

HIGH MORTALITY OF GREAT GRAY OWLS IN MANITOBA — WINTER 1980-81

ROBERT W. NERO, Wildlife Branch, P.O. Box 14, 1495 St. James Street, Winnipeg, Manitoba, R3H 0W9 and HERBERT W. R. COPLAND, Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg, Manitoba. R3B 0N2

Winter 1980-81 in Manitoba was relatively mild and dry, with little snow cover. Small mammals presumably suffered from these conditions and also from alternative thawing and freezing in late winter and early spring. In no previous winter have we tried so often to lure birds across dry grass or roads. Great Gray Owls, practically limited to a

diet of small mammals, appeared in Manitoba in small numbers in scattered localities from The Pas in northwestern Manitoba to Sprague in the extreme southeast. A concentration of 10 was reported along PR 308 from Sprague to Moose Lake (20 mi.) through January and February. Indications were that voles were abundant along the roadside

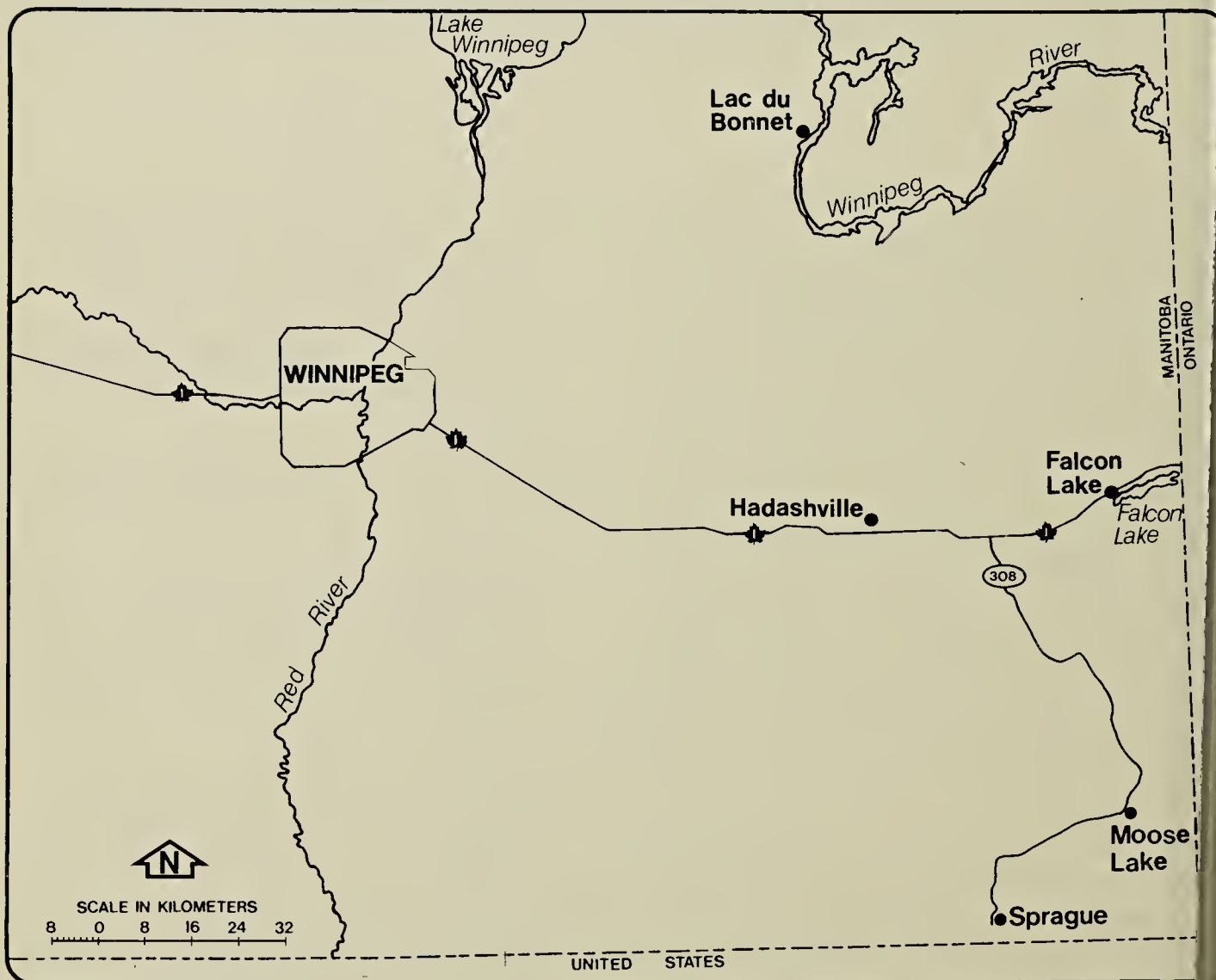


Figure 1.

rights-of-way. On 22 February we saw 10 owls along that route (Figure 1).

Beginning in January, numerous sightings were reported along the Trans-Canada Highway (PTH 1) east of Winnipeg, especially between Hadashville and Falcon Lake (28 mi.) (Figure 2). Accordingly, we spent most of our time on weekend sorties in that area. The total number of owls involved, based on the high number of accidentally killed owls, and ratio of banded to unbanded owls, was estimated as 100 to 150, probably the largest concentration yet recorded in Manitoba.

Our largest daily counts were 16 on 8 February (Prawda to Falcon Lake, about 23 mi.), and 16 on 8 March (McMunn to Falcon Lake, about 20 mi.). From one to 16 birds were reported by 20 different observers on 25 days in January; from one to 10 by seven persons on 20 days in February; from one to 12 by 18 persons on 21 days in March; and from one to nine by six persons on 10 days in April (to 19 April).

During the period from 1 January to 19 April, 50 dead Great Gray Owls were recorded (5 in January, 6 in February, 29 in March, 10 in April). All of these were victims of collisions with vehicles travelling on PTH 1 (one was found less than 2 mi. away on an adjacent road). Fifty is a minimum figure. Manitoba Highways staff, for example, admitted to having thrown three large owls onto the Hadashville garbage dump (before we contacted them) and, undoubtedly, some birds made their way into adjacent woods before succumbing to injuries. Probably predators, such as fox and coyote made off with others. Common Ravens fed voraciously on dead owls, occasionally eating most of the flesh and internal organs in a matter of minutes. Sometimes ravens carried the remains of owls some distance from the highway. It became a race between us and the ravens to retrieve birds. Whenever possible we made the rounds

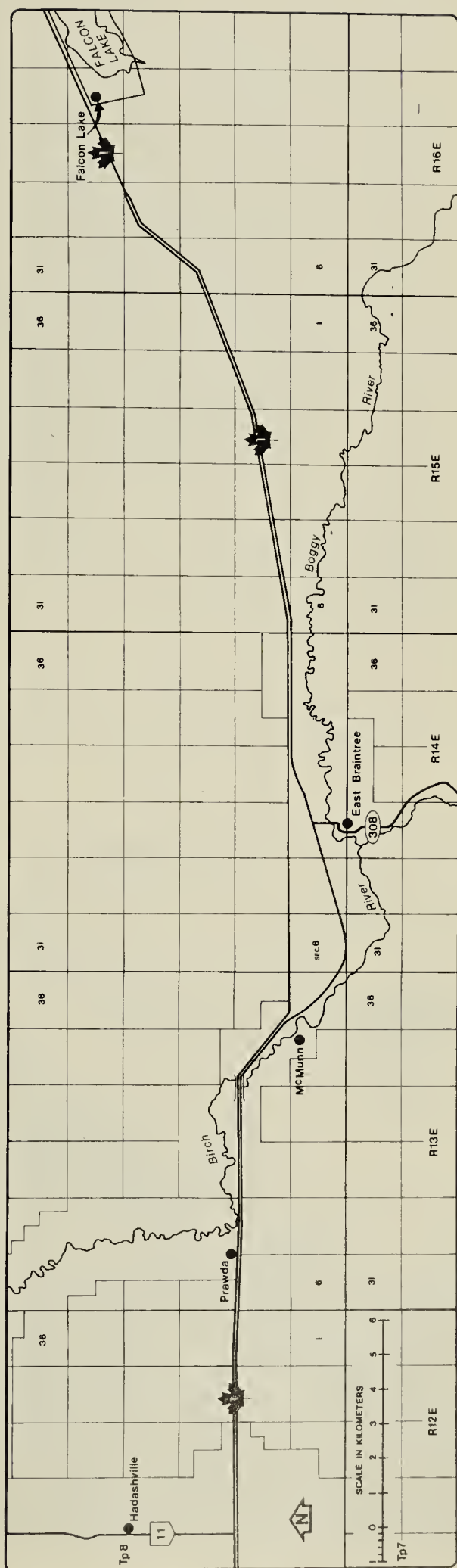


Figure 2.

of the highway early in the morning, searching for live birds and the remains of others. In three instances birds were found dead less than an hour after we had made a complete circuit of the divided highway between Hadashville and Falcon Lake. We suspect that most owls were killed in the early morning, late evening or at night, but several were killed during daylight hours. Birds lying on the highway or shoulder were easy to spot, but many were in the ditch or in grassy cover some distance from the road. The telltale signs of a victim — feathers scattered along the shoulder of the road — often were overlooked until the late evening sun backlighted strewn feathers, making them conspicuous. The feathers glowed in the low light, looking like full-blown crocuses, as beautiful as disheartening. Each time we found feathers, we walked the ditch and right-of-way, looking for an owl or its remains. Sometimes only a wing, tail or stripped carcass remained, but each remnant was retrieved and recorded.

Fortunately, a number of residents of the area picked up dead birds for us, thus ensuring the retrieval of a maximum number of owls. One person, a school teacher, drove this route twice daily, reporting the presence of live birds and picking up casualties. A few birds (or remains) were found after the thin snow cover disappeared and after shallow ditch water dried up. One Great Horned Owl and two Barred Owls were also found.

That birds were readily visible throughout the period is evident by records of sightings by at least 32 people. In addition, numerous residents were aware of the presence of owls and presumably a lot of travellers noticed them. Sometimes during the day they were unusually conspicuous, sitting upright on the highway shoulder, perching on road signs, or gliding and flying across the highway. We banded 24 birds in the area (20 immatures and 4 adults; 8 males and 16 females), bringing our overall total to 338.



Road-killed Great Gray Owl.

Gordon Elde



Road-killed Great Gray Owl.

Gordon Elder

Where did all these owls come from? Band returns indicate that this occurrence of owls was comprised of local residents and birds from northern Minnesota. An adult female, banded by us on 7 June 1980, at a nest near Spruce Siding, was found dead 9 mi. west of Falcon Lake on 17 March about 14 mi. east of her nest site. Two banded young from nests in the Spruce Siding area, both banded 7 June 1980, were found. One was captured alive on 4 March, 3 mi. east of McMunn, 20 mi. east of its nest site; the other was found dead on 7 March, 36 mi. east of its nest site. Those are small distances, indeed, suggesting that winter movement was minimal. Two banded young from our nests just across the border in Minnesota were also found. Banded 1 June 1980, one bird was captured 4 January, 9 mi. west of Falcon Lake (it was found dead nearby, 25 January); the second was captured 28 March; both were about 50 mi. north of their respective nest sites. An adult female, captured by us 5 April, at the junction of

PTH 1 and PR 308, had been banded as an adult by Steve Loch 10 April 1978, at Floodwood, Minnesota (pers. comm., 1981), about 223 mi. southeast, just west of Duluth.

The absence of winter (1980-81) Hawk Owl records or band returns from a heavily banded resident and winter population of Great Gray Owls to the north at Lac du Bonnet (42-50 mi. north) suggests that there was little influx into this area of northern owls.

One of the most striking aspects of this population was the high ratio of immatures (young from summer 1980) to adults. Among birds captured or found dead throughout the province at this period, 88% of 50 dead birds were immature. These are readily identified by a number of plumage characteristics. Even a few tail feathers or a single wing were sufficient to determine whether a bird was an immature or adult.⁵⁾ Of 24 birds banded on or within 4 mi. of PTH 1, 20 were immatures.

We found the immature/adult ratio in striking contrast to our previous experience. For example, in winter 1979-80, 32 of 36 owls banded by us were adults, including 10 captured on or close to PTH 1. Note that adults seemed to predominate in the notable winter incursion of Great Gray Owls into northeastern North America in 1978-79.⁷ Evidently, in summer 1980, Great Gray Owls had exceptionally good reproductive success in southern Manitoba and northern Minnesota. We had 13 active nests that summer (our highest number: 6 in Manitoba, 7 in Minnesota) and Steve Loch, in east-central Minnesota, had 17 active nests (pers. comm., 1980). A higher mortality of young birds is expected, both on the basis that there are more of them in the population (usually), and assuming that older birds may have had more experience with highway traffic or seek prey in sites away from highways.

Great Gray Owls evidently were concentrated along PTH 1 because of an abundance of voles (meadow mice) in the heavily grassed and extensive rights-of-way. In places, the grassed right-of-way extended back from the highway for as much as 100 yards. Low populations of prey species elsewhere (and competition with adults?) are presumed to have caused some of these birds to wander in search of a suitable winter hunting ground. Small mammals presumably had a tough winter in 1980-81, the sparse snow cover throughout the area making them more vulnerable to low temperatures. On the grassed rights-of-way, small mammals probably became more vulnerable as the snow melted, and as meltwater filled low-lying areas and later froze. Bog and forest habitats differed in that, generally, there was less grassy cover and more snow initially. Bogs, with an insulating layer of sphagnum moss were frozen (underneath 6 inches or so of moss) into May. Although in late April there was abundant sign that voles

had been numerous earlier, we saw not a single one, and guessed that deep frost, flooding, and heavy predation (for example, Rough-legged Hawks remained in the vicinity of PTH 1 and elsewhere in southeastern Manitoba, all winter) had depleted vole populations.

Owl movements and concentrations (and nesting) are related to prey species numbers, especially for a species so limited in its prey selection as the Great Gray Owl. Probably, the availability of voles from January to mid-April was the main basis for the unusual concentration of owls in this region, although recent observations by Steve Loch (pers. commun., 1981) indicate other complicating factors, as indicated by the three Great Gray Owls still in the area 12 May. Not since the winter of 1968-69, when a presumed influx was reported along PTH 1 and elsewhere in the province has this region supported so many owls.^{3 4} (We have since learned that Great Gray Owls are resident in this area and that "influx" may be slightly misleading.⁵) The availability of extensive edges of forest with good potential perches must also have contributed to the phenomenon. It seems likely, too, that some aspect of social interaction may have been involved or, at least, resulted from the unusual concentration of birds. Interactions — friendly or aggressive — were observed on numerous occasions through the period of observation.

Another factor that must be considered as a basis for the concentration and high mortality of owls is the fact that PTH 1 consists of two double lanes, eastbound and westbound, in places separated by a wide stand of trees (up to one mi.) providing four separate edges. In general, we found more birds (and carcasses) along the south edge of the east-bound lane, though birds occurred in all areas. Owls occasionally moved from one edge to another, crossing, in effect, two highways. Moreover, traffic on PTH 1 was unusual-



Coming in to a lure.

Robert R. Taylor



Great Gray Owl.

Robert R. Taylor

ly heavy. We experienced considerable difficulty conducting our search and capture activities at times owing to a continual movement of large trucks and other vehicles travelling at high speed. Often, we were attempting to capture birds, working directly from the highway shoulder, trying to ignore vehicles passing behind us as close as 2 or 3 yards. Our efforts were complicated by a need to drive slowly, watching for traffic while looking for live and dead owls. There were many aggravating situations.

There has not been in Manitoba, to our knowledge, as large a concentration of Great Gray Owls or as heavy a mortality, as was experienced in late winter 1980-81. What was apparently the largest influx of Great Gray Owls on the continent occurred in winter 1978-79 in

southern Ontario and the northeastern United States.^{1 2 6 7} Most of these birds were far from suitable breeding habitat and many perished from accidental collision with vehicles, shooting and starvation. In the Manitoba situation, on the contrary, most victims were in good, healthy condition and many were unusually fat, right up to the end of the period. It is thus surprising that we have not yet (10 May) found any nesting birds in any of several man-made nests in the vicinity of PTH 1, or elsewhere. Possibly a scarcity of prey species at a critical period may be a limiting factor.

The unusual appearance of a large number of Great Gray Owls in southeastern Manitoba along PTH 1 in late winter 1980-81, coupled with a heavy mortality, must be considered a

biological phenomenon of little known cause. Information gleaned from this occurrence of owls (twenty-one specimens which were mostly "moderately fat" to "heavy fat" prepared as scientific study skins by the senior author) somewhat softens the blow, but in our minds it will remain an astonishing event. Hopefully, it will not be repeated, for an annual mortality of this extent would pose a threat to maintenance of, at least, local populations.

Acknowledgements

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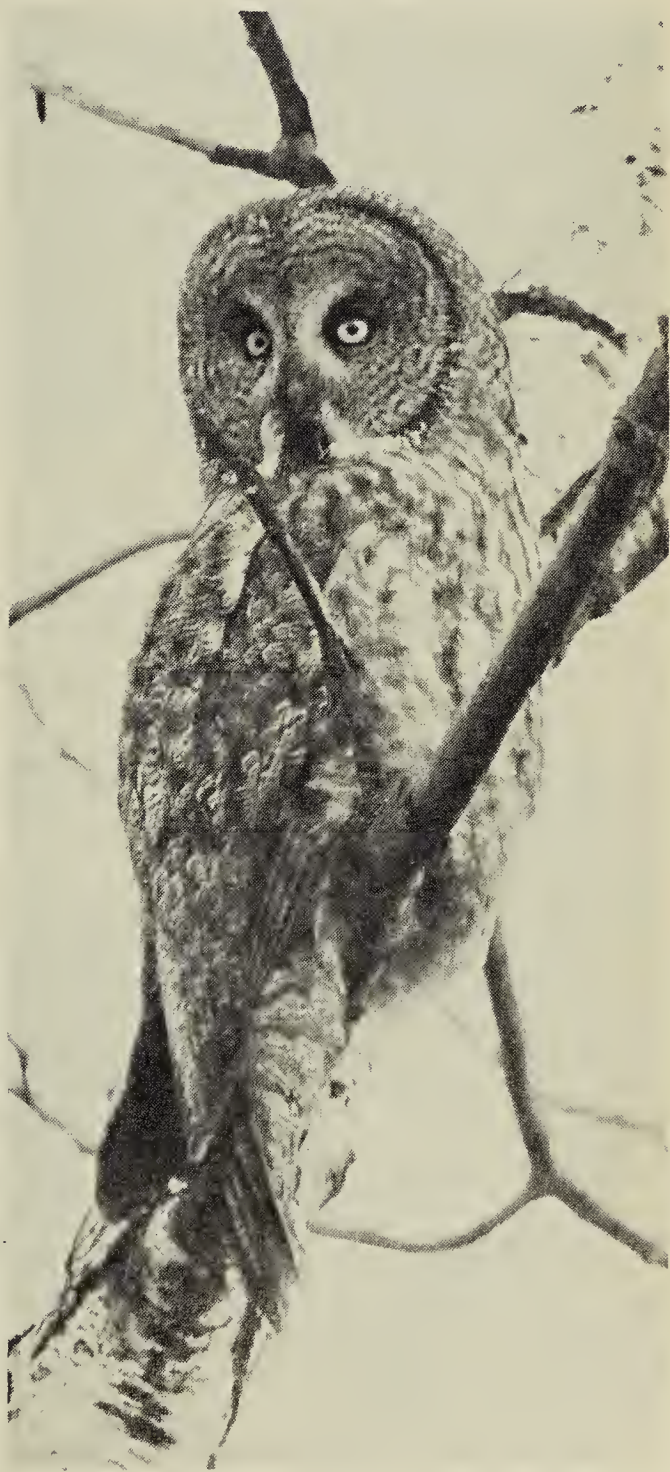
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⁶SHURFORD, D. and D. DeSANTE. 1979. The changing seasons. Winter 1978-79 ... the year of the Great Gray Owl. *American Birds* 33:255-262.

⁷VICKERY, P. D. and R. P. YUNICK. 1979. The 1978-1979 Great Gray Owl incursion across northeastern North America. *American Birds* 33:242-244.



Great Gray Owl.

Robert R. Taylor