

KILLER WHALE (*ORCINUS ORCA*) OCCURRENCE AT ISLA DE LOBOS, URUGUAY

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The killer whale, *Orcinus orca*, is a cosmopolitan cetacean but it occurs in higher densities in coastal waters and high latitudes (Jefferson *et al.*, 1993). In the western South Atlantic they frequent the coast between Paraíba state, Brazil (Lodi and Hetzel, 1998) and Tierra del Fuego, Argentina (Iñíguez, 2001). Research on killer whales has been undertaken in both countries but despite that, there is considerable uncertainty regarding distribution, abundance and movements of this species in the western South Atlantic. Based on dorsal fin and saddle patch shape, Iñíguez *et al.* (1994)² postulated the existence of a single killer whale population shared by southern Brazil, Uruguay and Buenos Aires Province of Argentina. In Uruguay, information regarding the presence of the species in coastal waters is scarce, primarily occasional sightings around oceanic islands inhabited by South American fur seals (*Arctocephalus australis*) and South American sea lions (*Otaria flavescens*) (Ximénez *et al.*, 1972; Praderi, 1980³; Vaz-Ferreira and Ponce de León, 1984; Ximénez and Langguth, 2002). There is one sighting of an interaction between a killer whale and a southern right whale (*Eubalaena australis*) (López, 2000), and occasional strandings have also been recorded along the Uruguayan coast, including at Isla de Lobos (Iriarte, 2004). In addition, interactions between killer whales and a pelagic longline fishery for swordfish (*Xiphias gladius*), bigeye (*Thunnus obesus*) and albacore (*Thunnus alalunga*) tuna have been documented in the Uruguayan Exclusive Economic Zone (EEZ) (Brum and Marín, 2000). Although killer whales are not officially listed as vulnerable, populations are small and their growth rate is low, and the species often interacts with industrial fisheries (Secchi and Vaske, 1998; Siciliano *et al.*, 1999; Baird, 2001), which make it an easy target for gun shooting. Likewise, in the western South Atlantic incidental catches in nets have been recorded, and captures for aquaria have also occurred (Iñíguez *et al.*, 1994)². All these factors, even occasional, could limit population growth (Baird, 2001). The objective of this note is to present the results of the first systematic research effort on killer whales in Uruguay. The study was undertaken in 2003 at Isla

de lobos (35° 01' 38"S, 54° 52' 55"W; Figure 1), the largest pinniped rookery in South America, with a year-round population of approximately 230000-270000 South American fur seals and 2000-2400 South American sea lions (Enrique Páez, pers.comm.⁴; Bastida *et al.*, 2007). This research site was chosen as it could represent an important foraging location for killer whales, which are known to feed on marine mammals in Patagonia (López and López, 1985; Iñíguez, 2001). The general objective of the study was to determine the occurrence patterns of killer whales around the island, and document their behaviour. Between January and November 2003 surveys were done on 141 days, distributed in seven periods, with 180.5 hours of effective searching effort (*i.e.* only scanning time is accounted for). Scans of 10-20 minutes in duration were done daily between periods of 30 minutes using 10x40 binoculars from the top of the lighthouse of the island, at an elevation of 63m. These scans could detect whales out to at least 3km from shore and covered a 360 degree view. Scans were undertaken between 8:00-12:00 and 14:00-18:00 hours. The seven periods included the four seasons of the year: 3/1/03 - 21/1/03 (period I), 20/2/03 - 1/4/03 (period II), 17/4/03 - 29/4/03 (period III), 30/5/03 - 11/6/03 (period IV), 25/6/03 - 23/7/03 (period V), 3/9/03 - 17/9/03 (period VI), 29/10/03 - 10/11/03 (period VII). For recording the presence of individuals, a 35mm high speed automatic camera with 60-300mm lens was used, and the method for recording and recognizing behavioural states (defined after Baird and Dill, 1995) was *ad libitum* (Martin and Bateson, 1991). Video recordings were taken with an 8mm camera. Killer whales were seen on only six occasions during the survey, all during period IV (30/5/03 - 11/6/03) (Table 1; Figure 2). Lone individuals and groups of at least three or more whales were observed. The primary behaviour documented was foraging and traveling, but social interactions were also observed. In two of the sightings group size was 3-4 individuals, which coincides with the typical size of a foraging and feeding group reported for marine mammal eating killer whales in the western North Pacific (3.29 individuals) (Baird and Dill, 1996).

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² Iñíguez, M.A., Secchi, E.R., Tossenberger, V., Dalla Rosa, L. (1994) *Orcas, Orcinus orca, en la Argentina y Brasil: Informe Preliminar*. Page 103 in Abstracts, VI Reunión de Trabajos de Especialistas en Mamíferos Acuáticos de América del Sur, 24-28 October, Florianópolis, Brasil.

³ Praderi, R. (1980) *Adiciones a la lista sistemática de cetáceos de Uruguay*. Pages 136-137 in Resumen de las Jornadas de Ciencias Naturales. Museo Nacional de Historia Natural, Montevideo, Uruguay.

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On two occasions feeding behaviour was noticed, which was confirmed by concentrations of flocks of gulls (*Larus dominicanus*) and giant petrels (*Macronectes giganteus*) above the whales.

As the occurrence of killer whales in Isla de Lobos was very low, and taking into account that the island would present an optimal site for foraging due the high number of potential prey, it could be considered that the species may have a more offshore distribution, occasionally venturing into coastal waters. The sightings in the present study occurred during winter, when the effects of the cold and productive Falkland Current are greater. However, killer whale

observations were recorded on three occasions in Punta del Este during the summers 2000 and 2001 (personal observations), and there was a live stranding of a killer whale at Río de la Plata Estuary in April 2003 (Alfredo Le Bas, pers. comm.)⁵, while a survey in Isla de Lobos was being undertaken. Killer whale presence in coastal waters off southeastern Brazil has been related to the productivity and low temperatures of coastal upwellings in Rio de Janeiro state (Lodi and Hetzel, 1998; Siciliano *et al.*, 1999), while in southern Brazil they are commonly found beyond the continental slope, in tuna and swordfish fishing grounds (Secchi and Vaske, 1998; Dalla Rosa and Secchi, in press).

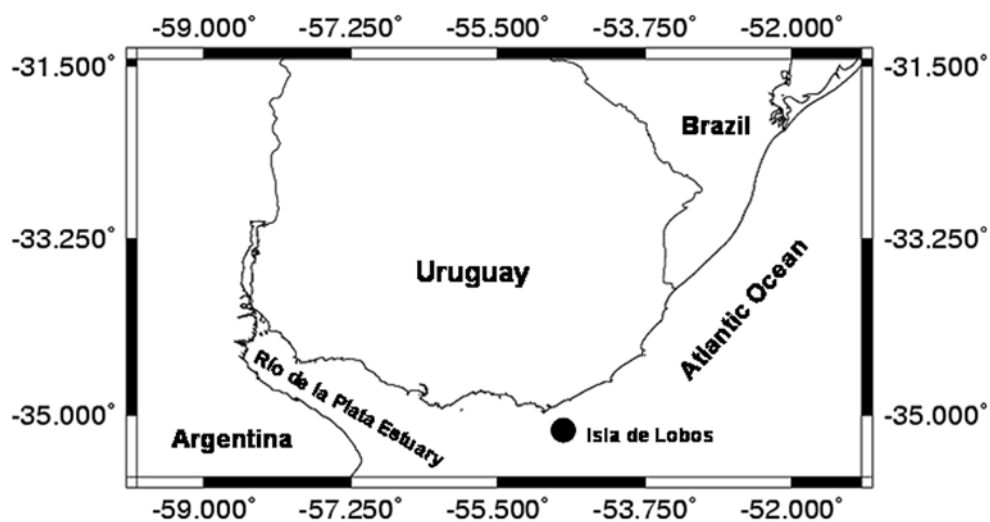


Figure 1. Location of the study area

Table 1. Killer whale sightings off Isla de Lobos, Uruguay, during 2003.

SIGHTING #	DATE	TIME FIRST SEEN	TIME LAST SEEN	N° OF INDIVIDUALS	SEX	BEHAVIOUR	CLASSIFICATION OF THE BEHAVIOUR ACCORDING TO THE ETHOGRAM
1	30/5/03	15:23	16:35	1	U	Percussion	Feeding? Social-play?
2	3/6/03	11:10	12:05	1	U	Foraging	Foraging-travel
3	3/6/03	15:25	16:02	1	U	Foraging	Foraging-travel
4	3/6/03	16:22	16:35	3	U	Foraging and traveling towards N and S repetitive times	Offshore foraging
5	4/6/03	14:53	15:54	1	U	Percussion with birds associated. Traveling towards S-W-S.	Feeding Foraging-travel
6	9/6/03	11:50	13:35	At least 3	1♂	Traveling isla-isla (twice). Birds associated. Breaching, porpoising, percussion.	Haulout foraging Feeding Fast travel Social-play

⁵ Alfredo Le Bas. PROFAUMA (Protección de Fauna Marina). Montevideo, Uruguay. E-mail: lebas@fcien.edu.uy.

Furthermore, Passadore *et al.* (2004)⁶ correlated the high killer whale occurrence in the western South Atlantic continental slope area with low temperatures and high productivity, which may support the hypothesis that killer whales in the area (southern Brazil-Uruguay-Buenos Aires Province) distribute mainly in open waters with coastward movements associated with the presence of cold water. Further research is required in order to bring light to all these uncertainties regarding the distribution pattern of the species in the western South Atlantic.

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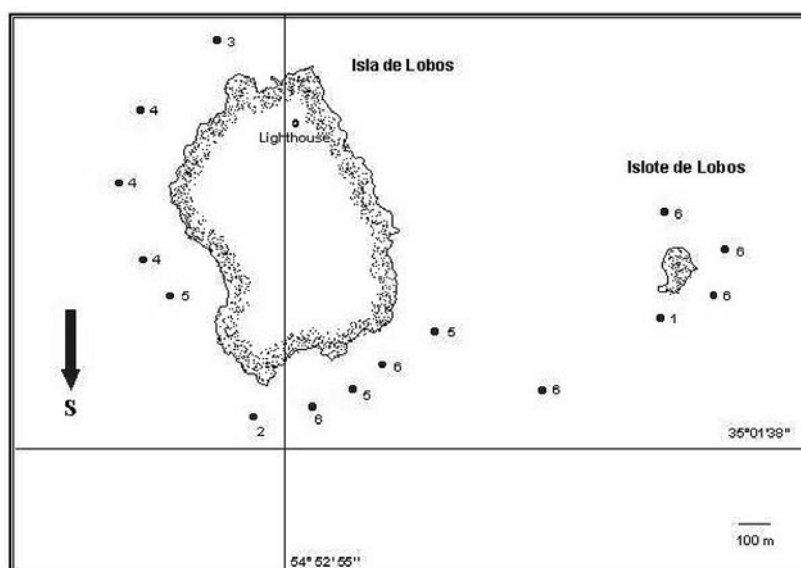


Figure 2. Geographic location of sighted individuals (black dots). The number indicates the sighting number. Repeated numbers show the movements of individuals. The smaller dots on the islands indicate the distribution of pinnipeds.

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⁶ Passadore, C., Szephegyi, M., Mora, O. and Domingo, A. (2004) *Presencia de Orcinus orca en el Océano Atlántico Sudoccidental*. Page 82 in Abstracts, V Congreso de la Sociedad Latinoamericana de Especialistas en Mamíferos Acuáticos, 11-17 September, Quito, Ecuador.

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