

CHILE

PROGRESS REPORT ON CETACEAN RESEARCH, APRIL 2005 TO MARCH 2006, WITH STATISTICAL DATA FOR THE SEASON 2005/06

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1. Species and stocks studied

Common name	Scientific name	Area/stock(s)	Items referred to
Southern right whale	<i>Eubalaena australis</i>	X & XII Regions	2.1; 3.1.1; 3.2
Blue whale	<i>Balaenoptera musculus</i>	III, IV & X Regions	2.1.1; 2.1.2; 2.2; 3.1.1; 3.2; 4.1
Sei whale	<i>Balaenoptera borealis</i>	X Region	2.1; 2.2; 3.1.1
Humpback whale	<i>Megaptera novaeangliae</i>	III, IV, X & XI Regions Magellan Strait Antarctic Peninsula	2.1.1; 2.1.2; 2.2; 3.1.1; 3.2; 4.1; 4.4; 9
Minke whale	<i>Balaenoptera bonarensis</i>	Antarctic Peninsula	2.1.1; 2.2
Fin whale	<i>Balaenoptera physalus</i>	III & IV Regions	2.1.2
Sperm whale	<i>Physeter macrocephalus</i>	III Region	8
Killer whale	<i>Orcinus orca</i>	Magellan Strait Antarctic Peninsula	2.1.1; 2.2; 3.1.1; 4.1
Risso dolphin	<i>Grampus griseus</i>	I & IV Region	2.1.2
Commerson's dolphin	<i>Cephalorhynchus comersonii</i>	Magellan Strait	2.1.1; 2.2; 3.1.1; 4.1; 4.4
Peales dolphin	<i>Lagenorhynchus australis</i>	Magellan Strait	2.1.1; 2.1.2; 2.2; 3.1.1; 3.2; 4.1; 4.3; 4.4; 7.3; 8
Bottlenose dolphin	<i>Tursiops truncatus</i>	I, III & IV Regions	2.1.1; 2.1.2

Orca	<i>Orcinus orca</i>	II, III, VIII & XII Regions	2.1.2
Common dolphin	<i>Delphinus delphis</i>	I & IV Regions	2.1.2; 8

2. Sighting data

2.1 Field work

2.1.1 SYSTEMATIC

CEQUA/INACH

Five marine surveys were conducted in Magellan Strait and adjacent channels, southern Chile, on board a 16 m long sailboat with 17 days of autonomy, and one marine survey (ECA 42) were conducted from Cape Horn to Antarctic Peninsula (Bransfield and Gerlache Straits) was undertaken as part of the Project INACH 163 (Aguayo-Lobo *et al.* 1998), on board M/N *Dap Mares* during 24 days in January 2006. Photo-identification and biopsy samples were taken of the species sighted. The first survey was undertaken in April 2005 for eight days, covering the central and western area of the Magellan Strait and waters off Tierra del Fuego. Peale's dolphin, Commerson's dolphin and humpback whale were sighted.

The second survey was carried out in October/November 2005 for five days, covering the central waters of the Magellan Strait and off Tierra del Fuego. The only specie sighted was Peale's dolphin. The third survey covered the central and western area of the Magellan Strait. Surveys went on for five days in December 2005. Humpback whale and Peale's dolphin were sighted.

The fourth survey covering from Cape Horn to Antarctic Peninsula in January 2006. The species sighted were Peale's dolphin, dusky dolphin, killer whale, minke whale and humpback whale.

The fifth survey covered the central and western area of the Magellan Strait. Surveys went on for 10 days in February 2006. Humpback whale and Peale's dolphin were sighted.

The sixth survey covered the central and western area of Magellan Strait during April 2006 and in seven days humpback whale, Peale's dolphin and killer whale were sighted.

During May, a seven-day survey is planned, which would cover the central and western area of the Magellan Strait.

CCC

Systematic surveys from land, marine and aerial platforms have been carried out by CCC in different regions of Chile since 2003 in order to determine the geographical and seasonal distribution of great whales, particularly southern right whales along the coastline, and/or to develop photo-identification activities.

Southern Right Whale Project: From September to December 2005, CCC conducted one marine survey and three aerial surveys on board Chilean Marine Navy vessels and aircraft at the Arauco Gulf, a former whaling ground. No great whales were recorded, although local observers and the Chilean Marine Navy recorded 16 opportunistically sightings between August to December comprising at least 65 baleen whales and 11 small cetaceans.

Alfaguara Project: from 03 February to 15 April 2006 CCC conducted twelve marine surveys on board artisan fishing vessels and one aerial survey on board Chilean Marine Navy aircraft.

During marine surveys, 91 groups of whales were recorded comprising 144 whales, where at least 70 groups of 112 individuals corresponded to blue whales, 7 groups of 11 individuals corresponded to sei whales and 10 groups of 15 individuals corresponded to humpback whales. Feeding Behaviour and defecation was recorded for all species.

Photo-IDs of blue whales taken in 2006 were compared with previous identified individuals. A total of 52 left sides and 61 right sides of blue whales were added to the catalogue. Twelve recaptures within season and one between years were recorded.

Additionally, 11 individuals of humpback whales were photo identified, including four juveniles and a mother-calf pair.

On the aerial survey, at least 24 groups of whales comprising 36 individuals were recorded, where 20 groups comprising 32 individuals were positively identified as blue whales and two groups of two individuals were positively identified as humpback whales.

Centro Eutropia & University of Valparaiso

Since February 2003 a photo identification study to evaluate site fidelity of bottlenose dolphins near Choros, Damas and Chañaral Islands (III and IV Regions) has been conducted. Twenty six marine surveys around adjacent waters of the islands were conducted on board artisan fishing vessels in order to photo-ID dorsal fins of the dolphins. Groups of dolphins were observed in 96% of the marine surveys, with 50 individuals photo identified. Approximately 57% of the individuals were recaptured during the period of study, indicating site fidelity. The highest indicator of residence (number of individuals sighted/total number of visits) has been 0.95. Individual dolphins have been identified in both areas, but the highest number of dolphins and calves was register around Chañaral Island (III Region). The information gathered has been organized in the first catalogue of the specie in Chile.

CBA-UACH's

The main study area corresponds to Western Chiloe Island, the Gulf of Corcovado and Chonos Archipelago (41°-44°S). From 2004 onwards they have concentrated efforts in the Gulf of Corcovado, operating from the small village of Melinka which is located in Ascension Island, Guaitecas Archipelago (43°53'S; 73°44'W). Previous surveys are contained in Hucke-Gaete (2004), Hucke-Gaete et al. (2005) and a detailed account of 2006 surveys can be found in Hucke-Gaete et al. (2006 a; b).

Marine surveys: A total of 85 dedicated marine surveys have been undertaken in the area of Corcovado Gulf during late January until late March between 2004-2006 years by using a 7.6 m semi-rigid hull inflatable "Musculus" and a 17m motorsail boat "Omega Centauro" (only during February 2006). In all marine surveys, observers recorded the animals' geographic position using a hand-held GPS, time of sighting, group size, and behaviour (such as feeding or defecation); any new sighting >2 km from the first one was considered as a different group. Photographs and biopsy samples were taken whenever possible for individual identification and future genetic and organochlorine and fatty-acid analysis.

Aerial surveys: during February 2006, two dedicated aerial surveys were undertaken from a chartered helicopter departing from the Guaitecas Archipelago and covering Guafo Island, southern Chiloé, Corcovado Gulf and northern Moraleda Channel at no less than 500 masl, using BBC's newly developed high-definition video camera (HeliGimbal) for addressing feeding behaviour.

Land-based observations: were made from a vantage point located about ca. 80 m from sea level located in Ascension Island (43°53'S; 73°44'W) (Guaitecas Archipelago), which has an open view-angle of ca. 150° and face the Corcovado Gulf and part of the Moraleda Channel. During 2005 we completed 12 effective days of observations and during 2006, a total of 31 days.

2.1.2 OPPORTUNISTIC, PLATFORMS OF OPPORTUNITY

CCC

Sightings reported to CCC by members of the Chilean Marine Mammal Sighting Network (MMSN) in 2005 along the Chilean coast included 88 additional sightings comprising at least 226 great whales and 321 small cetaceans.

Of the total sightings, in 12 opportunities the species were positively identified from pictures and included southern right whale (n=3), sei whale (n=1), Peale's dolphin (n=4), orca (n=1), bottlenose dolphin (n=1), common dolphin (n=1) and Risso's dolphin (n=2). (Contact person: Barbara Galletti/CCC)

Centro Eutropia

Opportunistic sightings of Risso's dolphins were recorded in April (n=60) and August 2005 (n=20) near Choros Island (IV Region).

In January 2005, three fin whales were observed southeast of Chañaral Island (III Region) and one individual south of Choros Island (IV Region). At least in two occasions whales have been recorded in feeding behavior. Samples of *Euphausia mucronata* were collected.

Two adult blue whales and a mother-calf pair of humpback whales were observed on 22 January 2005 southeast of Chañaral Island (III Region).

2.2 analyses/development of techniques

CCC

Blue and sei whale sightings made in the northwestern Chiloe Island during summer 2005 had been previously analyzed and reported (Galletti Vernazzani *et al.*, 2005a; Galletti Vernazzani *et al.*, 2005b).

CEQUA/ INACH

The temporary and spatial distribution of humpback whale, Peale's dolphin and Commerson's dolphin will be analyzed in order to investigate their potential concentration during certain periods during the year and/or areas within the Magellan Strait area.

The temporary and spatial distribution of humpback whale, minke whale and killer whale will be analyzed in order to investigate their potential concentration during certain periods during the year and/or areas within the Brasfield and Gerlache Strait, Antarctic Peninsula.

3. Marking data

3.1 Field work

3.1.1 NATURAL MARKING DATA

Species	Feature	Area/stock	Calendar year/season /no. photographed	Catalogue d (Y/N)	Catalogue total	Contact person/institute
Blue whale	Left side pigmentation pattern	X Region	2006 112	Y	68	Elsa Cabrera / CCC
	Right side pigmentation pattern	X Region	2006 112	Y	70	Elsa Cabrera / CCC
Blue whale	Head, dorsal fin, flanks, flukes.	X & XI Region	2004 / 15 2005 / 21 2006 / in process	Y + work in progress	36 + work in progress	Centro Ballena Azul / UACH
Sei whale	Flank, chevron, dorsal fin	X Region	2006 11	In process	4	Elsa Cabrera / CCC
Humpback whale	Fluke, pigmentation pattern, dorsal fin shape	X Region	2006 15	Y	12	Elsa Cabrera / CCC
Humpback whale	Fluke, dorsal fin	Magellan Strait / G	2005/06 53	Y	87	J. Acevedo / CEQUA
Humpback whale	Fluke, dorsal fin	Antarctic Peninsula / G	2006 54	Y	235	A. Aguayo-Lobo / INACH
Humpback whale	Fluke, dorsal fin	X & XI Region	2004 / 2 2005 / 2 2006 / in process	Y + work in progress	4 + work in progress	Centro Ballena Azul / UACH
Southern right whale	Pattern of callosities in the head	X and XII Regions	2005 2	Y	4	Elsa Cabrera / CCC
Killer whale	Dorsal fin and body	Magellan Strait	2006 6	N	--	J. Acevedo / CEQUA
Killer whale	Dorsal fin and body	Antarctic Peninsula	2006 8	N	--	A. Aguayo-Lobo / INACH
Peale's dolphin	Dorsal fin, flipper and body	Magellan Strait	2005/06 51	In process	43	J. Acevedo / CEQUA
Commerson's dolphin	Dorsal fin and body	Magellan Strait	2005 12	Y	29	J. Acevedo / CEQUA

3.1.2. ARTIFICIAL MARKING DATA

3.1.3 TELEMETRY DATA

3.2 Analyses/development of techniques

CEQUA/INACH

Photo-identification of Peale's dolphin was undertaken using an underwater mini-camera, fixed to the bow of the research vessel. Because natural marking in Peale's dolphin is difficult to observe from the surface, this methodology increased in 90% the effectiveness of traditional methods such as boat based photo-identification.

Studies of photo-identification, migration patterns, fidelity and residency have been conducted on humpback whales from the feeding grounds at Magellan Strait and Antarctic Peninsula. Winter destinations of humpback whale from Magellan Strait have been reported to SC/IWC by Acevedo et al. (2004, 2005). Digital photographic database (catalogue) of humpback whale of Magellan Strait and Antarctic Peninsula containing a formal description of the animal and additional information such as geographic location, group composition, calf presence/absence and other has been developed. This Digital photographic database is currently under comparison with Stock G reproductive grounds catalogues.

CCC

Individual identification of southern right whale has been made through pictures of the pattern of callosities in the head. The pictures has been analyzed using the Hiby and Lovell (2001) software for individual identification of southern right whales and were compared with other South American catalogues managed by Dr. Rowntree and Dr. Karina Groch.

Photo-ID catalogues of blue, sei and humpback whales have also been developed. The blue whale catalogue is being compared with other catalogues of the east Pacific (Dr. Sears and Dr. Calambokidis). The photo-ID images of humpback whales taken in 2006 are being compared with other catalogues of the east Pacific managed by Dr. Castro, Dr. Calambokidis and Dr. Flores and with the Antarctic Humpback Whale Catalogue.

4. Tissue/biological samples collected

4.1 Biopsy samples

Species	Area/stock	Calendar year/ season no. collected	Archive d (Y/N)	No. analysed	Total holdings	Contact person/institute
Humpback whale	Magellan Strait / G	2005/06 18	Y	1	75	C. Olavarría / CEQUA
Humpback whale	Antarctic Peninsula / G	2006 15	Y	0	79	C. Olavarría / INACH
Humpback whale	X & XI Region	2005 / 1 2006 / 4	N	1	5	R. Hucke-Gaete, Centro Ballena Azul / UACH
Blue whale	X & XI Region	2005 / 12 2006 / 4	N	16	20	R. Hucke-Gaete, Centro Ballena Azul / UACH
Killer whale	Magellan Strait	2006 1	Y	0	1	C. Olavarría / CEQUA
Peale's dolphin	Magellan Strait	2006 6	Y	0	56	C. Olavarría / CEQUA
Commerson's dolphin	Magellan Strait	2005 2	Y	0	19	C. Olavarría / CEQUA

4.2 Samples from directed catches or bycatches

4.3 Samples from stranded animals

Species	Area/stock	Calendar year/ season total	Archived (Y/N)	Tissue type(s)*	Contact person/institute
Peale's dolphin	X Region	2005/1	Y	Teeth	Barbara Galletti/CCC

4.4 Analyses/development of techniques

CEQUA/INACH

Genetic analysis involved the sequencing of the mitochondrial DNA control region and the sex identification of 52 biopsy samples of humpback whale individuals from Magellan Strait. These individuals were compared with sequences obtained from Antarctic Peninsula humpback whales and to the breeding grounds of the South Pacific and Indian Ocean (Olavarría *et al.* 2005, 2006). Additionally, samples of Peale's dolphin, Commerson's and killer whales are currently in the process of genetical analysis.

5. Pollution studies

6. Statistics for large cetaceans

6.1 Direct catches (commercial, aboriginal and scientific permits)

6.2 Non-natural mortality

Species	Area/stock	Males	Females	Total	Cause	Methodology
Unidentified baleen whale	II Region	U	U	1	Entanglement	Fishermen observation

6.2.1 STRANDINGS OR DEAD WHALES ENCOUNTERED AT SEA

6.2.2 OBSERVED OR REPORTED SHIP STRIKES

6.2.3 FISHERY BYCATCH

Whale species	Sex	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Unidentified baleen whale	U	June 2005	II Region	D	Albacore tuna	-	A	CCC

*6.3 Earlier years' statistics***7. Statistics for small cetaceans****7.1 For the season 2005/2006****7.2 Direct catches (commercial, aboriginal and scientific permits) for the calendar year 20XX or the season 20XX/XX****7.3 Non-natural mortality for or the season 2005/2006**

Species	Area/stock	Males	Females	Total	Cause	Methodology
Peale's dolphin	X Region	U	U	2	Entanglement	Post mortem

7.3.1 Strandings or dead SMALL CETACEANS encountered at sea**7.3.2 Observed or reported Ship strikes****7.3.3 Fishery bycatch****7.4 Earlier years' statistics****8. Strandings**CCC

Through the National Marine Mammal Sighting Network, seven strandings were reported comprising seven animals. Species stranded included sperm whale (n=1), common dolphin (n=1), and peale's dolphin (n=2) and one other non-identified baleen whales.

Contacts for strandings information:

CCC: Bárbara Galletti - info@ccc-chile.org

9. Other studies and analysesCEQUA/INACH

Oceanographic samples and parameters (phyto- and zoo-plankton) are collected during the surveys in the Magellan strait, which will be correlated with spatial and temporal distribution of humpback whales.

Feeding behavior and diet studies are currently in progress on Magellan Strait humpback whales to compare with those from the Antarctic Peninsula.

Finally, the research conducted in the Magellan Strait has been used for monitoring those humpback whale that use the recently created Francisco Coloane Marine Protected Area.

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