

# USA progress report on cetacean research, May 2006 to April 2007, with statistical data for the Calendar Year 2004

COMPILED BY BETH JOSEPHSON

*NOAA-NMFS-NEFSC*

*166 Water Street*

*Woods Hole, MA 02543*

*USA*

The following information summarizes cetacean research conducted or supported by the U.S. National Marine Fisheries Service at Silver Spring, Maryland (NMFS HQ), and by the five NMFS Science Centers; Alaska Fisheries Science Center (AFSC) and Northwest Fisheries Science Center (NWFSC) in Seattle, Washington; Southwest Fisheries Science Center (SWFSC), La Jolla, California, Northeast Fisheries Science Center (NEFSC), Woods Hole, Massachusetts; and the Southeast Fisheries Science Center (SEFSC), Miami, Florida. Information was also contributed by the Center for Coastal Studies, Provincetown, Massachusetts, Alaska Department of Fish and Game (ADFG), Anchorage, Alaska, the Alaska Beluga Whale Committee (ABWC), and the North Slope Borough (NSB), Barrow, Alaska, and the National Museum of Natural History (NMNH), Smithsonian Institution, Washington, DC. The following information was compiled in consultation with the above agencies.

This report summarises information obtained from:

Name of agency/institute	Abbreviation (use in rest of report)	Contact e-mail address
Northeast Fisheries Science Center	NEFSC	<a href="mailto:elizabeth.josephson@noaa.gov">elizabeth.josephson@noaa.gov</a>
Southeast Fisheries Science Center	SEFSC	<a href="mailto:lance.garrison@noaa.gov">lance.garrison@noaa.gov</a>
Alaska Fisheries Science Center	AFSC	<a href="mailto:Jeff.Breiwick@noaa.gov">Jeff.Breiwick@noaa.gov</a>
Northwest Fisheries Science Center	NWFSC	<a href="mailto:Jennie.Bolton@noaa.gov">Jennie.Bolton@noaa.gov</a>
Southwest Fisheries Science Center	SWFSC	<a href="mailto:Siri.Hakala@noaa.gov">Siri.Hakala@noaa.gov</a>
NOAA's Hawaiian Islands Humpback Whale National Marine Sanctuary	HIHWNMS	<a href="mailto:David.Mattila@NOAA.gov">David.Mattila@NOAA.gov</a>
North Slope Borough	NSB	<a href="mailto:Craig.George@north-slope.org">Craig.George@north-slope.org</a>
Alaska Beluga Whale Committee	ABWC	<a href="mailto:frostlow@ptialaska.net">frostlow@ptialaska.net</a>
Pacific Islands Fisheries Science Center	PIFSC	<a href="mailto:dave.johnston@noaa.gov">dave.johnston@noaa.gov</a>
Provincetown Center for Coastal Studies	PCCS	<a href="mailto:Jrobbins@coastalstudies.org">Jrobbins@coastalstudies.org</a>

## USA ATLANTIC WATERS

### 1. SPECIES AND STOCKS STUDIED

Common name	IWC recommended scientific name	Area/stock(s)	Items referred to
Atlantic spotted dolphin	<i>Stenella frontalis</i>	Atlantic and Gulf of Mexico	2.1 4.1, 4.3, 8
Atlantic white-sided dolphin	<i>Lagenorhynchus acutus</i>	Western N. Atlantic	2.1, 4.2, 4.3, 7.3, 8
Blainville's Beaked Whale	<i>Mesoplodon densirostris</i>	Atlantic and Gulf of Mexico	2.1, 4.1, 4.3, 8
Bottlenose dolphin	<i>Tursiops truncatus</i>	Atlantic and Gulf of Mexico	2.1, 3.1, 4.1, 4.2, 4.3, 7.3, 8, 9
Bryde's whale	<i>Balaenoptera edeni</i>	Gulf of Mexico	2.1, 4.3
Clymene Dolphin	<i>Stenella clymene</i>	Atlantic and Gulf of Mexico	2.1, 4.1, 4.3, 8
Common Dolphn	<i>Delphinus delphis</i>	Atlantic	2.1, 4.3, 8
Cuvier's Beaked Whale	<i>Ziphius cavirostris</i>	Atlantic and Gulf of Mexico	2.1, 4.3, 8
Dwarf Sperm Whale	<i>Kogia simus</i>	Atlantic and Gulf of Mexico	2.1, 4.3, 8
False Killer Whale	<i>Pseudorca crassidens</i>	Atlantic and Gulf of Mexico	2.1, 4.3, 8
Fin Whale	<i>Balaenoptera physalus</i>	Atlantic	2.1, 4.3, 6.3
Fraser's Dolphin		Atlantic and Gulf of Mexico	4.3
Gervais' Beaked Whale	<i>Mesoplodon europaeus</i>	Atlantic and Gulf of Mexico	4.3, 8
Harbor Porpoise	<i>Phocoena phocoena</i>	Atlantic	2.1, 4.2, 4.3, 7.3, 8
Humpback Whale	<i>Megaptera novaeangliae</i>	Atlantic	2.1, 3.1, 4.3, 6.3, 8
Melon headed whale	<i>Peponocephala electra</i>	Atlantic and Gulf of Mexico	4.3, 8
Minke whale	<i>Balaenoptera acutorostrata</i>	Atlantic	2.1, 4.3, 6.3, 7.3, 8
Northern Bottlenose Whale		Atlantic	4.3
Northern Right Whale	<i>Eublaena glacialis</i>	Atlantic	2.1, 3.1, 4.3, 6.3, 8
Pantropical Spotted Dolphin	<i>Stenella attenuata</i>	Atlantic and Gulf of Mexico	4.3, 8
Pilot whales	<i>Globicephaala sp.</i>	Atlantic	2.1, 4.1, 4.2, 4.3, 7.3, 8
Pygmy Killer Whale	<i>Feresa attenuata</i>	Atlantic and Gulf of Mexico	4.3, 8
Pygmy Sperm Whale	<i>Kogia breviceps</i>	Atlantic and Gulf of Mexico	4.3, 8
Risso's dolphin	<i>Grampus griseus</i>	Atlantic	2.1, 4.1, 4.3, 7.3, 8
Rough-toothed Dolphin	<i>Steno bredanensis</i>	Atlantic and Gulf of Mexico	4.3, 8
Sei Whale	<i>Balaenoptera borealis</i>	Atlantic	2.1, 4.3
Short-finned Pilot Whale	<i>Globicephala macrorhynchus</i>	Atlantic and Gulf of Mexico	2.1, 4.3, 8
Sperm whale	<i>Physeter catadon</i>	Atlantic	2.1, 4.1, 4.3, 8
Spinner Dolphin	<i>Stenella longirostris</i>	Atlantic and Gulf of Mexico	2.1, 4.1, 4.3, 8
Striped Dolphin	<i>Stenella coeruleoalba</i>	Atlantic and Gulf of Mexico	2.1, 4.3, 8
Unid. Beaked whale	<i>Ziphius sp. and Mesoplodon sp.</i>	Atlantic	2.1, 8
White Whale	<i>Delphinapterus leucas</i>	Atlantic	8

### 2. SIGHTINGS DATA

#### 2.1 Field work

##### 2.1.1 Systematic

##### NEFSC

#### **NOAA RESEARCH VESSEL R/VALBATROSS IV -NORTHERN RIGHT WHALE SURVEY 1 MAY - 26 MAY 2006 (AL06-04)**

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 northernmost portion of the Great South Channel (GSC) including the waters north of Cultivator's Shoal. 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 included: (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) attaching time-depth-recorder (TDR) tags on right whales;

(4) providing support for the Right Whale Sighting Advisory System (SAS); (5) conducting oceanographic CTD/OPC/VPR stations throughout the GSC Right Whale Critical Habitat area; (6) deploying oceanographic drifters to observe ocean currents and drift in and around the GSC; and (7) deploying and retrieving acoustic pop-up buoys in the GSC and (8) conducting two 24 hour fixed oceanographic stations with CTD operations every 30 minutes, with complimentary visual observations of right whales.

**NOAA RESEARCH VESSEL R/V DELAWARE II- PILOT WHALE BIOPSY CRUISE 6 JULY - 26 JULY 2006 (DE06-12)**

The objective of this cruise was to biopsy and photograph pilot whales (*Globicephala* spp.) distributed from the southern extreme of Georges Bank to south of the southern boundary for the 2004 pelagic cetacean assessment strata used by the Northeast Fisheries Science Center (the 38<sup>th</sup> Parallel). Collected tissues were to be used to distinguish between and determine distribution and geographic overlap of long-finned (*Globicephala melas*) and short-finned pilot whales (*G. macrorhynchus*) during the time of year used for conducting a pelagic cetacean assessment cruise (line-transect population size estimation cruise). If sea and weather conditions permitted, upon locating a group of pilot whales the large vessel would stop and deploy small boats for photographic and biopsy attempts.

**NOAA RESEARCH VESSEL R/V DELAWARE II- PASSIVE ACOUSTIC TESTING (PART I) & MARINE MAMMAL HABITAT SURVEY (PART II)**

**31 JULY - 4 AUGUST 2006 (DE06-13)**

Part I of the survey was conducted from 31 July - 4 August, 2006. The primary area of operations was in slope/shelf waters around Georges Bank and western portion of Browns Bank. Part II of the survey was conducted from 12-16 August in the western Gulf of Maine. For Part I, the primary objectives of acoustic monitoring during the cruise were to: (1) test and further develop Pamguard software, and in particular to test the Pamguard – Ishmael interface and collect data, for testing and ground proofing 3-D localization methods; and (2) set up a hydrophone array for NEFSC Protected Species Branch (PSB) and install International Fund for Animal Welfare (IFAW) software on a PSB computer for the detection of sperm whales, right whales and harbor porpoises, and to train PSB personnel in their operation. Secondary objectives were to: (1) conduct visual surveys for marine mammals; and (2) test and calibrate hand-held computers and software for future cetacean line-transect surveys. For Part II, the primary objectives were to: (1) collect information on the relationship between cetaceans and potential prey using an IGYPT mid-water trawl; (2) collect information on oceanographic features using CTD data; and (3) conduct visual surveys for marine mammals. Secondary objectives were to: (1) collect photo identification data on pilot whales; and (2) obtain biopsy samples from bow riding cetaceans.

**Shipboard Survey sightings 2006.**

Target species	Date	Area	No. of sightings	Contact person/institute and references
Beaked whale	6-26/7/06	Mid-Atlantic and NE US territorial waters	24	R. Pace (NEFSC)
Bottlenose dolphin	6-26/7/06	see above	354	R. Pace (NEFSC)
Common dolphin	1/5-4/8.06	see above	3506	R. Pace (NEFSC)
Fin whale	1/5-4/8.06	see above	20	R. Pace (NEFSC)
Fin/Sei whale	31/7-4/8.06	see above	2	R. Pace (NEFSC)
Risso's dolphin	6-26/7/06	see above	748	R. Pace (NEFSC)
Harbor porpoise	31/7-4/8.06	see above	9	R. Pace (NEFSC)
Humpback whale	1/5-4/8.06	see above	58	R. Pace (NEFSC)
Minke whale	1/5-4/8.06	see above	44	R. Pace (NEFSC)
Pilot whale	1/5-4/8.06	see above	652	R. Pace (NEFSC)
Right whale	1-26/5.06	see above	149	R. Pace (NEFSC)
Sei whale	1-26/5.06	see above	9	R. Pace (NEFSC)
Sperm whale	1/5-4/8.06	see above	22	R. Pace (NEFSC)
Stenella UID	6-26/7/06	see above	8	R. Pace (NEFSC)
UID Cetacean	6-26/7/06	see above	1	R. Pace (NEFSC)
UID dolphin	1/5-4/8.06	see above	227	R. Pace (NEFSC)

UID large whale	1/5-4/8.06	see above	20	R. Pace (NEFSC)
White-side dolphin	1/5-4/8.06	see above	96	R. Pace (NEFSC)

### ***AERIAL SURVEY: North Atlantic Right Whale Sighting System (NARWSS)***

The North Atlantic Right Whale Sighting Survey (NARWSS) is a NOAA Fisheries Service program dedicated to locating and recording the seasonal distribution of right whales off the northeastern United States. There were four primary types of surveys flown: broadscale, focused surveys in the Great South Channel (GSC) Critical Habitat, focused surveys over potential and realized Dynamic Area Management (DAM) closure zones, and focused surveys in a designated Navy bombing range located over Cashes Ledge, referred to as W-104B. Broadscale surveys were flown along systematic east-west tracklines that covered all Federal waters west of the Hague line from south of Long Island, New York, to Eastport, Maine. These surveys were flown to provide a synoptic view of right whale distribution; a completed series indicates coverage of the entire area. Surveys focused on the GSC served the dual purpose of providing relatively current locations of right whale aggregations to commercial shipping traffic and high photographic recapture rates of individuals for vital rate models of the population. DAM confirmation flights included flights made to investigate reported sightings of right whale aggregations outside existing closures, as well as monitoring aggregations' duration of residence within established DAM zones. Focused surveys in W-104B were conducted by NARWSS in cooperation with the Navy prior to scheduled bombing exercises to determine the presence or absence of marine mammals and sea turtles. Additional focused flights made to relocate reported whale carcasses or entangled whales as well as provide support for disentanglement efforts. A total of 88 survey flights were made in 2005. The total number of right whales surveyed (tally of estimated group size, not the number of unique individuals identified from photographs) was 410.

### ***AERIAL SURVEY: CIRCLE-BACK ABUNDANCE SURVEY***

The survey was conducted on the NOAA DeHavilland Twin Otter DHC-6, Series 300 aircraft (N57 RF) from 24 July to 26 August 2006. The study area (Figure 1) extended from New Jersey, USA (74° 20'N 39° 40'W), eastward to the Gulf of St. Lawrence (58° 30'W), and northward to the Bay of Fundy (45° 30'N). The objective of this survey was to describe the habitat of and estimate the abundance of cetaceans and turtles that are in the study area. Track lines were flown at 600 feet (183m) above the water surface, at about 110 knots. A total of 6594.3 nautical miles of track line were flown. Sightings included 4278 cetaceans (20 right whales).

## **SEFSC**

### **SHIPBOARD SURVEYS**

#### ***NOAA R/V Gordon Gunter, 19 June – 17 August 2006. MID-ATLANTIC CETACEAN HABITAT SURVEY***

A vessel survey was conducted aboard the NOAA Ship *Gordon Gunter* to quantify the abundance and spatial distribution of marine mammals along the shelf-break and inner continental slope from North Carolina to New Jersey. The survey took place during 19 June 2006 – 17 August 2006 and covered a total of 4,457km of trackline. Survey effort in the eastern Gulf of Mexico occurred during transits. Visual line transect surveys were conducted, and a total of 415 marine mammal groups were sighted. A passive acoustic array was also towed throughout the survey collecting additional data on marine mammal occurrence to supplement visual sightings. A small boat was deployed during the survey to collect biopsy samples from targeted species, and these samples were retained for genetic, stable isotope, and contaminants analyses. In addition, extensive hydrographic sampling was undertaken during the survey using XBTs and CTDs at defined intervals along the survey tracklines. Zooplankton samples were also collected to quantify primary and secondary productivity. A total of 455 hydrographic stations were sampled including 57 zooplankton 11 stations. Finally, both active and passive acoustic monitoring tools were used to provide continuous measures of zooplankton and nekton biomass during the survey. This combined physical, biological, and marine mammal data set will serve as the basis for habitat models investigating the relationships between mesoscale physical features and marine mammal spatial distribution.

Target species	Date	Area	No. of sightings	Contact person/institute and references
Atlantic spotted dolphin	19 June – 17 August 2006	U.S. Mid-Atlantic	59	L. Garrison, SEFSC
Bottlenose dolphin	19 June – 17 August 2006	U.S. Mid-Atlantic / Gulf of Mexico	80	L. Garrison, SEFSC
Bryde's whale	19 June – 17 August 2006	Gulf of Mexico	1	L. Garrison, SEFSC

Clymene dolphin	19 June – 17 August 2006	U.S. Mid-Atlantic	4	L. Garrison, SEFSC
Common dolphin	19 June – 17 August 2006	U.S. Mid-Atlantic	9	L. Garrison, SEFSC
Cuvier's beaked whale	19 June – 17 August 2006	U.S. Mid-Atlantic	2	L. Garrison, SEFSC
False killer whale	19 June – 17 August 2006	U.S. Mid-Atlantic	2	L. Garrison, SEFSC
Pilot whales	19 June – 17 August 2006	U.S. Mid-Atlantic	61	L. Garrison, SEFSC
Pygmy/Dwarf sperm whale	19 June – 17 August 2006	U.S. Mid-Atlantic	2	L. Garrison, SEFSC
Risso's dolphin	19 June – 17 August 2006	U.S. Mid-Atlantic	17	L. Garrison, SEFSC
Sperm whale	19 June – 17 August 2006	U.S. Mid-Atlantic	68	L. Garrison, SEFSC
Spinner dolphin	19 June – 17 August 2006	U.S. Mid-Atlantic	2	L. Garrison, SEFSC
Striped dolphin	19 June – 17 August 2006	U.S. Mid-Atlantic	26	L. Garrison, SEFSC
Unid. Beaked Whale	19 June – 17 August 2006	U.S. Mid-Atlantic	6	L. Garrison, SEFSC

## AERIAL SURVEYS

### *NOAA Twin Otter, 16 January – 6 March 2007. Eastern Gulf of Mexico Survey for Cetaceans and Turtles*

This survey was conducted between 16 January and 6 March, 2007 and covered the eastern Gulf of Mexico from the Dry Tortugas to the Mississippi River mouth. Survey effort was concentrated in waters from the shoreline to 20m depth, but also included effort over the continental shelf out to a depth of 200m. The survey was a visual line transect survey flown aboard a NOAA Twin Otter aircraft at an altitude of 229 m. The primary target species include bottlenose dolphins and endangered sea turtles. The survey included 125 tracklines and approximately 7,700 km of survey effort. These data are currently being analyzed to estimate the abundance of sighted species and describe spatial distribution as a function of habitat characteristics.

Target species	Date	Area	No. of sightings	Contact person/institute and references
Atlantic spotted dolphin	16 January – 6 March 2007	Eastern Gulf of Mexico	5	L. Garrison, SEFSC
Bottlenose dolphin	16 January – 6 March 2007	Eastern Gulf of Mexico	280	L. Garrison, SEFSC
Bryde's whale	16 January – 6 March 2007	Eastern Gulf of Mexico	4	L. Garrison, SEFSC
Shortfin Pilot Whale	16 January – 6 March 2007	Eastern Gulf of Mexico	1	L. Garrison, SEFSC

### *2.1.2 Opportunistic, platforms of opportunity*

The following U.S. organizations responded to a request for information on their use of “platforms of opportunity” to collect cetacean data in 2006.

<b>NORTH ATLANTIC</b>						
<b>Institution</b>	<b>US region</b>	<b>Species*</b>	<b>Platform type</b>	<b>Data type**</b>	<b>Collected by</b>	<b>Regional Archive***</b>

Allied Whale, College of the Atlantic, ME	NE	AB	Whale watch	1,2,3,4	Naturalist, dedicated observer	Yes
Blue Ocean Society, NH	NE	ABCDGHI	Whale watch	1,3,4	Naturalist	Yes
Center for Oceanic Research and Education, MA	NE	ABCDEFGHIJKMOPT	Whale watch	1,2,3,4,7	Naturalist, dedicated observer	Yes
Coastal Research & Education Society of Long Island, NJ	NE	ABCKOP	Whale watch, fishing vessel	1,3,4	Naturalist, trained volunteers	---
Dolphin Fleet, MA	NE	ABCDFGHIP	Whale watch	1,2,3,4,7	Naturalist, dedicated observer	Yes
Provincetown Center for Coastal Studies, MA	NE	ABCDFGHIP	Whale watch	1,2,3,4,5,7	Naturalist, dedicated observer	Yes
Whale Center of New England, MA	NE	ABCDFGHIP	Whale watch, ferry	1,2,3,4,5,7	Naturalist, dedicated observer	Yes
Whale and Dolphin Conservation Society, MA	NE	ABCEFGHI	Whale watch	1,3,4,5	Naturalist	Yes
<p><b>*Species codes:</b> A) <i>Megaptera novaeangliae</i>, B) <i>Balaenoptera physalus</i>, C) <i>Balaenoptera acutorostra</i>, D) <i>Eubalaena glacialis</i>, E) <i>Balenoptera musculus</i>, F) <i>Balaenoptera borealis</i>, G) <i>Lagenorhynchus acutus</i>, H) <i>Phocoena phocoena</i>, I), <i>Globicephala melas</i>, J) <i>Ziphiidae</i> spp. K) <i>Physeter macrocephalus</i>, L) <i>Stenella longirostris</i>, M) <i>Tursiops truncatus</i>, N) <i>Stenella attenuata</i>, O) <i>Delphinus delphis</i>, P) <i>Grampus griseus</i>, R) unspecified odontocete species, S) <i>Orcinus orca</i>, T) <i>Stenella coeruleoalba</i>, U) <i>Globicephala macrorhynchus</i>, V) <i>Feresa attenuata</i></p> <p><b>**Data types:</b> 1) cetacean sighting data, 2) survey effort data (varied from general location to logged positions), 3) animal behavior, 4), photo-ID (for at least one listed species), 5) management-oriented data (fisheries interactions, ship strike, harassment), 6) scat/prey collection, 7) environmental data</p> <p>--- Data not available</p> <p><b>***ARCHIVES: DATA FOR ONE OR MORE LISTED SPECIES WERE CONTRIBUTED TO A REGIONAL OR OCEANIC ARCHIVE. RESPONDERS REPORTED CONTRIBUTING DATA TO THE FOLLOWING OTHER INSTITUTIONS: ALLIED WHALE (ME), NEW ENGLAND AQUARIUM (MA), PROVINCETOWN CENTER FOR COASTAL STUDIES (MA), WHALE CENTER NEW ENGLAND (MA)</b></p>						

## 2.2 Analyses/development of techniques

NR

## 3. MARKING DATA

### 3.1 Field work

#### 3.1.1 Natural marking data- 2006

##### NEFSC

Species	Feature	Area/stock	No. photo-id'd	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Right whale	Callosities	W.N. Atlantic	442	Y	NA	R. Pace/NEFSC
Humpback whale	Fluke/dorsal	W.N. Atlantic	60	Y	NA	R. Pace/NEFSC

##### SEFSC

Species	Feature	Area/stock	No. photo-id'd	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Bottlenose Dolphin	Dorsal Fin	Gulf of Mexico / Mississippi Sound	NA	Y	NA	K. Mullin, SEFSC
Bottlenose Dolphin	Dorsal Fin	W.N. Atlantic/Coastal North Carolina	NA	Y	NA	L. Hansen, SEFSC
Bottlenose Dolphin	Dorsal Fin	W.N. Atlantic/Coastal Biscayne Bay FL	NA	Y	NA	L. Garrison, SEFSC

#### 3.1.2. Artificial marking data

NR

#### 3.1.3 Telemetry data

##### NEFSC

NR

##### SEFSC

Species	Tag type	No. successfully deployed	Maximum time transmitting	Contact person/institute; refs
Bottlenose Dolphin	Satellite / VHF radio tag	8	6 months	L. Hansen, SEFSC

## 3.2 Analyses/development of techniques

NR

## 4. TISSUE/BIOLOGICAL SAMPLES COLLECTED

### 4.1 Biopsy samples (summary only) - 2006

##### NEFSC

Species	Area/stock	Calendar year/season - no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Pilot whale	N. Atlantic	84	Y	84	NA	Fred Wenzel/NEFSC

## SEFSC

Species	Area/stock	Calendar year/ season - no. collected	Archi ved (Y/N)	No. analysed	Total holdings	Contact person/institute
Sperm Whale	W. North Atlantic	2006/Summer - 2	Y	0	NA	P. Rosel, SEFSC
Short-finned pilot whale	Gulf of Mexico	2006/Summer - 6	Y	0	NA	P. Rosel, SEFSC
Pilot whales	W. North Atlantic	2006/Summer - 7	Y	0	NA	P. Rosel, SEFSC
Bottlenose Dolphin	W. North Atlantic	2006/Summer - 50	Y	50	NA	P. Rosel, SEFSC
Atlantic Spotted Dolphin	W. North Atlantic	2006/Summer - 20	Y	0	NA	P. Rosel, SEFSC
Spinner Dolphin	W. North Atlantic	2006/Summer - 1	Y	0	NA	P. Rosel, SEFSC
Clymene Dolphin	W. North Atlantic	2006/Summer - 1	Y	0	NA	P. Rosel, SEFSC
Bottlenose Dolphin	Gulf of Mexico / Mississippi Sound	2006/Summer - 37	Y	0	NA	P. Rosel, SEFSC
Bottlenose Dolphin	W. North Atlantic/ Georgia	2006/Summer - 35	Y	0	NA	P. Rosel, SEFSC
Bottlenose Dolphin	W. North Atlantic/ Georgia	2007/Winter - 37	Y	0	NA	P. Rosel, SEFSC

## 4.2 Samples from directed catches (commercial, aboriginal and scientific permits) or bycatches - 2004

### NEFSC

species	Area/stock	Tissue type(s)*	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Atlantic white-sided dolphin	N. Atlantic	Skin	16	Y	0	Fred Wenzel/NEFSC
Atlantic white-sided dolphin	N. Atlantic	Blubber	9	Y	0	Fred Wenzel/NEFSC
Atlantic white-sided dolphin	N. Atlantic	Head	4	Y	2	Fred Wenzel/NEFSC
Atlantic white-sided dolphin	N. Atlantic	Heart	1	Y	0	Fred Wenzel/NEFSC
Atlantic white-sided dolphin	N. Atlantic	Muscle	1	Y	0	Fred Wenzel/NEFSC
Atlantic white-sided dolphin	N. Atlantic	Stomach	3	Y	3	Fred Wenzel/NEFSC
Atlantic white-sided dolphin	N. Atlantic	Jaw	1	Y	0	Fred Wenzel/NEFSC
Atlantic white-sided dolphin	N. Atlantic	Kidney	1	Y	0	Fred Wenzel/NEFSC
Atlantic white-sided dolphin	N. Atlantic	Liver	1	Y	0	Fred Wenzel/NEFSC
Atlantic white-sided dolphin	N. Atlantic	Whole	2	Y	2	Fred Wenzel/NEFSC
Harbor porpoise	N. Atlantic	Skin	23	Y	0	Fred Wenzel/NEFSC
Harbor porpoise	N. Atlantic	Blubber	12	Y	0	Fred Wenzel/NEFSC
Harbor porpoise	N. Atlantic	Head	4	Y	1	Fred Wenzel/NEFSC
Harbor porpoise	N. Atlantic	Muscle	4	Y	0	Fred Wenzel/NEFSC
Harbor porpoise	N. Atlantic	Stomach	2	Y	0	Fred Wenzel/NEFSC
Harbor porpoise	N. Atlantic	Jaw	5	Y	0	Fred Wenzel/NEFSC
Harbor porpoise	N. Atlantic	Kidney	1	Y	0	Fred Wenzel/NEFSC
Harbor porpoise	N. Atlantic	Liver	1	Y	0	Fred Wenzel/NEFSC
Harbor porpoise	N. Atlantic	Lung	1	Y	0	Fred Wenzel/NEFSC
Harbor porpoise	N. Atlantic	Whole	6	Y	6	Fred Wenzel/NEFSC
Harbor porpoise	N. Atlantic	Reproductive	1	Y	0	Fred Wenzel/NEFSC
Common dolphin	N. Atlantic	Skin	9	Y	0	Fred Wenzel/NEFSC



Common dolphin	N. Atlantic	Blubber	3	Y	0	Fred Wenzel/NEFSC
Common dolphin	N. Atlantic	Head	5	Y	0	Fred Wenzel/NEFSC
Common dolphin	N. Atlantic	Intestine	1	Y	0	Fred Wenzel/NEFSC
Common dolphin	N. Atlantic	Muscle	3	Y	0	Fred Wenzel/NEFSC
Common dolphin	N. Atlantic	Skeleton	1	Y	0	Fred Wenzel/NEFSC
Common dolphin	N. Atlantic	Stomach	3	Y	1	Fred Wenzel/NEFSC
Common dolphin	N. Atlantic	Reproductive	2	Y	0	Fred Wenzel/NEFSC
Bottlenose dolphin	N. Atlantic	Skin	2	Y	2	Fred Wenzel/NEFSC
Bottlenose dolphin	N. Atlantic	Whole	1	Y	1	Fred Wenzel/NEFSC
Pilot whale	N. Atlantic	Skin	2	Y	2	Fred Wenzel/NEFSC
Pilot whale	N. Atlantic	Blubber	2	Y	1	Fred Wenzel/NEFSC
Pilot whale	N. Atlantic	Lymphatic	1	Y	0	Fred Wenzel/NEFSC
Pilot whale	N. Atlantic	Spleen	1	Y	0	Fred Wenzel/NEFSC
Pilot whale	N. Atlantic	Muscle	1	Y	0	Fred Wenzel/NEFSC
Pilot whale	N. Atlantic	Stomach	1	Y	0	Fred Wenzel/NEFSC
Pilot whale	N. Atlantic	Kidney	1	Y	0	Fred Wenzel/NEFSC
Pilot whale	N. Atlantic	Liver	1	Y	0	Fred Wenzel/NEFSC
Pilot whale	N. Atlantic	Lung	2	Y	0	Fred Wenzel/NEFSC

**SEFSC**  
NR

**4.3 Samples from stranded animals – 2006<sup>a</sup>**  
**NEFSC**

Species	NW Atlantic	Mid-Atlantic	Tissue type(s) <sup>b</sup>	Archived (Y/N)	No. Analyzed <sup>c</sup>	Contact person/institute
Atlantic White-sided Dolphin	29	6		Y	NA	Mendy Garron, NER Stranding Network
Bottlenose Dolphin	1	72		Y	NA	Mendy Garron, NER Stranding Network
Common Dolphin	62	3		Y	NA	Mendy Garron, NER Stranding Network
Cuvier's Beaked Whale	1	0		Y	NA	Mendy Garron, NER Stranding Network
Fin Whale	0	1		Y	NA	Mendy Garron, NER Stranding Network
Harbor Porpoise	19	15		Y	NA	Mendy Garron, NER Stranding Network
Humpback Whale	1	4		Y	NA	Mendy Garron, NER Stranding Network
Minke Whale	1	0		Y	NA	Mendy Garron, NER Stranding Network
Pilot Whale (long-finned)	1	2		Y	NA	Mendy Garron, NER Stranding Network
Northern Bottlenose Whale	0	1		Y	NA	Mendy Garron, NER Stranding Network
Pygmy Sperm Whale	2	2		Y	NA	Mendy Garron, NER Stranding Network
Risso's Dolphin	2	3		Y	NA	Mendy Garron, NER Stranding Network
Sei Whale	1	1		Y	NA	Mendy Garron, NER Stranding Network
Striped Dolphin	1	4		Y	NA	Mendy Garron, NER Stranding Network
Unidentified Whale	0	1		Y	NA	Mendy Garron, NER Stranding Network
Unidentified Dolphin/Porpoise	0	2		Y	NA	Mendy Garron, NER Stranding Network

*a. Data are entered as represented by the NOAA Fisheries NER Stranding Network and have not been formally reviewed by NOAA Fisheries.*

*b. Samples include some or all of the following: hard parts (i.e. teeth, jaw, skull, baleen, entire skeleton, etc) and/or soft parts (i.e. skin, gonads, muscle, blubber, blood, organs, etc).*

*c. Samples are sent to various educational and scientific collections and number analyzed is unknown.*

**SEFSC**

Species	Area/stock	Tissue type(s)*	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Atlantic spotted dolphin	W. N. Atlantic and Gulf of Mexico	Various	3	Y	NA	B. Mase, SEFSC
Atlantic white-sided dolphin	W.N. Atlantic	Various	1	Y	NA	B. Mase, SEFSC

Blainville's beaked whale	W. N. Atlantic	Various	1	Y	NA	B. Mase, SEFSC
Bottlenose dolphin	W. N. Atlantic and Gulf of Mexico	Various	282	Y	NA	B. Mase, SEFSC
Bryde's whale	Gulf of Mexico	Various	1	Y	NA	B. Mase, SEFSC
Cuvier's beaked whale	W. N. Atlantic	Various	1	Y	NA	B. Mase, SEFSC
Dwarf sperm whale	W. N. Atlantic and Gulf of Mexico	Various	10	Y	NA	B. Mase, SEFSC
Fraser's dolphin	W. N. Atlantic	Various	1	Y	NA	B. Mase, SEFSC
Harbor porpoise	W. N. Atlantic	Various	6	Y	NA	B. Mase, SEFSC
Humpback whale	W. N. Atlantic	Various	2	Y	NA	B. Mase, SEFSC
Melon-headed whale	W. N. Atlantic	Various	3	Y	NA	B. Mase, SEFSC
Northern right whale	W. N. Atlantic	Various	3	Y	NA	B. Mase, SEFSC
Pygmy killer whale	W. N. Atlantic	Various	1	Y	NA	B. Mase, SEFSC
Pygmy sperm whale	W. N. Atlantic and Gulf of Mexico	Various	11	Y	NA	B. Mase, SEFSC
Risso's dolphin	W. N. Atlantic	Various	1	Y	NA	B. Mase, SEFSC
Rough-toothed dolphin	W. N. Atlantic	Various	2	Y	NA	B. Mase, SEFSC
Common dolphin	W. N. Atlantic	Various	2	Y	NA	B. Mase, SEFSC
Short-finned pilot whale	W. N. Atlantic	Various	1	Y	NA	B. Mase, SEFSC
Sperm whale	W. N. Atlantic	Various	1	Y	NA	B. Mase, SEFSC
Spinner dolphin	W. N. Atlantic	Various	1	Y	NA	B. Mase, SEFSC
Striped dolphin	W. N. Atlantic and Gulf of Mexico	Various	2	Y	NA	B. Mase, SEFSC
Pygmy/Dwarf sperm whale	W. N. Atlantic	Various	1	Y	NA	B. Mase, SEFSC

#### 4.4 Analyses/development of techniques

NR.

#### 5. POLLUTION STUDIES

NR

## 6. STATISTICS FOR LARGE CETACEANS

### 6.1 Corrections to earlier years' statistics for large whales

NR

### 6.2 Direct catches of large whales (commercial, aboriginal and scientific permits) for the calendar year 2006

NR

### 6.3 Anthropogenic mortality of large whales for the calendar year 2004

#### 6.3.1 Observed or reported ship strikes of large whales (including non-fatal events)

Whale species	Sex	No.	Date	Location	Vessel type	Speed	Fate	How observed	Contact person/ institute and refs
Right whale	F	1	7/2/04	Virginia Beach, VA	U	U	D	DA	Tim Cole/NEFSC/NEFSC Ref. Doc. 07-05
Right whale	F	1	24/11/04	Ocean Sands, NC	U	U	D	DA	Tim Cole/NEFSC/NEFSC Ref. Doc. 07-05
Humpback	U	1	19/12/04	Bethany Beach, DE	U	U	D	DA	Tim Cole/NEFSC/NEFSC Ref. Doc. 07-05
Fin whale	F	1	24/2/04	Port Elizabeth, NJ	U	U	D	DA	Tim Cole/NEFSC/NEFSC Ref. Doc. 07-05
Fin whale	U	1	26/9/04	St. Johns, NB	U	U	D	DA	Tim Cole/NEFSC/NEFSC Ref. Doc. 07-05
Minke whale	F	1	1/6/04	Chatham, MA (41° 41'N 69°56'W)	U	U	D	DA	Tim Cole/NEFSC/NEFSC Ref. Doc. 07-05

#### 6.3.2 Fishery bycatch of large whales

Whale species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Right whale	F	1	06/9/04	Roseway Basin, NS	D	U	U	DA	Tim Cole/NEFSC
Fin whale	U	1	12/2/04	Pea Island, NC	D	U	U	DA	Tim Cole/NEFSC
Fin whale	U	1	30/6/04	Georges Bank	D	U	U	DA	Tim Cole/NEFSC
Humpback whale	U	1	11/7/04	Briar Island, NS	D	U	U	DA	Tim Cole/NEFSC
Humpback whale	U	1	3/10/04	Georges Bank	D	U	U	DA	Tim Cole/NEFSC
Minke whale	F	1	6/5/04	Martha's Vinyard, MA (41°21'N 70°40'W)	D	U	U	DA	Tim Cole/NEFSC
Minke whale	F	1	19/7/04	Eastham, MA (41°54'N 69°58'W)	D	U	U	DA	Tim Cole/NEFSC

## 7. STATISTICS FOR SMALL CETACEANS

### 7.1 Corrections to earlier years' statistics for small cetaceans

NR

## 7.2 Direct catches of small cetaceans for the calendar year 2006

NR

## 7.3 Anthropogenic mortality of small cetaceans for the calendar year 2004

### 7.3.1 Observed or reported ship strikes of small cetaceans (including non-fatal events)

Species	Sex	No.	Date	Location	Vessel type	Speed	Fate	How observed	Contact person/ institute and refs
Bottlenose dolphin	M	1	3/30/04	Nueces, TX	U	U	D	DA	Mendy Garron, NER Stranding Network
Bottlenose dolphin	U	1	4/19/04	Nueces, TX	U	U	D	DA	Mendy Garron, NER Stranding Network
Bottlenose dolphin	F	1	3/19/04	Gulfport, MS	U	U	D	DA	Mendy Garron, NER Stranding Network
Bottlenose dolphin	U	1	4/27/04	Ocracoke, NC	U	U	D	DA	Mendy Garron, NER Stranding Network
Bottlenose dolphin	F	1	5/15/04	Isle of Palms, SC	U	U	D	DA	Mendy Garron, NER Stranding Network
Bottlenose dolphin	F	1	8/9/04	Freeport, TX	U	U	D	DA	Mendy Garron, NER Stranding Network

### 7.3.2 Fishery bycatch of small cetaceans

#### NEFSC

Species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
harbor porpoise	U	1	1/3/04	42.40°N, - 70.35°W	D	monkfish	GNS	F	NEFSC, 166 Water Street, Woods Hole, MA
harbor porpoise	U	1	1/3/04	42.45°N, - 70.35°W	D	monkfish	GNS	F	see above
harbor porpoise	U	1	1/29/04	42.42°N, - 70.35°W	D	cod	GNS	F	see above
white-sided dolphin	M	1	2/4/04	42.48°N, - 69.91°W	D	American plaice flounder	OTB	F	see above
harbor porpoise	F	1	2/9/04	42.45°N, - 70.40°W	D	cod	GNS	F	see above
white-sided dolphin	U	1	2/13/04	41.87°N, - 68.32°W	D	monkfish	OTB	F	see above
harbor porpoise	U	1	2/20/04	42.44°N, - 70.38°W	R	cod	GNS	F	see above
white-sided dolphin	M	1	2/25/04	42.59°N, - 69.68°W	D	white hake	OTB	F	see above
white-sided dolphin	M	1	2/27/04	39.77°N, - 72.48°W	D	Atlantic mackerel	PTM	F	see above
harbor porpoise	U	1	2/27/04	42.48°N, - 70.46°W	D	cod	GNS	F	see above
unknown dolphin	U	1	3/5/04	38.38°N, - 74.25°W	D	Atlantic mackerel	TM	F	see above
white-sided dolphin	U	1	3/13/04	41.64°N, - 69.12°W	D	cod	OTB	F	see above
white-sided dolphin	M	1	3/16/04	42.84°N, - 69.90°W	D	unknown flounder	OTB	F	see above
white-sided dolphin	F	1	3/17/04	42.49°N, - 69.47°W	D	unknown groundfish	OTB	F	see above

white-sided dolphin	M	1	3/19/04	42.55°N, - 69.66°W	R	unknown groundfish	OTB	F	see above
white-sided dolphin	M	1	3/20/04	42.63°N, - 69.53°W	D	unknown groundfish	OTB	F	see above
white-sided dolphin	M	1	3/23/04	42.52°N, - 69.60°W	D	unknown groundfish	OTB	F	see above
white-sided dolphin	U	1	3/25/04	42.75°N, - 69.35°W	D	white hake	OTB	F	see above
white-sided dolphin	U	1	3/25/04	41.80°N, - 68.35°W	D	witch flounder	OTB	F	see above
white-sided dolphin	F	1	3/27/04	41.79°N, - 68.25°W	D	winter skate	OTB	F	see above
white-sided dolphin	F	1	4/5/04	41.54°N, - 68.69°W	D	witch flounder	OTB	F	see above
white-sided dolphin	M	1	4/6/04	41.72°N, - 68.61°W	D	monkfish	OTB	F	see above
white-sided dolphin	M	1	4/6/04	41.32°N, - 69.24°W	D	haddock	OTB	F	see above
harbor porpoise	F	1	4/7/04	40.34°N, - 71.00°W	D	monkfish	GNS	F	see above
harbor porpoise	F	1	4/7/04	40.34°N, - 70.97°W	D	monkfish	GNS	F	see above
harbor porpoise	M	1	4/7/04	40.34°N, - 70.93°W	D	monkfish	GNS	F	see above
harbor porpoise	M	1	4/7/04	40.36°N, - 70.92°W	D	monkfish	GNS	F	see above
harbor porpoise	F	1	4/7/04	40.36°N, - 70.92°W	D	monkfish	GNS	F	see above
white-sided dolphin	U	1	4/7/04	41.98°N, - 67.94°W	D	monkfish	OTB	F	see above
white-sided dolphin	U	1	4/9/04	42.08°N, - 67.63°W	D	winter flounder	OTB	F	see above
white-sided dolphin	F	1	4/10/04	42.10°N, - 67.71°W	D	cod	OTB	F	see above
unknown dolphin	U	1	4/18/04	39.94°N, - 69.50°W	D	monkfish	GNS	F	see above
harbor porpoise	F	1	4/21/04	40.05°N, - 70.06°W	D	monkfish	GNS	F	see above
harbor porpoise	M	1	4/21/04	39.65°N, - 72.90°W	D	sea scallop	DRB	F	see above
harbor porpoise	F	1	4/25/04	40.58°N, - 71.16°W	D	monkfish	GNS	F	see above
bottlenose dolphin	M	1	4/25/04	40.12°N, - 70.22°W	D	monkfish	GNS	F	see above
unknown porpoise/ dolphin	F	1	4/25/04	40.62°N, - 71.17°W	U	monkfish	GNS	F	see above
harbor porpoise	M	1	4/27/04	37.95°N, - 75.03°W	D	monkfish	GNS	F	see above
harbor porpoise	U	1	4/27/04		D	monkfish	GNS	F	see above
harbor porpoise	U	1	4/27/04		D	monkfish	GNS	F	see above
harbor porpoise	M	1	4/27/04	37.97°N, - 75.03°W	D	monkfish	GNS	F	see above
unknown porpoise/ dolphin	U	1	5/5/04	41.07°N, - 71.34°W	D	monkfish	GNS	F	see above
unknown porpoise/ dolphin	U	1	5/5/04	41.06°N, - 71.39°W	D	monkfish	GNS	F	see above

unknown dolphin	U	1	5/11/04	37.75°N, - 74.56°W	D	sea scallop	DRB	F	see above
harbor porpoise	U	1	5/22/04	40.71°N, - 71.13°W	D	monkfish	GNS	F	see above
harbor porpoise	U	1	5/22/04	40.70°N, - 71.10°W	D	monkfish	GNS	F	see above
common dolphin	F	1	7/3/04	38.23°N, - 71.67°W	D	short-fin squid	OTB	F	see above
common dolphin	M	1	7/7/04	40.79°N, - 66.86°W	D	silver hake	OTB	F	see above
common dolphin	F	1	7/8/04	40.46°N, - 68.18°W	D	silver hake	OTB	F	see above
unknown porpoise/dolphin	U	1	7/14/04	41.81°N, - 68.28°W	D	monkfish	OTB	F	see above
harbor porpoise	U	1	7/19/04	41.73°N, - 68.38°W	D	unknown flounder	OTB	F	see above
minke whale	U	1	8/24/04	41.37°N, - 67.32°W	D	yellowtail flounder	OTB	F	see above
long-fin pilot whale	F	1	9/17/04	41.70°N, - 68.44°W	D	American lobster	OTB	F	see above
long-fin pilot whale	U	1	9/24/04	41.72°N, - 68.38°W	U	Atlantic herring	PTM	F	see above
common dolphin	M	1	9/27/04	40.75°N, - 66.99°W	D	silver hake	OTB	F	see above
harbor porpoise	M	1	10/6/04	42.72°N, - 70.47°W	D	cod	GNS	F	see above
white-sided dolphin	U	1	10/13/04	42.93°N, - 70.38°W	D	cod	GND	F	see above
harbor porpoise	M	1	10/13/04	42.75°N, - 70.29°W	D	cod	GNS	F	see above
harbor porpoise	M	1	10/13/04	42.76°N, - 70.33°W	D	cod	GNS	F	see above
harbor porpoise	M	1	10/13/04	42.76°N, - 70.33°W	D	cod	GNS	F	see above
white-sided dolphin	U	1	10/29/04	39.95°N, - 69.70°W	R	long-fin squid	OTB	F	see above
unknown baleen whale	U	1	10/29/04	41.73°N, - 68.39°W	D	monkfish	OTB	F	see above
unknown whale	U	1	10/30/04	41.73°N, - 68.38°W	D	witch flounder	OTB	F	see above
unknown whale	U	1	11/2/04	41.72°N, - 68.38°W	D	witch flounder	OTB	F	see above
common dolphin	F	1	11/3/04	38.15°N, - 73.78°W	D	long-fin squid	OTB	F	see above
common dolphin	F	1	11/3/04	38.15°N, - 73.78°W	D	long-fin squid	OTB	F	see above
common dolphin	F	1	11/3/04	38.15°N, - 73.78°W	D	long-fin squid	OTB	F	see above
harbor porpoise	U	1	11/7/04	42.522°N, - 70.61°W	D	cod	GNS	F	see above
white-sided dolphin	U	1	11/7/04	43.19°N, - 70.27°W	D	unknown groundfish	OTB	F	see above
common dolphin	F	1	12/2/04	38.31°N, - 73.62°W	D	long-fin squid	OTB	F	see above
unknown porpoise/dolphin	U	1	12/3/04	41.04°N, - 70.94°W	D	monkfish	GNS	F	see above
harbor porpoise	U	1	12/3/04	42.72°N, - 70.47°W	D	cod	GNS	F	see above

common dolphin	F	1	12/4/04	38.38°N, - 73.47°W	D	long-fin squid	OTB	F	see above
unknown whale	U	1	12/9/04	43.30°N, - 70.06°W	D	monkfish	OTB	F	see above
unknown baleen whale	U	1	12/9/04	41.74°N, - 68.37°W	R	unknown flounder	OTB	F	see above
unknown porpoise/dolphin	U	1	12/16/04	40.84°N, - 71.72°W	D	monkfish	GNS	F	see above
common dolphin	U	1	12/16/04	38.52°N, - 73.28°W	D	long-fin squid	OTB	F	see above
common dolphin	U	1	12/16/04	38.52°N, - 73.28°W	D	long-fin squid	OTB	F	see above
common dolphin	U	1	12/16/04	38.61°N, - 73.24°W	D	long-fin squid	OTB	F	see above
long-fin pilot whale	M	1	12/17/04	41.91°N, - 68.04°W	U	monkfish	OTB	F	see above
harbor porpoise	F	1	12/19/04	42.84°N, - 70.25°W	D	pollock	GNS	F	see above
harbor porpoise	U	1	12/22/04	41.71°N, - 69.82°W	D	monkfish	GNS	F	see above
harbor porpoise	U	1	12/30/04	40.78°N, - 70.83°W	D	monkfish	GNS	F	see above

## SEFSC

Species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Common dolphin	U	1	07/2004	44°49'N; 44°38'W	R	Swordfish/ Tuna	LLD	F	L. Garrison, SEFSC
Pilot whale	U	1	01/2004	35°56'N; 74°43'W	D	Swordfish/ Tuna	LLD	F	L. Garrison, SEFSC
Pilot whale	U	1	02/2004	20°30'N; 74°00'W	D	Swordfish/ Tuna	LLD	F	L. Garrison, SEFSC
Pilot whale	U	1	2/2004	20°25'N; 73°49'W	D	Swordfish/ Tuna	LLD	F	L. Garrison, SEFSC
Pilot whale	U	1	07/2004	35°42'N; 74°43'W	R	Swordfish/ Tuna	LLD	F	L. Garrison, SEFSC
Pilot whale	U	1	07/2004	35°42'N; 74°43'W	R	Swordfish/ Tuna	LLD	F	L. Garrison, SEFSC
Pilot whale	U	1	09/2004	39°43'N; 71°43'W	D	Swordfish/ Tuna	LLD	F	L. Garrison, SEFSC
Pilot whale	U	1	10/2004	39°41'N; 71°41'W	D	Swordfish/ Tuna	LLD	F	L. Garrison, SEFSC
Pilot whale	U	1	10/2004	39°48'N; 71°00'W	D	Swordfish/ Tuna	LLD	F	L. Garrison, SEFSC
Risso's dolphin	U	1	7/2004	39°55'N; 69°25'W	R	Swordfish/ Tuna	LLD	F	L. Garrison, SEFSC
Risso's dolphin	U	1	10/2004	39°42'N; 71°43'W	D	Swordfish/ Tuna	LLD	F	L. Garrison, SEFSC
Risso's dolphin	U	1	11/2004	38°14'N; 73°33'W	D	Swordfish/ Tuna	LLD	F	L. Garrison, SEFSC

Reference: Garrison (2005)

## 8. STRANDINGS (2005)

### NEFSC

The United States Northeast Regional Stranding network consists of local and regional responders who live and operate from Maine to North Carolina. A NMFS letter of agreement permits these individuals and organizations to approach, handle, and collect stranded, sick, dead, injured and alive marine mammals from both offshore and

onshore waters on a year round basis. These permitted individuals and organizations submit a Level A response letter in a timely manner. This Level A report informs NMFS to the level of response, number of animals, number of species involved and collectively assists NMFS in determining any unusual marine mammal mortality events.

## SEFSC

The southeast region marine mammal stranding network consists of numerous private and public agencies throughout the southeastern United States from Texas to North Carolina. The Southeast Fisheries Science Center coordinates the activities of these groups, provides training, and manages data from all reported strandings data for the region.

### NEFSC and SEFSC strandings -2005

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Atlantic spotted dolphin	4	2	Mendy Garron, NER Stranding Network	Mendy.Garron@noaa.gov
Atlantic white-sided dolphin	79	29	see above	see above
White whale	1	0	see above	see above
Blainville's beaked whale	2	2	see above	see above
Bottlenose dolphin	567	325	see above	see above
Common dolphin	77	32	see above	see above
Cuvier's beaked whale	2	1	see above	see above
Dwarf sperm whale	8	8	see above	see above
Gervais' beaked whale	2	2	see above	see above
Harbor porpoise	177	95	see above	see above
Humpback whale	2	1	see above	see above
Long-finned pilot whale	35	18	see above	see above
Minke whale	2	2	see above	see above
Right whale	1	1	see above	see above
Pantropical spotted dolphin	1	1	see above	see above
Pygmy sperm whale	22	20	see above	see above
Risso's dolphin	33	25	see above	see above
Rough-toothed dolphin	71	43	see above	see above
Short-finned pilot whale	35	31	see above	see above
Sperm whale	2	1	see above	see above
Striped dolphin	16	16	see above	see above
UID beaked whale	1	1	see above	see above
UID cetacean	10	1	see above	see above
UID delphinid	22	3	see above	see above
UID <i>Kogia</i>	1	0	see above	see above
UID pilot whale	4	2	see above	see above
UID stenelline dolphin	1	1	see above	see above
White-beaked dolphin	1	0	see above	see above

## 9. OTHER STUDIES AND ANALYSES

### NEFSC

Trawl bycatch reduction: A contract was awarded and a workshop with industry participants was held to discuss possible methods to reduce the bycatch of cetaceans in trawl fisheries. Information attained at this workshop led to recent testing and video analysis of openings in the mesh of a herring trawl and subsequent testing of openings



forward of the extension to ascertain the affect on the catch of the targeted species. Additionally, a 'V' panel is being investigated in association with mesh openings to both retain the targeted species and reduce the take of cetaceans in trawls. (Contact: Henry Milliken, NEFSC)

## **SEFSC**

### *Gulf of Mexico:*

A photo-identification study of bottlenose dolphins in Mississippi Sound (north-central Gulf of Mexico) was conducted. Mississippi Sound is a 1600 km<sup>2</sup> marine area with as many as 2000 bottlenose dolphins. These photo-identification surveys built on previous photo-id work but focused on three small discreet habitat areas to test hypotheses about ranging patterns and site-fidelity of dolphins. The results of this work are part of an overall study of bottlenose dolphin stock structure in inshore waters of the Gulf of Mexico. Systematic surveys were conducted from a 7-m boat in each area, dolphin groups were photographed and biopsy samples were collected. (Contact: K. Mullin, SEFSC).

### *Northwest Atlantic:*

The ongoing photo-identification study of bottlenose dolphins in Biscayne Bay, FL was continued. Surveys are undertaken on three days each month throughout the year. A small vessel systematically surveys a selected region of Biscayne Bay, photographing all bottlenose dolphins encountered. In addition, targeted biopsy sample collections were undertaken during the fall and spring to for this population to determine sex ratios, evaluate potential population structure, and explore contaminant loading in this population. The photo-identification component of this survey and the associated photographic catalogue has been ongoing for 10 years. (Contact: L. Garrison, SEFSC).

## **10. LITERATURE CITED**

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### **11.1 Published or 'In Press' papers only**

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#### **SEFSC**

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#### **11.2 Unpublished literature**

NR

## USA PACIFIC WATERS

### 1. Species and stocks studied

Common name	IWC recommended scientific name	Area/stock(s)	Items referred to
Baird's beaked whale	<i>Berardius bairdii</i>	Eastern Pacific	2.1
Blue whale	<i>Balaenoptera musculus</i>	Eastern Pacific	2.1, 6.3
Blainsville's Beaked Whale	<i>Mesoplodon densirostris</i>	Eastern Pacific	3.1
Bottlenose dolphin	<i>Tursiops truncatus</i>	Eastern Pacific/Central Eq. Pacific	2.1, 3.1, 4.1, 4.3, 7.3
Bowhead whale	<i>Balaena mysticetus</i>	Bering-Chukchi-Beaufort Seas	2.1, 2.2, 6.2
Bryde's whale	<i>Balaenoptera edeni</i>	Eastern Pacific/ Central equatorial Pacific	2.1, 4.1
Central American spinner dolphin	<i>Stenella longirostris centroamericana</i>	Eastern Pacific	2.1
Coastal spotted dolphin	<i>Stenella attenuata graffmani</i>	Eastern Pacific	2.1, 4.1
Cuvier's Beaked Whale	<i>Ziphius cavirostris</i>	Eastern Pacific	2.1, 3.1
Dall's porpoise	<i>Phocoenoides dalli</i>	Eastern Pacific/Bering Sea	4.3, 7.3, 9
Drawf sperm whale	<i>Kogia sima</i>	Central equatorial Pacific/ Eastern Pacific	2.1
Eastern spinner dolphin	<i>Stenella longirostris orientalis</i>	Eastern Pacific	4.1
False killer whale	<i>Pseudorca crassidens</i>	Eastern Pacific/ Central equatorial Pacific	2.1, 3.1, 4.1
Fin whale	<i>Balaenoptera physalus</i>	Eastern Pacific/ Gulf of Alaska/Bering Sea	2.1, 6.3, 9
Fraser's dolphin		Eastern Pacific	2.1
Gray whale	<i>Eschrichtius robustus</i>	Eastern Pacific /Gulf of Alaska/Bering Sea	2.1, 2.2, 3.1, 4.1, 6.3
Harbor porpoise	<i>Phocoena phocoena</i>	Eastern North Pacific/ Gulf of Alaska/Bering Sea	4.3, 9
Humpback whale	<i>Megaptera novaeangliae</i>	Eastern Pacific/ Central equatorial Pacific/Alaska/North Pacific	2.1, 3.1, 4.1, 4.3, 5, 6.3
Indo-pacific beaked whale	<i>Indopacetus pacificus</i>	Eastern Pacific	2.1
Killer whale	<i>Orcinus orca</i>	Eastern Pacific/ Alaska	2.1, 3.1, 4.1, 4.4, 7.3, 9
Killer whale	<i>Orcinus orca</i>	Antarctic/Type C, Type B	4.1, 9
Long-beaked common dolphin	<i>Delphinus capensis</i>	Eastern Pacific	4.1, 4.2, 4.3, 7.3
Melon-headed whale	<i>Peponocephala electra</i>	Eastern Pacific	2.1
Minke whale	<i>Balaenoptera acutorostrata</i>	Eastern Pacific	2.1
Northern right whale	<i>Eubalaena glacialis</i>	Florida/North Atlantic	5
North Pacific Right whale	<i>Eubalaena japonica</i>	Bering Sea	9
Northern right whale dolphin	<i>Lissodelphis borealis</i>	Eastern Pacific	4.3, 7.3
Pacific white-sided dolphin	<i>Lagenorhynchus obliquidens</i>	Eastern Pacific	8
Pantropical spotted dolphin	<i>Stenella attenuata</i>	Eastern Pacific	2.1, 4.1
Pygmy beaked whale	<i>Mesoplodon peruvianus</i>	Eastern Pacific	2.1
Pygmy killer whale	<i>Feresa attenuata</i>	Eastern Pacific	2.1, 4.1
Pygmy sperm whale	<i>Kogia breviceps</i>	Eastern Pacific	2.1
Risso's dolphin	<i>Grampus griseus</i>	Eastern Pacific	2.1, 4.1
Rough-toothed dolphin	<i>Steno bredanensis</i>	Eastern Pacific/ Central	2.1, 3.1, 4.1
Sei whale	<i>Balaenoptera borealis</i>	Eastern Pacific	2.1
Short-beaked common dolphin	<i>Delphinus delphis</i>	Eastern Pacific	2.1, 4.1, 4.2, 4.3, 7.3
Short-finned pilot whale	<i>Globicephala macrorhynchus</i>	Eastern Pacific/ Central equatorial Pacific	2.1, 4.1, 3.1
Sperm whale	<i>Physeter macrocephalus</i>	Eastern Pacific/Bering Sea/ Aleutian Islands/Central	2.1, 4.1, 4.4
Striped dolphin	<i>Stenella coeruleoalba</i>	Eastern Pacific/ Central equatorial Pacific	2.1, 4.1, 9
Tres Marias spinner dolphin	<i>Stenella attenuata</i>	Eastern Pacific	2.1, 4.1

Common dolphin, unidentified to species	<i>Delphinus spp.</i>	Eastern Pacific	4.1
Spotted dolphin, unidentified to subspecies	<i>Stenella attenuate spp.</i>	Eastern Pacific	2.1, 4.1
Spinner dolphin, unidentified to subspecies	<i>Stenella longirostris spp.</i>	Eastern Pacific/ Central equatorial Pacific	2.1, 3.1, 4.1, 7.3
Whale, unidentified	<i>Balaenoptera spp.</i>	Eastern Pacific	6.3
White whale	<i>Delphinapterus leucus</i>	Cook Inlet, Alaska, Beaufort	2.1

## 2. Sightings data

### 2.1 Field work

#### 2.1.1 Systematic

#### AFSC

##### *Aerial Surveys of Beluga Whales in Cook Inlet, Alaska*

The National Marine Fisheries Service (NMFS) conducted an aerial survey to document belugas in Cook Inlet 2-3 May, 5-15 June and 16-17 August 2006. Surveys were flown in a twin-engine, high-wing aircraft (Aero Commander 680 in May and June and a Twin Otter in August) at an altitude of 244 m (800 ft) and speed of 185 km/hr (100 kt), consistent with NMFS' annual abundance surveys for Cook Inlet belugas since 1993. Coastal tracklines were 1.4 km offshore such that most waters within 3 km of shore were searched by observers on the left and right sides of the aircraft. Additional tracklines were made away from shore to search for belugas in areas where they do not typically occur (in early summer, most belugas in Cook Inlet are in shallow coastal waters near river mouths). After sighting a beluga group, a series of four or more aerial passes were made to mark the group location and to make aerial counts. Paired High Definition (HD) video cameras were used to document beluga groups; one camera had a lens set at wide angle to capture a view of the entire group, and the other camera lens was zoomed to magnify individual whales in the group.

The survey in May (7.1 flight hours) had objectives to: 1) document beluga distribution in upper Cook Inlet; 2) record calf sightings relative to other seasons; and 3) test new survey equipment. Unlike June surveys, when groups are generally large, concentrated, and close to shore, belugas in May were in very small, widely scattered groups, some of them well offshore making them hard to find. The beluga distribution in early May appeared to be similar to winter/spring observations (November-April) made in previous years and in sharp contrast to the summer/fall distribution (June-October) when whales are in dense groups in shallow water. Although the total number of belugas seen (43 whales in two days) is small, no calves were observed, suggesting that this May survey proceeded the calving season. With the small, scattered nature of beluga groups, cameras could not be tested directly on whales; however, broken river ice provided an ideal test of camera performance because ice color ranged from white to black (similar to belugas) with crisp, uniquely identifiable ice edges, which helped in pair-wise comparisons between images.

The survey in June (58.4 flight hrs) included coverage of all coastal areas around the entire Inlet and 1553 km of transects across the Inlet, effectively searching 30% of the waters of Cook Inlet. The survey objectives were to: 1) document beluga distribution for annual comparisons back to 1993; 2) count and video beluga groups for abundance estimates; and 3) video belugas for evaluation of the presence of calves (black) and yearlings (gray) relative to adults (white). Sighting locations in 2006 were fairly typical of locations documented during these annual June surveys. The highest of the daily median estimates (a very rough but quick index of relative abundance, not corrected for effort nor for estimates of whales missed) for June 2006 is 153 belugas. This is well below index counts for years prior to 1998 (264-324), but it is similar, albeit somewhat lower, to other counts made during the past seven years (174-217).

The survey in August (10.1 flight hours) provided thorough coverage of all coastal areas in the upper Inlet. The primary intent of the survey was to document whale groups in video cameras for an analysis of age structure (white adults relative to dark juveniles). Beluga sighting locations were fairly typical of the distribution seen each June except that it was unusual to find no whales in Chickaloon Bay. Daily median estimates were 126 for 16 August and 143 for 17 August. The latter count compares favourably with the index count for June 2006 (153 belugas) but is below the similar count done on 2 days in August 2005 (236 and 277 belugas). (Contact: D. Rugh, AFSC)

##### *Bowhead whales*

NMFS observers were on aerial surveys flown jointly for Minerals Management Services' Bowhead Whale Aerial Survey Program (BWASP) and the Study of Northern Alaska Coastal System (SNACS). Surveys (33.7 flight hrs) were flown north and east of Pt Barrow, Alaska, 1-6 Sept 2006 in a Twin Otter with 4 bubble windows but no belly port, so there was no vertical photography for whale lengths. Most sightings were recorded on transect, but on a few occasions photographs were taken by handing a Nikon D-70 camera to the co-pilot who had a window that opened. The only useable images (34) were from an altitude of 750ft; photos taken at 1000ft and 1500ft were too far away to be used for identifying individual whales. Summary counts were 78 bowheads seen as well as 7 gray whales and 366 belugas. (Contact: D. Rugh, AFSC)

#### *2006 Killer whale survey, Aleutian Islands and Bering Sea*

This survey constituted the sixth consecutive year of a study conducted by the NOAA National Marine Mammal Laboratory (NMML) to assess killer whale population biology around the Aleutian Islands and Bering Sea. A total of 2300 miles of visual survey effort were conducted aboard the F/V Ocean Olympic between 31st May and 23rd June 2006. Surveys started and ended in Dutch Harbor and covered the coastal waters of the central and western Aleutian Islands and the Bering Sea between the eastern Aleutian Islands and the Pribilof Islands. (Contact: J. Durban, AFSC)

Primary species	Date	Area	No. of sightings	Contact person/institute
Killer whale	31/5/06-23/6/06	Aleutian Islands and Bering Sea, Alaska	42	J. Durban (AFSC)

#### *Gray Whale Census at Granite Canyon, California*

The southbound migration of the Eastern North Pacific stock of gray whales was documented by the Alaska Fisheries Science Center (AFSC), NMFS from 12 December 2006 to 22 February 2007. Research protocol was essentially identical to that used in previous surveys. This involved single observers independently searching for whales and recording data on environmental conditions and the time, location, count, and direction of travel for each sighting. The counting system and observer performance were tested through paired, independent observational effort. In addition, in a nearby trailer, a three observer team from the NMFS Southwest Fisheries Science Center (SWFSC) rotated through watches covering 9 hours per day for most days from 2 to 27 January. Each observer took a turn for 1.5 hr of dedicated searching, then 1.5 hr both searching and recording data in a computerized data entry system and then 3 hr of rest. The counts by SWFSC will be compared to the standard effort by the AFSC to determine if their results are equivalent or if there is a need to develop correction methods. After this survey, the SWFSC will be conducting the gray whale census using the new method and software. In the future the AFSC will participate as needed to complete the calibration of the two methods. A fix-mounted, high-powered (25x) binocular provided an index (n = 110 pods; 19.7 hr) of the offshore distribution of migrating whales passing within the sighting range of the observers. The timing of the 2006/07 southbound migration appeared to be approximately one week later than in previous years, with the median date close to 22 January instead of 15 January. Most (80%) of the sightings occurred in January, only 3% were in December and 17% were in February. A total of 1770 pods (3870 whales) were counted during the 73 days of the standard census during fair to excellent visibility conditions. This compares favourably with similar counts from 2000/01 (1684 pods) and 2001/02 (1712 pods). (Contact: D. Rugh, AFSC)

#### *Gray Whales off Washington Coast*

From May 4 to October 12, 2006, vessel surveys for gray whales were conducted along the northern Washington coast and western Strait of Juan de Fuca. The surveys covered 463 nautical miles and represented 46 hours of survey effort. During these surveys 102 gray whales were sighted and 86 were photographed for identification. More gray whales were sighted along the northern Washington coast (72) than in the western Strait of Juan de Fuca (30).

#### *Gray Whales off Oregon Coast*

Two surveys along the Oregon coast from Rogue Reef to Cape Blanco were conducted which covered 100 nautical miles and required 6 hours of survey effort. During these 2 surveys, only one gray whale was sighted and photographed. (Contact: M. Gosho, AFSC)

**NWFSC**

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**HIHWNMS**

Target species	Date	Area	No. of sightings	Contact person/institute and references
Bottlenose dophin	1-15/10/06	American Samoa	5/10	David Mattila/HIHWNMS
False killer whale	1-15/10/06	American Samoa	11/21	David Mattila/HIHWNMS
Humpback whale	1-15/10/06	American Samoa	114/117	David Mattila/HIHWNMS
Rough-toothed dophin	1-15/10/06	American Samoa	30/50	David Mattila/HIHWNMS
Spinner dolphin	1-15/10/06	American Samoa	60/85	David Mattila/HIHWNMS

**SWFSC**

The Stenella Abundance Research Cruise (STAR) 2006 cruise surveyed marine mammals and their habitat in the eastern tropical Pacific Ocean (ETP) from late July through early December of 2006 aboard NOAA Ships *David Starr Jordan* and *McArthur II*. The primary objective of STAR is to investigate trends in the population size of the species of dolphins most affected by the eastern tropical Pacific tuna-purse seine fishery. Using an ecosystem approach, we conducted studies of cetacean distribution and abundance, movements, vocalizations, phylogeny and systematics, and behavior. Ecosystem sampling was used to study physical and biological oceanographic characteristics, mid trophic prey fishes and squids, seabirds, and marine turtles. Aerial photographs were taken from a fixed wing aircraft to calibrate cetacean school size estimates and to study cetacean life history. The survey area in the eastern tropical Pacific Ocean is approximately 20 million km<sup>2</sup>; In 2006 we surveyed almost 40,000 nautical miles of trackline, including 18,000 nautical miles of daytime survey effort.

Target species	Date	Area	# sightings	Contact person
Balaenoptera acutorostrata	7/06-12/06	Eastern Tropical Pacific	1	L.Ballance
Balaenoptera borealis/edeni	7/06-12/06	Eastern Tropical Pacific	27	(SWFSC)
Balaenoptera edeni	7/06-12/06	Eastern Tropical Pacific	34	
Balaenoptera musculus	7/06-12/06	Eastern Tropical Pacific	110	
Balaenoptera physalus	7/06-12/06	Eastern Tropical Pacific	9	
Balaenoptera sp.	7/06-12/06	Eastern Tropical Pacific	52	
Berardius bairdii	7/06-12/06	Eastern Tropical Pacific	66	
Delphinus delphis	7/06-12/06	Eastern Tropical Pacific	27565	
Feresa attenuata	7/06-12/06	Eastern Tropical Pacific	222	
Globicephala macrorhynchus	7/06-12/06	Eastern Tropical Pacific	1573	
Globicephala sp.	7/06-12/06	Eastern Tropical Pacific	73	
Grampus griseus	7/06-12/06	Eastern Tropical Pacific	886	
Indopacetus pacificus	7/06-12/06	Eastern Tropical Pacific	3	
Kogia breviceps	7/06-12/06	Eastern Tropical Pacific	4	
Kogia sima	7/06-12/06	Eastern Tropical Pacific	48	
Kogia sp.	7/06-12/06	Eastern Tropical Pacific	3	
Lagenodelphis hosei	7/06-12/06	Eastern Tropical Pacific	145	
Megaptera novaeangliae	7/06-12/06	Eastern Tropical Pacific	16	
Mesoplodon peruvianus	7/06-12/06	Eastern Tropical Pacific	31	
Mesoplodon sp.	7/06-12/06	Eastern Tropical Pacific	71	
Orcinus orca	7/06-12/06	Eastern Tropical Pacific	137	
Peponocephala electra	7/06-12/06	Eastern Tropical Pacific	777	
Physeter macrocephalus	7/06-12/06	Eastern Tropical Pacific	140	
Pseudorca crassidens	7/06-12/06	Eastern Tropical Pacific	189	
Stenella attenuata (offshore)	7/06-12/06	Eastern Tropical Pacific	19126	
Stenella attenuata (unid. subsp.)	7/06-12/06	Eastern Tropical Pacific	878	
Stenella attenuata graffmani	7/06-12/06	Eastern Tropical Pacific	3184	
Stenella coeruleoalba	7/06-12/06	Eastern Tropical Pacific	7124	

Stenella longirostris (southwestern)	7/06-12/06	Eastern Tropical Pacific	3788
Stenella longirostris (unid. subsp.)	7/06-12/06	Eastern Tropical Pacific	4496
Stenella longirostris (whitebelly)	7/06-12/06	Eastern Tropical Pacific	6921
Stenella longirostris centroamericana	7/06-12/06	Eastern Tropical Pacific	613
Stenella longirostris orient/centroam	7/06-12/06	Eastern Tropical Pacific	188
Stenella longirostris orientalis	7/06-12/06	Eastern Tropical Pacific	13983
Steno bredanensis	7/06-12/06	Eastern Tropical Pacific	753
Tursiops truncatus	7/06-12/06	Eastern Tropical Pacific	3563
unid. dolphin	7/06-12/06	Eastern Tropical Pacific	1738
unid. large delphinid	7/06-12/06	Eastern Tropical Pacific	23
unid. large whale	7/06-12/06	Eastern Tropical Pacific	34
unid. medium delphinid	7/06-12/06	Eastern Tropical Pacific	313
unid. small delphinid	7/06-12/06	Eastern Tropical Pacific	3048
unid. small whale	7/06-12/06	Eastern Tropical Pacific	24
unid. whale	7/06-12/06	Eastern Tropical Pacific	5
ziphiid whale	7/06-12/06	Eastern Tropical Pacific	57
Ziphius cavirostris	7/06-12/06	Eastern Tropical Pacific	28

**PIFSC**  
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#### 2.1.2 OPPORTUNISTIC, PLATFORMS OF OPPORTUNITY

<i>NORTH PACIFIC</i>						
<b>Institution</b>	<b>US region</b>	<b>Species*</b>	<b>Platform type</b>	<b>Data type**</b>	<b>Collected by</b>	<b>Regional Archive***</b>
Channel Island National Marine Sanctuary Naturalist Corps, CA****	SW	AE	Whale watch	1,4	Naturalist, dedicated observer	Yes
Island Marine Institute, HI	HI	AR	Whale watch	1,2,3,4,5	Naturalist, dedicated observer	Yes
Monterey Bay Whale Watch, CA****	SW	AE	Whale watch	1,4	Naturalist, dedicated observer	Yes
Oceanic Society, CA****	SW	AE	Whale watch	1,4	Naturalist, dedicated observer	Yes
Univ. of Alaska SE, AK	NW	ABCKSW	Fishing vessels, Boaters	1,4,5	Captain, crew	Yes
Wild Dolphin Foundation, HI	HI	ALMN	Whale watch	1,2,3,4,7	Captain, crew, observers	No
Wild Whale Research Foundation, HI	HI	JMUVXY	Whale watch	1,4	Vessel captain/	Yes

					researcher	
<p><b>*Species codes:</b> A) <i>Megaptera novaeangliae</i>, B) <i>Balaenoptera physalus</i>, C) <i>Balaenoptera acutorostra</i>, D) <i>Eubalaena glacialis</i>, E) <i>Balenoptera musculus</i>, F) <i>Balaenoptera borealis</i>, G) <i>Lagenorhynchus acutus</i>, H) <i>Phocoena phocoena</i>, I), <i>Globicephala melas</i>, J) <i>Ziphiidae</i> spp. K) <i>Physeter macrocephalus</i>, L) <i>Stenella longirostris</i>, M) <i>Tursiops truncatus</i>, N) <i>Stenella attenuata</i>, O) <i>Delphinus delphis</i>, P) <i>Grampus griseus</i>, R) unspecified odontocete species, S) <i>Orcinus orca</i>, T) <i>Stenella coeruleoalba</i>, U) <i>Globicephala macrorhynchus</i>, V) <i>Feresa attenuata</i>, W) <i>Eschrichtius robustus</i>, X) <i>Steno bredanensis</i> Y) <i>Pseudorca crassidens</i></p> <p><b>**Data types:</b> 1) cetacean sighting data, 2) survey effort data (varied from general location to logged positions), 3) animal behavior, 4), photo-ID (for at least one listed species), 5) management-oriented data (fisheries interactions, ship strike, harassment), 6) scat/prey collection, 7) environmental data</p> <p>--- Data not available</p> <p><b>***ARCHIVES: DATA FOR ONE OR MORE LISTED SPECIES WERE CONTRIBUTED TO A REGIONAL OR OCEANIC ARCHIVE. RESPONDERS REPORTED CONTRIBUTING DATA TO THE FOLLOWING OTHER INSTITUTIONS: CASCADIA RESEARCH (WA), NATIONAL BIOLOGICAL INFORMATION INFRASTRUCTURE, NATIONAL MARINE MAMMAL LABORATORY (WA), SCRIPPS INSTITUTE OF OCEANOGRAPHY (CA)</b></p> <p>****Reported by Cascadia Research</p>						

## SWFSC

Primary species	Area	Data type/method	Collected by	Platform	Contact person/institute and refs
Long-beaked common dolphin	West Coast US	Biopsy, photo-id	Nick Kellar and John Hyde	Small boat	Nick Kellar (SWFSC)

## 2.2 Analyses/development of techniques

### AFSC

#### *Bowhead Whales*

Within-year and between-year matching has been completed for the 2003–05 spring photographs, and the databases are nearing completion. There were 11 whales matched between the 2003 and 2004 spring migrations, 3 whales were matched between 2003 and spring 2005, and no whales were matched between September 2005 and spring 2003 or spring 2004. Match effort is not yet complete for comparisons between spring 2004 and spring 2005 and for the recent years (2003-05) relative to earlier years (prior to 2000). A new computer assisted matching program is currently being developed. The photographs from these studies will permit calculation of a population estimate for comparison with the estimate from ice-based counts in 2001 and better precision in the calculation of bowhead whale life-history parameters. Stock structure analysis will be applied to resighting rates of bowheads photographed in April in the Bering Sea (early in the spring migration), through the spring migration near Barrow, during September near Barrow (which is prior to the main fall migration out of the Beaufort Sea), and in late summer in the Beaufort Sea (the primary feeding area).

#### *Gray Whale Census at Granite Canyon, California*

Population abundance calculations from the observer counts will follow the same analytical approach applied in previous studies. These methods account for: 1) whales passing during periods when there is no observational effort (prior to and after the census season, at night or when visibility is poor); 2) whales missed within the viewing range during on-effort periods; 3) differential sightability by observer, pod size, distance offshore and various environmental conditions; 4) errors in pod size estimation; 5) covariance within the corrections due to variable sightability by pod size and 6) differential diel travel rates of whales.



## North Pacific Humpback Whales

Target species	Date	Area	Methods/effort	Parameters/ factors measured	Contact person/institute
Humpback whale	2006	North Pacific	Computer assisted matching	Software development, total flukes photos (26,964), new photos entered (2,028), photos digitized (7,594)	S. Mizroch (AFSC)

Progress was made on updating entries in NMML's humpback whale computer-assisted matching system. There are now nearly 27,000 photographs in the database, some dating back to the late 1960s. Over 7,500 of those historical photos have been digitized using a newly developed rapid digitizing technique. The photo-ID matching software has been transitioned to the Microsoft Access database program.

Newly entered humpback whale photo-ID datasets include photos from offshore Mexico (Islas Revillagigedos, including Isla Socorro and Isla Clarion), from Japan, and from the Western Gulf of Alaska/Kodiak/Eastern Aleutians areas. These photos were from areas that had been mostly absent from the large, well-matched database that provided the data for the papers we published in the past few years (e.g., Mizroch et al. 2004).

A number of long-term (early-mid 1970s to 2006) matches were recently discovered and a note is being developed describing these long term matches. At least 9 whales that had been photographed by Chuck Jurasz in 1973 and 1974 in Glacier Bay, Alaska were seen in Glacier Bay in 2006. Seven of these whales have been seen over a 33-year time span and 2 whales have been seen over a 34-year time span. One of the whales was first photographed as a calf, which sets a record as the oldest known-age free ranging whale. These records extend the longevity record for humpback whales which had been 31 years based on a match we found from the Jurasz set a few years ago (1968-1998). (Contact: S. Mizroch, AFSC)

During 2006 some significant new matches were found:

- a match between offshore Mexico and Japan, a new movement that will be written up as a note
- a new match between Japan and the western GOA,
- a new match between offshore Mexico and the western GOA,
- a new match between Sitka and offshore Mexico (rare),
- a match of a known-age whale that moved from Sitka to the Kodiak area (it's rare for a whale to move between Alaska feeding areas).

## NWFSC, HIIHWNMS, SWFSC, PIFSC

NR

### 3. Marking data

#### 3.1 Field work

##### 3.1.1 Natural marking data

#### AFSC

*Washington State – gray whales*

The gray whales from 2005 and 2006 have not yet been identified so the count of whales in the catalogue cannot be updated (Contact: M. Gosho, AFSC).

## NWFSC, HIIHWNMS, SWFSC

NR

#### 3.1.1 NATURAL MARKING DATA

##### AFSC

Species	Feature	Area/stock	No. photo-id'd	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Killer whale	Dorsal fin, saddle patch	Aleutian Islands and Bering Sea, Alaska	712	Y	>1000	J. Durban (AFSC)

*NOAA Ship John N. Cobb – line transect cruises of inland waters of Southeast Alaska*

1-11 May 2006: 115 sightings of humpback whales (no photographs or biopsies). 1 sighting of killer whales (photo-identification photographs collected; no biopsies).

7-17 July 2006: 265 sightings of humpback whales (no photographs or biopsies). 6 sightings of killer whales (photo-identification photographs collected; no biopsies). (Contact: M. Dahlheim, AFSC).

## NWFSC, SWFSC

NR

### HIHWNMS

Species	Feature	Area/stock	No. photo-id'd	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Bottlenose dolphin	Dorsal fin	American Samoa	Minimal	N/A	Minimal	D. Johnston/PISC
False killer whale	Dorsal fin	American Samoa	Minimal	N/A	Minimal	D. Johnston/PISC
Humpback whale	Fluke	American Samoa	54	Y	102	J. Robbins/PCCS
Humpback whale	Dorsal fin	American Samoa	77	Y	190	J. Robbins/PCCS
Rough-toothed dolphin	Dorsal fin	American Samoa	20	Y	54	D. Johnston/PISC
Spinner dolphin	Dorsal fin	American Samoa	1	Y	56	D. Johnston/PISC

### PIFSC

Species	Feature	Area/stock	No. photo-id'd	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Spinner dolphin	Dorsal fin	Pacific	80	Y	80	DWJ/PIFSC

### 3.1.3 TELEMETRY DATA

#### AFSC

Species	Tag type	No. successfully deployed	Maximum time transmitting	Contact person/institute; refs
Killer whale	Satellite	3	54 days	J. Durban (AFSC)

#### NWFSC

Species	Tag type	No. successfully deployed	Maximum time transmitting	Contact person/institute; refs
Short-finned pilot whale	Satellite/VHF	1, 2	21/15 days	Brad Hanson, NWFSC
Blaineville's beaked whale	Satellite	3	28 days	Brad Hanson, NWFSC
Cuvier's beaked whale	Satellite	5	10 days	Brad Hanson, NWFSC

### HIHWNMS, SWFSC, PIFSC

NR

## 4. TISSUE/BIOLOGICAL SAMPLES COLLECTED

### 4.1 Biopsy samples (summary only)

#### AFSC

species	Area/stock	Calendar year/ season – no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Killer whale	Aleutian Islands and Bering Sea, Alaska	2006/54	Y	54	206	J. Durban (AFSC)

Sperm whale	Aleutian Islands and Bering Sea, Alaska	2006/1	Y	1	6	J. Durban (AFSC)
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### NWFSC

Species	Area/stock	Calendar year/season - no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Killer whale	Southern Resident	2006/3	N	3	0	Peggy Krahn, Brad Hanson, NWFSC

### HIHWNMS

Species	Area/stock	Calendar year/season - no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
False killer whale	American Samoa	2006/Austral Spring - 4	Y	See SWFSC	5	D. Mattila/HIHWNMS
Humpback whale	American Samoa	2006/Austral Spring - 15	Y	0	60	D. Mattila/HIHWNMS

**SWFSC – 2006 calendar year collections:** archiving is incomplete for our 2006 collections and no samples have been processed; “No. Analyzed” summarizes processing for “Total holdings” for samples collected in the Eastern Pacific only through 12/31/2006

Species	Area/stock	Calendar year/season (no. collected)	Archived (Y/N)	No. analysed	Total holdings through 12/31/2006	Contact person/institute
Blue whale	Eastern Pacific	18	N	82	509	S. Chivers, SWFSC
Bottlenose dolphin	Eastern Pacific	91	N	349	1130	S. Chivers, SWFSC
Byrde's whale	Eastern Pacific	5	N	46	74	S. Chivers, SWFSC
Coastal spotted dolphin	Eastern Pacific	28	N	217	321	S. Chivers, SWFSC
Eastern spinner dolphin	Eastern Pacific	78	N	54	399	S. Chivers, SWFSC
False killer whale	Eastern Pacific	4	N	126	136	S. Chivers, SWFSC
Gray whale	Eastern Pacific	11	N	187	320	S. Chivers, SWFSC
Humpback whale	Eastern Pacific	3	N	72	4706	S. Chivers, SWFSC
Killer whale	Eastern Pacific	22	N	212	318	S. Chivers, SWFSC
Long-beaked common dolphin	Eastern Pacific	22	N	109	335	S. Chivers, SWFSC
Pantropical spotted dolphin	Eastern Pacific	123	N	403	1460	S. Chivers, SWFSC
Pygmy killer whale	Eastern Pacific	1	N	16	26	S. Chivers, SWFSC
Risso's dolphin	Eastern Pacific	2	N	72	98	S. Chivers, SWFSC
Rough-toothed dolphin	Eastern Pacific	13	N	43	163	S. Chivers, SWFSC
Short-beaked common dolphin	Eastern Pacific	21	N	524	1132	S. Chivers, SWFSC
Short-finned pilot whale	Eastern Pacific	82	N	295	453	S. Chivers, SWFSC
Sperm whale	Eastern Pacific	16	N	248	876	S. Chivers, SWFSC
Striped dolphin	Eastern Pacific	2	N	63	105	S. Chivers, SWFSC
Unidentified common dolphin	Eastern Pacific	8	N	2	115	S. Chivers, SWFSC
Unidentified pantropical spotted dolphin	Eastern Pacific	8	N	22	183	S. Chivers, SWFSC
Unidentified small delphinid	Eastern Pacific	2	N		6	S. Chivers, SWFSC
Unidentified spinner dolphin	Eastern Pacific	25	N	53	202	S. Chivers, SWFSC

**PIFSC**

Species	Area/stock	Calendar year/ season - no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Spinner dolphin	PHR/Pacific	24	Y	24	40	DWJ/PIFSC

**4.2 Samples from directed catches (commercial, aboriginal and scientific permits) or bycatches****AFSC, HIIWNMS, PIFSC**

NR

**SWFSC – samples from bycatch in CA gillnet fisheries**

Species	Area/stock	Tissue type(s)*	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Long-beaked common dolphin	Eastern North Pacific	Head, teeth, gonads, stomach, skin, blubber	3	Y	3	K. Danil, SWFSC
Short-beaked common dolphin	Eastern North Pacific	Head, teeth, gonads, stomach, skin, blubber	5	Y	5	K. Danil, SWFSC

**NWFSC**

Species	Area/stock	Tissue type(s)*	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Beluga whale	Cook Inlet	Skin, blubber	1	Y	0	Barb Mahoney, NMFS AK

**4.3 Samples from stranded animals - 2006****AFSC, HIIWNMS, PIFSC**

NR

**NWFSC**

Species	Area/stock	Tissue type(s)*	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Harbor porpoise	Eastern North Pacific/ Georgia Basin	Muscle ( <i>longissimus dorsi</i> – neonate, calf, and adult), muscle, stomach, skin	18	Y	0	Dawn Noren, NWFSC Brad Hanson, NWFSC
Dall's porpoise	Eastern North Pacific/ Georgia Basin	Muscle ( <i>longissimus dorsi</i> – subadult), blubber, stomach, skin	1	Y	0	Dawn Noren, NWFSC Brad Hanson, NWFSC

Species	Area/stock	Tissue type(s)	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Northern right whale dolphin	E. N. Pacific	Skin, head, blubber, gonads, stomach, liver, kidney, blood	2	Y	2	K. Danil, SWFSC
Long-beaked common dolphin	E. N. Pacific	Skin, head, blubber, gonads, stomach, liver, kidney	7	Y	5	K. Danil, SWFSC
Short-beaked common dolphin	E. N. Pacific	Skin, head, blubber, gonads, stomach, liver, kidney, blood	3	Y	3	K. Danil, SWFSC

Humpback whale	E. N. Pacific	Skin	1	Y	0	K. Danil, SWFSC
Harbor porpoise	E. N. Pacific	Skin, blubber, head	1	Y	0	K. Danil, SWFSC
Bottlenose dolphin	E. N. Pacific	Skin, head, blubber, gonads, stomach, liver, kidney	1	Y	1	K. Danil, SWFSC

#### 4.4 Analyses/development of techniques

##### AFSC, NWFSC, HHHWNMS, PIFSC

NR

##### SWFSC

Prior to the beginning of molecular genetic studies in the late 1980's, almost all tissue samples were fixed in formalin for gross anatomy and histology studies. These tissue collections remain a valuable resource, but have not been used for genetic studies because it formalin causes DNA damage. Following published methods for extracting DNA from formalin fixed clinical tissues used for human biomedical studies, we tested various methods and summarize our results in an administrative report. Although we are able to extract small fragments of DNA from a majority of samples, formalin damage results in mutations in the DNA sequences that continues to limit the utility of these samples.

Robertson, K. M., LeDuc, C. A., LeDuc, R. G., and Morin, P. A. 2007. Extraction of DNA from formalin-fixed cetacean tissues. SWFSC Administrative Report No. 400.

We can now use historical and even ancient (>100 years) tissues such as bone, baleen and tooth for genetic studies using mitochondrial DNA, but nuclear microsatellites cannot be genotyped from these samples because of the extremely low concentration and degradation of the DNA. We developed a novel method that combines highly multiplexed PCR amplification of loci, followed by individual amplification and fluorescent genotyping of single nucleotide polymorphisms (SNPs). We show that this method is highly accurate and efficient, and can replace microsatellite genotyping in many studies for both high and low quality DNA samples. This research was funded by the SWFSC and the North Pacific Research Board.

Morin, P. A., and McCarthy, M. 2007. Highly accurate SNP genotyping from historical and low-quality samples. *Molecular Ecology Notes* **in press**.

We developed two quantitative PCR assays that allow us to accurately determine the concentration of DNA down to a few molecules per microliter from historical bone, baleen and tooth samples. We then compare the characteristics of these samples, showing that baleen contains about two orders of magnitude more mtDNA on average than bone or tooth samples, but the same amount of nuclear DNA. These methods and the information about sample types will be useful in selection of historical samples to use in future studies.

Morin, P. A., Hedrick, N. M., Robertson, K. M., and LeDuc, C. A. 2007. Comparative mitochondrial and nuclear quantitative PCR of historical marine mammal tissue, bone, baleen, and tooth samples. *Molecular Ecology Notes* **online**:doi: 10.1111/j.1471-8286.2007.01699.x.

In a continuing effort to develop more and better molecular markers to study population structure of marine mammals, we have published the first set of single nucleotide polymorphism (SNP) markers for a cetacean. These SNPs are being used as part of an ongoing study of sperm whale population structure world wide, and the research was funded by the SWFSC and the Marine Mammal Commission.

Morin, P. A., Aitken, N. C., Rubio-Cisneros, N., Dizon, A. E., and Mesnick, S. L. 2007. Characterization of 18 SNP markers for sperm whale (*Physeter macrocephalus*). *Molecular Ecology Notes* **online**:doi: 10.1111/j.1471-8286.2006.01654.x.

We used historical samples of killer whale tooth and bone to determine the ecotype and population of origin of whales captured or stranded along the western US coastline over the last 40 years. This information furthered our knowledge of the distribution of killer whale populations in a region where samples are rare, and ecotype and population of origin can often only be determined accurately with molecular data. The research was presented at the symposium on Southern Resident Killer Whales at the National Marine Mammal Lab in April, 2006, and supported by the Northwest Fisheries Science Center and SWFSC.

Morin, P. A., LeDuc, R. G., Robertson, K. M., Hedrick, N. M., Perrin, W. F., Etnier, M., Wade, P., and Taylor, B. L. 2006. Genetic analysis of killer whale (*Orcinus orca*) historical bone and tooth samples to identify western U.S. ecotypes. *Marine Mammal Science* **22**:897-909.

## 5. POLLUTION STUDIES

### AFSC, HIHWNMS, SWFSC, PIFSC

NR

### NWFSC

#### *Profiles of POPs, fatty acids, and lipid classes in biopsy blubber samples of humpback whales*

The SPLASH Project, an international cooperative effort to understand the population structure of humpback whales in the North Pacific and to assess the status, trends, and potential human impacts to this population, began in 2004 and will continue through summer of 2006. Biopsy samples of humpback whales collected from various parts of the Pacific Ocean as part of the SPLASH project will be analyzed for a suite of POPs, fatty acid signatures and lipid profiles. A pilot study is now underway, after which the SPLASH steering group will decide what further analyses are needed and prioritize them. For the pilot study, we are measuring levels of contaminants, fatty acids, and lipid classes in blubber biopsies from 10 adult male animals from each of 5 feeding areas. (Contact: Peggy Krahn, NWFSC)

#### *Levels and vertical distribution of POPs, lipid classes, and profiles of fatty acids in tissues of stranded northern right whales*

Previous studies indicate that there are differences in vertical distribution of lipids and contaminants in blubber strata of various marine mammal species. To investigate stratification of OCs, lipids, and fatty acids in an endangered mysticete species from the Atlantic Ocean, blubber samples of stranded Atlantic right whales collected from the US Atlantic coast will be analyzed for a suite of POPs, fatty acid signatures and lipid profiles. If sufficient sample is available, several depths will be analyzed to better understand differences in blubber strata, particularly for fatty acids. (Contact: Gina Ylitalo, NWFSC)

#### *Levels of POPs and profiles of lipid classes in tissues of stranded cetaceans*

As part of the NWFSC's collaboration with the US Marine Mammal Health and Stranding Response Program, blubber samples of stranded cetaceans from various species (e.g., killer whale, white whale, gray whale, etc.) collected by local stranding networks were analyzed for a suite of POPs, and lipid profiles, and, if the quality of the sample permitted, fatty acid signatures and/or stable isotopes of carbon and nitrogen (in skin). If sufficient sample is available, several depths are analyzed to better understand differences in blubber strata. (Contact: Gina Ylitalo, NWFSC)

## 6. STATISTICS FOR LARGE CETACEANS

### 6.1 Corrections to earlier years' statistics for large whales

NR

### 6.2 Direct catches of large whales (commercial, aboriginal and scientific permits) for the calendar year 2006

Data provided by Craig George, North Slope Borough.

Species	Type of catch	Area/stock	Males	Females	Total Landed	Struck and Lost
Bowhead	Aboriginal	E.N. Pacific	21	10	31	8

### 6.3 Anthropogenic mortality of large whales - 2004

#### 6.3.1 Observed or reported ship strikes of large whales (including non-fatal events)

### AFSC, HIHWNMS, NWFSC

NR

**SWFSC**

Whale species	Sex	N o.	Date	Location	Vessel type	Speed	Fate	How observed	Contact person/ institute and refs
Blue whale	U	1	21-Aug-2004	Los Angeles	U	U	D	Photos of dead whale	<a href="mailto:Jim.Carretta@noaa.gov">Jim.Carretta@noaa.gov</a> NMFS SWFSC Regional Stranding
Fin whale	U	1	14-Apr-2004	Los Angeles	Freighter	U	D	Carcass wrapped around bow of vessel	
Unidentified whale	U	1	06-May-2004	San Francisco	Cruise ship	U	U	Passenger account, blood observed in water	
Unidentified whale	U	1	12-Jun-2004	Half Moon Bay, CA	Sport Fishing Vessel	U	U		
Unidentified whale	U	1	06-Oct-2004	Eureka, CA	Coast Guard Vessel	U	U		

**PIFSC**

Whale species	Sex	N o.	Date	Location	Vessel type	Speed	Fate	How observed	Contact person/ institute and refs
Humpback whale	U	1	5-Jan-04	Kahului Harbor, Maui	U	U	U		Michelle Yuen/PISFC
Humpback whale	U	1	8-Aug-04	Puamana Beach Park, Maui	U	U	X		
Humpback whale	U	1	13-Feb-04	4 miles West of Ka'ena Point, O'ahu	U	U	U		
Humpback whale	U	1	24-Feb-04	1 mile south of Kewalo Harbor, O'ahu	U	U	X		
Humpback whale	U	1	25-Feb-05	Honolulu, O'ahu	U	U	X		

*6.3.2 Fishery bycatch of large whales*

**AFSC, HIHWNMS, NWFSC**  
NR

**SWFSC**

Whale species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
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Humpback whale	U	1	15-Nov-2004	32°38'N; 118°20'W	R	Swordfish	GND	F	<a href="mailto:Jim.Carretta@noaa.gov">Jim.Carretta@noaa.gov</a> NMFS SWFSC 858.546.7171
Gray whale	U	1	1-Jan-2005	32°40'N; 118°15'W	R	Swordfish	GND	F	
Comments: Released alive									

### PISFC

Whale species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Humpback whale	U	1	1/3/04	Outside EEZ	R	tuna	LL	F	NMFS/PIRO Observer Program

## 7. STATISTICS FOR SMALL CETACEANS

### 7.2 Direct catches of small cetaceans for the calendar year 2005

Data provided by Kathy Frost, ABWC (Alaska Beluga Whale Committee)

Species	Type of catch	Area/stock	Males	Females	Total landed	Struck and lost
White whale	Aboriginal	Beaufort Sea			20	
White whale	Aboriginal	Chukchi Sea			43	
White whale	Aboriginal	Eastern Bering Sea			132	
White whale	Aboriginal	Kuskokwim			2	
White whale	Aboriginal	Bristol Bay			19	

Data from Alaska Marine Mammals Stock Assessments - 2006 (Angliss and Outlaw 2007)

Species	Type of catch	Area/stock	Males	Females	Total landed	Struck and lost
White whale	Aboriginal	Cook Inlet			2	0

### 7.3 Anthropogenic mortality of small cetaceans for the calendar year 2004

#### 7.3.2 Fishery bycatch of small cetaceans<sup>1</sup>

### AFSC

Whale species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Killer whale	U	2	2004	Bering Sea	D	flatfish	TBB	F	M. Perez (AFSC)
Killer whale	U	1	2004	Bering Sea	R	flatfish	TBB	F	M. Perez (AFSC)
Dall's porpoise	M	1	2004	Bering Sea	D	pollock	TM	F	M. Perez (AFSC)

<sup>1</sup>Data from Perez (2006).

### HHWNMS, NWFSC

NR

### SWFSC

Species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed	Source or contact
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Northern right whale dolphin	F	1	16-Jan-2004	33° 09'N 118° 15'W	D	<i>Swordfish</i>	GND	F	<a href="mailto:Jim.Carretta@noaa.gov">Jim.Carretta@noaa.gov</a> NMFS SWFSC 858.546.7171
Short-beaked common dolphin	M	1	7-Nov-2004	32°30'N 117°56'W	D	<i>Swordfish</i>	GND	F	
Short-beaked common dolphin	F	1	5-Jan-2004	32°37'N 117°49'W	D	<i>Swordfish</i>	GND	F	
Short-beaked common dolphin	M	1	5-Jan-2004	32°37'N 117°49'W	D	<i>Swordfish</i>	GND	F	
Short-beaked common dolphin	M	1	18-Nov-2004	32°29'N 117°57'W	D	<i>Swordfish</i>	GND	F	
Short-beaked common dolphin	M	1	15-Jan-2004	33°00'N 118°08'W	D	<i>Swordfish</i>	GND	F	
Short-beaked common dolphin	M	1	7-Jan-2004	32°32'N 117°58'W	D	<i>Swordfish</i>	GND	F	
Short-beaked common dolphin	F	1	26-Oct-2004	32°44'N 117°45'W	D	<i>Swordfish</i>	GND	F	
Short-beaked common dolphin	F	1	16-Jan-2004	32°49'N 117°58'W	D	<i>Swordfish</i>	GND	F	
Long-beaked common dolphin	M	1	1-Aug-2004	34°17'N 119°28'W	D	<i>Swordfish</i>	GND	F	

In addition to the fishery observer records above, a number of dead-stranded animals in the Southwest Region (California coast) were attributed to fishery interactions during 2004-2005: 1 bottlenose dolphin, 10 long-beaked common dolphin, 1 sperm whale, 1 Pacific white-sided dolphin, 1 short-beaked common dolphin, and 5 harbor porpoise.

#### PIFSC

Whale species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed ?	Source or contact
False Killer whale	U	1	25/1/04	Outside EEZ	R	tuna	LL	F	NMFS/PIRO Observer Program
False Killer whale	U	1	17/2/04	Inside EEZ	R	tuna	LL	F	NMFS/PIRO Observer Program
False Killer whale	U	1	22/3/04	Outside EEZ	R	tuna	LL	F	NMFS/PIRO Observer Program
False Killer whale	U	1	4/4/04	Outside EEZ	R	tuna	LL	F	NMFS/PIRO Observer Program
False Killer whale	U	1	9/9/04	Inside EEZ	D	tuna	LL	F	NMFS/PIRO Observer Program
False Killer whale	U	1	18/9/04	Inside EEZ	R	tuna	LL	F	NMFS/PIRO Observer Program
Short-finned pilot whale	U	1	2/5/04	U	R	tuna	LL	F	NMFS/PIRO Observer Program

## 8. STRANDINGS -2005

### AFSC, HIHWNMS

NR

### NWFSC

The stranding network for the NWR is comprised of several regional stranding networks in Washington and Oregon. Coverage is not complete for all areas. The individual stranding networks respond to calls from the public, etc., and there is no directed monitoring.

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Harbor porpoise	18	NA	Brad Hanson/ NWFSC	Brad.hanson@noaa.gov
Dall's porpoise	6	NA	Brad Hanson/ NWFSC	Brad.hanson@noaa.gov

### SWFSC

SWFSC is part of the California Marine Mammal Stranding Network and responds to dead strandings year-round that primarily occur in San Diego County, California.

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Long-beaked common dolphin	5	4	K. Danil, SWFSC	<a href="mailto:Kerri.Danil@noaa.gov">Kerri.Danil@noaa.gov</a>
Short-beaked common dolphin	8	7	K. Danil, SWFSC	<a href="mailto:Kerri.Danil@noaa.gov">Kerri.Danil@noaa.gov</a>
Pacific white-sided dolphin	1	1	K. Danil, SWFSC	<a href="mailto:Kerri.Danil@noaa.gov">Kerri.Danil@noaa.gov</a>
Harbor porpoise	1	1	K. Danil, SWFSC	<a href="mailto:Kerri.Danil@noaa.gov">Kerri.Danil@noaa.gov</a>
Bottlenose dolphin	4	1	K. Danil, SWFSC	<a href="mailto:Kerri.Danil@noaa.gov">Kerri.Danil@noaa.gov</a>

### PIFSC

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Pygmy sperm whale	4		Dave Johnston/PIFSC	Dave.johnston@noaa.gov
Spinner dolphin	4			
Striped dolphin	3			
Pilot whale	2			
Melon-headed whale	1			
Dwarf Sperm Whale	2			
Unidentified whale	2			

## 9. Other studies and analyses

### AFSC

#### *Passive Acoustic Sampling*

Three autonomous recorders were deployed in the south eastern Bering Sea in April/July 2006 to provide year-round sampling of calls from baleen whales. The recorders were deployed at three oceanographic mooring sites (M2, M4 and M5), in collaboration with NOAA/Pacific Marine Environmental Laboratory. These deployments, funded by the North Pacific Research Board (D. Mellinger, PI), extend the sampling regime for large whale calls in the Bering Sea initiated in 1999 (Moore et al. 2006). Right whale calls have been detected from May through November and calls of fin whales detected over-winter in the Bering Sea. The recorders are scheduled for recovery in July 2007; data obtained will build upon analyses of data from previously deployed recorders, underway, as part of a graduate student dissertation at Scripps Institution of Oceanography (Contact: S. Moore, AFSC).

## *Arctic Issues*

The AFSC participated in the the 4th Shelf-Basin Interactions Pan-Arctic Meeting in Sopot, Poland, 26-29 September 2006, co-sponsored by the U.S. Western Arctic Shelf-Basin Interactions (SBI) Project Office and the Institute of Oceanology of the Polish Academy of Sciences (IOPAS). The challenge to meeting participants was to evaluate and coordinate developing circum-arctic studies of Shelf-Basin Exchange (SBE) for both the International Polar Year (IPY) 2007-2008 and development of longer-term collaborative international efforts as planned under the umbrella of the International Study of Arctic Change (ISAC), Study of Environmental Arctic Change (SEARCH), and the International Conference on Arctic Research Planning (ICARP) II Working Group 5 (Arctic margins and gateways) science plans.

A presentation entitled "Arctic Marine Mammals and Sentinels and Icons" provided baseline information for incorporation of marine mammals to these science plans. In addition, with the funding of the Canadian Circumpolar Flaw Lead (CFL) IPY study, AFSC scientists have contributed collaborative research plans, including the potential for deployment of autonomous recorders in the flaw lead offshore Banks Island in the Beaufort Sea. These study plans will be reviewed at the CFL science planning meeting in April 2007, for possible inclusion in field work scheduled to begin August 2007 (Contact: S. Moore, AFSC).

## *NMML's Platforms of Opportunity Program*

Since 1975, NMML's Platforms of Opportunity Program (POP) has collected and processed approximately 100,000 marine mammal sightings, including historic records dating back to 1958. Although primarily focused on the North Pacific, these sightings come from as far south as Antarctica and from every ocean in the world. Sightings have been submitted by a number of sources including Federal fisheries observers, NOAA Corps officers, and US Coast Guard sailors and pilots. At this time, the database includes sightings through 1998. Due to increased interest in recent sightings of marine mammals in the North Pacific, we hope to have the database current by the end of FY08.

POP data have been provided for use in management decisions by the NMFS, U.S. Navy, and Minerals Management Service (Department of the Interior); and in research performed by outside agencies and institutions. Data are provided to various researchers upon request. Most managers and researchers request data subsets (e.g. specific species, season, location) that are independent of data source (Table 1), but some decisions require a broad array of information available only from NMFS observers (Table 2). (Contact: R. Angliss, AFSC)

Table 1

- Document the historical occurrence of the highly endangered North Pacific right whale (NMFS)
- Identify historical distribution of Steller sea lions for fishery management (NMFS)
- Help determine cruise routes and locations for systematic marine mammal surveys (NMFS)
- Characterize distribution of all marine mammals in the Bering Sea (World Wildlife Fund )
- Extract fin whale sightings to assist with Cook Inlet/Outer Continental Shelf management issues (Minerals Management Service)
- Document marine mammal distribution to develop geographic and temporal components of potential impacts of seismic surveys (Oregon State University)
- Augment Steller sea lion telemetry data (Montana State University)
- Document seasonal occurrence of marine mammals in the Gulf of Alaska to aid in deciding when and where Navy operations will have the least impact on marine mammals (U.S. Navy)

Table 2

- Map the presence of Steller sea lions near fishing vessels
- Determine the minimum number of killer whales & sperm whales in the vicinity of observed fishery cruises
- Determine the locations of killer whale & sperm whale predation on fish catch

## **NWFSC**

### *Diving physiology studies*

Muscle samples (*longissimus dorsi*) from stranded, freshly dead harbor porpoise, Dall's porpoise, and killer whales of all age and sex classes in excellent condition are being collected to assess muscle myoglobin content and acid buffering capacity in this important swimming muscle. These data will be used to assess muscle oxygen stores and diving duration capabilities. Samples from all age classes, including neonates and juveniles are being collected to assess how diving capabilities improve with age, as has been observed in other pinniped and cetacean species. Limitations in juvenile diving capabilities may have important implications for survival if prey resources are limited. Samples that have been collected over the past two years (n=9, mostly from harbor porpoise) will be analyzed in the summer or fall of 2007. (Contact: Dawn Noren, NWFSC)

### *Energetics studies*

A study was conducted in 2005 to measure the energetic cost of surface active behaviors (breaches, tail slaps, etc.) that can be performed in response to vessel disturbance. To accomplish this, oxygen consumption of two trained bottlenose dolphins was measured using flow-through respirometry following bouts of surface active behaviors (tail slaps and breaches) that have been performed by cetaceans in response to disturbance by vessels. In order to assess how the number of successive behaviors performed in a bout affects metabolism, oxygen consumption following both low intensity bouts of breaches (n=5 breaches in a row) and high intensity bouts of breaches (n=10 breaches in a row) were measured. Data are currently being analyzed, but preliminary results suggest that bouts of breaches are energetically more expensive than bouts of tail slaps. Although tail slaps increase metabolism over resting values, these increases are not as significant as the increase in metabolism caused by breaches. These data in combination with field behavioral studies of cetacean vessel interactions (e.g., Southern Resident killer whales, see below) will allow us to assess whether cetaceans incur increased energetic costs in the presence of vessels. By knowing the metabolic cost of these behaviors, we will better understand the potential for vessel disturbance to increase energetic requirements (e.g., prey consumption) and the potential impact to individuals. (Contact: Dawn Noren, NWFSC)

A study was conducted to determine the energetic cost of transport in killer whales. Data on average swimming speed and respiration rates collected from adult Northern Resident killer whales (data from Rob Williams) were used in combination with published values of oxygen consumption in captive killer whales (Kriete 1995) to determine cost of transport (COT) curves over a range of speeds (up to approximately 3.0 ms<sup>-1</sup>) for adult male and female killer whales. The results show that killer whales can swim efficiently over a range of speeds, but that the optimum travel speed, corresponding to the speed with the minimum cost of transport, ranges between 2.6-3.0 ms<sup>-1</sup>. This is similar to the average travel speed (2.9 ms<sup>-1</sup>) of Northern Resident killer whales reported by Ford (1989). Finally, females with calves aged 0-2 years old have higher respiration rates than females without calves. As a result, the calculated COT for females with calves is greater than females without calves. This result could be due to a potential higher energetic cost to females with calves travelling in echelon or it could be an artifact of females surfacing more frequently to maintain contact with their calves that have reduced breath-hold capabilities. A draft of this paper (Williams, R. and Noren, D.P.) was submitted for publication in a peer-reviewed journal in March 2007. (Contact: Dawn Noren, NWFSC)

A study was conducted to determine the daily prey energetic needs for the Southern Resident killer whale population. Body mass, daily energy expenditure, and daily prey energetic needs were estimated for all age and sex-classes in the Southern Resident killer whale population. Results for the predicted daily energy expenditure in adult male and female killer whales agreed with the daily energy expenditure calculated from the energetic cost of transport at specific swimming speeds (from above study) and a daily activity budget that included average swimming speeds for various behaviours and the percentage of time engaged in the behaviours (e.g., foraging, travelling, resting, socializing, and beach-rubbing; from Ford 1989). A draft of this paper will be submitted for publication in a peer-reviewed journal in April/May 2007. (Contact: Dawn Noren, NWFSC)

### ***Southern Resident killer whales studies***

#### *Vessel interactions and noise effects on Southern Resident killer whales*

Several research projects focusing on vessel interactions with Southern Resident killer whale have been conducted from 2003-2006. Here we report only on studies that were conducted in 2006. The first study investigates the energetic costs to killer whales in the response to vessels. In 2006 behavioral and respiration data were collected from a small boat during 128 focal follows ( $\geq 15$  min) of 11 adult male and 19 adult female whales. This fourth season of data collection resulted in a total of 271 focal follows ( $\geq 15$  min) of 41 individual whales for the study. Preliminary results (data analyzed from 2003-04) suggest that in adult male killer whales surface durations following dives decrease when the number of vessels increases, but this relationship plateaus when a greater number of vessels (approximately 15) are present. Data analysis from all years is expected to be completed in 2007. A small related pilot project conducted in 2006 investigated the occurrence of surface active behaviors relative to vessel distances and mode of operation. Preliminary analysis suggests that most surface active behavior bouts occurred when the nearest vessel was within 100-225 m of the killer whales (guidelines suggest boats do not approach whales within 100 m), and that usually the nearest vessel was motoring under power rather than shut-down and stationary or idling and stationary. Concurrent with this study, killer whale

group behavior data were collected to examine geographic locations where travel/forage behavior, a behavior that has been identified as being affected by vessel traffic, is most likely to occur. Another concurrent study collected more detailed data on killer whale and vessel locations to quantify the dynamics of vessel distribution around the killer whales. (Contact: Dawn Noren, NWFSC).

#### *Annual southern resident killer whale survey*

The annual photo-identification survey was conducted to document all individual Southern Resident killer whales present in the population in late spring and early summer each year. This is the continuation of the long-term monitoring effort (since mid-1970s) that reports the presence or absence of individuals for demographic and population dynamics studies. (Contact: Ken Balcolmb, Center for Whale Research)

#### *Distribution and habitat of southern resident killer whales*

Studies on winter and summer distribution of Southern Resident killer whales were continued in 2006. Additional sightings of killer whales off the U.S. west coast during the winter were obtained through continuation of the coast-wide sighting network. Opportunistic sightings are obtained from fisherman, the general public, fishery observes and other scientists. Southern resident killer whales were sighted in California waters and off the Washington coast in 2006.

Results of passive acoustic recorders deployed in winter 2006 off the Washington coast documented the presence of southern resident killer whales in May 2006. This study continues in 2007. (Contact: Brad Hanson, NWFSC)

#### *Southern Resident killer whale foraging and prey*

Prey remains were collected in on 18 days in 2006 in conjunction with behavioral cues of predation events for Southern Resident killer whales. Of fish remains collected Chinook, were predominate in summer. This species was also predominant in fecal material collected during this season. Genetic analyses of Chinook identified from scales and tissue were primarily from the Fraser River. (Contact: Brad Hanson, NWFSC)

#### *Genetic Studies*

A study to investigate the paternity of southern resident killer whales (*Orcinus orca*) was undertaken using biopsy samples and fecal samples from known individuals. To date, results indicate that breeding within pod cannot be ruled out for at least one recently born calf. However, additional measures of genetic diversity will need to be developed and additional samples from the population will need to be obtained. (Contact: Mike Ford, NWFSC)

#### *Feeding Ecology studies*

Several studies were carried out to obtain information on the feeding ecology of various killer whale populations with emphasis on the less well-known resident and offshore populations from the Bering Sea and Aleutian Islands (in collaboration with the North Pacific Research Board) and from the Antarctic. Very little is known about the diets of these populations or about the extents of their foraging ranges. Thus, one major objective of this research was to determine if Alaskan offshore killer whales consume prey that are distinctly different from those of sympatric resident and transient killer whales, and if possible, to provide insight into the foraging range and the most likely predominant prey of the offshore ecotype. Additional, more specific, objectives are itemized below:

- 1) To determine the trophic position of transient, resident, and offshore killer whales in Alaska, and Type C killer whales in Antarctica using stable isotope analysis.
- 2) To determine and describe regional differences in both the stable isotopes and persistent organic pollutants present in the tissues of representative killer whale prey to infer killer whale foraging ranges.
- 3) To fully describe and confirm differences found in the fatty acid profiles and in the persistent organic pollutants (POPs) concentrations, profiles, and ratios found in the blubber of various killer whale populations.
- 4) To determine if identifiable differences exist in fatty acid and POPs composition of broad groups of killer whale prey in order to investigate whether fatty acid and POPs analysis can provide qualitative information about the presence/absence of various prey in the diet of different ecotypes of killer whales.
- 5) To use fatty acid, stable isotope, and POPs results obtained from the blubber-skin tissues of several specific killer whale populations as well as from tissues of their purported prey to corroborate compositional dietary estimates derived from field observation predation events.

The results of these investigations are summarized in a report to the North Pacific Research Board (Wade *et al.* [2007]), a recent paper (Krahn *et al.* 2007) and a paper submitted to Marine Mammal Research (Krahn *et al.* in review) (Contact: Peggy Krahn, NWFSC)

#### *Novel chemical studies – using fatty acid signatures to determine ages of individual killer whales*

Knowledge of the age distributions of endangered killer whale populations is a critical element in assessing the current health and long-term viability of these top-level predators. Currently, there is no reliable method to determine the specific age of live animals, particularly for remote populations that have not been continuously observed (i.e., historical photographic records maintained to track individuals beginning shortly after birth). Whereas allometric relationships (e.g., total length, dorsal fin height/width) enable individuals to be grouped into various age classes, they lack sufficient specificity to determine exact numerical ages, particularly for full-grown adult whales. To fill this gap in our knowledge of age structure, we describe methods by which their age can be deduced with varying degrees of precision from measurements of specific lipids (wax/sterol esters), specific endogenous fatty acids (short-chain mono-unsaturated, branched-chain, and odd-chain) and fatty acid ratios present in their outer-blubber layers. Whereas the correlation of wax/sterol esters with age was reasonably good for female resident killer whales, this correlation was much less pronounced for males and for transients. In contrast, individual short-, branched-, and odd-chain fatty acids correlated better with age for transients and residents of both sexes but these single parameter relationships were population specific, moderately scattered and seemingly varied with long-term diet. However, a simple, multi-linear equation model derived from the combination of two specific fatty acid ratios enables the ages of individual whales to be predicted with good precision ( $s = +3.8$  years). This simple killer whale (age)-fatty acid ratio model appears to be independent of individual diet and should therefore be applicable to eastern North Pacific killer whale populations of both genders and ecotypes. The model was applied to several less well-studied resident and transient killer whale populations to predict their age distributions from their blubber fatty acid compositions and these distributions compared to a population of known age structure (i.e., West Coast Southern Residents). Most interestingly, these results provide some evidence for the first time that adult male transient killer whales appear to have a lower life expectancy than their resident counter-parts. (Contact: David Herman, NWFSC)

**HHWNMS, SWFSC, PIFSC**

NR

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## **11.2 Unpublished literature**

### **AFSC, HHHWNMS**

NR

### **NWFSC**

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