

June 1, 2006

Cruise Results  
NOAA Fisheries Research Vessel Albatross IV  
Cruise No. Albatross IV 06-04  
Northern Right Whale Survey

**Cruise Period and Area**

The survey was conducted aboard the NOAA R/V Albatross IV from 1 May to 12 May, 2006 (Leg 1) with an in port 12-15 May and 15-26 May (Leg 2). It started and returned in Woods Hole, Ma. The southern border of the study area included Great South Channel, which is also the southern most portion of the Great South Channel Right Whale Critical Habitat area. The northern border included the waters surrounding the northeast portion of Cape Cod, (Provincetown, Ma.) and northern most portion of the Great South Channel (GSC) including the waters north of Cultivator's Shoal.

**Objectives**

The primary objectives of the cruise were to conduct marine mammal observations from the near-shore waters of Cape Cod to throughout the Great South Channel Right Whale Critical Habitat area. Specific goals include: (1) photographing and biopsy sampling of large cetaceans (North Atlantic Right whales, Sei and Humpback whales) for individual identification; (2) running transect lines to determine cetacean distribution; (3) Attached time-depth-recorder (TDR) tags on right whales; (4) provide support for the Right Whale Sighting Advisory System (SAS); (5) conduct oceanographic CTD/OPC/VPR stations throughout the GSC Right Whale Critical Habitat area; (6) deploy oceanographic drifters to observe ocean currents and drift in and around the Great South Channel; (7) deploy and retrieve acoustic pop-up buoys in the GSC and (8) conduct two 24 hour fixed oceanographic stations with CTD operations every 30 minutes, with complimentary visual operations of right whales.

**Methods**

**Survey Methods**

The marine mammal survey, aboard the Albatross IV was conducted at a speed of 10 knots. Survey operations were conducted during daylight hours (0700-1900) and sometimes later (until 20:00) if weather conditions permitted. The survey was conducted along pre-determined track lines with oceanographic stations every 5 miles (Figure 1).

During survey operations scientific personnel formed a single sighting team of either two or three observers. Two individuals searching from the bridge deck observing from the bow to amidships on either side using 10X50 binoculars. The third member of the team would be positioned in the middle and would act as data recorder as well as scanning using naked eye and

hand-held binoculars. When on watch, all observer positions rotated every 30 minutes.

When large concentration of whales were sighted which were too far away for proper identification, the Albatross IV, would break track to facilitate species identification, slowed its speed to conduct photo-identification of individuals and to better ascertain the actual total number of whales in an area. Upon request of the Chief Scientist, a rigid-bottom inflatable boat (RHIB) was deployed with three members aboard for; TDR tagging, photo identification and collection of biopsy samples. The decision concerning deployment would depend upon weather conditions and by the number of animals, species, and behavior of the encountered whales. Photo identification was conducted on the following species; right whales and sei whales.

During this 26 day cruise, the Albatross IV transected regions of the Gulf of Maine where North Atlantic right whales had been reported recently, historically, or in present time locations with the assistance of aerial survey platforms in the region. Weather (Beaufort <3), visibility and daylight conditions were the only limiting factors for the vessel to conduct small boat operations which coincided with sightings of right whales.

### **Photographic sampling methods**

Photographs were taken with a digital 35 mm camera equipped with an auto focus zoom or telephoto lens and power winder. Individual identity was documented using the following natural or acquired characteristics: dorsal fin shape and scarring (sei whales), callosity pattern and scarring (right whales), dorsal fin and ventral side of the fluke (humpback whale).

### **Additional methods for data collected**

The position (latitude/longitude), date, time, speed, course, sea surface temperature, water depth and other variables were obtained from the ship computer system (SCS), which will be interfaced with two portable computers. These data were routinely collected every minute during survey operations.

Sightings and effort data were recorded using a hand-held at-sea data entry system "pingle". All marine mammal sightings included; event number, observers name, date, time, species, best, high, low count for number of animals, bearing to the ship, animals swim direction, presence or absence of calves in group, distance from Albatross IV, animal's behavior, cue to sighting the animal, any additional comments.

All effort data included; date, time, event, platform, staff at position, magnification used for observations, cloud cover, weather, sun and glare (vertical and horizontal angle of the sun, angle/location to ship, glare width and intensity), transect number, Beaufort, visibility, sea state (swell height and angle to the ship).

Daily, all observers reviewed and edited effort and sightings data. Copies of the original and edited versions are maintained by the NEFSC.

Northern right whales: When northern right whales are encountered, and if the scientific party is

unavailable, bridge officers were requested to observe and collect data per the protocols described in the NEFSC Sighting Network Manual, dated 9 October 1997.

Data Management: Sightings and oceanographic data will be processed and computerized at the NEFSC Laboratory at Woods Hole, Massachusetts. Tissue collection and distribution will be conducted under authority of MMPA and ESA Research Permits 775-1600-11 (mammals) and 1295 (turtles).

ROSCOP 3 forms (IOC SC-90/WS-23) will be completed and forwarded to NODC, Washington, DC. A cruise report, and a completed "Ship Operations Evaluation Form," will be submitted to the NEFSC Vessel Coordinator within 20 days following the completion of the cruise.

## **Results**

### **Area covered**

The study area was the Great South Channel, which includes the Great South Channel Right Whale Critical Habitat area. Leg 1, 1-12 May, 2006, the first four days were spent at the Woods Hole dock due to gale winds and inclement weather, and one night we anchored off Nantucket, Ma. Leg 2, 15-26 May included one day at the dock in Woods Hole and two nights anchored off Chatham, Ma., due to gale winds and inclement weather. Figure 2 (gray area) was surveyed extensively during the remaining 15 days.

### **Right Whale Sightings**

All Right whale sightings were reported to the Right Whale Sighting Advisory System (SAS). Daily SAS reports were submitted via email and cell phone. This cruise generated 12 SAS reports; May 4<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup>, 19<sup>th</sup>, 23<sup>rd</sup>, 24<sup>th</sup>, and 25<sup>th</sup>. Total number of right whales sighted was approximately 149. The best number of individuals photographed will be determined at some later date after photo-analysis is completed.

### **CTD/OPC/VPR**

Oceanographic sampling stations were conducted along pre-determined track lines, with stations were 5 miles apart. A total of 259 CTD/OPC stations were sampled in the Great South Channel Right Whale Critical Habitat area (Figure 1).

Oceanographic sampling included: (1) CTD/OPC/VPR (CTD-Conductivity-Temperature-Depth profiler; OPC -Optimum Plankton Counter, VPR - Video Plankton Counter). These casts were along designated track lines and stations, and in the vicinity of tagged right whales; (2) plankton tows using Mocness and/or bongo nets. Environmental and oceanographic parameters were routinely collected (24 hrs per day) using the vessel's Scientific Computer System (SCS). Position, date, time, speed, course, temperature, depth and other variables will be obtained from the ship computer system (SCS), which will be interfaced with two portable computers.

### **Right whales and TDR (Time Depth Recorders)**

One right whale were approached and tagged with a TDR suction cup tag during this cruise. The goal was to tag right whales in the GSC and to gather time/depth and associated feeding behavior during these tagging operations (Table 2).

Time-depth recorders were deployed from the bow of the 5.5 m rigid hull inflatable boat (RHIB) using a telescoping pole. Identification photographs of the tagged whales were collected opportunistically in such a way as not to disturb the whales. The TDR tag consists of a Wildlife Computers MK9 Recorder, an instrument to measure physiological parameters, a radio transmitter, an acoustic transmitter and foam floatation. To this tag is attached a silicone or rubber suction cup, a Telonics VHF radio transmitter (model CHP-1P) and syntactic foam floatation. After deployment, the tag whale is tracked via an acoustic receiver aboard the RHIB, VHF radio receivers aboard the *Albatross IV* and the RHIB, and visually tracked by hand-held 7x50 binoculars and the naked eye. After the tag is attached, the time and position of the initial resurfacing after each long dive is recorded. The exact resurfacing position is obtained by

parking the RHIB on the whale's footprint, but occasionally this position will be roughly estimated from the Albatross IV's position, using a magnetic bearing and a distance estimate. The *Albatross IV* moves into position after each resurfacing location and a vertical cast with the CTD/OPC/VPR instrument package was completed. After TDR detachment from the whale, the tag is recovered by the RHIB with the aid of the VHF radio signal.

### **Deployment and Retrieval of Acoustic Pop-up buoys**

On May 3<sup>rd</sup> we deployed a total of four Cornell University acoustic pop-up buoys in the Great South Channel two miles North, South, East and West of 4117.2N/06908.9W. This position was the location of our 24 hour station which deployed an oceanographic package of CTD/OPC/VPR. The survey was actually 25 hours in duration. On May 23<sup>rd</sup>, the Albatross IV deployed a total of four Cornell University acoustic pop-up buoys in the Great South Channel two miles North, South, East and West of 4115.2N/06858.6W. This position was the location of our 24 hour station which deployed an oceanographic package of CTD/OPC/VPR. The survey was actually 40 hours in duration. All buoys were successfully retrieved.

Analysis is presently underway at Cornell University, Ithaca, NY to determine the success of these acoustic receivers.

### **Deployment of oceanographic drift buoys**

On May 4<sup>th</sup>, three drift buoys were deployed in the vicinity of the Boston Harbor Traffic lanes and the BD buoy. The three buoys were deployed between positions 4205.5N/7001.0W and 4207.4N/6954.6W. Another set of two drifters were deployed on May 16<sup>th</sup>, three of the five drifter buoys were still transmitting drift position data as of June 2<sup>nd</sup>. All buoys spent significant time in the Great South Channel Critical Habitat area.

### **Mocness and plankton sampling**

Two mocness deployments were conducted along line one, in the northeast and northwest portion of the Great South Channel (41 53.39N/069 16.79W and 41 53.38N/068 16.3W). Numerous bongo tows were conducted in the Great South channel during the cruise. Plankton analysis is currently underway with Nadine Lysiack, Boston University Marine Program, Christopher Tremblay, Cornell University and Mark Baumgartner, Woods Hole Oceanographic Institute.

On May 19<sup>th</sup>, the Albatross IV and scientific party recovered an oceanographic/acoustic glider which was adrift in the Great South Channel.

## Cetaceans sightings

Table 1. Sightings of cetaceans from *Albatross IV* AL06-04, 4 May to 25 May 2006. “Number” represents the sum of best estimates for each sighting during the entire cruise. Number photo-identified is preliminary and will be updated when photo analysis is complete.

Species	Number	Photo-ID'd	Biopsied
<i>Eubalaena glacialis</i>	149	3+	-
<i>Megaptera novaeangliae</i>	16	-	-
<i>Balaenoptera physalus</i>	2	-	-
<i>Balaenoptera borealis</i>	9	-	-
<i>Balaenoptera acutorostrata</i>	5	-	-
<i>Lagenorhynchus acutus</i>	15	-	-
<i>Phocoena phocoena</i>	0	-	-
Fin/sei undetermined	0	-	-
Unidentified dolphin	11	-	-
Unidentified large whales	5	-	-
TOTAL	212	3+	-

Table 2. Under the MMPA Permit No. 775-1600-11, Marine Mammal species observed, approaches for species ID, animals photographed, biopsy attempted and obtained, and TDR tags deployed during this cruise AL05-04.

Common Name	Scientific Name	Individuals approached	Photographed	Biopsy shots	Biopsy hits	Successful Biopsy	TDR tags applied
Right Whale	<i>Eubalaena glacialis</i>	2	yes	0	0	0	1

### **Disposition of the photographic data**

All right whales photographed during the cruise will be submitted to the Right Whale Catalogue maintained at New England Aquarium, Boston, Massachusetts.

### **PERSONNEL (SCIENTIFIC)**

1 May - 26 May 2006

<u>Name</u>	<u>Title</u>	<u>Institution</u>
1. Frederick Wenzel	Chief Scientist	NMFS, NEFSC, Woods Hole, MA
2. John Nicolas	Marine Mammal Spec.	NMFS, NEFSC, Woods Hole, MA
3. Maureen Taylor	Oceanographer	NMFS, NEFSC, Woods Hole, MA
4. Mark Baumgartner	Oceanographer	WHOI, Woods Hole, MA
5. David Mountain	Oceanographer	NMFS, NEFSC, Woods Hole, MA
6. Jon Hare	Oceanographer	NMFS, NEFSC, Woods Hole, MA
7. Nadine Lysiak	Student/Contractor	BUMP, Woods Hole, MA
8. Chris Tremblay	Contractor	Cornell Univ, Ithaca, NY
9. Nicole Gilles	Observer	NMFS, NEFSC, Woods Hole, MA
10. Richard Pace	Observer	NMFS, NEFSC, Woods Hole, MA
11. Melissa Patrician	Oceanographer	WHOI, Woods Hole, MA
12. Wes Dukes	Oceanographer	NMFS, NEFSC, Woods Hole, MA
13. Tamara Davis	Oceanographer	NMFS, NEFSC, Woods Hole, MA
14. Betsy Broughton	Oceanographer	NMFS, NEFSC, Woods Hole, MA
15. Elizabeth Joesphsen	Contractor	NMFS, NEFSC, Woods Hole, MA

### **Acknowledgment**

A special thank you to the officers and crew of the Albatross IV for making this right whale research cruise such a success.

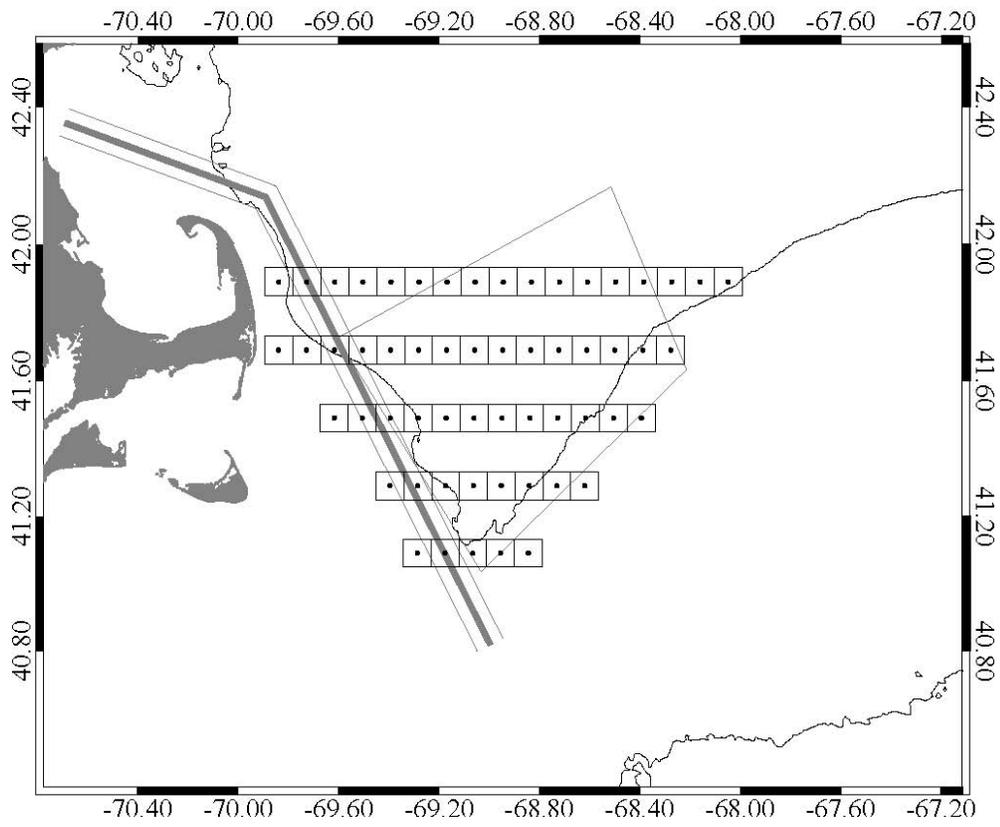


Figure 1. Great South Channel survey area and CTD/OPC/VPR sampling stations.

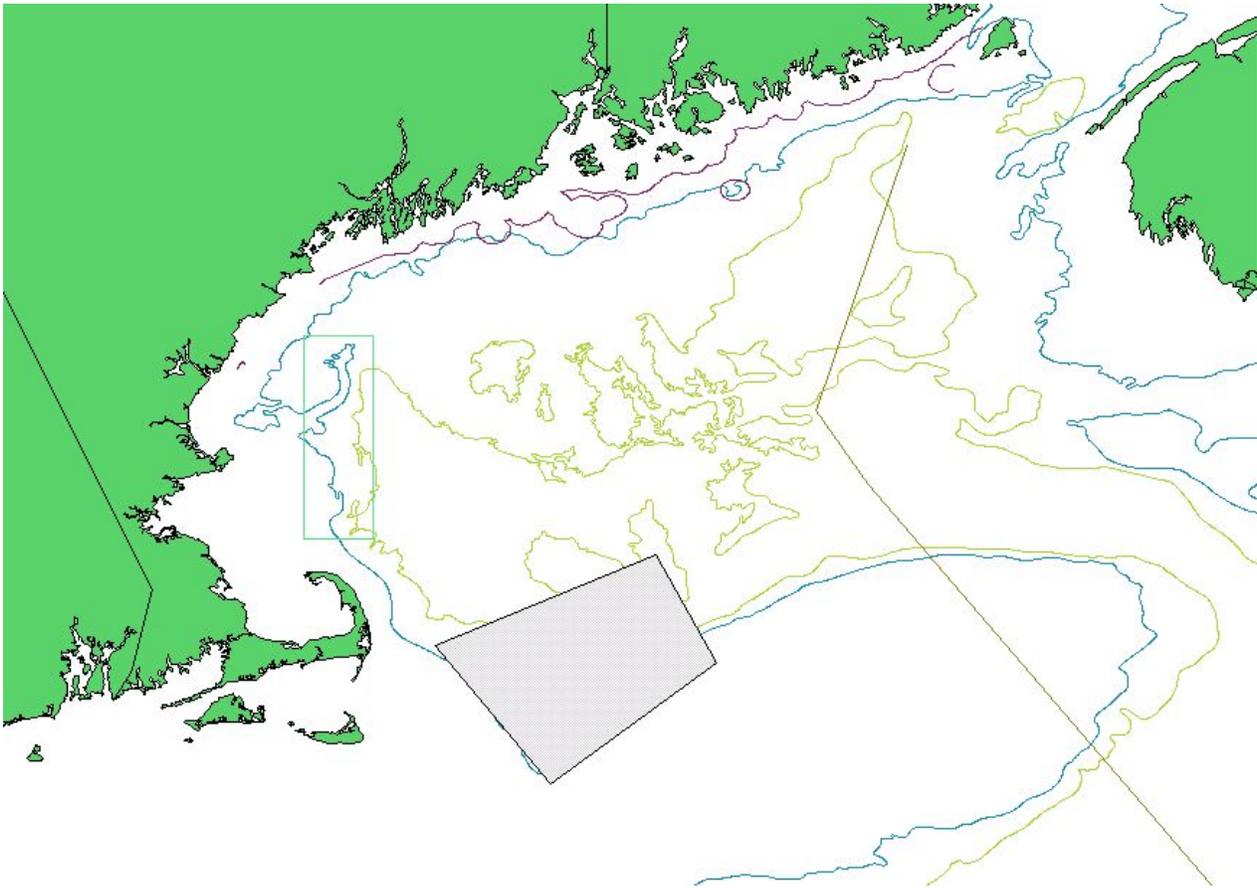


Figure 2. Grey shaded area is the Great South Channel Right Whale Critical Habitat area.