COMMITTEE ON THE
STATUS OF ENDANGERED
WILDLIFE IN CANADA

OTTAWA, ONT. K1A 0H3
(819) 997-4991

COMITÉ SUR LE STATUT
DES ESPÈCES MENACÉES
DE DISPARITION AU
CANADA

OTTAWA (ONT.) K1A 0H3
(819) 997-4991

UPDATED* STATUS REPORT ON THE FERRUGINOUS HAWK *BUTEO REGALIS* IN CANADA

BY

JOSEF K. SCHMUTZ

STATUS ASSIGNED IN 1995
VULNERABLE

REASON: POPULATION STABLE OR INCREASING; POSSIBLE HABITAT LOSS CONTINUING.

OCCURRENCE: ALBERTA, SASKATCHEWAN AND MANITOBA

*DESIGNATED THREATENED IN 1980 AND DOWNLISTED TO VULNERABLE IN 1995.

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CSEMDC - Un comité de représentants d'organismes fédéraux, provinciaux et privés qui attribue un statut national aux espèces canadiennes en péril.

Committee on the Status of Endangered Wildlife in Canada

Comité sur le statut des espèces menacées de disparition au Canada

JUNE 1990

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ENDANGERED SPECIES: Any indigenous species of fauna or flora that is threatened with imminent extinction or extirpation throughout all or a significant portion of its Canadian range.

EXTIRPATED SPECIES: Any indigenous species of fauna or flora no longer known to exist in the wild in Canada but occurring elsewhere.

EXTINCT SPECIES: Any species of fauna or flora formerly indigenous to Canada but no longer known to exist anywhere.

UPDATED STATUS REPORT ON THE FERRUGINOUS HAWK *BUTEO REGALIS* IN CANADA

BY

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STATUS ASSIGNED IN 1995
VULNERABLE

Updated report of the status of the ferruginous hawk (*Buteo regalis*).

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20 January 1994

Purpose

The purpose of this report is to summarize new information that has become available since the last status report was produced in 1980 (Schmutz and Schmutz 1980). For more complete coverage of status information, the original 1980 status report, the recovery plan (Schmutz et al. 1992) and the present document may be consulted. The current report was prepared by J.K. Schmutz under the direction of and in close consultation with the ferruginous hawk recovery team members.

Status: Threatened (As of 1993, the ferruginous hawk recovery team's recommendation is "vulnerable")

Sponsors: Environment Canada, Canadian Wildlife Service, Ferruginous Hawk Recovery Team

A. ABSTRACT

Once soaring widely over a sea of grasses, ferruginous hawks have receded to occupying only half their historic Canadian range, and within this range are absent from large tracts of cultivated land. This range reduction is rather well documented even if a corresponding change in overall population size remains impossible to evaluate. Recent population surveys indicate stability in selected ferruginous hawk populations throughout the three prairie provinces. An estimated 2000-4000 breeding pairs exist now in prairie Canada. In addition, a small fragment of the desert-shrub subpopulation centered in the western U.S. frequents the grasslands of the southern interior of B.C. In view of the current stability in range and population size, the ferruginous hawk recovery team has recommended that the status for this species be re-examined and the hawk be downlisted from threatened to vulnerable.

Two of the three recovery objectives identified in the National Recovery Plan have been approximated. These include 1) the maintenance of the species recent range and 2) stable or increasing populations including 2500 pairs over five years, with 1400 pairs in Alberta, 800 pairs in Saskatchewan and 50 pairs in Manitoba (see Schmutz et al. 1992 attached). The third objective, is to ensure the security of key habitat and nest sites. While this seems to have been met in the short term, longer term security is not yet assured. It is clear that the ferruginous hawks in Canada are still vulnerable. Their existence is only as secure as 1) their grassland habitat in Canada and 2) habitat and food in the United States and Mexico.

B. DISTRIBUTION

North America. Since 1980 when the original COSEWIC Status Report was completed (Schmutz and Schmutz 1980), knowledge of the distribution of ferruginous hawks nesting in Canada has been refined. Rather than being distributed throughout the North American range, ferruginous hawks originating from Canada remain within the grassland ecoregion east of the Rocky Mountains

throughout the year. Western Texas appears to be a major wintering area for ferruginous hawks breeding in Canada (see Fig. 1, from Schmutz and Fyfe 1987).

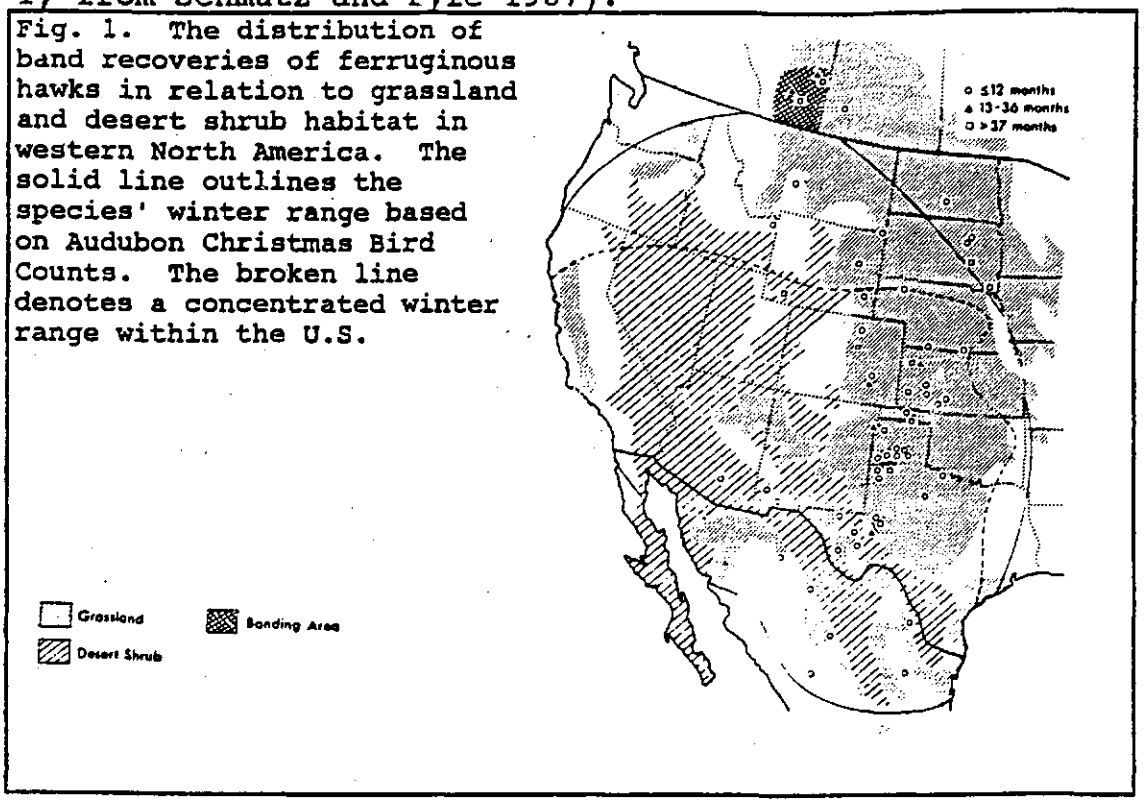


Fig. 1. The distribution of band recoveries of ferruginous hawks in relation to grassland and desert shrub habitat in western North America. The solid line outlines the species' winter range based on Audubon Christmas Bird Counts. The broken line denotes a concentrated winter range within the U.S.

Canada. The ferruginous hawks that breed in the southern interior of British Columbia (Campbell at al. 1990) represent a very different aspect of Canada's biodiversity. These hawks appear to belong to the desert shrub subpopulation that is mainly located in the inter-mountain basins of the western U.S., and may be somewhat distinct from the grassland subpopulation east of the continental divide. Since British Columbia's population appears to be extremely small (two known nests in 1992; W. Harper in litt.), it is unlikely to be viable on its own. Therefore, the status recommendation of the recovery team is essentially based on the much larger prairie population.

Within prairie Canada, the originally reported range reduction (Nero and Wrigley 1977, Knapton 1979, Houston and Bechard 1984, Schmutz 1984) is still observed with exception of southwestern Manitoba, and small portions of Alberta and Saskatchewan (Fig. 2). In Manitoba, ferruginous hawks were not found in the 1970s (Nero and Wrigley 1977, Knapton 1979). In the

1980s, a breeding population established itself and grew to a high of 56 nesting pairs in 1990, and remained at 48 pairs from 1991-93 (Ratcliff and Murray 1984, De Smet and Conrad 1989, De Smet 1992, De Smet in prep.).

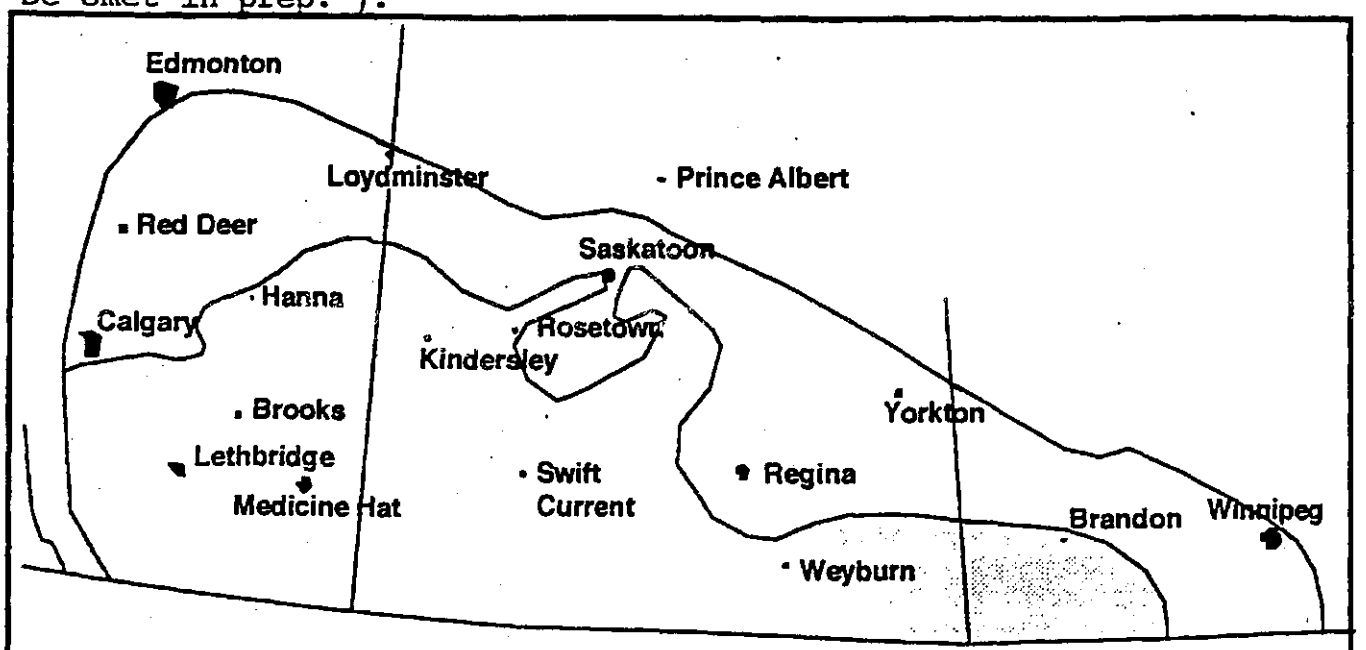


Fig. 2. Boundaries of the larger past and smaller current breeding range of ferruginous hawks in prairie Canada. Hawk distribution is irregular throughout the current range and especially at the boundary, depending largely on the degree of cultivation. Areas for which there is good evidence for a recent range re-expansion are indicated by stippling. For more detail see Houston and Bechard (1984), Schmutz (1984), and De Smet (1992).

C. PROTECTION

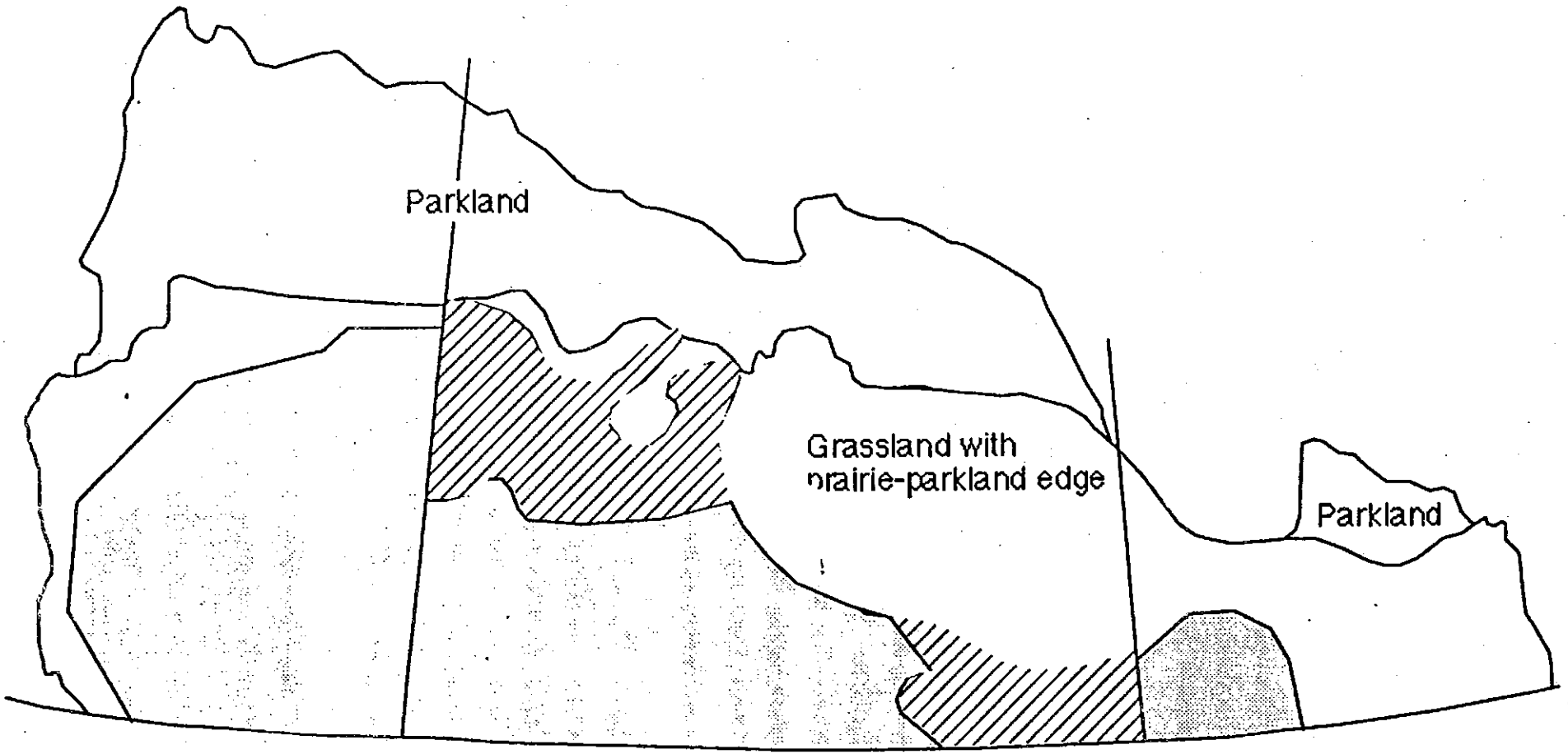
Ferruginous hawks have gained full protection under provincial legislation in each of the prairie provinces. The ferruginous hawk is designated as "endangered" under the Alberta Wildlife Act. In British Columbia the species is currently considered for listing as either threatened or endangered.

The ferruginous hawk recovery plan (Schmutz et al. 1992) calls for a safe minimum standard of protection for habitat and food. Currently, there is only limited protection for the hawk's habitat and essentially none for its main food, ground squirrels.

D. POPULATION SIZE AND TREND

Although the practical validity of the concept of "minimum viable population size" has been seriously called into question (e.g. Burgman et al. 1988), the number of ferruginous hawks now breeding in Canada is much larger than 500 individuals, a number frequently thought to resemble minimum size. Fig. 3 summarizes the results of population surveys in Alberta, Manitoba and Saskatchewan. Survey boundaries are shown in relation to grassland habitat boundaries. The hatched area denotes that portion of ferruginous hawk range in Saskatchewan that was not included in the regional survey.

A small number of nests has been found immediately outside the survey area in Alberta, but the survey area is thought to include at least 95% of the species' current range. In Manitoba the survey included all of the currently known nesting area and this probably the vast majority if not all pairs. In Saskatchewan, the survey area included about 60% of the currently used breeding range (Banasch 1989a 1989b 1991, Houston and Bechard 1984, A. Schmidt pers. comm.). The number of ferruginous hawk pairs actually counted on these surveys and on intensively monitored study areas including data from D. Collister (pers. comm.) are shown to reference an absolute minimum number of pairs in prairie Canada in 1992. For Saskatchewan, if the density at the upper confidence interval calculated for the survey area (U. Banasch pers. comm.) is used to extrapolate for the entire Saskatchewan breeding range, the upper limit of population size in Saskatchewan would be 2067 pairs. The actual number of pairs probably lies well above 347 (the minimum number of nests counted) but below 2067. Saskatchewan Environment and Resource Management has recorded from banders and other sources more than 1140 separate nest sites known to have been used in the past eight years. Because ferruginous hawks tend to reuse nests annually, this lends strong support for a population estimate in excess of 800 pairs. In Alberta, at least five nests were known to exist outside the survey area. The actual number of nests outside the survey region is unlikely to exceed 100. Thus, a reasonable



Survey Region	Actual Pairs Counted	Estimate for Survey Region	95% C.I.	Probable Uncounted Pairs	Suspected Total Pairs	Source
Alberta	215	1702	1181-2223	100?	1700-1800	Schmutz 1993
Saskatchewan	164	347		?	347-2067	U. Banasch pers. comm
Manitoba	48	48		0-10	48-58	K. De Smet pers. comm
	427	2097		100+?	2095-3925	

Figure 3. Survey regions in Alberta, Saskatchewan and Manitoba are indicated by stippling. See text for explanation.

assumption would be that in 1992 some 2500 pairs of ferruginous hawks nested in prairie Canada. This is the number of pairs which the recovery team suspected could be sustained in the available habitat in prairie Canada.

When the results of the 1992 surveys are compared with data from past ferruginous hawk surveys, the results suggest population stability. These surveys were carried out using the same procedures as in previous years. The estimated number of pairs nesting in the Alberta survey area in 1982, 1987 and 1992 was 1105 (adjusted for a 5% increase in size of survey area) 1770 and 1702, respectively. Similarly, in Saskatchewan the 346 pairs estimated during an earlier survey over three years (1986-88) compared favorably with 347 pairs estimated in 1992.

In addition to the regional surveys, small populations of ferruginous hawks were monitored on individual study areas (Fig. 4).

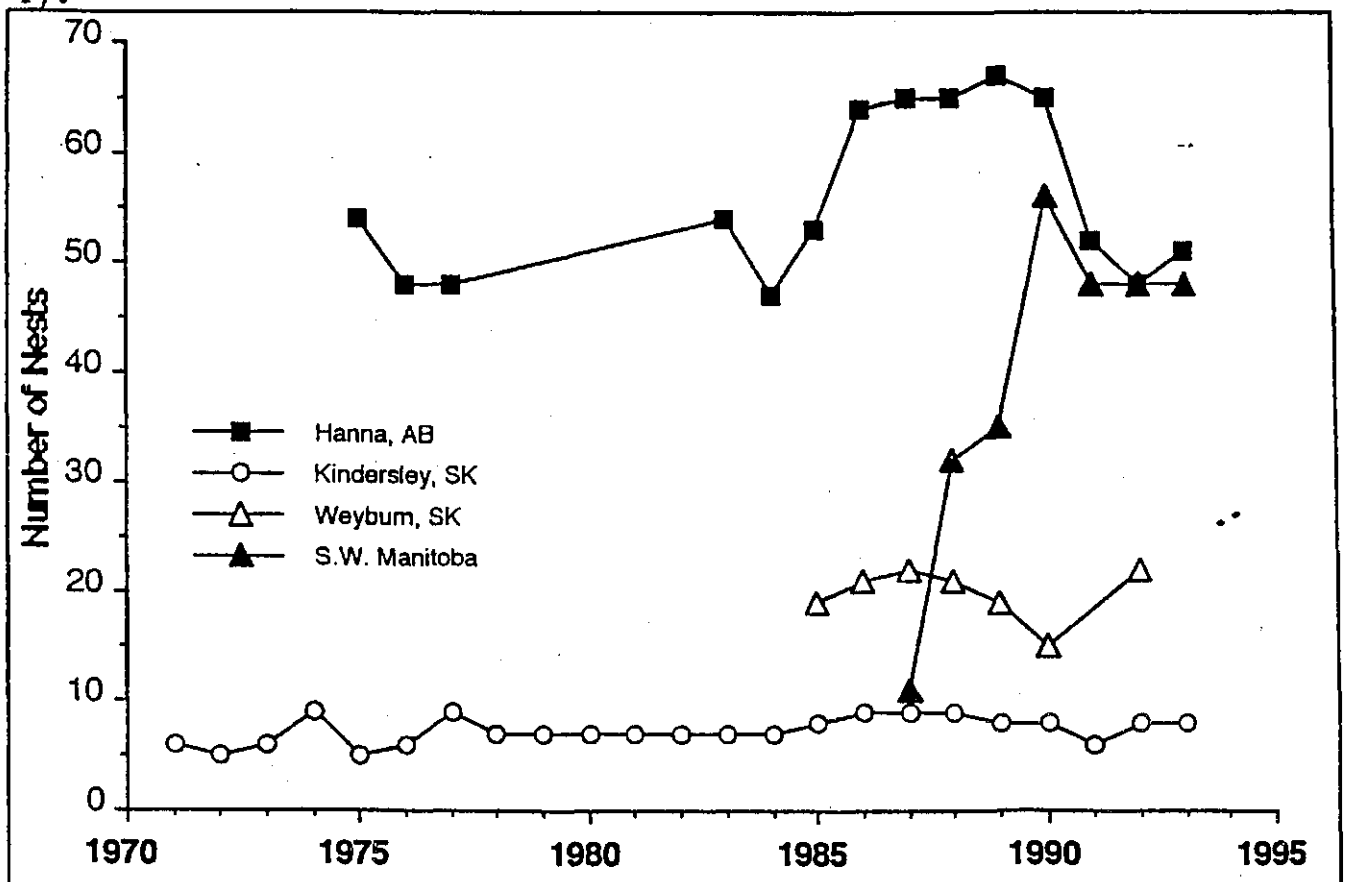


Fig. 4. Trends in the actual numbers of nesting pairs of ferruginous hawks on study areas of different size. Data were provided by Ken De Smet for southwestern Manitoba, Adam Schmidt for Weyburn, SK, Stuart Houston for Kindersley, SK, and Josef Schmutz for Hanna, AB.

Monitoring of selected populations across western Canada indicated that ferruginous hawk populations have been stable or increasing during the past 7-23 years. The only noteworthy change occurred in Manitoba where there is good evidence that ferruginous hawks have recolonized formerly vacated areas. The hawks seem to have reached their peak at about 50 pairs. Land use in this area includes farming and ranching. In Saskatchewan, the two populations monitored over several years nested on community pastures. The surrounding cultivated areas appear to be largely devoid of ferruginous hawks. On these pastures the numbers of breeders changed little over the years.

In Alberta, there was a periodic increase in nesting pairs in an area where ranching was the dominant land use. This fluctuation was strongly correlated with changes in the abundance of ground squirrels (Schmutz and Hungle 1989). In view of the above average nesting densities on this study area (9.8-14.0 nests/100km^2), the increase may be considered a response to unusually high ground squirrel densities and a subsequent return to "normal" population levels.

E. HABITAT

Degree of specialization. Evidence repeatedly points toward ferruginous hawks requiring three habitat components in combination. These include ground squirrels, grassland habitat (see Fig.5) and elevated nest sites. Where ground squirrels persist in extensively (>50%) cultivated regions (e.g. Schmutz 1989), Swainson's (B. swainsoni) and red-tailed hawks (B. jamaicensis) exploit these, and ferruginous hawks tend to be rare or absent. When grassland is available and ground squirrels are sparse occupancy by ferruginous hawks is low even when nest sites are abundant (Schmutz and Hungle 1989). There seem to be some exceptions. In parts of Saskatchewan (C.S. Houston pers. comm.) and Manitoba (K. De Smet pers. commun.) there are areas where all three requirements appear to be met, and yet ferruginous hawks are absent. It is conceivable that the hawks are reluctant to

disperse widely across marginal or poor habitat and hence are slow to invade new areas where habitat is fragmented.

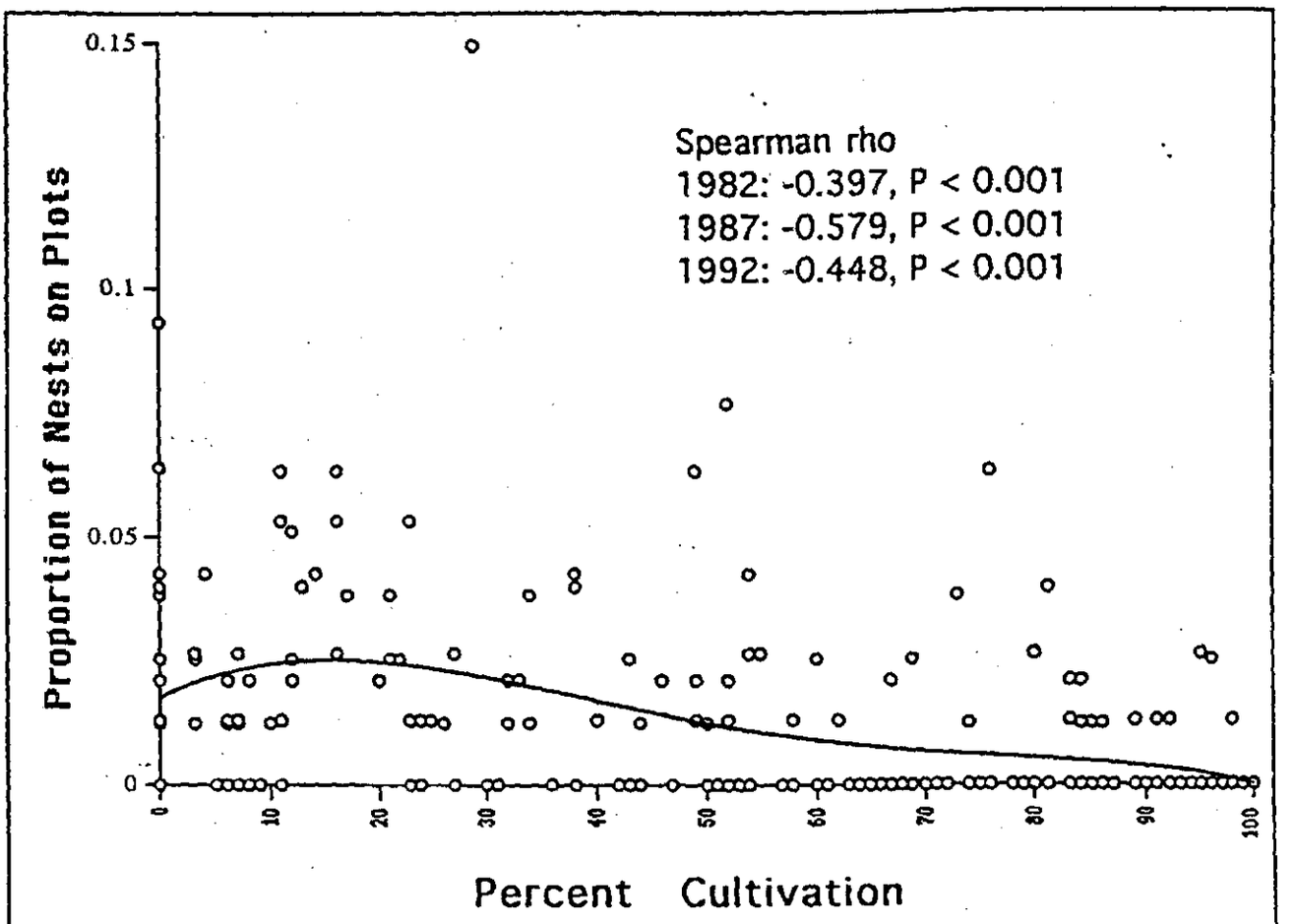


Fig. 5. The relationship between number of pairs of ferruginous hawks and extent of cultivation on plots. The scatter plot includes data for three years combined.

Habitat distribution. Large blocks of grassland suitable for ferruginous hawks remain only in southeastern Alberta and southwestern Saskatchewan. In other areas, this habitat is greatly fragmented (Anonymous 1989).

Habitat trend. Trends in the loss of grassland habitat are difficult to ascertain because of different land ownership. On approximately 80 study plots randomly selected from within the ferruginous hawk's range in Alberta, the extent of cultivation changed little during the last 10 years (49% in 1982, 54% in 1987 and 51 % in 1992). This encouraging observation may be due in large part to the considerable amount of publicly owned, ecologically sensitive semi-arid grassland. For example,

administration of this land by the Special Areas Board of Alberta Municipal Affairs, the Eastern Irrigation District, and the Lands Branch of Alberta Agriculture, Food and Rural Development has taken into account the vulnerability of the grassland ecosystem by re-adjusting livestock stocking rates, resisting efforts to cultivate grassland and encouraging the establishment of permanent cover.

In Saskatchewan, the Wildlife Habitat Protection Act prevents the sale or cultivation of 1,700,000 acres of provincial crown land in the grasslands ecoregion. While most lands were selected for their importance for one or more of several species, these protected areas include some lands specifically selected because they represent ferruginous hawk habitat. The degree of protection that is thus given to ferruginous hawks has not yet been fully determined. Native pasture covered only 25% of Saskatchewan's agricultural lands, but fortunately the conversion of this ecosystem to farmland has been slowed. In 1971 7.5 million hectares were grassland and in 1986 6.6 million (Anonymous 1991).

In Manitoba small parcels of grassland within the ferruginous hawk's range have been protected through easements (K. De Smet pers. comm.) and the potential for habitat protection exists through the Endangered Species Act. Within ferruginous hawk range across all three prairie provinces, 522,000 ha of grassland are secure on 42 community pastures administered by PFRA, Agriculture Canada.

The recent stability in populations of ferruginous hawks in comparison to extensive declines in breeding range in the past appear to reflect a similar pattern and timing of grassland loss across the prairies. This pattern underlines the importance of grassland for ferruginous hawks and the conclusion that the species is only as secure as its habitat and food.

There is much room for cooperation between conservationists and land users because current agricultural land uses often are not sustainable in the long term. Unfortunately, habitat protection programs and the administration agricultural policy at many levels have been cumbersome and unresponsive to widely

accepted needs (e.g. Canadian Wheat board policy; Thornton et al. 1993), so that the habitat is by no means secure.

In addition to grassland, elevated nest sites, such as trees or steeply eroded ground, are important for ferruginous hawks. While the hawks naturally may have encountered nest site shortages in the treeless grasslands of the past, this limitation is doubly severe today when a population large enough to be viable in the long term is relegated to a fraction of its original range. Due to the prolonged drought during the late 70s and early 80s, many trees were dying. Banasch (1989a) estimated that only 70-80% of tree nests are secure. As a local conservation measure, PFRA has identified and planted a species of shelterbelt tree that might be suitable and support the bulky nests of ferruginous hawks. Artificial nests have been effective in enhancing ferruginous hawk numbers (Schmutz et al. 1984). However, such an intervention can hardly be considered a satisfactory conservation solution range wide. It trivializes ecosystem conservation, it offends many people seeking a connection with wild land including ferruginous hawks in it, it may invite non-target species that could further tip the imbalance against grassland animals, and it would be exceedingly costly.

F. GENERAL BIOLOGY (see recovery plan)

G. LIMITING FACTORS

In Canada. Evidence from various sources suggests that the population size and distribution of ferruginous hawk in western Canada is limited by habitat. 1) Observations from several study areas indicate a general health among populations as indicated by apparently normal reproduction and survival. 2) Formerly vacant range in Manitoba and parts of Alberta has been repopulated. 3) The number of breeders has remained remarkably stable on at least three separate study areas in Saskatchewan and Alberta where habitat requirements were satisfied. 4) The number of breeders has increased in synchrony with an increase in ground squirrels (Schmutz and Hungle 1989). 5) When some breeders had died, these were replaced rapidly by others (J.K. Schmutz unpubl.). 6) When

artificial nests were provided, these were used with remarkable success. These observations suggest that the reason ferruginous hawks do not currently fill their entire former or current range is not because there are no additional individuals in the population to expand the range, but that this range is unsuitable for ferruginous hawk reproduction. If this interpretation of a presence of a surplus of breeders is correct, then it would follow that the areas vacated in the past and not repopulated (parkland and areas of extensive or >50% cultivation) have been sufficiently altered so as to exclude ferruginous hawks for as long as these habitat alterations exist.

Outside of Canada. Most ferruginous hawks are outside of Canada from September to March. In other raptor populations it has been shown that mortality over winter limits the size of the breeding population (Newton and Marquiss 1986). Thus ferruginous hawk conservation cannot be achieved in Canada alone. Habitat conservation and the protection of current levels of prey abundance in the migration corridors and on the wintering grounds is crucial.

H. SPECIAL SIGNIFICANCE

The ferruginous hawk is found only in North America. This species may serve as an indicator of the health of the prairie environment. Ferruginous hawks are large and hence highly visible in the prairie environment. They may have a considerable role in affecting ground squirrel population dynamics. Since a pair and its young consume an estimated 480 ground squirrel during their summer residency on the prairies, land owners favor this hawk and have erected artificial nests for them. This action on the part of the public has served well for conservation education.

I EVALUATION AND PROPOSED STATUS

The ferruginous hawk recovery plan outlines three key recovery objectives:

1) "Maintain the present range and distribution in Canada." Data indicate that the ferruginous hawk range has remained stable during the last decade.

2) "Achieve and maintain a stable or increasing population of 2500 or more pairs for at least five years." There can be reasonable confidence that the population of breeding ferruginous hawks in prairie Canada in 1992 equaled or exceeded 2500. Evidence also suggests that the populations have been stable in recent years. Furthermore, even if patchy in their distribution (caused by fragmented grassland habitat), the ferruginous hawks are distributed widely across the prairies and approximated the recovery plan goal of 1400 pairs in Alberta, 800 pairs in Saskatchewan and 50 pairs in Manitoba.

3) "Ensure the security of key habitats and nest sites." There is evidence that the loss of grassland acreage is slowing on the prairies. Trees suitable for nesting are on the decline but it is difficult to assess how able the hawks are in circumventing this limitation. Based on recent trends, the prognosis is encouraging. However ferruginous hawk populations are only as secure as is their habitat. The vast majority of their habitat is not secure.

J. RECOMMENDATIONS FOR CHANGING STATUS

On 26 November 1992, the members of the recovery team for the ferruginous hawk voted to recommend that COSEWIC consider "downlisting" the ferruginous hawk's status to "vulnerable." This decision was based on encouraging reports on ferruginous hawk numbers, stability of breeding populations and distribution. One important proviso is the concern about the future security of grassland habitat and nest sites. While the security of ferruginous hawks in Canada may be no longer threatened as it once was, for reasons of habitat security the ferruginous hawk is still "vulnerable." The recovery team felt that in view of the encouraging population data, ferruginous hawk conservation was successful in Canada to the point of having maintained populations that by all accounts have the potential to be secure in the long term. The habitat issue was a concern, but this concern was

raised to another level, the grassland ecosystem recovery team. The ferruginous hawk recovery team has been very vocal, urging that such a ecosystem team be established. The contribution that such a team can make is potentially very great and goes beyond the ferruginous hawk to include other endangered and more importantly all of the diversity that constitutes the prairie life support system. Once the habitat is secure, the ferruginous hawk recovery team felt that the ferruginous hawk may be removed completely from the list of threatened species.

Acknowledgments.
This report benefited greatly from input provided by ferruginous hawk recovery team members (Steve Brechtel, Ken De Smet, Dale Hjertaas, Geoff Holroyd, and Stuart Houston), and also Ursula Banasch, Gary Erickson, Bob Jones and Wanda Sobush. Financial support was kindly provided by Environment Canada, Canadian Wildlife Service.

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