

= Black @-@ tailed jackrabbit =

The black @-@ tailed jackrabbit (*Lepus californicus*), also known as the American desert hare , is a common hare of the western United States and Mexico , where it is found at elevations from sea level up to 10 @, @ 000 ft (3 @, @ 000 m) . Reaching a length around 2 ft (61 cm) , and a weight from 3 to 6 lb (1 @. @ 4 to 2 @. @ 7 kg) , the black @-@ tailed jackrabbit is the third @-@ largest North American hare . Black @-@ tailed jackrabbits occupy mixed shrub @-@ grassland terrains . Their breeding depends on the location ; it typically peaks in spring , but may continue all year round in warm climates . Young are born fully furred with eyes open ; they are well camouflaged and are mobile within minutes of birth , thus females do not protect or even stay with the young except during nursing . The average litter size is around four , but may be as low as two and as high as seven in warm regions .

The black @-@ tailed jackrabbit does not migrate or hibernate during winter and uses the same habitat of 0 @. @ 4 to 1 @. @ 2 mi² (1 ? 3 km²) year @-@ round . Its diet is composed of various shrubs , small trees , grasses , and forbs . Shrubs generally comprise the bulk of fall and winter diets , while grasses and forbs are used in spring and early summer , but the pattern and plant species vary with climate . The black @-@ tailed jackrabbit is an important prey species for raptors and carnivorous mammals , such as eagles , hawks , owls , coyotes , foxes , and wild cats . The rabbits host many ectoparasites including fleas , ticks , lice , and mites ; for this reason , hunters often avoid collecting them .

= = Description = =

Like other jackrabbits , the black @-@ tailed jackrabbit has distinctive long ears , and the long , powerful rear legs characteristic of hares . Reaching a length about 2 ft (61 cm) , and a weight from 3 to 6 lb (1 @. @ 4 to 2 @. @ 7 kg) , the black @-@ tailed jackrabbit is the third @-@ largest North American hare , after the antelope jackrabbit and the white @-@ tailed jackrabbit . The black @-@ tailed jackrabbit 's dorsal fur is agouti (dark buff peppered with black) , and its undersides and the insides of its legs are creamy white . The ears are black @-@ tipped on the outer surfaces , and unpigmented inside . The ventral surface of the tail is grey to white , and the black dorsal surface of the tail continues up the spine for a few inches to form a short , black stripe . The females are larger than males , with no other significant differences .

= = Taxonomy and distribution = =

Although 17 subspecies are recognized , this number may be excessive . Using a cluster analysis of anatomical characters , Dixon and others found that black @-@ tailed jackrabbit subspecies separated into two distinct groups that are geographically separated west and east of the Colorado Rocky Mountains and the Colorado River . They suggested only two infrataxa are warranted : the western subspecies *L. c. californicus* and the eastern subspecies *L. c. texianus* .

The black @-@ tailed jackrabbit is the most widely distributed jackrabbit (*Lepus* species) in North America . Native black @-@ tailed jackrabbit populations occur from central Washington east to Missouri and south to Baja California Sur and Zacatecas . Black @-@ tailed jackrabbit distribution is currently expanding eastward in the Great Plains at the expense of white @-@ tailed jackrabbit . The black @-@ tailed jackrabbit has been successfully introduced in southern Florida and along the coastline in Maryland , New Jersey , and Virginia .

Distribution of subspecies occurring entirely or partially in the United States is :

Lepus californicus altamirae (Nelson)

L. c. asellus (G. S. Miller)

L. c. bennettii (Gray) ? coastal southern California to Baja California Norte

L. c. californicus (Gray) ? coastal Oregon to coastal and Central Valley California

L. c. curti (E. R. Hall)

L. c. deserticola (Mearns) ? southern Idaho to Sonora

L. c. ememicus (J. A. Allen) ? central Arizona to Sonora
L. c. festinus (Nelson)
L. c. magdalenae (Nelson)
L. c. martirensis (J. M. Stowell)
L. c. melanotis (Mearns) ? South Dakota to Iowa , Missouri , and central Texas
L. c. merriamai (Mearns) ? south @-@ central and southeastern Texas to Tamaulipas
L. c. richardsonii (Bachman) ? central California
L. c. sheldoni (W. H. Burt)
L. c. texianus (Waterhouse) ? southeastern Utah and southwestern Colorado to Zacatecas
L. c. wallawalla (Merriam) ? eastern Washington to northeastern California and northwestern Nevada
L. c. xanti (Thomas)

= = Plant communities = =

The black @-@ tailed jackrabbit occupies plant communities with a mixture of shrubs , grasses , and forbs . Shrubland @-@ herb mosaics are preferred over pure stands of shrubs or herbs . Black @-@ tailed jackrabbit populations are common in sagebrush (*Artemisia* spp .) , creosotebush (*Larrea tridentata*) , and other desert shrublands ; palouse , shortgrass , and mixed @-@ grass prairies ; desert grassland ; open @-@ canopy chaparral ; oak (*Quercus* spp .) , and pinyon @-@ juniper (*Pinus* @-@ *Juniperus* spp .) woodlands ; and early seral (succeeding each other) , low-to mid @-@ elevation coniferous forests . It is also common in and near croplands , especially alfalfa (*Medicago sativa*) fields .

= = Major life events = =

Male black @-@ tailed jackrabbits reach sexual maturity around 7 months of age . Females usually breed in the spring of their second year , although females born in spring or early summer may breed in their first year . Ovulation is induced by copulation . The breeding season is variable depending upon latitude and environmental factors . In the northern part of their range in Idaho , black @-@ tailed jackrabbits breed from February through May . In Utah , they breed from January through July , with over 75 % of females pregnant by April . The Kansas breeding season extends from January to August . Breeding in warm climates continues nearly year @-@ round . Two peak breeding seasons corresponding to rainfall patterns and growth of young vegetation occur in California , Arizona , and New Mexico . In Arizona , for example , breeding peaks during winter (January ? March) rains and again during June monsoons .

The gestation period ranges from 41 to 47 days . More litters are born in warm climates : the number of litters born each year ranges from two per year in Idaho to seven in Arizona . Litter sizes are largest in the northern portions of black @-@ tailed jackrabbit 's range and decrease toward the south . Average litter size has been reported at 4 @-@ 9 in Idaho , 3 @-@ 8 in Utah , and 2 @-@ 2 in Arizona .

Female black @-@ tailed jackrabbits do not prepare an elaborate nest . They give birth in shallow excavations called forms that are no more than a few centimeters deep . Females may line forms with hair prior to giving birth , but some drop litters in existing depressions on the ground with no further preparation . Young are born fully furred with eyes open , and are mobile within minutes of birth . Females do not protect or even stay with the young except during nursing . Ages of weaning and dispersal are unclear since the young are well camouflaged and rarely observed in the field . Captive black @-@ tailed jackrabbits are fully weaned by 8 weeks . The young stay together for at least a week after leaving the form .

= = Preferred habitat = =

The black @-@ tailed jackrabbit can occupy a wide range of habitats as long as diversity in plant

species exists . It requires mixed grasses , forbs , and shrubs for food , and shrubs or small trees for cover . It prefers moderately open areas without dense understory growth and is seldom found in closed @-@ canopy habitats . For example , in California , black @-@ tailed jackrabbits are plentiful in open chamise (*Adenostoma fasciculatum*) and *Ceanothus* spp. chaparral interspersed with grasses , but does not occupy closed @-@ canopy chaparral . Similarly , the black @-@ tailed jackrabbit occupies clearcuts and early seral coniferous forest , but not closed @-@ canopy coniferous forest .

Black @-@ tailed jackrabbits do not migrate or hibernate during winter ; the same habitat is used year @-@ round . Diurnal movement of 2 to 10 miles (3 ? 16 km) occurs from shrub cover in day to open foraging areas at night . Home range area varies with habitat and habitat quality . Home ranges of 0 @. @ 4 to 1 @. @ 2 mi² (1 ? 3 km²) have been reported in big sagebrush (*Artemisia tridentata*) and black greasewood (*Sarcobatus vermiculatus*) communities of northern Utah .

Black @-@ tailed jackrabbits require shrubs or small conifers for hiding , nesting , and thermal cover , and grassy areas for night feeding . A shrub @-@ grassland mosaic or widely spaced shrubs interspersed with herbs provides hiding cover while providing feeding opportunities . Small shrubs do not provide adequate cover . In the Snake River Birds of Prey Study Area in southwestern Idaho , black @-@ tailed jackrabbits were more frequent on sites dominated by big sagebrush or black greasewood than on sites dominated by the smaller shrubs winterfat (*Krascheninnikovia lanata*) or shadscale (*Atriplex confertifolia*) . Black @-@ tailed jackrabbits do not habitually use a burrow , although they have occasionally been observed using abandoned burrows for escape and thermal cover .

= = Food habits = =

The black @-@ tailed jackrabbit diet is composed of shrubs , small trees , grasses , and forbs . Throughout the course of a year , black @-@ tailed jackrabbits feed on most if not all of the important plant species in a community . Growth stage and moisture content of plants may influence selection more than species . Shrubs generally comprise the bulk of fall and winter diets , while grasses and forbs are used in spring and early summer . This pattern varies with climate : herbaceous plants are grazed during greenup periods while the plants are in prereproductive to early reproductive stages , and shrubs are used more in dry seasons . Shrubs are browsed throughout the year , however . Most of a jackrabbit 's body water is replaced by foraging water @-@ rich vegetation . Jackrabbits require a plant 's water weight to be at least five times its dry weight to meet daily water intake requirements . Therefore , black @-@ tailed jackrabbits switch to phreatophyte (deep @-@ rooted) shrubs when herbaceous vegetation is recovering from their foraging .

Plant species used by black @-@ tailed jackrabbits are well documented for desert regions . Forage use in other regions is less well known . However , black @-@ tailed jackrabbits browse Douglas fir (*Pseudotsuga menziesii*) , ponderosa pine (*Pinus ponderosa*) , lodgepole pine (*P. contorta*) , and western hemlock (*Tsuga heterophylla*) seedlings , and oak (*Quercus* spp .) seedlings and sprouts .

= = = Great Basin = = =

In Great Basin , big sagebrush is a primary forage species and is used throughout the year ; in southern Idaho it forms 16 ? 21 % of the black @-@ tailed jackrabbit summer diet . Rabbitbrush (*Chrysothamnus* spp .) , spiny hopsage (*gray spinosa*) , and black greasewood are also browsed . Four @-@ wing saltbush (*Atriplex canescens*) is heavily used in western Nevada . In Butte County , Idaho , winterfat comprises 41 % of black @-@ tailed jackrabbits ' annual diet . Grasses comprise 14 % of the diet , with most grass consumption in March and April . Russian thistle (*Salsoda kali*) is an important forb diet item . Needle @-@ and @-@ thread grass (*Stipa comata*) and Indian ricegrass (*Oryzopsis hymenoides*) are preferred grasses . Other preferred native grasses include Sandberg bluegrass (*Poa secunda*) and bluebunch wheatgrass (*Pseudoroegneria spicata*) .

Where available , crested wheatgrass (*Agropyron desertorum* and *Agropyron cristatum*) and barley (*Hordeum vulgare*) are highly preferred . Cheatgrass (*Bromus tectorum*) use is variable : it comprises 45 % of the April diet on two southern Idaho sites , but black @-@ tailed jackrabbit on an eastern Washington site do not use it .

= = = Warm desert = = =

In warm desert , mesquite (*Prosopis* spp .) and creosotebush (*Larrea tridentata*) are principal browse species . Broom snakeweed (*Gutierrezia sarothrae*) and *Yucca* spp. are also used . In honey mesquite (*Prosopis glandulosa* var. *glandulosa*) communities in New Mexico , the overall black @-@ tailed jackrabbit diet was 47 % shrubs , 22 % grasses , and 31 % forbs . Black grama (*Bouteloua* spp .) , dropseed (*Sporobolus* spp .) , fluffgrass (*Erioneuron pulchellum*) , and threeawns (*Aristida* spp .) are the most commonly grazed grasses . Leather croton (*Croton pottsii*) , silverleaf nightshade (*Solanum elaeagnifolium*) , desert marigold (*Baileya multiradiata*) , wooly paperflower (*Psilostrophe tagetina*) , and globemallow (*Sphaeralcea* spp .) are important forbs , although many forb species are grazed . *Opuntia* spp . , saguaro (*Carnegiea gigantea*) , and other cacti are used throughout the year , but are especially important in dry seasons as a source of moisture .

= = Predators = =

The black @-@ tailed jackrabbit is an important prey species for many raptors and carnivorous mammals . The black @-@ tailed jackrabbit and Townsend 's ground squirrel (*Spermophilus townsendii*) are the two most important prey species on the Snake River Birds of Prey Study Area . Hawks preying on black @-@ tailed jackrabbits include the ferruginous hawk (*Buteo regalis*) , white @-@ tailed hawk (*Buteo albicaudatus*) , Swainson 's hawk (*B. swainsoni*) , and red @-@ tailed hawk (*B. jamaicensis*) . The black @-@ tailed jackrabbit is the primary prey of Swainson 's , red @-@ tailed , and ferruginous hawks on Idaho and Utah sites . Other raptors consuming black @-@ tailed jackrabbits include the great horned owl (*Bubo virginianus*) , burrowing owl (*Athene cunicularia*) , golden eagle (*Aquila chrysaetos*) , and bald eagle (*Haliaeetus leucocephalus*) . A significant correlation exists between golden eagle and black @-@ tailed jackrabbit reproduction patterns . In Colorado and southeastern Wyoming , black @-@ tailed jackrabbits constitute 9 % of nesting bald eagles ' diet . Jackrabbits and cottontails (*Sylvilagus* spp .) combined form 9 % of the diet of bald eagles wintering on national forests in Arizona and New Mexico .

Mammalian predators include coyote (*Canis latrans*) , bobcat (*Lynx rufus*) , lynx (*Lynx canadensis*) , domestic dog (*Canis lupus familiaris*) , domestic cat (*Felis catus*) , red fox (*Vulpes vulpes*) , common gray fox (*Urocyon cinereoargenteus*) , American badger (*Taxidea taxus*) , wolf (*Canis lupus*) , and mountain lion (*Felis concolor*) . In many areas , black @-@ tailed jackrabbit is the primary item in coyote diets . It is locally and regionally important to other mammalian predators . One study found that jackrabbits made up 45 % of the bobcat diet in Utah and Nevada . Another Utah ? Nevada study found that jackrabbits were the fourth @-@ most commonly consumed prey of mountain lions .

Rattlesnakes (*Crotalus* spp .) and garter snakes (*Thamnophis sirtalis*) prey on black @-@ tailed jackrabbit young . Raccoons (*Procyon lotor*) and striped skunks (*Mephitis mephitis*) may also capture young .

= = Parasites and disease = =

The black @-@ tailed jackrabbit plays host to many ectoparasites including fleas , ticks , lice , and mites , and many endoparasites including trematodes , cestodes , nematodes , and botfly (*Cuterebra*) larvae . Diseases affecting the black @-@ tailed jackrabbit in the West are tularemia , equine encephalitis , brucellosis , Q fever , and Rocky Mountain spotted fever . Ticks are vectors for tularemia , and infected ticks have been found on jackrabbits in the West . Jackrabbits infected with

tularemia die very quickly .

The high prevalence of disease and parasites in wild jackrabbits affects human predation . Many hunters will not collect the jackrabbits they shoot , and those who do are well advised to wear gloves while handling carcasses and to cook the meat thoroughly to avoid contracting tularemia . Most hunting of jackrabbits is done for pest control or sport .