

CHILE

PROGRESS REPORT ON CETACEAN RESEARCH, APRIL 2007 TO APRIL 2008, WITH STATISTICAL DATA FOR THE SEASON 2007/08

Compiled by

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Museo Municipal de Ciencias Naturales y Arqueología de San Antonio.	MMSA	jbrito@sanantonio.cl

1. SPECIES AND STOCKS STUDIED

Common name	Scientific name	Area/stock(s)	Items referred to
Southern right whale	<i>Eubalaena australis</i>	II, V, VIII, X, XI region and Antarctic Peninsula Area I	2.1.2; 2.2
Blue whale	<i>Balaenoptera musculus</i>	IV, X and XI regions	2.1.1; 2.1.2; 2.2; 3.1.1; 3.2; 4.1; 4.4; 5; 6.2
Fin whale	<i>Balaenoptera physalus</i>	Drake Passage and Antarctic Peninsula Area I	2.1.2
Sei whale	<i>Balaenoptera borealis</i>	IV, X, XI region,s Beagle channel and Drake Passage	2.1.1; 2.1.2; 3.1.1; 4.1
Antarctic minke whale	<i>Balaenoptera bonarensis</i>	Antarctic Peninsula Area I	2.1.1; 2.1.2; 2.2
Dwarf minke whale	<i>Balaenoptera acutorostrata</i>	Antarctic Peninsula Area I	2.1.2
Humpback whale	<i>Megaptera novaeangliae</i>	X, XI regions, Magellan Strait and Antarctic Peninsula / stock G	2.1.1; 2.2; 3.1.1; 3.2; 4.1; 4.4; 5; 6.2
Sperm whale	<i>Physeter macrocephalus</i>	IV, VIII, X	2.1.2; 8
Risso's dolphin	<i>Grampus griseus</i>	I, II regions	2.1.2; 8
Peale's dolphin	<i>Lagenorhynchus australis</i>	X, XI regions and Magellan Strait	2.1.1; 2.1.2; 4.1
Hourglas dolphin	<i>Lagenorhynchus cruciger</i>	Drake Passage	2.1.2
Killer whale	<i>Orcinus orca</i>	IV region and Antarctic Peninsula Area I	2.1.2
Strap-toothed whale	<i>Mesoplodon layardii</i>	V and VIII region	8
Chilean dolphin	<i>Cephalorhynchus eutropia</i>	X, XI region and Magellan Strait -	2.1.2; 8
Bottlenose dolphin	<i>Tursiops truncatus</i>	V region	2.1.1; 8
Pilot whales	<i>Globicephala melas</i>	VI region	8
Burmeister porpoise	<i>Phocoena spinipinnis</i>	V region	7.3.2
Dusky dolphin	<i>Lagenorhynchus obscurus</i>	V region	2.1.1; 7.2

2. SIGHTING DATA**2.1 Field work**

2.1.1 Systematic

Target species	Date	Area	No. of sightings	Contact person/institute and references
Blue whale	01 February-30 April 2008	Region of Los Rios, Los Lagos and Aysen	196	B. Galletti (CCC); SC/60/SH24
Humpback whale	01 February-30 April 2008	Isla de Chiloe, Los Lagos Region	16	B. Galletti (CCC); SC/60/SH26
Humpback whale	18 January-03 February 2008	Antarctic Peninsula, Area I	66	A. Aguayo Lobo / INACH
Humpback whale	May, June and December 2007; March and April 2008	Magellan Strait	57	J. Acevedo / CEQUA
Fin whale	18 January-03 February 2008	Antarctic Peninsula, Area I and Drake Passage	1	A. Aguayo Lobo / INACH
Anarctic minke whale	18 January-03 February 2008	Antarctic Peninsula, Area I and Drake Passage	4	A. Aguayo Lobo / INACH
Sei whale	01 February-30 April 2008	Isla de Chiloe, Los Lagos Region	2	B. Galletti (CCC)
Peale's dolphin	01 February-30 April 2008	Isla de Chiloe, Los Lagos Region	3	B. Galletti (CCC)
Southern right whale	October 2007	Entre Cartagena y Quintay	2	José Luis Brito; MMSA jbrito@sanantonio.cl
Southern right whale	18 January-03 February 2008	Antarctic Peninsula, Area I	1	A. Aguayo Lobo / INACH
Killer whale	18 January-03 February 2008	Antarctic Peninsula, Area I	2	A. Aguayo Lobo / INACH
Chilean dolphin	September 2007 October 2007 March 2008	San Antonio and Sto. Domingo	20 30 30	José Luis Brito; MMSA jbrito@sanantonio.cl
Bottle noise dolphin	August 2007 November 2007 March 2008	San Antonio, Algarrobo, Las Cruces	25 20 25	José Luis Brito; MMSA jbrito@sanantonio.cl
Dusky dolphin	August 2007	Cartagena	30	José Luis Brito; MMSA jbrito@sanantonio.cl

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.

Under the Alfaguara Project, CCC conducted from 01 February to 30 April 2008, seventeen marine surveys on board Alfaguara research vessel and Chilean Navy vessel "Puerto Montt"; and one aerial survey on board Chilean Marine Navy aircrafts.

Marine surveys were oriented to photoidentification of blue whales and conducted during one day, thus cetacean groups were approached after detection.

On seventeen marine surveys, sightings included at least 171 groups of 270 blue whales, 13 groups of 29 humpback whales, 2 groups of 2 sei whales and 3 groups comprising at least 16 peale's dolphins.

Feeding behaviour and defecation was recorded for blue and humpback whales.

Preliminary individual photo-identification analyses on 15 of 17 marine surveys, resulted in 146 individual blue whales, including 33 within season recaptures; and 24 individual humpback whales, including 6 within season recaptures.

During three consecutive days, aerial surveys covered about 1.500 km from 36o S to 44o S. Sightings included at least 25 groups of blue whales comprising 38 individuals, 3 group of 4 individual humpback whale.

CBA/UACH

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

Marine surveys: A total of 128 dedicated marine surveys have been undertaken in the area of Corcovado Gulf during late January until late March between 2004-2008 years by using a 7.6 m semi-rigid hull inflatable "Musculus". During 2007 and 2008 a total of 43 surveys were undertaken. In all marine surveys, observers recorded the animals' geographic position using a hand-held GPS, time of sighting, group size, and behaviour, any new sighting >2 km from the first one was considered as a different group. Feeding and defecation behaviours were recorded for the three whales species. Dedicated surveys for acoustics recordings were undertaken with a total of 16 analyzable hours (Buchan et al. 2008). Photographs of both sides of blue and sei whales flanks and dorsal fin as well as photographs of the flukes and dorsal fin of humpback whales were taken whenever possible. Biopsy samples were taken for individual identification and genetic and organochlorine and fatty-acid analysis.

Aerial surveys: during February 2007, one dedicated aerial survey was undertaken from a chartered helicopter departing from the Guaitecas Archipelago, covering part of Corcovado Gulf and northern Moraleda Channel, at no less than 500 masl. A dedicated aerial survey was undertaken during November 2007 from an airplane departing from Puerto Montt, covering western Chiloé, Corcovado Gulf and northern Moraleda Channel.

Land-based observations: were made from a vantage point located about ca. 80 m from sea level located in Ascencion 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 2007 we completed 37 effective days of observations and during 2008 a total of 48 effective days.

INACH

One marine survey on humpback whale and minke whale was conducted between Bransfield and Gerlache Straits as part of the Project INACH 163 (Aguayo-Lobo et al, 1998) during the 44rd Chilean Antarctic Scientific Expedition, on board R/V *Contralmirante Oscar Viel* during January 2008. During the surveys of the Project INACH 163, five species were recorded: Humpback whale (66 sightings with 161 animals), Antarctic minke whale (4 sightings with 6 animals), Southern right whale (1 sighting with 1 animal), fin whale (1 sighting with 1 animal) and killer whale (2 sightings with 23 animals).

CEQUA

Three systematic surveys on humpback whales were conducted in Magellan Strait and adjacent channels between May and December 2007, and two short survey during 2008 between Otway Sound and Magellan Strait. Two species were registered: Humpback whales and Peale's dolphins.

2.1.2 OPPORTUNISTIC, PLATFORMS OF OPPORTUNITY**CBA/UACH**

As part of a systematic small cetaceans study undertaken by CBA-Macquarie University, opportunistic sightings of blue (in analysis), humpback (in analysis) and killer whales (n=9) were recorded in the area. Photographs were taken when it was possible.

INACH

Four cetacean surveys onboard a turistic vessel was realized by one researcher from Ushuaia, Argentina, to Antarctic Peninsula between February and April 2008. The species recorded were: Fin whales (2 sightings with 3 animals), Sei whales (5 sightings with 7 animals), Humpback whales (55 sightings with 130 animals), Right whales (1 sighting with 2 animals), Antarctic minke

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whales (8 sightings with 11 animals), Dwarf minke whale (1 sighting with 1 animal), Killer whale (4 sightings with 22 animals) and Hourglass dolphin (4 sightings with 25 animals).

Primary species	Area	Data type/method	Collected by	Platform	Location of archive (if applicable)	Contact person/institute and refs
Southern right whale	Regions of Antofagasta, Valparaíso, BioBio and Aisen	Photograph	crew	NMMSN	CCC	Barbara Galletti - CCC
	Between 23°38' LS and 54°55' LS	Position report	crew	Navy vessels	DGTM	Marcela Zamorano – mzamorano@directemar.cl
Blue whale	Regions of Coquimbo and Los Lagos.	Photograph	crew	NMMSN	CCC	Barbara Galletti - CCC
	X región	Position report	crew	Navy vessels	DGTM	Marcela Zamorano – mzamorano@directemar.cl
Sei whale	Regions of Coquimbo and BioBio	Photograph	crew	NMMSN	CCC	Barbara Galletti - CCC
Humpback whale	Between 18°28' LS and 64°53' LS	Position report	crew	Navy vessels	DGTM	Marcela Zamorano – mzamorano@directemar.cl
Sperm whale	Regions of Coquimbo and BioBio	Photograph	crew	NMMSN	CCC	Barbara Galletti - CCC
	Between 19°29' LS and 54°34' LS	Position report	crew	Navy vessels	DGTM	Marcela Zamorano – mzamorano@directemar.cl
Orca	Region of Coquimbo	Photograph	crew	NMMSN	CCC	Barbara Galletti - CCC
	Between 20°19' LS and 55°20' LS	Position report	crew	Navy vessels	DGTM	Marcela Zamorano – mzamorano@directemar.cl
Risso's dolphin	Region of Arica	Photograph	crew	NMMSN	CCC	Barbara Galletti - CCC

CCC

Sightings reported by members of the CCC National Marine Mammal Sighting Network (MMSN) in 2007 along the Chilean coast included 215 additional sightings comprising at least 258 great whales and 732 small cetaceans.

Of the total sightings, in 17 opportunities the species were positively identified from pictures and included southern right whale (n=9), blue whales (n=2); sperm whale (n=2), sei whale (n=2), orca (n=1), Risso's dolphin (n=1). (Contact person: Barbara Galletti/CCC)

CEQUA

Three opportunistic survey on marine mammals were conducted between Magellan Strait and Beagle channel during September, November and December 2007, and one opportunistic survey on cetacean were conducted between 50°50'S and 52°15'S in February 2008. In four opportunistic surveys, three cetacean species were recorded: Peale's dolphins, Chilean dolphins and Sei whales.

CHILEAN NAVY

Since 2005 the crew of the Navy vessels report date, hour, position, course and identification if possible, of cetaceans sightings along the Chilean coast. The reports for the season April 2007-2008 included 188 sightings comprising more than 500 cetacean. Of the total sightings, in 89 opportunities the species were positively identified and included blue whale, southern right whale, sperm whale, humpback whale and Killer Whale.

2.2 Analyses/Development of Techniques

Target species	Date	Area	Methods/effort	Parameters/ factors measured	Contact person/institute; refs
Blue whale	2004-2008	Isla de Chiloe	Line transect survey / Mark-recapture	Distribution; sighting frequency;	B. Galletti / CCC; SC/60/SH24
Humpback whale	2008	Isla de Chiloe	Mark-recapture	Distribution; sighting frequency;	B. Galletti / CCC; SC/60/SH26
Southern Right whale	1976-2007	Coast of Chile	Opportunistic	Distribution; Trends	B. Galletti / CCC; SC/60/BRG22

CCC

Blue whale sightings made in Isla de Chiloe from 2004 to 2008 have been analyzed and reported (Galletti Vernazzani et al., 2008a).

Abundance estimates of blue whales through capture-recapture and line-transect methods are under development.

Humpback whale sightings have been analyzed and reported (Galletti Vernazzani et al., 2008b)

Sightings of southern right whales along the Chilean coast from 1976 and 2007 have been compiled and analyzed in order to better understand its distribution and trends in abundance. (Galletti Vernazzani et al., 2008c)

CBA/UACH

Analyses are conducted to investigate the temporary and spatial distribution of blue, humpback whales in the area of Corcovado Gulf and northern Moraleda Channel. A total of 170 groups (241 individuals) of blue whales and 29 groups (40 individuals) of humpback whales were sighted from a land vantage point during 2008 (Montecinos et al. 2008).

Abundance estimates of blue whales using mark-recapture technique are being implemented.

INACH

Analyses on humpback whales and minke whales are conducted to investigate the spatial distribution, group size, and feeding modes. In addition, one report on dwarf minke whale in Antarctic Area I and II was presented the last year to IWC (Acevedo *et al.*, 2007: SC/59/IA24). Moreover, two reports on humpback whales from Antarctic Peninsula and Magellan Strait is presented to IWC of this year.

CEQUA

Analyses are conducted to investigate the temporary and spatial distribution, group size, reproductive rates and feeding modes of humpback whales of Magellan Strait by CEQUA researchers. In addition, two reports on humpback whales from Magellan Strait and Antarctic Peninsula is presented to IWC of this year.

3. MARKING DATA

3.1 Field work

3.1.1 Natural marking data

Species	Feature	Area/stock	Calendar year/season /no. photographed	Catalogued (Y/N)	Catalogue total	Contact person/institute
Blue whale	Left side pigmentation pattern	Isla de Chiloe, Los Lagos Region	2008 / 270	N	159	Elsa Cabrera / CCC
	Right side pigmentation pattern	Isla de Chiloe, Los Lagos Region	2008 / 270	N	155	Elsa Cabrera / CCC
	Head, dorsal fin, flanks, flukes.	X and XI Region	2006 / 30 2007 / 19 2008 / 28	Y + work in progress	117 + work in progress	Centro Ballena Azul / UACH

Humpback whale	Fluke pigmentation pattern, dorsal fin shape	Isla de Chiloe, Los Lagos Region	2008 / 29	N	16	Elsa Cabrera / CCC
	Fluke, dorsal fin	X and XI Region	2006 / 15 2007 / in process 2008 / in process	Y + work in progress	20 + work in progress	Centro Ballena Azul / UACH
	Tail, dorsal fin	Antarctic Peninsula / stock G	2008/55	Y	298	A. Aguayo-Lobo / INACH
	Tail, dorsal fin	Magellan Strait / stock G	2007-08/36	Y	102	J. Acevedo / CEQUA
Sei whale	Dorsal fin	X and XI Region	2008/ in process	Y +work in progress	Work in progress	Centro Ballena Azul / UACH
Killer whale	Dorsal fin	Antarctic Peninsula/Area I-II	2008/03	In process	7	A. Aguayo-Lobo / INACH

INACH

During the systematic surveys on humpback whales conducted in Antarctic Peninsula by INACH, photo identification was undertaken on 22 sightings. Opportunistic photo identification was conducted on Killer whales in one sighting.

CEQUA

During all systematic surveys on humpback whales conducted in Magellan Strait by CEQUA, photo identification was undertaken on all the sightings.

3.1.2. Artificial marking data

3.1.3 Telemetry data

3.2 Analyses/development of techniques

CCC

Photoidentification techniques for blue whales were made following Sears et al. (1990). Details are reported in SC/60/SH24 (Galletti Vernazzani et al., 2008).

Photoidentification techniques for blue whales were made following Katona and Whitehead (1981). Details are reported in SC/60/SH26 (Galletti Vernazzani et al., 2008b).

INACH

Analyses of the migratory destinations of humpback whales from Antarctic Peninsula and the Magellan Strait are presented in one reports submitted to IWC of this year.

CEQUA

Analyses of the migratory destinations of humpback whales from the Magellan Strait were recently published by Acevedo et al. (2007). An update of this information was submitted to IWC in this year.

4. TISSUE/BIOLOGICAL SAMPLES COLLECTED

4.1 Biopsy samples (summary only)

Species	Area/stock	Calendar year/ season no.	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Blue whale	X and XI Region	2007 / 6 2008 / 28	N	16	54	R. Hucke-Gaete or J.P. Torres-Florez, Centro Ballena Azul / UACH
Blue whale (skin slough)	Isla de Chiloe, Los Lagos region	2008/2	Y	0	2	Barbara Galletti / CCC
Humpback whale	X and XI Region	2008 / 4	N	1	9	R. Hucke-Gaete, Centro Ballena Azul / UACH
	Antarctic Peninsula / G	2008/15	Y	0	100	A. Aguayo-Lobo / INACH
	Magellan Strait / G	2007-08/2	Y	0	94	C. Olavarría / CEQUA
Sei whale	X and XI Region	2005 / 1 2006 / 4	N	0	2	R. Hucke-Gaete, Centro Ballena Azul / UACH
Peale's dolphin	Magellan strait	2007-08/2	Y	0	59	C. Olavarría / CEQUA

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

4.3 Samples from stranded animals

4.4 Analyses/development of techniques

CBA/UACH

Blue whales samples are going to be analyzed by a CBA/UACH researcher in association with a researcher of the American Museum of Natural History.

Genetic analysis of Corcovado Gulf humpback whales is being carried out in association with the CEQUA/INACH researchers.

INACH/ CEQUA

The latest genetic analysis of humpback whales from the Magellan Strait and Antarctic Peninsula feeding areas was reported to the workshop for the Comprehensive Assessment of Southern Hemisphere Humpback Whales held in Hobart, April 2006 (Olavarría *et al.* 2006).

A recent comparison of the Magellan Strait and Antarctic Peninsula feeding areas and the breeding ground of Ecuador is presented in this meeting (Felix *et al.*, 2007: SC/59/SH11)

5. POLLUTION STUDIES

Blubber samples from blue and humpback whales are being analyzing by a CBA/UACH researcher.

6. STATISTICS FOR LARGE CETACEANS**6.1 Corrections to earlier years' statistics for large whales****6.2 Direct catches of large whales (commercial, aboriginal and scientific permits) for the season 2007/08****6.3 Anthropogenic mortality of large whales for the season 2007/08**

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

6.3.2 Fishery bycatch of large whales

7. STATISTICS FOR SMALL CETACEANS**7.1 Corrections to earlier years' statistics for small cetaceans****7.2 Direct catches of small cetaceans for the season 2007/08**

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Lagenorhynchus obscurus	1	1	José Luis Brito - MMSA	jbrito@sanantonio.cl

7.3 Anthropogenic mortality of small cetaceans for the season 2007/08

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

7.3.2 Fishery bycatch of small cetaceans

Species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observe	Source or contact
Burmeister porpoise	-	01	01/2008	33° 27' LS and 71°30' LW	D	<i>Not specified</i>	NK	M	José Luis Brito jbrito@sanantonio.cl
Burmeister porpoise	-	04	02/2008	33° 39' LS and 71°36' LW	D	<i>Not specified</i>	GEN	M	José Luis Brito jbrito@sanantonio.cl
Comments: Entangled in gear									

8. STRANDINGS

CCC

Strandings are reported opportunistically by members of the National Marine Mammal Sighting Network established by CCC in 2003.

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Strap-toothed whale	1	1	Barbara Galletti / CCC José Luis Brito/MMSA	info@ccc-chile.org jbrito@sanantonio.cl
Sperm whale	1	1	Barbara Galletti / CCC	info@ccc-chile.org
Risso's dolphin	1	1	Barbara Galletti / CCC	info@ccc-chile.org
Bottle noise dolphin	1	1	José Luis Brito/MMSA	jbrito@sanantonio.cl
Pilot whale	1	1	José Luis Brito/MMSA	jbrito@sanantonio.cl

9. Other studies and analyses

10. Literature cited

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11. PUBLICATIONS

11.1 Published or 'In Press' papers only

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