

THE TAXONOMY, DISTRIBUTION, LEGAL STATUS, AND UTILIZATION OF NONGAME MAMMALS IN MINNESOTA

1979

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A PRELIMINARY REVIEW OF
THE TAXONOMY, DISTRIBUTION, LEGAL STATUS,
AND UTILIZATION OF NONGAME MAMMALS
IN MINNESOTA

1979

by Carol Henderson, Nongame Supervisor

Among Minnesota's eighty species of wild mammals are 58 nongame species. Nongame species are those which are not generally hunted or harvested. This review also includes those traditional furbearers which are either fully protected, like the gray wolf, wolverine, and marten, or those which are not protected by law, like the striped skunk, coyote, and long-tailed weasel.

Pending legislation which would provide for planning for nongame wildlife conservation is now in Congress. This could focus much-needed attention on nongame species.

This preliminary guide has been prepared to help assess the needs and priorities for conservation of nongame mammals. It includes a review of the taxonomy, distribution, legal status, and utilization of nongame mammals in Minnesota. Ten regional guides with species lists and county occurrence records have been prepared to be used in conjunction with this publication.

This review will be periodically updated. A new book on Mammals of Minnesota will soon be published by Dr. E.B. Hazard of Bemidji State University and will provide a comprehensive analysis of both game and nongame species.

REGIONAL ANALYSIS

For purposes of analysis the State of Minnesota has been subdivided into ten areas. They conform generally to Department of Natural Resources regions and/or economic development regions. These are portrayed in Figure 1.

TAXONOMY AND IDENTIFICATION

The taxonomy accepted here is that published by J.K. Jones, Jr., D.C. Carter, and H.H. Genoways (1975).

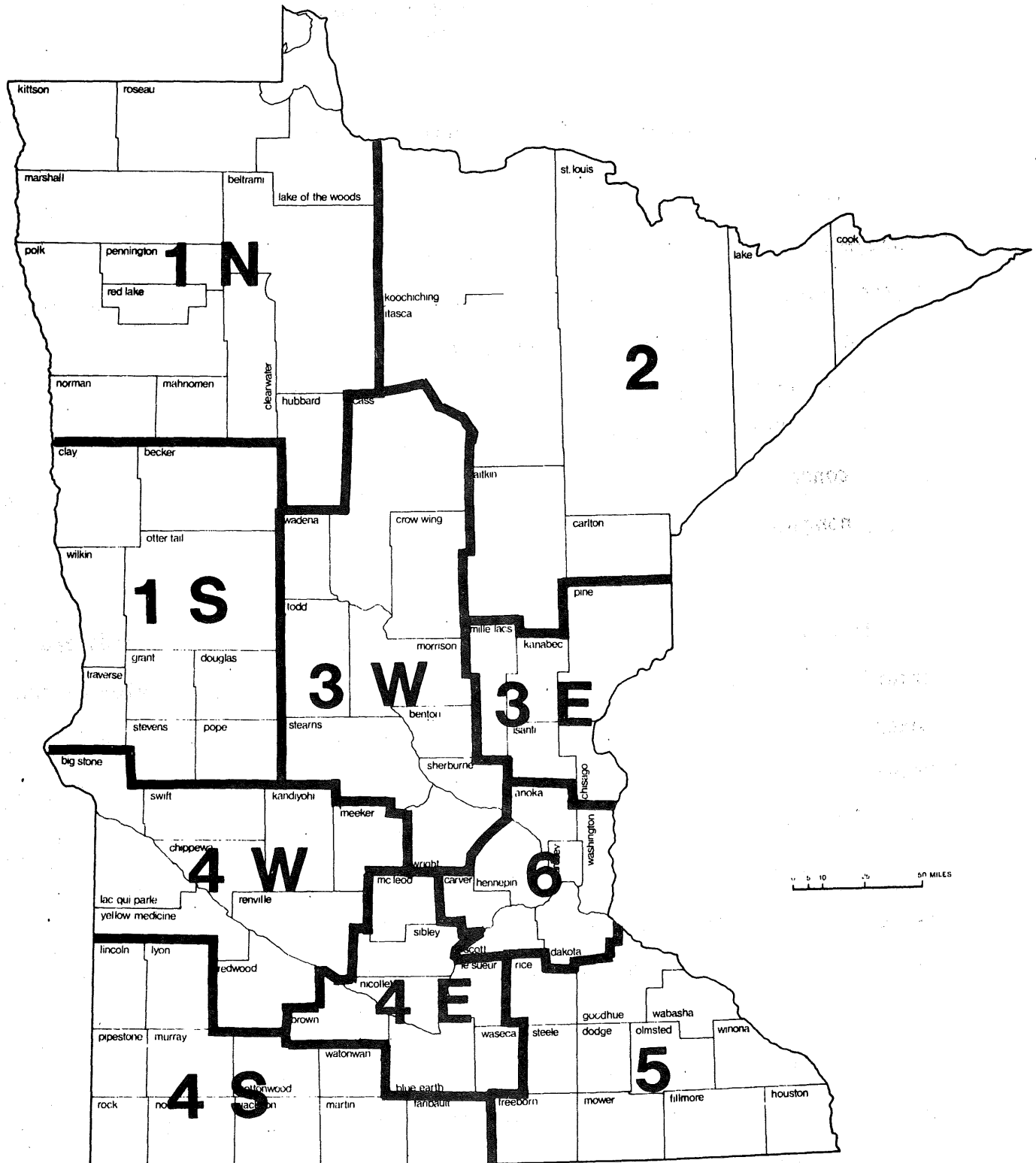


Figure 1. Regional breakdown used for nongame wildlife analysis.

Identification marks for nongame mammals are explained in the Peterson field guide "A Field Guide to the Mammals" by Burt and Grossenheider, (1964).

A list of Minnesota's 58 nongame mammals, including families and scientific names, is given in Appendix A.

Subspecies designations are not dealt with in this review.

SPECIES DIVERSITY

Current information suggests that there are 58 nongame mammals in Minnesota, including 1 marsupial, 6 shrews, 2 moles, 7 bats, 9 squirrels, 2 pocket gophers, 1 pocket mouse, 12 New World mice, 2 Old World rats and mice, 2 jumping mice, 1 porcupine, 2 dogs, 7 weasels and relatives, 1 cat, 2 deer, and the pronghorn.

The species diversity varies somewhat from one region to another. The maximum number of nongame mammal species known for one region, 42, is in Region 1N in northwest Minnesota. The lowest number, 27, is recorded for Region 4E in south central Minnesota.

There is a general increase in species diversity from south to north as peripheral northern species are encountered. These species are named in Table 1.

Fewer southern peripheral species like the least shrew, eastern pipistrelle, western harvest mouse, prairie vole, pine vole, and opossum are picked up as distribution is reviewed from north to south. Other southern species are mentioned in Table 1.

This is opposite from the situation with reptiles and amphibians which are most abundant in southeast Minnesota.

Figure 2 is a summary of the nongame mammal species diversity in the ten nongame regions. Two numbers are presented for each region. The top number is the actual number of nongame species that are verified in that region. The bottom number is the total number of species that have been verified plus the tally of hypothetical species which possibly or probably occur there. Some regions like 1N, 2 and 6 have been well-researched by mammalogists so few

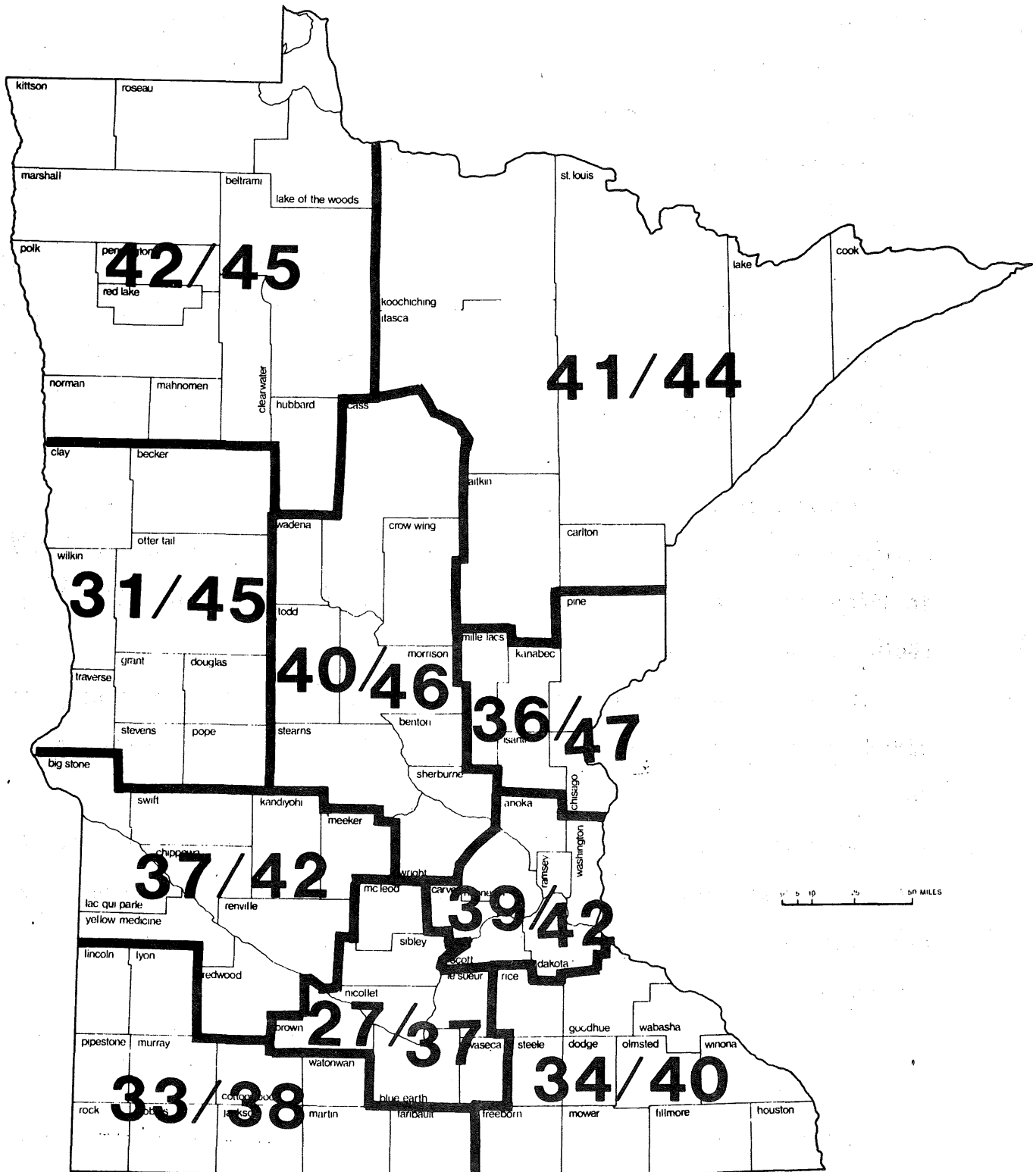


Figure 2. Species diversity of nongame mammals by region. Numbers on left are the number of species for which documentation exists. Numbers on right are totals for documented species plus hypothetical species.

species remain to be verified.

Other regions like 1S, 3E, and 4E have ten or more hypothetical species and still require more survey work to verify their presence.

GAME MAMMALS

Twenty species of Minnesota mammals have been excluded from this summary because they are game species regulated by game laws. They include the white-tailed jackrabbit, snowshoe hare, eastern cottontail rabbit, eastern gray squirrel, fox squirrel, beaver, muskrat, black bear, raccoon, fisher, badger, mink, river otter, red fox, gray fox, Canada lynx, bobcat, white-tailed deer, mule deer, and moose. Two other species, the bison and grizzly bear, are extirpated, but by tradition they also are included here as game species.

EXOTIC SPECIES

An exotic species is one which has been introduced from another country and which is not native to Minnesota. The Norway rat and house mouse are the only exotic species of wild mammals which have become established. There are occasional records of nutria being found in the state but they are not known to have bred or established feral populations. Exotic species are identified in Appendix A.

EXTINCT SPECIES

None of the state's nongame mammals, or game mammals, have become extinct in recent times. An extinct species is one that has completely disappeared from the earth.

EXTIRPATED SPECIES

An extirpated species is one which has disappeared from a portion of its original range that is usually defined by political boundaries. The grizzly bear, bison, woodland caribou, and wolverine have been extirpated from Minnesota. Studies are currently underway to assess the feasibility of reintroducing woodland caribou in northern Minnesota. Wolverines may accidentally range into Minnesota from Canada. Occasional reports of wolverines are received by the

Department of Natural Resources, but none have been verified in this century by specimens or valid documentation.

Extirpated species are identified by region in Appendix A.

ENDEMIC SPECIES

An endemic species is one which is only found in one location or area. There are no endemic mammals which are found only in Minnesota.

ACCIDENTAL SPECIES

An "accidental" species is one which is found outside of its regular range. This includes species like the cougar and pronghorn which can easily move into Minnesota from adjacent areas. It can also include other species like the opossum. One unexpectedly showed up in St. Louis County in 1978. Sometimes these accidental occurrences result from the escape of pets or the capture and release of wild specimens by humans. Accidental species will not generally reproduce where they accidentally occur. Accidental species are identified by region in Appendix A.

HYPOTHETICAL SPECIES

Hypothetical species are those which are predicted to occur in a region or in the state but for which verification is lacking. Hypothetical species are identified by region in the regional summaries.

THREATENED AND ENDANGERED SPECIES (Federal)

The gray wolf is officially listed as a threatened species under the terms of the Endangered Species Act of 1973. There are no endangered mammal species in Minnesota.

THREATENED AND ENDANGERED SPECIES (State)

The gray wolf is officially listed as a threatened species by the State of Minnesota in accordance with the provisions of M.S. 1976, Section 97.488.

The pine marten was unofficially listed as threatened in the Department of Natural Resources publication "The Uncommon Ones" in 1975. This designation had no legal status. The pine marten is fully protected, and its

numbers have increased considerably since 1975.

HABITAT AFFILIATIONS

Review of nongame mammals by habitat preference facilitates understanding their distribution and conservation needs (Batten 1979, Birney and Nordquist 1978, Burt and Grossenheider 1964, Gunderson and Beer 1953, Kalen 1976, Martin, Zim and Nelson 1951, and Shelford 1963).

Nongame mammals have been divided into four broad habitat categories: cosmopolitan, forest, prairie and grassland, and wetland. Cosmopolitan species are those species which are so adaptable to varying habitats that they are found in all ten nongame regions in Minnesota. These include the species which incidentally are most often adapted to urban environments. It is recognized that some of these species will exhibit certain habitat affiliations throughout the state and for that reason could probably be designated in other categories. However, the cosmopolitan category is extremely useful to describe those species which are typically our most common and adaptable species.

Several mammals are apparent cosmopolitan species because their presence has been verified in eight or nine of the ten regions. These include the Keen's little brown bat, big brown bat, silver-haired bat, and red-backed vole.

Forest, prairie and grassland, and wetland habitat preferences have also been identified. There are 19 nongame mammals in the "cosmopolitan" category, 21 species in the "forest" category, 12 species in the prairie and grassland category, and 6 in the wetland category. These categories are identified in the species list in Appendix A.

DISTRIBUTION

The 19 cosmopolitan species identified in Appendix A occur in all ten nongame regions. Distribution of the other mammals in more restricted and is shown in range maps in Appendix B.

Many nongame mammals are "peripheral" in Minnesota. That is, they reach the edge of a portion of their North American range in the state. Ten southern

species are at the northern limit of their range, four western species are at the eastern edge of their range, and twelve northern mammals are at the southern limit of their range. These species are identified in Table 1.

Table 1.- Peripheral Nongame Mammals in Minnesota

<u>Southern Species</u>	<u>Western Species</u>	<u>Northern Species</u>
Least shrew	Northern pocket gopher	Arctic shrew
Eastern mole	Northern grasshopper mouse	Northern water shrew
Eastern pipistrelle	Prairie vole	Pygmy shrew
Spotted skunk	Pronghorn	Star-nosed mole
Opossum		Pine marten
Southern flying squirrel		Gray wolf
Plains pocket gopher		Least chipmunk
Plains pocket mouse		Northern flying squirrel
Western harvest mouse		Heather vole
Pine vole		Woodland jumping mouse
		Porcupine
		Wolverine

The mammals known only from one region are the northern pocket gopher, heather vole, rock vole, and pine vole.

PRIORITY SPECIES

Some nongame mammals are peripheral and occupy a very small range in the state, they may have unique habitat requirements, they may be rare or uncommon throughout their range, or their range or numbers within their range may have declined significantly in recent years. Other mammals may be federally listed as threatened or endangered even though their status is secure within Minnesota, or they may be extirpated in Minnesota.

All of the above reasons provide justification for assigning "priority" status to some species so that appropriate actions can be taken in the nongame program to collect data on these species, monitor their status, and take appro-

priate management actions when necessary.

Priority nongame mammals are identified in Table 2.

Table 2. - Priority nongame mammal species in Minnesota, with annotated reasons for priority status.

Least shrew - 1	Rock vole - 1
Keen's little brown bat - 3	Pine marten - 1
Big brown bat - 2	Least weasel - 3
Eastern pipistrelle - 3	Wolverine - 6
Northern pocket gopher - 1	Spotted skunk - 4
Western harvest mouse - 3	Cougar - 1
Northern grasshopper mouse - 2	American elk - 1
Northern bog lemming - 1	Woodland caribou - 6
Pine vole - 1	Pronghorn - 1,6
Heather vole - 1	Gray wolf - 5

Key

- 1 - Peripheral and/or occupies a very small range in the state
- 2 - Unique habitat requirements
- 3 - Rare or uncommon throughout its range in Minnesota
- 4 - Range, or numbers within the range, has declined significantly
- 5 - Federally threatened or endangered, although Minnesota status is secure
- 6 - Extirpated from Minnesota

LEGAL STATUS

There is a wide variety of legal status among nongame mammal species.

The gray wolf is totally protected by state and federal laws in accordance with provisions of the Endangered Species Act of 1973 and Minnesota Statute 1976, Section 97.488.

The American elk, woodland caribou, pronghorn, pine marten, and wolverine are totally protected by state law, M.S. 1976, Section 100.27. The Department of Natural Resources has no authority to set seasons on these animals unless legislation is passed by the Minnesota legislature.

All other nongame mammals listed in Appendix A are unprotected species. Their unprotected status is designated in M.S. 1976, Section 100.26, Subdivisions 1 and 3. Unprotected mammals may be taken either in the daytime or at night, and in any manner, except with the aid of artificial lights. They may be possessed, bought, sold, or transported in any quantity. Poisons may not be used to take unprotected animals except in the manner authorized by Section 18.022. It is illegal to intentionally drive, chase, run over or kill with any motor propelled vehicle any unprotected animals.

Striped skunks and spotted skunks are accorded a similar degree of protection, except that if control by poisoning is necessary, the poisoning is regulated by Minnesota Statutes 1961, Sections 18.021 to 18.035, and amendments to that act.

Some "nongame mammals" are traditional furbearers which are unprotected. This includes the coyote, short-tailed weasel, long-tailed weasel, spotted skunk, striped skunk, and Virginia opossum. These species, however, have not been over-exploited for their fur and the unprotected status has not been detrimental to their status in the state. Prejudice against predators, livestock depredations by coyotes and rabies problems caused by skunks have contributed to maintaining them as unprotected animals. This allows greater flexibility in carrying out control of problem animals without being detrimental to the species.

The cougar should probably be designated as a protected species. Recent substantial increases in pine marten numbers in Lake and Cook counties should also be reviewed. Pine martens are traditional furbearers which may deserve game status if the harvest could be maintained without detriment to the species.

UTILIZATION

Utilization of nongame mammals is primarily restricted to those furbearers which technically fall into the nongame category because of unprotected status.

A mail survey of resident trappers yielded data on the 1977 furbearer harvest which is shown in Table 3.

Table 3. - Harvest of selected furbearers by resident hunters and trappers in 1977.

<u>Species</u>	<u>Hunter Harvest</u>	<u>Trapper Harvest</u>	<u>Total Harvest</u>	<u>Mean Pelt Price</u>	<u>Estimated Total Pelt Value</u>
Long-tailed weasel	N.S.*	1,000	1,000	.85	\$ 850.00 85.00
Short-tailed weasel	N.S.	1,000	1,000	.44	\$ 440.00 44.00
Striped Skunk	N.S.	29,000	29,000	2.78	\$ 80,620.00
Spotted Skunk	N.S.	1,000	1,000	5.42	\$ 5,420.00
Opossum	N.S.	3,000	3,000	2.11	\$ 6,330.00
Coyote	4,000	3,000	7,000	34.03	\$238,210.00
TOTAL-			42,000		\$330,709.00 331,870.00

*N.S. = Not Significant

There is also a demand for red squirrel pelts on Canadian fur markets.

Hunted species are the woodchuck, Richardson's ground squirrel, thirteen-lined ground squirrel, and Franklin's ground squirrel. Hunting poses no threat to the status of these prolific rodents. It is a popular spring and summer activity in western Minnesota.

Virtually no nongame mammals are utilized for meat. Opossums can be eaten, but because of their scavenging habits, most people do not eat them. Porcupines are also reputed to be edible.

There is some demand for skunks as pets, but they are a major rabies carrier.

Flying squirrels and opossums are occasionally kept as pets. In general, nongame mammals do not make good pets. Prices at one pet retail business in Minnesota in 1979 were \$32 for skunk kittens, \$85.00 for coyote pups, \$325 for gray wolf pups, and \$800 for cougar cubs. Adult skunk prices at a pet dealer in Blaine were \$55 a piece.

NUISANCE ANIMALS

Some nongame mammals create nuisance problems. For this reason the control of some nongame species is a significant management consideration.

Species which most often create nuisance problems are the eastern mole, little brown bat, woodchuck, Richardson's ground squirrel, thirteen-lined

ground squirrel, red squirrel, plains pocket gopher, Norway rat, house mouse, porcupine, coyote, gray wolf, and striped skunk.

Spotted skunks, Franklin's ground squirrels, long-tailed weasels, and opossums occasionally create crop damage or poultry depredation problems.

RECOMMENDATIONS FOR DATA COLLECTION

Reports of sightings of priority species or new county records of other species, excluding the house mouse and Norway rat, are important to help document mammal occurrences. When an important sighting occurs, the following data should be recorded: County, township, range, section number, date, year, type of habitat, and name and address of observer. List the identifying characteristics of the specimen which will distinguish it from similar species. Take photos or plaster casts of tracks for unique species like cougars. If the specimen is collected and preserved, tell where the specimen will be kept.

Send these reports to the Nongame Supervisor, Department of Natural Resources Section of Wildlife, Box 7, Centennial Building, 658 Cedar Street, St. Paul, Minnesota 55155.

LITERATURE CITED

- 1) Batten, Elizabeth, 1979. Small mammals of the regional copper-nickel study area. Minnesota Environmental Quality Board. Mimeo. 40 pp.
- 2) Birney, E.C. and Gerda E. Nordquist, 1978. The importance of peatland habitats to small mammals in Minnesota. Mimeo. 52 pp.
- 3) Burt, W.H. and R.P. Grossenheider, 1964. A field guide to the Mammals. 2nd Ed. Houghton Mifflon Co. Boston. 284 pp.
- 4) Gunderson, H.L. and J.R. Beer, 1953. The Mammals of Minnesota. Univ. Minn. Press. Mpls. 190 pp.
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- 6) Martin, A.C., H.S. Zim, and A.L. Nelson, 1951. American Wildlife and Plants: A Guide to Wildlife Food Habits. Dover Publications, N.Y. 500 pp.
- 7) Shelford, V.E., 1963. The Ecology of North America. Univ. of Ill. Press. Urbana. 610 pp.

APPENDIX A

A CHECKLIST OF
MINNESOTA'S NONGAME MAMMALS

ORDER MARSUPIALIA		HABITAT
Family Didelphidae -- New World Opossums		
Virginia opossum	<u>Didelphis virginiana</u>	F
ORDER INSECTIVORA -- Insectivores		
Family Soricidae -- shrews		
masked shrew	<u>Sorex cinereus</u>	C
water shrew	<u>Sorex palustris</u>	W
arctic shrew	<u>Sorex arcticus</u>	W
pygmy shrew	<u>Microsorex hoyi</u>	W
short-tailed shrew	<u>Blarina brevicauda</u>	C
least shrew	<u>Cryptotis parva</u>	F
Family Talpidae -- moles		
eastern mole	<u>Scalopus aquaticus</u>	P
star-nosed mole	<u>Condylura cristata</u>	W
ORDER CHIROPTERA -- bats		
Family Vespertilionidae -- vespertilionid bats		
little brown bat (little brown myotis)	<u>Myotis lucifugus</u>	C
Keen's little brown bat (Keen's myotis)	<u>Myotis keenii</u>	F
silver-haired bat	<u>Lasionycteris noctivagans</u>	F
eastern pipistrelle	<u>Pipistrellus subflavus</u>	F
big brown bat	<u>Eptesicus fuscus</u>	F
red bat	<u>Lasiurus borealis</u>	C
hoary bat	<u>Lasiurus cinereus</u>	F
ORDER RODENTIA -- rodents		
Family Sciuridae -- squirrels		
eastern chipmunk	<u>Tamias striatus</u>	C
least chipmunk	<u>Eutamias minimus</u>	F
woodchuck	<u>Marmota monax</u>	C
Richardson's ground squirrel	<u>Spermophilus richardsonii</u>	P
thirteen-lined ground squirrel	<u>Spermophilus tridecemlineatus</u>	C
Franklin's ground squirrel	<u>Spermophilus franklinii</u>	C
red squirrel	<u>Tamiasciurus hudsonicus</u>	C
southern flying squirrel	<u>Glaucomys volans</u>	F
northern flying squirrel	<u>Glaucomys sabrinus</u>	F
Family Geomyidae -- pocket gophers		
northern pocket gopher	<u>Thomomys talpoides</u>	P
plains pocket gopher	<u>Geomys bursarius</u>	P

Family Heteromyidae -- pocket mice
 plains pocket mouse Perognathus flavescens P

Family Cricetidae -- New World mice
 western harvest mouse Reithrodontomys megalotis P
 deer mouse Peromyscus maniculatus C
 white-footed mouse Peromyscus leucopus C
 northern grasshopper Onychomys leucogaster P
 mouse
 Gapper's red-backed Clethrionomys gapperi F
 vole
 heather vole Phenacomys intermedius F
 meadow vole Microtus pennsylvanicus C
 rock vole Microtus chrotorrhinus F
 prairie vole Microtus ochrogaster P
 pine vole(woodland vole) Microtus pinetorum F
 southern bog lemming Synaptomys cooperi W
 northern bog lemming Synaptomys borealis W

Family Muridae -- Old World rats and mice
 Norway rat Rattus norvegicus C
 house mouse Mus musculus C

Family Zapodidae -- jumping mice
 meadow jumping mouse Zapus hudsonius C
 woodland jumping mouse Napaeozapus insignis F

Family Erethizontidae -- New World porcupines
 porcupine Erethizon dorsatum F

ORDER CARNIVORA -- carnivores

Family Canidae -- dogs
 coyote Canis latrans C
 gray wolf Canis lupus F

Family Mustelidae -- weasels and relatives
 pine marten Martes americana F
 short-tailed weasel Mustela erminea C
 least weasel Mustela nivalis P
 long-tailed weasel Mustela frenata C
 wolverine Gulo gulo F
 eastern spotted skunk Spilogale putorius P
 striped skunk Mephitis mephitis C

Family Felidae -- cats
 cougar Felis concolor F

Family Cervidae -- deer
 American elk Cervus elaphus P
 woodland caribou Rangifer tarandus F

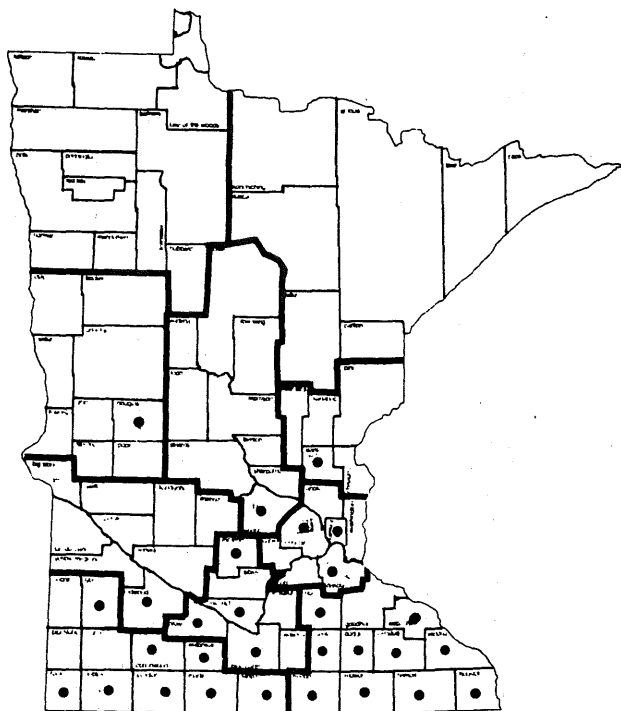
Family Antilocapridae -- pronghorn
 pronghorn Antilocapra americana P

*HABITAT KEY

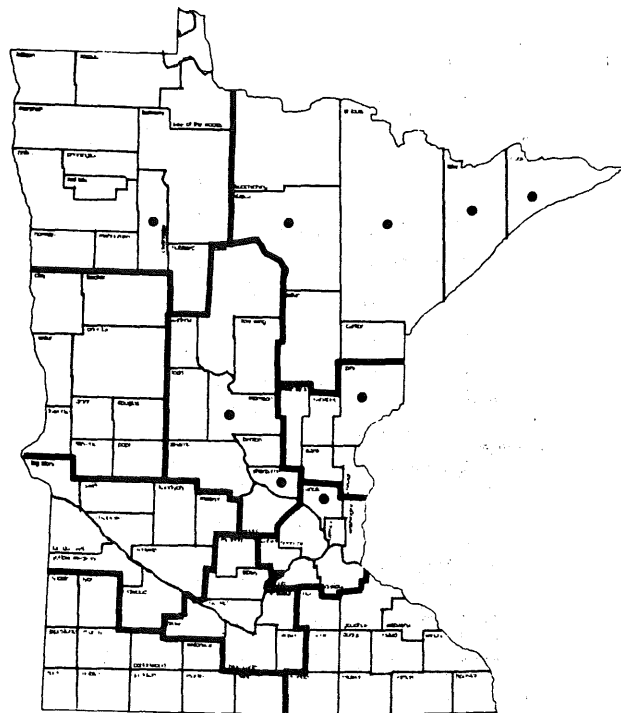
C = cosmopolitan
F = forest
P = prairie and grassland
W = wetland

Distribution records, by county, of nongame mammals which are not reported to be found in all ten regions.

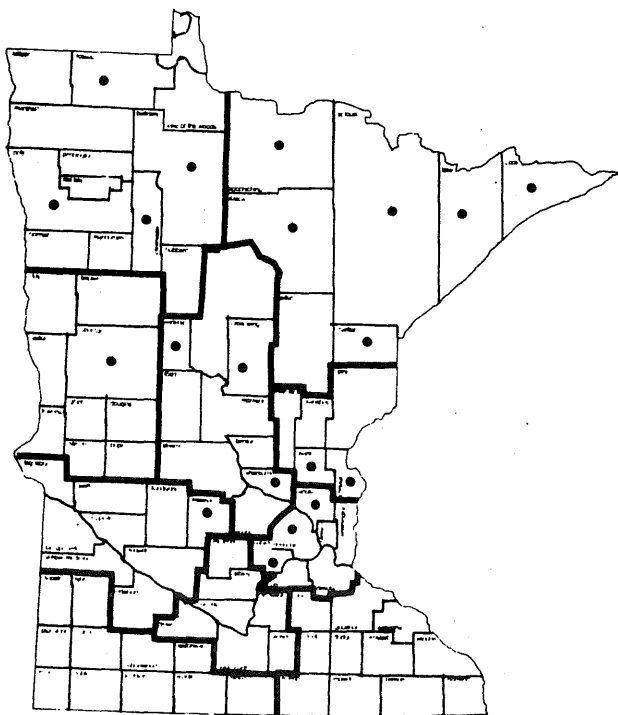
APPENDIX B



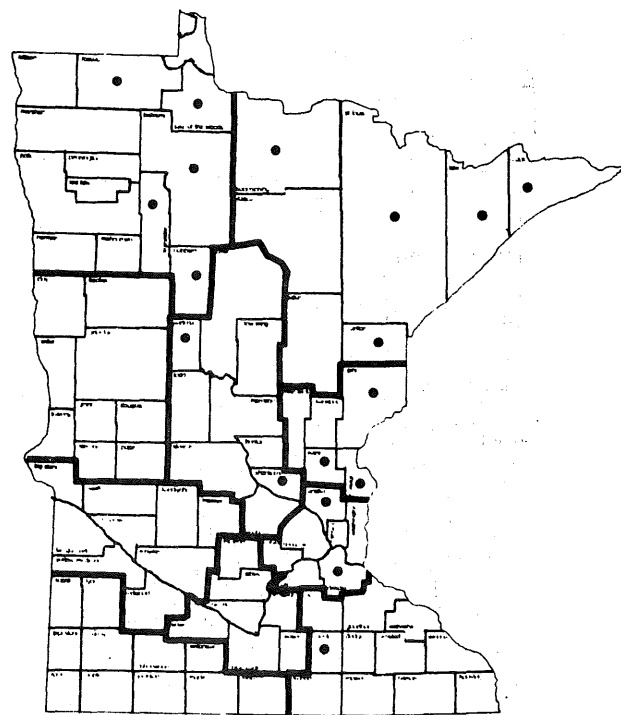
Virginia Opossum



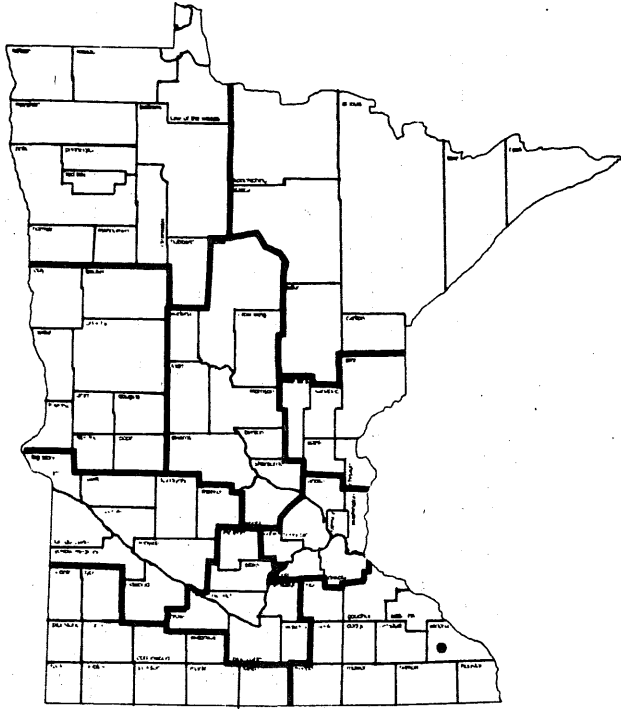
Water Shrew



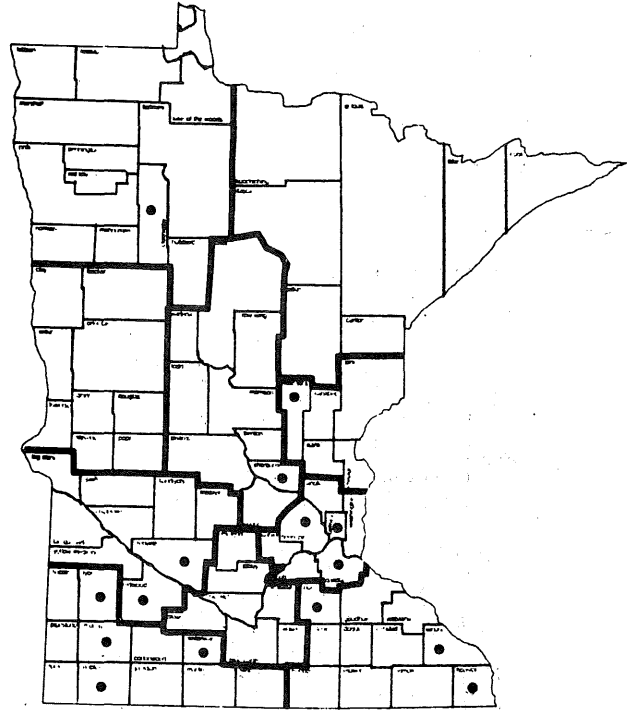
Arctic Shrew



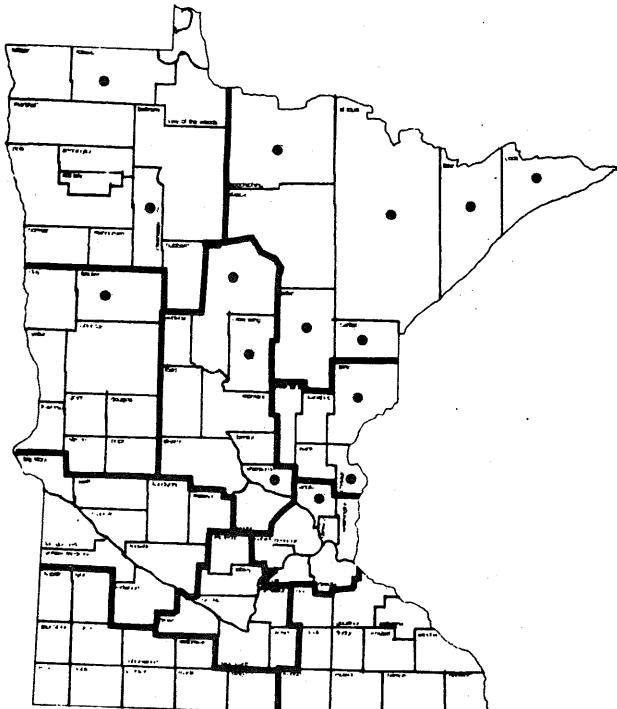
Pygmy Shrew



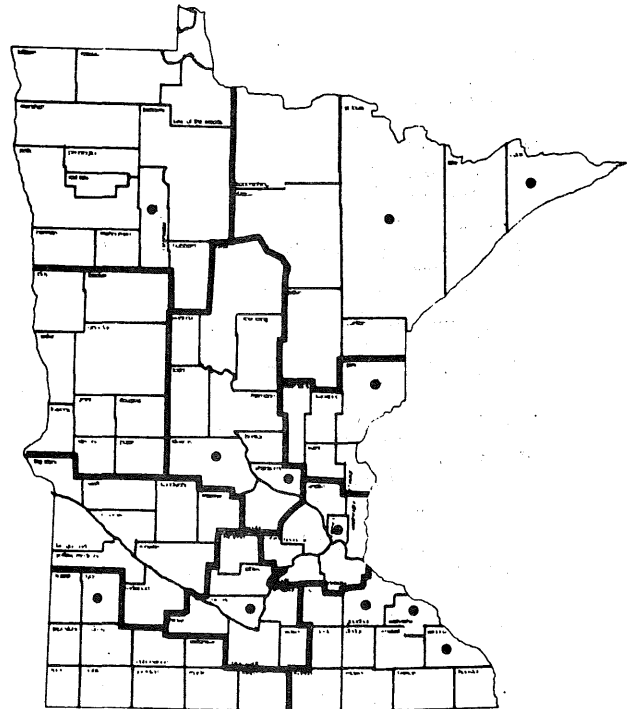
Least Shrew



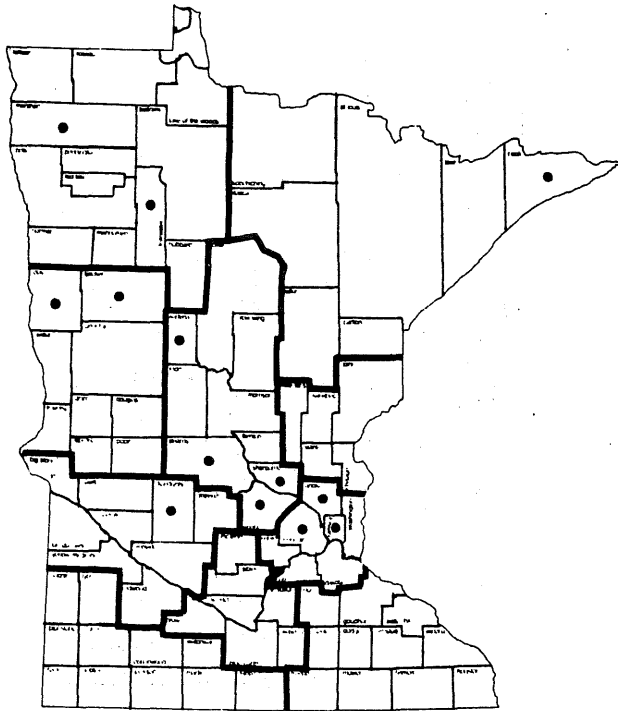
Eastern Mole



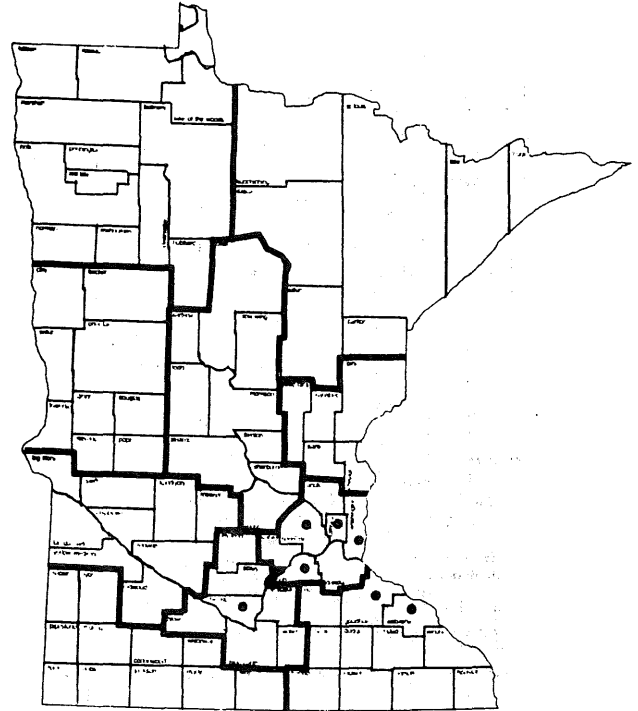
Star-nosed Mole



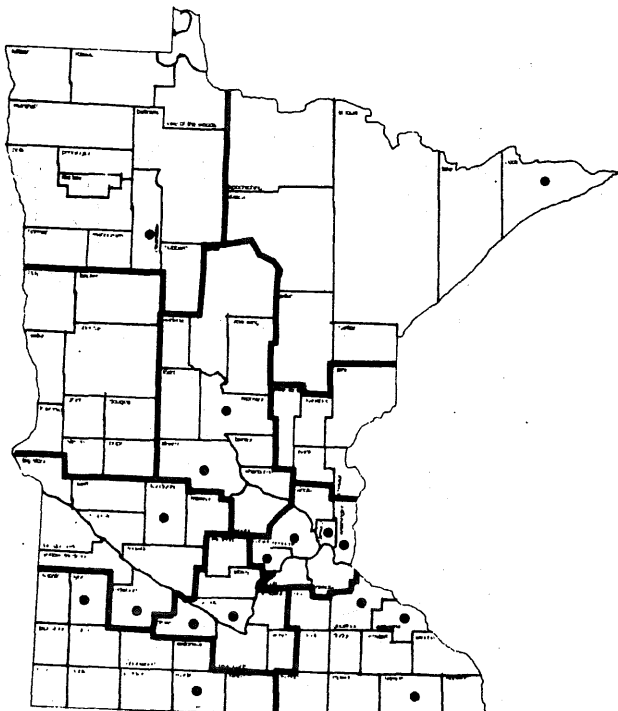
Keen's Little Brown Bat



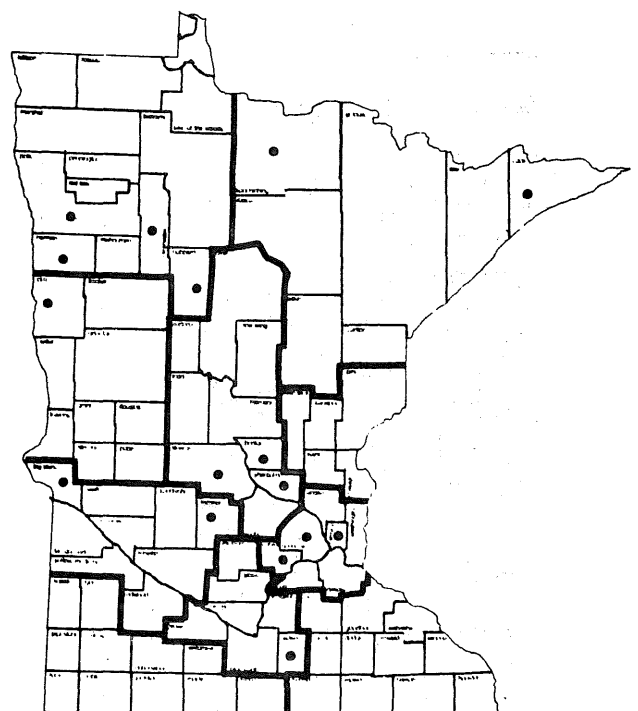
Silver-haired Bat



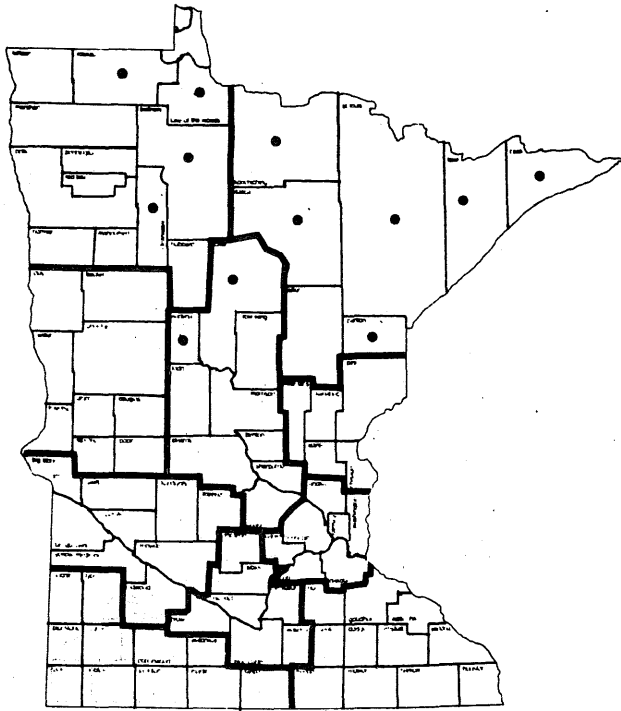
Eastern Pipistrelle



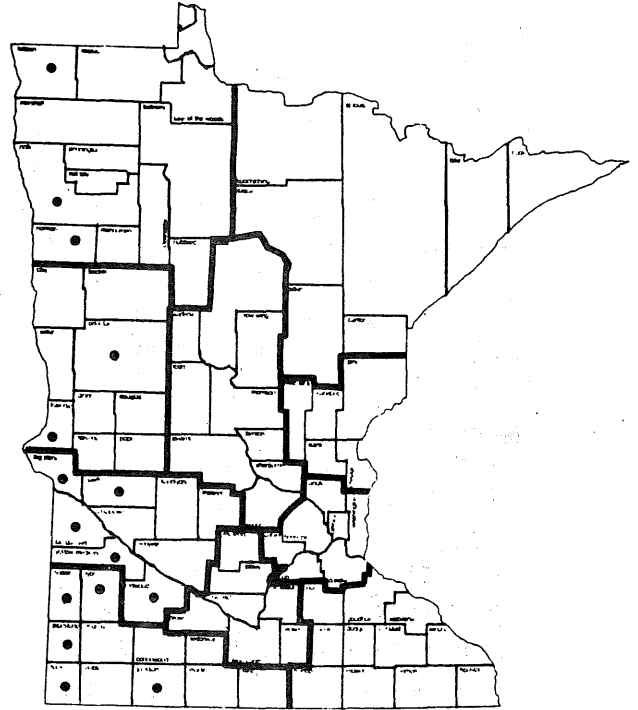
Big Brown Bat



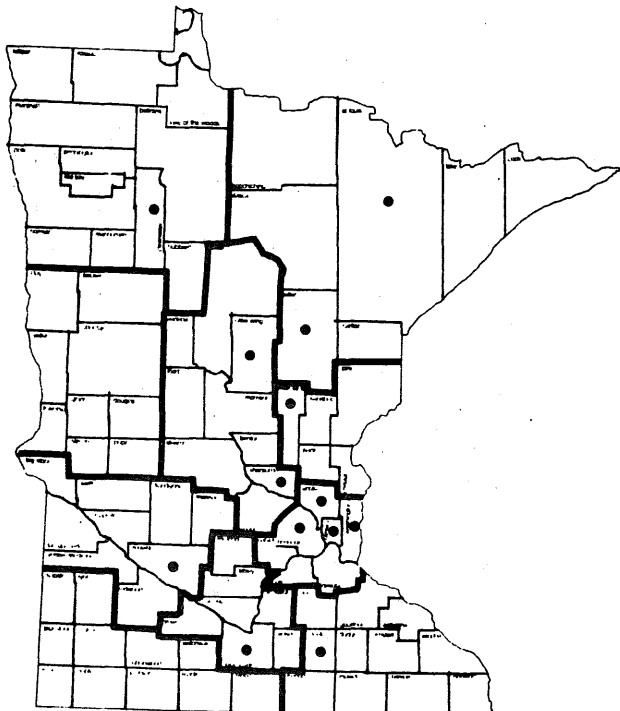
Hoary Bat



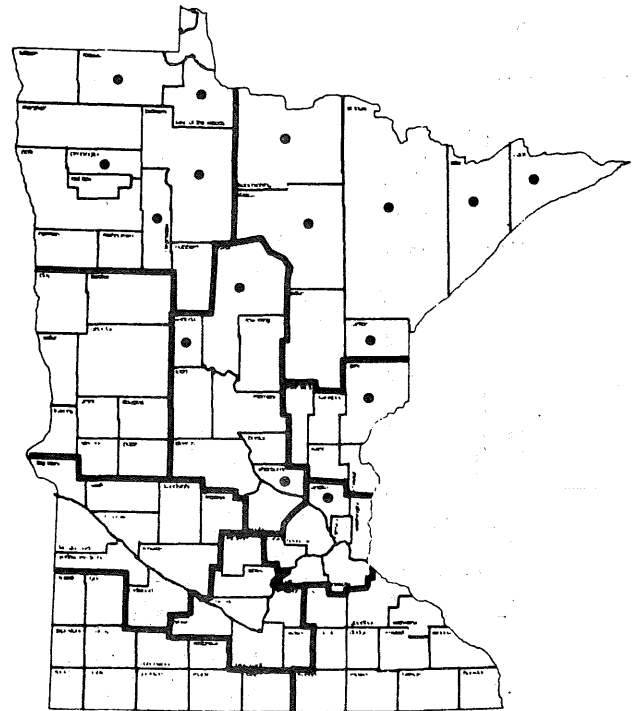
Least Chipmunk



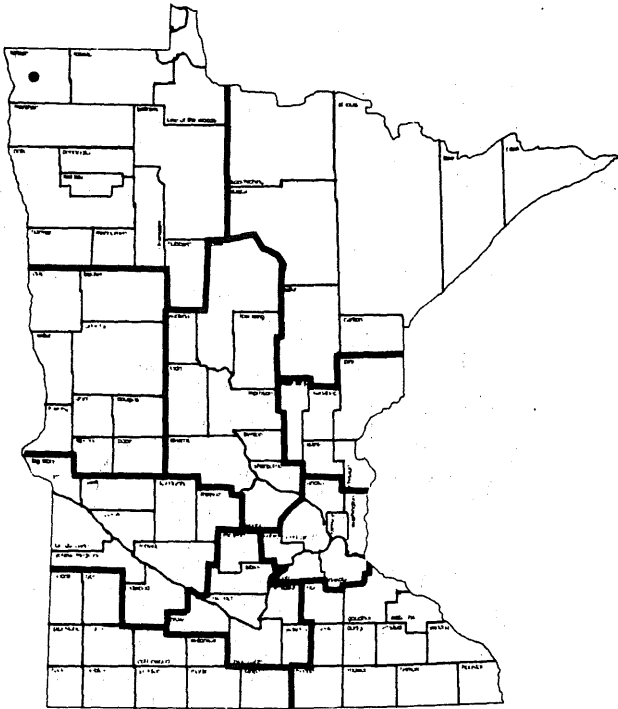
Richardson's Ground Squirrel



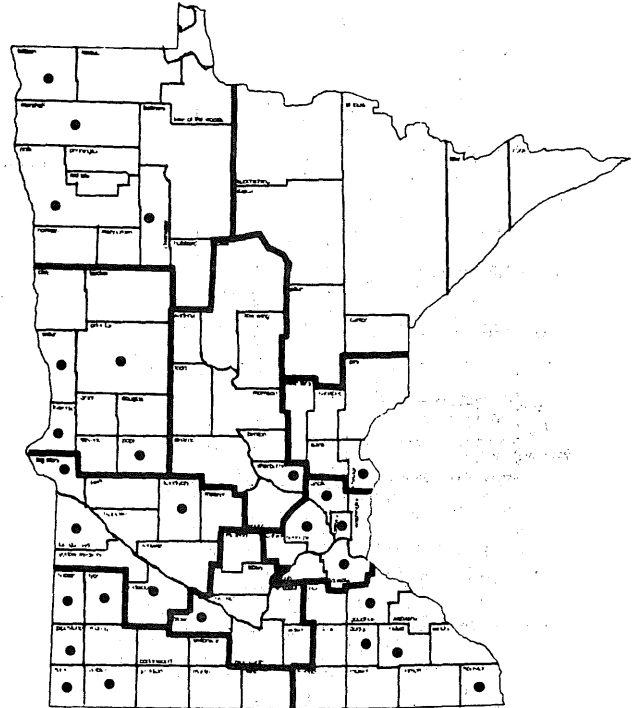
Southern Flying Squirrel



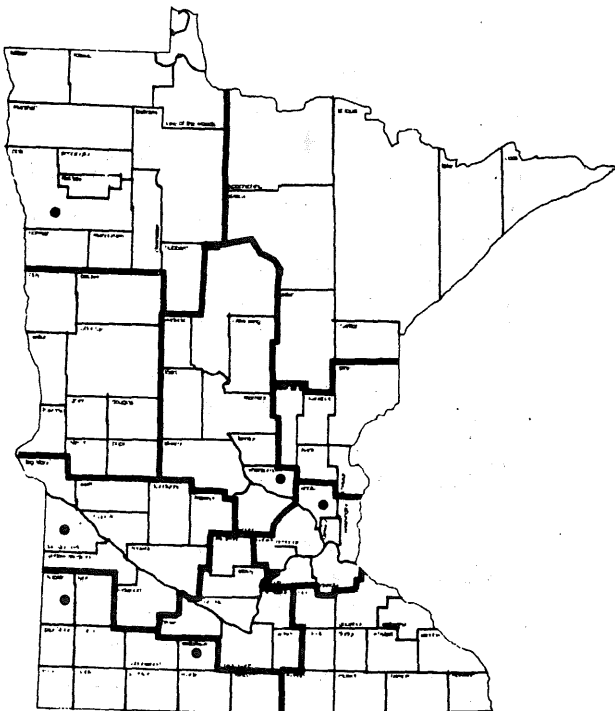
Northern Flying Squirrel



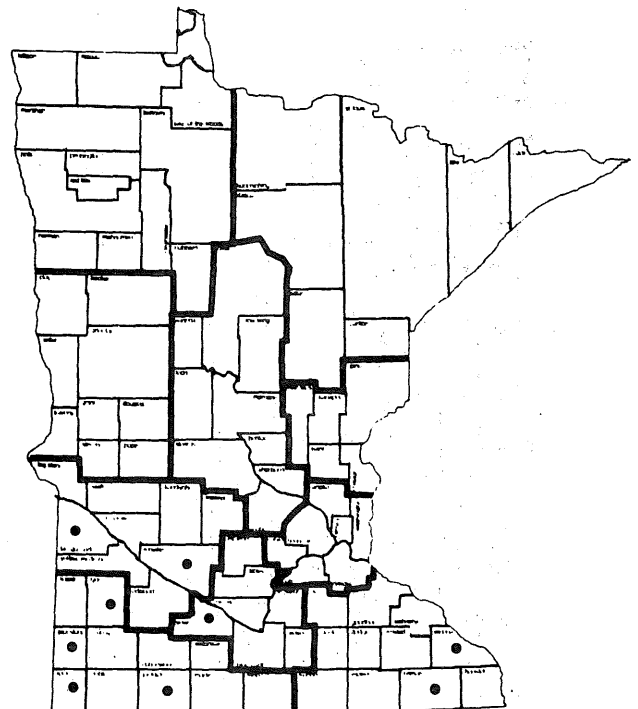
Northern Pocket Gopher



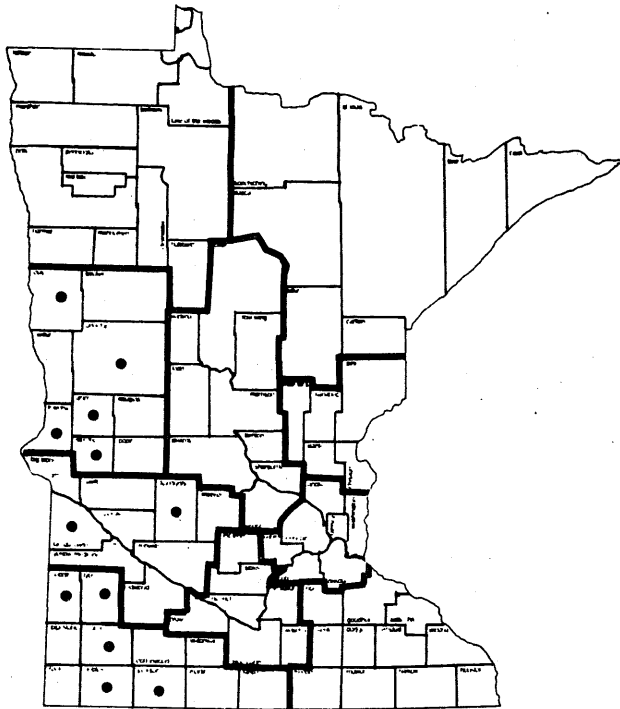
Plains Pocket Gopher



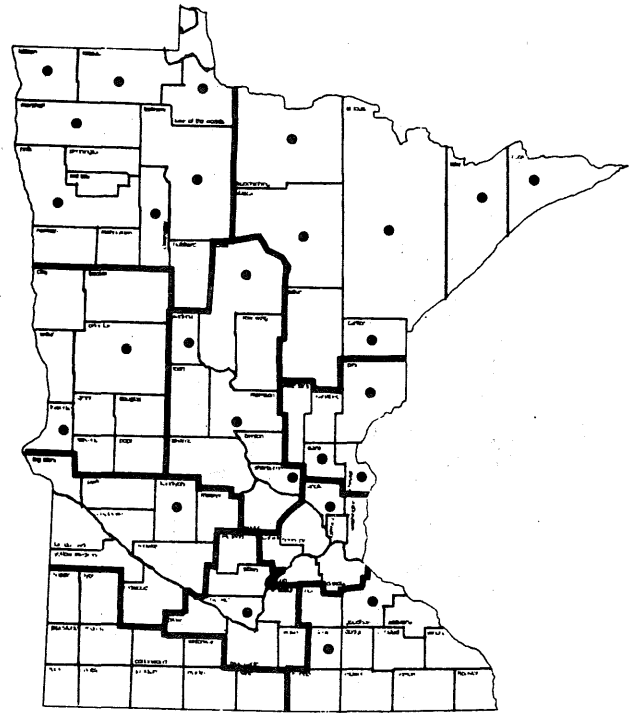
Plains Pocket Mouse



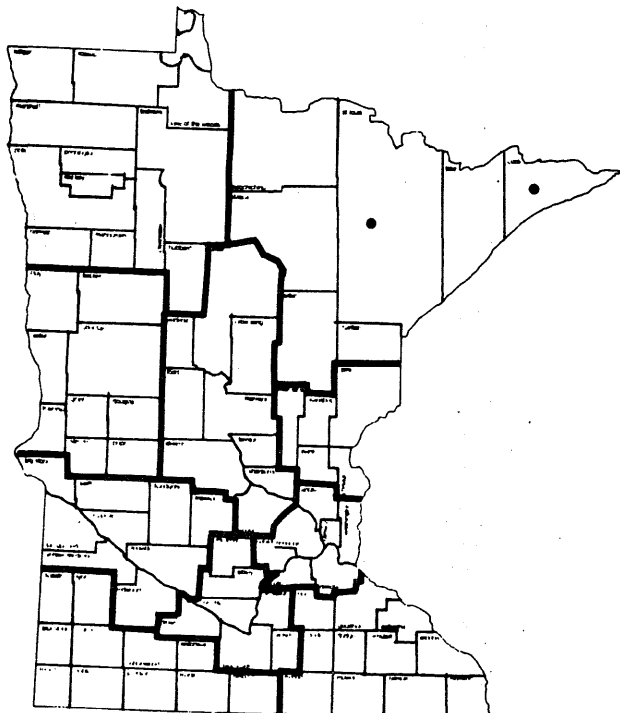
Western Harvest Mouse



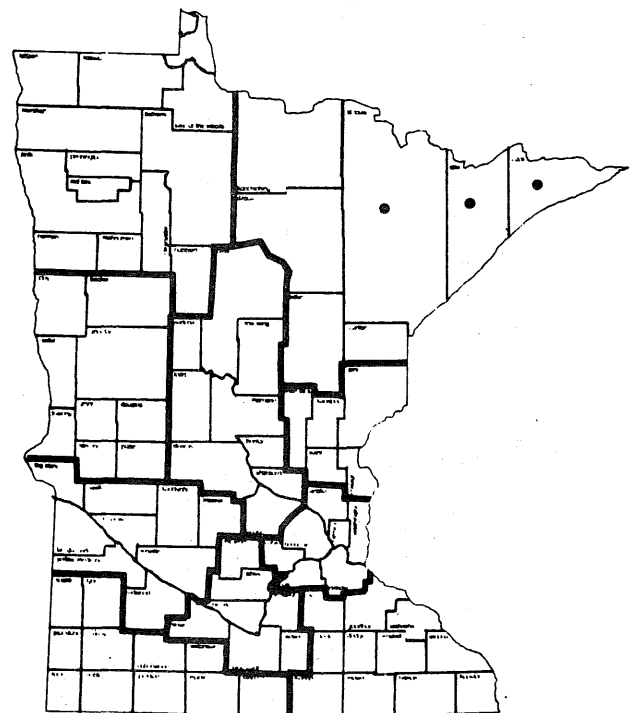
Northern Grasshopper Mouse



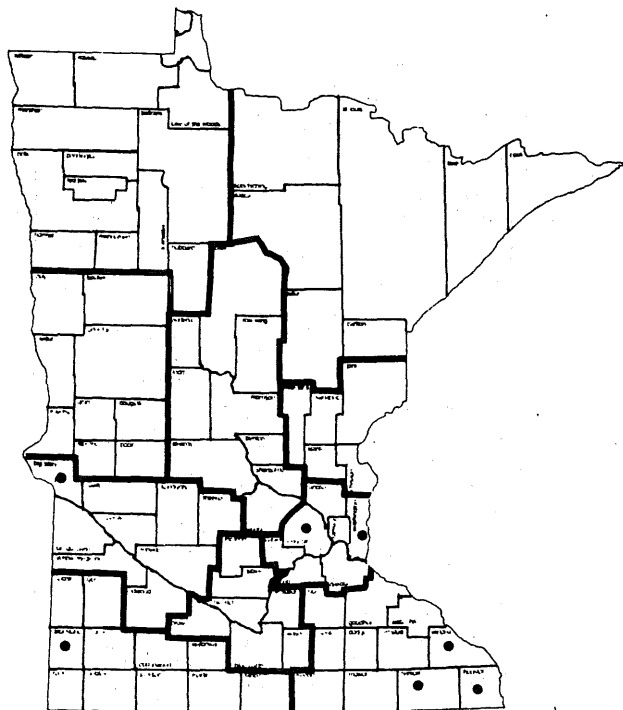
Gapper's Red-backed Vole



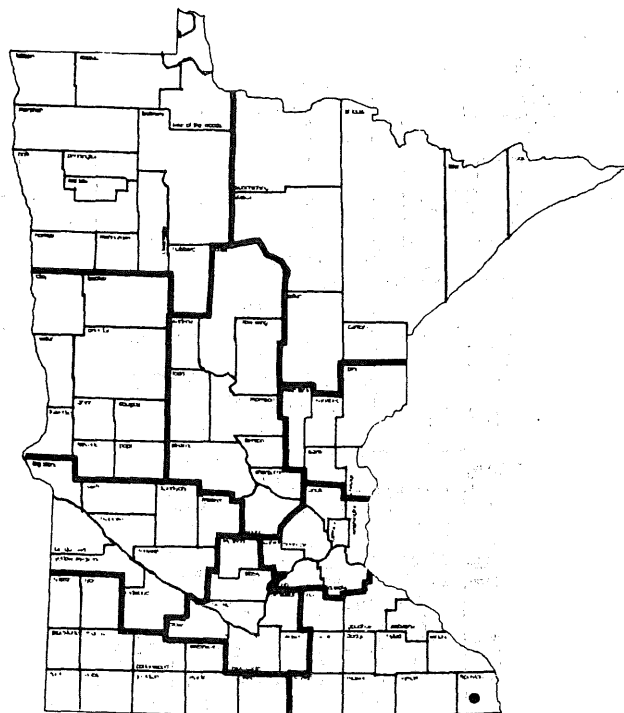
Heather Vole



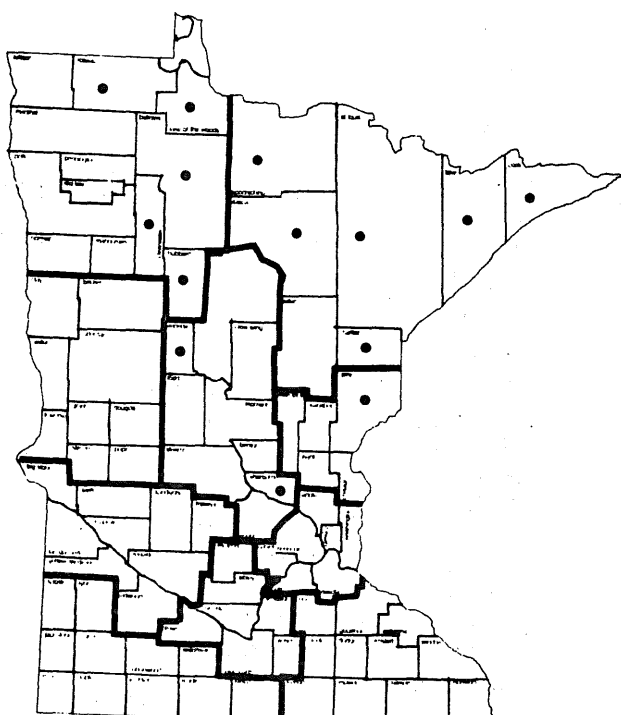
Rock Vole



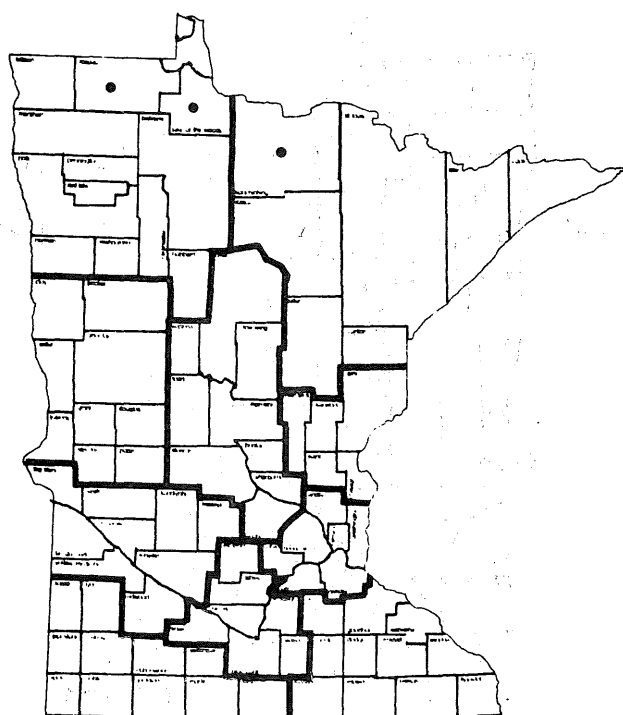
Prairie Vole



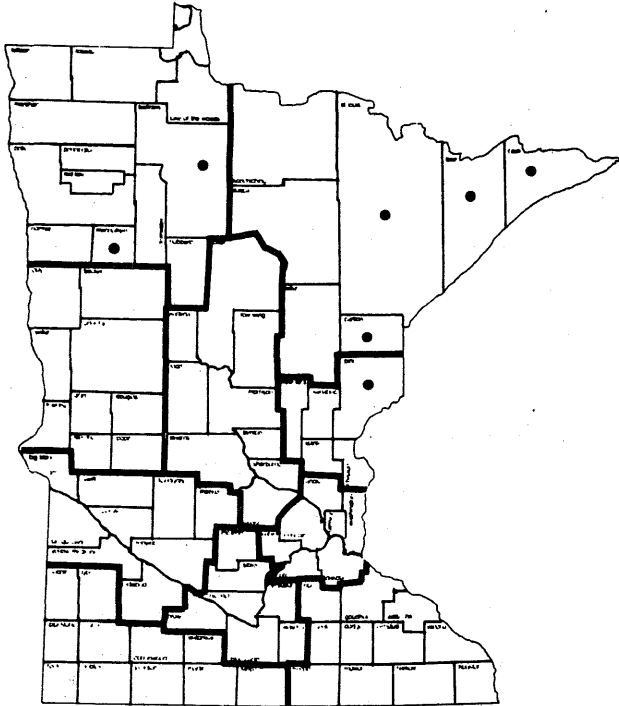
Pine Vole



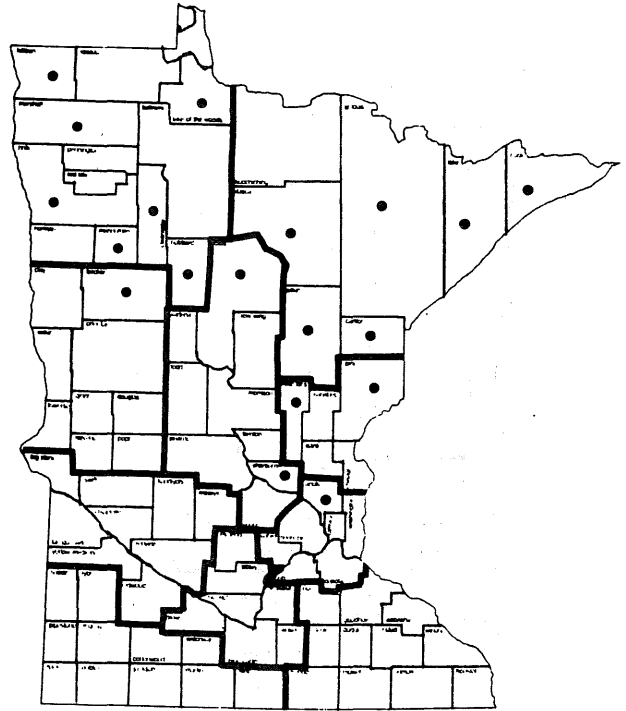
Southern Bog Lemming



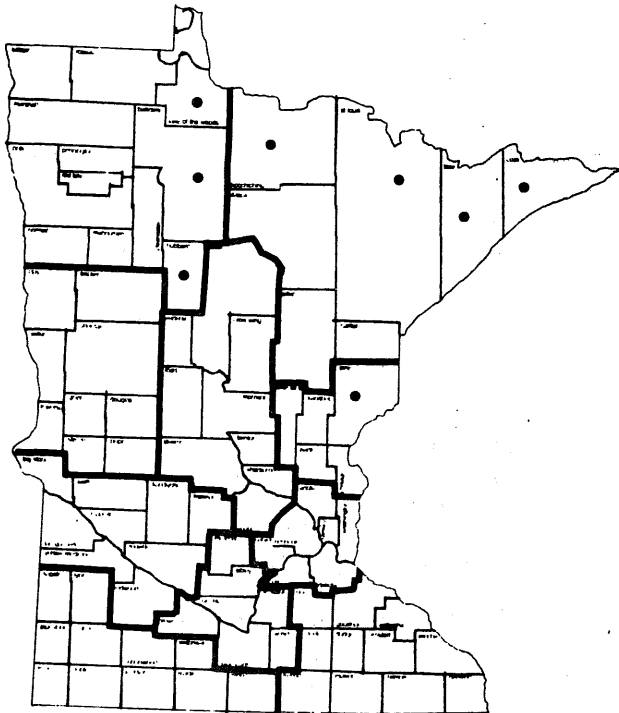
Northern Bog Lemming



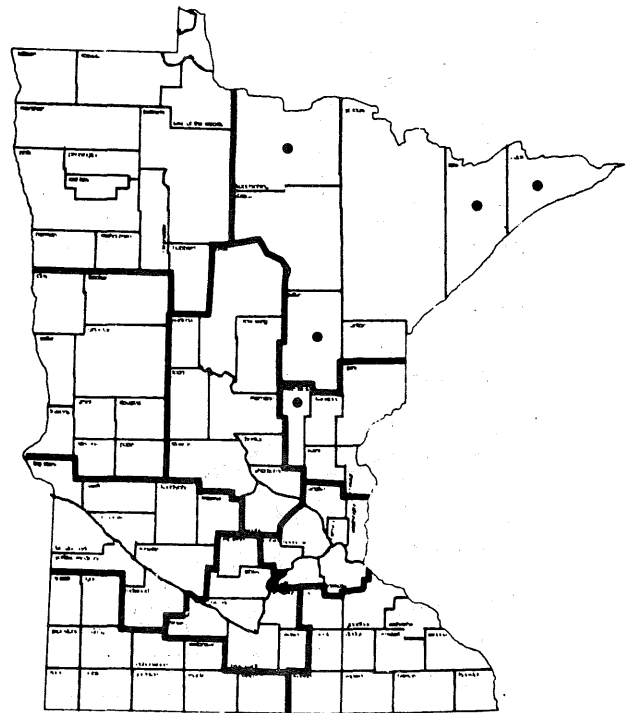
Woodland Jumping Mouse



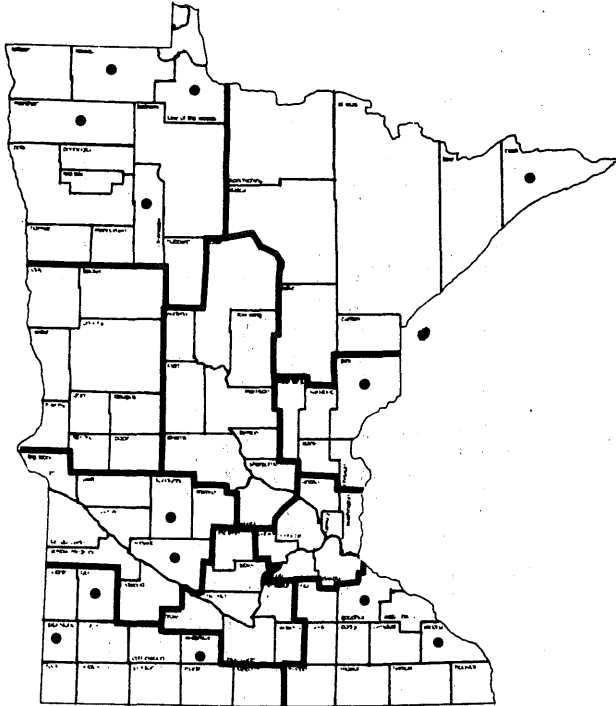
Porcupine



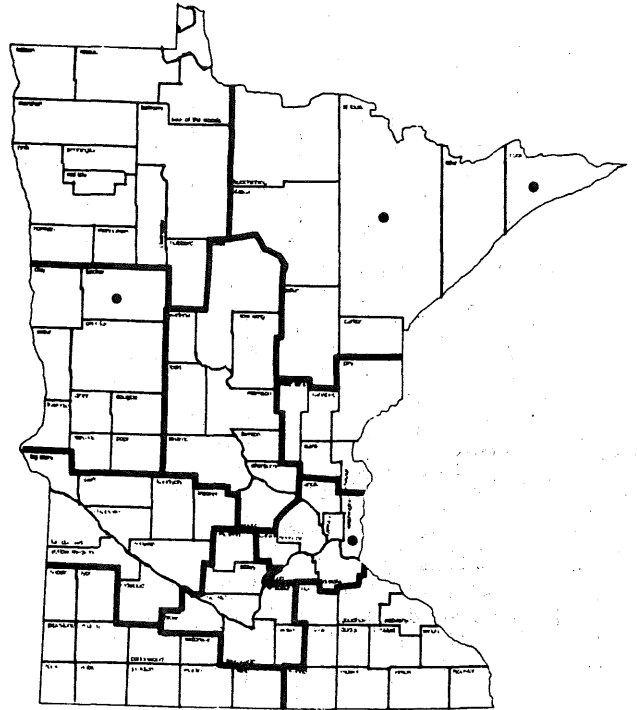
Gray Wolf



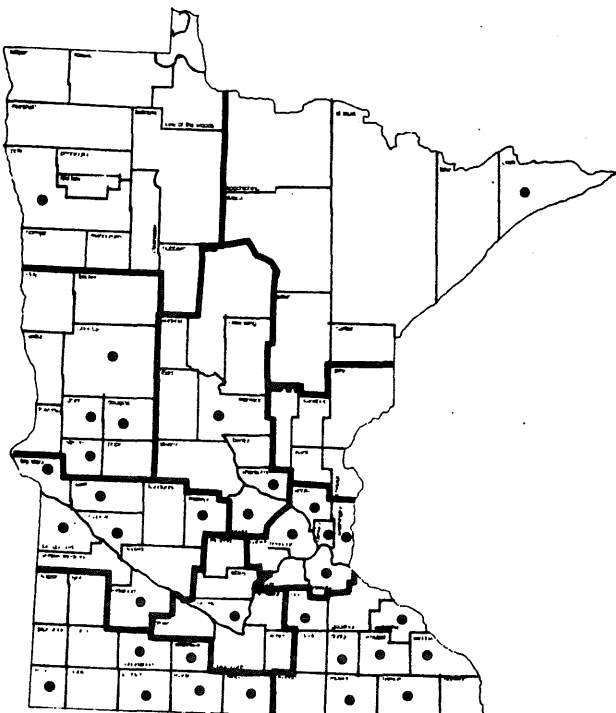
Pine Marten



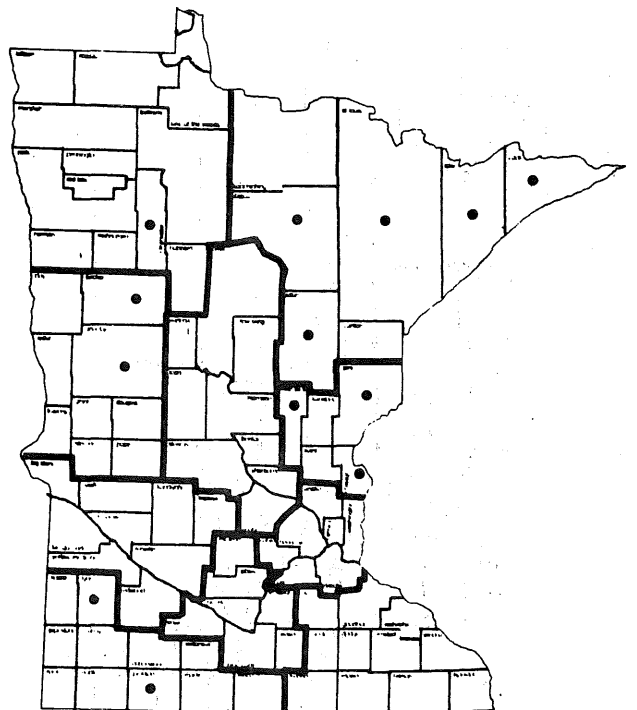
Least Weasel



Wolverine

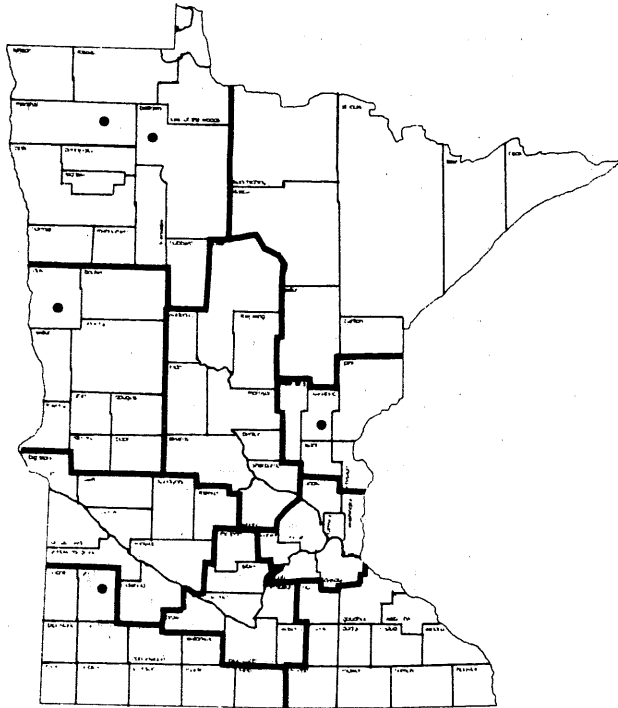


Eastern Spotted Skunk

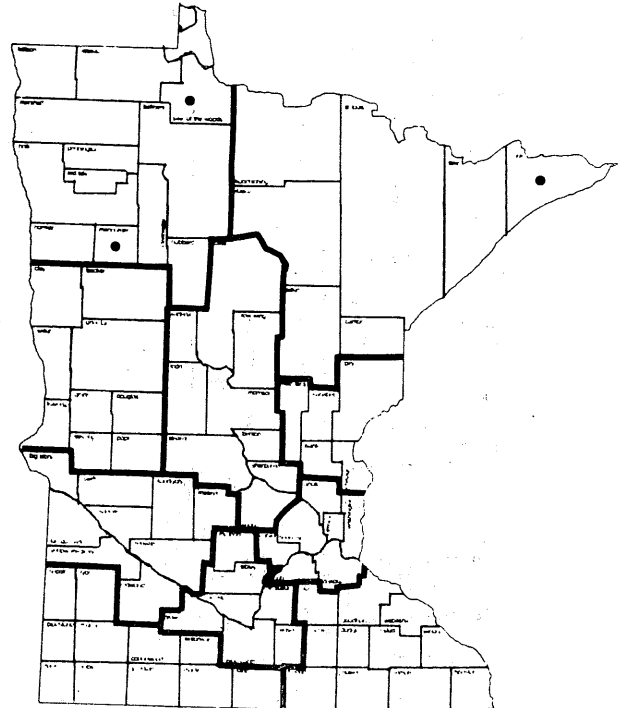


Cougar

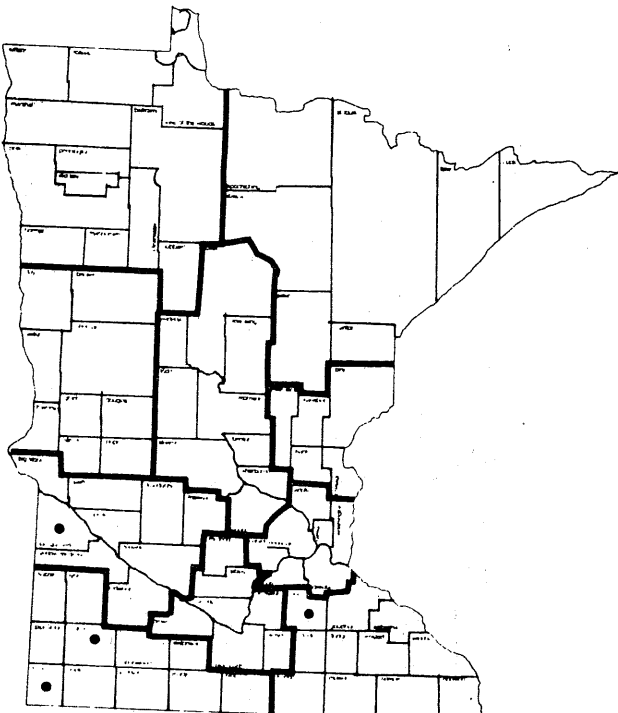
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STATE OF MINNESOTA



American Elk



Woodland Caribou (Extirpated)



Pronghorn (Extirpated)

