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Richard P. Lampe
Buena Vista College

John B. Bowles
Central College

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Annotated Checklist of the Mammals of the Loess Hills of Western Iowa

RICHARD P. LAMPE and JOHN B. BOWLES

Dept. of Biology, Buena Vista College, Storm Lake, Iowa 50588

Dept. of Biology, Central College, Pella, Iowa 50219

Of the 44 species of mammals that have been reported in western Iowa, 14 are uncommon and 30 are common. Nine more are expected to be present and another nine have been extirpated. Work is needed to verify the status of several species.

INDEX DESCRIPTORS: mammals, Iowa, faunal survey, Loess Hills, Missouri River.

The Loess Hills rise from the Missouri River floodplain to create a border of low bluffs along the east bank of the Missouri River from Plymouth County, Iowa, to Atchison County, Missouri. Once covered with prairie, the vegetational margins of these hills probably were less distinct in the past than at present. Since the 1800s, cultivation of land and prevention of periodic fires has reduced the prairie to isolated patches. Whereas some mammals survive in cultivated areas, others, unable to adjust to the changes, have found refuge on the steeply sloped ridges. As a result, the distributional patterns of mammals found today in western Iowa are different from that of 200 years ago.

The mammalian fauna of western Iowa also has been influenced by the Missouri River, which evidently acted as a barrier to eastward-dispersing, non-volant Great Plains species. Although the swift-flowing current undoubtedly prevented some grassland species from crossing into Iowa, the gallery forests, especially on the Nebraska side, may have been of equal or more importance as barriers to dispersal.

Although the Loess Hills area is a distinctive regional geographic feature, only one study has focused on the distribution of mammals in western Iowa. In his survey of the state, Bowles (1975) considered specimens from this region and commented on the taxonomic status of several species. Additionally, specimens from western Iowa were included in various taxonomic investigations (Heaney and Timm, 1983; Moncrief et al., 1982; George et al., 1982).

Since 1979, important collections from the region were made by personnel of the Iowa Conservation Commission in Monona County and by participants in the 1980-1983 annual forays to western Iowa organized by the Iowa State Preserves Advisory Board. In 1981, Lampe surveyed the small mammals of selected prairie and forest sites in the region with research funds provided by the Iowa Conservation Commission. Additionally, various field classes from Central College, Pella, and Buena Vista College, Storm Lake, visited the Loess Hills during 1979-1984.

In the following accounts, we briefly indicate the present knowledge of mammals from the western tier of counties in Iowa. This region includes seven counties encompassing the Loess Hills in Iowa (Plymouth to Fremont) and two counties above the Loess Hills (Sioux and Lyon). We have denoted each species as either common or uncommon. By common we mean that a species is widespread and easily found in suitable habitat. An uncommon species, on the other hand, exists either in localized populations or is widespread but of low density and not easily found even in suitable habitat.

ACCOUNTS OF SPECIES

Didelphis virginianus Kerr, Virginia Opossum

Opossums are common throughout western Iowa. Our sightings, however, were all of individuals killed on roads.

Sorex cinereus Kerr, Masked Shrew

This small shrew is uncommon and restricted to mesic habitats,

either woodland or tall herbaceous cover by standing water. Although final identification of our specimens awaits the completed taxonomic revision of this species (van Zyll de Jong, pers. comm.), the tentative western distribution is shown in Fig. 1. Because of its small size, the masked shrew often is not captured with standard traps used to sample small mammals. Pitfall traps are much more effective and their use in future studies may show this insectivore to be more common.

Sorex haydeni Baird, Hayden's Shrew

Considered by Bowles (1975) as the subspecies of *Sorex cinereus* in Iowa, this shrew recently was elevated to species level (Junge and Hoffmann, 1981) and reported from various sites in western Iowa (van Zyll de Jong, pers. comm.). However, information on its habitat preference in Iowa and its interactions with its close relative, *S. cinereus*, have yet to be studied in detail. Elsewhere, Hayden's shrew inhabits grassland whereas the masked shrew is more prevalent in forest habitat (van Zyll de Jong, 1980).

Blarina brevicauda (Say), Northern Short-tailed Shrew

The northern short-tailed shrew is a common member of grassland communities throughout western Iowa and has been collected in every county within its range. Its large size, dark color and almost continuous activity make it a frequently-observed small mammal. In Loess Hills population studies conducted by Lampe in 1981, however, only one short-tailed shrew was taken in the forest whereas five were captured in prairie habitats. At Badger Lake Wildlife Area, Iowa Conservation Commission personnel found that these shrews were commonest in moist grasslands but also were present in tall herbaceous vegetation.

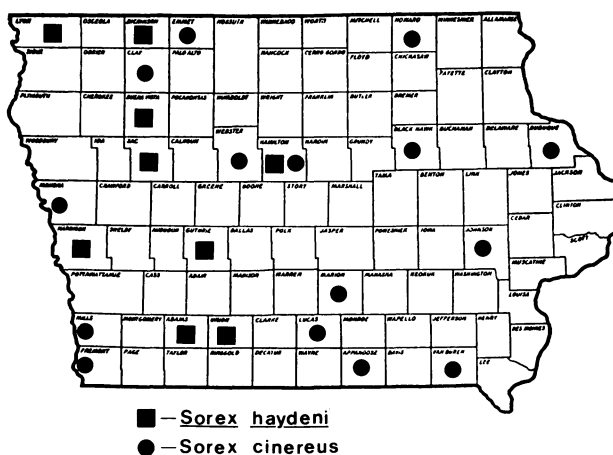


Figure 1. Distribution of *Sorex cinereus* and *S. haydeni* in Iowa.

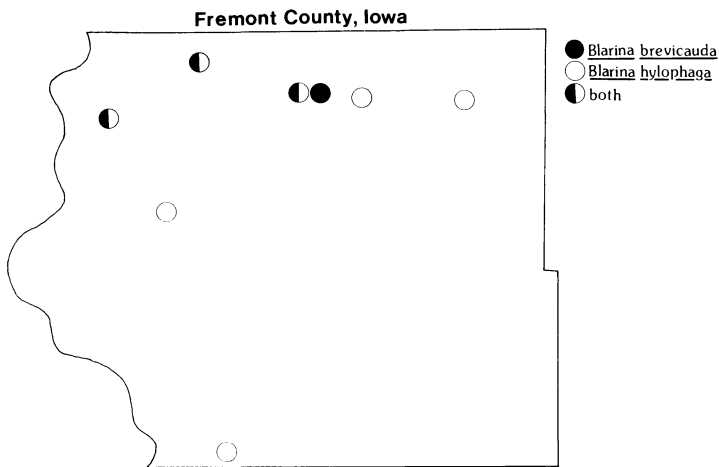


Figure 2. Distribution of two species of short-tailed shrew (*Blarina brevicauda* and *B. hylophaga*) in Fremont County, Iowa.

Blarina hylophaga Elliot, Elliot's Short-tailed Shrew

This short-tailed shrew was referred to as *B. brevicauda carolinensis* by Bowles (1975) but elevated to the status of a distinct species by George et al. (1981). It is slightly smaller than its congener, *B. brevicauda* (see above account). The two species occur sympatrically in southwestern Iowa (George et al. 1981; Moncrief et al., 1982). Elliot's short-tailed shrew is common in southwestern Iowa (Fig. 2).

Cryptotis parva (Say), Least Shrew

The least shrew is an uncommon resident of western Iowa prairies. The few recent specimens were collected in dry grasslands on exposed slopes having moderate plant cover.

Scalopus aquaticus (Linnaeus), Eastern Mole

Eastern moles are common throughout western Iowa in moist, friable prairie and forest soils. Although tunnels frequently were observed, few specimens were collected.

Myotis keenii (Merriam), Keen's Myotis

This bat is uncommon throughout western Iowa. The only two specimens reported from the Loess Hills were netted by a forest pond in Waubonsie State Park, Fremont County, in 1981. We believe that the absence of suitable hibernacula and lack of contiguous forest cover may restrict this species in western Iowa.

Eptesicus fuscus (Palisot de Beauvois), Big Brown Bat

Big brown bats are the most widespread Iowan bat, probably because they can use buildings as summer roost sites and winter hibernacula. There are few regional records of this species even though it undoubtedly is common.

Lasiurus borealis (Muller), Red Bat

This fast-flying species is seen most often as it feeds on insects attracted to street lights. Its preference for roosting in trees, however, enables it to exist with little notice during its summer residence in the state. Although we know of only two records from western Iowa, we consider it to be common based on its overall distributional pattern.

Nycticeius humeralis Rafinesque, Evening Bat

Evening bats are uncommon in western Iowa. Our two records from the Little Sioux Boy Scout Ranch, Monona County, and Stone Park, Woodbury County, extend the reported range and represent the northwestern limits for the species (Bowles, 1975).

Sylvilagus floridanus (J.A. Allen), Eastern Cottontail

Although this rabbit is common throughout all of western Iowa, its abundance may vary annually and with respect to cover. In the Loess Hills, cottontails may have increased in number as the forest has encroached upon the prairie during the past several decades.

Lepus townsendii Bachman, White-tailed Jack Rabbit

As prairies and pastures have been plowed and replaced by cropland or invaded by woodland, this uncommon species has shown marked reduction in numbers. During fieldwork in the Loess Hills in recent years, only one jack rabbit was seen in the region, near the Loess Hills Wildlife Area, Monona County. This species may be somewhat more common in the northwestern corner of Iowa although, even there, loss of habitat is of concern.

Tamias striatus (Linnaeus), Eastern Chipmunk

Chipmunks reach the western limit of their range in western Iowa and eastern Nebraska (Hall, 1981) and, as is true with many species on their range periphery, they are found in isolated populations. At Fowlers Preserve, a small wooded park near Smithland in eastern Woodbury County, chipmunks are common though they are unknown in nearby woodlots. This population is the only one in western Iowa that we have verified. However, in the spring of 1985, chipmunks were observed in a woodlot at the Loess Hills Wildlife Management Area (Roosa, pers. comm.). We are not sure why this species is uncommon and not more widely distributed in the region, especially where woodland has expanded in recent years.

Marmota monax (Linnaeus), Woodchuck

This largest of the ground squirrels is known from all but Plymouth County and it likely occurs there also. Although its numbers may not be high anywhere in western Iowa, we consider it a common species in the region.

Spermophilus franklinii (Sabine), Franklin's Ground Squirrel

Franklin's ground squirrel is common in most areas of the Loess Hills and at other sites in western Iowa. Sightings of active individuals along roadsides are not unusual and, as might be expected, many are hit by vehicles. This ground squirrel is an inhabitant of tall grass so is not found on the overgrazed and now relatively barren slopes of most of the Loess Hills. Populations in roadsides and ungrazed habitats apparently are adequate to sustain the species.

Spermophilus tridecemlineatus (Mitchell), Thirteen-lined Ground Squirrel

This ground squirrel is common throughout western Iowa where it frequents the short-grass habitats. With increased cultivation and grazing of prairies, thirteen-lined ground squirrels likely have become more numerous and widespread.

Sciurus carolinensis Gmelin, Gray Squirrel

In western Iowa, gray squirrels are uncommon and the only Loess Hills record is from Waubonsie State Park. This population may have spread from adjacent northwestern Missouri through contiguous forests.

Sciurus niger Linnaeus, Fox Squirrel

This tree squirrel is a common resident of almost every wooded section of western Iowa. In some areas, melanistic color phases are common or may predominate.

Geomys bursarius (Shaw), Plains Pocket Gopher

Although pocket gophers have been collected in only half of the counties in western Iowa, we consider them common throughout the region. Agricultural practices, however, may restrict local populations to roadsides or hay fields. In their recent taxonomic review of the species, Heaney and Timm (1983) referred individuals from Iowa to *G. bursarius bursarius* rather than *G. b. majusculus* (Bowles, 1975).

Perognathus flavescens Merriam, Plains Pocket Mouse

This pocket mouse is the only heteromyid rodent in Iowa. Although once present throughout all but the southeastern corner of Iowa (Bowles, 1975), these mice probably now occur as two disjunct populations, one in eastern Iowa (Christiansen and Sanz, 1978) and the other in the Loess Hills. Populations in western Iowa are known from prairie areas in Plymouth, Monona, and Harrison counties. Although densities appear to remain low in all areas, individuals of this uncommon mammal have been collected from numerous sites at the Loess Hills Wildlife Area and several in Plymouth County.

Castor canadensis Kuhl, Beaver

In most areas of western Iowa, small streams provide adequate

habitat for this large rodent. However, in the Loess Hills beaver probably are restricted.

Reithrodontomys megalotis (Baird), Western Harvest Mouse

This small, seed-eating rodent is one of the most common species of the grasslands of western Iowa. Although present in various grassland situations, it is most numerous in native prairies having substantial cover.

Peromyscus leucopus (Rafinesque), White-footed Mouse

The white-footed mouse is the most common rodent of the forest habitats of western Iowa. While also present in areas with shrubs or brushy cover, it rarely is found away from woody growth.

Peromyscus maniculatus (Wagner), Deer Mouse

Deer mice are the most common mammal in western Iowa, where they are found in a variety of non-forested habitats. In many places, deer mice even utilize farmsteads and cultivated fields.

Oryzomys leucogaster (Wied-Neuwied), Northern Grasshopper Mouse

Grasshopper mice reach the southeastern limit of their distribution in Iowa and previously were considered to be uncommon (Roosa, 1977). Recent studies suggest that numerous, small, localized populations occur throughout western and northwestern Iowa. At many of these sites, the species inhabits cultivated fields, particularly corn, soy beans and alfalfa. These habitats should receive more attention than in the past as grasshopper mice may be expanding their range eastward.

Synaptomys cooperi Baird, Southern Bog Lemming

This microtine rodent is an uncommon member of moist grassland communities of western Iowa. Although it has been found as far north as Monona County, most records are from Fremont County.

Microtus ochrogaster (Wagner), Prairie Vole

Prairie voles are common in xeric grasslands throughout the Loess Hills. Although numbers vary with season and quality of habitat, most individuals have been taken in early autumn in grassland habitats having good cover. The exact nature of the interaction of this species with the meadow vole is uncertain but we suspect the prairie vole, at least in the southern Loess Hills, is at a competitive disadvantage when both are present.

Microtus pennsylvanicus (Ord), Meadow Vole

Whereas prairie voles predominate in the xeric grasslands, meadow voles do so in more mesic grasslands and hay fields. In western Iowa, densities of meadow voles do not appear as high as elsewhere in Iowa although the species may be increasing in number and distribution.

Microtus pinetorum (Le Conte), Woodland Vole

The woodland vole is another deciduous forest rodent that reaches its range limit in western Iowa. These voles are uncommon throughout Iowa and in western Iowa, they are known only from two forest sites, one each in Mills and Fremont counties.

Ondatra zibethicus (Linnaeus), Muskrat

Musk rats, like beaver, exist in the marshes and streams within and around the Loess Hills. The creation of farm ponds has increased habitat for these common rodents.

Mus musculus Linnaeus, House Mouse

House mice are uncommon in undisturbed native prairie but common inhabitants of farmsteads and margins of cultivated fields.

Rattus norvegicus (Berkenhout), Norway Rat

Few rats have been collected in western Iowa but this no doubt reflects a bias in collecting habits of field biologists rather than a paucity of this mammal. Rats are common around farmsteads and cities.

Zapus hudsonius (Zimmerman), Meadow Jumping Mouse

In lush, mesic grasslands in western Iowa, the meadow jumping mouse is common. Although Bowles (1975) reported no records of jumping mice from southwestern Iowa, we have collected specimens from all but Pottawattamie County.

Canis latrans Say, Coyote

Our records suggest that coyotes are common throughout western Iowa. In the Loess Hills, ample potential den sites and prey would

suggest a large population. Howls and sightings were recorded from Monona, Harrison, Mills and Fremont counties.

Vulpes vulpes (Linnaeus), Red Fox

Red foxes are common in western Iowa and frequently are captured by trappers. The relative isolation of ridges within the Loess Hills no doubt contains many den sites.

Urocyon cinereoargenteus (Schreber), Gray Fox

Although there are few records in western Iowa for this uncommon, forest-dwelling fox, the spread of oak forest in the Loess Hills possibly has been beneficial to this species. The only individual we have seen in the Loess Hills crossed the road in Waubonsie State Park, Fremont County.

Procyon lotor (Linnaeus), Raccoon

Raccoons are common in all of western Iowa. In the Loess Hills, their abundance may result from a positive response to grassland cultivation and forest expansion where woody second growth invades the prairie ridge (Bowles, 1975). During our studies, many dead raccoons were seen on highways.

Mustela frenata Lichtenstein, Long-tailed Weasel

Weasels probably occur throughout western Iowa but are uncommon. Our only record is a sighting at Louisville Bend, 2 mi. N and 5 mi. W of Blencoe, Monona County.

Mustela vison Schreber, Mink

There are few documented records of mink from western Iowa although the species no doubt is common in suitable habitats throughout the region.

Taxidea taxus (Schreber), North American Badger

Although seldom seen or collected in western Iowa, badgers are common and their presence is evident from diggings produced when pursuing prey or seeking shelter. The stability of loess soil allows such burrows to last for several years and many prairie animals and plants depend on these disturbances.

Mephitis mephitis (Schreber), Striped Skunk

Skunks are common throughout western Iowa. They frequently are seen as road-kills and we have many such records from the Loess Hills.

Lutra canadensis (Schreber), River Otter

The most recent published record of the otter was of a female taken at Lake Manawa near Council Bluffs, Pottawattamie County in 1969 (Bowles, 1975). On this basis we consider it to be uncommon in the Missouri River perhaps occasionally moving to adjacent bodies of water.

Odocoileus virginianus (Zimmerman), White-tailed Deer

The white-tailed deer is another species that has benefited from the ongoing transition of prairie to forest. It is common in the Loess Hills.

Species Expected to be Present

In addition to the mammals reported from western Iowa and noted in the above accounts, the following species have been reported from nearby counties in Iowa or adjacent states. Although documentation of recent presence is lacking, we expect them to be in the region.

Myotis lucifugus (Le Conte), Little Brown Myotis

Myotis sodalis Miller and G.M. Allen, Indiana Myotis

Lasiurus noctivagans (Le Conte), Silver-haired Bat

Pipistrellus subflavus (F. Cuvier), Eastern Pipistrelle

Lasiurus cinereus (Palisot de Beauvois), Hoary Bat

Spermophilus richardsonii (Sabine), Richardson's Ground Squirrel

Glaucomys volans (Linnaeus), Southern Flying Squirrel

Mustela nivalis Linnaeus, Least Weasel

Spilogale putorius (Schreber), Spotted Skunk

Lynx rufus (Schreber), Bobcat

Odocoileus hemionus (Rafinesque), Mule deer

Extirpated or Accidental Species

We have reason to believe that these species were extirpated in historic times or, in the case of the two species of bats, were accidentals

and not part of a breeding population.

Tadarida macrotis (Gray), Big Free-tailed Bat

T. brasiliensis (I. Geoffroy Saint-Hilaire), Brazilian Free-tailed Bat

Sigmodon hispidus Say and Ord, Cotton Rat: This species has never been trapped in Iowa as the published record was from an owl pellet (Bowles, 1975). In light of our recent extensive trapping in south-western Iowa without any evidence of its presence and its susceptibility to severe winters (Farney, 1975), we believe that the cotton rat is not present in the state.

Canis lupus Linnaeus, Gray Wolf

Ursus americanus Pallas, Black Bear

Felis concolor Linnaeus, Mountain Lion

Cervus elaphus Erxleben, Wapiti: A western Iowa sighting of an elk in 1978 is believed to be either an individual that escaped from captivity or a wanderer from the Black Hills.

Antilocapra americana Pronghorn

Bison bison (Linnaeus), Buffalo

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