

Short Note

The Most Northerly Record of a Southern Elephant Seal (*Mirounga leonina*) in the Pacific Ocean at the Island of Taboga, Gulf of Panama, Panama

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Pinnipeds occur only occasionally in Panamanian Pacific waters, usually during extreme climatic events such as the El Niño phenomenon (Félix et al., 2007; Autoridad de los Recursos Acuáticos de Panamá [ARAP], 2014). In general, these specimens are wandering animals recorded on beaches where they came to rest probably exhausted after a long journey. Although several specimens have been recorded, the only confirmed species of pinniped in the Pacific Panamanian waters to date is the Galapagos fur seal (*Arctocephalus galapagoensis*) (ARAP, 2014). The period of highest occurrence of this species coincides with seasonal upwelling in the Gulf of Panama between December and March when the sea surface temperature can be as low as 17° C (D'Croz et al., 1991), and with the lower primary productivity season in the Galapagos Islands due to annual weakening of the Humboldt Current (Wyrki, 1966).

A large elephant seal was observed and photographed in the Pacific Ocean on the Island of Taboga in the Gulf of Panama, Panama (08° 47' 40" N, 70° 33' 17" W), on 31 December 2016 (Figure 1). Taboga is a small island close to Panama City with a fishing village and tourist resort on beaches on the northeast side, and high cliffs and rocky shores on the rest of the island. The island is an important breeding site for brown pelicans and other seabirds such as cormorants, frigate birds, white egrets, boobies, and ospreys (ARAP, 2011). The seal was photographed hauled out in several different places on the beaches at Taboga. Photographs were taken on cell phones by islanders Mayra and Lorenzo Lopez and others. A video with information about the event was also reported on the local Telemetro news channel (www.telemetro.com/nacionales/Foca-aparece-Isla-Taboga_3_986931305.html).

The elephant seal was sighted in the early morning when the tide was dropping (low tide was at 1117 h), and it attracted a small crowd of curious islanders. The seal was reported to leave in the afternoon going north in the direction of the Panama Canal, and it was photographed by Lorenzo Lopez swimming in the sea at a tanker jetty at nearby Melones Island, a very small uninhabited island ~5 km west-northwest of Taboga where there is a tank farm. The photos were passed on to the senior author who sent them to several experts for identification. Enquiries made of locals show there were no other recorded sightings of the seal either on Taboga or the Pearl Islands in the Gulf of Panama.

Available photographs show a robust elephant seal ~2.5 m long with light grey and brown fur with dark spots as a result of an advanced stage of molting, resting on its belly on the beach (Figures 2 & 3). The short flat fore flippers, rigid hind flippers, and absence of auditory pavilion indicate that it is a true seal (Phocidae). The sex and physical maturity of the animal are unknown. Because of its size, external color, and shape of the snout, the specimen is suggested to be either a female or a subadult male elephant seal (*Mirounga* sp.). The head of female and subadult male elephant seals is similar, both having a proportionately large and broad head with a broad, massive, and somewhat blunt muzzle with more forward facing nostrils (see Reeves et al., 1992; Jefferson et al., 2007).

The elephant seal is the largest species of pinniped. There are two recognized species: (1) the northern *Mirounga angustirostris* and (2) the southern *M. leonina*. Both species are physically similar, although the southern species is larger than the northern and has a less pronounced proboscis in adult males (Reeves et al., 1992). Females and young males are physically similar, and differentiation occurs at puberty (3 to 6 y)

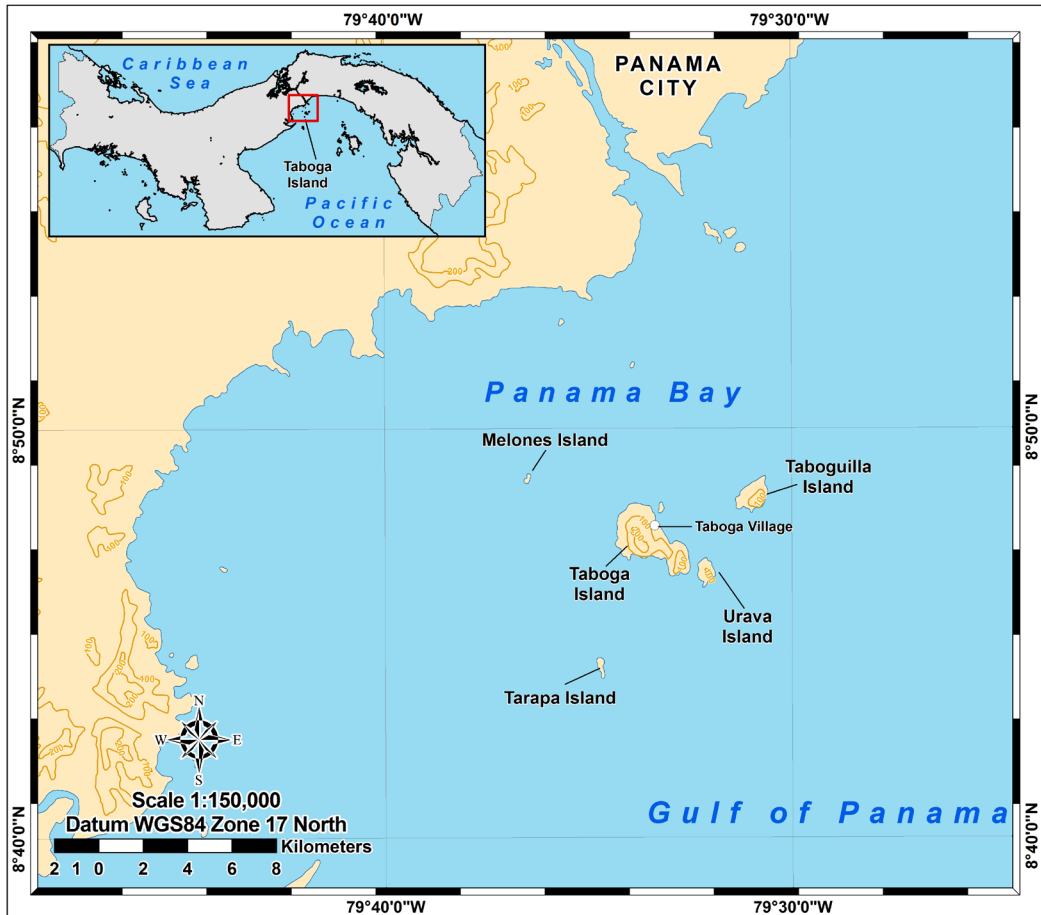


Figure 1. Location map of the Islands of Taboga and Melones, Gulf of Panama, Panama

(Ling & Bryden, 1981; Reeves et al., 1992). The population of *M. angustirostris* is estimated at between 210,000 and 239,000 specimens, with a distribution restricted to the northeastern Pacific from Baja California in Mexico to San Francisco in the United States, but may extend to Alaska and the Aleutian Islands to the north, and west to 180° W (McGinnins & Schusterman, 1981; Reeves et al., 1992; Hückstädt, 2015). Some wandering animals have been registered as far west as Japan (Hückstädt, 2015) and as far south as the Galapagos Islands where two young males were recorded in May 2004 (Vargas et al., 2004), although the latter also could be the southern species (Lewis et al., 2006).

The southern elephant seal population was estimated to be about 650,000 individuals in the 1990s, with a circumpolar distribution and breeding sites located in the Antarctic and sub-Antarctic islands, although there is also an extensive breeding

colony in temperate waters in southern Argentina (Reeves et al., 1992; Lewis et al., 2006; Hofmeyr, 2015). Wandering animals have been reported in different continents, including a record above the equator in the Oman Peninsula (Johnson, 1990). The species has been reported along both sides of South America with dozens of cases throughout the year in Brazil up to 3° 51' N latitude (Lodi & Siciliano, 1989; De Moura et al., 2010), and on the western side of South America throughout Chile (Torres, 1981; Pacheco et al., 2011; Acevedo et al., 2016), southern Peru (Nowak, 1991), and as far north as the Gulf of Guayaquil, Ecuador (Álava & Carvajal, 2005), although the latter was not identified as either the northern or southern species. Historical records indicate that the southern elephant seal was common on the Juan Fernandez Islands off the coast of Chile and in southern Chile, but these colonies were wiped out by hunting in the 19th century (Ling

& Bryden, 1981; Sielfeld, 1983; Nowak, 1991; S epulveda et al., 2007; Acevedo et al., 2016).

Elephant seals have two short periods on land each year—when molting and when breeding. The rest of the time they remain at sea (Reeves et al., 1992; Hofmeyr, 2015). In the northern hemisphere, the molting period extends between April and August (H uckst adt, 2015), while in the southern hemisphere it occurs during the austral summer (December to March) (Hofmeyr,

2015). In immature males, molting occurs specifically between December and January (Ling & Bryden, 1981). Photographs of the elephant seal at Taboga show that the animal was evidently in a molting period and that is probably the reason it was sighted on land. Therefore, the Taboga specimen most probably came from the southern hemisphere. Most tagged elephant seals found in South America originate in the Vald es Peninsula, Argentina (Lewis et al., 2006), and the Falkland/



Figure 2. The specimen lying on the beach at Taboga (Courtesy of M. Lopez)



Figure 3. The specimen reacting to the approach of a person at Taboga (Courtesy of M. Lopez)

Malvinas Islands (Acevedo et al., 2016). As a result of an extensive tagging program, Lewis et al. (2006) found that about 88% ($n = 137$) of the animals recorded on both sides of South America away from the reproductive colonies were males, and 59% of them were categorized as immature. Acevedo et al. (2016) also reported that 93% of the animals recorded north of 51° S on the west coast of South America were males, mostly immatures. Additionally, on the coast of Brazil, De Moura et al. (2010) reported that 81.2% of the sexed animals were males. Thus, although reproductive colonies of the northern elephant seal are located closer to Panama than those of the southern species (4,000 km vs 8,700 km), the molting fur and the correlation between dispersion and sex indicate that the Taboga specimen is most probably an immature male of *M. leonina*.

This is the northernmost record of the species in the Pacific Ocean, some 1,300 km north of the nearest sighting in the Gulf of Guayaquil (Álava & Carvajal, 2005), and the second in the northern hemisphere in the world after Johnson (1990) in Oman (18° 07' N). A sport fisherman from Taboga reported seeing a similar animal, which was not molting, in ~2001 near the Island of Coiba in western Panama (L. R. López Alfaro, pers. comm., 7 January 2017), while another islander reported seeing two seals on the beach at Taboga in late December 2015 (M. Lopez, pers. comm., 4 January 2017); thus, there is a chance that other elephant seals occurred before in the area.

Although the geographic dispersion of the species by thousands of kilometers around the Antarctic and sub-Antarctic zones (Hindell & McMahon, 2000; Hindell et al., 2016) and southern South America is relatively well known (Lewis et al., 2006), extreme cases at low latitudes as reported herein are scarce. Large-scale marine currents can promote dispersal of the species as occurs with the Malvinas/Falklands Current on the eastern coast of South America (De Moura et al., 2010). In the case of the Panamanian specimen, the Humboldt Current, running north along the western side of South America, could influence the distancing of the specimen from its normal distribution area in the south. This could also occur with the two animals reported in continental Ecuador at the same time of the year (December 1998 and February 2002; Álava & Carvajal, 2005) as the Panamanian specimen (end of December 2016).¹

The presence of the specimen in Panama also coincides with the cold phase of the El Niño–Southern Oscillation (ENSO) cycle referred as to “La Niña” (following the El Niño of 2015–2016). The effect of the ENSO cycle on the breeding and feeding ecology of both northern and southern

elephant seals is well known (Crocker et al., 2006; Vergani et al., 2008). La Niña was present since the second half of 2016 with a negative sea surface temperature anomaly of -0.5 to -1.0° C in the central Pacific between June 2016 and January 2017, although in the south Pacific (Region Niño 1 + 2), the sea surface temperature had neutral values in the same period (Climatic Prediction Center, 2017a). It is possible that the strong environmental signal of El Niño–La Niña, which would extend the anomaly from the equatorial Pacific Ocean south to Antarctica (Turner, 2004), caused the wandering movement of the specimen in question. The first specimen reported in continental Ecuador also coincided with a La Niña phase at the end of 1998 after the intense El Niño of 1997–1998. The second record in Ecuador occurred at the end of a La Niña event, which remained pulsating between June 1998 and February 2002 (Climatic Prediction Center, 2017b). It is possible that the changing El Niño–La Niña conditions along the southeastern Pacific, combined with the seasonal upwelling of the Gulf of Panama, were in some way correlated. The final destination of the specimen reported herein is unknown.

Endnote

¹While this paper was in press, the second author (FF) observed a third specimen, a ~4-m-long adult male, in a river within the Gulf of Guayaquil in Ecuador on 23 October 2017.

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