Great Gray Owl Observations 2004-2005

Ron Pittaway

The fall and winter of 2004-2005 were notable for the largest irruption ever recorded of Great Gray Owls (*Strix nebulosa*) in North America, including southern Ontario. The flight followed a probable large hatch in 2003 (based on number of second year birds), and widespread vole crash causing almost no reproduction in 2004, similar to the "nearly continent-wide" irruption of 1995-1996 (Nero 2003). Here I discuss selected observations and ideas from watching more than 100 individual owls; many were seen on numerous occasions.

Origin of Flight: Most Great Gray Owls seen in southern Ontario likely originated from north of the Canadian Shield in the Hudson Bay Lowland of Ontario. The first reports on *Ontbirds* of irrupting Great Grays were in late September 2004 from Marc Johnson of Hearst in northeastern Ontario, suggesting that the flight came mainly from the Hudson Bay Lowland, which is about 110 km north of Hearst. I postulate that much of the forested Canadian (Precambrian) Shield is unsuitable for breeding because Great Grays prefer semi-open lowlands with a grass/sedge ground cover supporting Meadow Voles (*Microtus pennsylvanicus*). On the Shield's contoured landscape, lowland breeding habitat is often confined, linear, fragmented and widely scattered compared to the extensive interspersion of forests and barrens in the Hudson Bay Lowland. This is discussed further under the next heading.

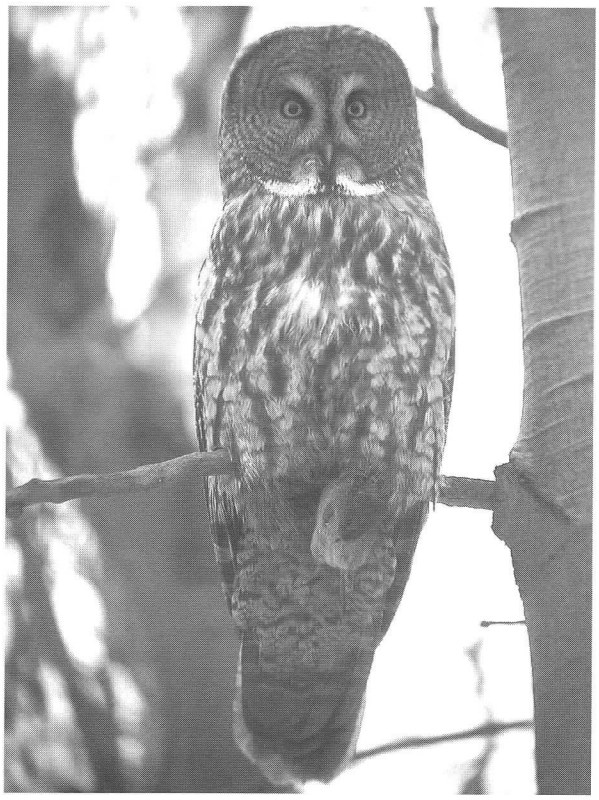

Figure 1: Typical plumage of Great Gray Owl in Toronto, Ontario, 29 December 2004. Compare with melanistic (darker) individual in Figure 2. Note the plump short-tailed Meadow Vole in its claws. Photo by *Jean Iron*.

Breeding Range Mystery: Why do range maps show the Great Gray Owl breeding mainly west of James Bay and the Ontario-Quebec boundary? See maps in any field guide. A few breed in western Quebec (Morneau 1996), but for no obvious reason they are absent as breeders from most of Quebec, all of Newfoundland and Labrador, the Maritime Provinces and Maine. Why? Suitable breeding habitat may be limited by topography and precipitation because (1) most of boreal Eastern Canada is mountainous Canadian Shield and Appalachian Mountains with restricted lowland breeding habitat; and (2) the greater amount of precipitation in Eastern Canada, both in summer and winter, has broad-scale effects on vegetation structure (Michel Gosselin, pers. comm.).

Prey Species: The Meadow Vole of open grassy habitats is the chief prey in much of the Great Gray's range (Brunton and Pittaway 1971, Bull and Duncan 1993). The Meadow Vole is called "field mouse" by most people. Voles differ from typical mice by their blunt noses, small eyes, short ears and particularly by their short tails (Banfield 1974). Voles, unlike nocturnal mice, are active both day and night, but seem to be most active around dawn and dusk. The Red-backed Vole (*Clethrionomys gapperi*) is a much less frequent prey because of its forest habitat.

High Vole Populations: Great Gray Owls concentrated in areas with high populations of Meadow Voles such as Ottawa, Peterborough, Simcoe County and Durham Region. How do Great Grays locate these areas? They possibly can visually detect vole urine and feces, which are visible in the ultraviolet light spectrum, allowing them to find high numbers of voles. This ability has been shown experimentally for Eurasian Kestrels and Rough-legged Hawks (Viitala et al. 1995) and is worth investigating for nomadic owls.

Dull-tipped Talons: The literature often mentions "razor-sharp" and "needle-sharp" talons. However, I was surprised when examining road-killed birds and specimens that some had dull-tipped talons as if filed down. One road-killed bird's claws were so blunt-tipped it was as if they had been trimmed with cat nail clippers. I suspect this wear resulted from the Great Gray's habit of spending considerable amounts of time on frozen ground and hard snow cover. Stressed birds may be more susceptible to heavy wear.

Diurnal and Nocturnal: When Great Gray Owls arrived hungry in the south, they hunted during the day. After several weeks of regaining weight, they gradually became less diurnal, particularly at midday. For example, on 26-27 February 2005, sunrise was about 6:59 a.m. and by 8:00 a.m. the five birds hunting the fields along Halls Road in Whitby (Durham Region) went to roost for the day in a thick mixture of spruce, cedar and hardwoods on the east side of the road. They did not leave the woods to hunt the fields again until after 5:00 p.m. Sunset was about 6:02 p.m. The owls

apparently hunted into the night as the moon was a full and light reflected off the snow, but they were probably inactive around midnight. As Great Grays became less diurnal and more crepuscular and nocturnal in late February and March, the best times to see them were dawn to early morning and late afternoon to dark. Winter activity periods were similar to those first reported by Godfrey (1967), Pittaway and Brunton (1969), Brunton and Pittaway (1971).

Luminous White Bowtie: Godfrey (1967) said that the narrow band of silvery white feathers on the foreneck just under the facial disk "may well be functional." This white bowtie (but not its black knot) is luminescent to humans in dim light and probably easily seen by owls at night. The American Woodcock, another crepuscular and nocturnal bird, shows luminescent silvery white undertail coverts during spring strutting displays (personal observations). The large white tail sides of male Whip-poor-wills and pale patches on other goatsuckers also are probably functional in low light. Much remains to be learned about visual communication in night birds.

Interactions with Great Horned Owls: It is overstated that Great Horned Owls kill adult Great Gray Owls because this happens only "occasionally". In fact, Bull and Duncan (1993) stated that Great Gray Owls "share habitat" with Great Horned Owls and defend the vicinity of the nest site from them. The Great Gray Owls that spent January to March 2005 on the Leslie Street Spit in Toronto and along Halls Road in Whitby were in close contact with Great Horned Owls without an incident.

Figure 2: Melanistic (darker) Great Gray Owl near Newmarket, Ontario, 19 February 1996. Compare with typical bird in Figure 1. Note darker plumage, dark area between eyes, and larger "black knot" of white bowtie. Photo by *Albert Kuhnigk*.

Hunting by Sound and Sight: This past winter I often heard people say that Great Gray Owls hunt by sound, suggesting that they hunt only by ear. Voles usually stay under the snow so are detected by ear, but Great Grays also are excellent visual hunters.

Head or Feet First Dives? Great Grays give the illusion of diving face first into the snow to catch prey, but just before hitting the snow they switch to feet first. The feet are folded like a fist which helps them break through a snow crust.

Melanism: Great Gray Owls exhibit varying degrees of melanism. Compare a typical individual in Figure 1 with the darker bird in Figure 2. A bird along Halls Road in Whitby in January and February 2005 was intermediate between the two birds pictured here. An almost black individual was photographed last fall in Minnesota.

Concealment Posture: Greats Gray Owls rarely use a sleeked upright "dead snag" posture in reaction to humans that is typical of Long-eared Owls and to varying degrees in other owls. However, one bird that roosted by day in a large roadside spruce displayed a moderately sleeked posture and further concealed itself by perching close to the tree's trunk.

Human Disturbance: Some people expressed concern that Great Gray Owls were being disturbed by people getting too close to the owls. Peer pressure and gentle reminders kept most enthusiastic people at a reasonable distance from the owls. Actual problems were minor compared to the tremendous conservation and education benefits gained by those people, especially youngsters, who saw this exciting owl for the first time. The real mortality factor was collisions with vehicles.

Acknowledgements

I thank Bruce Falls, Glenn Coady, Mark Cranford, Jean Iron, Marc Johnson, Doug Lockrey, Glenn Murphy (ROM), Mark Peck (ROM), Jon Pleizier, Rayfield Pye and Albert Kuhnigk. I particularly thank Michel Gosselin (CMN) and Ron Tozer for reviewing the manuscript.

Literature Cited

Banfield, A.W.F. 1974. The Mammals of Canada. National Museums of Canada. University of Toronto Press, Toronto.

Brunton, D.F. and R. Pittaway. 1971. Observations of the Great Gray Owl on Winter Range. *Canadian Field-Naturalist* 85(4):315-322.

Bull, E. L. and J. R. Duncan. 1993. Great Gray Owl (*Strix nebulosa*). In *The Birds of North America*, No. 41 (A. Poole and F. Gill, Eds.). Philadelphia: The Academy of Natural Sciences; Washington, D.C.: The American Ornithologists Union.

Godfrey, W.E. 1967. Some Winter Aspects of the Great Gray Owl. *Canadian Field-Naturalist* 81(2):99-101.

Morneau, F. 1996. Great Gray Owl. Pages 602-605 *in* J. Gauthier and Y. Aubry, eds. The Breeding Birds of Quebec: Atlas of the Breeding Birds of Southern Quebec. Association québécoise des groupes d'ornithologues, Province of Quebec Society for the Protection of Birds, Canadian Wildlife Service, Environment Canada, Quebec Region, Montreal, 1302 pages.

Nero, R.W. 2003. Great Gray Owl. *In* The Birds of Manitoba. Manitoba Naturalists Society, Winnipeg.

Pittaway, R. and D.F. Brunton. 1969. Great Gray Owl: Fact and Fiction. *Trail & Landscape* 3(3):94-97.

Viitala, J.E., E. Korpimaki and M. Kovula. 1995. Attraction of Kestrels to vole scent marks visible in ultraviolet light. *Nature* 373:425-427.