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Research note

First record of a neonate California sea lion (*Zalophus californianus*) in Manzanillo, Colima, Mexico

Primer registro de un lobo marino de California (*Zalophus californianus*) neonato en Manzanillo, Colima, México

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Abstract. We present the first report of a neonate California sea lion near Manzanillo, Colima, Mexico, about 900 km from the southernmost breeding colonies recognized for the species. The sighting occurred June 25th, 2011, and during the 2 following days, in La Boquita beach. Near the site of the sighting, sea surface temperature (SST) was recorded. SST values were some of the lowest recorded in the region (21-24° C), similar to the ones typically recorded in feeding areas in the southern Gulf of California in winter (~20.9° C). California sea lion females give birth in summer and stay close to their colonies where they feed their young during approximately one year. Thus, their feeding areas tend to be confined within a radius of about 30 km from their colonies. This close relationship between breeding and feeding make extralimital births important; the increasing knowledge regarding travel patterns of individuals may provide better ways to analyze the species status and its future conservation.

Key words: California sea lion, neonate, extralimital birth, individual patterns.

Resumen. Este es el primer reporte de un lobo marino de California recién nacido cerca de Manzanillo, Colima, México, cerca de 900 km al sur de las colonias reproductivas más sureñas reconocidas para la especie. El avistamiento ocurrió en playa La Boquita el 25 de junio de 2011 y durante los 2 días posteriores. Se registraron valores de temperatura superficial del mar que resultaron ser los más bajos (21-24° C) en la región, similares a los de áreas de alimentación de lobo marino en el sur del golfo de California en invierno (~20.9° C). Las hembras dan a luz en verano, después presentan un ciclo de alimentación alternado con la atención a sus crías por lo que permanecen cerca de sus colonias, donde alimentan a sus crías por 1 año aproximadamente. Por esta razón, las áreas de alimentación de las hembras se encuentran confinadas a un radio de unos 30 km alrededor de las colonias. Esta relación entre alimentación y reproducción provoca que estos nacimientos atípicos sean importantes, ya que proveen conocimiento acerca de patrones individuales de desplazamiento, proporcionando elementos nuevos para el análisis del estado de la especie y su conservación.

Palabras clave: lobo marino de California, neonato, nacimiento fuera de límites de distribución, patrones individuales.

The California sea lion (*Zalophus californianus*) is the most common pinniped in Mexico, and one of the most abundant otarids in the northern hemisphere. The population size in California is between 237 000 to 244 000 individuals (Carretta et al., 2007); the west coast of Baja California harbors an estimated 75 000 individuals, while 24 000 to 30 000 inhabit the Gulf of California (Lowry and Maravilla-Chávez, 2005; Szteren et al., 2006). The California sea lion presents a limited range, which in turn

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has affected the genetic structure of the species. Analysis of mitochondrial DNA allowed the identification of 2 distinct populations along the west coast of Baja California and 3 within the Gulf of California (Schramm-Urrutia et al., 2009). The southernmost breeding colony in the Gulf is located on Los Islotes island in La Paz Bay (24°36.16' N, 110°24.16' W), while the southernmost breeding colony on the west coast of Baja California is found at Santa Margarita island in Magdalena Bay (24°20.12' N, 111°44.14' W) (Fig. 1). In terms of sightings outside the species typical distribution range, adult California sea lions have previously been reported south of the Baja California peninsula, with sightings in Mexico occuring as far south as Guerrero, Oaxaca, and Chiapas, near the border with Guatemala (Gallo-Reynoso and Ortega-Ojeda, 1986; Gallo-Reynoso and Solorzano-Velasco, 1991). There is a previous sighting (April 2004) of a subadult male California sea lion at Manzanillo's thermoelectrical plant (Lechuga and Gallo-Reynoso, unpublished data). However, there have been no reports of neonate California sea lions in areas this far south.

We present the first report of a neonate California sea lion outside of the species range, near Manzanillo, Colima, Mexico, roughly 900 km south of Los Islotes island and 950 km south of Santa Margarita island. The sighting occurred in June 25th, 2011, and during the 2 following days (June 26th and 27th), in the intertidal zone of La Boquita beach.

This beach is popular among tourists, posing a threat to the life of the newborn, therefore fishermen from La Boquita beach captured the pup and notified the Procuraduría Federal de Protección al Ambiente (PROFEPA; Federal Environmental Protection Agency). The individual was taken to the Centro Internacional de Mamíferos Marinos, S. A. de C. V. (International Center for Marine Mammals) in Guadalajara, Jalisco, for ongoing care. At this center the neonate response was evaluated in order to determine if it could be relocated to a given sea lion colony.

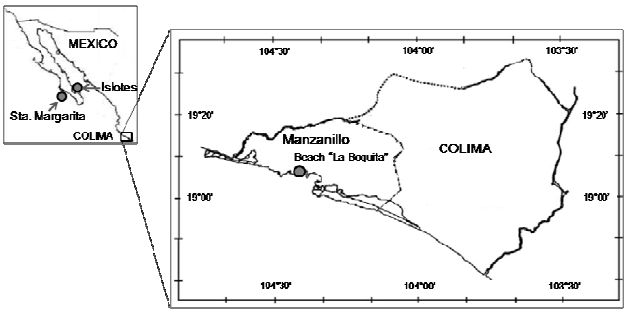

Figure 1. Location of La Boquita beach near Manzanillo, where the neonate California sea lion (*Zalophus californianus*) was sighted. Also shown: Los Islotes island in La Paz Bay and Santa Margarita island in Magdalena Bay, the southernmost reproductive sites of the species.

The observed neonate was a female; its standard length (distance between the tip of the nose and the tip of the tail) and its body mass, of 60 cm in length and 5 kg in mass, respectively, suggested an acceptable body condition (Luque and Aurioles-Gamboa, 2001). The presence of the remains of an umbilical cord suggested that the individual was no more than 2 weeks old and that it had been born in the area (Fig. 2).

Regarding large-scale displacements, Young et al. (2007) reported a California sea lion pup (79.8 cm standard length, 8.5 kg) tagged as a newborn on Los Islotes island that was sighted 3 weeks later 600 km to the north on Granito island, in the northernmost part of the Midriff Region in the Gulf of California. The pup was observed nursing on an adult female, assumed to be the pup's mother. On that occasion it was also assumed that both animals traveled together from Los Islotes to Granito island.

The small size of the neonate pups and their resulting limited ability to thermoregulate, make it unlikely that the individual we report traveled ~900 km, even if it was accompanied by its mother. Based on the adult California sea lion swim speed of ~5.8 km/h proposed by Feldkamp (1987) and the swim speed of ~1.4 km/h reported by Young et al. (2007) for the pup/mother pair they observed, it would have taken around 25 days for this neonate (and its mother) to travel from Los Islotes island or Santa Margarita island to La Boquita beach. Considering the small size of the newborn and the presence of umbilical cord remains when it was sighted, this animal was not old enough or able to swim such a distance. Therefore, the case reported here is a neonate that was born near Manzanillo.

It is unclear why the newborn was found alone at this beach. Several hypotheses have been proposed: including the possibility that the mother became ill or died, or that the mother was young and inexperienced, resulting in the loss of her neonate. Also, an ongoing foraging trip by the mother cannot be totally ruled out as a motive of absence.

Near the locality where the sighting took place (19°09.47' N, 104°38.66' W), the sea surface temperature (SST) is permanently recorded by an oceanographic buoy of the Centro Universitario de Investigaciones Oceanológicas (CEUNIVO; University Center for Oceanological Studies) of the Universidad de Colima (University of Colima) and the Instituto de Ciencias del Mar de Barcelona (ICMB; Marine Sciences Institute of Barcelona). This buoy is equipped with a CTD and ARGOS satellite transmitter that permit continuous measurement of the SST. This physical parameter is a factor that has been related to

Figure 2. Neonate California sea lion (*Zalophus californianus*) found on La Boquita beach, Manzanillo, Colima, Mexico. Remains of the umbilical cord are visible on the ventral side of the individual.

atypical sea lions sightings around Manzanillo region. An unusual sea lion sighting previously occurred off the coast of Colima between July and November, 2008. The individual was a subadult Steller sea lion (*Eumetopias jubatus*), whose presence was attributed to the drop in SST caused by the 2008 La Niña event (Ceballos et al., 2010). Taken collectively, this and other similar sightings in the future could have important repercussions in terms of conservation management.

The oceanographic buoy in this neonate sighting has recorded important oscillations in SST throughout the year (Fig. 3). An important period for adult female California sea lions (in terms of energy consumption), is just prior to giving birth during April-May, when individuals have an intense period of foraging. The female that gave birth on this beach most likely fed in the region of Manzanillo. At this time, SST values were some of the lowest recorded in the region in 2011 (as low as 24° C). A lower temperature of 21° C was also recorded in the region during this period the previous year (Fig. 3). These temperatures were similar (21° C) to those typically recorded in *Zalophus* feeding areas in the southern Gulf of California between December and February (Szteren and Aurioles-Gamboa, 2011). This period is crucial for the California sea lion (Peterson and Bartholomew, 1967) because of the positive effect that SST has on the abundance and distribution of the California sea lion prey species (Le Boeuf and Croker, 2005). However, further studies are necessary in the region of Manzanillo, in order to determine the presence of California sea lion potential prey.

Adult female California sea lions are typically characterized by limited dispersion and high degrees of philopatry (Hernández-Camacho et al., 2008). Adult females give birth in summer (June-July) and stay close to their colonies where they feed their young for about a year (Peterson and Bartholomew, 1967), when they will probably give birth to another pup (García-Aguilar and Aurioles-Gamboa, 2003). Thus, their feeding areas tend to be confined within a radius of about 30 km from their breeding colonies (García-Rodríguez and Aurioles-Gamboa, 2004; Kuhn et al., 2004). This typical close relationship between breeding grounds and feeding areas

Figure 3. Annual sea surface temperature (SST) values for the area around La Boquita beach, Manzanillo, Colima, Mexico, recorded by the CEUNIVO-ICMB oceanographic buoy.

for female California sea lions make extralimital births important, highlighting the importance of monitoring these areas. Monitoring activities will increase the knowledge regarding range and travel patterns of individuals and will provide new elements for the species conservation and status analysis.

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