

Lemmings

One true lemming, as well as several closely related species commonly called lemmings, lives in Alaska. Distinguishing one from the other, or even lemmings from voles, is difficult. Many of the small rodents in the north have a similar appearance, especially during the summer months. The information below will help to identify lemming species in the field, but positive identification can be made only with the help of a mammalogy expert, text or field guide which gives detailed information on tooth structure and skull conformation.

The **brown lemming**, *Lemmus trimucronatus*, is the only true lemming in Alaska. Brown lemmings inhabit open tundra areas throughout Siberia and North America. They live in northern treeless regions, usually in low-lying, flat meadow habitats dominated by sedges, grasses and mosses. Their principal summer foods are tender shoots of grasses and sedges. During the winter they eat frozen, but still green, plant material, moss shoots, and the bark and twigs of willow and dwarf birch. There is some evidence that brown lemmings are cannibalistic when food is scarce.



True lemmings, the largest of the various lemming species, range from 4 to 5½ inches (100 to 135 mm) in length, including a 1 inch (26 mm) tail. Adults weigh from just over an ounce to 4 ounces (40 to 112 g) but average 2¾ ounces (78 g). These lemmings are heavily furred, grayish or brownish above and buffy beneath, and are stockily built. They are well-adapted for their rigorous climate with short tails and ears so small they are almost hidden by fur. Lemmings are active both day and night and tend to follow the same routes from nests to feeding spots until their living area becomes a network of trails a couple of inches below the snow or land surface. Winter nests are commonly found in lowland areas where the snow, a good natural insulation, is deepest.

Breeding apparently begins before the animals are full grown. It may occur throughout winter under the snow but is usually restricted to the brief summer, June to September. Litter size averages four in summer, four to five in early and late winter, and three in mid-winter. There appears to be no reproduction during the period of spring snow melt (May through early June) nor during the period of fall snow pack formation (September through early October). Young lemmings weigh only a little over one-tenth of an ounce (3 g) at birth. They open their eyes at 11 days and can walk at 15 days.

Lemmings are known for their wide fluctuation in population numbers, reaching peak abundance in some areas every three to five years. The causes of population fluctuations are unclear, although some combination of predation, food quantity and quality, weather, or genetic change in individuals making up the population is probably involved. Actual migrations do not occur, although some lemmings may move into marginal or unsuitable areas during periods of population increase. This probably explains occasional sightings of lemmings on sea ice well beyond land.

The **collared lemming** (*Dicrostonyx groenlandicus*) is not considered a true lemming by scientists who place it in a different genus. The species frequents dry, sandy, or gravelly areas above the timber line and is, for some, the most interesting of the lemmings because of its peculiar adaptations to winter. It is the only true rodent that turns white in the winter. Its thick white winter coat is used by the Eskimos for garment trimming and toys for children. The collared lemming also grows enlarged claws, rather like snow shovels, on the third and fourth digits of its forefeet. The winter claws are used to dig through the wind-packed snow common in its arctic habitat. There have even been reports of lemmings drilling through the walls of igloos! The claws are slowly worn away and by spring all claws have the same shape. These animals also build extensive runways and nesting areas.

Collared lemmings average a little over 14 ounces (40 g) in weight and are about 4¾ inches (120 mm) long. The collared lemming is short and stocky with a very heavy coat year round. Their appearance in summer is much like that of true lemmings except for definite dark lines or striping from the top of the head along the middle of the back and on the sides of the head. Like true lemmings, they consume mostly plants (willow buds, fruits, flowers, grasses and twigs), although it is possible that they eat insects and meat when available.

When sexually mature, females weigh slightly more than an ounce (30 g). Mating may occur as early as January but usually takes place from March to September. During the height of the summer breeding season nearly all females are pregnant, and each may have up to three litters a year with an average of four to five young per litter. Few collared lemmings live beyond one year of age. With this rapid breeding and short life cycle, it is common for 30 percent of the collared lemming population to die every two weeks.

The **northern bog lemming**, *Synaptomys borealis*, is native to the area all along the Pacific coast of Alaska. They seem to occupy cold bog or spring areas, but they are also found near rocky cliffs. They live primarily in burrows among sedges and grasses where moisture levels are high, providing cover as well as food.

They are the smallest of the lemmings in size, with a mean weight of just a bit more than an ounce (33 g) and a head and body length around 4 inches (100 mm). Their general coloration is a grizzled brown above and soiled white underneath. Northern bog lemmings occupy somewhat warmer climates than the other lemmings, and their fur is not so thick. Their powerful jaws may be an indication that they gnaw through tangles of roots, moss, and soil, but they feed mainly on green parts of low vegetation and probably on slugs and snails.

The breeding pattern of the northern bog lemming is much like that of the other lemmings, with most breeding occurring from May to late August. Litter sizes range from two to eight, with an average size of four to five young per litter. Females are capable of having two to three litters per breeding season.

In addition to the three species mentioned above, a number of endemic lemmings occur on specific islands in the Bering Sea, including the eastern Aleutian Islands and western Gulf of Alaska. Endemic subspecies have naturally restricted distributions and small populations. Data is lacking on their genetic distinctiveness and habitat requirements. Because of their limited geographic range, they are often, but not always, vulnerable to extinction.

One of the native names for lemmings is "kilangmiutak", which means one-who-comes-from-the-sky. The legend of lemmings falling from the sky is common from the eastern Canadian Arctic to western Alaska, and is also found in Scandinavia. Perhaps it arose because of the sudden appearance of lemmings when the snow melts in the spring of a peak population year.

All of the lemmings are staple prey for many larger animals which share their ranges, including weasels, arctic foxes, wolves, wolverines, weasels, mink, marten, snowy and short-eared owls, rough-legged hawks, peregrine falcons, glaucous gulls, and jaegers. Pomarine jaegers (*Stercorarius pomarinus*) and snowy owls (*Nyctea scandiaca*) depend on lemmings to feed their young, and these two species nest only in years and locations where lemmings are plentiful.

In general, lemmings are cold-adapted species that likely will be compromised by warmer climate, along with other arctic land species including mosses and lichens, voles, arctic fox, and snowy owl. Warming leads to other cascading impacts on Arctic land animals. In winter, voles and lemmings live and forage in the space between the frozen ground of the tundra and the snow, almost never appearing on the surface. The snow provides critical insulation. Mild weather and wet snow lead to the collapse of these under-snow spaces, destroying the burrows of lemmings and voles, while ice crust formation reduces the insulating properties of the snow pack vital to their survival. Well-established population cycles of lemmings and voles are no longer seen in some areas. Declines in populations of these animals can lead to declines in the populations of their predators, particularly those predators that specialize in preying on lemmings such as snowy owls, skuas, weasels and ermine. A decline in lemming populations would be very likely to result in an even stronger decline in populations of these specialist predators. More generalist predators, such as the arctic fox, switch to other prey species when lemming populations are low. Thus, a decline in lemmings can also indirectly result in a decline in populations of other prey species such as waders and songbirds. A declining lemming population will certainly affect the economics of the fur trapping industry as lemmings are a major food resource for many furbearers. It also could produce an increase of snowy owl sightings in the northern states of the Lower 48 to the delight of many bird enthusiasts. In addition, soil fertility could be affected as these burrowing animals help aerate the soils and fertilize the earth with their droppings.

Perhaps one of the most fascinating aspects of the lemming is its capability for survival in its predominantly harsh environment. To come across the intricately-patterned and well-traveled raceways of a group of lemmings while traveling across apparently barren frozen ground gives one a sense of the wonderful and delicate balance of life in all climes.

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