

Ageing and Variation of Great Gray Owls

Ron Pittaway and Jean Iron

Introduction

Here we describe how to distinguish two broad age classes, adult and first year, of the Great Gray Owl (*Strix nebulosa*) in the field. A third age class (second year) is described because sometimes it can be recognized in the field. We also discuss plumages and molts, subspecies, morphs, albinism, melanism, and telling males from females. We hope that birders and researchers will find this information useful in understanding the age classes and variation observed during irruption years and when encountering individuals in non-irruption years. This article revises our post to ONTBIRDS and the OFO website in January 2005.

Plumages and Molts

Juveniles undergo a partial first prebasic molt into first year plumage by late September. After September, young of the year and older birds are similar in appearance. First year birds retain the juvenal primaries, secondaries, tertials and tail for a year or more. The first annual molt of flight feathers starts at about 13 months of age (Bull and Duncan 1993). Not all primary and secondary feathers and often lesser secondary coverts are molted annually, so after about 1.5 years of age, Great Gray Owls usu-

ally show a mix of old and new flight feathers. A few juvenal primaries and secondaries may be retained for 3-4 years. Year-old and older Great Gray Owls normally molt all tail feathers annually (Bull and Duncan 1993), but Pyle (1997) on page 88 stated that they often keep juvenal tail feathers for two years, so such birds would have substantially abraded tails. More study is needed. Most second year and probably older birds from the 2004-2005 irruption showed an abnormal plumage because they retained many old feathers, which normally would have been molted. The retention of considerable old feathering indicated an inhibited or partially skipped molt and probably resulted from food stress during the molt period before these owls irrupted southward. Nero and Copeland (1997) reported a similar inhibited molt during the 1995-1996 irruption. We postulate that heavily worn birds with much retained old plumage may be typical of many irruption years.

Adults

We arbitrarily define adults as birds in their second fall and older. The folded wingtips are dark brown without pale tips and contrast with the paler gray tertials above and paler tail below, as shown in Figures

1 and 3. Some adults have one or two new grayer secondaries among contrasting older brownish secondaries on the folded wing panel (Figure 3). Other adults have the entire visible secondary panel brownish, indicating no recent molting. In first year birds, the secondary panel is more uniformly gray and less contrasting. The overall plumage of adults (not all) in 2004-2005 showed a greater mix of older browner feathers (probably due to an inhibited stress molt) contrasting with newer gray feathering. Even normally molting adults often retain brownish lesser wing coverts, which is a good indicator of age.

First Year

A first year owl is a bird during its first fall, winter and spring. First year birds have distinctly fresh pale-tipped primaries on the folded wingtips, as shown in Figures 1 and 2. The tail feathers of first year birds usually have tiny sharp points where the juvenal down (mesoptile) adhered to the tips of tail feathers. These tips remain into January or February. Figure 1 shows a comparison of first year and adult tails. Also see the photo of a first year bird on page 243 in Duncan (1996). *Caution:* Do not confuse the pointed tail tips of first year birds with the exposed quills on the tails

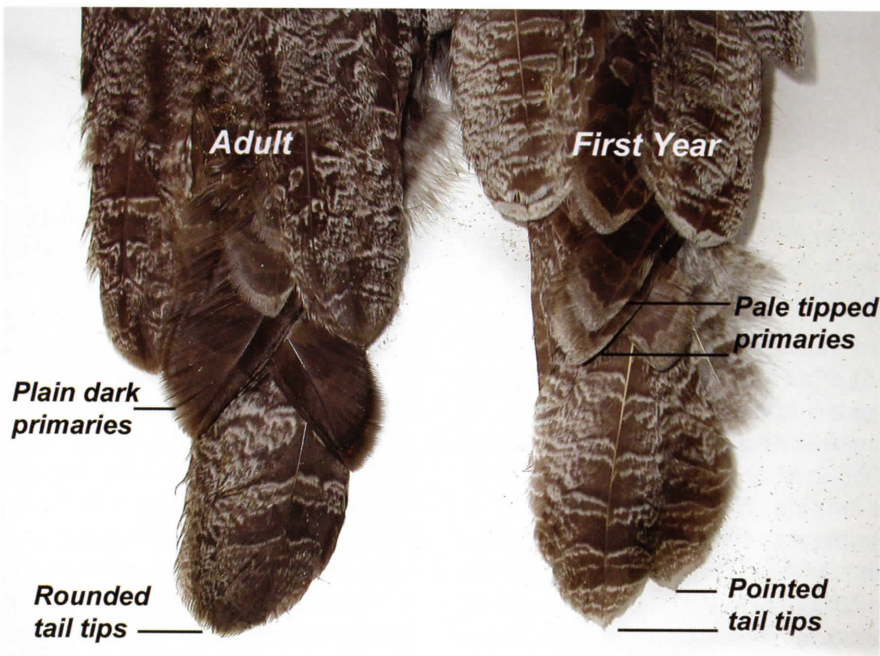


Figure 1: Comparison of adult and first year Great Gray Owls in the Royal Ontario Museum showing differences in folded wingtips and tail tip shape which can be used to age birds in the field. Photo by *Jean Iron*.



Figure 2: First year Great Gray Owl showing all fresh pale-tipped folded primaries and rather uniform grayish plumage. Illustration by John A. Crosby from *The Birds of Canada* (Godfrey 1986).

of heavily worn older birds (Figure 5). First year birds lack the mix of older browner feathers, which is typical of many but not all adults. We saw no first year Great Gray Owls in 2004-2005, indicating a widespread failed breeding season in 2004, as reported by Pittaway (2005). However, we did see second year birds whose retained juvenal folded primaries suggested first year birds, as in Figure 4. These birds did not molt normally. They

differed from first year birds in having retained two-year-old frayed tails and variable amounts of contrasting old brown feathering.

Second Year

Sometimes, this age class can be recognized in the field. Second year birds that have molted normally usually show a mixture of pale primary tips and darker adult tips. Some third year birds are similar, but most should have more adult primaries. Most second year birds in 2004-2005 had retained old brown feathering similar to that described by Nero and Copeland (1997). They stated, "The inhibited molt shown in these 2-year old birds was presumably the result of a nutrient shortage (lack of sufficient food) in winter 1994/1995, and/or spring and summer 1995. As a result, these birds had

retained much plumage that was more than 1 year old, hence largely worn and faded, thus giving them a strongly brown color overall. Often such birds could be identified at a distance, whether perched or in flight." Figure 4 shows a second year bird with first year folded wingtips and a mix of old and new feathers elsewhere. This molt contrast indicates that it is not a first year bird. Figure 5 shows heavily abraded tail feathers, suggesting a



Figure 3: Adult Great Gray Owl showing contrasting dark folded wingtips lacking pale tips, and mixture of new gray and old brown secondaries. 5 January 2005, Cranberry Marsh, Whitby, Durham Region, Ontario. Photo by Jean Iron.

second year bird or possibly an older bird with a retained juvenal tail. See *Caution* under the heading First Year above.

Subspecies

There is one subspecies (race) in North America, which is the first named or nominate subspecies, *S. n. nebulosa*. The Great Gray Owl was described in 1772 from a specimen from the Severn River in northern Ontario (AOU 1998). There is very little geographical variation in size

and plumage colour across North America, probably because its nomadic behaviour allows out-crossing and gene flow among populations. The Great Gray Owl is one of the few bird species described first from the New World that also occurs in the Old World. A second subspecies, *S. n. lapponica*, occurs across northern Eurasia. The three Royal Ontario Museum specimens of *lapponica* are slightly paler overall with more distinct long streaking below. A third subspecies, *S. n. elisa-*



Figure 4: Second year Great Gray Owl told by its retained old faded juvenal pale-tipped wingtips, contrasting new gray and old brown secondaries, and mix of gray and brown coverts. This individual's plumage is abnormal due to an inhibited molt. 3 January 2005, Thickson's Woods, Whitby, Durham Region, Ontario. Photo by Jean Iron.

bethae, described from Mongolia, is not recognized by most authorities (Michel Gosselin, pers. comm.).

Morphs

There are no morphs of the Great Gray Owl, but some birds are grayer or browner than others due to individual variation, age, wear, and amount of retained older faded feathers. Fresh first year birds with all new feathers often appear more uniform gray in the field. It is

important to keep in mind that the same bird will appear different depending on light, time of day, and background. Observers seeing the same individual in the morning and then in the afternoon often think they have seen two different birds. A Great Gray Owl's true colours and patterns often are altered in photographs.

Albinism

Albinism is more frequent in Great



Figure 5: Badly frayed “skeletonized” tail of Great Gray Owl showing exposed quill tips, suggesting a second year bird having retained its tail for two years due to an inhibited or missed stress molt. Do not confuse this tail with that of a first year bird’s pointed tail tips where the down once adhered. 1 January 2005, Thickson’s Woods, Whitby, Durham Region, Ontario. Photo by Jean Iron.

Gray Owls than in other owls (Alaja and Mikkola 1997). A male bird with white plumage that mated with a normal bird in Idaho produced normal young (Whitfield and Kelley 1995). It was considered an incomplete albino because its eyes and toes were not pink. Many partial albinos with some white feathers and a few leucistic birds with

diluted or muted feather coloration have been recorded.

Melanism

Great Gray Owls exhibit varying degrees of melanism (Pittaway 2005). Figure 6 shows a partially melanistic individual from the irruption in 1995-1996, with more information in the caption. A slight-



Figure 6: Partially melanistic Great Gray Owl. Note overall darker plumage colour, darker loreal area, larger black chin spot “black knot” and shorter white bowtie. The worn tail tips suggest at least a second year bird. 19 February 1996, near Newmarket, York Region, Ontario. Photo by *Albert Kuhnigk*.

ly melanistic individual along Halls Road in Whitby, Durham Region, during January and February 2005 was intermediate between Figure 6 and normally-coloured birds. An almost solid black individual was photographed in Minnesota in November and December 2004 (see photo in Alt 2005).

Male or Female

Females are larger than males, but there is considerable overlap (Bull and Duncan 1993). Judging size in the field is deceptive and unreliable. If several birds are seen together, one might "guess" that an extremely small individual is a male or an extremely large one is a female, but not with certainty. It is impossible to tell males from females by appearance in the field on winter range (Pittaway 2005).

Ethics and Photos

Please allow Great Gray Owls the space they need to hunt and rest. To

age them, a scope is essential. If you are taking photos of perched birds to determine age, the best photos are of the sides and the back, showing the wingtips, secondaries, wing coverts and tail.

Conclusion

The above information on ageing Great Gray Owls in the field is preliminary. Some will be difficult if not impossible to age in the field. We recommend using our information in combination with the paper by Peck and Murphy (2005) in this issue.

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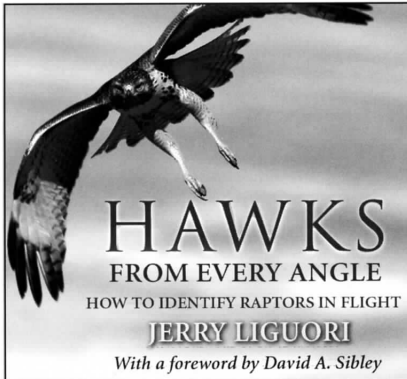
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