

RECENT BREEDING SUCCESS OF RICHARDSON'S MERLIN IN SASKATCHEWAN

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Abstract

Records for 96 nestings of the Merlin (*Falco columbarius richardsonii*) in Saskatchewan from 1970-77 were analyzed. An average of 4.0 yg./pair were raised by 47 successful pairs. Current reproductive levels in Saskatchewan indicate that the recent concern over *F.c. richardsonii* in comparison to the other two subspecies is perhaps unwarranted.

Introduction

The reproductive success of Merlins nesting in the grasslands of the Great Plains is reported to have decreased during the period of 1950-69 as compared to pre-1950 levels (Fox 1971). This decrease was accompanied by a decrease in the weight of eggshells. These changes, as well as the disappearance of a small, well-studied population near Kindersley, Saskatchewan, have resulted in much concern over the status of the Merlin (*Falco columbarius richardsonii*) found in the Great Plains area (Trimble 1975).

Recently a small breeding population of this Merlin established itself in the city of Saskatoon, a fairly high density of nesting Merlins was found on a segment of the North Saskatchewan River, and Merlins were found nesting successfully again near Kindersley. These findings prompted a study of the present population status of this bird in Saskatchewan.

Methods

Breeding data were collected for Merlins nesting in southern Saskatchewan for the period 1970-77. Two major study areas were established, one in the city of Saskatoon (1972-77) and the other along a 40-km stretch of the North Saskatchewan River near Saskatoon (1975-77). The data from our work in these two areas were supplemented by information from the Prairie Nest Records Scheme and reports from private individuals.

Pairs of Merlins were located in the city each year by visiting previously known nest sites and following up reports of Merlins seen in the city. Merlins nesting in the city were intensively studied throughout the breeding season (1973-77). The river survey was conducted primarily by canoe. An initial survey was made in early May to locate potential breeding birds and a second was made in late May, during incubation, to confirm the location of the nest sites. The nests were generally not climbed at these times. A third trip to band young and determine reproductive success was made in late June or early July when the young were 2-4 weeks old.

Only sites where Merlins were known to have laid eggs or were actively defending a nest late in the season (when eggs or young would be expected) were included in our total of known nestings. Pairs which had fledged an unknown number of young when visited at banding time were termed successful but were not included in the calculation of production. Nesting attempts that were known not to have fledged any young were termed unsuccessful.

Results

The nest records of the past eight years indicate that Merlins currently breed throughout southern Saskatchewan where there is suitable habitat (fig. 1). Merlins (*F.c. richardsonii*, according to the criteria of Temple 1972a) were found nesting as far north as the southern fringes of the boreal forest northeast of Prince Albert, Saskatchewan. In that area, and in Saskatoon, most of the nests were in old Common Crow (*Corvus brachyrhynchos*) nests located in tall spruce (*Picea* sp.). Along the North Saskatchewan River, the most common nest situation was a Crow or Black-billed Magpie (*Pica pica*) nest in small willows (*Salix* sp.) 2–4 m. high. In other areas, nests were generally located in magpie nests in larger deciduous trees (usually *Populus* sp.). Most of the nest sites were located along major drainage systems (fig. 1).

Table 1 summarizes the breeding data for 1970–77. An average of 4.0 young/successful pair were produced. Three of the unsuccessful nests were in Saskatoon. These nest trees had been climbed during egg-laying and/or incubation. Another brood of 5 young died of starvation at about 3½ weeks of age after the adults disappeared. It is possible that the adults were shot as the nest was adjacent to an area frequented by many people, and both adults were unusually vocal and aggressive.

Breeding densities were found to be relatively high in our two study areas. Merlins nesting in Saskatoon nested as close as 1.8 km apart. The average distance between four successful urban nests found in 1976 was 3 km. The minimum distance between

Table 1. Breeding data for 1970–1977.

Year	Known Nestings	Known Successful	Known Unsuccessful	Unknown Outcome	Known Production Per Successful Pair ¹
1970	3	—	—	3	—
1971	3	—	—	3	—
1972	11	8	2	1	34/8 = 4.3
1973	9	4	1	4	12/3 = 4.0
1974	12	8	—	4	25/6 = 4.2
1975	17	10	1	6	26/6 = 4.3
1976	14	12	—	2	36/10 = 3.6
1977	27	19	1	7	54/14 = 4.2
TOTAL	96	61	5	30	187/47 = 4.0

¹Includes 4 nests from which eggs were collected for pesticide analysis in 1972 and 1973. Only successful nests where the exact number of advanced young were known were used to calculate production.

breeding pairs recorded on the North Saskatchewan River was 2.5 km. The age of males was not determined at all nest sites, but the occurrence of males in immature plumage at four successful nests suggests that a significant proportion of males breed in their first year.

Discussion

Historical Perspective. Prior to the coming of settlers, the major nesting habitat of the Merlin on the Canadian prairies was probably restricted to the tree-lined river systems. With the advent of farming in southern Saskatchewan in 1880s, prairie fires were controlled and shelterbelts planted eventually providing new nesting habitats. In these early years native grasslands were more extensive than they are now and provided excellent habitat for typical prey species (Fox 1964; Hodson 1976, 1978). About two-thirds of the total land area of southern Saskatchewan is presently cultivated (Shields et al. 1970). The gradual loss of native prairie (Trimble 1975) and destruction of nesting trees in old shelterbelts by cattle (Fox 1971) have been regarded as major reasons for the disappearance of nesting Merlins in these types of situations. Fox states that five out of six sites occupied at Kindersley, Saskatchewan, in 1960 were unsuitable for nesting by 1962. Whether the decrease in the Kindersley population was due primarily to habitat changes, decreased production due to pesticide contamination, or other reasons is unclear.

Our data include five recent nestings from the Kindersley area, (2 in 1972, 1 in 1975, and 2 in 1976) all of which were successful, although there has been no attempt to do an intensive survey. A determination of the size of the present Kindersley population in comparison to 1950 levels would provide an interesting test of the hypothesis that habitat changes were the major reason for the decline in this population. Although the major Merlin population has probably always been associated with the river systems, there is no adequate historical data to allow comparison with the present population nesting along the river.

Present Status. The production of young by the 47 successful pairs in Saskatchewan from 1970 to 1977 with known numbers of nestlings (4.0 yg./nest) is higher than that reported by Fox (1971) for 17 nests on the Canadian prairies from 1950 to 1969 (2.7 yg./successful nest) and Fyfe (Hodson 1972) for 14 nests in Alberta and Saskatchewan in 1968–69 (3.1 yg./successful nest). It is comparable with pre-1950 reproductive levels of 3.1–4.3 yg./successful nest reported by Fox (1971).

The breeding density along the North Saskatchewan River indicates a rather large breeding population if it is typical of similar habitat elsewhere in the province. The recent appearance and expansion of the urban population in Saskatchewan and the reappearance of breeding pairs in the Kindersley area both suggest an expanding population. An intensive study of the birds of the Rosetown-Bigger district between 1968 and 1976 failed to reveal any breeding Merlins (Renaud & Renaud 1975). During 1976 and 1977, however, a total of seven nesting pairs were found in this area. Fyfe (1976) has recently concluded that *F.c. richardsonii* is increasing on the Canadian prairies. The first records of Merlins breeding in Montana have recently been reported (Ellis 1976). Further investigation is needed to clarify the status of the Merlin in the southern Great Plains.

The conclusion (Trimble 1975) that *F.c. richardsonii* is in greater trouble than the other subspecies is, in our opinion, unwarranted on the basis of its current status in Saskatchewan. The only recent account of the breeding status of taiga nesting Merlins (*F.c. columbarius*) is on 20 nests studied in Newfoundland in 1969 which produced

3.0 yg./successful nest (Temple 1972b). Substantial recent data on taiga Merlins throughout the rest of their range is unavailable. The taiga Merlin, since it is the most migratory of the three North American subspecies, bears close watching if the current hypothesis that problems of pesticide contamination are primarily associated with wintering populations in Latin and South America is true.

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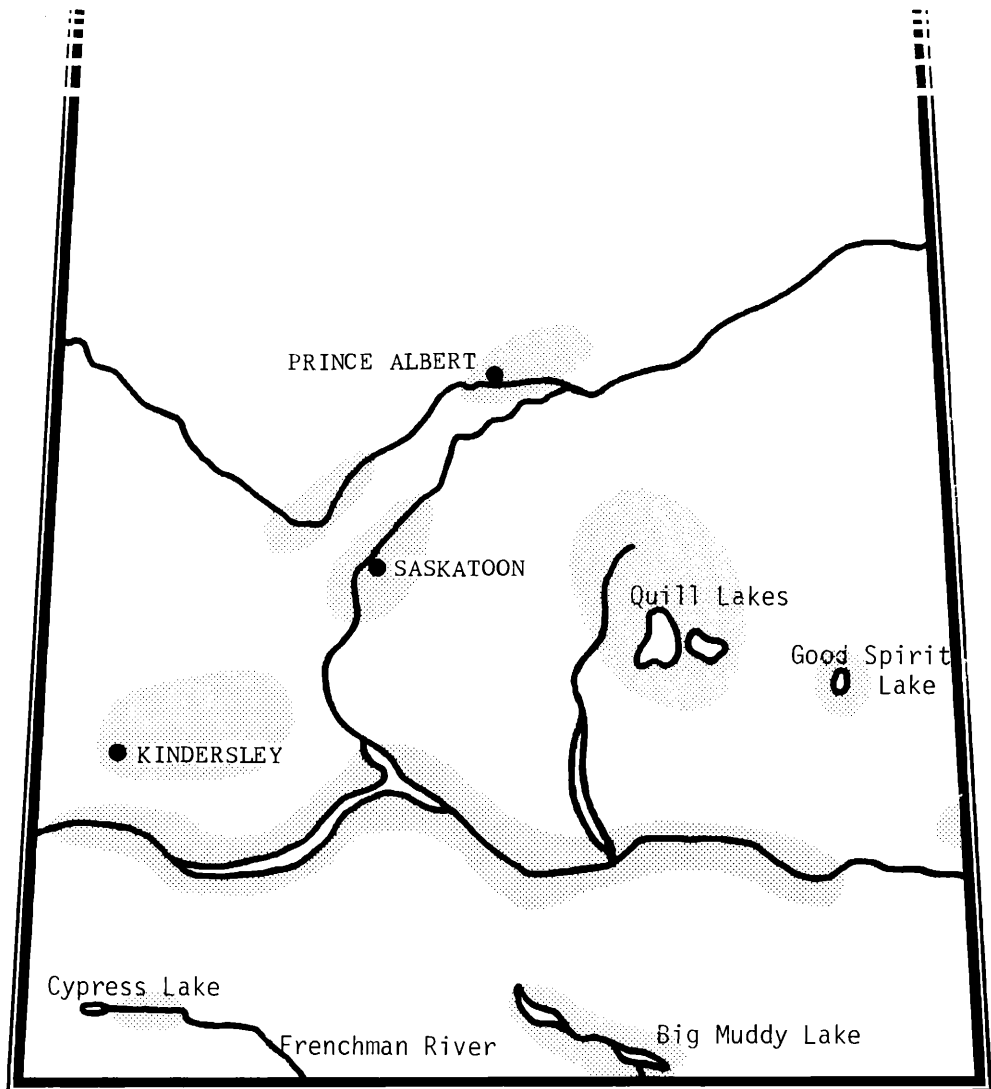


FIGURE 1. Map of southern Saskatchewan with major drainage systems. The stippled areas indicate locations of nesting sites active between 1970 and 1977.