

# GREAT GRAY OWL AND NORTHERN HAWK OWL NESTS AT CHURCHILL, MANITOBA

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The avifauna of the Churchill region in Manitoba has become increasingly well known in recent years.<sup>13</sup> Suetin added to this knowledge when he reported the first two nests of the Northern Hawk Owl to be found at Churchill in 1989. Here we report on the discovery of an active Great Gray Owl nest at Churchill in 1990 and on observations made at the nest. This is the first nest to be found at Churchill (Herbert Copland

pers. comm.) and the most northerly nesting record for this species in Manitoba.<sup>9</sup> We also report on observations made at a Northern Hawk Owl nest at Churchill in 1990.

While the University of Toronto Field Ornithology course was being conducted out of the Churchill Northern Studies Centre, adult Northern Hawk Owls were observed in an area of relatively dry



*Figure 1. Female Great Gray Owl on nest at Churchill, Manitoba.*

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taiga on a gravel kame beginning on 7 June 1990. A Great Gray Owl was spotted in the area on 10 June. On 11 June participants in the course heard a *whoop* call given in the same area early in the morning. Later the same morning we saw two adult Great Gray Owls, one with a rodent in its bill. During a search of this area on 13 June, Rising found a Great Gray Owl sitting on a nest. Later the same afternoon, Lang found an active Northern Hawk Owl nest approximately 200 m away. These nests were located on the Twin Lakes kame, about 18 km east and 6 km south of Churchill.

### Great Gray Owl Nest

The Great Gray Owl nest was 2.3 m up in a 10 m tall dead tamarack. It was situated on a horizontal branch adjacent to the trunk (Fig. 1). The nest, judging from its size, was probably originally built by either Common Ravens or Northern Goshawks, since Great Gray

Owls do not build their own nests.<sup>7,8</sup> The nest tree was located on the edge of the kame where it sloped down to the adjacent wet taiga (Fig. 2). The kame itself rose approximately 15 m above the wet taiga. The habitat on the kame consisted of open forest: white spruce (*Picea glauca*), tamarack (*Larix laricina*), and some black spruce (*P. mariana*) averaging 10 m in height with an understory of reindeer moss (*Cladonia* spp.) and Labrador tea (*Ledum* sp.). The wet taiga consisted of boggy habitat with black spruce of about 8 m and mosses. About 200 m southeast of the nest was an alder (*Alnus* sp.) bog. The remains of a long dead adult Great Gray Owl, consisting primarily of feathers, were found about 75 m northeast of the nest. However, two adults were later seen in the vicinity of the nest.

The *whoop* call, referred to earlier, is a food demand call given by breeding female Great Gray Owls.<sup>1</sup> It was heard



Figure 2. Habitat at the 1990 Churchill Great Gray Owl nest. The nest and young are visible in a snag on the left side of the picture.

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on other occasions. By 16 June, when the nest was next observed, the female (assuming that the brooding adult was the female) was no longer continuously brooding the three nestlings. At 0615 h the adult female was observed near the nest giving the *whoop* call every 10 to 15 seconds while the other adult (probably the male) was visible in the distance. That same evening, the female was near the nest and *whoop*-ed rapidly and loudly as the male flew in quickly with a rodent. The nest was last checked on 18 June, when the three large young had body and flight feathers pushing through the down and an adult was spotted 10 m away (Fig. 3). The young were estimated to be from two to three weeks old.

Nine pellets, and fragments of numerous other pellets, were collected from the vicinity of the nest on 12 July 1990 by Duncan. The number of prey items/pellet was 3.67 (range=1-8, stand-

ard deviation=2.12). Heather voles were easily the most numerous prey item (Fig. 4), but three other species were also recorded. Smith and Foster observed that some avian predator species seemed to prey disproportionately upon heather voles at Churchill.<sup>12</sup> They suggested that heather voles are more vulnerable due to their bold nature. However, piles of debarked twigs of uniform length left by heather voles were very numerous throughout the area. This suggests that heather voles were abundant and that the owls may have been preying on them in proportion to their abundance. Members of the subfamily Microtinae (voles) made up 86.5% of the diet of Great Gray Owls in the breeding season in Fennoscandia and the USSR.<sup>3</sup>

The previous most northerly known nests of the Great Gray Owl in Manitoba were found at Wabowden, some 500 km to the southwest.<sup>9</sup> However, in 1989, Duncan found a pair of Great Gray Owls



Figure 3. Great Gray Owlets in the Churchill nest.

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nesting near White Goose Lake, 400 km to the southeast (unpubl. data). A Great Gray Owl was sighted near the town of Churchill on 18 June 1949 and another was seen at La Perouse Bay, further east along Hudson Bay on 4 June 1972, both in tundra.<sup>2,5</sup> Nero et al. predicted that there was appropriate Great Gray Owl nesting habitat in the northern transition forest that lies between the northern coniferous forest and tundra.<sup>9</sup> This species has nested in similar habitat near Moosenee, Ontario.<sup>9</sup> We feel the lack of summer sightings and nest records from the area between Wabowden and Churchill is probably partly due to the lack of observers. However, the amount of the grassy meadow habitat that supports voles, which are the Great Gray Owl's prey, as well as the number of nest sites, may be limited on the Precambrian Shield.<sup>9</sup>

#### Northern Hawk Owl Nest

The Northern Hawk Owl nest was

found about 200 m northeast of the Great Gray Owl nest. It was within the broken off top of a 5 m tall dead spruce tree (Fig. 5). Three nestlings were visible when the nest was found. Two larger nestlings were more visible than the third and were approximately 3/4 the size of the adults. They were already covered in juvenal plumage. The nest tree was on the kame (see habitat description above) and was about 5 m west of a pond that measured roughly 300 m by 75 m. Fifty m to the south of the nest was a stand of balsam poplar (*Populus balsamifera*). It was not known whether either pair of owls excluded the other from its territory. Active nests of Honey Buzzards (*Pernis apivorus*), Sparrow Hawks (*Accipiter nisus*), Short-eared Owls, Ural Owls (*Strix uralensis*), and Great Gray Owls have been found within 500 m of nesting Northern Hawk Owls in Europe.<sup>7</sup> Mikkola considers the last three species direct competitors for food with Northern Hawk Owls. They

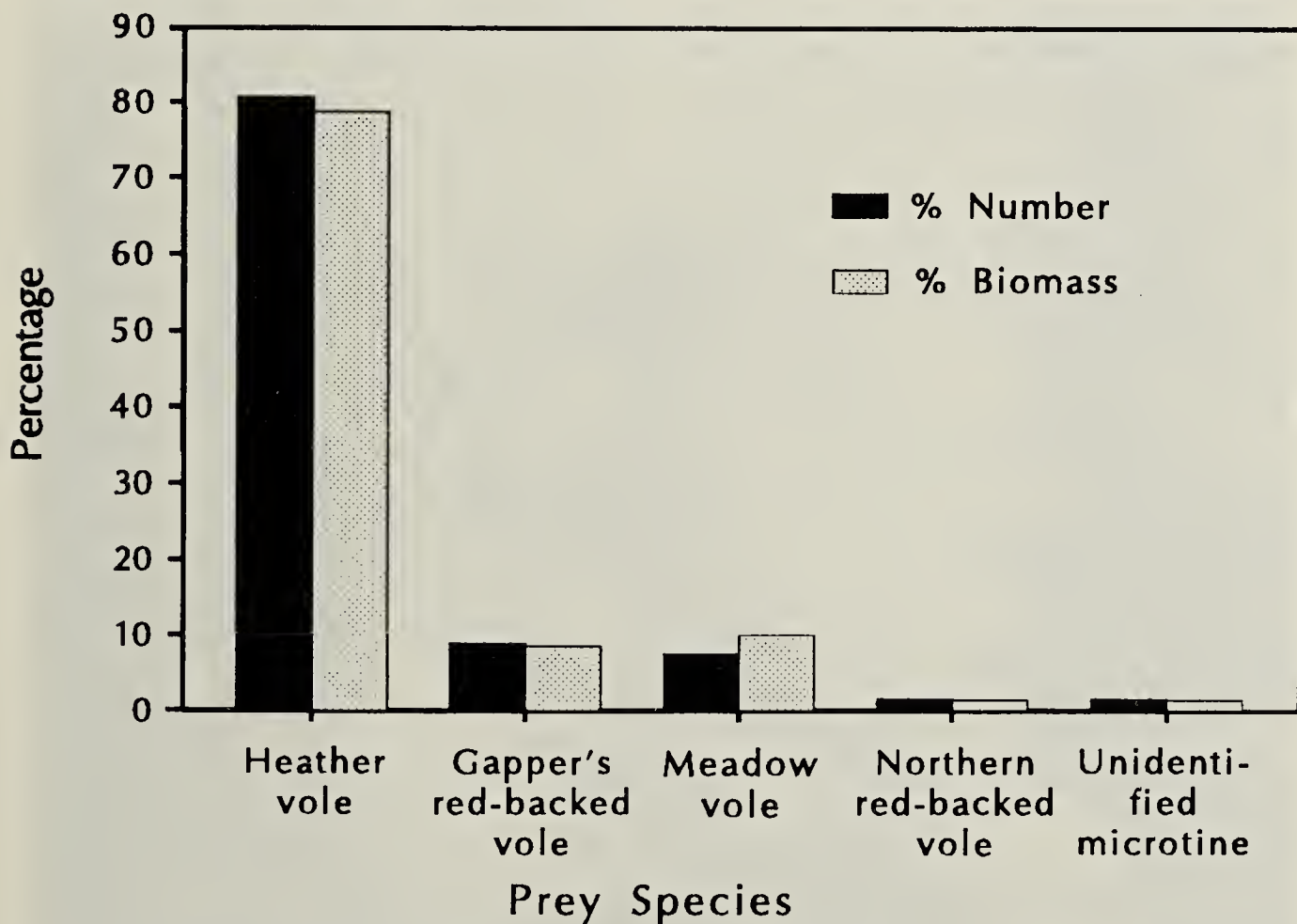


Figure 4. Percent number and biomass of species of prey items ( $n = 67$ ) found in pellets ( $n = 9$ , plus several fragments) at the Churchill Great Gray Owl nest. Mean species weights were: heather vole, 27.9g; Gapper's red-backed vole, 27.4g; meadow vole, 38.4g; northern red-backed vole, 27.4g; unidentified microtine, 27.6g (based on percent of species in sample).

may also hunt at the same times of day.<sup>7</sup> Raymond Tuokko (pers. comm.) observed a Northern Hawk Owl repeatedly attack a female Great Gray Owl, each time she left the nest. On one occasion Tuokko saw the female knocked to the ground. We did not observe aggressive interactions between the two species at the Churchill nest site.

Ramsay observed the nest from a blind for 27.5 h 16-19 June. On 16 June the largest juvenile had left the nest and was perched halfway down the tree. All of the young had some natal down showing. The next largest juvenile left the next day, and the smallest left the day after. Each of the juveniles remained in the nest tree for several hours after leaving the nest. The day after they left the nest, each juvenile had moved a few metres away from the nest tree. None of the young were seen to fly during the observation period. Lane and Duncan observed that young Northern Hawk Owls

were able to fly at least 20 m when only 34 days old.<sup>6</sup> This was approximately five to six days after leaving the nest. There has likely been strong selection for rapid flight development, given that the young Northern Hawk Owls are extremely vulnerable at this stage.

The young were fed by the adults while they were in the nest, and while they were perched on trees, fallen logs or the ground. Adults made an average of 2.1 food deliveries per hour to the nest area. Adults delivered food at intervals averaging 48.5 minutes (standard deviation=34.9, n=12 intervals). These intervals ranged from 10 to 130 minutes in length; however, even longer intervals were not included in this analysis because they began or ended with the beginning or termination of an observation period. Observations from the blind did not appear to affect the provisioning of the young, as adults delivered food in as little as five minutes after the blind



*Figure 5. Northern Hawk Owl nest located in the top of a broken off spruce.*

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was occupied. Ramsay was accompanied on two of the six visits to the blind by another person who promptly left. The longest intervals between food deliveries were recorded shortly after midnight, in the early afternoon, and at mid-afternoon. The two oldest juveniles appeared to be fed less often on their first day out of the nest than on other days, however, feeding was only observed for three days. Adults fed up to two young per trip. In most cases, the sex of the adult could not be determined. The adults appeared to bring food to the young in response to their calls rather than feeding them at will. This agrees with other published observations.<sup>3</sup>

Two pellets were collected from under the nest tree and the contents were identified by Kevin Seymour of the Department of Vertebrate Paleontology of the Royal Ontario Museum. Bones from the pellets are now housed in the collection of that department. One of the pellets contained the remains of two red-backed voles (ROM R2719). There was insufficient material to determine whether the remains were from Gapper's or Northern Red-backed Voles. Bones in the other pellet were identified as belonging to two northern bog lemmings (ROM R2717) and one heather vole (ROM R2718). In Norway, Finland, and the USSR, rodents of the subfamily Microtinae made up 75.6 to 96.3% of the prey items in the breeding season diet of hawk owls.<sup>3</sup> Red-backed voles and heather voles were preyed upon by both the Northern Hawk Owls and the closely nesting Great Gray Owls (Fig. 4).

Mikkola considers Great Gray Owls and Northern Hawk Owls competitors for food. The two species may compete only when prey abundance is low.<sup>7</sup> However, both species are thought to be nomadic, settling into areas with high vole abundance. These species may be limited more by nest site availability. Mikkola reports that Great Gray Owls occasionally nest in "loose colonies" in 49(4). December 1991

areas with high vole densities.<sup>7</sup> Hagen, in Cramp, estimated European Hawk Owl densities as high as 4 pairs/200 km.<sup>2,3</sup> Therefore, high densities of both of these owl species are possible, perhaps when prey densities are high. Such conditions may have prevailed at the Churchill nest sites, permitting these potential competitors to nest within 200 m of each other. Similar interspecific nesting densities were observed during a cyclic vole peak in burnt forest habitat in northern Minnesota.<sup>4,6</sup>

The hawk owls were observed caching prey. On one occasion, an adult flew from a tree near the nest and landed just below the top of another tree. It then flew out of the tree with prey in its bill and returned to feed the young. One adult habitually perched near the young owlets and was often inactive for long periods of time. On some of its forays for prey it would return almost immediately with prey. Observations that the adult flew off with any uneaten portions of prey items after feeding the young also suggest that the owls may have been caching food. Caching has been previously documented for this species.<sup>10,11</sup> As suggested above, one of the adults was always present at the nest as a sentinel. At a Northern Hawk Owl nest in Minnesota, Lane and Duncan found that after the young fledged, the female stayed to protect them while the male did most of the hunting.<sup>6</sup>

The adults appeared agitated and flew from tree to tree when people were in the vicinity of the young or nest. The adults flew at the heads of people who walked near the nest, at times even striking them, although without using their talons. However, every effort was made to avoid approaching the nest closely, except to occupy the blind. When human intruders were near, the adults gave rasping alarm calls that rose abruptly at the end. These are described and illustrated by sonograms in Cramp and Walker.<sup>3,14</sup> A sample of these calls was tape recorded and the length of the calls was measured from sonograms made from the recordings. The calls varied from 0.5 to 1.45 s in length.

Shorter calls that can be described as *ki-ki-ki* were also given. These calls were given individually or in groups with individual calls separated by approximately 0.2 s. As mentioned above, the young called to be fed. These calls are also described by Cramp and Walker.<sup>3,14</sup> The adult hawk owls tolerated very close approach by people while away from the nest or young. It became apparent that the adults had habituated to the observer near the nest when it was discovered that their behaviour did not change when Ramsay stepped out of the observation blind. Copies of the recordings mentioned above, and of other species tape recorded at Churchill, are housed in the Library of Natural Sounds at the Cornell Laboratory of Ornithology, 159 Sapsucker Woods Road, Ithaca, New York, 14850. Interested individuals can request copies of these and other recordings from the Library of Natural Sounds.

On one occasion the alarm calls of the adult owls attracted a male Pine Grosbeak to within 10 m of one adult hawk owl. The grosbeak's crown feathers were erect and it began calling, but the owls ignored it. It was not apparent whether the grosbeak was scolding the owls or joining the owls in mobbing the human intruders. A Bonaparte's Gull flying overhead also elicited an aggressive response, the adult owl becoming more agitated. One of the owls was attacked by a Rusty Blackbird on another occasion.

There are rumours that there were as many as three Northern Hawk Owl nests at Churchill in 1990 (Rudolf Koes pers. comm.). We urge people to report any nesting of these species at Churchill in the future in order that we may learn more about the in status and ecology at the poorly known northern edges of their ranges.

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