Dynamic Management Areas (DMA) and afforded some protection for the right whales south of the Southeast U.S. SMA. Ultimately, constraints on survey design and/or funding limited survey teams' flexibility to cover waters outside the EWS area. It would be useful to have more contingency plan options or overall flexibility built into the SEUS survey design so that all parties involved are better prepared and able to respond to shifts in whale distribution. FWRI, in partnership with NOAA Fisheries, will continue to monitor right whale presence in the SEUS, develop protection measures, execute recovery activities, and implement educational initiatives for right whales in Florida.

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USCG District 7 NAVTEX station

USCG Sector Jacksonville

Florida and Georgia port authorities and harbor pilot associations

Georgia Department of Natural Resources

Wildlife Trust aerial survey teams

New England Aquarium staff and aerial survey team

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St. Johns County habitat conservation staff

Volusia County Stranding Network

GTM NERR

University of Florida College of Veterinary Medicine – Alex Costidis

Cover Photo: Marjorie Foster, FWC

FIGURE 1: MAP OF EARLY WARNING SYSTEM (EWS) SURVEY TRACKLINES

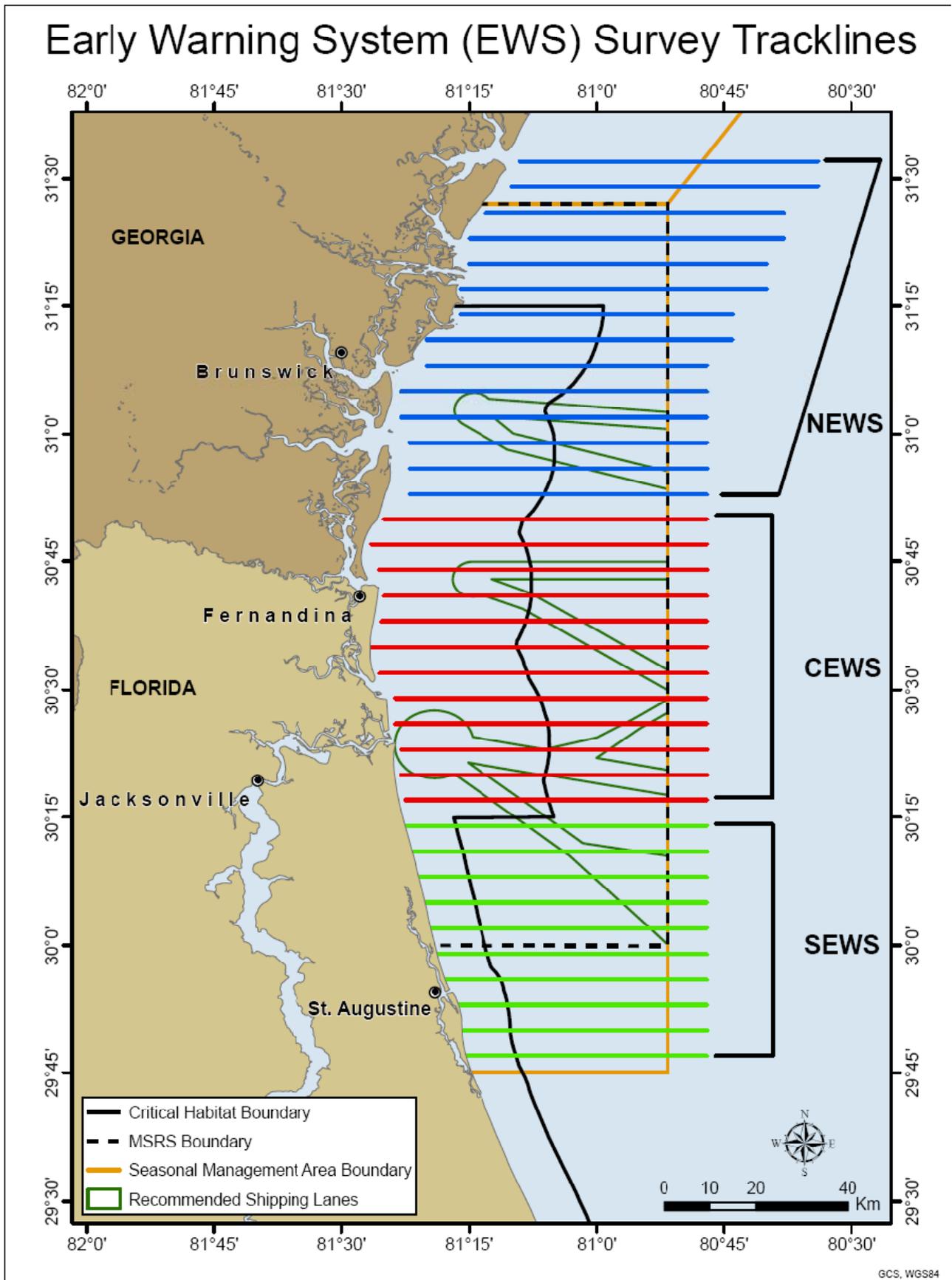


FIGURE 2: MAP OF FWRI SEWS SURVEY DENSITY DECEMBER 2009 – MARCH 2010

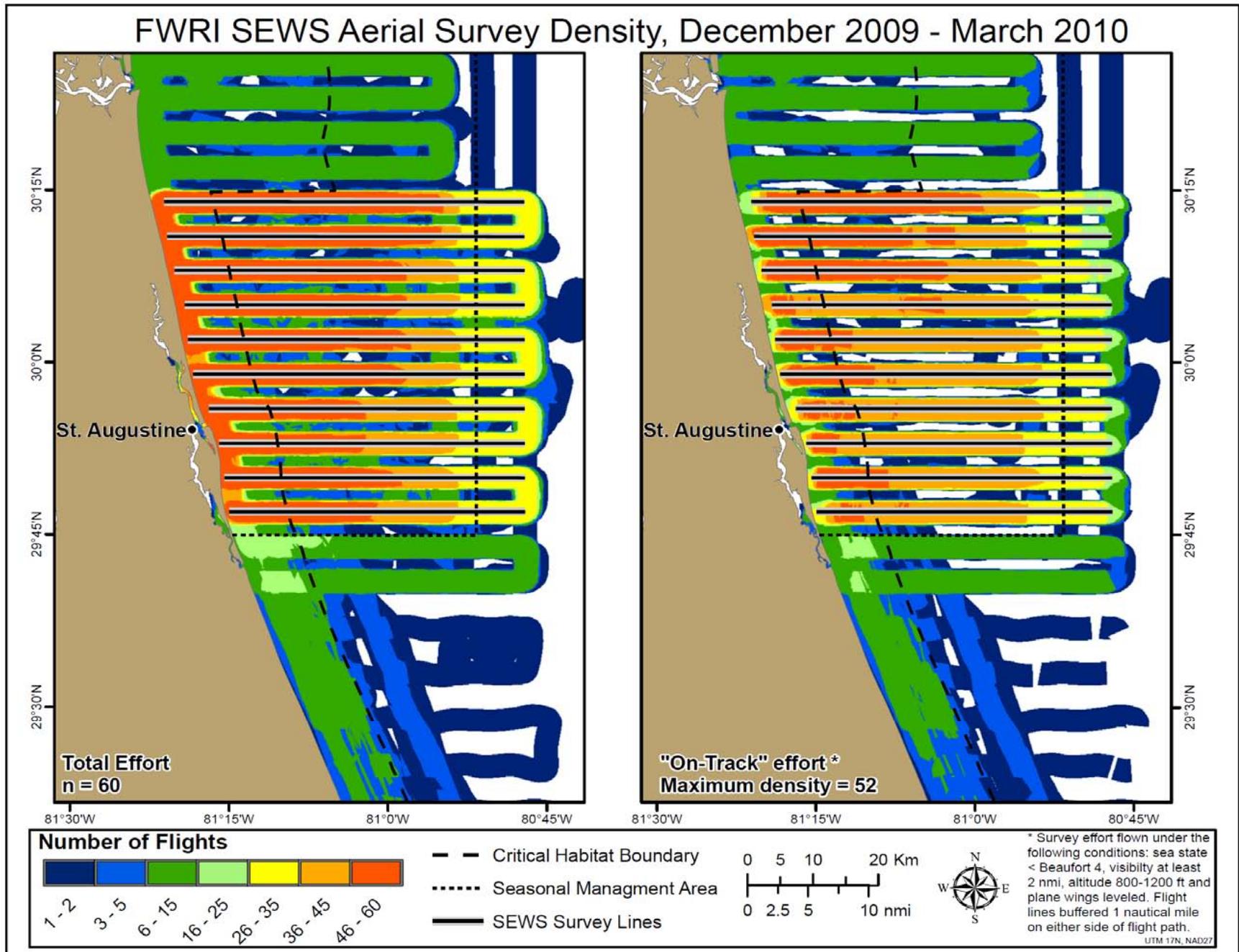


FIGURE 3: GRAPH OF FWRI AERIAL SURVEY EFFORT

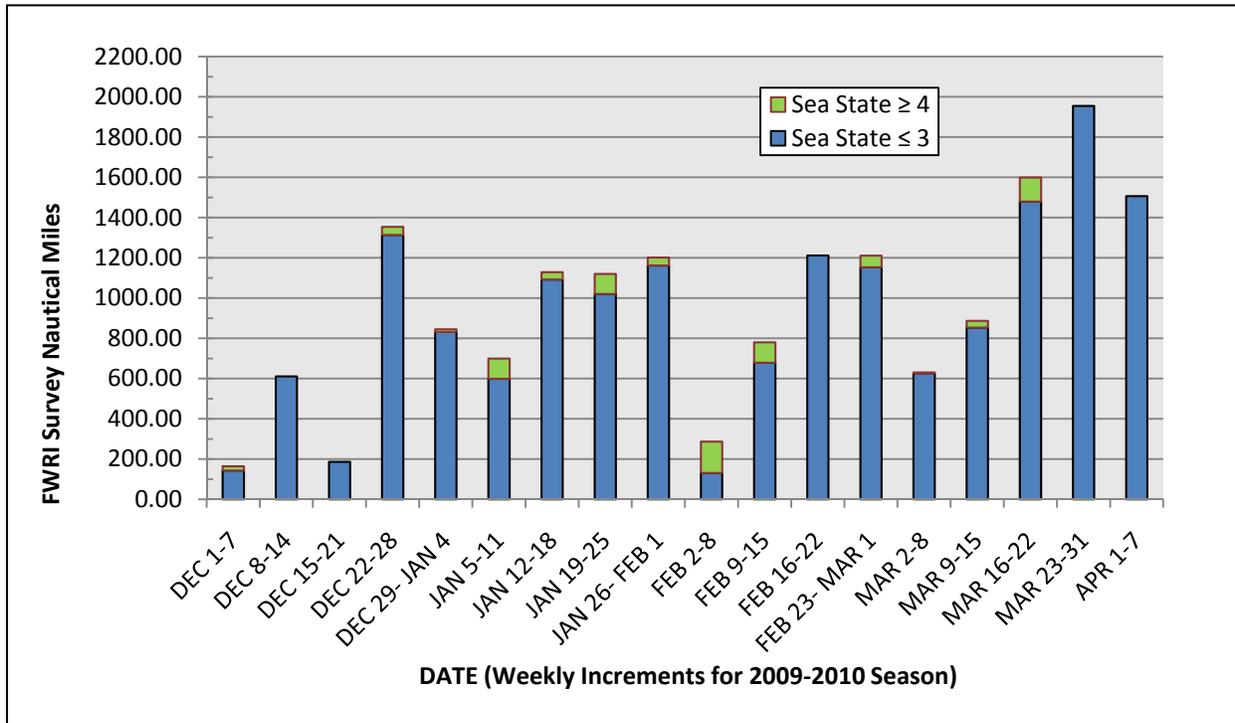


Figure 3: Total nautical miles of survey flown per week during the 2009-2010 season broken down by Beaufort sea state less than and greater than or equal to 4

FIGURE 4: GRAPH OF FWRI COASTAL VS. SEWS/CONTINGENCY SURVEY EFFORT

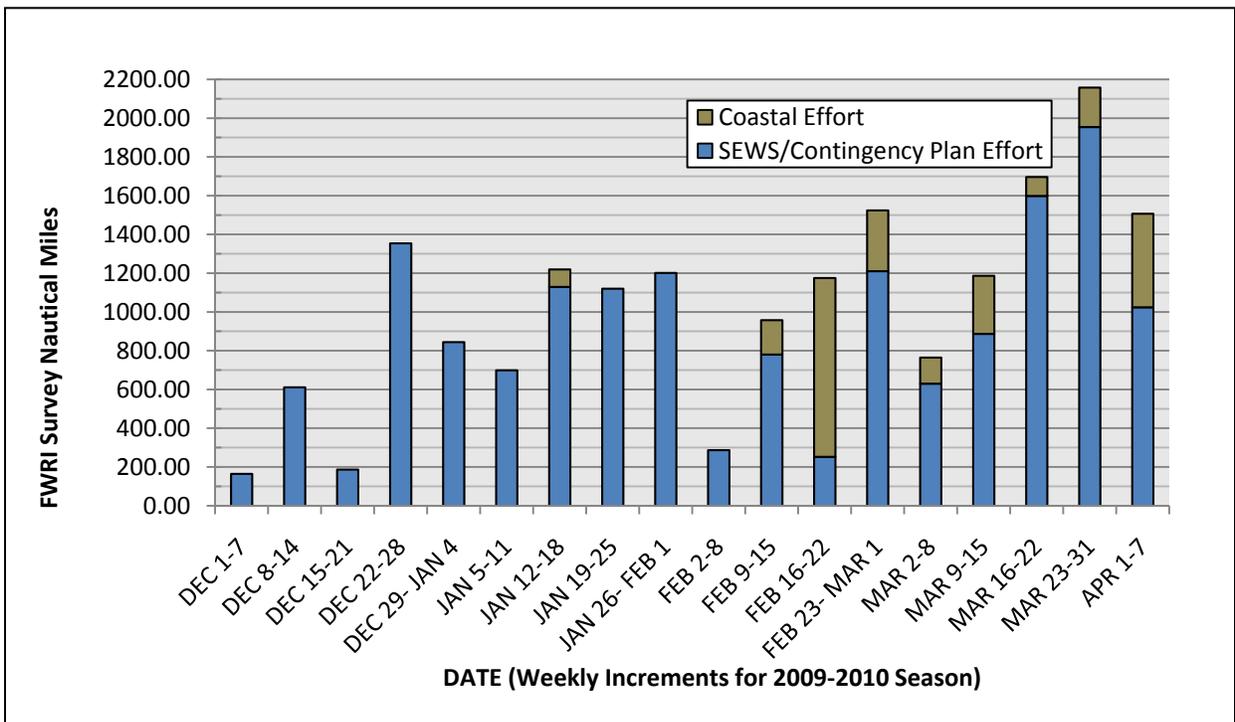


Figure 4: Total nautical miles (nmi) of survey flown per week during the 2009-2010 season broken down by nmi for coastal surveys and nmi for SEWS/Contingency Plan surveys combined

FIGURE 5: MAP OF FWRI TOTAL SURVEY DENSITY DECEMBER 2009 – MARCH 2010

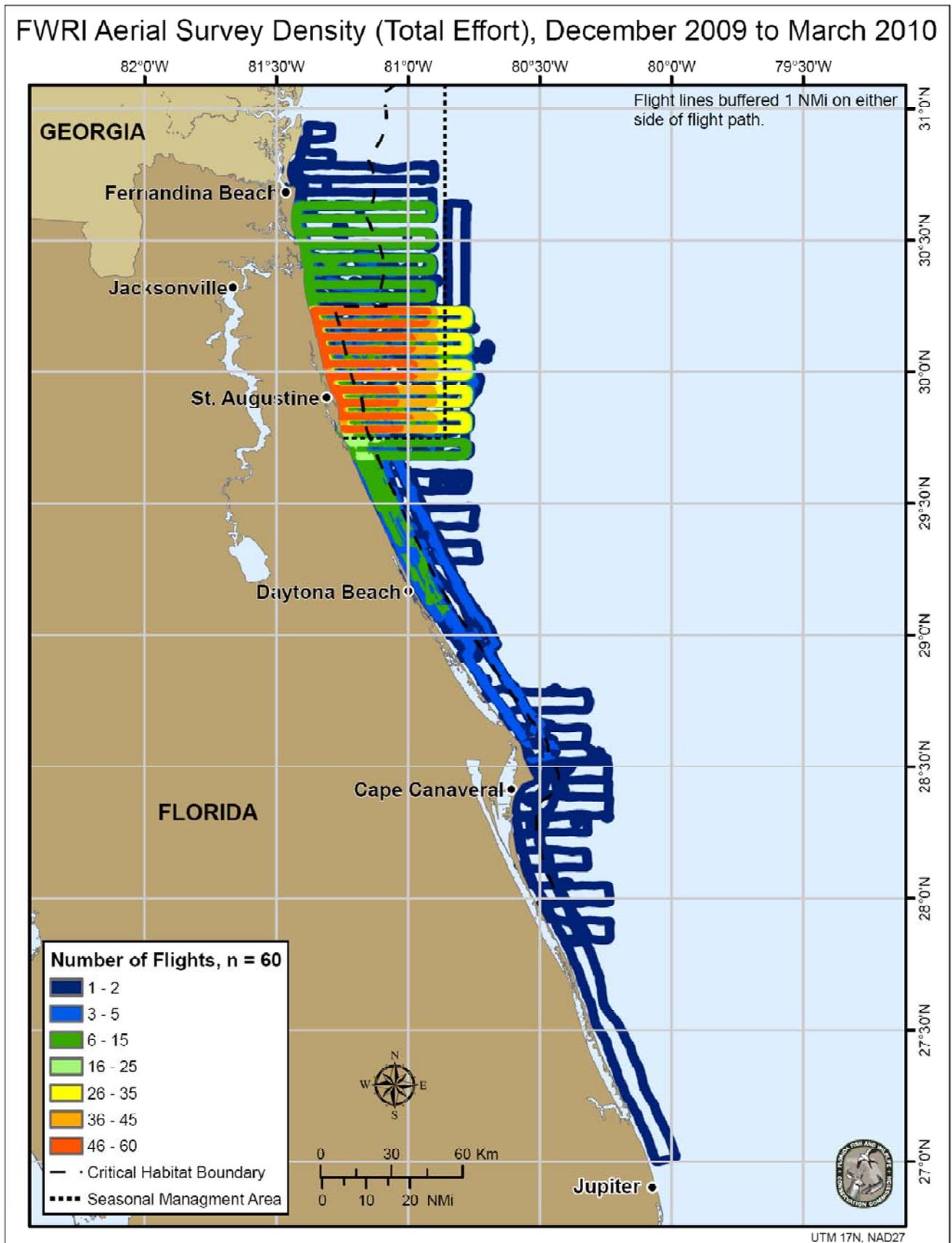


FIGURE 6: MAP OF FWRI ON-TRACK SURVEY DENSITY DEC 2009 – MAR 2010

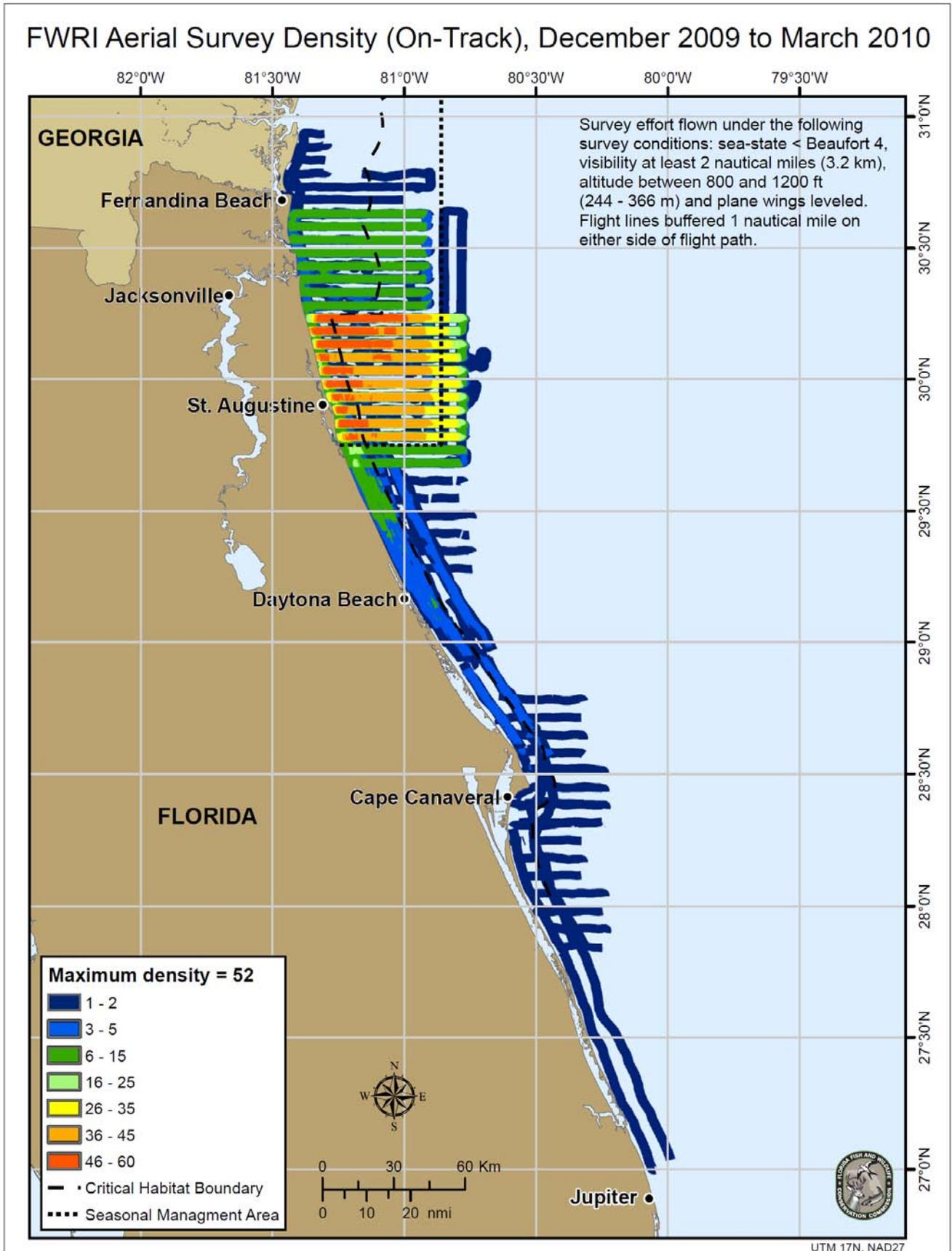


FIGURE 7: MAP OF 2009-2010 FWRI RIGHT WHALE SIGHTINGS

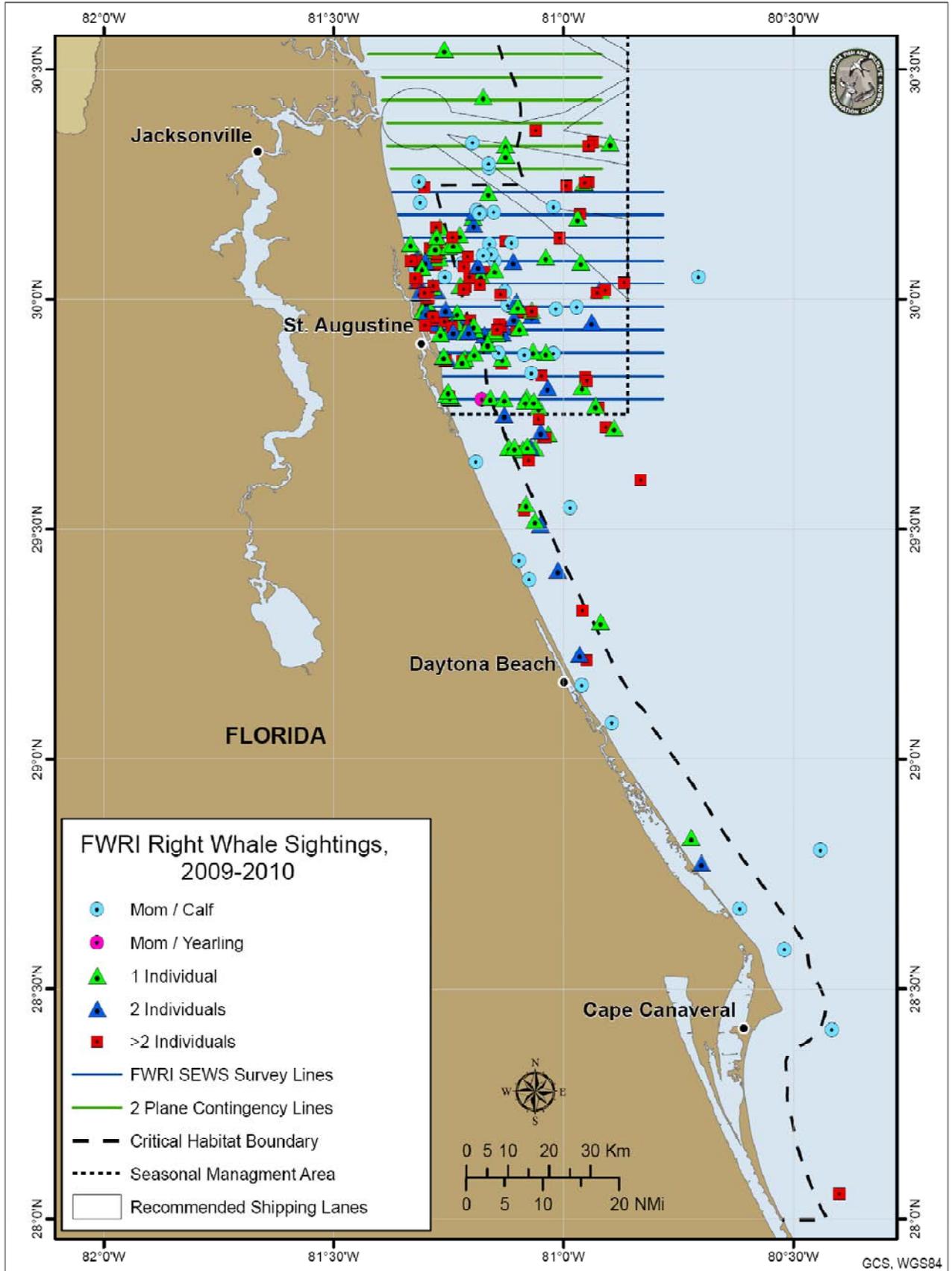


FIGURE 8: MAP OF 2009-2010 FWRI SEWS RIGHT WHALE SIGHTINGS  
 MAP ZOOMED AND CROPPED TO SHOW DISTRIBUTION OF SIGHTINGS IN SEWS

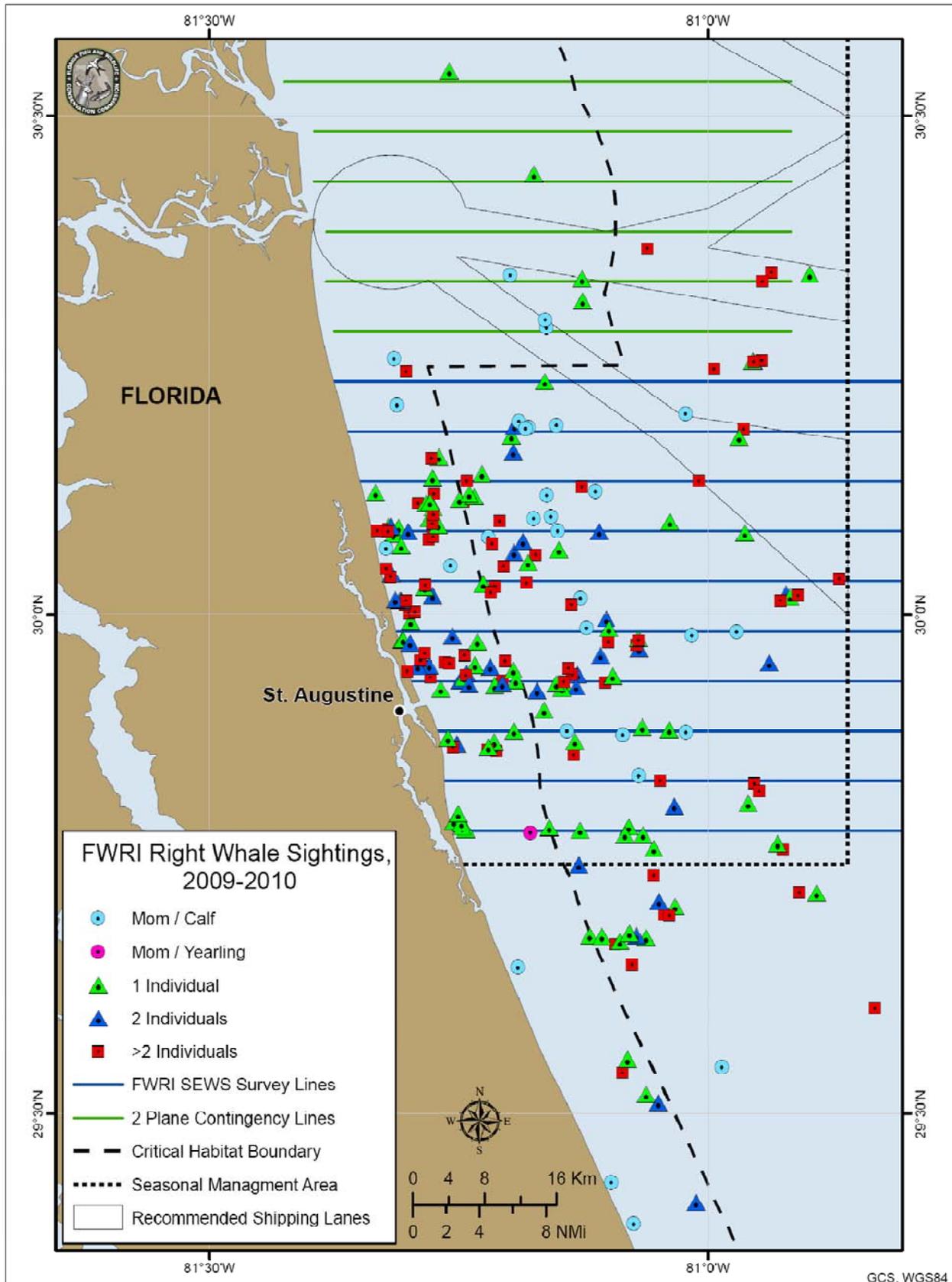


FIGURE 9: MAP OF 2009-2010 FWRI HUMPBACK WHALE SIGHTINGS  
 INCLUDES 2 SIGHTINGS OF THE SAME ENTANGLED HUMPBACK FROM 07MAR2010

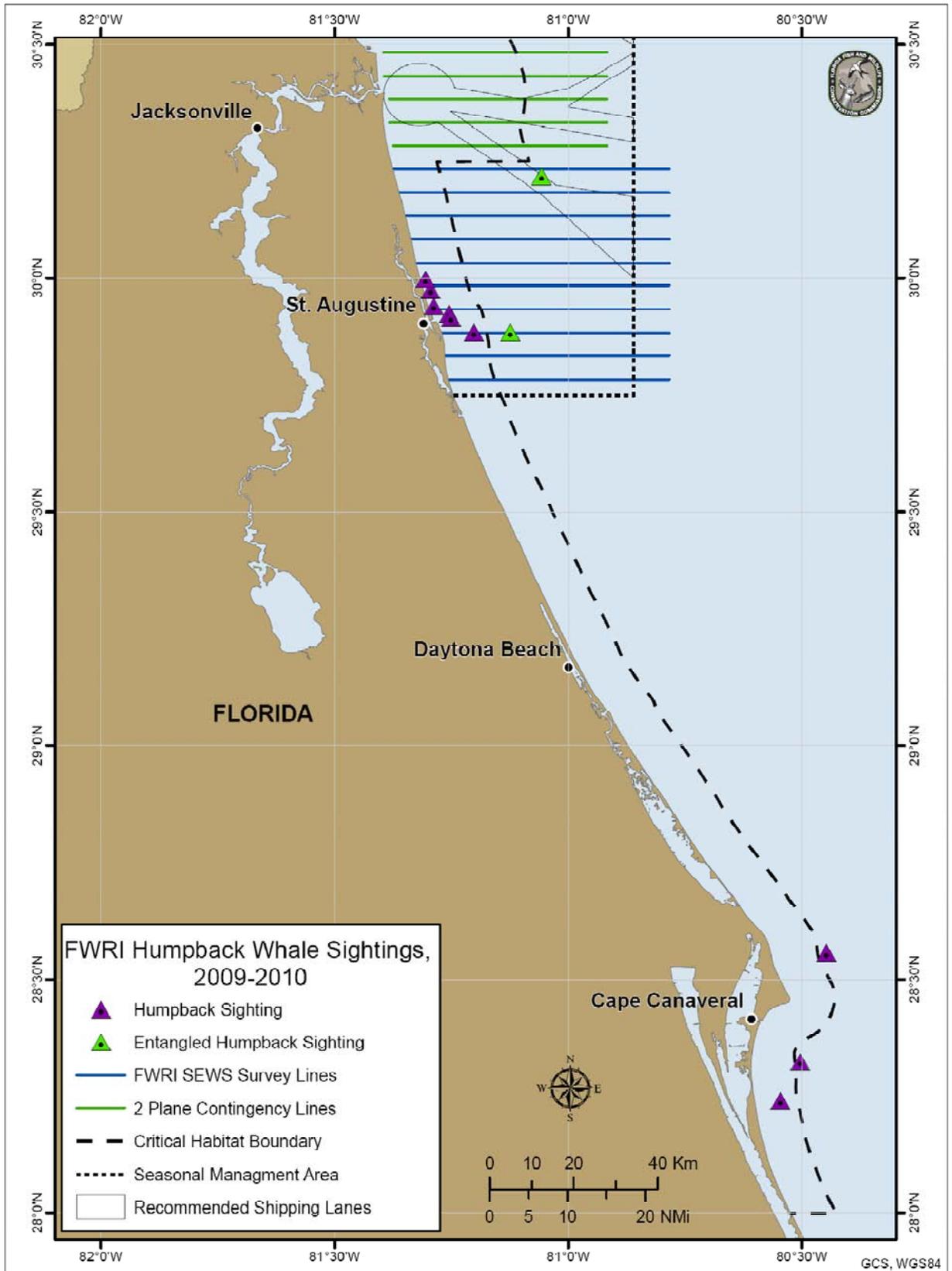


FIGURE 10: GRAPH OF TOTAL FWRI SIGHTINGS, WHALES, AND MOM/CALF PAIRS

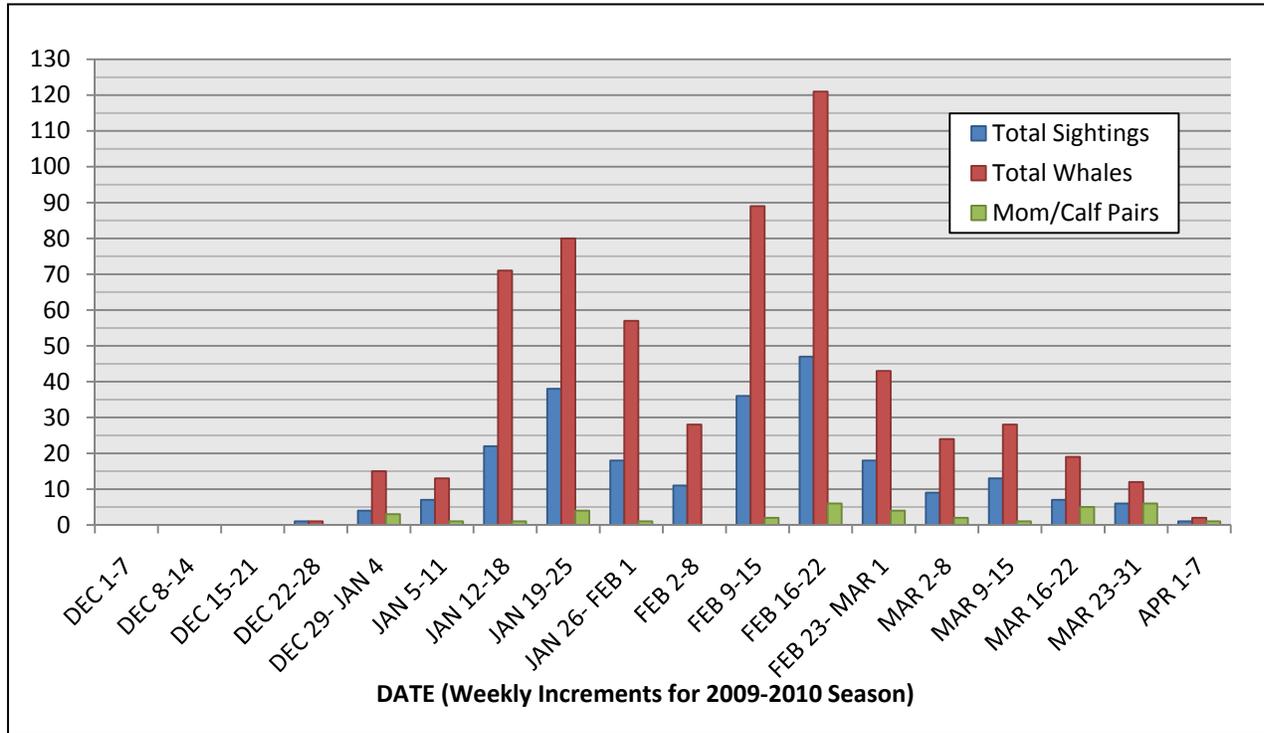


Figure 10: Total number of sightings, whales, and mom/calf pairs sighted per week by FWRI during the 2009-2010 season

FIGURE 11: GRAPH OF TOTAL FWRI SIGHTINGS AND WHALES PER EFFORT

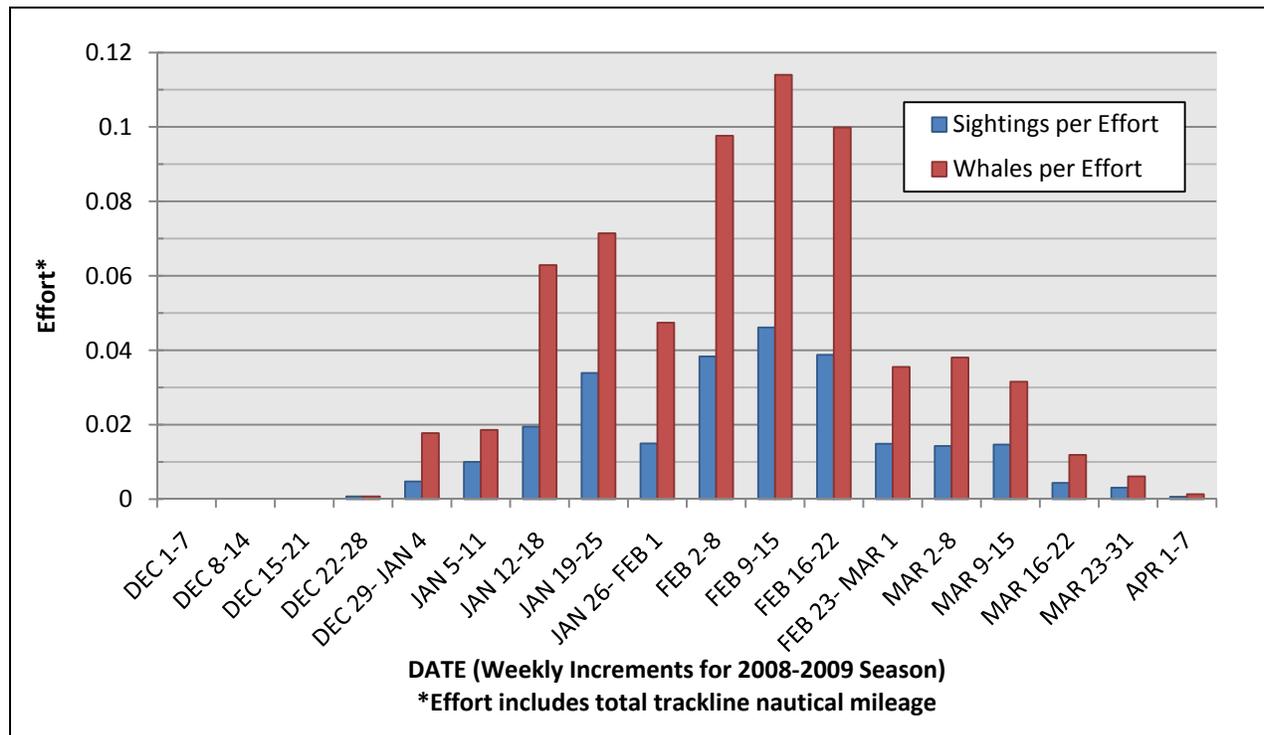


Figure 11: Total number of FWRI sightings and whales per survey nautical mileage effort

FIGURE 12: MAP OF 2009-2010 FWRI SEWS RIGHT WHALE SIGHTINGS PER MONTH

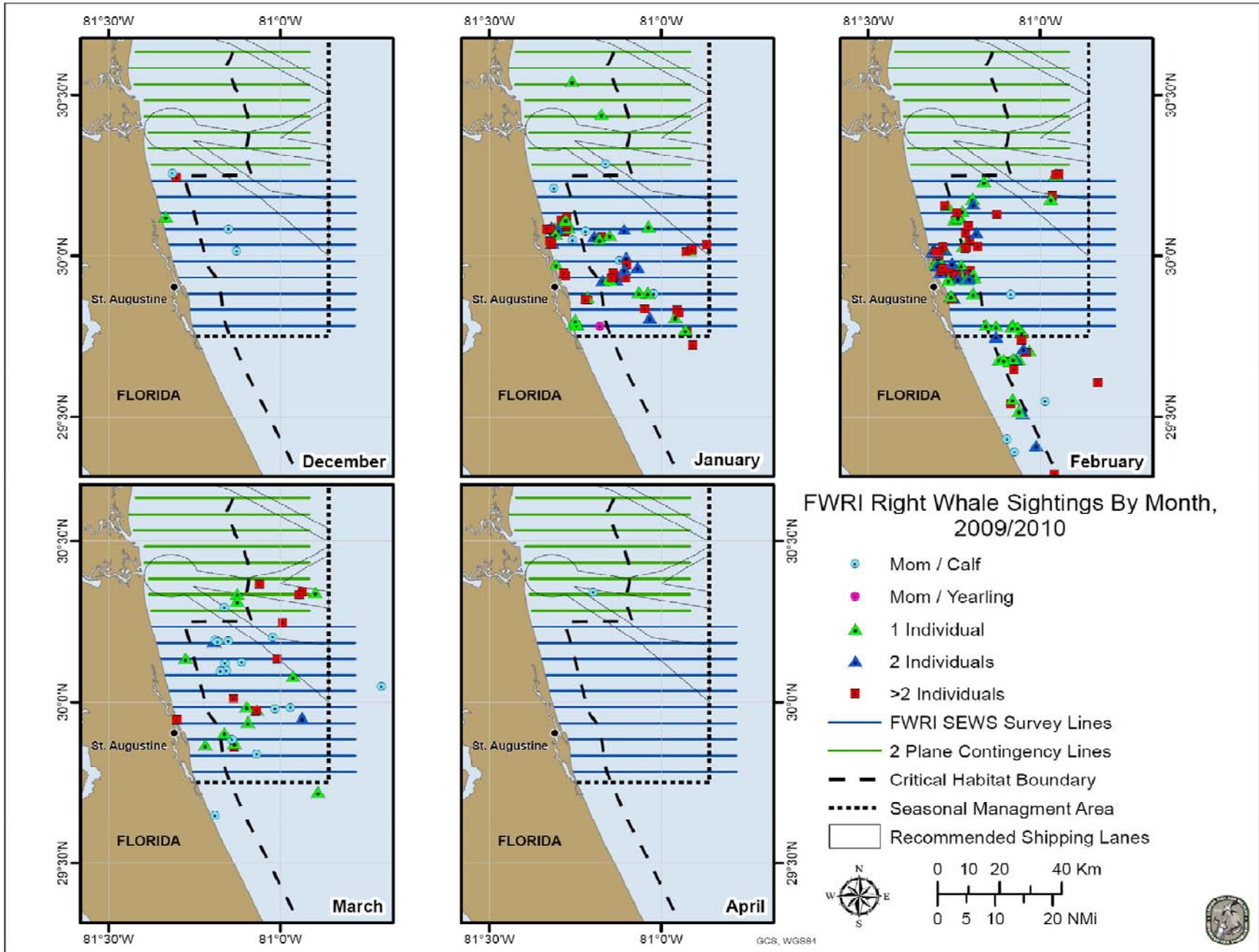


FIGURE 13: GRAPH OF FWRI SIGHTING DISTANCE

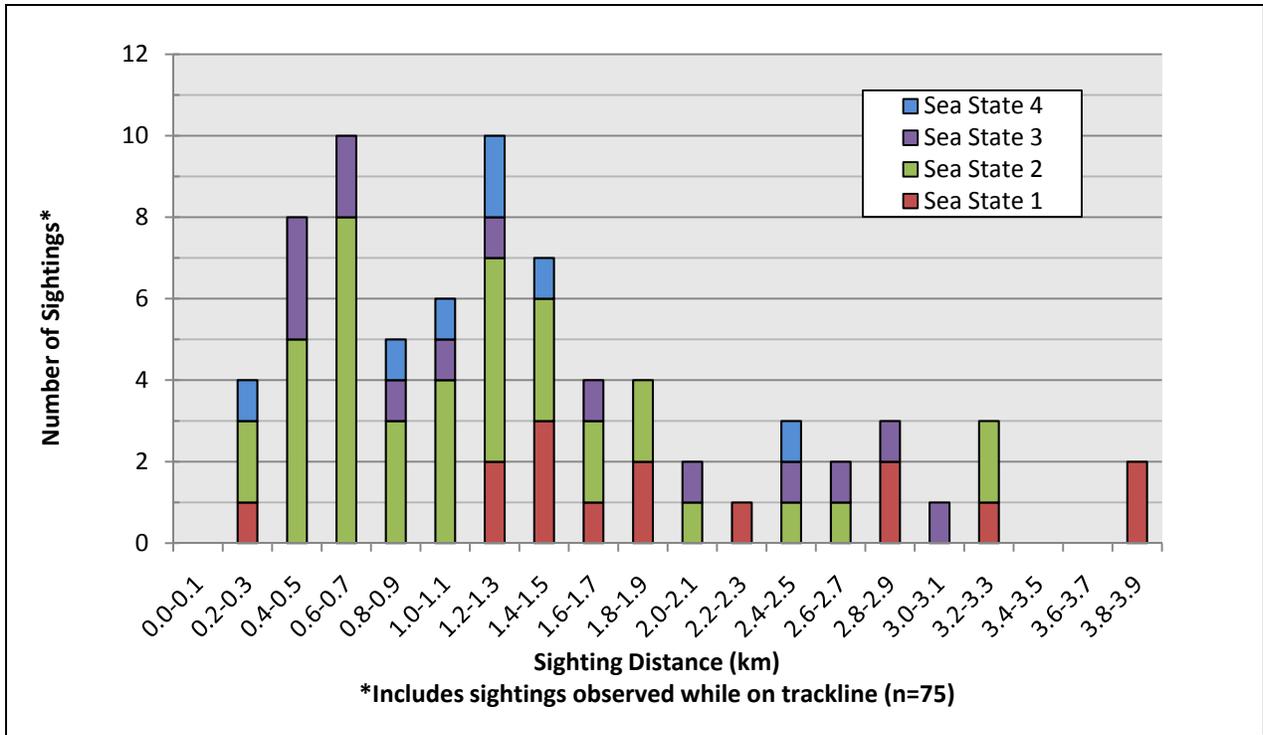


Figure 13: Sighting distance by Beaufort sea state for sightings observed from survey trackline

FIGURE 14: GRAPH OF FWRI PERPENDICULAR DISTANCE

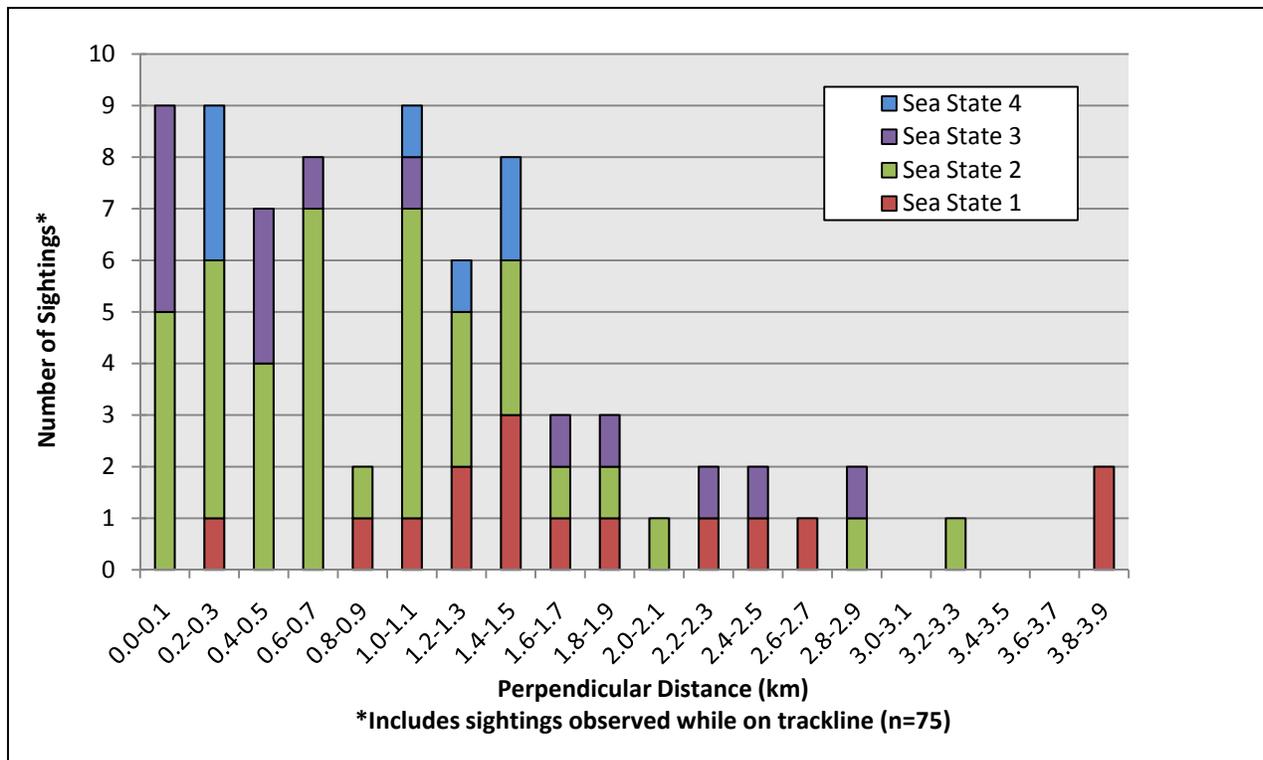


Figure 14: Sighting distance by Beaufort sea state for sightings observed from survey trackline. See METHODS section for description of sighting distance.

FIGURE 15: MAP OF FWRI ON-TRACK SURVEY DENSITY APRIL 2010

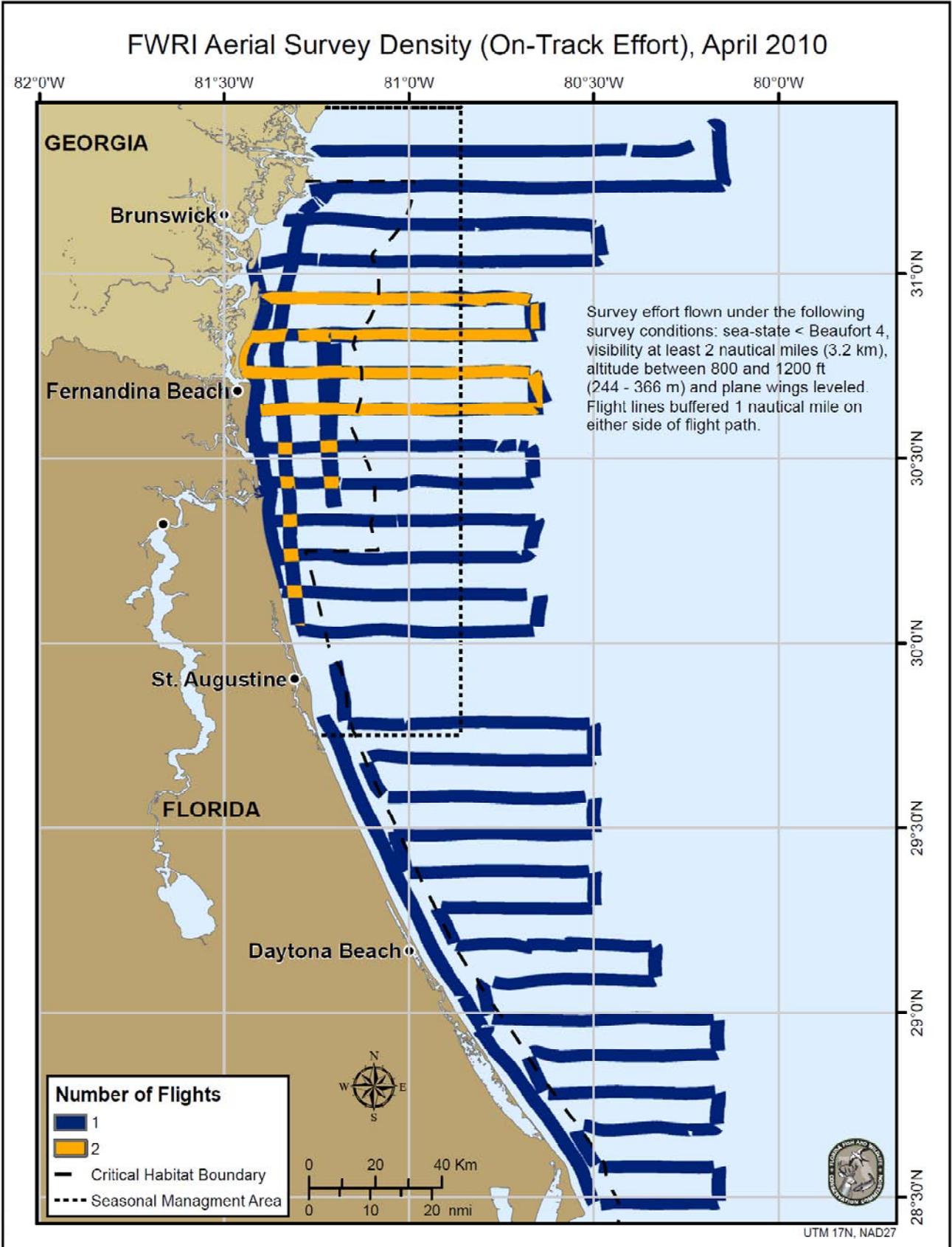


FIGURE 16: CHART OF DEMOGRAPHICS OF ALL INDIVIDUAL WHALES SIGHTED BY FWRI DURING THE 2009-2010 SEASON (N=162)

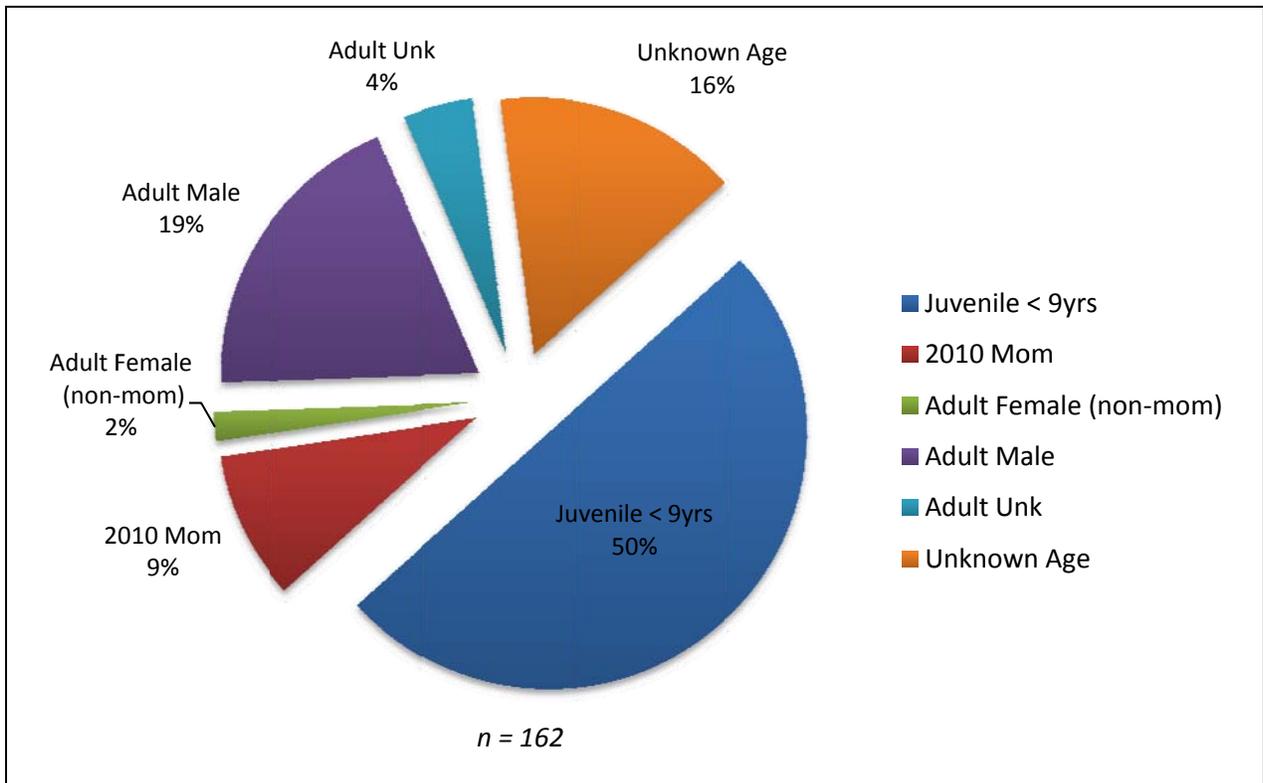


FIGURE 17: CHART OF DEMOGRAPHICS OF CATALOGED AND INTERMATCH RIGHT WHALES SIGHTED BY FWRI DURING THE 2009-2010 SEASON (N=148)

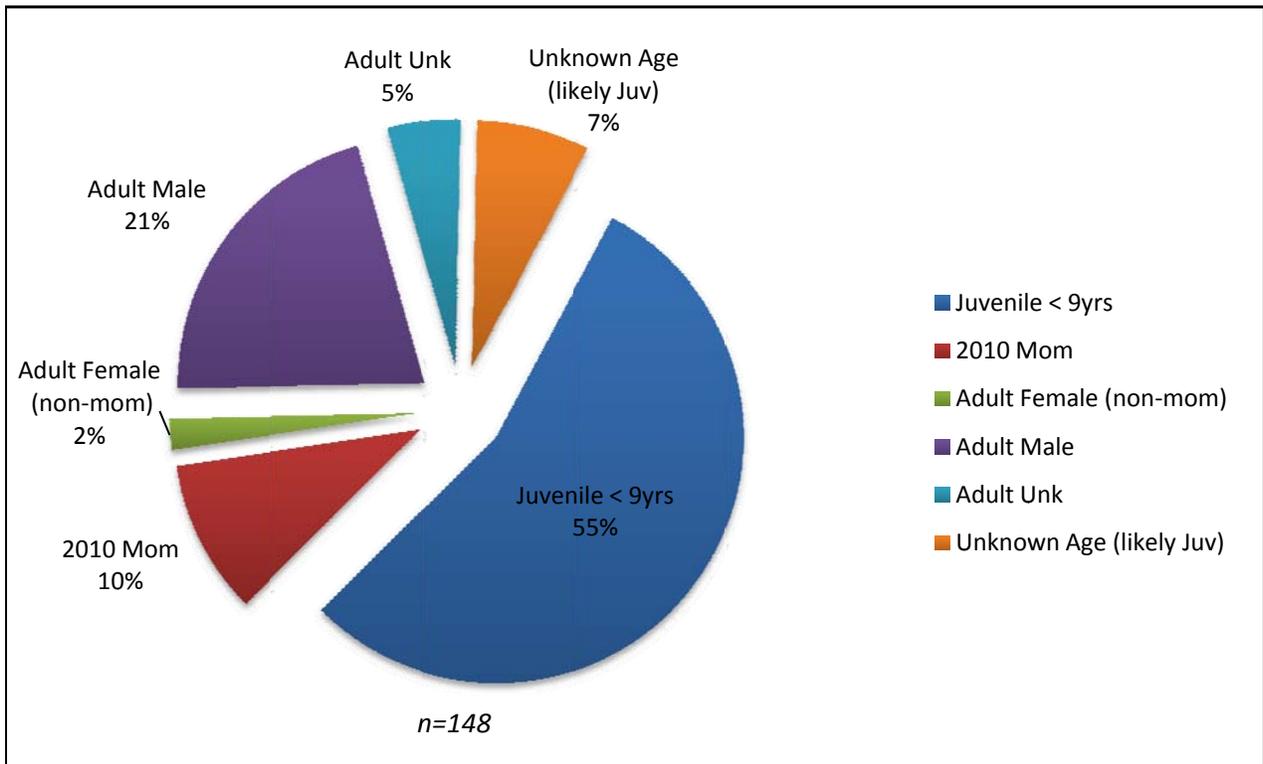




FIGURE 19: PHOTOGRAPH OF THE 2008 CALF OF CATALOG #1208 ON 13JAN2010

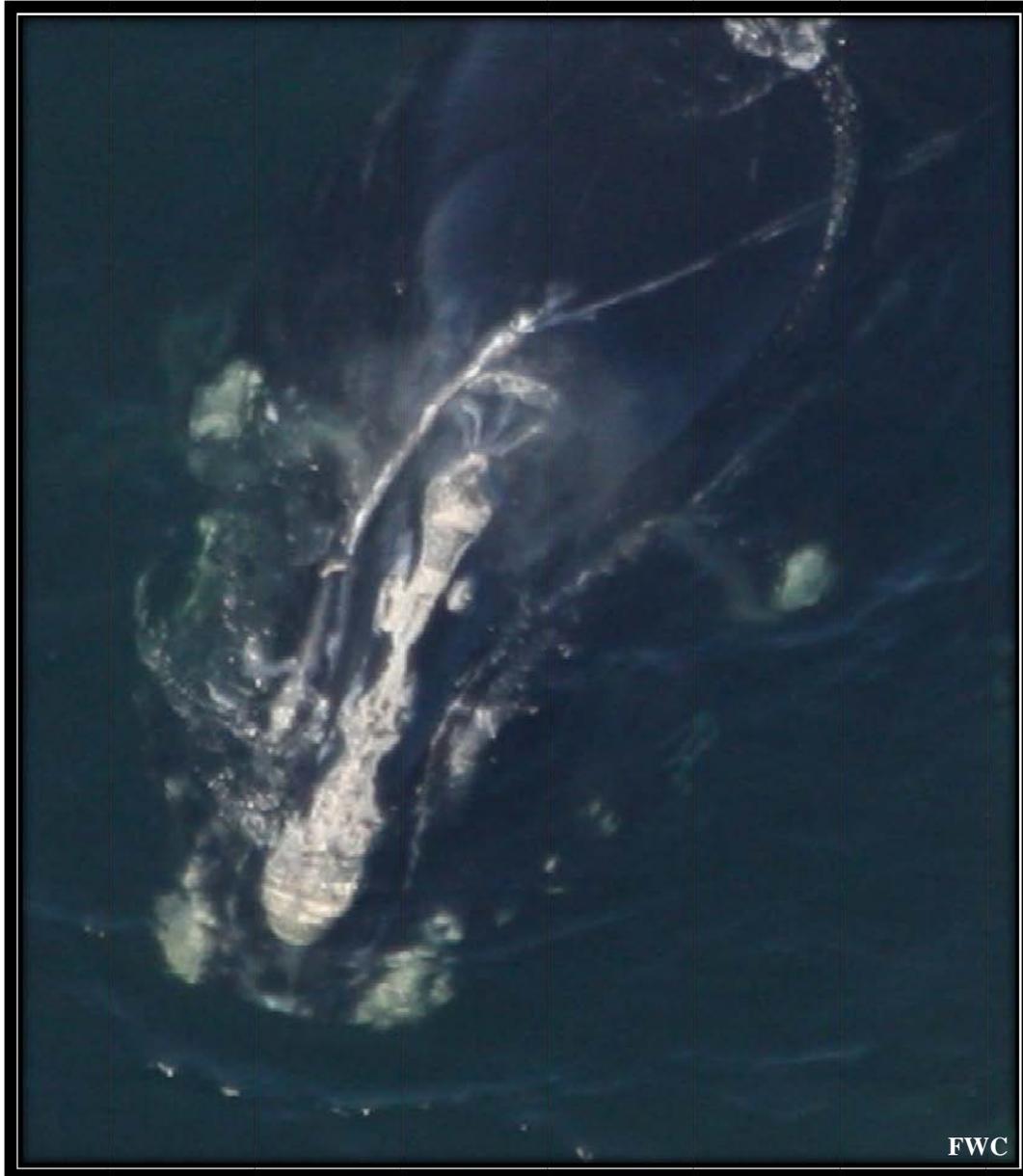


Figure 19: Note the wounds/scars left by embedded rope exiting both sides of the mouth, see EVENTS: 2008 Calf of Catalog #1208 for details

Photographer: Jennifer Jakush, FWC

FIGURE 20: PHOTOGRAPH OF THE 2009 CALF OF CATALOG #1240 ON 25JAN2010

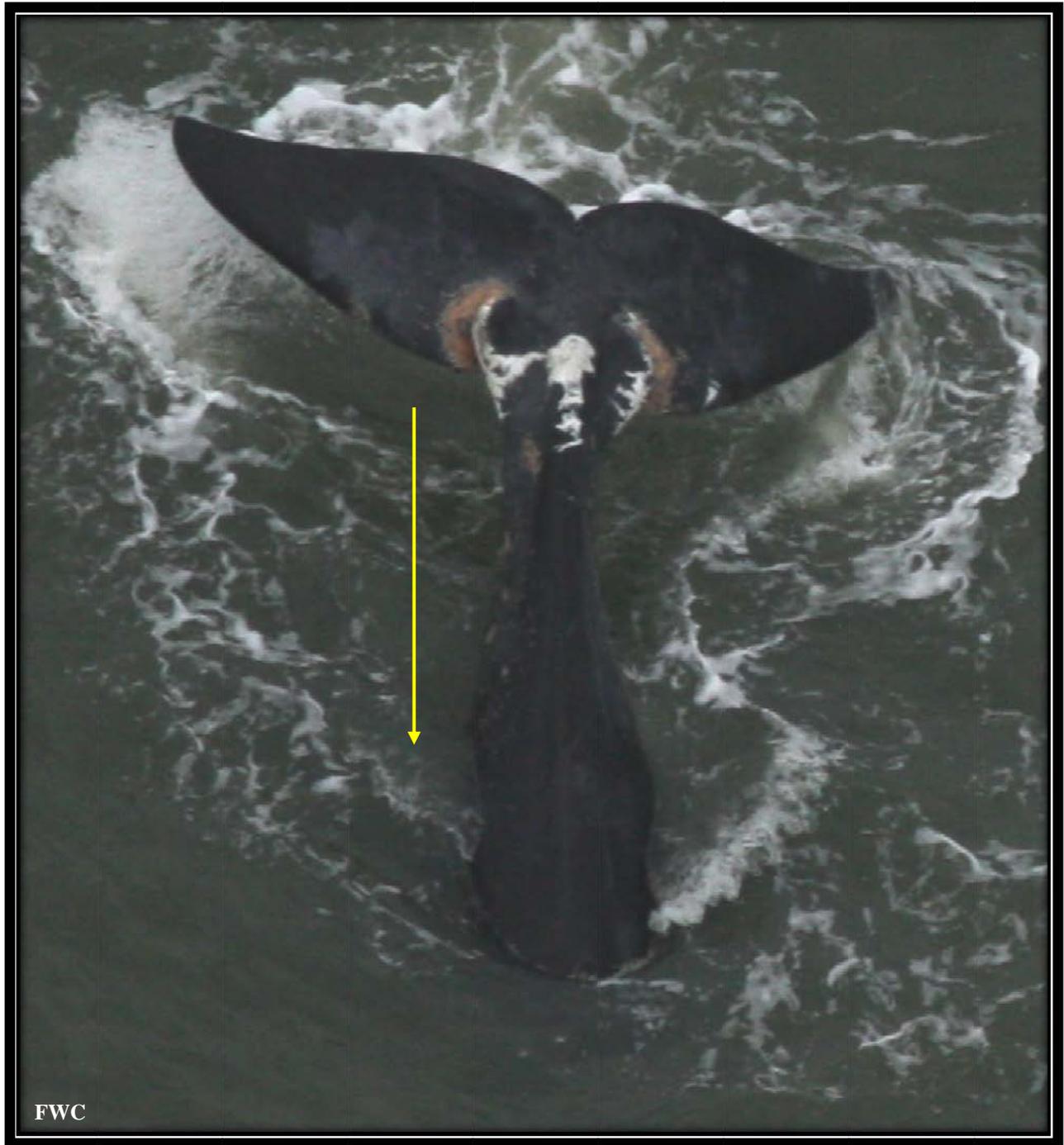


Figure 20: Note the severe ventral fluke insertion wounds likely due to entanglement, see EVENTS: 2009 Calf of Catalog #1240 for details; whale is ventral up in this photo  
Photographer: Corey Accardo, FWC

FIGURE 21: PHOTOGRAPH OF ENTANGLED HUMPBACK WHALE ON 07MAR2010



Figure 21: Note the embedded rope and associated wounds exiting both sides of the mouth, see

EVENTS: Humpback for details

Photographer: Corey Accardo, FWC

FIGURE 22: PHOTOGRAPH OF CATALOG #3346 “KINGFISHER” ON 27JAN2010

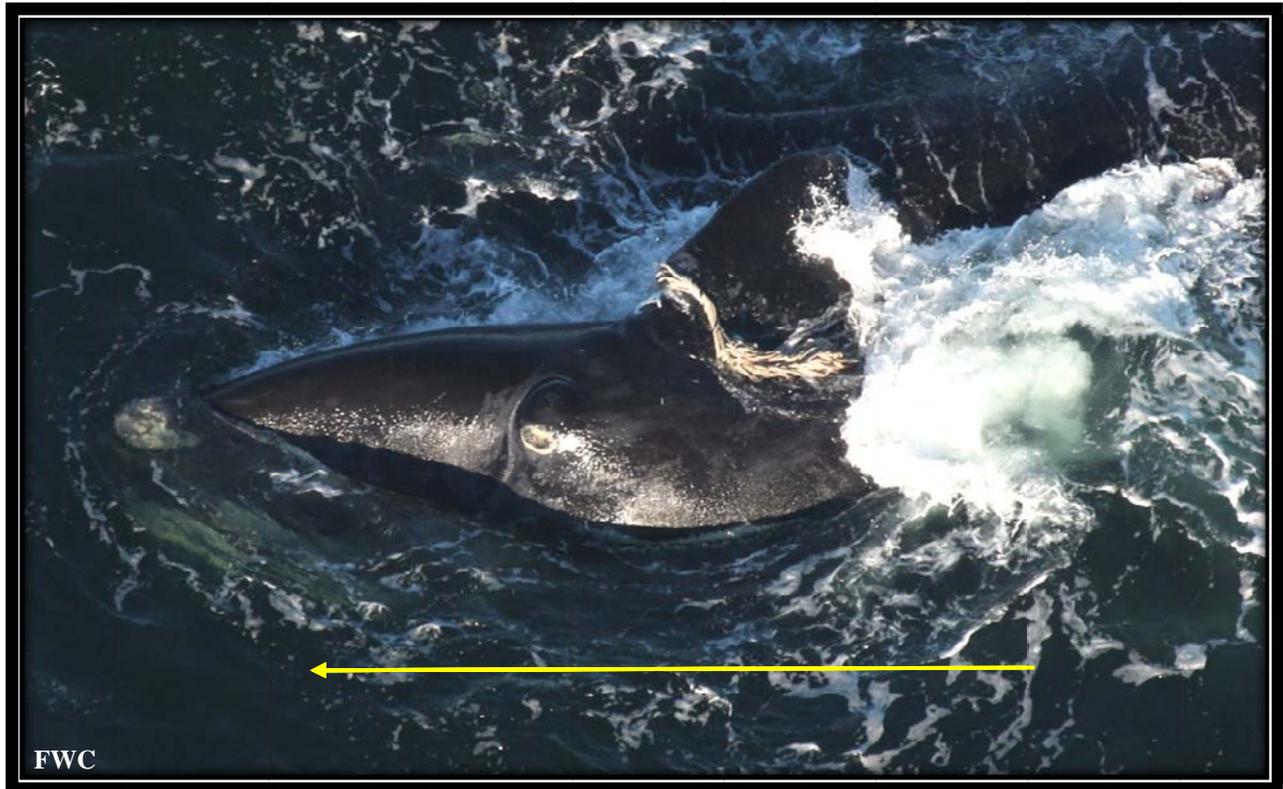


Figure 21: Note the absence of trailing rope from the right flipper, see EVENTS: Catalog #3346 “Kingfisher” for details

Photographer: Katie Jackson, FWC

FIGURE 23: MAP OF FWRI ON-TRACK COASTAL SURVEY DENSITY 20-21 FEB 2010

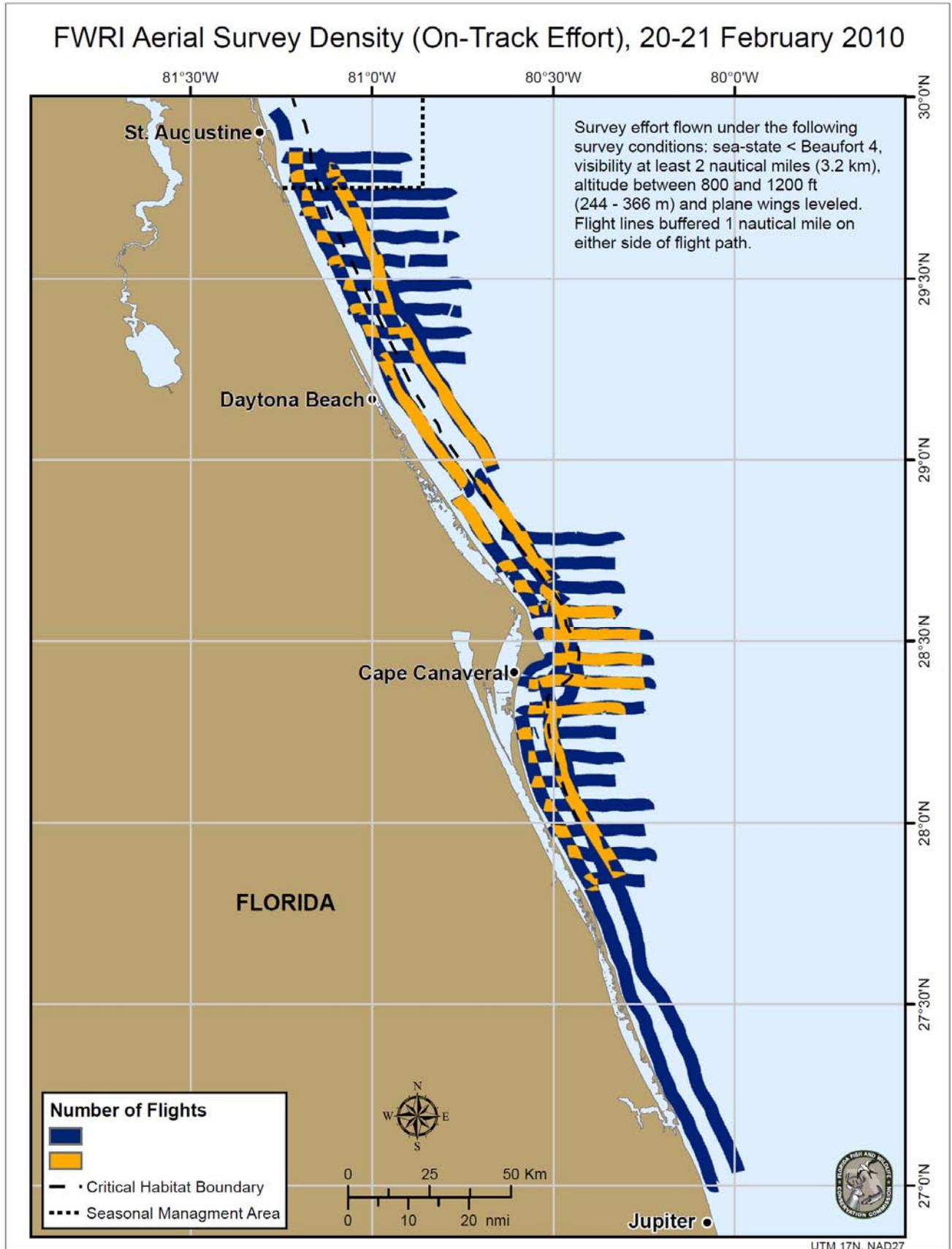


FIGURE 24: MAP OF FWRI COASTAL SURVEY SIGHTINGS 20-21FEB2010

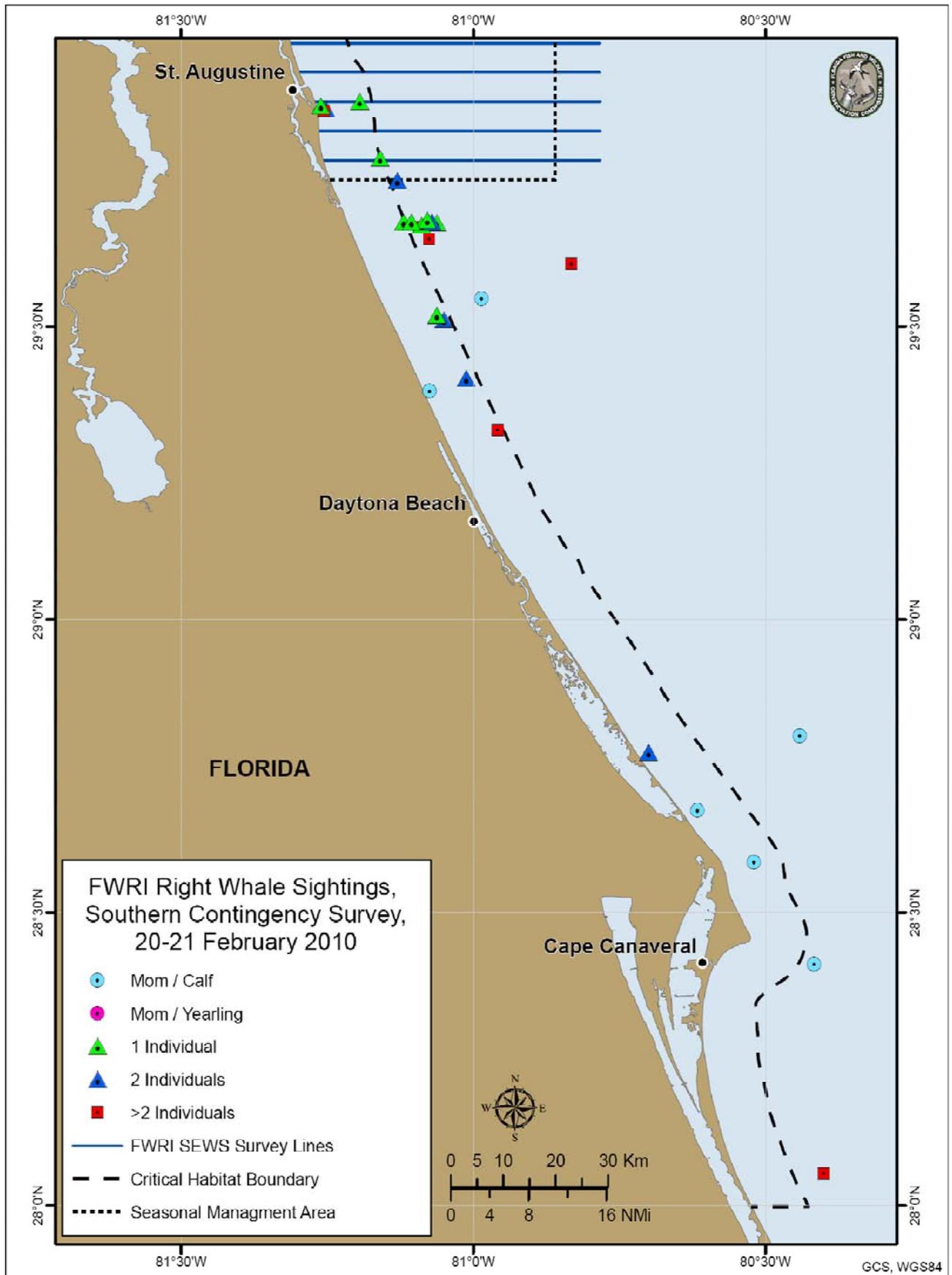


FIGURE 25: PHOTOGRAPH OF CATALOG #2360 AND CALF ON 20MAR2010

FIGURE 26: PHOTOGRAPH OF THE 2010 CALF OF CATALOG #2360 ON 20MAR2010



Figure 25 (top): Catalog #2360 “Derecha” approaches neonate calf, see EVENTS: Catalog #2360 “Derecha” for details; photo taken approximately 1 hour after birth

Figure 26 (bottom): Note color, size, and lack of cyamid coverage on calf (bottom of photo)

Photographer: Marjorie Foster, FWC

FIGURE 27: PHOTOGRAPH OF CATALOG #2360 AND CALF ON 05APR2010



Figure 27: Catalog #2360 “Derecha” with 16 day old calf, see EVENTS: Catalog # 2360  
“Derecha” for details

Photographer: Jennifer Jakush, FWC

FIGURE 28: MAP OF FWRI 2010 SIGHTINGS OF CATALOG #2360 AND CALF

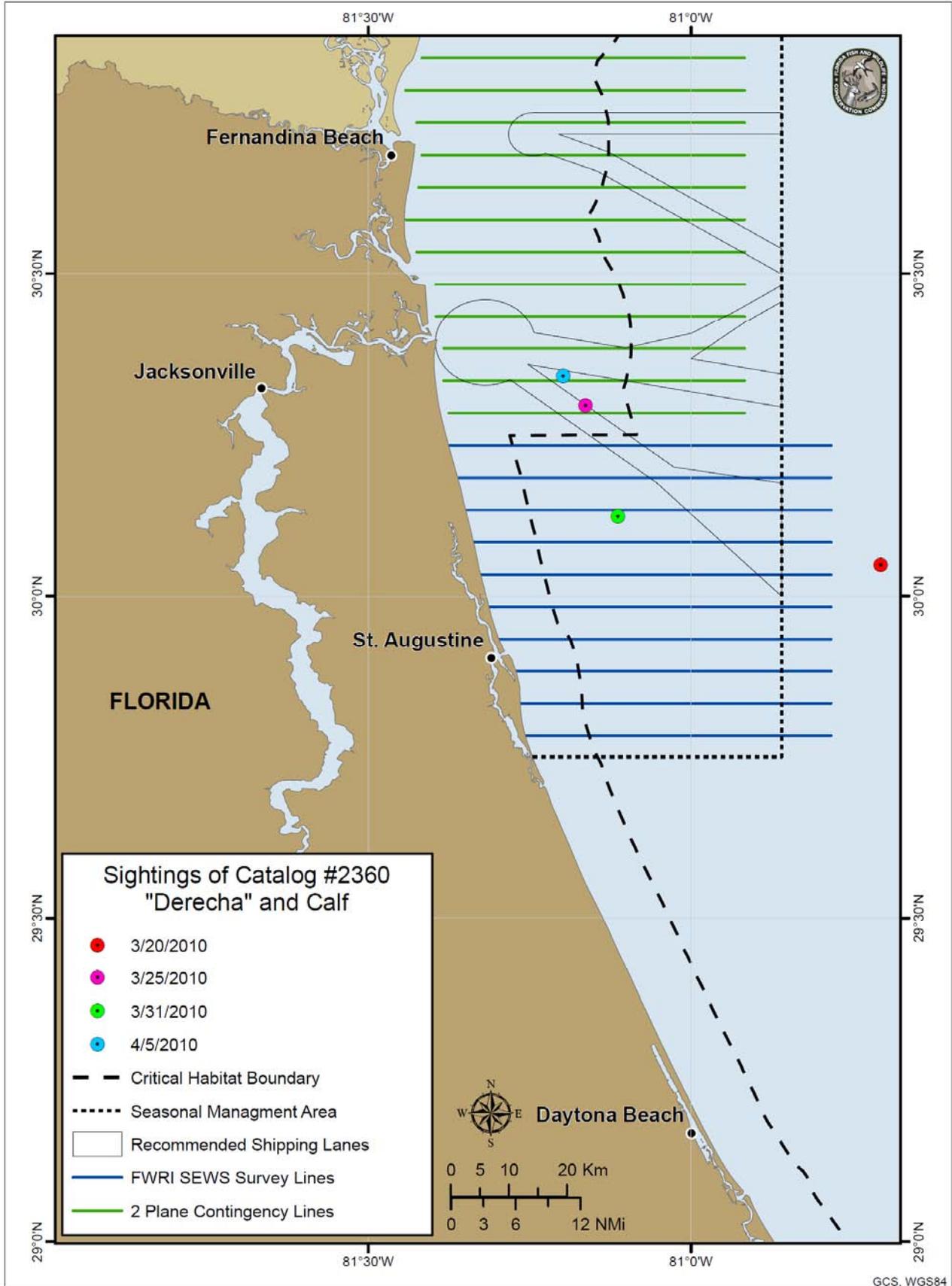


FIGURE 29: PHOTOGRAPH OF CATALOG #3745 ON 07MAR2010



Figure 29: Note 2 separate wounds on back, see EVENTS: Vessel Related Injuries for details  
Photographer: Corey Accardo, FWC

FIGURE 30: PHOTOGRAPH OF THE 2008 CALF OF CATALOG #1703 ON 26FEB2010



Figure 30: Note wounds on right shoudler, across blowholes, and along the right side of the rostrum, see EVENTS: Vessel Related Injuries for details

Photographer: Katie Jackson, FWC

FIGURE 31: PHOTOGRAPH OF THE 2009 CALF OF CATALOG #1608 ON 18JAN2010



Figure 31: Note comet-like wound on upper back, see EVENTS: Vessel Related Injuries for details

Photographer: Jennifer Jakush, FWC

FIGURE 32: PHOTOGRAPH OF SEASON CODE WHALE "S038" ON 14FEB2010

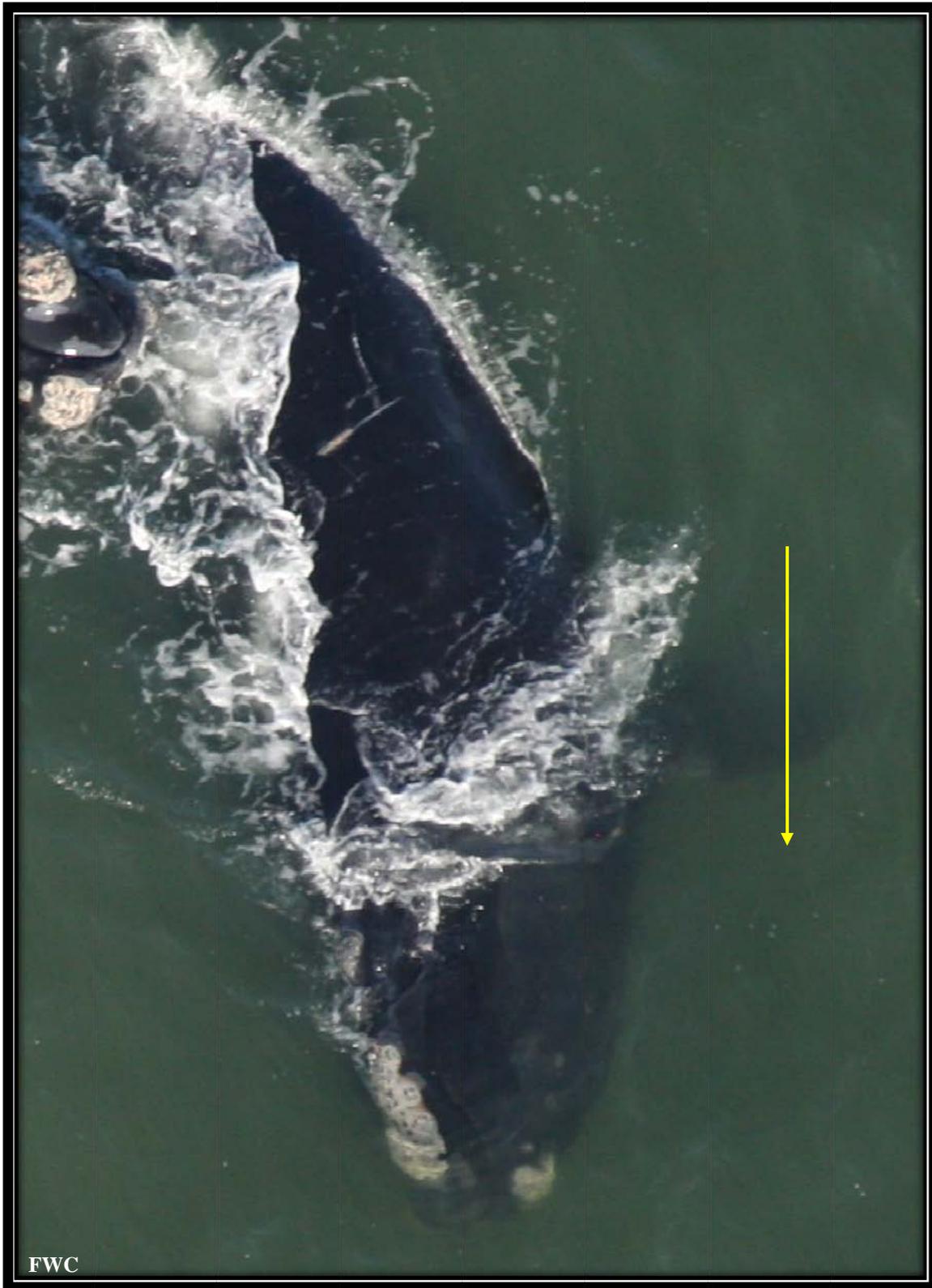


Figure 32: Note wounds on left side of body, see EVENTS: Vessel Related Injuries for details

Photographer: Amy Willoughby, FWC

FIGURE 33: MAP OF SEUS 2009-2010 WHALE/VESSEL INTERACTIONS

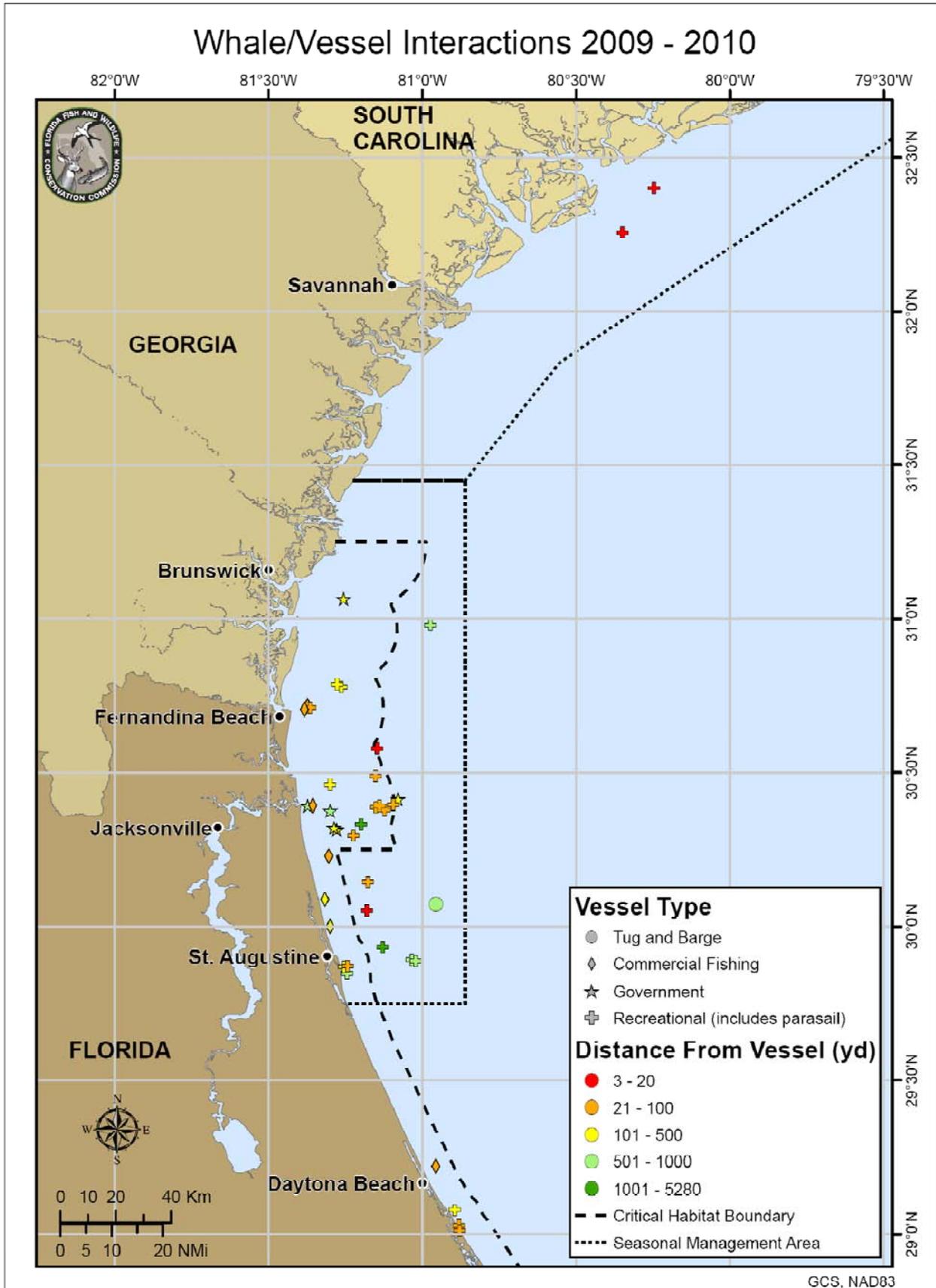


FIGURE 34: MAP OF 2009-2010 SEASON EWS WHALE ALERTS

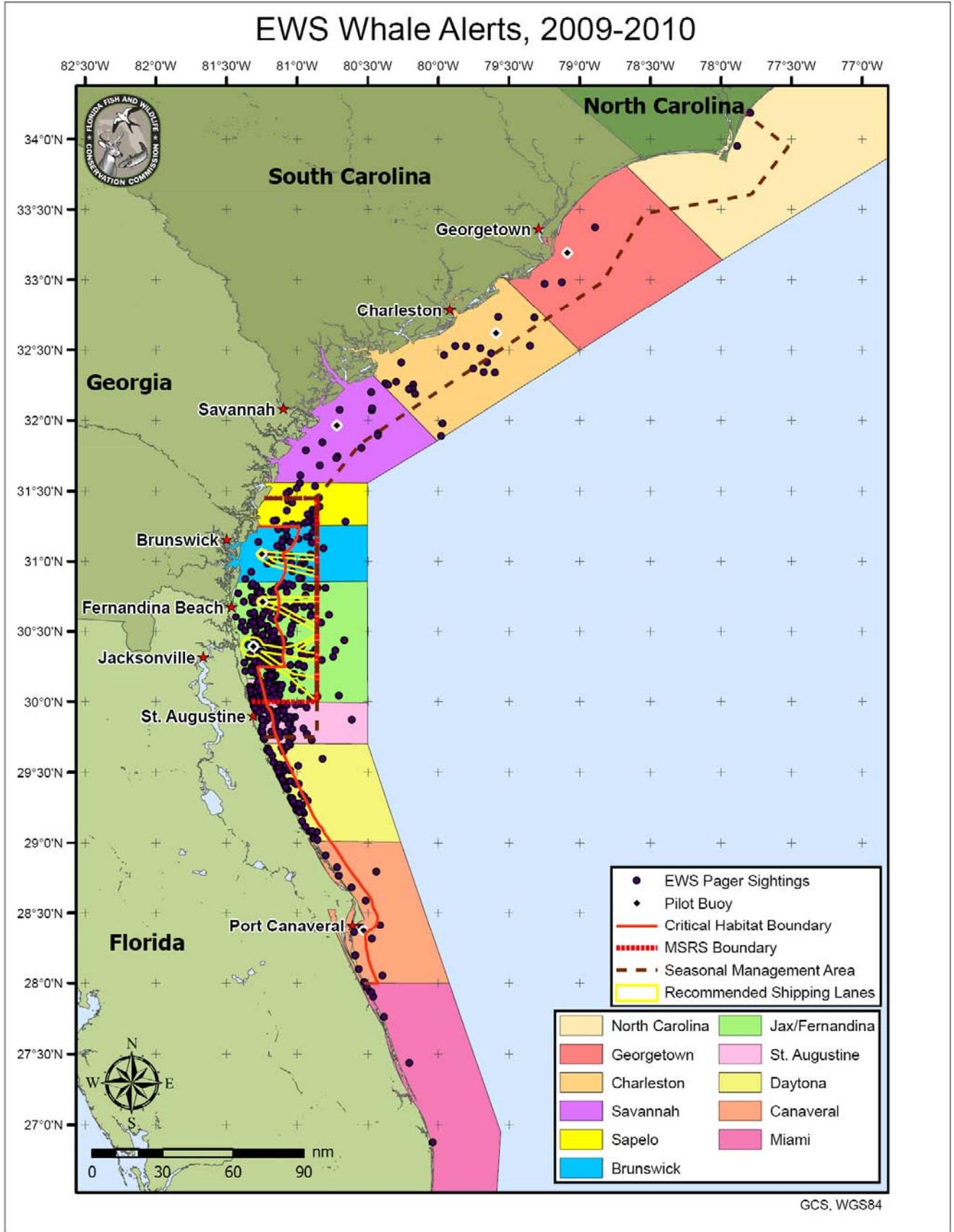


FIGURE 35: CHARTS COMPARING SIGHTING SOURCES FOR 2009-2010 SEASON AND 2008-2009 SEASON EWS WHALE ALERTS

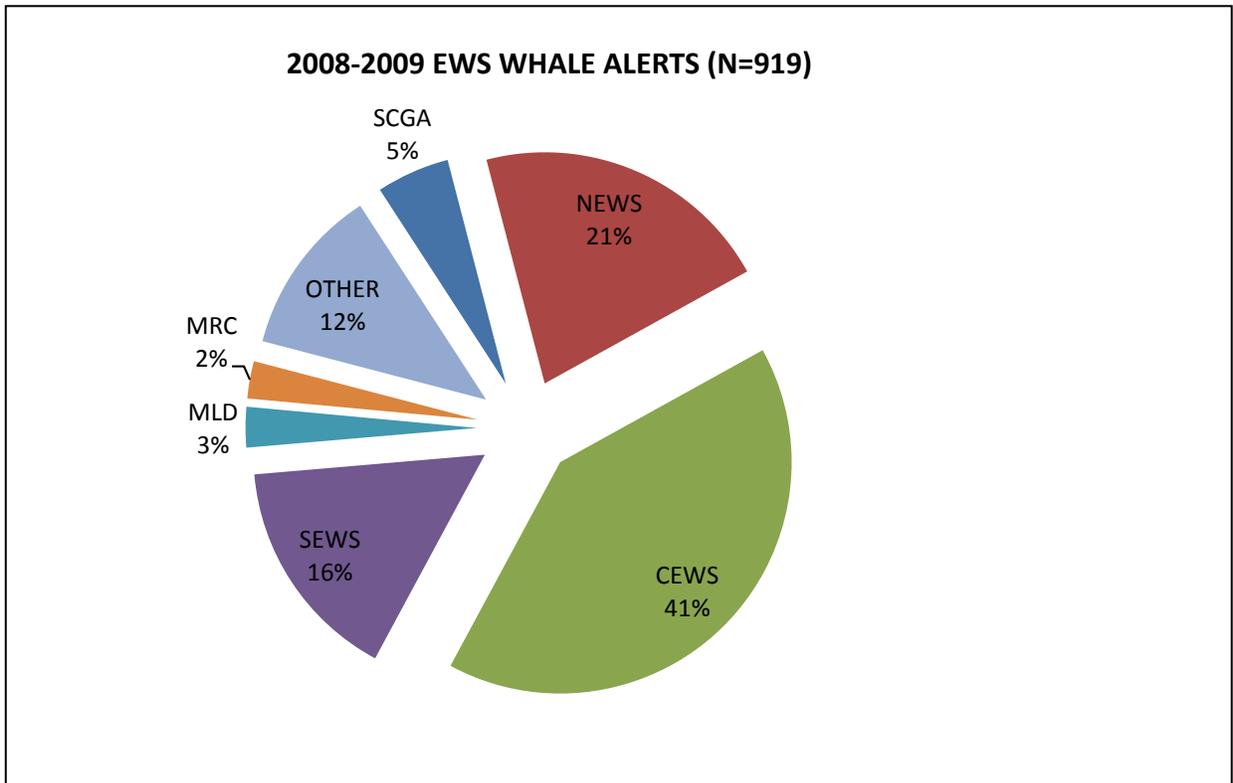
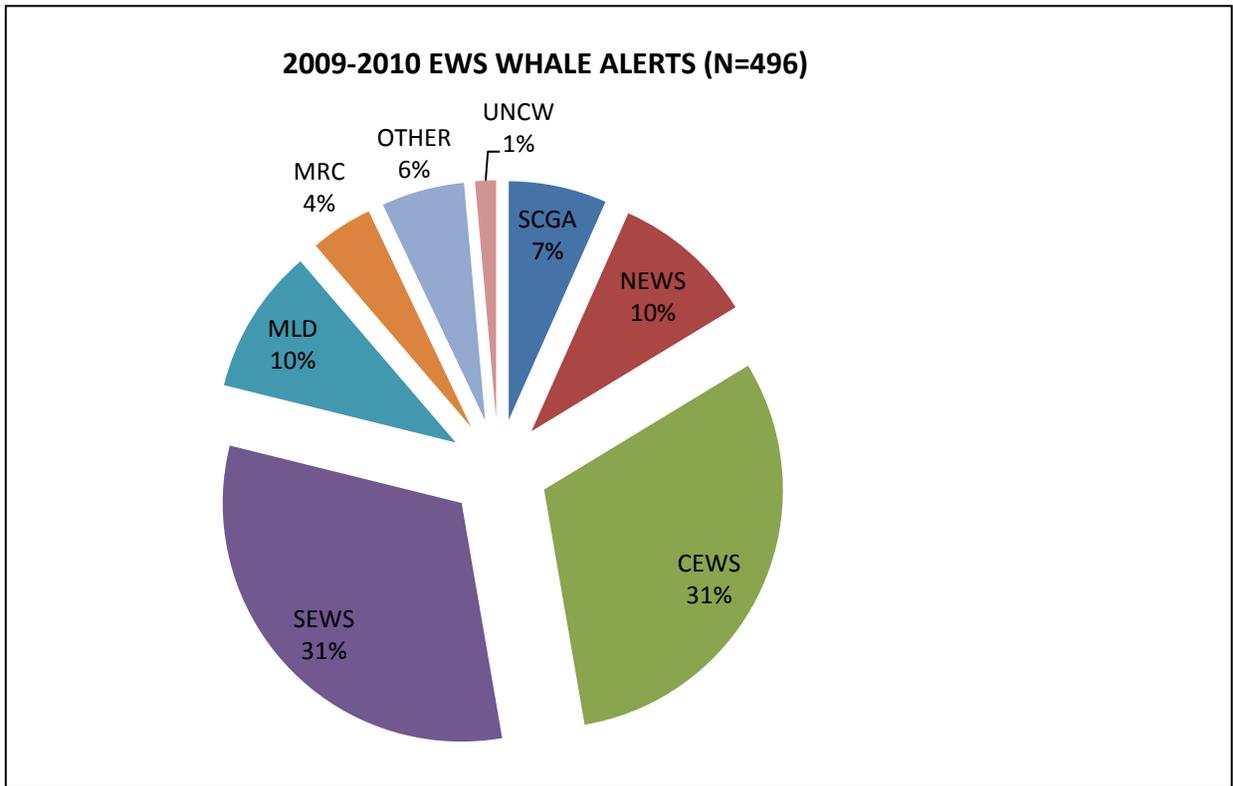


FIGURE 36: MAP OF FWRI 2009-2010 SAG AND NON-SAG SIGHTINGS

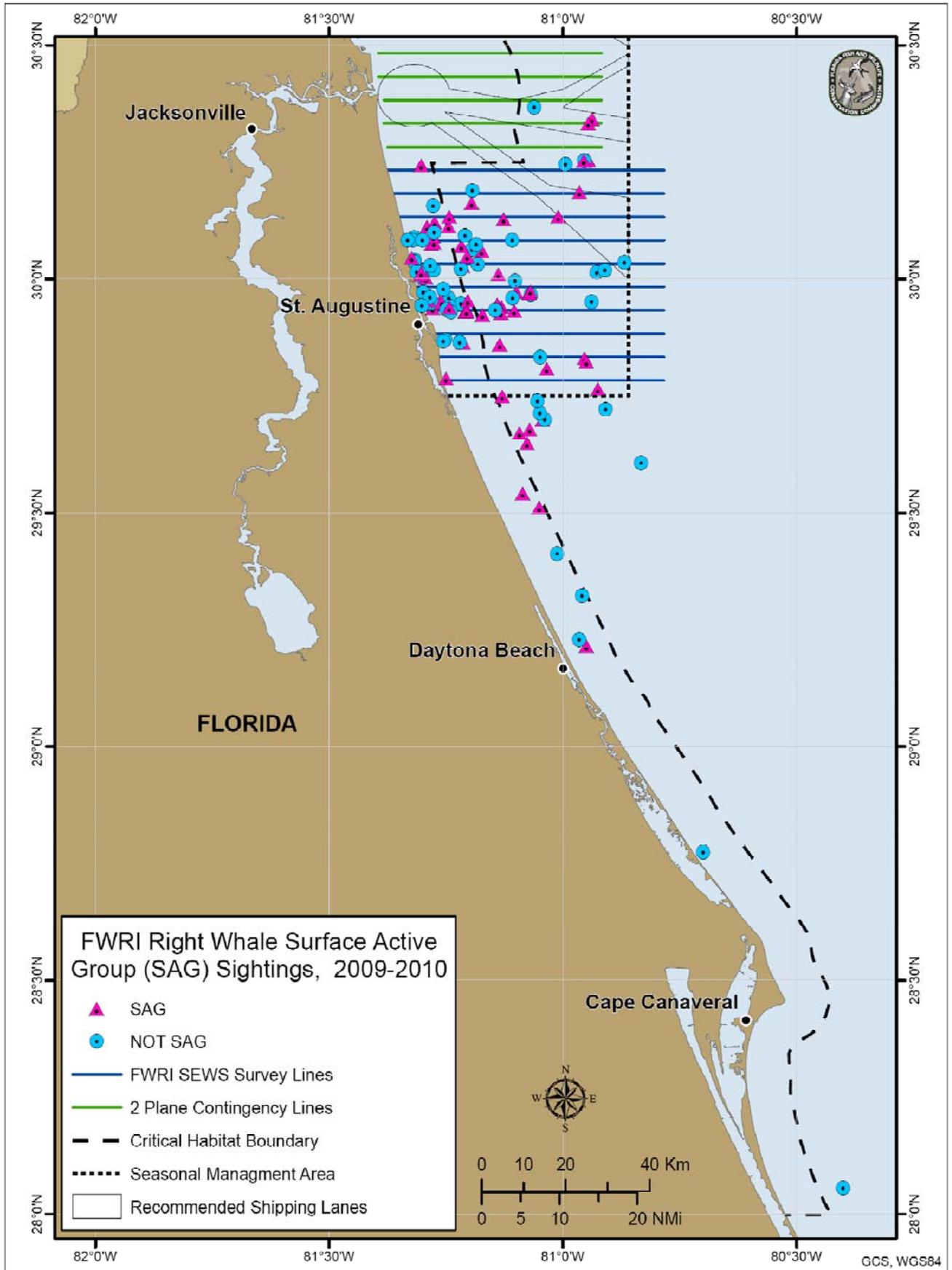


TABLE 1: EWS SURVEY TRACKLINE WAYPOINTS AND NAUTICAL MILEAGE

All EWS Waypoints

EWS Line	Latitude	Longitude (Eastern Point)
1	31°26.0	-080°38.0
2	31°23.0	-080°38.0
3	31°20.0	-080°40.0
4	31°17.0	-080°40.0
5	31°14.0	-080°44.0
6	31°11.0	-080°44.0
7	31°08.0	-080°47.0
8	31°05.0	-080°47.0
9	31°02.0	-080°47.0
10	30°59.0	-080°47.0
11	30°56.0	-080°47.0
12	30°53.0	-080°47.0
13	30°50.0	-080°47.0
14	30°47.0	-080°47.0
15	30°44.0	-080°47.0
16	30°41.0	-080°47.0
17	30°38.0	-080°47.0
18	30°35.0	-080°47.0
19	30°32.0	-080°47.0
20	30°29.0	-080°47.0
21	30°26.0	-080°47.0
22	30°23.0	-080°47.0
23	30°20.0	-080°47.0
24	30°17.0	-080°47.0
25	30°14.0	-080°47.0
26	30°11.0	-080°47.0
27	30°08.0	-080°47.0
28	30°05.0	-080°47.0
29	30°02.0	-080°47.0
30	29°59.0	-080°47.0
31	29°56.0	-080°47.0
32	29°53.0	-080°47.0
33	29°50.0	-080°47.0
34	29°47.0	-080°47.0

FWRI SEWS Survey Waypoints

EWS Line	Latitude	Longitude (Eastern Point)	Nautical Mileage
25	30°14.0	-080°47.0	30.87
26	30°11.0	-080°47.0	30.60
27	30°08.0	-080°47.0	29.97
28	30°05.0	-080°47.0	29.07
29	30°02.0	-080°47.0	28.80
30	29°59.0	-080°47.0	28.35
31	29°56.0	-080°47.0	27.00
32	29°53.0	-080°47.0	26.10
33	29°50.0	-080°47.0	25.65
34	29°47.0	-080°47.0	25.20

2 Plane Contingency Plan  
FWRI typical waypoints

EWS Line	Latitude	Longitude (Eastern Point)
15	30°44.0	-080°55.0
16	30°41.0	-080°55.0
17	30°38.0	-080°55.0
18	30°35.0	-080°55.0
19	30°32.0	-080°55.0
20	30°29.0	-080°55.0
21	30°26.0	-080°55.0
22	30°23.0	-080°55.0
23	30°20.0	-080°55.0
24	30°17.0	-080°55.0
25	30°14.0	-080°55.0
26	30°11.0	-080°55.0
27	30°08.0	-080°55.0
28	30°05.0	-080°55.0
29	30°02.0	-080°55.0
30	29°59.0	-080°55.0

1 Plane Contingency Plan  
Waypoints

EWS Line	Latitude	Longitude (Eastern Point)
5	31°14.0	-081°00.0
6	31°11.0	-081°00.0
7	31°08.0	-081°00.0
8	31°05.0	-081°00.0
9	31°02.0	-081°00.0
10	30°59.0	-081°00.0
11	30°56.0	-081°00.0
12	30°53.0	-081°00.0
13	30°50.0	-081°00.0
14	30°47.0	-081°00.0
15	30°44.0	-081°00.0
16	30°41.0	-081°00.0
17	30°38.0	-081°00.0
18	30°35.0	-081°00.0
19	30°32.0	-081°00.0
20	30°29.0	-081°00.0
21	30°26.0	-081°00.0
22	30°23.0	-081°00.0
23	30°20.0	-081°00.0
24	30°17.0	-081°00.0
25	30°14.0	-081°00.0

Total Nautical Mileage for FWRI SEWS Survey: 281.6

TABLE 2: FWRI 2009-2010 AERIAL SURVEY ACTIVITIES

Date	Full SEWS	None	Partial	1 or 2 Plane Cont.	Coastal Survey	EWS Lines (SEWS 25-34)	Number of RIWH Sightings	Number of RIWH Whales	M/C Pair	Hobbs	Nautical Miles Flown	Nautical miles flown sea state < 3	Coastal Nautical Miles	WVI	Number HUWH Sightings	Comments
1-Dec-09		X														No fly - high wind
2-Dec-09		X														No fly - high wind
3-Dec-09		X														No fly - high wind
4-Dec-09			X			25-34	0	0	0	3.0	164.59	143.56				All lines flown N to S. Lines 29-32 cut due to fog bank at approximately 8113W. Lines 33-34 cut at the 8059W due to cloud bank and increased sea state.
5-Dec-09		X														No fly - rain and high wind
6-Dec-09		X														No fly - high wind and low ceiling. Standby due to fog.
7-Dec-09		X														No fly - high wind
8-Dec-09				X		17-30	0	0	0	5.1	344.09	344.09				2-plane contingency. Lines 17-30 flown S to N.
9-Dec-09		X														No fly - high wind and afternoon rain
10-Dec-09		X														No fly - high wind
11-Dec-09		X														No fly - high wind
12-Dec-09		X														No fly - high wind and rain
13-Dec-09		X														No fly - high wind, low ceiling. Standby due to fog.
14-Dec-09			X			25-34	0	0	0	3.7	267.27	267.27				All 10 lines flown S to N. Standby due to fog. Line 25-26 cut at 8055W due to diminishing daylight. Patchy fog offshore lines 29-34.
15-Dec-09			X			25-34	0	0	0	3.0	186.54	186.54				All 10 lines flown N to S. Cut middle section of line 26 and offshore section of lines 27-34 due to fog. Standby due to fog.
16-Dec-09		X														No fly - high wind
17-Dec-09		X														No fly - high wind
18-Dec-09		X														No fly - high wind and rain
19-Dec-09		X														No fly - high wind
20-Dec-09		X														No fly - high wind
21-Dec-09		X														No fly - high wind

TABLE 2: FWRI 2009-2010 AERIAL SURVEY ACTIVITIES

Date	Full SEWS	None	Partial	1 or 2 Plane Cont.	Coastal Survey	EWS Lines (SEWS 25-34)	Number of RIWH Sightings	Number of RIWH Whales	M/C Pair	Hobbs	Nautical Miles Flown	Nautical miles flown sea state < 3	Coastal Nautical Miles	WVI	Number HUWH Sightings	Comments
22-Dec-09	X					25-34	0	0	0	4.7	281.61	281.61				All 10 lines flown N to S. Sea state comparison with CEWS.
23-Dec-09	X					25-34	0	0	0	4.2	281.61	281.61				All 10 lines flown N to S. Sea state comparison with CEWS.
24-Dec-09			X			25-34	0	0	0	3.3	227.74	197.22				All 10 lines flown N to S. Lines 27-34 cut due to sea state (27-30 cut at 8055W and 28-34 cut east of 8055W). Sea state comparison with CEWS.
25-Dec-09		X														No fly - high wind, rain, and low ceiling
26-Dec-09	X					25-34	1	1	0	3.8	281.61	281.61				All 10 lines flown N to S. Standby due to high seas.
27-Dec-09	X					25-34	0	0	0	3.9	281.61	271.80				All 10 lines flown N to S. Sea state comparison with CEWS.
28-Dec-09		X														No fly - high offshore wind
29-Dec-09		X														No fly - high wind
30-Dec-09	X					25-34	1	2	1	4.9	281.61	268.92				All 10 lines flown S to N
31-Dec-09	X					25-34	3	13	2	5.5	281.61	281.61		Yes		All 10 lines flown. Lines 29-34 flown S to N and Lines 25-28 N to S. Delayed takeoff due to low ceilings.
1-Jan-10		X														No fly - rain and wind
2-Jan-10		X														No fly - high wind
3-Jan-10	X					25-34	0	0	0	4.5	281.61	281.61				All 10 lines flown N to S. Standby due to high wind and sea state.
4-Jan-10		X														No fly - high wind
5-Jan-10		X														No fly - high wind
6-Jan-10			X			25-34	1	2	1	3.0	164.61	79.10				All 10 lines flown S to N and cut at the 8100W due to high wind and sea state offshore. Standby due to sea state and wind.
7-Jan-10	X					25-34	1	2	0	5.2	281.61	281.61				All 10 lines flown N to S
8-Jan-10		X														No fly - high wind
9-Jan-10		X														No fly - high wind
10-Jan-10		X														No fly - high wind

TABLE 2: FWRI 2009-2010 AERIAL SURVEY ACTIVITIES

Date	Full SEWS	None	Partial	1 or 2 Plane Cont.	Coastal Survey	EWS Lines (SEWS 25-34)	Number of RIWH Sightings	Number of RIWH Whales	M/C Pair	Hobbs	Nautical Miles Flown	Nautical miles flown sea state < 3	Coastal Nautical Miles	WVI	Number HUWH Sightings	Comments
11-Jan-10			X			25-34	5	9	0	5.6	253.33	238.87				All 10 lines flown N to S, cut lines 27-30 short due to high sea state offshore. Standby due to high wind.
12-Jan-10			X		X	25-34	5	15	1	6.1	134.91	127.76	90.44	Yes		All 10 lines flown N to S, cut all lines due to high sea state offshore. Also flew coastal survey to Daytona Beach, 2 miles offshore hdg S and 4 miles offshore hdg N (coastal = 90.44nm on track).
13-Jan-10			X			27-34	5	21	0	7.5	159.35	150.11				Lines 27-34 flown S to N. Sighted potentially entangled whale on line 33. Lines 27-32 cut offshore due to high sea state (27-30 cut at ~8055, 31-32 cut at ~8103.) Did not fly lines 24 and 25 due to approaching sunset.
14-Jan-10	X					25-34	5	21	0	6.0	281.61	281.61				All 10 lines flown N to S
15-Jan-10	X					25-34	5	11	0	5.9	281.61	267.34				EWS lines 33-34 flown S to N, two additional track lines (2944N and 2941N) flown N to S due to low SST and whale abundance in area, then EWS lines 25-32 flown S to N. The nautical mileage for the two additional lines was 47.34nm total.
16-Jan-10		X														No fly - fog and high wind
17-Jan-10		X														No fly - high wind
18-Jan-10			X			25-34	2	3	0	5.3	271.76	266.17				All 10 lines flown N to S. Cut lines 27-30 short due to high offshore sea state. Flew two additional track lines (2944N and 2941N), NM=47.34. Standby due to high wind offshore.
19-Jan-10	X					25-34	11	21	2	7.0	281.61	281.61				All 10 lines flown N to S, plus two additional track lines (2944N and 2941N), NM=47.34nm.
20-Jan-10	X					25-34	6	13	1	5.9	281.61	281.61		Yes		All 10 lines flown, lines 25-30 flown N to S and lines 31-34 flown S to N.

TABLE 2: FWRI 2009-2010 AERIAL SURVEY ACTIVITIES

Date	Full SEWS	None	Partial	1 or 2 Plane Cont.	Coastal Survey	EWS Lines (SEWS 25-34)	Number of RIWH Sightings	Number of RIWH Whales	M/C Pair	Hobbs	Nautical Miles Flown	Nautical miles flown sea state < 3	Coastal Nautical Miles	WVI	Number HUWH Sightings	Comments
21-Jan-10		X														No fly - high wind and rain
22-Jan-10			X				12	25	0	2.3	237.45	175.57				No survey lines flown. Sighted SAG while transiting to northern survey line, landed due to an approaching fog bank from the north after completing sighting data. Standby due to fog and low ceilings.
23-Jan-10		X														No fly - high wind
24-Jan-10		X														No fly - high wind
25-Jan-10				X		17-30	9	21	1	7.7	319.51	281.85				Survey flown N to S. Lines 17-26 flown east to the 8055W. Line 26 cut inshore due to high sea state. Lines 27-28 flown out to the 8047W and cut inshore due to high sea state. Eastbound on line 29 a large group of whales was sighted. While completing sighting data the sea state increased significantly, so lines 29-30 were cut offshore due to sea state.
26-Jan-10				X		21-28	1	1	0	3.2	171.71	147.60				Survey flown N to S. All lines cut offshore due to high sea state. Transited south along coast to southern end of survey area (sighted Eg) and then aborted survey due to high sea state.
27-Jan-10				X		21-26;33-34	2	8	0	5.1	191.20	175.50				Flew a portion of lines 23-24 S-N then landed due to increased sea state. Standby from 1000-1330 due to high sea state. Flew lines 21-26 N to S (cut lines 25-26 at 8100) and lines 33-34 S to N.
28-Jan-10				X		17-34	9	28	1	7.6	419.49	419.49		Yes		Lines 17-34 flown N to S
29-Jan-10				X		17-34	6	20	0	8.0	419.49	419.49				Lines 17-30 flown N to S
30-Jan-10		X														No fly - rain and high wind
31-Jan-10		X														No fly - high wind
1-Feb-10		X														No fly - high wind

TABLE 2: FWRI 2009-2010 AERIAL SURVEY ACTIVITIES

Date	Full SEWS	None	Partial	1 or 2 Plane Cont.	Coastal Survey	EWS Lines (SEWS 25-34)	Number of RIWH Sightings	Number of RIWH Whales	M/C Pair	Hobbs	Nautical Miles Flown	Nautical miles flown sea state < 3	Coastal Nautical Miles	WVI	Number HUWH Sightings	Comments
2-Feb-10		X														No fly - fog, rain and high wind
3-Feb-10		X														No fly - high wind
4-Feb-10		X														No fly - high wind
5-Feb-10		X														No fly - high wind and rain
6-Feb-10			X			25-30	5	17	0	5.0	116.69	36.59				Lines 25-30 flown N to S, lines 25-28 cut at 8100W and lines 29-30 cut at 8055W due to high sea state offshore. Flew two additional tracklines (2944N and 2941N out to 8100W, NM= 23.94nm) in response to sighting report from public. Transit south on track (NM= 36.15nm).
7-Feb-10		X														No fly - high wind
8-Feb-10			X			25-29; 31-34	6	11	0	5.4	170.13	94.50				Flew lines 25-29 N to S. Landed after line 28 due to high sea state. Standby until 15:15 due to high sea state. Started survey on line 29, cut at 8111W and redirected south to cover southern section because of planned USCG live fire exercises in the vicinity of recent whale sightings (2942.1N 08102.7W). Flew two additional tracklines (2944N and 2941N, NM=47.34) then flew lines 31-34 S to N. Cut lines 33-34 at the 8108W and lines 31-32 at the 8100W due to approaching sunset.
9-Feb-10			X			29-34	6	15	0	3.7	158.77	158.77				Flew lines 29-34 S to N. Cut line 29 at 8116W after last pass from sighting number 6 and aborted remainder of survey due to incoming rain.
10-Feb-10		X														No fly - high wind

TABLE 2: FWRI 2009-2010 AERIAL SURVEY ACTIVITIES

Date	Full SEWS	None	Partial	1 or 2 Plane Cont.	Coastal Survey	EWS Lines (SEWS 25-34)	Number of RIWH Sightings	Number of RIWH Whales	M/C Pair	Hobbs	Nautical Miles Flown	Nautical miles flown sea state < 3	Coastal Nautical Miles	WVI	Number HUWH Sightings	Comments
11-Feb-10	X				X	25-34	1	2	1	5.0	240.23	227.30	123.39			All 10 lines flown N to S. Cut lines 27-28 at 8055W due to high sea state. Flew two additional track lines (2944N and 2941N, NM=42.39nm) and coastal to Ponce Inlet. The 2941N line was cut 5nm east of the shoreline, coastal survey was flown 5nm offshore south and 2nm offshore north (NM=81.00nm).
12-Feb-10		X														No fly - high wind and rain
13-Feb-10		X														No fly - high wind
14-Feb-10			X			25-34	15	38	0	7.5	270.40	249.74				All 10 lines flown N to S. Cut lines 27-28 at 8050W due to high sea state and cut inshore portion of line 31 due to sighting near cross beach location. Standby due to high wind offshore.
15-Feb-10			X		X	25-34	14	34	1	6.4	111.36	43.36	53.84			Lines 29-34 flown S to N and cut at various points due to high sea state. Tracked N with multiple sightings from line 29. After finishing sighting, went back on track on line 25 offshore (8100W) and flew west on track. Lines 25 to 29 flown N to S and cut at various points due to high sea state. After refuel flew a coastal to Flagler, 2nm offshore south and 5nm offshore north. (Coastal = 53.84NM)
16-Feb-10		X														No fly - high wind
17-Feb-10		X														No fly - high wind
18-Feb-10		X														No fly - high wind
19-Feb-10			X			25-34	20	53	0	8.3	252.81	252.81		Yes		All 10 lines flown N to S. Cut line 31-34 at 8055W due to approaching sunset.

TABLE 2: FWRI 2009-2010 AERIAL SURVEY ACTIVITIES

Date	Full SEWS	None	Partial	1 or 2 Plane Cont.	Coastal Survey	EWS Lines (SEWS 25-34)	Number of RIWH Sightings	Number of RIWH Whales	M/C Pair	Hobbs	Nautical Miles Flown	Nautical miles flown sea state < 3	Coastal Nautical Miles	WVI	Number HUWH Sightings	Comments
20-Feb-10			X		X	None	15	31	3	9.4	0.00	0.00	475.14	Yes	3	Flew offshore coastal survey (4 and 8 miles from shoreline) from St. Augustine (2958N) to New Smyrna (2855N) and nearshore coastal survey (2nm and 6nm from shoreline) from New Smyrna (2855N) to Tequesta (2700N) including 12 transect lines (4 miles apart) off Cape Canaveral.
21-Feb-10			X		X	33-34	12	37	3	9.1	36.45	36.45	447.54		1	Flew EWS lines 33-34 out to 8055W. Flew coastal survey from St. Augustine to Lake Worth Inlet with 16 east/west transect lines between St. Augustine and Ormond Beach and around Canaveral. Flew lines 2944N-2933N to 8047W and lines 2929N-2917N to 8045W, lines cut 3nm offshore on the western end of the transect due to MLD survey. Coastal survey south 4nm offshore to 2855N and 2nm offshore to 2847N. Flew lines 2847N-2835N out to 8020W and lines 2831N-2819N out to 8015W. Coastal survey south 2nm offshore to 2750N. Coastal survey north at 6nm offshore to 2855N and 8nm offshore to 2950N.
22-Feb-10		X														No fly - rain and wind
23-Feb-10			X			25-34	8	19	0	5.9	238.00	238.00				Standby due to fog. Lines 29-34 flown S to N and lines 25-28 N to S. Cut lines 31-34 offshore due to fog and lines 27-28 at 8100W due to approaching sunset. Attempted to verify land-based sighting off Jax Beach before completing lines 25-28.

TABLE 2: FWRI 2009-2010 AERIAL SURVEY ACTIVITIES

Date	Full SEWS	None	Partial	1 or 2 Plane Cont.	Coastal Survey	EWS Lines (SEWS 25-34)	Number of RIWH Sightings	Number of RIWH Whales	M/C Pair	Hobbs	Nautical Miles Flown	Nautical miles flown sea state < 3	Coastal Nautical Miles	WVI	Number HUWH Sightings	Comments
24-Feb-10			X			25-34	1	2	1	4.2	243.81	216.36				Flew EWS lines 24-34 N to S. Lines 31-32 cut at 8055W due to USCG exercise and lines 33-34 due to high sea state.
25-Feb-10		X														No fly - high wind
26-Feb-10			X		X	25, 27-34	2	5	0	5.3	224.89	206.36	145.07			Standby due to high wind. Attempted survey N-S, aborted due to sea state. Flew nearshore coastal survey (2nm and 4.5nm from shoreline from Ponte Vedra to Daytona (2900N). Flew two additional tracklines (2944N and 2941N out to 8055W, NM=26.27nm). Coastal survey NM flown on track = 118.8. Then flew survey lines 34-27 S-N.
27-Feb-10			X			25-26,29-34	0	0	0	3.1	222.57	211.31				Lines 29-34 flown S to N. Lines 25-26 flown N to S. Cut lines 27-28 due to reduced visibility.
28-Feb-10		X														No fly - high wind
1-Mar-10	X				X	25-34	7	17	3	8.0	281.61	281.61	168.01			Flew over St. Augustine Inlet and then lines 25-34 flown N to S. Coastal survey south 4nm offshore to 2855N and 2nm offshore to 2832N; north 6nm offshore to 2855N and 8nm offshore to 2955N. Coastal survey NM on track = 168.01nm.
2-Mar-10		X														No fly - wind and rain
3-Mar-10		X														No fly - high wind
4-Mar-10		X														No fly - high wind
5-Mar-10		X														No fly - high wind
6-Mar-10			X			25-34	3	7	1	4.3	218.36	214.85				All 10 lines flown N to S. Cut at various locations due to high sea state offshore.

TABLE 2: FWRI 2009-2010 AERIAL SURVEY ACTIVITIES

Date	Full SEWS	None	Partial	1 or 2 Plane Cont.	Coastal Survey	EWS Lines (SEWS 25-34)	Number of RIWH Sightings	Number of RIWH Whales	M/C Pair	Hobbs	Nautical Miles Flown	Nautical miles flown sea state < 3	Coastal Nautical Miles	WVI	Number HUWH Sightings	Comments
7-Mar-10			X			25, 30, 31-34	2	8	0	9.2	130.65	130.65			2	Began survey N to S. Sighted an entangled humpback from line 25. Tracked south with the humpback until the disentanglement team arrived. Flew line 30 west and landed to refuel. Began survey again S to N (lines 31-34). Broke track from line 31 to assist disentanglement team. Ended survey due to approaching sunset. HUWH whale sightings are same individual.
8-Mar-10	X				X	25-34	4	9	1	7.7	281.61	281.61	134.29		1	All 10 lines flown S to N. Flew offshore coastal survey to Ponce Inlet (2900N) and two additional track lines flown S to N (2944N and 2941N, 36.73nm). Coastal survey flown south 4nm and north 8nm from shoreline (97.56nm).
9-Mar-10	X				X	25-34	4	4	0	7.3	281.61	281.61	96.69	Yes	2	All 10 lines flown S to N. Verified sighting outside St. Augustine Inlet before beginning survey. Flew two additional track lines S to N (2941N and 2944N, 47.34nm). Flew nearshore coastal survey to Flagler Beach (2930N). Coastal flown 2nm and 6nm from shoreline (49.35nm).
10-Mar-10				X		17-32	8	23	1	9.3	383.04	380.65		Yes	1	Lines 17-24 flown S to N and lines 25-32 flown N to S. After completing survey attempted to relocate m/c pair for biopsy vessel.
11-Mar-10		X														No fly - wind and rain
12-Mar-10		X														No fly - rain
13-Mar-10		X														No fly - high wind

TABLE 2: FWRI 2009-2010 AERIAL SURVEY ACTIVITIES

Date	Full SEWS	None	Partial	1 or 2 Plane Cont.	Coastal Survey	EWS Lines (SEWS 25-34)	Number of RIWH Sightings	Number of RIWH Whales	M/C Pair	Hobbs	Nautical Miles Flown	Nautical miles flown sea state < 3	Coastal Nautical Miles	WVI	Number HUWH Sightings	Comments
14-Mar-10			X		X	33-34	1	1	0	3.2	222.50	191.43	203.03			Flew nearshore coastal survey from Ponte Vedra (3014N) to False Cape (2837N) and lines 33-34 S to N. Coastal survey flown 1.5nm and 4.5nm from shoreline (203.03nm). Lines 33-34 cut at 8100W due to sea state. From the 2950N line, flew North at 4.5nm off shore to the 3014N line. Turned West and bumped into 1.5nm off shore and flew South and into airport.
15-Mar-10		X														No fly - high wind
16-Mar-10		X														No fly - high wind
17-Mar-10	X				X	25-34	3	11	1	6.5	281.61	281.61	97.42	Yes		All 10 lines flown N to S. Nearshore coastal survey to Ponce Inlet (2905N). Coastal flown at 1.5nm and 3nm from shoreline (97.42nm).
18-Mar-10	X					25-34	0	0	0	4.8	281.61	241.14				All 10 lines flown N to S. Lines 25-30 cut due to high sea state offshore. Offshore portions of lines 25-30 were surveyed S to N later in the day when conditions improved. (Additional nautical mileage flown on lines 25 and 30 to complete offshore portion of survey = 43.42nm)
19-Mar-10	X					25-34	0	0	0	4.7	281.61	264.93				All 10 lines flown N to S. Flew two additional tracklines (2944N and 2941N, NM=47.34). Standby due to high wind offshore.
20-Mar-10	X					25-34	4	8	4	6.4	281.61	281.61				All 10 lines flown N to S. Flew two additional tracklines (2944N and 2941N, NM=47.34). Collected behavioral data for mom/calf pair after the UNCW/USWTR survey team witnessed the birth of the calf. Birth occurred approx 5nm east of the

TABLE 2: FWRI 2009-2010 AERIAL SURVEY ACTIVITIES

Date	Full SEWS	None	Partial	1 or 2 Plane Cont.	Coastal Survey	EWS Lines (SEWS 25-34)	Number of RIWH Sightings	Number of RIWH Whales	M/C Pair	Hobbs	Nautical Miles Flown	Nautical miles flown sea state < 3	Coastal Nautical Miles	WVI	Number HUWH Sightings	Comments
																SEWS line 29 (3002N).
21-Mar-10				X		21-30	0	0	0	3.5	235.44	235.44				2-plane contingency: Lines 21-30 flown N to S. Aborted remainder of survey due to rain and reduced visibility.
22-Mar-10				X		14-17, 19-24	0	0	0	3.7	237.45	175.57				Modified 2-plane contingency: Lines 19-24 and 14-17 flown S to N. Cut lines 19-22 due to high offshore sea state. CEWS survey landed due to mechanical issues, so our 2-plane configuration was modified to cover the Fernandina channel.
23-Mar-10				X		11-26	0	0	0	3.5	173.54	173.54				1-plane contingency: Lines 11-26 flown S to N. Cut lines 11-24 due to high offshore sea state. Line 5-10 not flown due to high sea state.
24-Mar-10				X		17-34	0	0	0	6.6	419.49	419.49				2-plane contingency. Lines 17-34 flown N to S.
25-Mar-10				X		17-32	1	2	1	6.2	383.04	383.04				2-plane contingency. Lines 17-32 flown N to S.
26-Mar-10		X														No fly - low ceilings, high wind
27-Mar-10		X														No fly - high wind
28-Mar-10		X														No fly - high wind
29-Mar-10	X					25-34	1	2	1	3.9	281.61	281.61				All 10 lines flown N to S. Standby due to high wind.

TABLE 2: FWRI 2009-2010 AERIAL SURVEY ACTIVITIES

Date	Full SEWS	None	Partial	1 or 2 Plane Cont.	Coastal Survey	EWS Lines (SEWS 25-34)	Number of RIWH Sightings	Number of RIWH Whales	M/C Pair	Hobbs	Nautical Miles Flown	Nautical miles flown sea state < 3	Coastal Nautical Miles	WVI	Number HUWH Sightings	Comments
30-Mar-10			X		X	25-34	1	2	1	4.4	277.85	277.85	49.27		1	All 10 lines flown. Lines 25-30 flown N to S and lines 31-34 flown S to N. Coastal survey flown 1nm and 3nm from shoreline (49.27nm) to Flagler Beach Pier. Line 34 started 3nm from shoreline where the coastal intersected. Standby due to high wind and sea state.
31-Mar-10				X	X	17-34	3	6	3	8.8	419.24	419.24	154.34			2-Plane contingency: Lines 17-34 flown N to S. Coastal survey offshore along 8051W from 2944N to 3038N (nm=54nm) and 8047W from 3038N to 2941N (nm=57nm). Flew the two additional tracklines (2944N and 2941N, nm=43.34nm).
1-Apr-10			X		X	34	0	0	0	6.8	0.00	0.00	482.74			Extended season survey, Coastal survey flown 2nm from shoreline from St. Augustine to Canaveral (2829N). Flew 14 transect lines (6nm apart) from 2829N to 2947N. Western end of lines cut 5nm from shoreline and eastern end of lines cut at 8010W (southern 6 lines), 8020W (2 middle lines), and 8030W (northern 6 lines).
2-Apr-10		X														No fly - stand down
3-Apr-10		X														No fly - stand down
4-Apr-10				X		11-29 (odds)	0	0	0	6.0	475.98	475.98				Extended season survey, modified 1-Plane contingency: Lines 11-29 (3002N to 3056N) flown S to N east to 8040W. Every other transect line flown (10 lines total, transects 6nm apart). Standby due to fog.

TABLE 2: FWRI 2009-2010 AERIAL SURVEY ACTIVITIES

Date	Full SEWS	None	Partial	1 or 2 Plane Cont.	Coastal Survey	EWS Lines (SEWS 25-34)	Number of RIWH Sightings	Number of RIWH Whales	M/C Pair	Hobbs	Nautical Miles Flown	Nautical miles flown sea state < 3	Coastal Nautical Miles	WVI	Number HUWH Sightings	Comments
5-Apr-10				X		3-17 (odds)	1	2	1	7.1	548.24	548.24				Extended season survey: Take off at 1100(L), no standby. Extended season, modified 1-Plane contingency: Lines 3-17 (3126N to 3038N) flown S to N. Every other transect line flown (8 lines total, transects 6nm apart). Lines 3-5 east to 8010W, lines 7-9 east to 8030W, lines 11-17 east to 8040W. Broke from survey on line 13 to verify sighting off Jacksonville. Transit south at end of survey 5 miles offshore from 3114N - 3002N.
6-Apr-10		X														No fly - stand down
7-Apr-10		X														No fly - stand down
8-Apr-10		X														No fly - high wind
9-Apr-10		X														No fly - high wind
10-Apr-10		X														No fly - high wind
11-Apr-10		X														No fly - high wind
12-Apr-10		X														No fly - high wind
13-Apr-10		X														No fly - high wind
14-Apr-10		X														No fly - high wind
15-Apr-10		X														No fly - high wind

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
12/26/2009	1256	30.12201	-81.33337	A	2009CalfOf1151	UNK	1	SUB TR, BODO	SEWS001	
12/30/2009	1222	30.08340	-81.15093	A	1145	F	>29	W/CALF	SEWS002	
12/30/2009	1222	30.08340	-81.15093	B	2010CalfOf1145	UNK	C	CALF W/MOM	SEWS002	
12/31/2009	1147	30.01647	-81.12803	A	3142	F	9	W/CALF, BOD CNT, HD LFT, WH CHN	SEWS003	
12/31/2009	1147	30.01647	-81.12803	B	2010CalfOf3142	UNK	C	CALF W/MOM, BOD CNT	SEWS003	
12/31/2009	1256	30.24375	-81.30314	C	3530	M	UNK	SAG	SEWS005	
12/31/2009	1256	30.24375	-81.30314	D	2008CalfOf1408	UNK	2	SAG	SEWS005	
12/31/2009	1256	30.24375	-81.30314	E	2009CalfOf3440	UNK	1	SAG, POST	SEWS005	
12/31/2009	1256	30.24375	-81.30314	F	3670	F	4	SAG, BEL/BEL	SEWS005	
12/31/2009	1256	30.24375	-81.30314	G	3742	M	3	SAG, WH CHN, WH BEL, BEL/BEL	SEWS005	
12/31/2009	1256	30.24375	-81.30314	H	2008CalfOf2330	UNK	2	SAG, POST, BEL/BEL	SEWS005	
12/31/2009	1256	30.24375	-81.30314	I	3611	UNK	4	SAG	SEWS005	
12/31/2009	1256	30.24375	-81.30314	J	2008CalfOf1812	UNK	2	APPR	SEWS005	
12/31/2009	1256	30.24375	-81.30314	K	2009CalfOf3101	UNK	1	APPR	SEWS005	
12/31/2009	1319	30.25603	-81.31503	L	3180	F	9	W/CALF, BOD CNT, HD LFT	SEWS004	
12/31/2009	1319	30.25603	-81.31503	L	2010CalfOf3180	UNK	C	CALF W/MOM, BOD CNT	SEWS004	
1/6/2010	1352	29.98663	-81.12210	A	1145	F	>29	W/CALF	SEWS006	
1/6/2010	1352	29.98663	-81.12210	B	2010CalfOf1145	UNK	C	CALF W/MOM	SEWS006	
1/7/2010	1035	30.08319	-81.10891	A	3730	F	3	BOD CNT, HD LFT, BEL/BEL?	SEWS007	
1/7/2010	1035	30.08319	-81.10891	B	2008CalfOf1408	UNK	2	BOD CNT, HD LFT, ROLL, BEL/BEL?	SEWS007	
1/11/2010	1413	29.99589	-81.10222	A	S037	UNK	UNK	SUB TR, BOD CNT	SEWS008	
1/11/2010	1413	29.99589	-81.10222	B	3111	M	9	SUB TR, BOD CNT	SEWS008	
1/11/2010	1516	29.92404	-81.17159	C	3346	M	7	SAG, ENTGL	SEWS009	
1/11/2010	1516	29.92404	-81.17159	D	2007CalfOf3360	UNK	3	SAG	SEWS009	
1/11/2010	1538	29.94006	-81.13084	E	3660	M	4	BEL/BEL, WH CHN, WH BEL, SAG, HD LFT, ROLL	SEWS010	
1/11/2010	1538	29.94006	-81.13084	F	3302	M	7	BEL/BEL, WH CHN, WH BEL, SAG, HD LFT, ROLL	SEWS010	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
1/11/2010	1553	29.92868	-81.14407	G	CT05SEUS08	F	UNK	BRCH, UW EXH, APPR, SAG, MOPN, BLK BEL	SEWS010	
1/11/2010	1609	29.92727	-81.13256	H	S037	UNK	UNK	APPR, SAG, W/UNPH EG	SEWS010	
1/11/2010	1609	29.92727	-81.13256	I	NO PHOTOS	UNK	UNK	APPR, SAG	SEWS010	
1/12/2010	1126	29.88219	-81.02238	A	3180	F	9	W/CALF, BOD CNT	SEWS011	
1/12/2010	1126	29.88219	-81.02238	B	2010CalfOf3180	UNK	C	CALF W/MOM, BOD CNT	SEWS011	
1/12/2010	1208	29.97232	-81.10013	C	2008CalfOf1243	UNK	2	SAG, BEL/BEL	SEWS012	
1/12/2010	1208	29.97232	-81.10013	D	CT05SEUS08	F	UNK	SAG, BEL/BEL	SEWS012	
1/12/2010	1208	29.97232	-81.10013	E	2009CalfOf3101	UNK	1	SAG	SEWS012	
1/12/2010	1208	29.97232	-81.10013	F	3660	M	4	SAG, BEL/BEL, HD LFT	SEWS012	
1/12/2010	1208	29.97232	-81.10013	G	2007CalfOf3360	UNK	3	SAG	SEWS012	
1/12/2010	1449	29.21436	-80.95041	H	2009CalfOf1151	UNK	1	SAG, BODO, W/UNPH EG	SEWS013	
1/12/2010	1449	29.21436	-80.95041	I	3730	F	3	SAG, BODO, W/UNPH EG	SEWS013	
1/12/2010	1449	29.21436	-80.95041	J	3790	UNK	UNK	SAG, BODO, W/UNPH EG	SEWS013	
1/12/2010	1449	29.21436	-80.95041	K	NO PHOTOS	UNK	UNK	SAG, BODO	SEWS013	
1/12/2010	1449	29.21436	-80.95041	L	3648	M	4	SAG, BODO, W/UNPH EG, BEL UP, MALE, WH BEL, BLK CHN, DFCN?	SEWS013	
1/12/2010	1500	29.29912	-80.92016	M	3623	UNK	4	FLIP, LBTL, ROLL, WH CHN, WH BEL	SEWS014	
1/12/2010	1553	29.22895	-80.96552	N	3646	F	4	AGG VSL, BODO	SEWS015	
1/12/2010	1553	29.22895	-80.96552	O	UNID	UNK	UNK	AGG VSL, BODO	SEWS015	
1/13/2010	0958	29.83103	-80.95374	A	CT05SEUS08	F	UNK	SAG, SUB TR	SEWS016	
1/13/2010	0958	29.83103	-80.95374	B	BK01SEUS09	UNK	UNK	SAG, SUB TR, HD LFT	SEWS016	
1/13/2010	0958	29.83103	-80.95374	C	1934	F	21	SUB TR	SEWS016	
1/13/2010	0958	29.83103	-80.95374	D	3314	F	7	SUB TR	SEWS016	
1/13/2010	0958	29.83103	-80.95374	E	2007CalfOf3360	UNK	3	SAG, SUB TR	SEWS016	
1/13/2010	0958	29.83103	-80.95374	F	3520	F	5	SAG, LBTL, BRCH, BEL/BEL, BLK BEL?, FEM?, SUB TR	SEWS016	
1/13/2010	0958	29.83103	-80.95374	G	3346	M	7	SAG, ENTGL, SUB TR	SEWS016	
1/13/2010	0958	29.83103	-80.95374	1	3111	M	9	SAG, SUB TR	SEWS016	
1/13/2010	0958	29.83103	-80.95374	2	3302	M	7	SAG, SUB TR	SEWS016	
1/13/2010	1024	29.81057	-80.96017	H	3560	UNK	5	SAG, SUB TR, APPR	—	Joined SEWS016, not paged
1/13/2010	1050	29.82309	-80.94913	I	3541	M	5	SAG, SUB TR	—	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
1/13/2010	1050	29.82309	-80.94913	J	3660	M	4	SAG, SUB TR	—	
1/13/2010	1050	29.82309	-80.94913	K	2008CalfOf1208	UNK	2	WH CHN, WH BEL, LN GONE, SUB TR	—	
1/13/2010	1050	29.82309	-80.94913	L	3603	F	4	SAG, SUB TR	—	
1/13/2010	1050	29.82309	-80.94913	3	2008CalfOf1243	UNK	2	SAG, SUB TR	—	
1/13/2010	1403	29.72144	-80.90879	M	2008CalfOf1208	UNK	2	FLIP, W/UNPH EGS	—	Resight, not paged
1/13/2010	1403	29.72144	-80.90879	N	3346	M	7	LBTL, ENTGL, W/UNPH EGS	—	
1/13/2010	1403	29.72144	-80.90879	O	3520	F	5	W/UNPH EGS	—	
1/13/2010	1522	29.93210	-81.10339	P	2008CalfOf2330	UNK	2	SAG, BEL/BEL	SEWS017	
1/13/2010	1522	29.93210	-81.10339	Q	3504	UNK	5	SAG, WH CHN, WH BEL, BEL/BEL, MALE	SEWS017	
1/13/2010	1522	29.93210	-81.10339	R	2008CalfOf1812	UNK	2	SAG	SEWS017	
1/14/2010	1130	29.97400	-81.30700	A	S038	UNK	UNK		SEWS018	
1/14/2010	1320	29.86386	-81.21282	B	3670	F	4	SAG, FLIP, BLK CHN, BLK BEL, ROLL	SEWS020	
1/14/2010	1320	29.86386	-81.21282	C	3742	M	3	SAG, BEL/BEL, WH CHN, WH BEL	SEWS020	
1/14/2010	1320	29.86386	-81.21282	D	2008CalfOf1812	UNK	2	SAG	SEWS020	
1/14/2010	1320	29.86386	-81.21282	E	2008CalfOf3292	UNK	2	SAG, BEL/BEL	SEWS020	
1/14/2010	1320	29.86386	-81.21282	F	S039	UNK	UNK	SAG	SEWS020	
1/14/2010	1320	29.86386	-81.21282	G	3530	M	UNK	SAG	SEWS020	
1/14/2010	1320	29.86386	-81.21282	H	3245	M	8	SAG	SEWS020	
1/14/2010	1320	29.86386	-81.21282	I	3546	UNK	5	SAG	SEWS020	
1/14/2010	1339	29.87218	-81.21501	J	2008CalfOf2330	UNK	2		SEWS019	
1/14/2010	1455	29.78145	-81.17844	K	2009CalfOf3317	UNK	1	YRLG W/MOM, BODO	SEWS021	
1/14/2010	1455	29.78145	-81.17844	1	3317	F	7	W/YRLG	SEWS021	
1/14/2010	1532	29.86489	-81.22102	L-T	NO PHOTOS	UNK	UNK	W/UNPH EGS	—	Resight, not paged
1/15/2010	0932	29.78726	-81.24944	A	3530	M	UNK	SAG, POST	SEWS022	
1/15/2010	0932	29.78726	-81.24944	B	2008CalfOf1802	UNK	2	SAG	SEWS022	
1/15/2010	0932	29.78726	-81.24944	C	3245	M	8	SAG	SEWS022	
1/15/2010	0932	29.78726	-81.24944	D	2008CalfOf2330	UNK	2	SAG	SEWS022	
1/15/2010	0932	29.78726	-81.24944	E	3742	M	3	SAG	SEWS022	
1/15/2010	0932	29.78726	-81.24944	F	2008CalfOf3292	UNK	2	SAG	SEWS022	
1/15/2010	0932	29.78726	-81.24944	1	2008CalfOf1123	UNK	2	SAG	SEWS022	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
1/15/2010	1015	29.78451	-81.24313	G	2008CalfOf1812	UNK	2	BODO	SEWS022	
1/15/2010	1011	29.78679	-81.24670	H	3670	F	4	LOG, BODO	SEWS022	
1/15/2010	1020	29.79291	-81.25503	I	2008CalfOf3292	UNK	2		SEWS022	
1/15/2010	1038	29.79107	-81.24718	J	2009CalfOf3440	UNK	1	APPR, SAG	SEWS023	
1/18/2010	1418	29.88485	-81.03922	A	2009CalfOf1608	UNK	1	WH CHN, POST, SUB TR	SEWS024	
1/18/2010	1505	29.80831	-81.03428	B	3504	UNK	5	SAG, BEL/BEL, WH CHN, WH BEL, HD LFT	SEWS024	
1/18/2010	1505	29.80831	-81.03428	C	2008CalfOf2790	UNK	2	SAG, BEL/BEL, BLK CHN, BLK BEL, BEL UP		
1/19/2010	1039	30.07709	-81.22066	A	1701	F	23	W/CALF, BOD CNT	SEWS025	
1/19/2010	1039	30.07709	-81.22066	B	2010CalfOf1701	UNK	C	CALF W/MOM, BOD CNT	SEWS025	
1/19/2010	1058	30.04864	-81.25848	C	3142	F	9	W/CALF, BRCH, NURS, HD LFT, WH CHN, WH BEL, UW EXH, BOD CNT	SEWS026	
1/19/2010	1058	30.04864	-81.25848	D	2010CalfOf3142	UNK	C	CALF W/MOM, NURS, BOD CNT	SEWS026	
1/19/2010	1144	29.96555	-81.06907	E	2008CalfOf2790	UNK	2		SEWS027	
1/19/2010	1144	29.96555	-81.06907	F	2008CalfOf1408	UNK	2		SEWS027	
1/19/2010	1159	29.93995	-81.13649	G	3545	M	5	SAG, BEL/BEL	SEWS028	
1/19/2010	1159	29.93995	-81.13649	H	S041	UNK	UNK	SAG, BEL/BEL	SEWS028	
1/19/2010	1159	29.93995	-81.13649	I	BK02SEUS09	UNK	UNK	SAG, BEL/BEL	SEWS028	
1/19/2010	1208	29.92619	-81.14620	J	2009CalfOf3440	UNK	1		SEWS028	
1/19/2010	1215	29.93107	-81.15210	K	2009CalfOf1515	UNK	1	LOG	SEWS028	
1/19/2010	1226	29.94624	-81.14036	L	3504	UNK	5	SAG, BEL/BEL, BEL UP, MALE, WH CHN, WH BEL, HD LFT	SEWS028	
1/19/2010	1226	29.94624	-81.14036	M	3423	M	6	SAG, BEL/BEL, BLK BEL	SEWS028	
1/19/2010	1226	29.94624	-81.14036	N	CT05SEUS08	F	UNK	SAG, BEL/BEL, BEL UP, BLK BEL, FEM, HD LFT	SEWS028	
1/19/2010	1250	29.93995	-81.13649	O	NO PHOTOS	UNK	UNK	APPR	SEWS028	
1/19/2010	1300	29.95892	-81.10783	P	2009CalfOf1503	UNK	1		SEWS029	
1/19/2010	1300	29.95892	-81.10783	Q	2009CalfOf1151	UNK	1	FLIP, ROLL	SEWS029	
1/19/2010	1423	29.93307	-81.14474	R	2009CalfOf1515	UNK	1	WH CHN, WH BEL	—	Resight, not paged
1/19/2010	1423	29.93307	-81.14474	S	S041	UNK	UNK		—	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
1/19/2010	1423	29.93307	-81.14474	T	2009CalfOf3440	UNK	1		—	
1/19/2010	1452	29.88708	-81.06639	U	3351	M	7	FLIP	SEWS030	
1/20/2010	1003	30.20960	-81.31229	A	1701	F	23	W/CALF, LOG	SEWS031	
1/20/2010	1003	30.20960	-81.31229	B	2010CalfOf1701	UNK	C	CALF W/MOM	SEWS031	
1/20/2010	1050	30.05983	-81.17326	C	2009CalfOf1515	UNK	1	SAG, WH CHN, WH BEL	SEWS032	
1/20/2010	1050	30.05983	-81.17326	D	3421	M	6	SAG	SEWS032	
1/20/2010	1050	30.05983	-81.17326	E	2008CalfOf2790	UNK	2	SAG, BEL/BEL	SEWS032	
1/20/2010	1050	30.05983	-81.17326	F	3545	M	5	SAG, BEL/BEL	SEWS032	
1/20/2010	1104	30.06517	-81.14985	G	2008CalfOf1408	UNK	2	SUB TR	SEWS032	
1/20/2010	1120	30.06216	-81.19476	H	S041	UNK	UNK	LOG	SEWS032	
1/20/2010	1120	30.06216	-81.19476	I	CT05SEUS08	F	UNK	LOG	SEWS032	
1/20/2010	1225	30.05220	-81.18059	J	S041	UNK	UNK	LOG, AGG VSL	—	Resight, not paged
1/20/2010	1402	29.83354	-81.04837	K	3314	F	7		SEWS033	
1/20/2010	1402	29.83354	-81.04837	L	3701	UNK	3		SEWS033	
1/20/2010	1402	29.83354	-81.04837	M	2008CalfOf1245	UNK	2		SEWS033	
1/22/2010	1101	30.07559	-81.28064	A	3681	UNK	4	SAG	SEWS035	
1/22/2010	1101	30.07559	-81.28064	B	3620	M	4	SAG, WH CHN, WH BEL	SEWS035	
1/22/2010	1101	30.07559	-81.28064	C	3603	F	4	SAG, BEL UP, BLK BEL, FEM	SEWS035	
1/22/2010	1108	30.07815	-81.27624	D	3530	M	UNK	SAG	SEWS034	
1/22/2010	1108	30.07815	-81.27624	E	3742	M	3	SAG	SEWS034	
1/22/2010	1108	30.07815	-81.27624	2	UNID	UNK	UNK	SAG	SEWS034	
1/22/2010	1111	30.09607	-81.27977	F	3730	F	3	LOG	SEWS034	
1/22/2010	1120	30.08953	-81.27064	G	2009CalfOf1266	F	1	LOG	SEWS037	
1/22/2010	1140	30.09067	-81.27674	H	3714	UNK	3	SAG	SEWS037	
1/22/2010	1140	30.09067	-81.27674	I	3740	UNK	3	SAG	SEWS037	
1/22/2010	1140	30.09067	-81.27674	J	3617	UNK	4	SAG, HD LFT	SEWS037	
1/22/2010	1140	30.09067	-81.27674	K	3530	M	UNK	SAG	SEWS037	
1/22/2010	1147	30.10652	-81.27549	L	3314	F	7		SEWS036	
1/22/2010	1153	30.11227	-81.27830	M	3301	M	7	BODO	SEWS036	
1/22/2010	1202	30.11164	-81.29107	N	2007CalfOf3360	UNK	3	SAG	SEWS037	
1/22/2010	1202	30.11164	-81.29107	O	NO PHOTOS	UNK	UNK	SAG	SEWS037	
1/22/2010	1202	30.11164	-81.29107	1	BK56	UNK	UNK		SEWS037	
1/22/2010	1206	30.11147	-81.28305	P	3545	M	5	BODO	SEWS037	
1/22/2010	1211	30.12123	-81.27502	Q	2009CalfOf1151	UNK	1	SAG, BODO	SEWS036	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
1/22/2010	1211	30.12123	-81.27502	R	3623	UNK	4	SAG, BODO	SEWS036	
1/22/2010	1211	30.12123	-81.27502	S	S043	UNK	UNK	SAG, BODO	SEWS036	
1/22/2010	1215	30.09945	-81.27589	T	3346	M	7	ENTGL, W/UNPH EG	SEWS037	
1/22/2010	1215	30.09945	-81.27589	U	UNID	UNK	UNK		SEWS037	
1/22/2010	1215	30.09945	-81.27589	V	3530	M	UNK	W/UNPH EG	SEWS037	
1/22/2010	1228	30.11263	-81.27908	W	3545	M	5	BRCH, MOPN, BLK CHN, CHN BRCH	SEWS036	
1/25/2010	0913	30.08019	-81.31535	A	2009CalfOf1240	M	1	FLIP, LBTL, ROLL, BLK BEL	SEWS038	
1/25/2010	0938	30.06604	-81.32315	B	1701	F	23	W/CALF	SEWS039	
1/25/2010	0938	30.06604	-81.32315	C	2010CalfOf1701	UNK	C	CALF W/MOM	SEWS039	
1/25/2010	1048	30.54370	-81.25961	D	2009CalfOf3101	UNK	1		SEWS040	
1/25/2010	1416	30.09254	-81.03821	E	2009CalfOf1151	UNK	1	MOPN, SKM FD?	SEWS041	
1/25/2010	1447	30.01999	-80.92210	F	3681	UNK	4	SAG, SFC TR	SEWS042	
1/25/2010	1447	30.01999	-80.92210	G	3730	F	3	SAG, FLIP, SF TR	SEWS042	
1/25/2010	1447	30.01715	-80.91839	H	3421	M	6	BRCH, SFC TR	SEWS042	
1/25/2010	1450	30.01376	-80.92781	I	3701	UNK	3	SFC TR, BOD CNT	SEWS042	
1/25/2010	1450	30.01376	-80.92781	J	3520	F	5	SFC TR, BOD CNT	SEWS042	
1/25/2010	1450	30.01376	-80.92781	K	BK56	UNK	UNK	SFC TR, FLIP, BOD CNT	SEWS042	
1/25/2010	1450	30.01376	-80.92781	L	3545	M	5	SFC TR	SEWS042	
1/25/2010	1518	30.01893	-80.91004	M	3346	M	7	SFC TR, ENTGL	SEWS042	
1/25/2010	1518	30.01893	-80.91004	N	3670	F	4	SFC TR	SEWS042	
1/25/2010	1518	30.01893	-80.91004	O	3620	M	4	SFC TR	SEWS042	
1/25/2010	1543	30.03560	-80.86880	P	3603	F	4	SFC TR	SEWS043	
1/25/2010	1543	30.03560	-80.86880	Q	2007CalfOf3360	UNK	3	SFC TR	SEWS043	
1/25/2010	1543	30.03560	-80.86880	R	2008CalfOf3020	UNK	2	SFC TR	SEWS043	
1/25/2010	1543	30.03560	-80.86880	S	2008CalfOf1245	UNK	2	SFC TR, MOPN	SEWS043	
1/25/2010	1543	30.03560	-80.86880	T	2008CalfOf3292	UNK	2	SFC TR, MOPN	SEWS043	
1/25/2010	1543	30.03560	-80.86880	U	3714	UNK	3	SFC TR	SEWS043	
1/26/2010	1153	29.80073	-81.25050	A	S043	UNK	UNK		SEWS044	
1/27/2010	1611	29.76472	-80.92529	A	3421	M	6	SAG	SEWS046	
1/27/2010	1611	29.76472	-80.92529	B	3346	M	7	SAG, ENTGL, HD LFT	SEWS046	
1/27/2010	1611	29.76472	-80.92529	C	3545	M	5	SAG, UW EXH?, HD LFT	SEWS046	
1/27/2010	1611	29.76472	-80.92529	D	3681	UNK	4	SAG	SEWS046	
1/27/2010	1611	29.76472	-80.92529	E	2009CalfOf1240	M	1		SEWS046	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
1/27/2010	1611	29.76472	-80.92529	F	3301	M	7	SAG	SEWS046	
1/27/2010	1611	29.76472	-80.92529	G	2048	M	20	SAG, HD LFT	SEWS046	
1/27/2010	1617	29.77048	-80.93051	H	3620	M	4		SEWS045	
1/28/2010	1143	30.28679	-81.16240	A	3180	F	9	W/CALF, BOD CNT, HD LFT	SEWS047	
1/28/2010	1143	30.28679	-81.16240	B	2010CalfOf3180	UNK	C	CALF W/MOM, BOD CNT, BEL UP, BLK BEL, ROLL	SEWS048	
1/28/2010	1246	30.08706	-81.31026	C	S041	UNK	UNK		SEWS048	
1/28/2010	1249	30.08766	-81.32057	D	3750	UNK	3		SEWS048	
1/28/2010	1253	30.08586	-81.32072	E	2009CalfOf1281	UNK	1		SEWS048	
1/28/2010	1253	30.08586	-81.32072	F	S044	UNK	UNK		SEWS048	
1/28/2010	1253	30.08586	-81.32072	G	2009CalfOf1611	UNK	1		SEWS048	
1/28/2010	1253	30.08586	-81.32072	H	S025	UNK	UNK		SEWS048	
1/28/2010	1253	30.08586	-81.32072	I	2008CalfOf1245	UNK	2		SEWS048	
1/28/2010	1306	30.08840	-81.31827	J	2009CalfOf1266	F	1		SEWS049	
1/28/2010	1306	30.08840	-81.31827	K	3760	UNK	3		SEWS049	
1/28/2010	1415	30.08282	-81.32141	L	S025	UNK	UNK	BODO	—	Resight, not paged
1/28/2010	1415	30.08282	-81.32141	M	2009CalfOf1611	UNK	1	BODO	—	
1/28/2010	1415	30.08282	-81.32141	N	2009CalfOf1266	F	1	BODO	—	
1/28/2010	1415	30.08282	-81.32141	O	3760	UNK	3	BODO	—	
1/28/2010	1415	30.08282	-81.32141	P	2009CalfOf1281	UNK	1	BODO	—	
1/28/2010	1415	30.08282	-81.32141	Q	3750	UNK	3	BODO	—	
1/28/2010	1415	30.08282	-81.32141	1	S041	UNK	UNK	BODO	—	
1/28/2010	1452	30.08319	-81.30081	R	3650	F	4	BOD CNT	—	Not paged, close to SEWS048
1/28/2010	1452	30.08319	-81.30081	S	2008CalfOf3292	UNK	2	BOD CNT	—	
1/28/2010	1454	30.06907	-81.30775	T	3740	UNK	3		SEWS050	
1/28/2010	1513	30.08341	-81.33215	U	S025	UNK	UNK	W/UNPH EGS	—	Resight, not paged
1/28/2010	1513	30.08341	-81.33215	V	S041	UNK	UNK	W/UNPH EGS	—	
1/28/2010	1513	30.08341	-81.33215	W	2009CalfOf1266	F	1	W/UNPH EGS	—	
1/28/2010	1513	30.08341	-81.33215	X	2009CalfOf1281	UNK	1	W/UNPH EGS	—	
1/28/2010	1513	30.08341	-81.33215	Y	3760	UNK	3	W/UNPH EGS	—	
1/28/2010	1513	30.08341	-81.33215	Z	NO PHOTOS	UNK	UNK		—	
1/28/2010	1513	30.08341	-81.33215	AA	NO PHOTOS	UNK	UNK		—	
1/29/2010	0916	30.04095	-81.31728	A	2009CalfOf1611	UNK	1		SEWS051	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
1/29/2010	0916	30.04095	-81.31728	B	3760	UNK	3		SEWS051	
1/29/2010	0923	30.03730	-81.31853	C	2009CalfOf1281	UNK	1		SEWS051	
1/29/2010	0923	30.03730	-81.31853	D	S044	UNK	UNK		SEWS051	
1/29/2010	0923	30.03730	-81.31853	E	2009CalfOf1266	F	1		SEWS051	
1/29/2010	0923	30.03730	-81.31853	F	2008CalfOf1245	UNK	2		SEWS051	
1/29/2010	0929	30.04588	-81.32311	G	3740	UNK	3	SAG	SEWS051	
1/29/2010	0929	30.04588	-81.32311	H	S041	UNK	UNK	SAG	SEWS051	
1/29/2010	0929	30.04588	-81.32311	I	3650	F	4	SAG	SEWS051	
1/29/2010	1135	30.44100	-81.17466	J	3705	F	3	LOG, WH CHN	SEWS052	
1/29/2010	1542	29.93735	-81.27881	K	2009CalfOf1266	F	1	SAG, FLIP	SEWS053	
1/29/2010	1542	29.93735	-81.27881	L	3760	UNK	3	SAG	SEWS053	
1/29/2010	1542	29.93735	-81.27881	M	3650	F	4	SAG	SEWS053	
1/29/2010	1542	29.93735	-81.27881	N	2009CalfOf1281	UNK	1	SAG	SEWS053	
1/29/2010	1542	29.93735	-81.27881	O	3740	UNK	3		SEWS053	
1/29/2010	1543	29.94732	-81.28317	P	2009CalfOf1611	UNK	1	APPR, BODO	SEWS053	
1/29/2010	1543	29.94732	-81.28317	Q	S041	UNK	UNK	APPR, BODO	SEWS053	
1/29/2010	1543	29.94732	-81.28317	R	S044	UNK	UNK	APPR, BODO	SEWS053	
1/29/2010	1543	29.94732	-81.28317	S	2008CalfOf1245	UNK	2	APPR, BODO	SEWS053	
1/29/2010	1543	29.94732	-81.28317	1	3745	M	3	APPR, BODO	SEWS053	
2/6/2010	1052	29.69932	-81.04432	A	3346	M	7	SAG, ENTGL	SEWS054	
2/6/2010	1052	29.69932	-81.04432	B	3670	F	4	SAG	SEWS054	
2/6/2010	1052	29.69932	-81.04432	C	3545	M	5		SEWS054	
2/6/2010	1052	29.69932	-81.04432	D	S040	UNK	UNK	SAG, MOPN	SEWS054	
2/6/2010	1052	29.69932	-81.04432	1	3301	M	7		SEWS054	
2/6/2010	1052	29.69932	-81.04432	2	3745	M	3		SEWS054	
2/6/2010	1052	29.69932	-81.04432	3	3333	M	7		SEWS054	
2/6/2010	1052	29.69932	-81.04432	4	UNID	UNK	UNK		SEWS054	
2/6/2010	1105	29.70734	-81.03300	E	3603	F	4	BRCH	SEWS054	
2/6/2010	1125	29.69885	-81.03922	F	2008CalfOf2330	UNK	2	BOD CNT	SEWS054	
2/6/2010	1125	29.69885	-81.03922	G	2009CalfOf2791	UNK	1	BOD CNT	SEWS054	
2/6/2010	1125	29.69885	-81.03922	5	3660	M	4		SEWS054	
2/6/2010	1215	29.71269	-81.04929	H	2009CalfOf3440	UNK	1	LBTL, BLK BEL?, FEM?	SEWS055	
2/6/2010	1215	29.71269	-81.04929	I	2009CalfOf1334	UNK	1	LBTL, WH CHN, WH BEL	SEWS055	
2/6/2010	1313	30.03110	-81.18241	J	2009CalfOf1281	UNK	1		SEWS056	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
2/6/2010	1313	30.03110	-81.18241	K	3760	UNK	3		SEWS056	
2/6/2010	1313	30.03110	-81.18241	L	2008CalfOf2753	UNK	2		SEWS056	
2/8/2010	1005	30.12786	-81.12682	A	2008CalfOf3020	UNK	2	SAG, BEL/BEL, BEL UP?, BLK BEL?	SEWS057	
2/8/2010	1005	30.12786	-81.12682	B	3681	UNK	4	SAG	SEWS057	
2/8/2010	1005	30.12786	-81.12682	C	3545	M	5	SAG, BEL/BEL	SEWS057	
2/8/2010	1615	29.78724	-81.07983	D	2009CalfOf1240	M	1	SFC TR, MOPN, LBTL	SEWS058	
2/8/2010	1624	29.77915	-81.08337	E	2008CalfOf1245	UNK	2	SFC TR, MOPN	SEWS058	
2/8/2010	1633	29.76542	-81.05421	F	2008CalfOf1123	UNK	2	BRCH	SEWS059	
2/8/2010	1643	29.73900	-81.05469	G	2009CalfOf1503	UNK	1	SUB TR, MOPN, W/UNPH EGS	SEWS060	
2/8/2010	1643	29.73900	-81.05469	H	2009CalfOf1515	UNK	1	SUB TR, W/UNPH EGS	SEWS060	
2/8/2010	1643	29.73900	-81.05469	I	NO PHOTOS	UNK	UNK	SUB TR	SEWS060	
2/8/2010	1643	29.73900	-81.05469	J	NO PHOTOS	UNK	UNK	SUB TR	SEWS060	
2/8/2010	1713	29.77916	-81.06541	K	S041	UNK	UNK	MOPN	SEWS061	
2/9/2010	1059	30.02777	-81.21407	A	3346	M	7	ENTGL, SAG	SEWS064	
2/9/2010	1059	30.02777	-81.21407	B	3670	F	4	SAG, BLK BEL	SEWS064	
2/9/2010	1059	30.02777	-81.21407	C	2008CalfOf3020	UNK	2	SAG	SEWS064	
2/9/2010	1059	30.02777	-81.21407	D	3660	M	4	SAG, MOPN, WH BEL	SEWS064	
2/9/2010	1113	30.03051	-81.22538	E	2008CalfOf3020	UNK	2		SEWS062	
2/9/2010	1130	30.02230	-81.21822	F	3650	F	4	BOD CNT	SEWS063	
2/9/2010	1130	30.02230	-81.21822	G	S038	UNK	UNK	BOD CNT, ROLL	SEWS063	
2/9/2010	1130	30.02230	-81.21822	H	2008CalfOf2330	UNK	2	BOD CNT, ROLL	SEWS063	
2/9/2010	1059	30.02777	-81.21407	I	3333	M	7		SEWS064	
2/9/2010	1205	30.01874	-81.27634	J	2008CalfOf1243	UNK	2		SEWS065	
2/9/2010	1205	30.01874	-81.27634	K	2008CalfOf1812	UNK	2		SEWS065	
2/9/2010	1210	30.02722	-81.28397	L	3745	M	3		SEWS066	
2/9/2010	1217	30.02902	-81.28381	M	3545	M	5		SEWS066	
2/9/2010	1217	30.02902	-81.28381	N	2009CalfOf1334	UNK	1		SEWS066	
2/9/2010	1217	30.02902	-81.28381	O	2008CalfOf3293	UNK	2		SEWS066	
2/11/2010	1654	29.15992	-80.96104	A	3157	F	9	W/CALF, LOG	SEWS067	
2/11/2010	1654	29.15992	-80.96104	B	2010CalfOf3157	UNK	C	CALF W/MOM	SEWS067	
2/14/2010	1046	30.17873	-81.19724	A	S039	UNK	UNK	SUB TR	SEWS068	
2/14/2010	1107	30.16276	-81.19543	B	3301	M	7	SAG, BEL/BEL	SEWS069	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
2/14/2010	1107	30.16276	-81.19543	C	3232	F	8	SAG, BEL/BEL, HD LFT	SEWS069	
2/14/2010	1307	29.94753	-81.21865	D	3750	UNK	3	MOPN, SUB TR	SEWS070	
2/14/2010	1307	29.94753	-81.21865	E	3680	UNK	UNK	SUB TR	SEWS070	
2/14/2010	1324	29.94959	-81.23392	F	3650	F	4		SEWS071	
2/14/2010	1333	29.95893	-81.24471	G	3620	M	4		SEWS072	
2/14/2010	1333	29.95893	-81.24471	H	BK56	UNK	UNK		SEWS072	
2/14/2010	1333	29.95893	-81.24471	I	3333	M	7		SEWS072	
2/14/2010	1351	29.93035	-81.20878	J	BK02SEUS09	UNK	UNK	SAG	SEWS074	
2/14/2010	1351	29.93035	-81.20878	K	3680	UNK	UNK	SAG	SEWS074	
2/14/2010	1351	29.93035	-81.20878	1	3421	M	6	SAG	SEWS074	
2/14/2010	1405	29.93389	-81.20638	L	2904	UNK	11	SAG	SEWS074	
2/14/2010	1405	29.93389	-81.20638	M	S041	UNK	UNK	SAG	SEWS074	
2/14/2010	1405	29.93389	-81.20638	N	3411	F	6	SAG, BEL/BEL	SEWS074	
2/14/2010	1405	29.93389	-81.20638	O	S037	UNK	UNK	SAG	SEWS074	
2/14/2010	1409	29.93378	-81.19296	P	2009CalfOf1334	UNK	1	WH CHN, WH BEL, FEM, BRCH, FLIP	SEWS073	
2/14/2010	1438	29.95202	-81.26408	Q	3660	M	4	SAG, WH BEL	SEWS075	
2/14/2010	1438	29.95202	-81.26408	R	3740	UNK	3	SAG	SEWS075	
2/14/2010	1438	29.95202	-81.26408	S	2008CalfOf1812	UNK	2	SAG	SEWS075	
2/14/2010	1438	29.95202	-81.26408	T	3705	F	3	SAG	SEWS075	
2/14/2010	1454	29.94872	-81.27969	U	NO PHOTOS	UNK	UNK	W/UNPH EGS	—	Resight, not paged
2/14/2010	1454	29.94872	-81.27969	V	NO PHOTOS	UNK	UNK	W/UNPH EGS	—	
2/14/2010	1455	29.94844	-81.29106	W	NO PHOTOS	UNK	UNK	W/UNPH EGS	—	Resight, not paged
2/14/2010	1455	29.94844	-81.29106	X	NO PHOTOS	UNK	UNK	W/UNPH EGS	—	
2/14/2010	1550	29.95072	-81.25956	Y	3660	M	4	SAG, WH BEL	—	Resight, not paged
2/14/2010	1550	29.95072	-81.25956	Z	2008CalfOf1812	UNK	2	SAG	—	
2/14/2010	1550	29.95072	-81.25956	AA	3705	F	3	SAG	—	
2/14/2010	1558	29.95439	-81.28859	BB	2009CalfOf3317	UNK	1	SAG	SEWS076	
2/14/2010	1558	29.95439	-81.28859	CC	S038	UNK	UNK	SAG	SEWS076	
2/14/2010	1558	29.95439	-81.28859	DD	3346	M	7	SAG, ENTGL	SEWS076	
2/14/2010	1558	29.95439	-81.28859	EE	2008CalfOf1123	UNK	2	SAG	SEWS076	
2/14/2010	1558	29.95439	-81.28859	FF	3725	F	3	SAG	SEWS076	
2/14/2010	1613	29.95370	-81.20370	GG	3421	M	6	SAG, W/UNPH EGS	—	Resight, not paged

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
2/14/2010	1613	29.95370	-81.20370	HH	3650	F	4	SAG, BEL UP, BLK BEL, W/UNPH EGS	—	
2/14/2010	1613	29.95370	-81.20370	II	NO PHOTOS	UNK	UNK	SAG, W/UNPH EGS	—	
2/14/2010	1613	29.95370	-81.20370	JJ	NO PHOTOS	UNK	UNK	SAG, W/UNPH EGS	—	Resight, not paged
2/14/2010	1620	29.94414	-81.19521	KK	S037	UNK	UNK	BRCH, CHN BRCH, MOPN	—	Resight, not paged
2/15/2010	0904	30.01401	-81.30899	A	S038	UNK	UNK	ROLL	SEWS077	
2/15/2010	1004	30.04865	-81.20532	B	S047	UNK	UNK	SAG	SEWS078	
2/15/2010	1004	30.04865	-81.20532	C	3650	F	4	SAG	SEWS078	
2/15/2010	1004	30.04865	-81.20532	D	2009CalfOf1151	UNK	1	SAG	SEWS078	
2/15/2010	1031	30.07079	-81.21701	E	2904	UNK	11	SAG, WH CHN	SEWS079	
2/15/2010	1031	30.07079	-81.21701	F	3346	M	7	SAG, ENTGL	SEWS079	
2/15/2010	1031	30.07079	-81.21701	G	3745	M	3	SAG	SEWS079	
2/15/2010	1031	30.07079	-81.21701	H	3750	UNK	3	SAG	SEWS079	
2/15/2010	1031	30.07079	-81.21701	I	3680	UNK	UNK	SAG, MOPN	SEWS079	
2/15/2010	1054	30.11234	-81.24523	O	BK56	UNK	UNK	SAG, HD LFT, BEL/BEL	SEWS082	
2/15/2010	1054	30.11234	-81.24523	K	3333	M	7	SAG	SEWS082	
2/15/2010	1054	30.11234	-81.24523	L	3421	M	6	SAG	SEWS082	
2/15/2010	1054	30.11234	-81.24523	M	3740	UNK	3	SAG, BEL/BEL	SEWS082	
2/15/2010	1054	30.11234	-81.24523	N	3660	M	4	SAG, BEL/BEL, WH CHN, WH BEL	SEWS082	
2/15/2010	1057	30.11485	-81.24940	J	BK56	UNK	UNK	APPR, ROLL, BEL UP, BLK CHN, BLK BEL	SEWS082	
2/15/2010	1101	30.11862	-81.23491	P	2009CalfOf1334	UNK	1	LOG, WH CHN	SEWS082	
2/15/2010	1108	30.14051	-81.22693	Q	2009CalfOf1281	UNK	1	BRCH, FLIP	SEWS080	
2/15/2010	1114	30.15723	-81.26993	R	2009CalfOf1503	UNK	1	LBTL, BRCH, CHN BRACH, APPR	SEWS081	
2/15/2010	1118	30.15653	-81.27769	S	2008CalfOf1703	UNK	2	BOD CNT, ROLL, WH CHN, WH BEL	SEWS081	
2/15/2010	1118	30.15653	-81.27769	T	3411	F	6	BOD CNT	SEWS081	
2/15/2010	1118	30.15653	-81.27769	U	2008CalfOf1123	UNK	2	BOD CNT	SEWS081	
2/15/2010	1213	30.12072	-81.23975	V	3620	M	4	APPR	SEWS082	
2/15/2010	1253	30.13361	-81.24242	W	3740	UNK	3	SAG, W/UNPH EG	—	Resight, not paged
2/15/2010	1253	30.13361	-81.24242	X	3660	M	4	SAG, W/UNPH EG	—	
2/15/2010	1253	30.13361	-81.24242	Y	3333	M	7	SAG, W/UNPH EG	—	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
2/15/2010	1253	30.13361	-81.24242	Z	BK56	UNK	UNK	SAG, W/UNPH EG	—	
2/15/2010	1253	30.13361	-81.24242	AA	NO PHOTOS	UNK	UNK	SAG	—	
2/15/2010	1310	30.09313	-81.20930	BB	3745	M	3	BODO	—	Resight, not paged
2/15/2010	1310	30.09313	-81.20930	CC	3346	M	7	BODO, ENTGL	—	
2/15/2010	1310	30.09313	-81.20930	DD	3680	UNK	UNK	BODO	—	
2/15/2010	1318	30.07319	-81.18583	EE	S047	UNK	UNK	W/UNPH EG	—	Resight, not paged
2/15/2010	1318	30.07319	-81.18583	FF	NO PHOTOS	UNK	UNK		—	
2/15/2010	1443	29.43138	-81.09745	GG	3123	F	9	W/CALF, BODO	SEWS083	
2/15/2010	1443	29.43138	-81.09745	HH	2010CalfOf3123	UNK	C	CALF W/MOM, BODO	SEWS083	
2/19/2010	0915	29.99297	-81.29816	A	2009CalfOf1334	UNK	1	SUB TR, WH CHN	SEWS084	
2/19/2010	0917	30.00126	-81.29987	B	2009CalfOf1503	UNK	1	BODO	SEWS084	
2/19/2010	0917	30.00126	-81.29987	1	2009CalfOf1281	UNK	1	BODO	SEWS084	
2/19/2010	0917	30.00126	-81.29987	7	2009CalfOf1334	UNK	1	BODO, WH CHN	SEWS084	
2/19/2010	0930	30.00259	-81.29418	C	3725	F	3	SAG, BODO, HD LFT	SEWS085	
2/19/2010	0930	30.00259	-81.29418	D	2910	M	>11	SAG, BODO	SEWS085	
2/19/2010	0930	30.00259	-81.29418	E	3414	M	6	SAG, BODO	SEWS085	
2/19/2010	0930	30.00259	-81.29418	2	1409	M	26	SAG, BODO, WH CHN, WH BEL	SEWS085	
2/19/2010	0956	30.00953	-81.30439	F	1506	M	25	SAG	SEWS085	
2/19/2010	0956	30.00953	-81.30439	G	2008CalfOf1812	UNK	2	SAG, BLK BEL, BEL UP	SEWS085	
2/19/2010	0956	30.00953	-81.30439	H	3160	UNK	9	SAG	SEWS085	
2/19/2010	1017	30.01422	-81.30759	I	3745	M	3		SEWS085	
2/19/2010	1017	30.01422	-81.30759	J	3740	UNK	3		SEWS085	
2/19/2010	1021	30.01480	-81.31350	K	3346	M	7	ENTGL	SEWS085	
2/19/2010	1021	30.01480	-81.31350	L	3296	M	8		SEWS085	
2/19/2010	1024	30.01389	-81.30306	M	2910	M	>11	SAG	SEWS085	
2/19/2010	1024	30.01389	-81.30306	N	1506	M	25	SAG	SEWS085	
2/19/2010	1024	30.01389	-81.30306	O	3414	M	6	SAG	SEWS085	
2/19/2010	1024	30.01389	-81.30306	P	BK56	UNK	UNK	SAG	SEWS085	
2/19/2010	1024	30.01389	-81.30306	Q	2370	UNK	>17	SAG, HD LFT	SEWS085	
2/19/2010	1024	30.01389	-81.30306	3	3705	F	3	SAG, WH CHN, WH BEL, BEL UP	SEWS085	
2/19/2010	1024	30.01389	-81.30306	4	2720	UNK	>13	SAG, HD LFT	SEWS085	
2/19/2010	1024	30.01389	-81.30306	5	1409	M	26	SAG, WH CHN, WH BEL	SEWS085	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
2/19/2010	1024	30.01389	-81.30306	6	3343	M	7	SAG	SEWS085	
2/19/2010	1024	30.01389	-81.30306	8	3745	M	3	SAG, HD LFT	SEWS085	
2/19/2010	1311	29.97240	-81.23128	R	3160	UNK	9	SUB TR, BODO	SEWS086	
2/19/2010	1340	29.97824	-81.25629	S	1506	M	25		SEWS087	
2/19/2010	1340	29.97824	-81.25629	T	2904	UNK	11		SEWS087	
2/19/2010	1500	29.97474	-81.30616	U	2009CalfOf2611	UNK	1	BODO, SFC TR	SEWS088	
2/19/2010	1506	29.97155	-81.29895	V	2009CalfOf1334	UNK	1	BODO, WH CHN, WH BEL, ROLL	SEWS088	
2/19/2010	1506	29.97155	-81.29895	W	2009CalfOf1503	UNK	1	BODO	SEWS088	
2/19/2010	1522	29.96109	-81.28444	X	3745	M	3	SFC TR, W/UNPH EGS	SEWS089	
2/19/2010	1522	29.96109	-81.28444	Y	3705	F	3	BOD CNT, SFC TR, W/UNPH EGS, WH CHN, WH BEL	SEWS089	
2/19/2010	1522	29.96109	-81.28444	Z	2009CalfOf3317	UNK	1	BOD CNT, SFC TR, W/UNPH EGS	SEWS089	
2/19/2010	1522	29.96109	-81.28444	AA	NO PHOTOS	UNK	UNK	SFC TR	SEWS089	
2/19/2010	1522	29.96109	-81.28444	BB	NO PHOTOS	UNK	UNK	SFC TR	SEWS089	
2/19/2010	1559	29.94144	-81.24261	CC	3740	UNK	3	BODO, BOD CNT	SEWS090	
2/19/2010	1559	29.94144	-81.24261	DD	3343	M	7	BODO, BOD CNT	SEWS090	
2/19/2010	1607	29.93434	-81.24897	EE	2009CalfOf1281	UNK	1	BODO, BLK BEL, BLK BEL, ROLL	SEWS090	
2/19/2010	1607	29.93434	-81.24897	FF	3725	F	3	BODO	SEWS090	
2/19/2010	1608	29.93751	-81.24455	GG	1150	M	>31	BODO	SEWS090	
2/19/2010	1624	29.93922	-81.24320	HH	1409	M	26	SAG, WH CHN, W/UNPH EG	SEWS090	
2/19/2010	1624	29.93922	-81.24320	II	3343	M	7	SAG, W/UNPH EG	SEWS090	
2/19/2010	1624	29.93922	-81.24320	JJ	2904	UNK	11	SAG, WH CHN, W/UNPH EG	SEWS090	
2/19/2010	1624	29.93922	-81.24320	KK	1506	M	25	SAG, W/UNPH EG	SEWS090	
2/19/2010	1624	29.93922	-81.24320	LL	2910	M	>11	SAG, W/UNPH EG	SEWS090	
2/19/2010	1624	29.93922	-81.24320	MM	NO PHOTOS	UNK	UNK	SAG	SEWS090	
2/19/2010	1622	29.93001	-81.23976	NN	2008CalfOf1812	UNK	2	BODO, BOD CNT	SEWS090	
2/19/2010	1622	29.93001	-81.23976	OO	BK56	UNK	UNK	BODO, BOD CNT	SEWS090	
2/19/2010	1639	29.92884	-81.21424	PP	3414	M	6		SEWS091	
2/19/2010	1650	29.93092	-81.20629	QQ	2720	UNK	>13	SAG, BODO, BEL/BEL, HD LFT	SEWS091	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
2/19/2010	1650	29.93092	-81.20629	RR	3160	UNK	9	SAG, BODO, BEL/BEL, WH CHN, HD LFT	SEWS091	
2/19/2010	1747	29.92553	-81.26779	SS	2009CalfOf1503	UNK	1	BODO	SEWS092	
2/20/2010	0859	29.87067	-81.25209	A	3745	M	3	AGG VSL, AVD	SEWS093	
2/20/2010	0859	29.87067	-81.25209	B	3705	F	3	AGG VSL, WH CHN, AVD	SEWS093	
2/20/2010	0900	29.86755	-81.25621	C	2009CalfOf1334	UNK	1	AGG VSL, WH CHN, WH BEL, BEL UP, BOD CNT, AVD	SEWS094	
2/20/2010	0900	29.86755	-81.25621	D	2009CalfOf2611	UNK	1	AGG VSL, BOD CNT, AVD	SEWS094	
2/20/2010	0900	29.86755	-81.25621	E	2008CalfOf2753	UNK	2	AGG VSL, BOD CNT, BEL UP, AVD	SEWS094	
2/20/2010	0903	29.87646	-81.26083	F	2008CalfOf1123	UNK	2	AGG VSL, AVD	SEWS094	
2/20/2010	0900	29.86755	-81.25621	G	2008CalfOf1123	UNK	2	AGG VSL, AVD	SEWS094	
2/20/2010	0936	29.88349	-81.19468	H	NO PHOTOS	UNK	UNK	BRCH, LOG	SEWS095	
2/20/2010	0956	29.51119	-81.05032	I	3760	UNK	3	SAG, BLK CHN, BLK BEL, BEL UP	SEWS096	
2/20/2010	0956	29.51119	-81.05032	J	1506	M	25	SAG, BEL UP, BLK BEL, BLK CHN	SEWS096	
2/20/2010	1002	29.51917	-81.06250	K	2009CalfOf1611	UNK	1	LOG	SEWS097	
2/20/2010	1015	29.38986	-81.07496	L	3123	F	9	W/CALF	SEWS098	
2/20/2010	1015	29.38986	-81.07496	M	2010CalfOf3123	UNK	C	CALF W/MOM	SEWS098	
2/20/2010	1032	29.41171	-81.01209	N	3245	M	8		SEWS099	
2/20/2010	1032	29.41171	-81.01209	O	1033	M	>32		SEWS099	
2/20/2010	1121	28.77337	-80.70020	P	S025	UNK	UNK	FLIP, BOD CNT, BODO, ROLL	SEWS100	
2/20/2010	1121	28.77337	-80.70020	Q	S041	UNK	UNK	FLIP, BOD CNT, BODO, BEL UP, BLK BEL, ROLL	SEWS100	
2/20/2010	1138	28.67371	-80.61717	R	2430	F	>16	W/CALF, BOD CNT	SEWS101	
2/20/2010	1138	28.67371	-80.61717	S	2010CalfOf2430	UNK	C	CALF W/MOM, BOD CNT	SEWS101	
2/20/2010	1153	28.58538	-80.52020	T	1701	F	23	W/CALF, LOG	SEWS102	
2/20/2010	1153	28.58538	-80.52020	U	2010CalfOf1701	UNK	C	CALF W/MOM	SEWS102	
2/20/2010	1641	28.05458	-80.40088	V	2057	M	20		SEWS103	
2/20/2010	1641	28.05458	-80.40088	W	2009CalfOf1151	UNK	1		SEWS103	
2/20/2010	1641	28.05458	-80.40088	X	3712	UNK	3		SEWS103	
2/20/2010	1752	29.32279	-80.95890	Y	3442	M	6	WH CHN	SEWS104	
2/20/2010	1752	29.32279	-80.95890	Z	3245	M	8		SEWS104	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
2/20/2010	1752	29.32279	-80.95890	AA	1506	M	25		SEWS104	
2/20/2010	1752	29.32279	-80.95890	1	1033	M	>32		SEWS104	
2/20/2010	1812	29.74937	-81.12955	BB	2370	UNK	>17	SAG	SEWS105	
2/20/2010	1812	29.74937	-81.12955	CC	3740	UNK	3	SAG	SEWS105	
2/20/2010	1817	29.78652	-81.15928	DD	NO PHOTOS	UNK	UNK		—	Not paged, likely duplicate of CEWS098
2/21/2010	0930	29.67668	-81.06236	A	S047	UNK	UNK		SEWS107	
2/21/2010	0933	29.67000	-81.09341	B	3346	M	7	SAG, ENTGL, BRCH?	SEWS106	
2/21/2010	0933	29.67000	-81.09341	C	2008CalfOf1123	UNK	2	LOG, BOD CNT	SEWS106	
2/21/2010	0933	29.67000	-81.09341	D	3705	F	3	LOG, BOD CNT, BEL UP, WH BEL, ROLL, FEM?	SEWS106	
2/21/2010	0933	29.67000	-81.09341	E	3725	F	3	LOG	SEWS106	
2/21/2010	0933	29.67000	-81.09341	F	3760	UNK	3	SAG	SEWS106	
2/21/2010	0933	29.67000	-81.09341	G	BK56	UNK	UNK	SAG	SEWS106	
2/21/2010	0933	29.67000	-81.09341	H	2009CalfOf1611	UNK	1	SAG	SEWS106	
2/21/2010	0933	29.67000	-81.09341	I	3333	M	7	SAG	SEWS106	
2/21/2010	0937	29.67284	-81.08865	J	2008CalfOf1812	UNK	2	LOG	SEWS106	
2/21/2010	0955	29.67852	-81.07167	K	3414	M	6	SAG, HD LFT	SEWS107	
2/21/2010	0955	29.67852	-81.07167	L	2009CalfOf1334	UNK	1	SAG, WH CHN, WH BEL, BEL UP	SEWS107	
2/21/2010	0956	29.68122	-81.07921	M	3745	M	3	LOG	SEWS107	
2/21/2010	1005	29.67856	-81.11871	N	NO PHOTOS	UNK	UNK		SEWS108	
2/21/2010	1013	29.67813	-81.10632	O	2008CalfOf2753	UNK	2	WH CHN	SEWS106	
2/21/2010	1033	29.60618	-80.83298	P	1150	M	>31	SFC TR	SEWS109	
2/21/2010	1033	29.60618	-80.83298	Q	1427	M	26	SFC TR	SEWS109	
2/21/2010	1033	29.60618	-80.83298	R	2720	UNK	>13	SFC TR	SEWS109	
2/21/2010	1033	29.60618	-80.83298	S	2910	M	>11	SFC TR	SEWS109	
2/21/2010	1033	29.60618	-80.83298	T	3350	M	7	SFC TR	SEWS109	
2/21/2010	1033	29.60618	-80.83298	U	3343	M	7	SFC TR, MOPN, BRCH?	SEWS109	
2/21/2010	1033	29.60618	-80.83298	V	3160	UNK	9	SFC TR, WH CNH	SEWS109	
2/21/2010	1121	29.54733	-80.98619	W	3157	F	9	W/CALF	SEWS110	
2/21/2010	1121	29.54733	-80.98619	X	2010CalfOf3157	UNK	C	CALF W/MOM	SEWS110	
2/21/2010	1246	28.80181	-80.44173	Y	1620	F	>24	W/CALF, BOD CNT	SEWS111	
2/21/2010	1246	28.80181	-80.44173	Z	2010CalfOf1620	UNK	C	CALF W/MOM, BOD CNT	SEWS111	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
2/21/2010	1503	28.41090	-80.41694	AA	1701	F	23	W/CALF, BODO, ROLL	SEWS112	
2/21/2010	1503	28.41090	-80.41694	BB	2010CalfOf1701	UNK	C	CALF W/MOM, BODO	SEWS112	
2/21/2010	1712	29.64897	-81.07630	CC	3414	M	6	SAG, W/UNPH EGS	SEWS113	
2/21/2010	1712	29.64897	-81.07630	DD	2008CalfOf1812	UNK	2	SAG, W/UNPH EGS	SEWS113	
2/21/2010	1712	29.64897	-81.07630	EE	3346	M	7	SAG, W/UNPH EGS, ENTGL	SEWS113	
2/21/2010	1712	29.64897	-81.07630	FF	3760	UNK	3	SAG, W/UNPH EGS	SEWS113	
2/21/2010	1712	29.64897	-81.07630	GG	2009CalfOf1611	UNK	1	SAG, W/UNPH EGS	SEWS113	
2/21/2010	1712	29.64897	-81.07630	HH	2440	M	16	SAG, W/UNPH EGS	SEWS113	
2/21/2010	1712	29.64897	-81.07630	II	3725	F	3	SAG, W/UNPH EGS	SEWS113	
2/21/2010	1712	29.64897	-81.07630	JJ	3750	UNK	3	SAG, W/UNPH EGS	SEWS113	
2/21/2010	1712	29.64897	-81.07630	KK	UNID	UNK	UNK	WH BEL, MALE, BEL UP, SAG	SEWS113	
2/23/2010	1151	29.78375	-81.12830	A	S048	UNK	UNK	BODO	SEWS114	
2/23/2010	1515	30.23281	-81.16402	B	3260	F	>8	RAND SUB TR	SEWS115	
2/23/2010	1533	30.25434	-80.94634	C	2770	M	>14	SAG, BEL/BEL?	SEWS117	
2/23/2010	1533	30.25434	-80.94634	D	BK02SEUS09	UNK	UNK	SAG, BEL/BEL, BLK BEL, BLK CHN, MALE	SEWS117	
2/23/2010	1533	30.25434	-80.94634	E	2904	UNK	11	SAG, WH CHN, MALE, WH BEL	SEWS117	
2/23/2010	1533	30.25434	-80.94634	F	2681	M	14	SAG	SEWS117	
2/23/2010	1533	30.25434	-80.94634	G	1170	M	29	SAG, WH CHN	SEWS117	
2/23/2010	1533	30.25434	-80.94634	1	1971	M	21	BLK CHN, BLK BEL	SEWS117	
2/23/2010	1533	30.25434	-80.94634	3	3301	M	9		SEWS117	
2/23/2010	1534	30.25377	-80.95458	2	2271	M	18		SEWS116	
2/23/2010	1534	30.25377	-80.95458	H	2042	F	20		SEWS116	
2/23/2010	1538	30.25390	-80.95531	I	1801	M	22		SEWS116	
2/23/2010	1550	30.25300	-80.95461	J	1971	M	21	SAG	SEWS116	
2/23/2010	1550	30.25300	-80.95461	K	3301	M	7	SAG	SEWS116	
2/23/2010	1550	30.25300	-80.95461	L	3295	UNK	>8	SAG	SEWS116	
2/23/2010	1639	30.18592	-80.96492	M	3380	UNK	>7	SAG, HD LFT	SEWS118	
2/23/2010	1639	30.18592	-80.96492	N	2018	M	20	SAG, BEL/BEL	SEWS118	
2/23/2010	1639	30.18592	-80.96492	O	2304	M	17	SAG	SEWS118	
2/23/2010	1648	30.17743	-80.96921	P	3150	M	9	APPR, SAG, HD LFT, BEL/BEL, WH CHN, WH BEL	SEWS118	
2/24/2010	1221	29.87952	-81.08578	A	3180	F	9	W/CALF, HD LFT	SEWS119	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
2/24/2010	1221	29.87952	-81.08578	B	2010CalfOf3180	UNK	C	CALF W/MOM, FLIP, LBTL, BRCH, CH BRCH, POST, ROLL	SEWS119	
2/26/2010	1419	29.54109	-81.08628	A	3460	UNK	6	SAG	SEWS120	
2/26/2010	1419	29.54109	-81.08628	B	2008CalfOf1703	UNK	2	SAG, HD LFT, BEL/BEL, WH CHN	SEWS120	
2/26/2010	1419	29.54109	-81.08628	C	2304	M	17	SAG, BEL/BEL, BLK CHN, BLK BEL	SEWS120	
2/26/2010	1419	29.54109	-81.08628	D	2042	F	20	SAG, HD LFT, BEL/BEL, WH CHN, WH BEL	SEWS120	
2/26/2010	1434	29.55500	-81.08118	E	1409	M	26		SEWS120	
3/1/2010	1042	30.11950	-81.16199	A	1701	F	23	W/CALF	SEWS121	
3/1/2010	1042	30.11950	-81.16199	B	2010CalfOf1701	UNK	C	CALF W/MOM	SEWS121	
3/1/2010	1201	29.98272	-80.97155	C	3180	F	9	W/CALF, NURS	SEWS122	
3/1/2010	1201	29.98272	-80.97155	D	2010CalfOf3180	UNK	C	CALF W/MOM, NURS	SEWS122	
3/1/2010	1222	29.97883	-81.01656	E	2642	F	14	W/CALF, NURS, BOD CNT, ROLL, WH CHN, WH BEL	SEWS123	
3/1/2010	1222	29.97883	-81.01656	F	2010CalfOf2642	UNK	C	CALF W/MOM, NURS, BOD CNT	SEWS123	
3/1/2010	1249	29.96950	-81.07206	G	2009CalfOf1611	UNK	1	SAG, BEL/BEL	SEWS126	
3/1/2010	1249	29.96950	-81.07206	H	3660	M	4	SAG, BEL/BEL, WH CHN, WH BEL	SEWS126	
3/1/2010	1249	29.96950	-81.07206	I	3714	UNK	3	APPR, SAG, BEL/BEL	SEWS126	
3/1/2010	1250	29.97558	-81.06985	J	BK02SEUS09	UNK	UNK		SEWS125	
3/1/2010	1259	29.97390	-81.06980	K	3241	M	8	SAG, FLIP, WH CHN, WH BEL	SEWS126	
3/1/2010	1259	29.97390	-81.06980	L	3323	M	7	SAG	SEWS126	
3/1/2010	1259	29.97390	-81.06980	M	3421	M	6	SAG	SEWS126	
3/1/2010	1259	29.97390	-81.06980	N	2304	M	17	SAG	SEWS126	
3/1/2010	1259	29.97390	-81.06980	O	2740	M	13	SAG	SEWS126	
3/1/2010	1259	29.97390	-81.06980	1	3301	M	7	SAG	SEWS126	
3/1/2010	1331	29.98585	-81.09940	P	3579	M	5	BRCH	SEWS124	
3/6/2010	1130	29.85981	-81.13515	A	3725	F	3	SAG, FCL, BEL/BEL, BLK CHN	SEWS128	
3/6/2010	1130	29.85981	-81.13515	B	3323	M	7	SAG	SEWS128	
3/6/2010	1130	29.85981	-81.13515	C	CT02BOF2007	UNK	UNK	SAG	SEWS128	
3/6/2010	1130	29.85981	-81.13515	D	2615	M	14	SAG	SEWS128	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
3/6/2010	1136	29.87274	-81.13349	E	2009CalfOf1334	UNK	1	WH CHN	SEWS127	
3/6/2010	1146	29.88335	-81.14159	F	3157	F	9	W/CALF, SUB TR, NURS	SEWS129	
3/6/2010	1146	29.88335	-81.14159	G	2010CalfOf3157	UNK	C	CALF W/MOM, SUB TR, NURS	SEWS129	
3/7/2010	1309	30.01024	-81.13728	A	3745	M	3	SAG, BEL/BEL, SFC TR	SEWS130	
3/7/2010	1309	30.01024	-81.13728	B	CT02BOF2007	UNK	UNK	SAG, SFC TR, BEL/BEL	SEWS130	
3/7/2010	1309	30.01024	-81.13728	C	3323	M	7	SAG, SFC TR	SEWS130	
3/7/2010	1309	30.01024	-81.13728	D	1403	M	26	SAG, SFC TR	SEWS130	
3/7/2010	1753	29.94320	-81.30196	E	2009CalfOf3317	UNK	1	BOD CNT	SEWS131	
3/7/2010	1753	29.94320	-81.30196	F	S046	UNK	UNK	BOD CNT, WH CHN	SEWS131	
3/7/2010	1753	29.94320	-81.30196	G	S043	UNK	UNK	BOD CNT	SEWS131	
3/7/2010	1753	29.94320	-81.30196	H	S037	UNK	UNK	BOD CNT	SEWS131	
3/8/2010	1032	29.95153	-80.93862	A	1320	M	>36	SUB TR	SEWS132	
3/8/2010	1032	29.95153	-80.93862	B	3346	M	7	SUB TR, ENTGL	SEWS132	
3/8/2010	1220	30.13699	-81.27650	C	S037	UNK	UNK	BRCH, SPY, BLK CHN, BLK BEL, CHN BRCH	SEWS133	
3/8/2010	1247	30.18903	-81.19376	D	2009CalfOf3317	UNK	1	SFC TR, ROLL, BEL UP, MOPN, BLK BEL, BLK CHN	SEWS134	
3/8/2010	1247	30.18903	-81.19376	E	S043	UNK	UNK	SFC TR	SEWS134	
3/8/2010	1306	30.19319	-81.18993	F	3180	F	9	W/CALF, BOD CNT, FLIP	SEWS135	
3/8/2010	1306	30.19319	-81.18993	G	2010CalfOf3180	UNK	C	CALF W/MOM, CALF W/OTHERS, BOD CNT, LBTL, ROLL, BEL UP, BLK BEL, BLK CHN, FEM	SEWS135	
3/8/2010	1318	30.19319	-81.18993	H	S043	UNK	UNK	BOD CNT, POST, ROLL	—	Joined SEWS135, not repaged
3/8/2010	1318	30.19319	-81.18993	I	2009CalfOf3317	UNK	1		—	
3/9/2010	0935	29.93858	-81.09599	A	S046	UNK	UNK	LOG, MOPN, WH CHN	SEWS136	
3/9/2010	1030	29.72102	-80.89102	B	2541	M	15	WH CHN	SEWS137	
3/9/2010	1302	29.90378	-81.16467	C	S046	UNK	UNK	WH CHN, SUB TR	SEWS138	
3/9/2010	1634	29.86731	-81.22023	D	S046	UNK	UNK	BODO, WH CHN, SUB TR	—	Resight, not paged
3/10/2010	0930	30.34039	-80.89836	A	NO PHOTOS	UNK	UNK		SEWS139	
3/10/2010	0939	30.34226	-80.93694	B	1121	M	>29	BOD CNT, SAG, BEL/BEL, HD LFT	SEWS140	
3/10/2010	0939	30.34226	-80.93694	C	1628	UNK	>24	BOD CNT, SAG, BEL/BEL	SEWS140	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
3/10/2010	0939	30.34226	-80.93694	D	3450	F	>6	BOD CNT, SAG, BEL/BEL, HD LFT, FCL, BEL UP, BLK CHN, BLK BEL	SEWS140	
3/10/2010	0939	30.34226	-80.93694	E	1320	M	>36	BOD CNT, SAG, HD LFT, BLK CHN	SEWS140	
3/10/2010	0959	30.33319	-80.94577	F	3466	M	6	SAG, APPR, HD LFT	SEWS140	
3/10/2010	0959	30.33319	-80.94577	G	2740	M	13	SAG, APPR	SEWS140	
3/10/2010	0959	30.33319	-80.94577	H	1719	F	>23	SAG, BLK CHN, APPR	SEWS140	
3/10/2010	0959	30.33319	-80.94577	I	3279	M	8	SAG, APPR, WH CHN	SEWS140	
3/10/2010	0959	30.33319	-80.94577	J	3391	M	>7	SAG, APPR	SEWS140	
3/10/2010	0959	30.33319	-80.94577	1	1613	M	24	APPR	SEWS140	
3/10/2010	0959	30.33319	-80.94577	2	3040	M	>14	SAG	SEWS140	
3/10/2010	0959	30.33319	-80.94577	3	2541	M	15	SAG, WH CHN, WH BEL, MALE	SEWS140	
3/10/2010	1038	30.33624	-81.12650	K	3260	F	>8	SFC TR, ROLL	SEWS141	
3/10/2010	1102	30.31418	-81.12607	L	S052	UNK	UNK		SEWS142	
3/10/2010	1355	30.20117	-81.02274	M	1620	F	>24	W/CALF, BOD CNT, HD LFT, ROLL	SEWS143	
3/10/2010	1355	30.20117	-81.02274	N	2010CalfOf1620	UNK	C	CALF W/MOM, BOD CNT, BEL UP, BLK CHN, BLK BEL	SEWS143	
3/10/2010	1414	30.24577	-80.99447	O	2042	F	20	BOD CNT, SUB TR	SEWS144	
3/10/2010	1414	30.24577	-80.99447	P	3579	M	5	BOD CNT, SUB TR	SEWS144	
3/10/2010	1414	30.24577	-80.99447	Q	UNID	UNK	UNK	SUB TR	SEWS144	
3/10/2010	1751	30.36710	-81.06120	R	UNID	UNK	UNK	BEL/BEL	—	Resight, not paged
3/10/2010	1751	30.36710	-81.06120	S	UNID	UNK	UNK	BEL/BEL	—	
3/10/2010	1751	30.36710	-81.06120	T	NO PHOTOS	UNK	UNK		—	
3/14/2010	0959	28.82938	-80.72229	A	S053	UNK	UNK	SUB TR, BODO	SEWS145	
3/17/2010	1017	30.13346	-81.00945	A	1327	M	>28	WH BEL	SEWS146	
3/17/2010	1017	30.13346	-81.00945	B	1176	M	>29	SAG	SEWS146	
3/17/2010	1017	30.13346	-81.00945	C	1131	M	>31	SAG	SEWS146	
3/17/2010	1017	30.13346	-81.00945	D	2920	UNK	>11	SAG	SEWS146	
3/17/2010	1017	30.13346	-81.00945	E	1249	M	>28	SAG, WH CHN	SEWS146	
3/17/2010	1017	30.13346	-81.00945	F	2740	M	13	SAG	SEWS146	
3/17/2010	1017	30.13346	-81.00945	G	3208	M	8	SAG	SEWS146	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
3/17/2010	1017	30.13346	-81.00945	1	1719	F	>23	SAG	SEWS146	
3/17/2010	1109	30.08131	-80.96320	H	S054	UNK	UNK	SUB TR	SEWS147	
3/17/2010	1455	29.07840	-80.89574	I	2614	F	14	W/CALF, BOD CNT, BODO, NURS, AGG VSL	SEWS148	
3/17/2010	1455	29.07840	-80.89574	J	2010CalfOf2614	UNK	C	CALF W/MOM, BOD CNT, BODO, LBTL, ROLL, BLK CHN, BLK BEL, MALE, NURS, AGG VSL	SEWS148	
3/20/2010	1014	30.18945	-81.15224	A	2645	F	14	W/CALF, BOD CNT	SEWS149	
3/20/2010	1014	30.18945	-81.15224	B	2010CalfOf2645	UNK	C	CALF W/MOM, BOD CNT, WH CHN, WH BEL	SEWS149	
3/20/2010	1114	30.04835	-80.70695	C	2360	F	>17	W/CALF, BOD CNT	UNCW005	
3/20/2010	1114	30.04835	-80.70695	D	2010CalfOf2360	UNK	C	CALF W/MOM, BOD CNT	UNCW005	
3/20/2010	1207	30.09750	-81.15782	E	3360	F	>7	W/CALF, LOG, BOD CNT	SEWS150	
3/20/2010	1207	30.09750	-81.15782	F	2010CalfOf3360	UNK	C	CALF W/MOM, BOD CNT, LOG	SEWS150	
3/20/2010	1448	29.83840	-81.06985	G	2710	F	13	W/CALF, LOG	SEWS151	
3/20/2010	1448	29.83840	-81.06985	H	2010CalfOf2710	UNK	C	CALF W/MOM, LOG	SEWS151	
3/25/2010	1212	30.29488	-81.16361	A	2360	F	>17	W/CALF, BOD CNT	SEWS152	
3/25/2010	1212	30.29488	-81.16361	B	2010CalfOf2360	UNK	C	CALF W/MOM, BOD CNT	SEWS152	
3/29/2010	1055	30.18733	-81.18044	A	2645	F	14	W/CALF	SEWS153	
3/29/2010	1055	30.18733	-81.18044	B	2010CalfOf2645	UNK	C	CALF W/MOM	SEWS153	
3/30/2010	1755	29.64649	-81.19092	A	3360	F	>7	W/CALF, BOD CNT	MLD029	
3/30/2010	1755	29.64649	-81.19092	B	2010CalfOf3360	UNK	C	CALF W/MOM, BOD CNT, WH CHN	MLD029	
3/31/2010	1252	30.18625	-81.18332	A	2645	F	14	W/CALF, NURS, BOD CNT, WH CHN	SEWS154	
3/31/2010	1252	30.18625	-81.18332	B	2010CalfOf2645	UNK	C	CALF W/MOM, NURS, BOD CNT, WH CHN, WH BEL, HD LFT, ROLL	SEWS154	
3/31/2010	1317	30.12343	-81.11308	C	2360	F	>17	W/CALF, BOD CNT	SEWS155	
3/31/2010	1317	30.12343	-81.11308	D	2010CalfOf2360	UNK	C	CALF W/MOM, ROLL, BOD CNT	SEWS155	
3/31/2010	1344	30.09584	-81.17506	E	2614	F	14	W/CALF, BOD CNT	SEWS156	

TABLE 3: FWRI 2009-2010 AERIAL SURVEY SIGHTINGS

Date	Time (L)	Latitude (Dec Degrees)	Longitude (Dec Degrees)	RIWH Letter	NARWC ID No Or Intermatch Code	Sex	Age	Behaviors*	SEWS Number	Comments
3/31/2010	1344	30.09584	-81.17506	F	2010CalfOf2614	UNK	C	CALF W/MOM, BOD CNT, ROLL, BLK BEL	SEWS156	
4/5/2010	1305	30.34003	-81.19847	A	2360	F	>17	W/CALF, BOD CNT, ROLL	SEWS157	
4/5/2010	1305	30.34003	-81.19847	B	2010CalfOf2360	UNK	C	CALF W/MOM, BOD CNT, ROLL	SEWS157	

\*Behavior Codes: AGG VSL = Aggressive Vessel,AVD = Avoidance,BOD CNT = Body Contact,BODO = Associated with Bottlenose Dolphins,BEL/BEL = Belly to Belly Contact,BEL UP = Belly Up,BLK BEL = Black Belly,BRCH = Breach,BUBLS = Bubbles Observed,CHN BRCH = Chin Breach,ENTGL = Entangled,FRST ENTGL = First Observed Entangled,FL = Fluke Up Dive (Entangled),FLIP = Flipper Slapping,HD LFT = Head Lift,LBTL = Lobtail,LOG = Logging,MOPN = Mouth Open,MUD = Mud On Whale,NOT FL = Dive No Fluke Up (Entangled),NURS = Nursing,POST = Posturing,RAND SUB TR = Random Subsurface Travel,ROLL = Rolling (not in SAG),SAG = Surface Active Group,SFC TR = Surface Travel,SPY = Spyhopping,SUB TR = Subsurface Travel,UW EXH = Underwater Exhale,W/UNPH EGS or CALF = With Unphotographed Whales or Calf,W/TELBUIY = Telemetry Buoy Attached (Entangled),WH BEL = White Belly,WH CHN = White Chin,YRLG = Yearling

TABLE 4: FWRI 2009-2010 WHALE/VESSEL INTERACTIONS

Date	ID	Survey Area	Whale EGNO	Initial Whale LAT	Initial Whale LONG	Vessel #	Close Approach	Vessel Type	Est. Initial Vessel Speed (kts)	Closest Distance (yds)	Initial Whale Behavior	Reaction to Vessel	Coms Achieved	Communication Notes
12/31/2009	1022	SEWS	9 juv.	30.24375	-81.30314	1	No	Commercial Fishing/ Shrimp	10	67	SAG	Yes	No	Vessel was hailed by name three times on VHF channel 16, no response. Also hailed vessel by name twice on VHF channel 88, no response. Vessel appeared to be transiting north with nets out of the water (not actively fishing). Upon coming within a few hundred yards of the whales, vessel made a turn towards the Northeast, made a semi-circle around the whales and then turned back on a north course. It appeared that if the vessel had maintained its initial heading of due north it would have come much closer to the whales.
1/12/2010	1730	N/A	#3646 and UNID whale	29.22895	-80.96552	1	No	Commercial Fishing/ Shrimp	<10	50	Milling	Yes	No	Vessel was hailed by name three times on VHF channel 16, no response. Vessel appeared to be transiting south with nets out of the water (not actively fishing). Upon coming within a few hundred yards of the whales, the vessel turned towards the southwest and continued on that heading until well past the whales. The vessel then turned southeast and eventually turned due south resuming its initial course (effectively making a half-circle around the whales' location). It appeared that if the vessel had maintained its initial heading of due south it would have come much closer to the whales.

TABLE 4: FWRI 2009-2010 WHALE/VESSEL INTERACTIONS

Date	ID	Survey Area	Whale EGNO	Initial Whale LAT	Initial Whale LONG	Vessel #	Close Approach	Vessel Type	Est. Initial Vessel Speed (kts)	Closest Distance (yds)	Initial Whale Behavior	Reaction to Vessel	Coms Achieved	Communication Notes
1/20/2010	1167	SEWS	S041	30.05220	-81.18059	1	Yes	Recreational	0	17	Milling	Yes	Yes	The vessel was hailed by description and approximate GPS location. The captain came back after the first hail and both switched to working channel. The observers informed the captain of the 500 yard rule, and that there were other whales in the area. The vessel responded that they had not known what they were looking at, and that they would not have approached if they had realized it was a right whale. The Captain was courteous. Vessel was stationary in close proximity to whale upon initial sighting. As the plane approached and hailed the vessel it began to move away from the whale.
1/28/2010	1385	SEWS	2007 Calf Of 1705	30.08766	-81.32057	1	No	Commercial Fishing/ Shrimp	2	167	Swim/ Travel	No	Yes	Vessel was hailed by name twice on VHF Ch. 16, no response. Vessel was then hailed by name twice on VHF Ch. 65, no immediate response. Approx 5 minutes later the vessel pulled its nets out of the water and turned to the east. The vessel came back on Ch. 65. The observers notified the captain that there had been a whale off his bow and that there were several other whales in the area to the west of his vessel. The observers stated on Ch. 65 that the whales were to the west of the other two shrimping vessels to his NE. The observers also informed the captain of the 500 yard rule and asked him to please keep a lookout for the whales. There was no additional response or communication from the vessel. After the vessel pulled its nets it turned and headed east for approx 1/2 mile and then turned to the north. It is unknown if the vessel altered course and/or pulled its nets because the captain spotted the whale(s), the communication/information from the aerial survey team, or just coincidence.

TABLE 4: FWRI 2009-2010 WHALE/VESSEL INTERACTIONS

Date	ID	Survey Area	Whale EGNO	Initial Whale LAT	Initial Whale LONG	Vessel #	Close Approach	Vessel Type	Est. Initial Vessel Speed (kts)	Closest Distance (yds)	Initial Whale Behavior	Reaction to Vessel	Coms Achieved	Communication Notes
2/19/2010	53	SEWS	UNID juv. - one of many seen in vicinity	30.00126	-81.29987	1	No	Commercial Fishing/Crab	20	200	Milling	No	No	No communication attempted, observers spotted whale and vessel at the same time. Vessel apparently saw the whale and immediately corrected course to avoid the whale, but did not slow down.
2/20/2010	67	SEWS	7 juv.	29.86755	-81.25621	1	Yes	Recreational	15	87	Milling	Yes	No	Vessel was hailed 3 times on VHF Ch. 16 using various vessel descriptions, listed vessel type, and attire of persons on board. Vessel did not respond to communication attempts. Once the vessel entered the vicinity of the groups of whales it slowed and altered course towards the whales' various locations (one after another) depending on which of the three subgroups were the surface.
2/20/2010	67	SEWS	7 juv.	29.86755	-81.25621	2	No	Recreational	15	880	Milling	No	Yes	The survey plane was hailed on VHF Ch. 16 by the vessel captain; he asking for information on location of whales. Switched to working channel. Observers informed the captain of the whales' location relative to his vessel and advised of the 500 yard rule. Captain asked if he could be of assistance with the non-responsive vessel (#1). The observers relayed that vessel #1 was within close proximity to several groups of whales and advised the captain to avoid that area. Captain was very courteous. Vessel slowed and turned to the west well before approaching the whales, made a half-circle around the whales, and then continued heading south on previous course once well south of whales.

TABLE 4: FWRI 2009-2010 WHALE/VESSEL INTERACTIONS

Date	ID	Survey Area	Whale EGNO	Initial Whale LAT	Initial Whale LONG	Vessel #	Close Approach	Vessel Type	Est. Initial Vessel Speed (kts)	Closest Distance (yds)	Initial Whale Behavior	Reaction to Vessel	Coms Achieved	Communication Notes
2/20/2010	67	SEWS	7 juv.	29.86755	-81.25621	3	No	Recreational	2	164	Milling	No	No	No communication attempted. Vessel was already past whales and continuing away from them at time of sighting. Vessel passed between two subgroups of whales at a slow speed, increased speed once past the whales, and continued to head away from the whales. Vessel did not turn towards or linger in vicinity of whales after the observers spotted it (observers had returned to survey prior to sighting this vessel).
3/9/2010	128	SEWS	S046	29.93858	-81.09599	1	No	Recreational/ Charter Fishing	28	1320	Logging	No	No	Vessel was hailed twice by name and vessel description, general location, heading, and speed on VHF Ch. 16. There was no response to communication attempts. The vessel was sighted leaving the St. Augustine Inlet heading ENE towards the general vicinity of the whale. The vessel did not alter course or speed and remained clear of the whale.
3/10/2010	225	CEWS	12 juv. and adults	30.34226	-80.93694	1	No	Military/U.S. Navy aircraft carrier	15	500	SAG	Unk	Yes	The observers informed the ship of the group of whales approx 3nm off their bow and several other groups of whales in the vicinity. The observers attempted twice to relay the GPS location of the whales to the vessel, but they declined. The vessel requested the survey team keep a 5nm buffer around the ship (causing the team to have to depart the area). The observers reiterated to the ship that they were no longer on scene and asked to relay coordinates to the ship; the ship then copied the location. The ship was observed making a an approx 30 degree turn to port once it was already approx 500 yards abeam the whales.

TABLE 4: FWRI 2009-2010 WHALE/VESSEL INTERACTIONS

Date	ID	Survey Area	Whale EGNO	Initial Whale LAT	Initial Whale LONG	Vessel #	Close Approach	Vessel Type	Est. Initial Vessel Speed (kts)	Closest Distance (yds)	Initial Whale Behavior	Reaction to Vessel	Coms Achieved	Communication Notes
3/10/2010	576	CEWS	#3260 and S052	30.33624	-81.12650	1	No	Recreational	20	5280	Swim/Travel	No	Yes	Vessel was hailed twice on VHF Ch. 16 as recreational vessel approx 10 miles east of Jacksonville heading east. Captain responded and switched to working channel. Captain was informed that there were a large number of endangered North Atlantic right whales in the general area, specifically two whales at his twelve o'clock approximately three miles. Captain thanked the survey team for the information and informed the team that he was almost to his destination (fishing location). Captain was advised of the 500 yard rule and the survey team asked him to give any whales spotted a wide berth. All communication with captain was courteous. Vessel was never in observed in close proximity to whales and slowed significantly during communications with observers. Survey team had to alter course due to the aircraft carrier and so they would not have been able to determine the proximity of this vessel to the whales later in survey.

TABLE 4: FWRI 2009-2010 WHALE/VESSEL INTERACTIONS

Date	ID	Survey Area	Whale EGNO	Initial Whale LAT	Initial Whale LONG	Vessel #	Close Approach	Vessel Type	Est. Initial Vessel Speed (kts)	Closest Distance (yds)	Initial Whale Behavior	Reaction to Vessel	Coms Achieved	Communication Notes
3/17/2010	706	SEWS	S054	30.08131	-80.96320	1	No	Tug and Barge	6	880	Swim/Travel	No	Yes	Vessel was hailed by name on VHF Ch. 16. Vessel responded after the first hail and switched to working channel. The survey team advised the captain they were currently circling above a North Atlantic right whale. Captain replied he could see the plane and his intended course wouldn't take the vessel near the whale's location. The survey team informed the captain there are many whales still in the area, relayed the LAT/LONG of a previous sighting of 7 adults he may also encounter on his current heading, and advised him of the 500 yard rule. Communication was courteous. Vessel maintained course and speed.
3/17/2010	1772	N/A	#2614 and Calf	29.07840	-80.89574	1	No	Parasail	20	436	Swim/Travel	No	No	Vessel was initially hailed three times using vessel type, description, and location on VHF Ch. 16, there was no response. After the vessel altered course towards the whales for a second time the vessel was again hailed by vessel type, description, and location VHF Ch. 16. with no response. The survey team made a general broadcast on VHF Ch. 16 stating the 500 yard rule to all vessels in the vicinity of Ponce Inlet.

TABLE 5: ACRONYMS

AFF	Automatic Flight Following
ALWDN	Atlantic Large Whale Disentanglement Network
ALWTRT	Atlantic Large Whale Take Reduction Team
AIS	Automatic Identification System
BNTM	Broadcast Notices to Mariners (USCG)
CEWS	Central Early Warning System
EPIRB	Emergency Position Indicator Radio Beacon
EWS	Early Warning System
FACSFACJAX	Fleet Area Control and Surveillance Facility Jacksonville (U.S. Navy)
FWC	Florida Fish and Wildlife Conservation Commission
FWRI	Fish and Wildlife Research Institute (part of FWC)
IFR	Instrument Flight Rules
GDNR	Georgia Department of Natural Resources
GIS	Geographic Information Systems
GPS	Global Positioning System
GTM NERR	Guana Tolomato Matanzas National Estuarine Research Reserve
JAX	Jacksonville, FL
LNTM	Local Notice to Mariners (USCG)
MSRS	Mandatory Ship Reporting System
NARWC	North Atlantic Right Whale Catalog
NARWD	North Atlantic Right Whale Consortium Database
NEAq	New England Aquarium
NEWS	Northern Early Warning System
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
PCCS	Provincetown Center for Coastal Studies
PIC	Pilot in Command
RIWH	Right Whale
R/V	Research Vessel
SAG	Surface Active Group
SEIT	Southeastern U.S. Right Whale Recovery Plan Implementation Team
SEUS	Southeast U.S.
SEWS	Southern Early Warning System
SIC	Second In Command (pilot)
SLR	Single Lens Reflex
SMA	Seasonal Management Area
VFR	Visual Flight Rules
VHF	Very High Frequency
UNCW	University of North Carolina, Wilmington
USCG	U.S. Coast Guard
USWTR	Undersea Warfare Training Range
WVI	Whale/Vessel Interaction

APPENDIX 1: MAP OF WHALE ALERT GEOGRAPHIC “BINS”

