

Lagomorphs

Hopping out of view?



Pygmy Rabbit. *Brachylagus idahoensis*. Least Concern © Jim Witham

In spite of their reputation as prolific breeders, nearly one in four rabbits, hares and pikas - from the order known as lagomorphs - are classified as Threatened on the IUCN Red List of Threatened Species™. Lagomorphs are considered to be 'keystone species', as they have an effect on the environment that is disproportionate relative to their numbers. Because of their ecological importance as prey, population declines of lagomorphs have led to catastrophic declines in predator species. For example, the reduction in rabbit numbers in the Iberian Peninsula led to a decline in the Critically Endangered Iberian Lynx, *Lynx pardina*, as well as the Vulnerable Spanish Imperial Eagle, *Aquila adalberti*.

The Sumatran Striped Rabbit, *Nesolagus netscheri*, from Southeast Asia is one of the rarest lagomorphs, known from only about a dozen museum specimens (collected between 1880-1916), and has been seen only occasionally since that time. It is currently listed as Vulnerable but is likely to be changed to Critically Endangered following reassessment. Apparently this has always been a rare rabbit, occupying dense forest at moderate elevations on Sumatra, where its habitat is under increasing pressure from development.

The Annamite Striped Rabbit, *Nesolagus timminsi*, was first discovered by scientists in 1995. It is currently listed as Data Deficient, although all available evidence points to a Near Threatened or Threatened category. The species is heavily hunted locally, largely with snares. It has been found in aseasonal wet forests that generally occur on the seaward-facing slopes of the Annamite mountains, although further studies are needed to find out where else it may occur.

The Riverine Rabbit, *Bunolagus monticularis*, is Critically Endangered and is only found in what is now agricultural land in the Karoo of South Africa. None of its habitat is protected as it lives only in prime agricultural habitats, and populations have declined by about 60% in the past 20 years.

The Hispid Hare, *Caprolagus hispidus*, is really a rabbit and is Endangered. It lives in the tall grasses of northern India and southern Nepal. Habitat destruction has played a major role in its serious decline throughout most of its range, and it is barely holding on in a small handful of protected areas. This species occupies tracts of early successional grassland along the foothill regions of the Himalayas, from Uttar Pradesh through Nepal and West Bengal to Assam. It was once believed to be extinct, until capture of a specimen in 1971 brought renewed hope for the species. While it has been found in a number of wildlife sanctuaries, it has disappeared from several of these and its specialist habitat type is heavily impacted by human activities.



The Amami Rabbit, *Pentalagus furnessi*, is Endangered and lives only on two small islands in the seas of southern Japan: Amami Island and Tokuno Island. The only black rabbit, its habitat consists of broadleaf evergreen forests and cutover areas where perennial grasses dominate. The species is under threat from invasive mongooses and feral cats and dogs, as well as deforestation and development projects; its population size is estimated to be around 3,000 individuals.



The Tehuantepec Jackrabbit, *Lepus flavigularis*, is Endangered and occurs only in a small handful of restricted-area patches in southern Mexico. The area of occupancy may be as little as 67 km² in coastal Oaxaca, Mexico, comprised of three separated and small populations. The total population is estimated to be fewer than 1,000 individuals, and these numbers continue to decline. The Tehuantepec Jackrabbit is jeopardized by habitat alteration and degradation by invasive alien grasses, human-induced fires, encroaching agriculture, cattle-raising activities, predation, and hunting.

The Volcano Rabbit, *Romerolagus diazi*, is classified as Endangered, and numbers only about 3,000 individuals. This species is isolated on 16 small patches of habitat, at altitudes between 2,800 m and 4,250 m in the Transvolcanic Belt south and east of Mexico City. Expansion of Mexico City is lapping up the slopes of its only known habitat. Hunting and habitat destruction due to forest fires, logging and collection of zacaton for thatch threaten the survival of the Volcano Rabbit, and inbreeding remains a concern.

The Omilteme Rabbit, *Sylvilagus insonus*, is Endangered and is the rarest and least understood of all lagomorphs. It is known definitively from only three specimens, and it has not been recorded in the wild since the early 1900s. Its area of occupancy is less than 500 km² in a semi-isolated mountain range in coastal western Mexico. Recently, frequent intensive surveys failed to locate any Omilteme Rabbits, leading to reports that this rabbit was extinct. In 1998, however, two rabbit specimens were collected and eaten by hunters, and the partial skin of one of these was recovered. This specimen was identified as an Omilteme Rabbit, giving proof that the species had not gone extinct. While the Omilteme Rabbit is listed as critically endangered by the Mexican government and occurs in an ecological reserve, it remains at risk from hunting and habitat destruction.

The San Jose Brush Rabbit, *Sylvilagus mansuetus*, is listed as Near Threatened and is endemic to the island of San Jose (194 km²), an ecological reserve in the Gulf of California, Mexico. A recent study showing that it occupies only a small part of the island indicates that it may be Critically Endangered; the Mexican government considers the species to be critically endangered. This animal is poorly known, but is apparently at risk due to introduced predators such as cats and rats, as well as habitat loss.



The Pygmy Rabbit, *Brachylagus idahoensis*, is listed as Least Concern. It was once abundant in the northwestern United States. Today, the isolated Washington population is extinct in the wild, with only two zoos having captive stock tenuously holding on to existence. Numbers of Pygmy Rabbits in the nearby Great Basin continue to fall as its preferred sage habitat declines from overgrazing and other human activities.

The European Rabbit, *Oryctolagus cuniculus*, is listed as Near Threatened. It is often considered to be one of the world's major pest species, but this is generally associated with instances in which it is an invasive alien species, such as in Australia. However, throughout Europe, European Rabbit populations have drastically declined due to Rabbit Haemorrhagic Fever. In Portugal, for example, declines of 30% occurred from 1994 to 2004; in the Iberian Peninsula as a whole, 20% declines are reported with some populations on the verge of extinction. Elsewhere, death from the viral disease ranges from 40% to 100%, with 90% being typical. Even before this viral disease became felt throughout Europe (it was described in the 1980s from China, but genetic evidence suggests it was present in a milder form in Europe before that), European Rabbit populations were in a tailspin decline from habitat loss and habitat fragmentation, as well as overhunting, both legal and illegal. These declines have strong economic impacts, as rabbits are important game species throughout Europe. However, there also are effects on other wildlife, as, in ecological terms, rabbits are considered to be 'keystone species': one that has an effect on the environment that is disproportionate relative to its numbers. In the case of the Iberian Peninsula in particular (the original geographic range of the European Rabbit), the decline in rabbit numbers led to a decline in the Critically Endangered Iberian Lynx, *Lynx pardinus*, of which it is thought only 100 animals may remain (down from about 4,000 in 1960), as well as declines in populations of the Spanish Imperial Eagle, *Aquila adalberti*, with only 222 pairs remaining on the Iberian Peninsula as of 2006. The Iberian Lynx and Spanish Imperial Eagle are specialist predators on the European Rabbit - without rabbits their demise is sealed. Other affected species include foxes and badgers, both of which have suffered strong population declines.

Approximately one third of all lagomorph species are pikas. Pikas are divided into two groups based on their lifestyles: there are species that are more solitary and live on rocky slopes, and there are gregarious species which live underground where, like prairie dogs, *Cynomys spp.*, they dig extensive burrow systems. Like the European Rabbit, these neglected and obscure burrow-dwelling pikas are keystone species in their environment. Studies in Central Asia, particularly on the Tibetan Plateau, have shown that their burrows provide habitats for other rare and geographically restricted species. Hume's Ground Pecker, *Pseudopodoces humilis*, and at least five species of snow finch depend on pika burrows, as do some species of lizard. Similarly, they are an integral prey species for several species of weasel, fox, wolf, the Near Threatened Pallas's Cat, *Otocolobus manul*, and the Brown Bear, *Ursus arctos*. More importantly, pika burrowing activities contribute to soil turnover and enrichment, which leads to increased plant species richness in areas they inhabit. This soil turnover also promotes nutrient cycling in the soil, further enriching it, and decreases the potential for erosion during heavy monsoons.

In spite of all the benefits to the environment, these pikas have, like prairie dogs, whose ecology they share, been the target of extensive and long-lasting poisoning campaigns. These campaigns are based on the mistaken assumption that the pikas reduce forage for domestic livestock and that they may be responsible for habitat degradation. In fact, overstocking and overabundance of the selfsame domestic livestock, increasingly

coupled with climate change, are more likely causes of the degradation of the pikas' original habitat. In areas where Plateau Pikas have been poisoned, Brown Bears deprived of their main source of food have taken to breaking in to the houses of local pastoralists.



The Ili Pika, *Ochotona iliensis*, is listed as Endangered. From the remote Tian Shan Mountains of northwest China, it was first described about 30 years ago. Recent censuses have given the alarming result that since its discovery it has disappeared from half of its previously known locations. There have been only 27 confirmed identifications of Ili Pikas, and 10 additional confirmed sightings by local pastoralists. This species occupies cliff-face habitat along two spurs of the Tian Shan Mountains.

The Silver Pika, *Ochotona argentata*, is listed as Critically Endangered. It occupies a very restricted area in the isolated Helan Shan Mountains in central China. Its extent of occurrence and area of occupancy have decreased dramatically in recent years.

Hoffmann's Pika, *Ochotona hoffmanni*, is listed as Endangered. It occupies a restricted area in the Bayan-Ulan Mountains, Mongolia, and Chita Province, Russia.

Koslov's Pika, *Ochotona koslowi*, is Endangered. It is found in the isolated high mountains near the junction of Qinghai Province, Xinjiang-Uygur Autonomous Region, and the Xizang Autonomous Region in central China. Following its discovery, it was not seen again for about a hundred years. Recently, however, surveys conducted in the area found that Koslov's Pika is locally abundant within its restricted geographic range. There is some evidence that its species range may extend further to the west than previously thought.