

# THE MANITOBA BURROWING OWL SURVEY 1982-1984

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*Burrowing Owl*      *Brian D. Ratcliff*

The Burrowing Owl was officially classified as a threatened species in Canada in 1979 by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). A declining population has been reported over much of the owl's former breeding range resulting in the Threatened status designation.<sup>13</sup> The Burrowing Owl also has been on National Audubon Society's early warning Blue List every year since 1971 when the list was initiated.<sup>10</sup>

Little is known about the Canadian Burrowing Owl population. The only studies

in Canada have been conducted by Lang and Weseloh and Wedgwood.<sup>6 12 13</sup> Betsy Haug conducted a radio-telemetry study of the Burrowing Owl in Saskatchewan from 1981-82 for an M. Sc. thesis at the University of Saskatchewan, but the results had not yet been made available (pers. comm., 1984). There have been no thorough studies of the Manitoba population which represents the northeastern extent of the Burrowing Owl's range in North America.

A 3-year survey was conducted from May until August 1982-1984, with funding from the World Wildlife Fund and the Manitoba Department of Natural Resources, to determine the current status and distribution of Burrowing Owls in Manitoba. A banding program was also initiated to delineate the owls' migration routes and wintering grounds.

## **Methods**

The study area extended from Winnipeg in the east, Swan River to the north and southwest to the Saskatchewan-North Dakota border. This area coincides with the Burrowing Owl distribution range from Wedgwood's COSEWIC report and also the range of the American Badger and Richardson's Ground Squirrel.<sup>2</sup> The abandoned burrows created by these mammals are used as nest sites by the owls.

Due to the large study area (approx. 80,000 km<sup>2</sup>) the only viable way to survey for the owls was to seek help from the general public. The initial month of the

survey involved setting up an elaborate communication network. The plan was to have local contact people throughout the study area to receive information from their communities. This would stimulate local interest in the project and enable people reporting owls to contact someone they knew. Thirty individuals acted as contact people. An article was placed in 37 newspapers describing the owls and survey, plus giving a local contact name and telephone number. A special poster was made and 700 copies were distributed throughout the study area in high schools, shopping centres, post offices and community halls. Since farmers visit local Agricultural Representative offices for information, posters were placed in 24 of these premises. Two radio interviews, one to describe and the other to summarise the survey, were recorded each year by the Manitoba Department of Natural Resources Media Services. Six radio stations in the province broadcast the interviews.

Nest records from the Prairie Nest Records Scheme (PNRS) at the Manitoba Museum of Man and Nature (MMMN) were investigated. All Burrowing Owl nest localities were revisited to determine their present status. Of ten nests reported from 1971-1981 only two were active during this survey. All but one of the sites still offered suitable habitat.

When a report of a Burrowing Owl was made I visited the person reporting the owl to verify each sighting. A special effort was made to talk to that person about the owls and to explain why the project was being conducted. Each nest was visited every 2 weeks and observations were made with a 20X spotting scope to minimise stress at the nest site.

Approximately 2 weeks after the young owls had emerged from the burrow, they were banded. The young owls were caught by using a box trap that fitted into the burrow. There was a one way (out)

swinging screen door in the trap which allowed the young to emerge from the burrow through the trap, but they were blocked off when they tried to re-enter the burrow. An electric weld wire cage was placed over the entire burrow area to prevent the young from running down other burrows. Adults were caught with a size 1 Havahart live animal trap. The owls were banded with a U.S. Fish and Wildlife Service band (size 4) on one leg and a colour ring on the other. Adults were colour-banded on the right leg and the young on the left leg. Blue colour bands were used in 1982, orange in 1983 and yellow in 1984. The ring was Rotex tape, 1 cm wide and 5 cm long. It was wrapped onto itself and glued to seal the end. The colour bands will aid in the determination of the owls' migration routes, wintering range and ageing of the resident breeding owls.

## Discussion

Historical records of Burrowing Owls in Manitoba are limited. Atkinson stated that the Burrowing Owl was becoming numerous in many localities during the 1890's.<sup>1</sup> The distribution of Burrowing Owls in Manitoba as recorded in naturalist A.G. Lawrence's Winnipeg Free Press "Chickadee Notes" column (1921-55) is presented in Figure 1.<sup>7</sup>

Butts, Howie, Wedgwood and Zarn stated that Burrowing Owl populations have declined in many parts of their range throughout North America.<sup>3 5 12 14</sup> Loss of habitat, control of burrowing mammals, secondary poisoning and road kills have all been suggested as factors which contributed to the decline. Land-owners I talked to during this survey indicated that the owls were fairly common from 1930-1960 but have declined since then.

Over the past 30 years many pastures

which offered suitable Burrowing Owl habitat have been converted to grain crops. The conversion of these pastures not only eliminates owl habitat but destroys the burrows that are required for nest sites. This loss of habitat is a major factor in the species' decline, but it should be noted that there are still many pastures with burrows in them that are not being used by owls. A critically low regional Burrowing Owl population is probably the reason why these pastures are not being used.

Ground squirrels and badgers have both been classified as vermin by landowners on the prairies. Programs to eliminate them from pastures results in the loss of burrows which offer potential nest sites. The use of rodenticides to

poison ground squirrels can also cause secondary poisoning in Burrowing Owls. Owls and other predators scavenge on these lethal carcasses. Observations during this survey confirm that landowners still use rodenticides to control ground squirrel populations.

Another possible reason for the Burrowing Owl decline is the use of insecticides to control grasshoppers. In 1984, local municipalities and landowners in southwestern Manitoba introduced spraying programs to control a major infestation of grasshoppers. Spraying programs result in the direct loss of food for the owls and possibly death from feeding on contaminated insects. After the young Burrowing Owls have hatched, grasshoppers are their primary food source. There

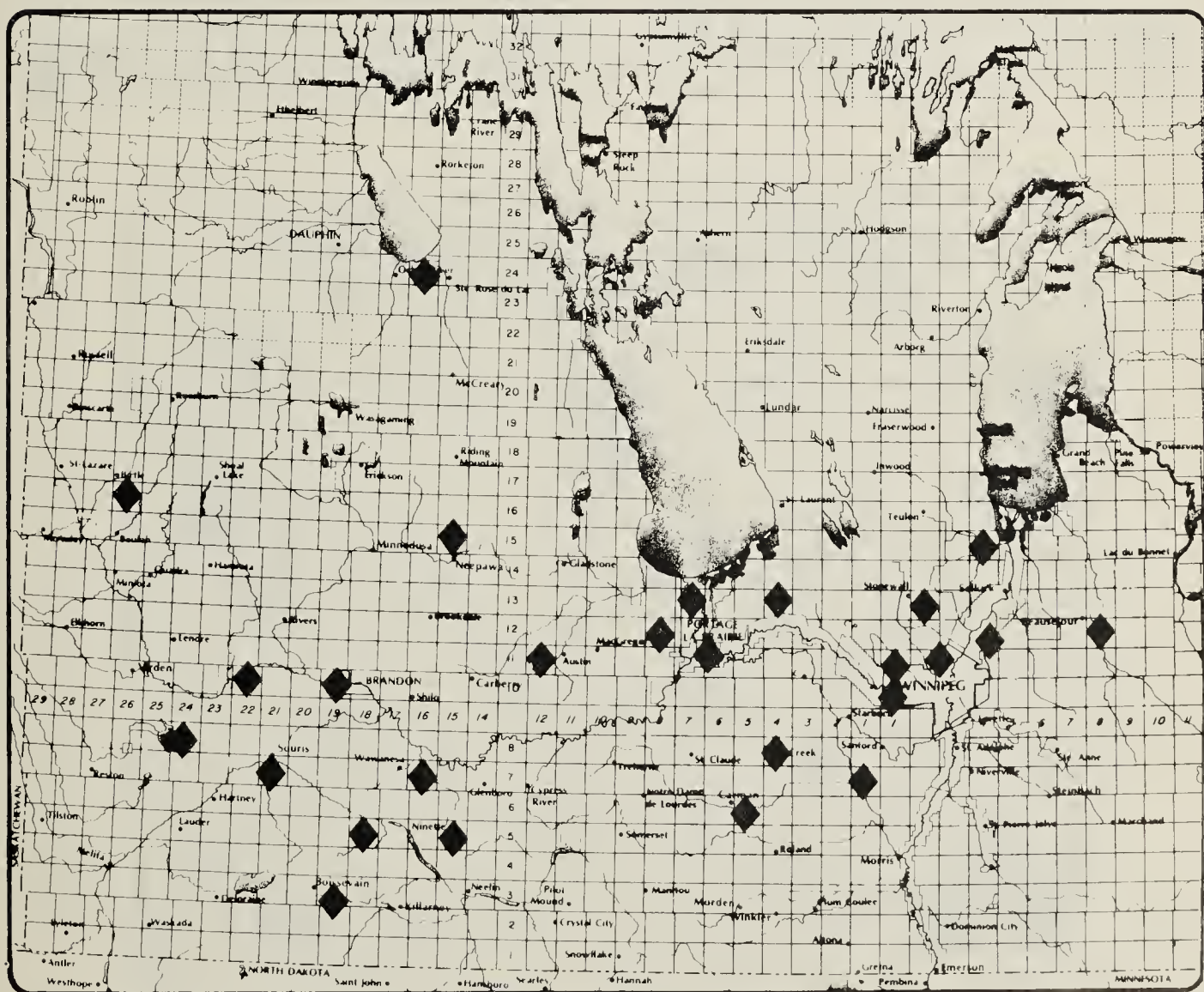


Figure 1. Historical records of Burrowing Owls from A.G. Lawrence's *Chickadee Notes* (1922-1955).

have been no studies to show the effects of secondary poisoning from rodenticides or insecticides on Burrowing Owls.

Mortality from road kills is a serious problem. During this survey there were reports of seven owls killed on highways. Most of the dead were young owls which had recently fledged and were scavenging for dead insects on the road after dark. Incidentally, while driving between Boise, and Pocatello, Idaho, in August 1981, I observed 23 Burrowing Owls dead on the road. Most were fresh carcasses from the previous night. It is difficult to assess overall losses due to road kills but it is obvious that they are significant.

A few landowners stated that Burrowing Owl numbers increased during the late 1970's. The loss of many stock pastures to cultivation has resulted in the birds nesting in farmyard pastures. These pastures are usually less than 10 ha and

adjoin farm buildings. These pastures are seldom incorporated into the larger grain fields. When the owls return each spring, nest site availability is almost guaranteed in these pastures. In 1982, 41 of the 76 pairs were located in this habitat. Instead of Burrowing Owls increasing in numbers there may have been a population shift to more stable pastures, and the owls present are now more readily observed by the landowner.

When this survey was started in 1982, I had no idea how many Burrowing Owls would be located. When 76 pairs were found that year I was pleased because it was consistent with the 100 pairs that Wedgwood had estimated for Manitoba in his COSEWIC report.<sup>13</sup> As Table 1 indicates, the number of pairs located dropped by more than 50 percent during this survey. The major reason for this decline was the weather. On 12 May 1983, a severe storm left up to 20 cm of snow and ice on the ground in western

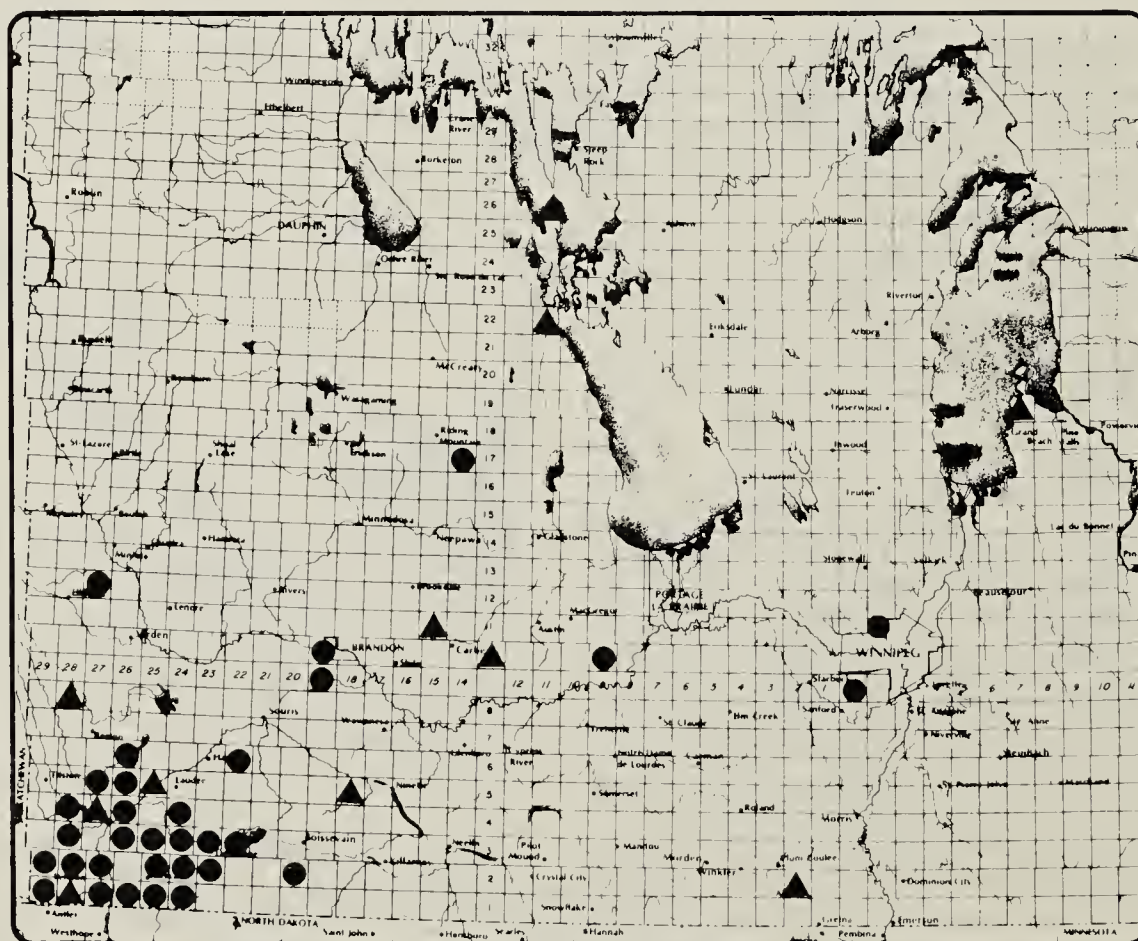


Figure 2. 1982 Burrowing Owl site distribution. ● Township with one or more pairs. ▲ Township with sighting of adult owl.

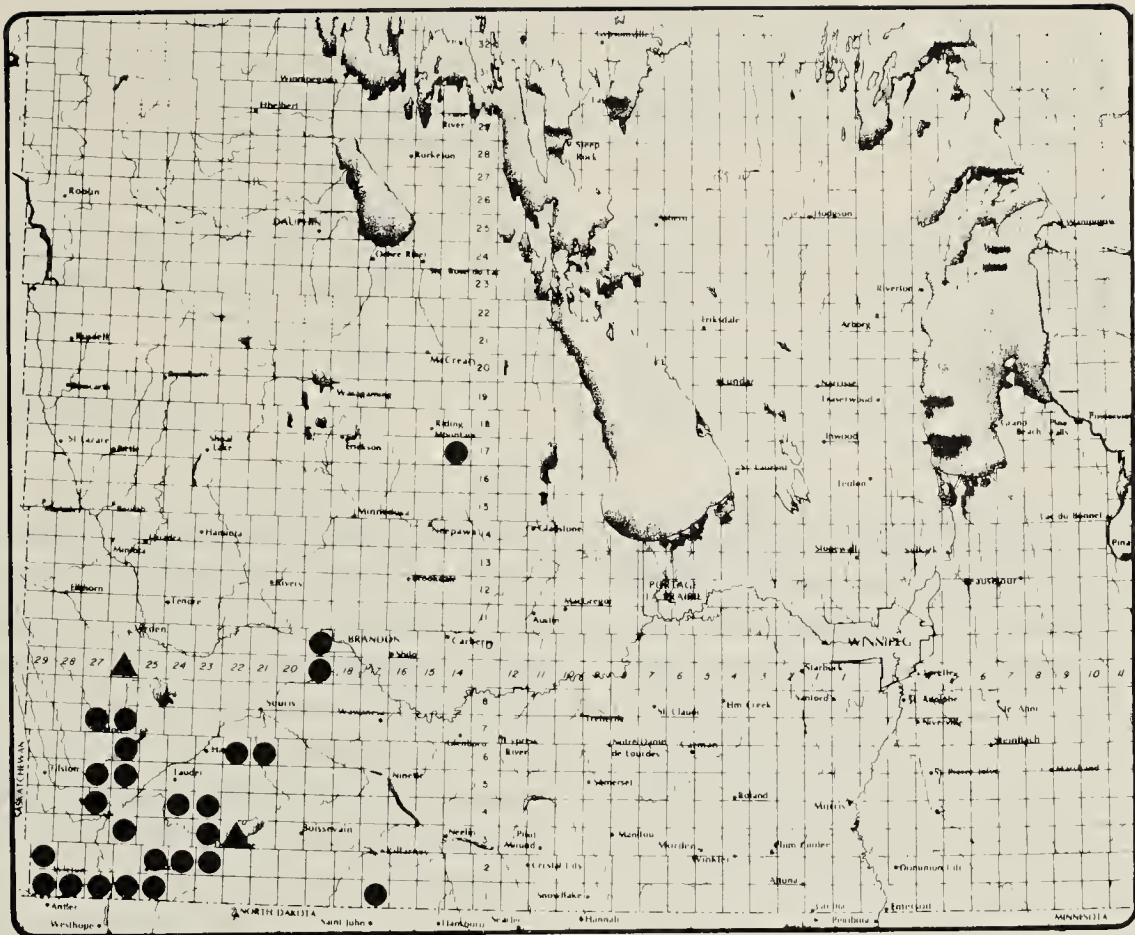


Figure 3. 1983 Burrowing Owl site distribution. ● Township with one or more pairs.  
▲ Township with sighting of adult owl.

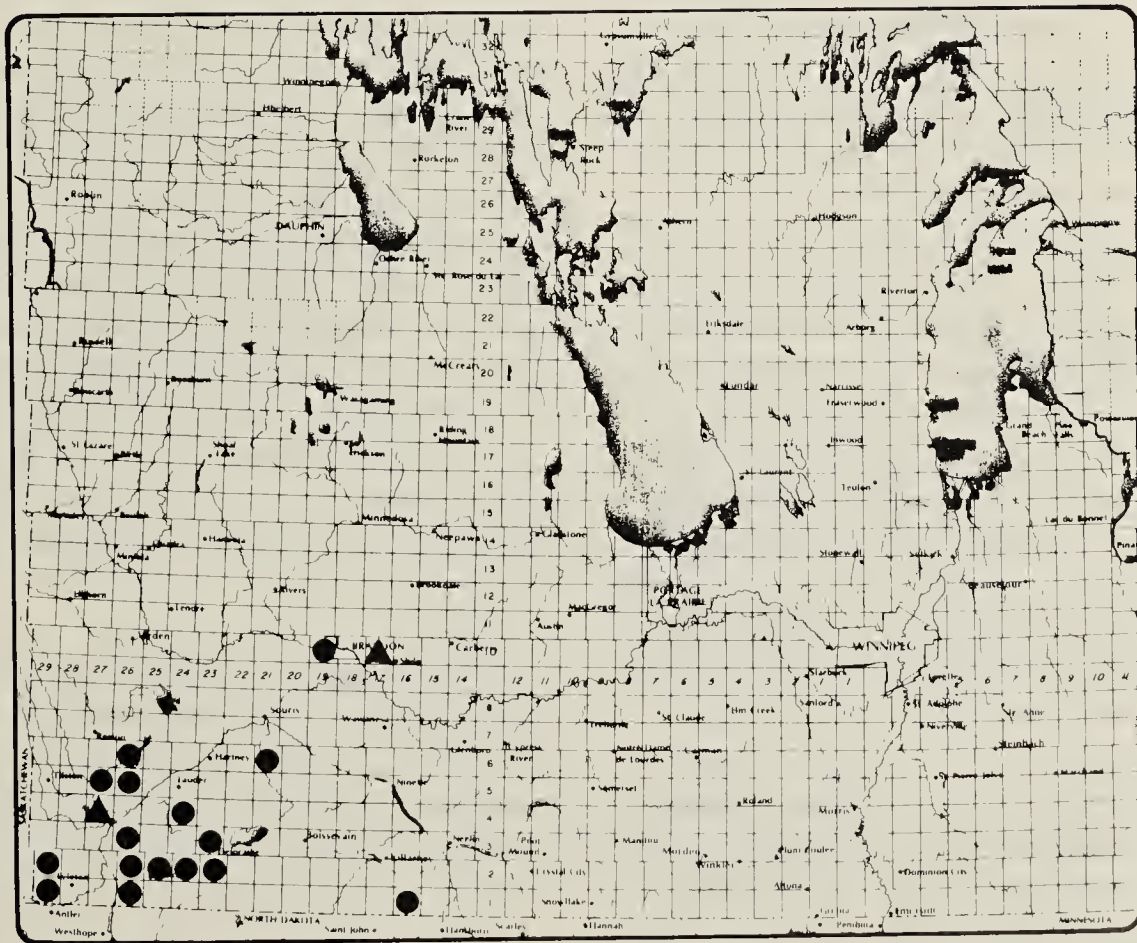


Figure 4. 1984 Burrowing Owl site distribution. ● Township with one or more pairs.  
▲ Township with sighting of adult owl.

Table 1. DATA FROM MANITOBA BURROWING OWL SURVEY

	1982	1983	1984
Burrowing Owl pairs	76	60	35
Successful breeding pairs	55	30	27
Single adults observed	24	17	7
Young owls observed	204	96	142
Average brood size	3.7	3.2	5.3
Total owls observed	380	233	219
Owls banded	102	60	101

Manitoba. One landowner knocked the ice crust off the burrow entrance after failing to observe the owls for 3 days. Within 15 minutes both owls were standing at the burrow entrance. Mid-May is when the owls start their egg laying and incubation. The cold temperatures disrupted embryo development of the eggs and nest success was only 50 percent in 1983 compared to 72 percent in 1982. The total number of young observed was 53 percent less in 1983 than in 1982. This low recruitment resulted in only 35 pairs of owls being located in 1984. Whether the owls can rebound and build their population back up will only be known with future monitoring programs. Figs. 2,3 and 4 show the 1982,1983 and 1984 Burrowing Owl distribution in Manitoba.

The average brood size for this study was 4.1. This number is comparable to 4.6 in Saskatchewan, 4.2 in western Minnesota, 4.9 in New Mexico and 2.2 in California.<sup>12 4 8 11</sup> The increase from 3.2 in 1983 to 5.3 in 1984 was attributed to a marked increase in grasshoppers as a food source. Grasshopper populations have been increasing during the past few years and this increase has enabled more young owls to reach fledging age.

Burrowing Owls return from their wintering grounds in April and by the first week of May have established pair bonds and secured territories. The incubation period is 28-29 days and the young emerge from the burrow approximately

10 days after hatching. The first appearance of young owls was 18 June with 1 July as the average date. The owls were then watched for 2-3 weeks to determine complete brood size. Then the owls were banded. Ten adults and 253 young owls were colour-banded during this survey. A young owl banded near Waskada, Manitoba on 7 July 1982 was found dead on the side of the road near San Antonio, Texas, on 15 October 1982. The owl was decomposed and the person who found it assumed it had been dead for about a week. The landowner in whose pasture this owl was raised informed me that there were still owls in the pasture during the first week of September. It appears that the owl took 4-6 weeks to fly the 2200+ km from Manitoba to Texas. This is only the second band return that gives us some indication of the owl's migration route and wintering area. The other band return was from an owl banded by A.B. Gresham at West Kildonan, Manitoba on 31 July 1926 and shot at Spalding, Nebraska on 24 September 1927.<sup>9</sup> It is my opinion that Burrowing Owls that breed in Manitoba winter in Mexico.

The Manitoba Burrowing Owl survey was the first in-depth attempt to document the status and distribution of the owl in the province. There is now better understanding of the owl's provincial status.

This survey was public-orientated, designed to draw attention to the pro-

blems this bird is encountering. Since all of the nests were located on private land, protection of the owls must involve landowners. The positive response showed by landowners to this survey and to the owls suggests that this approach is probably the best management plan at the present time.

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