

## STATUS OF AN INVADING MAINLAND JACKRABBIT ON CERRALVO ISLAND, GULF OF CALIFORNIA

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**ABSTRACT.**—We report the first observations of the black-tailed jackrabbit (*Lepus californicus*) on Cerralvo Island, Baja California Sur, Mexico. Evidence suggests a self-sustaining population. Analysis of available records indicates no previous record of *Lepus* on the island. Introduction of the jackrabbit to the island appears to have occurred between 1960 and 1991.

*Key words:* jackrabbit, island, human introduction, native species, Gulf of California, Mexico.

The black-tailed jackrabbit (*Lepus californicus*) occupies the northwestern part of Mexico, including the Baja California Peninsula (Ramírez-Pulido et al. 1983). Four known mainland subspecies of *L. californicus* (*L. c. xanti*, *L. c. martirensis*, *L. c. bennettii*, and *L. c. deserticola*) and 2 island endemic subspecies (*L. c. sheldoni*, Carmen Island; and *L. c. magdalenae*, Magdalena and Margarita islands) occur on the peninsula. The populations of *L. c. sheldoni* and *L. c. magdalenae* are on the Mexican list of endangered species (NOM-059-SEMARNAT-2001, SEMARNAT 2002). Last year, we began to review the status of populations of Lagomorpha on the islands around the Baja California Peninsula. Previous surveys of Cerralvo Island indicated possible presence of *L. californicus*, but the species had not been definitively documented on the island. We surveyed the island to determine if this species was present.

Cerralvo Island, the southernmost island in the Gulf of California, is located off the Cape Region of the southern end of the peninsula. It is the fifth largest island in the Gulf of California, about 140 km<sup>2</sup> (Murphy et al. 2002), and is 11 km from the peninsula (Álvarez-Castañeda and Patton 1999). The only native mammal species recorded for the island are *Chaetodipus arenarius siccus* and *Peromyscus eremicus avius* (Álvarez-Castañeda and Cortés-Calva 1999, Lawlor et al. 2002). The vegetation consists of trees, bushes, and perennials; and the most common genera are *Euphorbia*, *Perityle*,

*Opuntia*, *Porophyllum*, *Mammillaria*, *Bursera*, and *Boerhaavia* (León de la Luz and Rebman 2002). Most of the island is hilly and deeply dissected by narrow canyons; less than 5% has a slope under 50%. The island also has a small population of domestic cats (*Felis sylvestris*).

We conducted our first survey on 26–28 February 2009 by walking random transects (approximately 6 km) at an average of 2 km · h<sup>-1</sup> from 5:00 to 8:00 (morning) and from 18:00 to 21:00 (evening). During the evening hours, we used headlamps. In a localized area (24.160°N, 109.875°W and 24.150°N, 109.865°W), we saw 14 jackrabbits (Fig. 1). Twelve jackrabbits were observed in flat, sandy habitat, and only 2 were seen on high-gradient slopes. We also found a large amount of feces and numerous resting beds of black-tailed jackrabbits.

A second survey was conducted on 3–5 June 2009. Four specimens were collected, an additional 2 specimens were observed, and 16 skulls and skeletons were found (Table 1, Fig. 1). Three skulls or skeletons were found in scrub vegetation habitat on the southern side of the island in association with *Cyrtocarpa edulis* (wild plum), *Jatropha cuneata* (limberbush), *Cylindropuntia cholla* (cholla), *Colubrina glabra*, and *Phaulothamnus spinescens* (putia). Thirteen skulls or skeletons of jackrabbits were found in sandy habitat with coastal vegetation composed of *Hyptis emoryi* (salvia), *Jouwea pilosa* (tropical grass), *Euphorbia leucophylla* (spurge), *Lycium brevipes* (wolfberry), *Condalia globosa* (bitter

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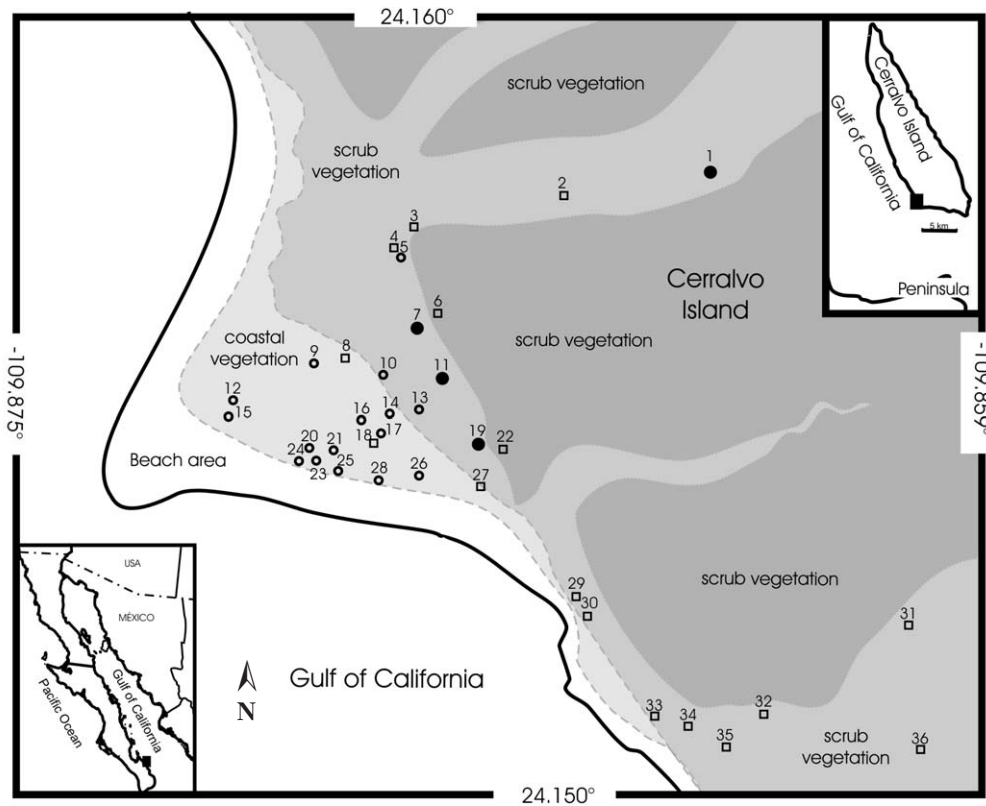


Fig. 1. Map of Cerralvo Island showing the places where specimens of *Lepus californicus* were observed (open squares) and collected (solid circles) and where skulls of *Lepus* were found (open circles). Three habitat types on the island are sandy areas with coastal vegetation (light gray), alluvial areas with scrub vegetation (medium gray), and slopes with scrub vegetation (dark gray).

TABLE 1. List of specimens and skulls for the black-tailed jackrabbit (*Lepus californicus*) found on Cerralvo Island, Baja California Sur, Mexico. Localities (Loc) by number are shown in Figure 1. Latitudes and longitudes are north and west, respectively, and are in decimal degrees.

Loc	Record	Latitude	Longitude	Loc	Record	Latitude	Longitude
1	Collected <i>Lepus</i>	24.1573	-109.8632	19	Collected <i>Lepus</i>	24.1535	-109.8672
2	Observed <i>Lepus</i>	24.1573	-109.8659	20	Skull <i>Lepus</i>	24.1534	-109.8701
3	Observed <i>Lepus</i>	24.1566	-109.8683	21	Skull <i>Lepus</i>	24.1534	-109.8697
4	Observed <i>Lepus</i>	24.1562	-109.8686	22	Observed <i>Lepus</i>	24.1533	-109.8671
5	Skull <i>Lepus</i>	24.1562	-109.8686	23	Skull <i>Lepus</i>	24.1533	-109.8700
6	Observed <i>Lepus</i>	24.1556	-109.8680	24	Skull <i>Lepus</i>	24.1532	-109.8702
7	Collected <i>Lepus</i>	24.1552	-109.8682	25	Skull <i>Lepus</i>	24.1531	-109.8697
8	Observed <i>Lepus</i>	24.1547	-109.8697	26	Skull <i>Lepus</i>	24.1530	-109.8684
9	Skull <i>Lepus</i>	24.1547	-109.8700	27	Observed <i>Lepus</i>	24.1529	-109.8676
10	Skull <i>Lepus</i>	24.1545	-109.8689	28	Skull <i>Lepus</i>	24.1529	-109.8690
11	Collected <i>Lepus</i>	24.1545	-109.8678	29	Observed <i>Lepus</i>	24.1511	-109.8656
12	Skull <i>Lepus</i>	24.1541	-109.8714	30	Observed <i>Lepus</i>	24.1509	-109.8654
13	Skull <i>Lepus</i>	24.1540	-109.8683	31	Observed <i>Lepus</i>	24.1508	-109.8598
14	Skull <i>Lepus</i>	24.1540	-109.8689	32	Observed <i>Lepus</i>	24.1493	-109.8623
15	Skull <i>Lepus</i>	24.1540	-109.8714	33	Observed <i>Lepus</i>	24.1492	-109.8644
16	Skull <i>Lepus</i>	24.1538	-109.8692	34	Observed <i>Lepus</i>	24.1491	-109.8636
17	Skull <i>Lepus</i>	24.1535	-109.8691	35	Observed <i>Lepus</i>	24.1488	-109.8629
18	Observed <i>Lepus</i>	24.1535	-109.8692	36	Observed <i>Lepus</i>	24.1488	-109.8596

snakewood), *Colubrina glabra* (coulubrina), *Jatropha cuneata* (limberbush), and *Cylindropuntia cholla* (cholla). Specimens have the diagnostic characteristics of *L. californicus*, and their collection constitutes the first record of this species on Cerralvo Island. All the specimens are housed in the mammal collection of Centro de Investigaciones Biológicas del Noroeste (CIB 15512 to 15515). Specific collection locales are given in Table 1.

The first recorded mammal survey on Cerralvo Island was made by Nelson and Goldman (11–13 February 1906), when the type specimens of *Chaetodipus arenarius siccus* (Osgood 1907) and *Peromyscus eremicus avius* (Osgood 1909) were collected. *Lepus* was not reported by Goldman (1951). From 1906 to 1960, Cerralvo Island was surveyed 39 times for terrestrial vertebrates (Banks 1964), and in none of these surveys was *L. californicus* recorded. Given this relatively large number of surveys, we believe that the introduction of jackrabbits occurred between 1960 and 1991, the latter year being when S.T. Álvarez-Castañeda (second author) first found tracks of jackrabbits. We have no information on how jackrabbits arrived on the island. The most plausible explanation is intentional introduction by a resident on the peninsula.

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