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SHORT NOTE

# Vagrant Antarctic fur seals, *Arctocephalus gazella*, in southern Chile

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**Abstract** The Antarctic fur seal, *Arctocephalus gazella*, in the eastern South Pacific Ocean, first reported on Hoste Island, Cape Horn in 1973, and then on the Juan Fernandez Archipelago in 1982 and 1983, was recorded again in October and December 2009 on the southern coast of Chile. Three different individuals were seen simultaneously on a single day at Punta Dungenes, Magellan Strait, and a fourth individual was sighted at the northeastern coast of Almirantazgo Sound, Tierra del Fuego. These records represent the first sightings of live *Arctocephalus gazella* in southern Chile. Although it is difficult to establish both their origin and rationale for dispersion outside of their distribution range, the substantial breeding population recovery in South Georgia and food shortages during the breeding and post-breeding season are suggested as possible explanations.

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## Introduction

Four otariid species are found breeding in South America, the Juan Fernández fur seal, *Arctocephalus philippii* (Peters, 1866); Galápagos fur seal, *A. galapagoensis* (Heller, 1904); South American fur seal, *A. australis* (Zimmermann, 1783); and South American sea lion, *Otaria flavescens* (Shaw, 1800). The first two species only occur in oceanic islands (Aguayo-Lobo 1971, 1973; Bonner 1981; King 1983), while the South American fur seal and sea lion are distributed along the coasts of South America from Perú to southern Brasil (Bonner 1981; Vaz-Ferreira 1981; King 1983).

The Antarctic fur seal, *A. gazella* (Peters, 1875), is the only fur seal that lives south of the Antarctic Convergence. Its breeding populations occur mainly on islands located south of Antarctic Convergence and north of latitude 65°S (Bonner 1981). However, some vagrant Antarctic fur seals have been reported in South America. In the western Atlantic coast, an overall of five dead individuals have been reported in Brazil between 1984 and 1994 (Pinedo and Marmotel-Rosas 1987; Pinedo 1990; Drehmer and Oliveira 2000; Oliveira et al. 2001), another two animals (dead and live) were reported in Uruguay between 2000 and 2002 (Naya and Achaval 2006), and around 23 specimens have been recorded mainly in the central and northern coast of Argentina (Rodríguez et al. 1994; Fernández et al. 1998; Bastida and Rodríguez 2003; Goodall et al. 2005; Barquez et al. 2006). In addition, a total of 25 individuals have also been reported at Gough Island, South Atlantic Ocean, between 2005 and 2009

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(Wilson et al. 2006; Bester and Reisinger 2009). On the Pacific coast of South America, sightings of this species are scarce. Only three records of vagrant Antarctic fur seals have been reported in this area, one individual on Hoste Island, Cape Horn, in 1973 (Texera 1974), and another two individuals in Juan Fernández Archipelago in 1982 and 1983 (Torres et al. 1984). In this note, we report the first sightings of live animals of this species for the southern Chile.

## Materials and methods

In October 2009, as part of field research project developed by CEQUA Foundation and the Wildlife Conservation Society, the northern coast of the eastern Magellan Strait was surveyed for photo-identification of southern right whales (*Eubalaena australis* Desmoulins, 1822) (Fig. 1). In December 2009, the Almirantazgo Sound (see Fig. 1) was also visited to census southern elephant seals, *Mirounga leonina* (Linnaeus, 1758) and to conduct field work in the small breeding colony of black-browed albatross, *Thalassarche melanophrys* (Temminck 1828), located at Islote Albatros. On the surveyed beaches, all associated fauna was recorded and photographed.

## Results

Over a period of 3 months, between October and December 2009, four Antarctic fur seals were seen and photographed (see Fig. 1). On October 2nd, a juvenile male, an

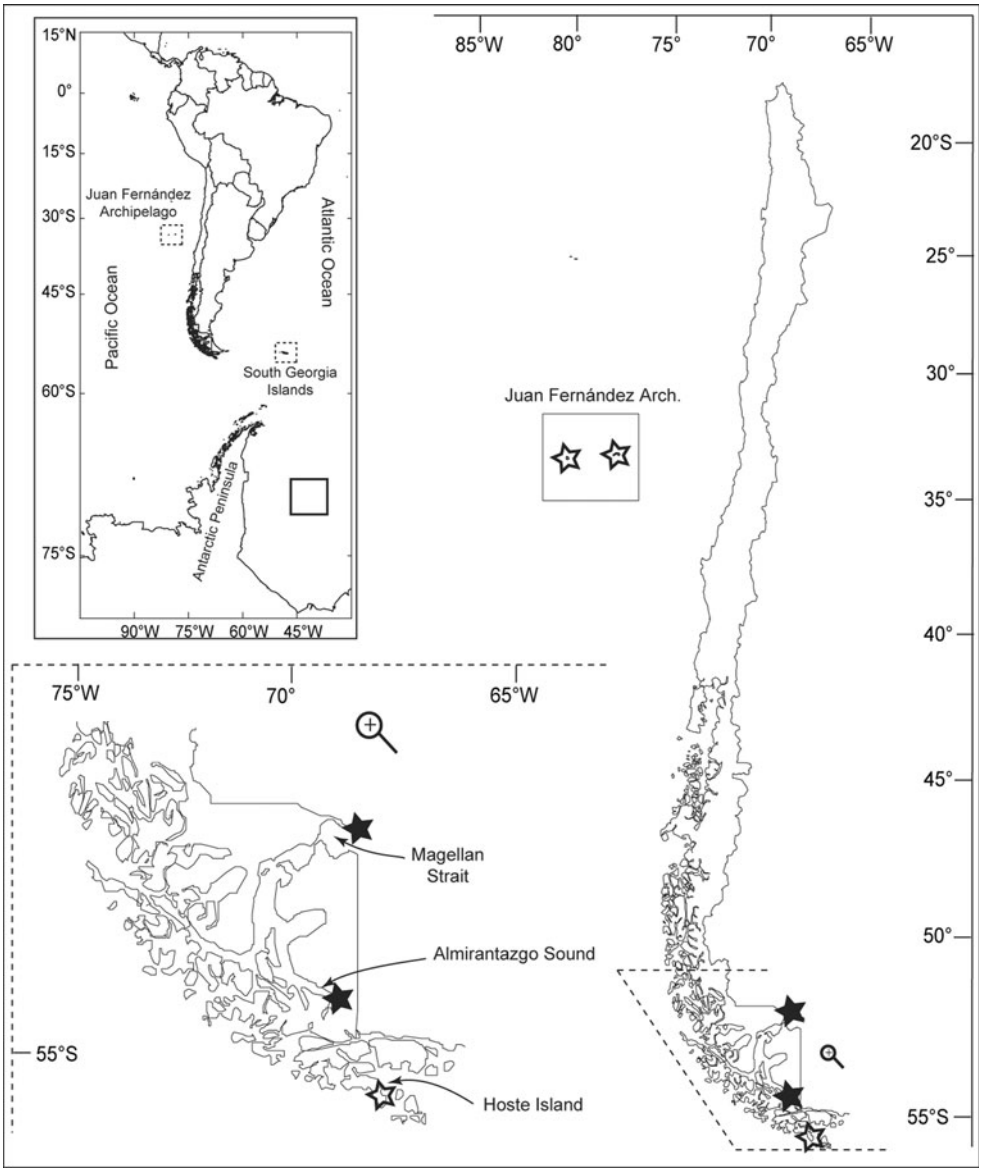


**Fig. 1** Location of the vagrant Antarctic fur seals sighted in Chilean coasts, showing previous (*outlined stars*) and new records (*filled stars*). The inset shows Chile position in relation to South America, South Georgia Islands, and Antarctica

adult male, and one unidentified (probably an adult female) were simultaneously sighted resting on the beach on Punta Dungenes (52°23′S; 69°25′W), Magellan Strait. The juvenile male shared the same area with the adult male, with the third individual approximately 300 m distant from them. Both the juvenile male and the unidentified individual were in excellent physical condition and aware of our presence, while the adult male appeared lethargic and lean with protruding hip bones (Fig. 2).

On December 17, 2009, a small juvenile of unidentified sex was also seen resting and scratching itself on the beach of Azopardo Bay (54°27′04″S; 68°58′12″W), Almirantazgo Sound. The coat of this juvenile was gray dorsally with a lighter underside, particularly on the chest and neck. It was identified preliminarily as an Antarctic fur seal (Fig. 2). This identification was confirmed later by two experienced seal biologists (M. Bester and I. Boyd). This individual was in excellent physical condition and did not display avoidance behavior in reaction to human presence.

## Discussion

On the Pacific coast of South America, only three juveniles have been previously reported. A dead juvenile Antarctic fur seal was found at Hoste Island, Cape Horn (55°30′S; 68°07′W), in September 1973 (Texera 1974), and two live juveniles were seen 2,650 km to north of the previous location, on Alejandro Selkirk (33°46′S), Robinson Crusoe Islands (33°38′S) in 1982, and the Juan Fernández Archipelago in 1983. On the Pacific coast of South America, only three juveniles have been previously reported. A dead juvenile Antarctic fur seal was found at Hoste Island, Cape Horn (55°30′S; 68°07′W), in September 1973 (Texera 1974), and two live juveniles were seen 2,650 km to north of the previous location, on Alejandro Selkirk (33°46′S), Robinson Crusoe Islands (33°38′S) in 1982, and the Juan Fernández Archipelago in 1983 (Torres et al. 1984). While Texera (1974) considered accidental the presence of the Antarctic fur seal on Hoste Island, Torres (1976) suggested that the incursions of this species in the Southern tip of South America may be more frequent and erroneously identified as South American fur seal. Although no Antarctic fur seal has been positively identified in the otariid censuses conducted in the Patagonian and Fueguian fjords of Chile, the possibility that other vagrant individuals have arrived on the southern coast of Chile cannot be ruled out. In fact, currently Goodall et al. (2005) reported five dead specimens found in the Argentinean coast of Tierra del Fuego. To our knowledge, this new records of Antarctic fur seals represent the first sightings of live individuals in the southern region of South America.

Given the lack of identification tags, it is difficult to establish the origin of these individuals which would help inform the mechanisms that drive dispersion of these animals outside of their natural distribution range. Antarctic fur seals were subject of an extensive commercial harvest and nearly exterminated during the 19th and early 20th centuries (Bonner 1968). Since the cessation of sealing, a substantial recovery of the populations has taken place from small remnant breeding groups re-colonizing most of their former breeding sites, as well as another localities such as Marion, Crozet, Prince Edward, Mc Donald, and Macquarie Islands (Aguayo-Lobo and Torres 1967; Bonner 1968; Repenning et al. 1971; Payne 1977; Aguayo-Lobo 1978; Laws 1981; Bengtson et al. 1990; Hucke-Gaete et al. 2004; Hofmeyr et al. 2006). The dispersion of vagrant animals from their natal colonies has been suggested as an indicator of population recovery after cessation of a large-scale harvesting as congested conditions develop (McCann and Doidge 1987; Hofmeyr et al. 2005; Wilson et al. 2006). In this sense, our sightings are found at 1,200 and 2,066 km from the

**Fig. 2** Adult male (*left*) and juvenile (*right*) Antarctic fur seals seen at Magellan Strait and Almirantazgo Sound, Chile, respectively (photographs D. Droguett and R. Matus)

nearest breeding colonies of Antarctic fur seals located on Livingston Island, South Shetland Islands and South Georgia Islands, respectively. Nevertheless, the breeding population of South Georgia Islands has experienced the most significant population growth, from a few small and isolated breeding colonies in the 1930s to an estimated population that exceeds 4 million of individuals in the late 1990s (SCAR 2006).

On the other hand, juveniles are not generally present at the colonies during the breeding season as they mostly remain at sea (Riedman 1990). Marked differences in the foraging behavior between juvenile males and females have been reported, with juvenile males forage significantly further away from their colonies than females and, as winter progresses, they leave the continental shelf toward a more oceanic distribution (Warren et al. 2006). Meanwhile, Falabella et al. (2009) reported that some adult females tagged with satellite-linked radio transmitters at South Georgia migrated to the continental shelf off the Patagonian sea of Argentina at the end of the breeding season, where they feed for most of the year. This movement from South Georgia Islands to South America was also documented for an immature individual tagged in Evermann Cove, Bird Island, that was then found dead at Hoste Island (Texera 1974).

These findings suggest that vagrant Antarctic fur seals seen at Magellan Strait and Almirantazgo Sound probably come from the breeding population of South Georgia Islands. Although it is impossible to say when the individuals arrived and how long they have remained on these remote localities of southern fjord, the good conditions of the observed vagrants (except the adult male) also suggests that they have successfully exploited food sources outside their normal range.

The sightings of vagrant individuals are relevant for a better comprehension on species movements; learning about vagrant individuals can potentially lead to new insights into the biology of the species outside of their natural distribution range, while the existence of a greater number of vagrant individuals could open the possibility of the colonization of new sites, as occured with Subantarctic fur seals in the Juan Fernández Archipelago (Torres et al. 1984).

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