LAGOMORPHS

Pikas, Rabbits, and Hares of the World

EDITED BY
Andrew T. Smith
Charlotte H. Johnston
Paulo C. Alves
and Klaus Hackländer
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The IUCN Species Survival Commission Lagomorph Specialist Group (LSG) and the World Lagomorph Society (WLS) are pleased to present this comprehensive compendium of all the lagomorphs in the world. This work is designed to expand coverage of the world’s lagomorphs and update the 1990 LSG Lagomorph Action Plan (*Rabbits, Hares and Pikas: Status Survey and Conservation Action Plan*, compiled and edited by Joseph A. Chapman and John E. C. Flux). The Action Plan has served as the most thorough single source of information on lagomorphs for biologists, but it was never widely available to the public and it has become outdated. In this book we present updated range maps of all lagomorph species, high-quality images of most species, as well as current information on identification, systematics, ecology, behavior, reproduction, genetics, physiology, and conservation and management of the pikas, rabbits, and hares of the world. The book also summarizes key components of topics of broad interest across all lagomorph species: evolution, systematics, lagomorph diseases, introduced lagomorphs, and conservation and management. Despite several ongoing controversies in lagomorph taxonomy, we have maintained a conservative systematic approach. Nevertheless, we highlight relevant taxonomic issues that require attention.

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**Lepus insularis** W. Bryant, 1891

**Black Jackrabbit**

**OTHER COMMON NAMES:** Espiritu Santo jackrabbit; Liebre negra, Liebre de Espíritu Santo, Liebre prieta (Spanish)

**DESCRIPTION:** The black jackrabbit is a large and slender jackrabbit; the ears are long, are black at the edge of the superior tip, and have grayish hair on the front. The dorsal part of the body is black mixed with dark cinnamon or brown fur; the shoulders, sides, and forelimbs are yellow to dark. The black back is distinctly different from that of the black-tailed jackrabbit (L. californicus). The dorsal part of the tail is black and brown, fading to pale on the ventral side. The top of the head is black, and white rings surround the eyes. The ventral part of the body is cinnamon color mixed with light yellow. The dorsal part of the hind legs is yellowish white.

The skull is long; the cheeks are thicker than those of any subspecies of the black-tailed jackrabbit.

**SIZE:** Head and body 542–608 mm; Tail 64–111 mm; Hind foot 107–122 mm; Ear 110–122 mm; Greatest length of skull 89–97 mm; Weight 2,200–3,400 g

**CURRENT DISTRIBUTION:** The black jackrabbit is endemic to the Espiritu Santo Archipelago in the Gulf of California, Mexico, including Espiritu Santo Island and La Partida Island. It occurs from sea level to 300 m asl, and its available potential habitat is not greater than 112 km².

**TAXONOMY AND GEOGRAPHIC VARIATION:** No subspecies. L. insularis is closely related to L. californicus, and it has been suggested that L. insularis derived from a common ancestor of L. californicus as a result of a vicariant event of a population of L. c. xanti. The isolation of L. insularis from peninsular forms occurred approximately 11,000 years ago when Espiritu Santo Island separated from the peninsula. The specific status of L. insularis has been questioned by researchers who consider that it may be only a melanistic form of L. californicus. A comparative study of allozyme variation involving 26 loci between the two species showed that L. insularis has lower intraspecific genetic variation, and that little genetic differentiation separates L. insularis from L. californicus forms. However, a karyotypic and G-banding analysis reported that L. insularis is chromosomally differentiated from L. californicus, thus supporting the hypothesis that they are genetically distinctive species. On the other hand, it has been reported that L. californicus and L. insularis are sister taxa although L. californicus is paraphyletic in relation to L. insularis. The nuclear and mitochondrial differences, color variation, and small differences in the structure of a single bone in the skull (jugal) between L. insularis and L. californicus do not support the specific level of L. insularis; thus this form may be considered a subspecies of L. californicus. Definite clustering using morphological characteristics separates L. insularis from...
the subspecies of *L. californicus* from Baja California (*L. c. martirensis*, *L. c. xanti*, and the insular subspecies *L. c. magdalena)*.

**ECOLOGY:** The population density of the black jackrabbit averages 11.4/km², and the total number of animals has been estimated at 923 (range 537–1,586) in a sampling area of 81 km² in xeric shrub. The island has many cliffs and canyons that are not optimal habitat for the species.

The black jackrabbit shares its habitat with other endemic mammals on Espiritu Santo Island: Lamb’s spiny pocket mouse (*Chaetodipus spinatus lambi*), the northern Baja deer mouse (*Peromyscus fraterculus insulicola*), Bryant’s woodrat (*Neotoma bryanti bryanti*), the Espiritu Santo antelope squirrel (*Ammospermophilus leucurus insularis*), and the ringtail (*Bassariscus astutus saxicolor*). Introduced goats (*Capra aegagrus hircus*) also occur on the island and may compete with the black jackrabbit for forage. Other vertebrates recorded are the American kestrel (*Falco sparverius*), the red-tailed hawk (*Buteo jamaicensis*), the crested caracara (*Caracara cheriway*), the speckled rattlesnake (*Crotalus mitchelli*), the variable sandsnake (*Chilomeniscus stramineus*), the Baja California striped whip snake (*Masticophis barbouri*), and the Espiritu Santo orange-throated whiptail (*Aspidoscelis hyperythra espiritensis*).

**HABITAT AND DIET:** The black jackrabbit lives in xeric shrub with several dominant plant species: palo adán (*Fouquieria diguetii*), matacora (*Jatropha cuneata*), lomboy (*Jatropha cinerea*), jojoba (*Simmondsia chinensis*), acacia (*Acacia cymbispina*), palo blanco (*Lysiloma candida*), chainlink cholla (*Cylindropuntia cholla*), and cardón (*Pachycereus pringlei*). Black jackrabbits avoid areas covered by mangrove.

The diet of the black jackrabbit is composed mainly of grasses (more than 55% of the diet), including three-awns (*Aristida* ssp.), grama grasses (*Bouteloua* ssp.), panic-grasses (*Panicum* ssp.), and bentgrasses (*Agrostis* ssp.). As generalized herbivores, however, they are known to consume 52 different plant species; the majority of non-grass plants include Engelmann prickly pear (*Opuntia engelmannii*), cardons (*Pachycereus* ssp.), pincushion cacti (*Mammillaria* ssp.), pitaya (*Stenocereus* ssp.), and branches of mesquite (*Prosopis* ssp.). The availability of each of these sources varies seasonally.

**BEHAVIOR:** The black jackrabbit is a solitary species; occasionally it may be found in groups of two individuals. Black jackrabbits are active from the early twilight into the night and then again at dawn; thus they are considered nocturnal and crepuscular. This jackrabbit uses beds of sand and dry grass (15 × 24 × 3 cm) surrounded by slipper plants (*Pedilanthus macrocarpus*) and bushes with thorns for resting and protection from the sun and hot temperatures. They can stand up on their hind legs to reach and eat leaves of acacias (*Acacia* spp.).

**PHYSIOLOGY AND GENETICS:** Diploid chromosome number = 48 and FN = 80

**REPRODUCTION AND DEVELOPMENT:** The reproductive season of the black jackrabbit can be pieced together by scattered observations of males with scrotal testes and pregnant or lactating females. These observations indicate that the breeding season occurs primarily during the wet season (May–October). Some additional data show that breeding may also extend into the dry season, both before (as early as March) and after (as late as November) the wet season. The only six adult females collected that were pregnant contained two embryos each, one in each uterine horn.

**CONSERVATION STATUS:**

IUCN Red List Classification: Near Threatened (NT)—qualifies for Blb(iii), but does not qualify for second sub-criteria for listing as Vulnerable (VU)

National-level Assessments: Mexico (Subject to special protection in the Mexican Official Norm NOM-059-2010 [SEMARNAT])

**MANAGEMENT:** Espiritu Santo Island is uninhabited and has been set aside as a protected area. It represents an important tourist destination, and many trails have been constructed on the island. Many of the beaches are used for recreation or by fishers. In spite of these impacts, the habitat of the jackrabbit has not been fragmented or heavily modified. One negative impact on the jackrabbit population on the island is the presence of introduced goats, which compete with the jackrabbits for food and...
Lepus mandshuricus

Manchurian Hare

**OTHER COMMON NAMES:** Dongbei tu (Chinese); Manzhurskiy zayats (Russian); Manjutokki (Korean)

**DESCRIPTION:** The dorsal pelage of the Manchurian hare, including the top of the head, is ochraceous brown or ochraceous gray. The sides are light yellow, and the ventral pelage is dirty white. A dark band is visible below the eyes. The sides of the head are lighter than the top and have white spots along the anterior and lower portions. The tail is black-brown on top and dingy white below. There is a melanistic form, which is shiny black and tinged with brown on the back and flanks; the belly is white. The Manchurian hare’s throat and chest are cinnamon-buff, and there is a white spot on the head.

The skull is relatively narrow and the cranium is weakly bulged. The supraorbital process is short, narrow, and not warped upward. The zygomatic arches are massive and wide. The palatal bridge is broad, and the auditory bullae are laterally compressed and not inflated.

**SIZE:** Head and body 410–540 mm; Tail 50–80 mm; Hind foot 110–145 mm; Ear 75–118 mm; Greatest length of skull 79–89 mm; Weight 1,400–2,600 g

**CURRENT DISTRIBUTION:** The Manchurian hare occurs in SE Russia (Amur Oblast, Primorsky Krai, and Khabarovsk Krai), NE China (Jilin, Nei Mongol, Liaoning, and Heilongjiang Provinces), and the extreme northern region of the Korean Peninsula where it is potentially parapatric with the Korean hare (L. coreanus). It occupies elevations of 300–900 m asl.

**TAXONOMY AND GEOGRAPHIC VARIATION:** Lepus mandshuricus is a monotypic species, although melanistic forms have been previously designated as L. melainus. Lepus mandshuricus appears to be generally similar to the Japanese hare (L. brachyurus).

**ECOLOGY:** Little is known about the ecology of the Manchurian hare, but it is thought to be the ecological equivalent of the North American snowshoe hare (L. americanus). In Russia individual territories surrounding permanent shelters do not exceed a few hundred square meters.

**HABITAT AND DIET:** Manchurian hares occur in broadleaf and coniferous forest habitats, particularly areas with Manchurian hazelnut (Corylus sieboldiana mandshurica) undergrowth in Mongolian oak (Quercus mongolica) stands. They do not enter the zone of fir-spruce forests in high mountains, and neither do they like open valleys or grasslands.

The diet consists of herbaceous plants, shrubs, fallen fruit, and twigs from a variety of trees: willow (Salix spp.), linden (Tilia spp.), wild apple (Malus spp.), birch (Betula spp.), and elm (Ulmus spp.).

**BEHAVIOR:** The Manchurian hare is a nocturnal species that is known to display some activity at dawn. It is shy