

Committee  
on the Status  
of Endangered  
Wildlife  
in Canada

Comité sur le  
statut des espèces  
menacées  
de disparition  
au Canada

Ottawa, Ont. K1A 0H3  
(819) 997-4991

**STATUS REPORT ON THE PRAIRIE LONG-TAILED WEASEL  
MUSTELA FRENATA LONGICAUDA  
IN CANADA**

**BY**

**PRAIRIE LONG-TAILED WEASEL RECOVERY TEAM  
CATHERINE JOHNSON (TEAM LEADER)  
WAYNE RUNGE  
ROBERT MCFETRIDGE**

**STATUS ASSIGNED IN 1993  
NO DESIGNATION REQUIRED**

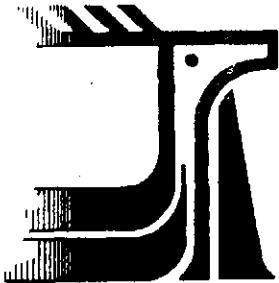
**REASON: VERIFIED OCCURRENCE OF SUBSPECIES THROUGHOUT MOST OF  
OF ITS LARGE HISTORIC RANGE SUGGESTS STABLE AND  
SECURE POPULATION.**

**OCCURRENCE: ALBERTA, MANITOBA AND SASKATCHEWAN**

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JUNE 1990

Ottawa, Ont. K1A 0B7 (819) 997-4991  
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IN CANADA

BY

CATHERINE JOHNSON (TEAM LEADER)  
MANITOBA DEPARTMENT OF NATURAL RESOURCES  
WINNIPEG, MANITOBA  
R3H 0W9

WAYNE RUNGE  
SASKATCHEWAN DEPARTMENT OF PARKS AND RENEWABLE RESOURCES  
PRINCE ALBERT, SASKATCHEWAN  
S6V 6G1

AND

ROBERT MCFETRIDGE  
ALBERTA FISH AND WILDLIFE DIVISION  
EDMONTON, ALBERTA  
T6H 4P2

STATUS ASSIGNED IN 1993

NO DESIGNATION REQUIRED

## A. Abstract

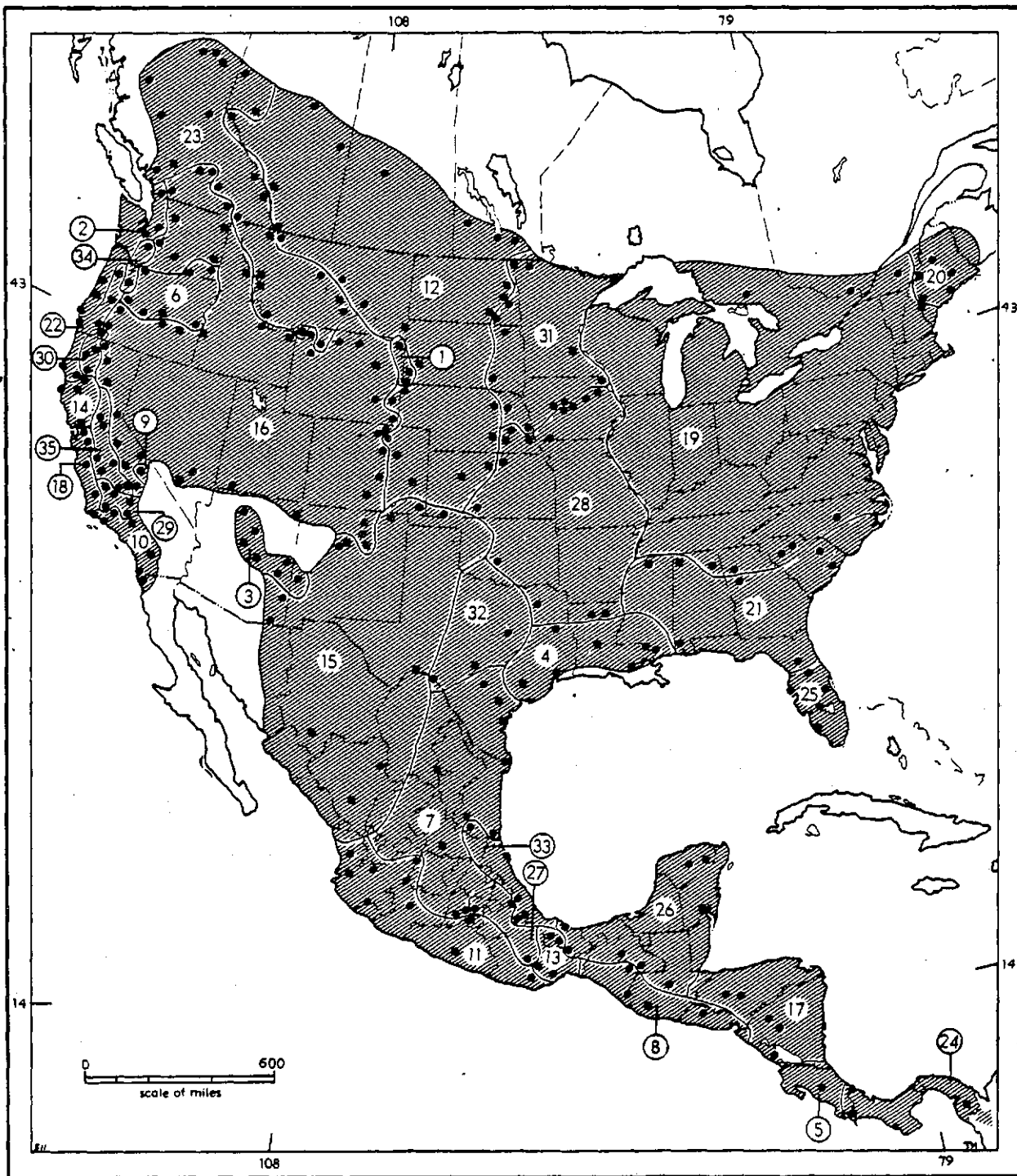
Long-tailed weasel (*Mustela frenata*) occur throughout southern Canada, all of the United States and northern South America. The prairie subspecies (*M.f. longicauda*) occurs in the central Great Plains of the United States and south central Canada. Prairie long-tailed weasels are found in the grassland/aspen parkland regions of the prairie provinces and thrive in the grassland/aspen parkland ecotone.

Prairie long-tailed weasel were plentiful in Canada in the early part of the century. Conditions at the time included the expansion of the aspen parkland and low key agricultural activities. The population declined significantly in the mid-1900s due to intense agricultural activity, the use of pesticides and habitat degradation. The prairie long-tailed weasel is still common throughout its range and may be undergoing continued range expansion. There is no population estimate available but the population appears to be stable.

The greatest limiting factor is the availability of free standing water. Long-tailed weasel are tolerant of human related activities and often live alongside with them. Chemical contamination is not a current threat. The prairie long-tailed weasel population is widespread and stable with the potential for increase. The suggested designation is No Designation Required.

## B. Distribution

*Mustela frenata* occur in southern Canada, throughout all of the United States, Mexico, Central America, Venezuela and western South America to southern Peru and



Guide to subspecies

- |                               |                               |                                 |                              |
|-------------------------------|-------------------------------|---------------------------------|------------------------------|
| 1. <i>M. f. alleni</i>        | 9. <i>M. f. inyoensis</i>     | 18. <i>M. f. nigricaris</i>     | 27. <i>M. f. perotae</i>     |
| 2. <i>M. f. altifrontalis</i> | 10. <i>M. f. latirostra</i>   | 19. <i>M. f. noveboracensis</i> | 28. <i>M. f. primulina</i>   |
| 3. <i>M. f. arizonensis</i>   | 11. <i>M. f. leucoparia</i>   | 20. <i>M. f. occisor</i>        | 29. <i>M. f. pulchra</i>     |
| 4. <i>M. f. arthuri</i>       | 12. <i>M. f. longicauda</i>   | 21. <i>M. f. olivacea</i>       | 30. <i>M. f. saturata</i>    |
| 5. <i>M. f. costaricensis</i> | 13. <i>M. f. macrophontus</i> | 22. <i>M. f. oregonensis</i>    | 31. <i>M. f. spadix</i>      |
| 6. <i>M. f. effera</i>        | 14. <i>M. f. munda</i>        | 23. <i>M. f. oribasus</i>       | 32. <i>M. f. texensis</i>    |
| 7. <i>M. f. frenata</i>       | 15. <i>M. f. neomexicana</i>  | 24. <i>M. f. panamensis</i>     | 33. <i>M. f. tropicalis</i>  |
| 8. <i>M. f. goldmani</i>      | 16. <i>M. f. nevadensis</i>   | 25. <i>M. f. peninsulae</i>     | 34. <i>M. f. washingtoni</i> |
|                               | 17. <i>M. f. nicaraguae</i>   | 26. <i>M. f. perda</i>          | 35. <i>M. f. xanthogenys</i> |

Figure 1: *Mustela frenata*, North American Distribution (Hall 1981).

extreme northern Bolivia (Hall 1951). Forty-four subspecies have been catalogued. *M. f. longicauda* occurs in the central Great Plains of North America including the grasslands and aspen parklands of central Canada (Fig. 1).

Prairie long-tailed weasel occur in the southern portions of Manitoba, Saskatchewan and Alberta (Fig. 2). Its northern and eastern ranges are limited by the boreal forest and by the Rockies in the west.

In Manitoba, the long-tailed weasel occurs over most of the western and southern third of the province, excluding the Interlake (Johnson *et al.* in prep) (Appendix). Its range has expanded into the fringes of the boreal forest since the turn of the century (Seton 1909, 1929) resulting from agricultural activities and the expansion of the aspen parkland. Physical evidence of their presence has been collected throughout its range except in the heart of, Duck, Porcupine and Riding Mountains, which are composed largely of boreal habitats.

In Saskatchewan, *M. f. longicauda* are found in all of the 255,140 km<sup>2</sup> of the grassland and parkland regions (Runge and Mulhern 1985). The historic range has not changed appreciably in recent years as the Provincial (boreal) Forest boundary has remained fixed. The heavily wooded aspen parkland areas immediately south of the forest have been under major conversion to agriculture. This has not affected the distribution of the long-tailed weasel but has limited their numbers. Trapper harvest records for 1988-89 showed long-tailed weasel occurring in almost all of the southern management areas (Appendix). The areas of no reported harvest were likely a function of no records or no trapping of weasels rather than an absence of the species.



Figure 2: *Mustela frenata longicauda*, current Canadian distribution.

In Alberta, the prairie long-tailed weasel occurs throughout the aspen parkland/grassland region. Its greatest concentrations are reached in the aspen corridor connecting Edmonton to the US border with a patchy distribution in adjacent areas (Proulx and Drescher 1991). The distribution has varied little from those found by

### C. Protection

The long-tailed weasel is classed as a furbearer in all three of the provinces in which it occurs. Seasons can be opened or closed on an annual basis through provincial administrative processes. The trapping season has remained closed in Manitoba since 1987 as a result of a survey on the status of the species in the province (Harvey 1988) and will re-open in 1993-1994. Saskatchewan and Alberta retain open winter trapping seasons. In Alberta an indirect method of protection is the application of rat (*Rattus norvegicus*) control around the perimeter of the province. Along the Saskatchewan border Alberta has imposed a restricted harvest zone for weasels for the purpose of controlling rats. Rat poisoning activities in these areas may be detrimental to the weasel population.

### D. Population size and trend

Long-tailed weasel, as other mustelids, do not lend themselves well to population census methods (Gamble 1980). Winter track counts may be used as a relative indicator of populations from year to year in localized area. This method will not give a true indicator of population size as females are subnivean throughout most of the winter and



given favourable conditions many males are as well (Gamble 1981). DeVan (1982) also found it difficult to distinguish separate animals by their tracks in heavily travelled areas. Their population distributions are dependent on immediate prey availability (Gamble 1980, DeVan 1982). Seton (1909) estimated one pair of weasels present per square mile of prairie in Manitoba at the beginning of the century. A current population estimate of *M.f. longicauda* in Canada cannot be made as no recent density studies have been conducted.

Seton (1909) also surmised settlement had not decreased their ranks and that they were as numerous as ever. Early settlement, in fact, facilitated the range expansion of the aspen parkland (Bird 1961) and suitable habitat. Increased agricultural activity has since fragmented and depreciated the quality of this habitat. It is known that the numbers of long-tailed weasels have decreased dramatically during this century, as indicated by trapper surveys in Manitoba (Harvey 1988). It cannot be determined however, whether long-tailed weasel numbers may have been artificially high at the turn of the century due to creation of suitable habitat as a by-product of settlement activity. Stardom (*pers. comm.* Richard Stardom, Nongame Biologist, Manitoba Natural Resources) indicated that long-time residents relate stories about mice and weasels being plentiful when stooking grain was common practice. The number of weasels declined dramatically with the invention of the combine. In addition, land clearing activities provided many rock and brush piles that provided excellent new habitat for microtines and ultimately the long-tailed weasel.

Hudson Bay Company records indicate large numbers of "ermine" being sold in the

past, with peak production in the early to mid part of the century and many fewer being sold presently (Johnson 1989). The percentage of this total that were long-tailed weasels cannot be estimated. The very small pelts can be verified as short-tailed weasels and the very large as long-tailed but there are many in between that cannot be classified without examination of the actual pelts. Changes in sales can be attributed to a number of factors. In the 1930's many farms were abandoned and reverted to a semi-wild state as farmers could not afford to keep them going (Bird 1961), small mammals and their predators would then be numerous. Bounties on "gophers" would have encouraged concomitant capture of long-tailed weasels, one of their main predators. Since that time habitat and prey species have been removed and the price received for "ermine" pelts has decreased dramatically in relation to other consumer goods. The interest and effort in trapping has waned. The habits of young trappers have changed with the consolidation of rural schools. Previously school boys would trap on their way to and from school (Harvey 1988).

In the past five years, efforts have been made to monitor the relative population status of the long-tailed weasel in Manitoba. The greatest number of sightings and captures have been recorded in the Swan River and Steinbach areas which border the boreal forest. The population level appears to be stable and may in fact increase with improved hydrological conditions.

In Saskatchewan, it is thought the low annual harvest (691) is not affecting the species. Long-tailed weasel are still found in all their former areas. These numbers are reduced from historical times but appear to be stable at present.

In Alberta, complete records have not been kept but they have been found to occur in all their formerly identified habitats and do not appear to be decreasing in number. In fact, they may be increasing in areas where alfalfa has become an important forage crop and pocket gophers (*Thomomys talpoides*) have become numerous (Proulx and Drescher 1991).

#### E. Habitat

Generally, the prairie long-tailed weasel is found in the late seral stages of the aspen parkland/prairie ecotone (Seton 1909, Soper 1964, Simms 1979, Gamble 1981). Their northern and eastern limit is the transition between the aspen parkland and boreal forest (Gamble 1981, Harvey 1988) and the Rocky Mountains to the west. Within this ecotonal range the weasel is highly adaptable and will use a variety of habitats available. The vegetative species composition is not as important as the interspersed habitats, low canopy cover (<15%), 50% ground cover and availability of free standing water (Johnson *et al.* in prep.). On average, in Manitoba long-tailed weasel captures or sightings occurred 234 m (range 0-1200m) from free standing water and 213m (range 0-100m) from the next suitable cover. Suitable cover consists largely of tall grasses ( $x=0.6m$ ), regardless of species, interspersed with forbs, shrubs and trees (native and introduced species). In highly agricultural areas they are associated with waterways not suitable for cultivation (Fagerstone 1987). These areas supply the highest diversity of prey species as well as a water source. Seton (1909) indicated a preference for edges of broken land, thickets and river banks. Long-tailed weasel were also seen on the open

prairie but usually not more than one mile from cover such as shrubs, trees, ravines and rock piles. Recent studies (Johnson *et al.* in prep., Proulx and Drescher 1991) have shown the variety of habitats used by long-tailed weasel include cultivated fields, old fields, fencelines, rockpiles, brush piles, wetland margins, ditches/roadsides, pastures, grasslands, farmyards, aspen forest and boreal margins.

This ecotonal habitat is widespread across the southern prairie provinces. The range for this habitat type has expanded and will continue to expand as more development activity occurs on the fringes of the boreal forest. Some areas in the high density crop producing areas have become unsuitable for prairie long-tailed weasel due to the lack of cover, prey species and standing water.

The trend in quantity of habitat is upward although, the quality of some of the formerly suitable areas will be lost due to agricultural and urban development. This will however, be a slow process and can be mitigated for if developers are aware of the species requirements.

Though there are no specific conservation programs in place for long-tailed weasel in Manitoba, wildlife land acquisition and improvement in the grassland and parkland areas will help to maintain and perhaps increase their numbers. Long-tailed weasel have been considered in the management plans of such projects as the Tall Grass Prairie Preserve, the Mixed Grass Prairie Preserve and many other initiatives in the Aspen Parkland region.

In Saskatchewan the loss of upland and riparian habitats appear to be the major threat. Acquisition of lands through the Wildlife Development Fund to conserve native

habitat will contribute to the conservation of the species. Wildlife habitat projects in Alberta will also contribute to improvements in habitat for weasels.

In addition, the cessation of drought conditions will improve prairie long-tailed weasel habitat by re-establishing much needed water sources. Because long-tailed weasels are generalists in their habitat preferences it is impossible to conserve or even manage specific habitat "types" for the species. The species is quite adaptable to man's activities. Many weasel families live in close proximity to humans in places such as farmyards. In Manitoba, one sighting was recorded in a planter on the main street of a small town. The long-tailed weasel is an adaptive species to the edge effect where there is an abundance of prey. Activities which negatively influence the density of small mammals such as mowing of roadsides, chemical contamination and removal of cover will impact on the weasel. Efforts have been made to educate municipalities and local governments to the impact of these activities on a variety of wildlife species. These impacts have been taken into account in many local areas. The major limiting habitat factor for long-tailed weasel is the availability of free standing water (Johnson *et. al.* in prep.).

## F. General Biology

### Reproduction

Male long-tailed weasel mature at 15 months of age. Even though they have reached adult size by 5 months of age, the sexual organs, baculum and testes are not developed (Wright 1951). There is some debate on when females mature. Wright

(1942a,b, 1948a,b) observed mating during the first summer and production of a litter the following spring. Gamble (1980) found no juveniles pregnant and all litters produced by females two or more years old. The variation is likely related to habitat quality/availability of prey, general condition, population densities and structure. Wright's (1942a,b, 1948a,b) observations were for captive animals where competition for food and space would not be a factor. Gamble's (1980) observations were from wild animals.

Long-tailed weasels are promiscuous. Wright (1947, 1948a,b,) indicated the greatest breeding success was attained when a female mated with different males on three consecutive days. Copulation may take as long as 2-3 hrs. The male finds the female through urine scent. Long-tailed weasels, as other mustelids, undergo delayed implantation. Females mate during the summer with implantation occurring after the spring moult (Fagerstone 1987). Both are thought to be triggered by length of photoperiod. Gestation is 23-27 days (Wright 1947). A litter of 4-5 young are born in April or May. In early spring the female chooses a den site, usually an enlarged burrow of a prey species (ground squirrel, pocket gopher, mole). The den usually consists of a number of chambers, one or more are used for food caching (Polderboer *et. al.* 1941).

Gamble (1980) indicated an adult male aids in the rearing/feeding of the young. This male may not be the sire of the young but may be the male in whose territory the female has chosen her den. Others (Hamilton 1933) have said males do not participate at all.

Young are born blind with thin fur (Hamilton 1933). They develop stiff white fur

which is replaced by an adult coat at 3-4 weeks. At this time the canines and premolars erupt and chewing is then possible. Females continue to nurse young for up to 6 weeks of age. The eyes of the kits are open at 5 weeks. Young weasels will stay with the mother for several weeks post weaning. At six weeks sexual differences begin to appear and the characteristic musky odour is present. At this time they accompany the mother on hunting trips (Fagerstone 1987). Young weasels attack prey at the base of the skull instinctively (Sanderson 1949). By the time they are 11-12 weeks old they have their permanent teeth, have attained their adult weight and begin to disperse (Wright 1947).

The female comes into estrus 65-104 days after birth. Estrus may last a long time if she does not breed (Wright 1948b).

Analysis of carcass samples (accidental deaths) received in Manitoba resulted in a large number of juveniles, few adults and rarely an adult female (Wildlife Branch Files). This composition would indicate there is reproductive success as there appears to be a surplus of juveniles. Some authors (Kopein 1967) have indicated that high juvenile production or harvest rates is the result of a highly harvested population. The long-tailed weasel trapping season has been closed in Manitoba for a number of years yet there is still a very high proportion of juveniles found in carcass samples. This fact would suggest that long-tailed weasel on the prairies are highly productive. The specific rates of natality and mortality are unknown. There is no documented evidence that specific age/sex structures are needed to maintain a social balance to facilitate successful reproduction. Long-tailed weasel are not highly social and are relatively independent in their habits.

The greatest measurable man-caused mortality factor appears to be highways. A large proportion of the carcasses turned in to the Manitoba Wildlife Branch were deaths resulting from being run over. Predation on this species occurs from raptors, foxes, coyotes, domestic cats and dogs. Although weasels may be captured and killed by canids they are rarely eaten (Latham 1952). There are no studies available to indicate what level of predation is occurring and what effect it is having on the long-tailed weasel population. Predation rates probably vary with the availability of small mammals. A long-tailed weasel are likely not the first choice of predators, considering their feisty behaviour, when alternate prey are available.

There is little competition for food by the sympatric species, *M. erminea*. Long-tailed weasel will repress ermine invasion to their territory with interference behaviour (Gamble 1980). This excludes ermine, temporally from feeding and nesting sites. Size partitioning of prey and the long-tail's adaptability to utilize alternate sources of prey also minimizes competition for food resources.

### Species Movement

Social distributions are dependent upon prey availability (Gamble 1980, DeVan 1982). Long-tailed weasels prefer late seral stages of the aspen/prairie ecotone (Gamble 1980). Males have larger ranges than females (Fagerstone 1987). Males range in 10-24 ha (DeVan 1982) at times of available prey and can range in an area up to 80-160 ha (Quick 1944, 1951) at times of low prey. The summer range is usually larger than the winter range (DeVan 1982). A number of male ranges will overlap although one



individual will be found in an area at a time. The males are site tenacious while the females make short emigrations (Gamble 1980). Gamble (1980) indicated that social structures are dependent upon prey availability and quality of habitat. When prey is abundant and habitat optimal they are social but when prey is scarce and habitat sub-optimal they are more solitary, as is the accepted characteristic of the weasel.

### Behaviour/Adaptability

The long-tailed weasel is a generalist. It will eat anything from small mammals to insects, eggs and small birds. Their preferred food, which make up the greater portion of their diet, is small mammals. Their food habits vary with the availability of prey (Fagerstone 1987). Their adaptability has led to stable local populations as apposed to the short-tail weasel whose populations fluctuate with the small mammal cycles (Hall 1951, Gamble 1980).

*Mustela frenata* is a generalist that is tolerant of man. It has benefitted as well as suffered from man's activities in the past. Settlement and development activities provide ecotonal edge which are productive for prey species and consequently long-tailed weasel. Many long-tailed weasel have been found to live in farmyards and in close proximity to man. One of the most productive sites for weasels in Manitoba was around a town's reservoir where long grasses had provided excellent habitat for small mammal production and consequently for long-tailed weasel.

### G. Limiting Factors

It has been agreed by those who have studied long-tailed weasels (Gamble 1980, COSEWIC 1982, Fagerstone 1987, Harvey 1988) that the removal or destruction of habitat has been the major reason for decline of the species. The use of monoculture farming practices and "clean" farming have also decreased the number and diversity of prey species available. In addition, the draining of wetlands has contributed to the limitation of suitable habitat.

The wide use of pesticides is also thought to have an effect on the species (COSEWIC 1982, Harvey 1988). Runge (unpubl. data) found traces of organochlorides in 17 of 49 samples of long-tailed weasels from central and west central Saskatchewan. Traces of DDE, DDT, MRX, Dieldrin and PCBs were found. Concentrations were several times lower than those known to cause reproductive impairment in mink (Aulerich and Ringer 1970). Inconclusive results from a very small sample in Manitoba also hinted at the same findings (Harvey 1988). Traces of potentially lethal organochlorides were found almost 20 years after they were banned from use in Saskatchewan. At the time of common use these chemicals may have been partly responsible for the decline of the species, especially during the 1950s and 1960s (Harvey 1988).

Organophosphate compounds have replaced organochlorides for control of insects on farmlands. These chemicals have shorter lives but may reduce microtine rodents and other small mammals locally, that are food items for weasels.

A number of different herbicides, are used annually to control weeds in a variety of crops grown in the agricultural area. The principle hazard of herbicides is not from

direct contact with wildlife but is in its alteration of habitat. The vigour, productivity and diversity of native plants is reduced by spraying, and some native sites are destroyed by repeated applications. Pothole habitat and field margins are particularly vulnerable because of spray drift and the difficulty and tendency for operators to avoid small parcels.

A major limiting factor for the prairie long-tailed weasel on the prairie provinces at present appears to be the lack of free standing water. In some areas, intense crop producing areas, have become unsuitable to sustain large numbers due to the lack of cover and prey species.

#### H. Special Significance of the Species

*M. frenata* and its subspecies have not yet been ranked to status by The Nature Conservancy in North America. It was indicated, that considering all the available data that the prairie long-tailed weasel would probably be ranked S4 or greater in Canada (J. Duncan, Co-ordinator, Saskatchewan Conservation Data Centre). This would indicate there is no particular concern for the species at present. Prairie long-tailed weasel are common throughout their North American range.

The species does not bring a great degree of public interest although there was a small concern from trappers when the trapping season was closed in Manitoba. Public awareness in the environment in general was more pronounced, especially in the study areas. Many farmers, particularly grain and alfalfa farmers consider the species a boon in controlling rodent populations and damage to their crops and stored grains.

There are no related species that are threatened in North America. Its closest relative, *M. erminea* is numerous and widespread throughout its range. There are no major limitations to maintaining genetic integrity. *M.f. spadix* is thought to invade the southeastern portion of Manitoba where some gene mixing may take place. This has not yet been proven and there is some debate on whether *M.f. longicauda* and *spadix* are distinct subspecies (Hall 1951). *M.f. longicauda* is geographically separated from *M.f. oribusus* by the Rocky Mountains. None of the subspecies are in jeopardy.

#### I. Recommendations/Management Options

Population monitoring should continue to take place especially in areas where trapping is allowed to ensure there are no future threats to the species. More research into the ecology of the species, including denning activities, home range characteristics in typical habitats and reproductive success is needed to better understand the ecosystem processes. Public education programs could be incorporated into the local agricultural education material to stress the benefits of the species to the farmer and environment. This could reduce the amount of chemical rodent control that is needed. No specific management options can be recommended because the species is such a generalist, each situation will have to be evaluated separately. If sufficient cover is maintained for the propagation of prey populations and sufficient water supplies are available then the species will remain stable and perhaps flourish. Numerous habitat projects (NAWP, prairie restoration) designed for the benefit of other species will concomitantly benefit the prairie long-tailed weasel.

## J. Evaluation

Based on limited data, the prairie long-tailed weasel was designated by COSEWIC as threatened in 1982. Recent evidence, however, suggests that this species inhabits most available suitable habitat in the prairie provinces. The population appears to be stable and secure. It is projected that long-tailed weasel populations will likely increase with the decreased use of pesticides, particularly rodenticides, and improved water regimes once drought conditions cease. Additionally, many wildlife habitat improvement projects in each province, eg. the North American Waterfowl Plan, will continue to provide water sources and habitat for this species.

Additional research is needed into the ecology of the species including denning activities, home range characteristics in typical habitats and reproductive success. We recommend that this species be downlisted from Threatened to No Designation Required.

Suggested designation NO DESIGNATION REQUIRED.

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APPENDIX Provincial long-tailed weasel distributions and abundance.

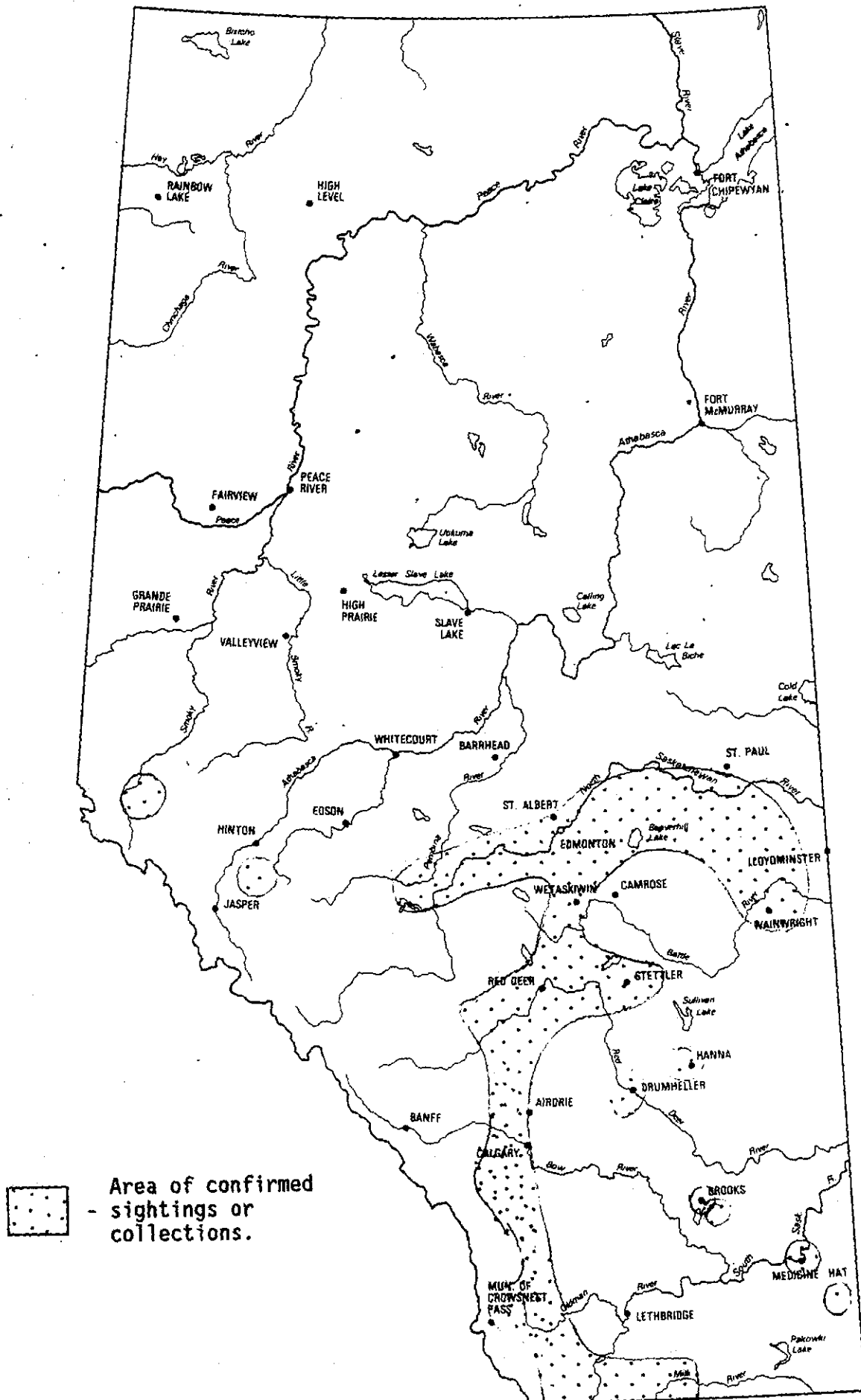


Figure A: Confirmed distribution of long-tailed weasel in Alberta based on questionnaires and interviews, July 1991 (Proulx and Drescher 1991).

Area of  
- reported harvest.

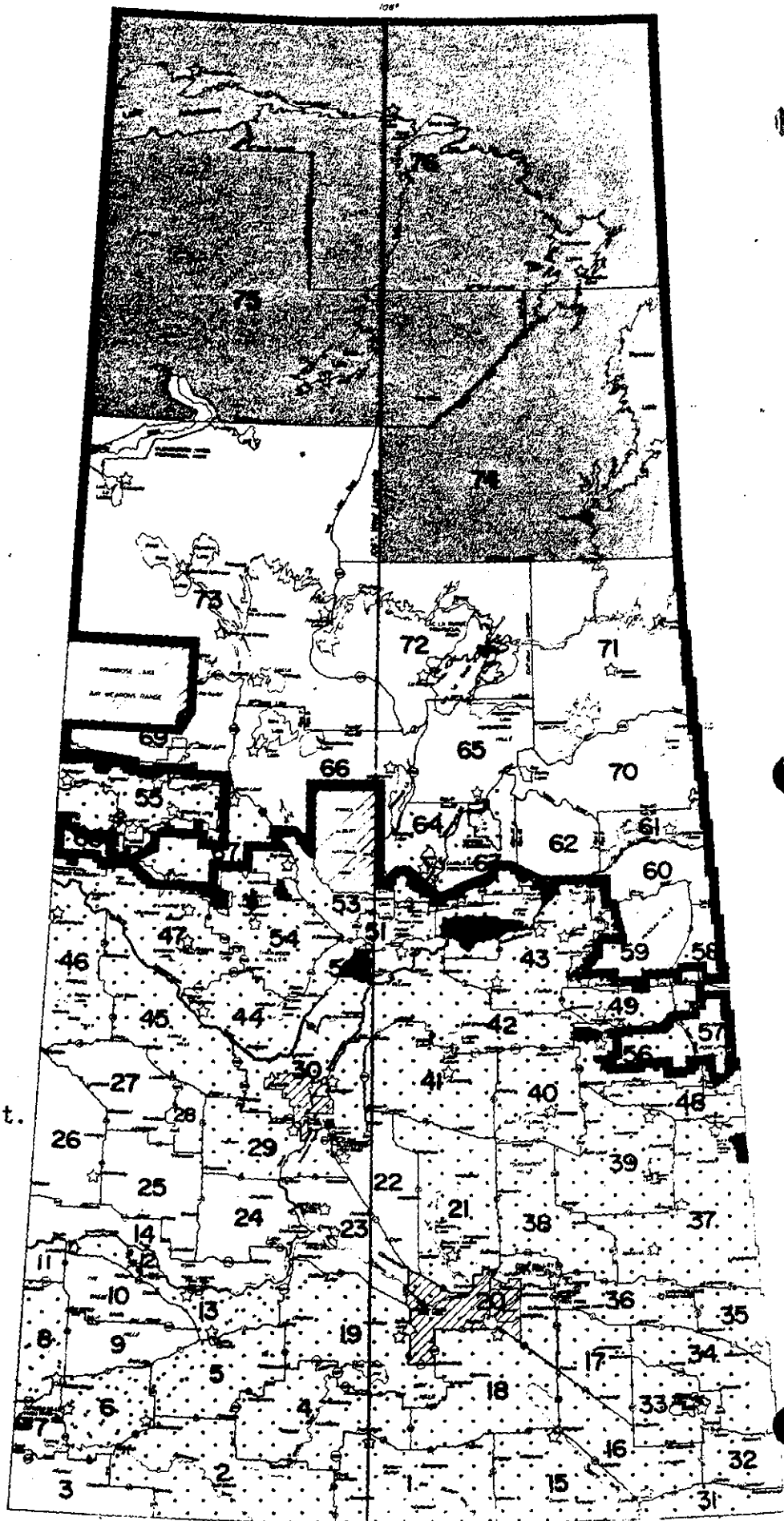


Figure B: Area of reported long-tailed weasel harvest for 1988-89.

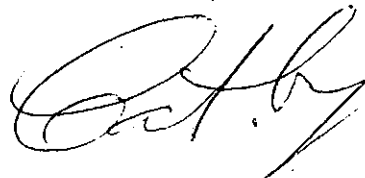
September 23, 1993

Dear David,

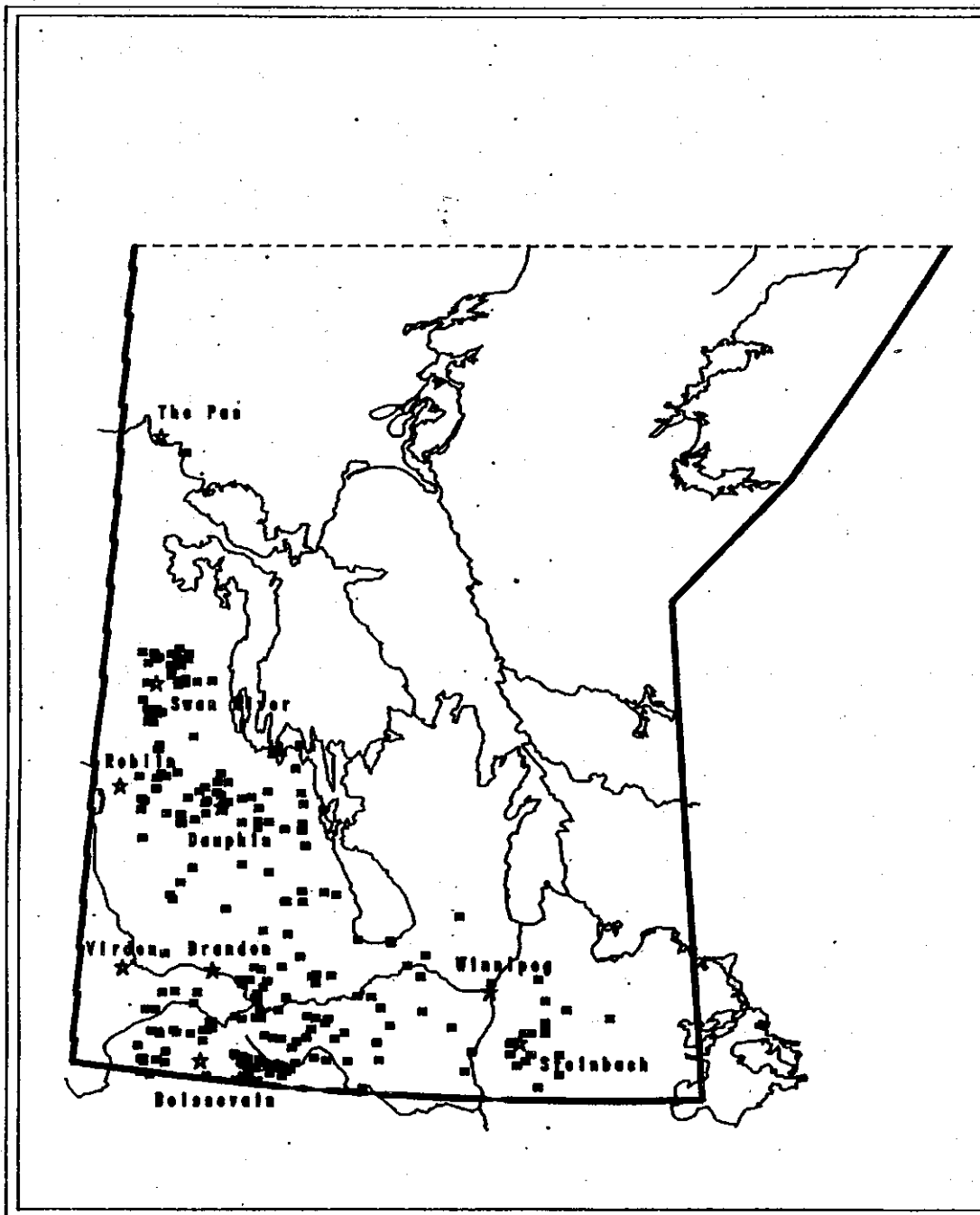
I'm sorry it has taken so long to get you the maps for the long-tailed weasel report. Unfortunately we have not been able to rectify our mapping problem as yet. Rather than hold up this report any longer I suggest we include the Manitoba map as is and attach a qualifying statement to the effect of:

Difficulties were experienced in production of this map and could not be rectified by time of printing. Please note that long-tailed weasel observations occur as far west as the Saskatchewan border but they are not accurately represented on Figure C.

If you need any more help or information please call.



Cathy Johnson  
204-945-6813



## FIGURE C

Long-tailed Weasel  
Observations  
and  
Collections  
1920 to 1991