

Blue, sei and humpback whale sightings during 2006 field season in northwestern Isla de Chiloe, Chile

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ABSTRACT

Continual sightings of blue whales and sei whales in the waters northwest of Isla de Chiloe, Chile during February/April 2004 and 2005 document the relevance of this area as an important feeding ground for baleen whales. Here we present recent sightings of blue, sei and humpback whales from marine and aerial platforms from the same region. All species were observed feeding, either with conspecifics or in association with other species. Skinny blue whales were recorded for a second year. These records further strengthen the necessity to design and implement a comprehensive Marine Protected Area that effectively represents the important feeding area of blue whales in southern Chile.

INTRODUCTION

The northwestern coast of Isla de Chiloe, Chile has been described as an important feeding area for baleen whales by staff members of the Centro de Conservación Cetacea. Continual sightings of blue whales (*Balaenoptera musculus*) have been recorded as far north as 41°45'S for 2004 (Cabrera *et al.*, 2005) and 41°05'40''S for 2005 (Galletti Vernazzani *et al.* 2005a). The presence of sei whales (*Balaenoptera borealis*) has been documented for two consecutive years. Feeding behavior and defecation was recorded for blue and sei whales, either with conspecifics or in association with another species (Galletti Vernazzani *et al.* 2005b).

Here we present new records from the 2006 field season of the Alfaguara Project (for the conservation and management of blue, sei and humpback whales in the waters off northwestern Isla de Chiloe), that include the presence of blue and sei whales for the third consecutive year and the sightings of humpback whales (*Megaptera novaeangliae*) for the first time.

METHODS

Field work was conducted from 03 February to 15 April 2006 at the northwestern Isla de Chiloe and included twelve marine surveys on board artisanal fishing vessels and one aerial survey on a Chilean Navy aircraft.

Marine surveys were conducted between 41°45'S and 42°05'S, within 22km from the coastline. Photo-identification of the three species of whales was conducted according to Lien and Katona (1990) and associated data on group composition, behavior and other fauna was collected. Digital sound was recorded when sea conditions permitted with a 5Hz to 100kHz hydrophone and a Digital Audio Tape recorder. Plankton and faeces samples were also collected and preserved on 10% formalin or frozen.

During marine and aerial surveys, the initial position of a whale or group of whales and the vessel track were recorded with a GPS device.

For the third consecutive year, the aerial survey covered 200 km of coastline, from San Pedro Bay (40°57'47''S – 73°52'27''W) to Cucao Bay (42°37'09''S – 74°16'13''W), between 3km to 15km to the coast. The survey was conducted on 01 March 2006 with a constant flight altitude of 900 ft, on board the aircraft Naval 332, of the Chilean Navy.

RESULTS

During marine surveys, 91 groups of whales comprising 144 whales were recorded. At least 70 groups with 112 individuals were identified as blue whales (Table 1, Figure 1b) between 11 February and 21 March 2006. Seven groups of sei whales with 11 individuals were observed in February 2006. Ten groups of humpback whales with 15 individuals were observed between 16 February and 1 March 2006. Usually blue whales were observed in groups of 1 or 2 individuals (1.57 ± 0.71) (Figure 2). Humpback whales were recorded only in groups of 1 or 2 individuals, and sei whales generally were observed alone.

During the aerial survey on 1 March 2006 at least 24 groups of whales comprising 36 individuals were recorded. Of the total number, 20 groups comprising 32 individuals were positively identified as blue whales (Table 1). No sei whales were observed and two single humpback whales were observed.

Photo-IDs of blue whales taken in 2006 were compared with previously identified individuals. A total of 53 left and 61 right sides and dorsal fins of blue whales were added to the catalogue. Twelve left and right side records of individuals were recaptured within the season and 1 recapture between years. Additionally, 11 individual humpback whales were photographed by dorsal fins and fluke when possible, including four juveniles and a mother-calf pair. Photographs of sei whales are being analyzed.

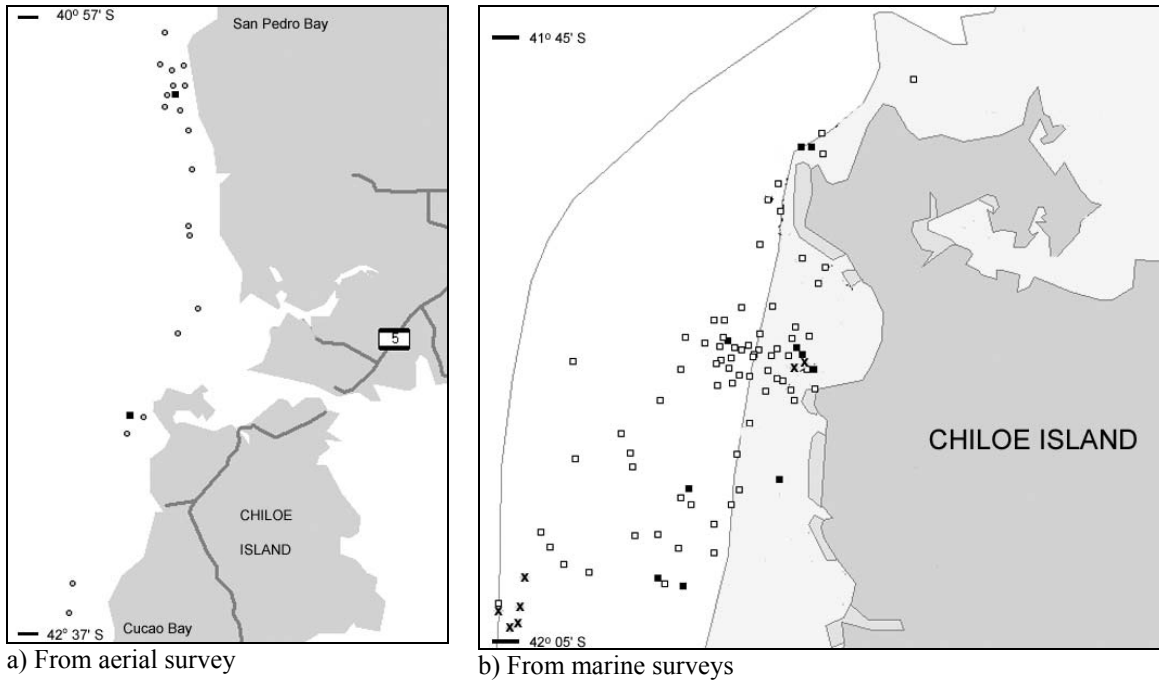
Additionally, our skipper reported seeing blue whales until 30 April at northwestern area of Isla de Chiloé. He stopped fishing for the season after 30 April.

ID	Date	Platform	Duration	Whales		Blue whales		Sei whales		Humpback whales	
				Groups of whales	Number of Individ.	Groups of whales	Number of Individ.	Groups of whales	Number of Individ.	Groups of whales	Number of Individ.
1	1-Mar-06	Aerial	1:28	24	36	20	32	0	0	2	2
TOTAL AERIAL				24	36	20	32	0	0	2	2
1	11-Feb-06	Marine	2:38	2	4	1	2	0	0	0	0
2	16-Feb-06	Marine	8:35	14	24	12	22	0	0	2	2
3	17-Feb-06	Marine	6:14	15	25	10	16	2	5	3	4
4	22-Feb-06	Marine	4:05	2	4	2	4	0	0	0	0
5	23-Feb-06	Marine	6:50	13	20	7	12	5	6	1	2
6	24-Feb-06	Marine	4:20	4	8	4	8	0	0	0	0
7	25-Feb-06	Marine	6:20	5	8	3	4	0	0	2	4
8	1-Mar-06 ¹	Marine	10:51	8	11	6	8	0	0	2	3
9	3-Mar-06	Marine	4:29	4	7	4	7	0	0	0	0
10	4-Mar-06	Marine	3:00	2	4	1	2	0	0	0	0
11	10-Mar-06	Marine	3:02	4	7	2	5	0	0	0	0
12	21-Mar-06	Marine	6:51	18	22	18	22	0	0	0	0
TOTAL MARINE				91	144	70	112	7	11	10	15

¹ Marine survey conducted on board a sailboat

Table 1 – Summary of sightings field season 2006

During the aerial survey, the presence of blue whales was recorded as far north as 40°58'11''S (Figure 1a). No significant differences in body length was observed within groups of individuals. This record represents the current northern limit formally described for blue whales in feeding activities in southern Chile.



Black dot = humpback whale group; White dot = blue whale group; Cross = sei whale group

Figure 1 – Distribution of sightings

Feeding behavior and defecation was recorded for blue, sei and humpback whales, either with conspecifics or in association with other species.

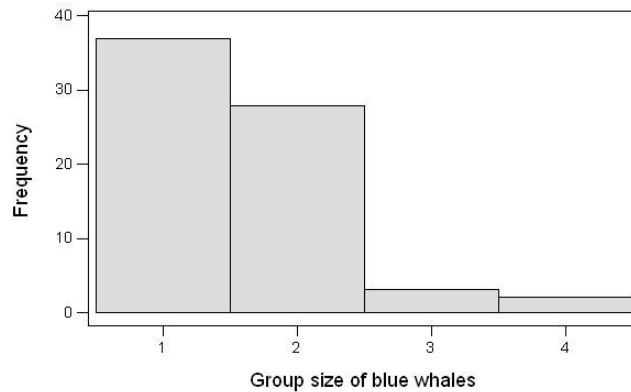


Figure 2 – Histogram of group size of blue whales from marine surveys 2006

DISCUSSION

Blue Whales

Both true and pygmy blue whales are known from Chilean waters (Aguayo L. 1974). The taxonomic status of blue whales off Isla de Chiloe during the austral summer and fall have not been determined for certain

but we believe they must be referable to pygmy blue whales (*B. musculus brevicauda*). Based only on their distribution, feeding north of the Antarctic Convergence during the austral summer they should be classified as pygmy blue whales. In addition, blue whales observed and biopsied off central Chile in January were classified as pygmy blues (Findlay *et al.* 1998, LeDuc *et al.* In press).

Our observations, represents the third consecutive year that the area used by blue whales for feeding activities is north of where blue whales have been previously found feeding. This highlights the importance of continued research in the waters off the northwest coast of Isla de Chiloe to determine the spatial and seasonal distribution of blue whales in Chilean waters. Our study area is north of the feeding area used by blue whales in the Corcovado Gulf, which is south of Isla de Chiloe (Hucke-Gaete *et al.* 2005).

Some data were collected on the behavior of the blue whales, two groups of blue whales composed of at least three individuals were recorded in a chasing mode that included partial breaches, high-speed swimming, forceful blows and bubbles streams. Bubble streams were also observed in groups of two individuals swimming slowly near the surface. Similar social behavior by blue whales has been observed in the Gulf of St. Lawrence (Sears *et al.* 1999).

‘Skinny’ blue whales were observed during seven marine surveys. Analyses of photographs resulted in the establishment of three categories of skinny whales, based on respective depression of the lateral flank and exposure vertebrae and ribs. In 17 groups, comprising 23 skinny blue whales, nine revealed depressed or concaved flanks and the outline of vertebrae, and in one whale the outline of the ribs could be seen under the blubber. In the skinny whales the dorsal processes of the vertebral column were clearly visible projecting along the back anterior to the dorsal fin with depressed tissue between the individual processes.

There are at least three possible explanations for the skinny blue whales: (1) natural or human produced changes in prey availability or habitat quality, (2) physiological changes, or (3) disease. We believe the most likely cause of this condition is nutritional stress due to the lack of prey resources but the underlying reason(s) for this remain unknown.

Balance *et al.* (2001) and Anderson (2005) reported skinny blue whales from the Maldives like those we observed off Isla de Chiloe. However, Anderson (2005) suggested that during the period blue whales occur off the Maldives, they may not be feeding as much as other times of the year. This explanation does not explain why only some of these blue whales were skinny.

Sei Whales

We only recorded sei whales twice in February 2006. In 2004 and 2005, sei whales were observed in 12 days (Galletti Vernazzani *et al.* 2005b). This species was depleted during the 1960s by landed-based whaling on the Chilean coast and pelagic whaling south of 40°S at the same time.

In late March 1966, 344 sei whales were observed in the region between 33°S to 46°S and 72°W and 76°W about 60 to 70 whales offshore (Aguayo L. 1974). Although sei whales were the main species hunted off central Chile in the 1960s, no biological data was ever published on these captures (Aguayo L. 1974). The species remain poorly known in Chilean waters.

Humpback Whales

Humpbacks were not observed off Isla de Chiloe and in 2006 they were only observed during the February. Some of these humpbacks were observed feeding and these whales extend the Magellan Strait Feeding Area (MSFA) to the northern end of Isla de Chiloe. However, because of their low density these humpbacks may represent the northern limit on the MSFA. Based of the time of our observations, these whales do not migrate south of the Antarctic Convergence to feed during the Austral summer. None of the six humpback we photographed (flukes) off Isla de Chiloe matched any of the 41 whales photographed off Chile or the 965 whales in the Antarctic Humpback Whale Catalogue (Areas II-VI). Acevedo *et al.* (2004) reported four matches between whales they photographed in the Magellan Strait Feeding Area with photographs from Costa Rica, Panama, Colombia and Ecuador. Sabaj *et al.* (2004) suggested the idea, based on genetics, that humpbacks sampled in the MSFA represent a discrete feeding ground. It is possible that Southern Hemisphere and Northern Hemisphere humpbacks could overlap during a short time off the

coast of Central America, it is not likely, due the out of phase breeding cycles of the two populations. Therefore, it is unlikely that there is any genetic mixing of the two populations.

CONCLUSIONS

Considering that the extended distribution and site fidelity of blue whales in southern Chile remains uncertain, and that the presence of humpback and sei whales strengthen the importance of northwestern of Isla de Chiloe for baleen whales feeding activities, there is an urgent need to better understand the spatial and seasonal distribution of blue whales to design and implement a comprehensive and sound Marine Protected Area.

Blue whales need large areas to survive and the northwestern coast of Isla de Chiloe is believed to be critical for their conservation. The resolution to encourage the Republic of Chile to establish a protected marine area at the Corcovado Gulf to ensure the protection of blue whales, that was adopted at the 3rd IUCN World Conservation Congress, held in Bangkok, Thailand, from 17-25 November 2004 is insufficient in size. As to ensure whale conservation, particularly blue whale conservation, at least the entire western coast of Isla de Chiloe should be protected along with the Corcovado Gulf region.

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