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NOTES

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Nebraska's Endangered Species Part 6: Threatened and Endangered Mammals

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Few mammals in Nebraska today are threatened, endangered, or extinct from a continental perspective. Several historically, widely distributed species such as otter, mountain lion, wolf, bear, bison, pronghorn, elk, and bighorn were hunted for pelts, meat, or predator abatement during pioneer times. All of these larger mammals were hunted to the point that they were extirpated from the state. However, because of their wide distribution, several have been reintroduced or have dispersed naturally back into Nebraska, and their small populations are healthy. Mountain lion and wolf are moving into Nebraska from the west and north, respectively, but there are no bear yet. Nebraska still has good habitat to support these new populations.

An interesting aspect of Nebraska is its unique geography. Mammals, other animals, and plants reflect this uniqueness. Few places in America can boast of being the center where many edges of distributions come together. Imagine Nebraska as the center of a pond. Pebbles tossed in from opposite shores cause ripples coming from all sides to converge in the center. The ripples are edges of animal and plant distributions that come together from north, south, east, and west. This mixture at the center has a delicate balance, and Nebraska sits right at the center.

For the 85 or so mammal species that occur in Nebraska, two-thirds reach their distributional limits in the state. Mammals that have their centers of distribution in the deciduous forests of the eastern U.S. reach the western edge of their geographic limits at the eastern edge of the state where there is good deciduous forest along the Missouri River. The same goes for the Pine Ridge and Wildcat Hills in the west. There, the eastern edges of primarily western mammals occur. This edge, or ripple effect, also occurs for northern mammals dipping south into the state and southern

mammals spreading further north.

The Niobrara River is a natural ribbon of water crossing Nebraska from west to east. The uniqueness of this river and its valley cannot be overstated. It allows a healthy remnant population of Bailey's woodrat (*Neotoma floridana baileyi*), a packrat separated by the last glacial retreat, to exist hundreds of miles away from its southern population along the Nebraska/Kansas line. The valley's north bank is warmed by the winter sun, and the south bank is shaded and cool enough for remnants of northern plants to be well-separated from their northern populations. Eastern bats extend into western Nebraska along this natural corridor in the Great Plains where eastern deciduous forest touches and mingles with ponderosa pines and other Rocky Mountain plants. Western bats also extend east. The river is a place of biogeographical discoveries and surprises. It is the only major river in the Great Plains that has no



Mountain lion. American Society of Mammalogists, Mammal Images Library. Photo by G. H. Barrett.

great dam interrupting its flow from the foothills of the Rockies to the Missouri or Mississippi Rivers.

Many mammals have their main centers of abundance east of the state. A distinct but small ripple from that center is the distribution of squirrels that inhabit old growth deciduous forest along the Missouri River. Southern flying squirrels, eastern chipmunks (*Tamias striatus*), and Carolina gray squirrels (*Sciurus carolinensis*) rely on these kinds of forests. Now that these forests are no longer extensively harvested for wood, they can mature again if left intact. With that growth, flying squirrels and chipmunks should become more common. These two species are rare and are considered threatened or endangered within Nebraska. However, they are common in states to the east with appropriate habitat. Similarly, the rare pine vole (*Microtus pinetorum*) and the eastern pipistrelle bat (*Pipistrellus subflavus*) also inhabit these woods, but only the little pipistrelle strays to similar habitat a little farther to the west.

The classic, now-rare habitat in eastern Nebraska is the tall grass prairie. Small, eastern populations of mammals that appear to be found only in these eastern grasslands include the eastern plains harvest mouse (*Reithrodontomys montanus griseus*) and the eastern plains pocket mouse (*Perognathus flavescens perniger*), and these are disappearing. Unique, tall grass prairie fragments hold part of the state's heritage of genetic diversity that cannot be replaced. The records of occurrence of these animals have become fewer and fewer since the late 1980s.

Many western mammals reach the eastern edges of their distributions in the ponderosa pine forest of the Pine Ridge and Wildcat Hills. These outcrops are islands of western forest surrounded by a sea of short grass prairie. Different communities of mammals, especially bats, occur in these islands. Three species of insect-eating bats are rare and considered threatened in Nebraska, and two of those species have breeding colonies in the Pine Ridge.

The Sand Hills have a variety of habitats where mice that like moist, grassy areas (such as grass-eating voles) can live side-by-side with kangaroo rats and pocket mice that like dry, sandy areas.

Black-footed ferret

Native black-footed ferrets (*Mustela nigripes*) are extinct — extirpated with the ever-decreasing numbers of their prey animal, the black-tailed prairie dog (*Cynomys ludovicianus*). This ferret is long and low to the ground, which makes it ideal for hunting in burrows. Ferrets are secretive and feed at night almost exclusively on prairie dogs. This grassland animal was declared extinct in the wild in 1987. The last few remaining ferrets were brought into zoos and bred in captivity. Three small colonies have been reintroduced in Montana, South Dakota, and Wyoming. The future of these three groups is not assured because the decrease in its genetic variability makes them more



Black-footed ferret. NEBRASKAland Magazine/Nebraska Game and Parks Commission photo.

susceptible to a changing environment. They are particularly susceptible to canine distemper disease.

Black-tailed prairie dog

Although a controversial rodent, prairie dogs have decreased to about two percent of their former continental range. Prairie dog populations in Nebraska are too small to support a black-footed ferret population. These diurnal ground squirrels eat grass and can have large colonies. They are the most social of the squirrels and construct deep and complex burrow systems. Their abandoned burrows are home to many other animals, including rabbits, burrowing owls, and snakes. In an open environment without trees, the ability to hide underground affords protection from predation and weather. But those very burrows that are so beneficial for prairie diversity make living alongside prairie dogs problematic. Some maintain that holes caused by burrows are traps for cows and horses. Prairie dogs eat grass, which may or may not put them in competition with cattle. The continental decrease in the range of prairie dogs resulting from a lack of any regulation of their destruction has caused the federal government to consider their status as potentially threatened. The intent is to encourage each state to develop its own management plan. The notion that there could be protection for what many consider a pest is a hot political topic, and so prairie dogs do not yet have special status, either federally or in Nebraska. However, many states have granted prairie dogs special status. Ironically, in the years it took to consider their status, a great many animals were destroyed, further decreasing the continental population.

Southern flying squirrel

Southern flying squirrels (*Glaucomys volans*) do not have true flight but can only glide. They have a loose flap of skin from the length of their foreleg to the length of their hind leg. When their legs stretch out, so do the flaps of skin, and, instead of dropping straight down out of a tree, they are able to land on the ground at

about a 45° angle. This nocturnal squirrel is a woodland creature that likes tree holes. They will forage for a wide variety of foods, both in trees and on the ground, including nuts, seeds, fruits, buds, flowers, lichen, fungi, sap, insects, invertebrates, bird eggs, nestlings, and other mice. In the fall they will hoard acorns. Unlike other squirrels, six to eight animals or more (the record is 50) will group together in winter, presumably for warmth, in a single nest. Flying squirrels will also inhabit nest boxes, but they especially like the more insulated holes in big trees.



Southern flying squirrel. NEBRASKAland Magazine/Nebraska Game and Parks Commission photo.

Eastern plains pocket mouse

The plains pocket mouse is about the same size as the harvest mouse and also eats seeds and insects that are usually on the ground instead of at the top of grass stalks. Pocket mice are relatives of kangaroo rats and gophers. All three have fur-lined cheek pouches into which they stuff seeds and other food before running back to their burrows to cache them. Pocket mice are usually found in the more western, sandier soils in open spaces, but they do range east into the tall grass prairie in Nebraska. This eastern population is now threatened.



Plains pocket mouse. B. Clauson and R. M. Timm, American Society of Mammalogists, Mammal Images Library.

Eastern plains harvest mouse

The harvest mouse is tiny, weighing only 6-13 grams, or the weight of 1-3 nickels. It prefers open, grassy areas and climbs grass stalks to eat the seed heads. Harvest mice also eat flower heads of weeds and grasses and the occasional grasshopper. It is not a common mouse but can be found in many grassland habitats. The eastern population that inhabited tall grass prairie is now threatened.

Long-legged myotis

Long-legged myotis (*Myotis volans*) is a small bat (5-10 g) found on the pine-covered buttes of the Pine Ridge. Long-legged myotis breed in the Pine Ridge, and only one pup is born annually. Nursery colonies have been found in tree cavities, under loose bark, in buildings, and in rock crevices. Hibernacula (overwintering roosts) are in caves and mines.

Fringe-tailed myotis

Fringed myotis (*Myotis thysanodes pahasapensis*) are western bats that can be found in ponderosa pine forests of the Pine Ridge and in the Wildcat Hills. Favored hibernation sites and maternity sites include caves, mines, and buildings where females give birth to one pup. These bats typically inhabit montane and upland forests, but they also occur in other habitats, including desert lowlands. At dusk they are often seen foraging for insects over ponds and the open water of rivers. The fringed myotis weighs 6-12 g and has a wingspan of 11 inches. A female fringed myotis is known to have lived for 11 years. Their common name refers to a short fringe of straw-colored hairs that extend beyond the tail membrane.

Townsend's big-eared bat

Townsend's big-eared bats (*Corynorhinus townsendi*) are a little heavier (weight of two nickels) and prefer caves and mine shafts to any other roost. Caves and mines are used both as shelters and maternity roosts during the warmer months and as hibernacula during the colder ones. Long-range migration is not known for big-eared bats, and they make only short seasonal movements from their summer homes to winter hibernacula. Mating in Townsend's big-eared bats begins in autumn prior to hibernation, which is typical of Nebraska's hibernating bats. Sperm are stored in the female's reproductive tract and remain alive throughout winter dormancy. When females emerge from hibernation, eggs are shed, fertilization takes place, and embryos develop without interruption. A single pup is born in June or July. The known record for longevity is 16.5 years.

Swift fox

The swift fox (*Vulpes velox*) is a small carnivore that inhabited short, mid, and tall grass prairie. It is now rare in western Nebraska and is considered threatened in the state. From a continental perspective, swift fox

are not particularly common west and north of Nebraska either. Swift fox have big ears and are the smallest native canids of the Great Plains. They create complex subterranean dens with many entrances (escape routes?) that are actually the remodeled burrow systems of other mammals. They eat all kinds of small mammals, birds, and lizards as well as a few plants and insects. The swift fox is a curious animal that is not afraid of traps and baits, which may have contributed to its decline.

Some mammals that were scarce 200 years ago now regularly traverse west along the wooded habitats of the Niobrara, Platte, and Republican Rivers. One southern species, the nine-banded armadillo (*Dasyurus novemcinctus*), was originally South American about two million years ago, but it has finally made it to Nebraska. It is probably not breeding here yet because all we find are males and not females. Black-tailed (*Lepus californicus*) and white-tailed jackrabbits (*Lepus townsendi*) used to be widespread and very common. Today very few are seen. The same is true for long-tailed weasels (*Mustela frenata*). They have gone from being wide-spread and common both in Nebraska and across the U.S. to rarely seen. Additional rare mammals from the west are Richardson's ground squirrel (*Spermophilus elegans*), northern pocket gopher (*Thomomys talpoides chyennensis*), silky pocket mouse (*Perognathus flavus*), bushy-tailed woodrat (*Neotoma cinerea*), and mountain lion (*Puma concolor*).



Nine-banded armadillo. NEBRASKAland Magazine/Nebraska Game and Parks Commission photo.

Merriam's shrew (*Sorex merriami*) just creeps into the state at the northwest corner. For years it was known to occur in the state from only one specimen. The Museum now has nine thanks to collaboration with a colleague at Chadron State College. This small beast (weight of one nickel) is probably common west and northwest of Nebraska in sagebrush prairie, but it is difficult to catch for surveys. Rare mammals coming from the south are the hispid cotton rat (*Sigmodon hispidus*) and the osage woodrat (*Neotoma floridana osagensis*) and from the south and east is the spotted skunk (*Spilogale putorius*). A rare mammal from the north is the olive-backed pocket mouse (*Perognathus fasciatus*). Twenty-three of the species of mammals in the state have had significant shifts in their distributions

just in the last 40 years. Nebraska is a sampler box of habitats, all of which allow different kinds of species to live inside the borders of the state. Nebraska mammals represent a rich and unique heritage but also a fragile one.

Farewell Editorial

It is with the deepest regret that I announce that this, our 120th issue, is the final issue of *Museum Notes*. *Museum Notes* began 49 years ago in October 1956. We had a good, but all too brief, journey with *Museum Notes*. The series has provided a broad array of marvelous topics that have been timely, well-written, occasionally provocative, and, above all, informative. *Museum Notes* is like an old friend, and I am genuinely saddened to see it go at such a "young" age.

I have had the pleasure of being its editor since April 1983, an amazingly brief 22 years ago! During that time I have thoroughly enjoyed working with dozens of authors who all had a fascinating story to tell about natural history, anthropology, or the Museum's history and people. During all those years, I have been assisted by Gail Littrell, our Secretary in the Research Collections, and for the past few years by Angie Fox, our incomparable Scientific Illustrator. The Friends of the Museum are also gratefully acknowledged because, since 1989, they have paid for the publication and distribution of *Museum Notes*.

Why is *Museum Notes* being discontinued? In 2003, the Museum suffered a tragic and severe cut to its personnel and programs that was mandated by the University. After years of dedicated service, some curators and support staff lost their positions. The curators were reassigned from the Museum to academic departments where their responsibilities to the Museum were diminished. So, with a reduction in staff, there is a concomitant scaling back in programs because we simply do not have the people or the time to do all that we used to do.

As for *Museum Notes*, perhaps Dana Gioia (Chair of the National Endowment for the Arts) said it best: "Print culture affords irreplaceable forms of focused attention and contemplation that make complex communication and insights possible. To lose such intellectual capability and the many sorts of human continuity it allows, would constitute a vast cultural impoverishment." Ending on a brighter note, we can also say that a day is not wasted if a memory is made. And *Museum Notes* has given us lots of memories.

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