

Recognizable Forms

Subspecies and Morphs of the Red-tailed Hawk

by
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Introduction

Hawkwatching has been growing in popularity by leaps and bounds in recent years. Increasingly, hawkwatchers are recording the age classes (adult and immature), subspecies (races) and morphs (colour phases) of the hawks passing their lookouts.

The Red-tailed Hawk (*Buteo jamaicensis*) is a highly variable species, having a number of recognizable forms. In this note I discuss the status and identification of the Red-tailed Hawk subspecies and morphs in Ontario. I also will review the question of whether "Krider's" Red-tailed Hawk (*B. j. kriderii*) and "Harlan's" Red-tailed Hawk (*B. j. harlani*) are valid subspecies, or morphs.

Taxonomy

For subspecies in this account, I follow the treatment used by Godfrey (1986). See Pittaway (1991) for a list of the subspecies and morphs found in Ontario.

The "Eastern" Red-tailed Hawk (*B. j. borealis*) "breeds over most of the province" (James 1991). Observant watchers will occasionally see the other following forms in the province: "Western" Red-tailed Hawk (*B. j. calurus*) and its colour

morphs; "Krider's" Red-tailed Hawk; and "Harlan's" Red-tailed Hawk.

Since I will be discussing whether Krider's and Harlan's hawks are valid subspecies or just colour morphs, a review of the differences between a subspecies and a morph is in order. Under the rules of taxonomy, a subspecies is considered to be a distinct subdivision of a species occupying a separate geographical breeding range exclusive of other subspecies. Subspecies intergrade (interbreed) freely with related subspecies where their ranges meet. Subspecies are recognized taxonomically by a formal scientific name; for example, the "Eastern" Red-tailed Hawk is *Buteo jamaicensis borealis*. The third part of the scientific name, *borealis*, is the name of the subspecies. On the other hand, morphs are not formally recognized taxonomically by a scientific name. The key difference between a morph and a subspecies is that morphs constitute two or more distinct forms which coexist over a wide area in an interbreeding population, often even in the same brood.

Plumages, Molts and Ageing

The sexes in the Red-tailed Hawk are similar, except that females on average are somewhat larger. Like most hawks, there are two distinct

age classes and plumages: immature (juvenile) and adult. In hawks, most birders prefer to use the term immature for birds which are in juvenile plumage. "The juvenile plumage is assumed in the nest and is retained until the next midsummer moult, when the adult plumage is assumed at approximately fifteen months of age" (Taverner 1927). Adults undergo a prolonged molt annually during the summer months. For additional details of plumages and molts see Palmer (1988).

Albinos

Albinistic Red-tailed Hawks are regularly encountered. They range from partial albinos, having various mixtures of white and normal feathers, to completely white birds. Partial albinos usually show a patchy pattern quite unlike "Krider's" Red-tailed Hawk. See the illustration on Plate 11 in the Peterson hawk guide (Clark and Wheeler 1987). Total albinos could be confused with white morph Gyrfalcon (*Falco rusticolus*), but differ in "behaviour, general shape and flight style" (Lish and Voelker 1986).

"Eastern" Red-tailed Hawk (*B. j. borealis*)

This subspecies of the Red-tailed Hawk is the common large hawk in most of Ontario. The distinctive rufous tail of a soaring adult is visible at a great distance. Immature birds have barred, brownish-grey tails and like adults usually have a distinctly streaked band across the belly. Overhead, the dark patagial marks at the leading edge of the inner wing are diagnostic of both adults and immatures. See Plate 11 in Clark and Wheeler (1987).

The plain red tail, usually with a narrow black subterminal band, is a trait of the Eastern subspecies (Taverner 1936, Godfrey 1986). See Figure 1. It is almost invariably a light morph bird. I could find no reports in the literature of rufous or dark morph birds breeding in eastern Canada.

Interestingly, Todd (1950, 1963) named the northern population of the "Eastern" Red-tailed Hawk breeding in the spruce-fir forests from Nova Scotia to Alberta as *Buteo jamaicensis abieticola*. This subspecies was not recognized by the American Ornithologists' Union (A.O.U.) Check-list (1957) or by Palmer (1988). Godfrey (1986) stated that he had not "seen adequate material to appraise it". However, Godfrey (pers. comm. 1993) has said that Todd (1950) was probably correct in naming this northern subspecies. Dickerman and Parkes (1987) supported the recognition of *abieticola*, and reported a breeding record south to Frontenac County, Ontario. If this subspecies were to be formally recognized, then true Eastern *borealis* would be restricted to the deciduous forests of extreme southern Ontario and the eastern United States except Florida.

Typical adults of this proposed "Spruce-Fir" subspecies, *abieticola*, differ from more southern birds "in having bold, heavy, dusky to black streaking on the feathers of the belly band. The throat is never pure white as in many *borealis*, and may be so heavily streaked as to appear almost black... The ground color of the underparts of *abieticola* averages more richly colored (buffy) than in *borealis*, overlapping somewhat with the palest

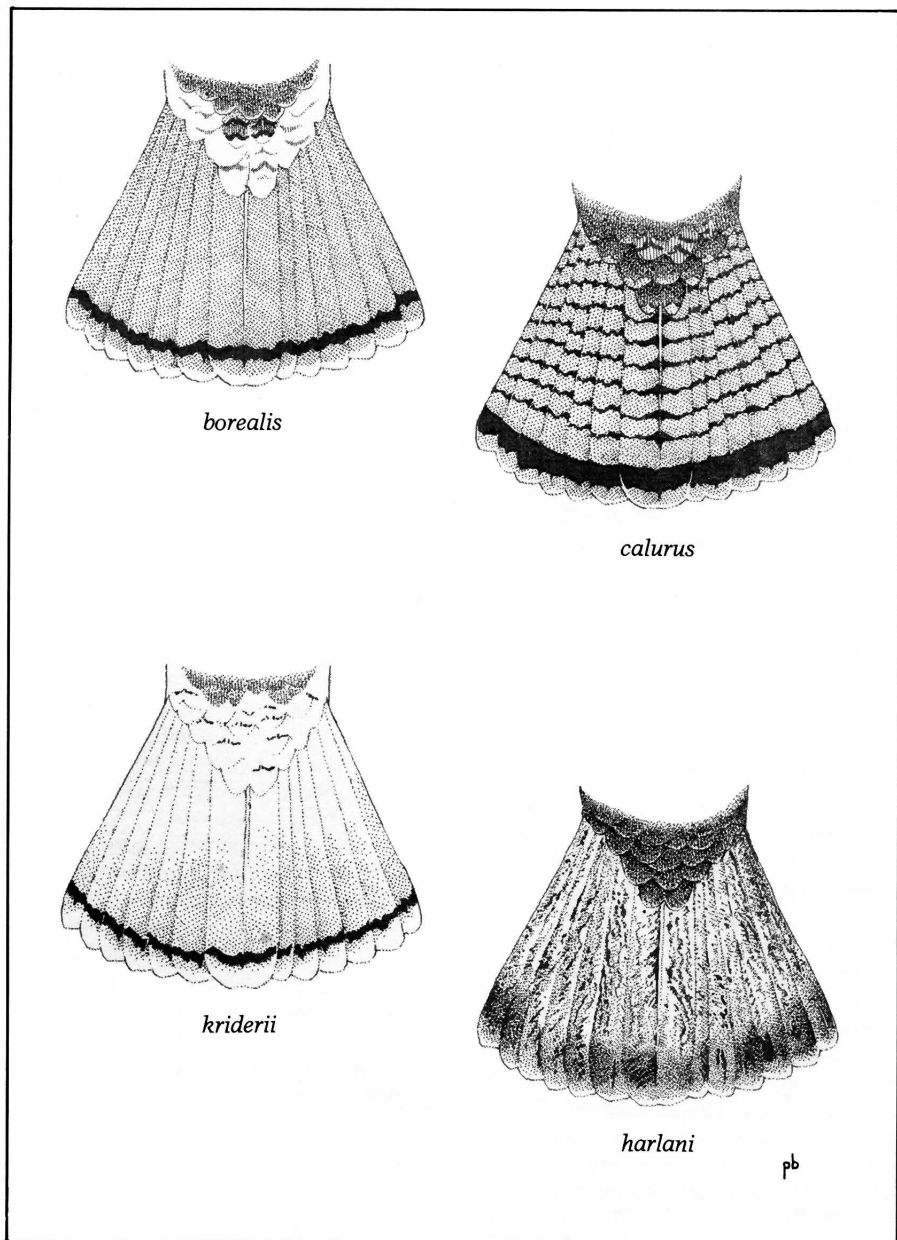


Figure 1: Adult tail patterns of four Red-tailed Hawk subspecies.
Drawings by Peter Burke.

individuals of *calurus*." Immatures "often may be identified as such by the greatly increased area of blackish ventral streaking, in some instances forming almost a solid band" (Dickerman and Parkes 1987).

During the peak flight of 371 Red-tailed Hawks at Cranberry Marsh, Durham Region, 25 October 1992 (Barker 1993), and being aware of the description of *B. j. abieticola*, I noted that most of the birds were typical of this proposed race. Whether or not this is a valid subspecies, it is certain that northern Redtails are much more heavily marked than their extreme southern Ontario counterparts.

"Western" Red-tailed Hawk (*B. j. calurus*)

The highly polymorphic Western subspecies, *calurus*, breeds east to central Manitoba, where it intergrades with the Eastern Red-tailed Hawk (Godfrey 1986). "As a migrant and wintering bird, it regularly occurs along the Atlantic seaboard" (Dunne *et al.* 1988). It is a "rare wanderer" throughout Ontario from autumn to spring (James 1991).

Western Redtails are usually divided into three morph categories: light (most common morph), rufous, and dark, with various intermediates. Clark and Wheeler (1987) provide illustrations and a thorough discussion of these morphs.

Adult light morph Western Redtails are like Eastern Redtails but have distinctly rufous-washed underparts and rufous-banded leg feathers. A characteristic of all morphs of the Western subspecies is that the red tail is often crossed by several sharply defined black bars (Taverner 1936). The black on the tail varies from flecking to complete

cross-barring. Note to, that the subterminal band is usually wider. See Figure 1. The Western adult on Plate 11 in Clark and Wheeler (1987) is somewhat intermediate between a typical light morph and the rufous morph on Plate 14. Note the black barring on the red tails. Immature light morph Western Redtails are often difficult to separate from Eastern immatures.

Rufous and dark morph Western Redtails are less frequent in the population than are the light morph birds, but they are reported more often than the latter. A rufous morph adult was seen by Alan Wormington at Point Pelee on 24 October 1992 (Henshaw and Kerr 1992). Rufous morph immatures are often distinctive; see Plate 14 in Clark and Wheeler (1987). I saw a dark morph adult on 20 October 1990 near Saintfield, Durham Region (Bain and Henshaw 1991). At first I thought it was a dark morph Rough-legged Hawk (*Buteo lagopus*) and would have overlooked it had I not stopped my car to view it with binoculars. To my amazement, it was a beautiful all-black Redtail except for silvery underwing flight feathers and a barred red tail. Immature dark morph Western Redtails are usually difficult to separate from immature Harlan's.

It is generally assumed that rufous and dark morph Redtails with red tails seen in Ontario are of the Western subspecies since such morphs are virtually unknown in the Eastern race. When it can be seen, the black-banded red tail of the adult Western should further support the identification of this subspecies. If in doubt about the subspecies, just call them rufous and dark morph Red-tailed Hawks.

"Krider's" Red-tailed Hawk

(*B. j. kriderii*)

This is a very pale form which breeds on the southern prairies east to extreme western Ontario (Godfrey 1986, James 1991). Krider's is a rare migrant in southern Ontario (Taverner 1927, James 1991). Typical adults are like bleached Eastern Redtails, being much whiter overall with a whitish or pinkish tail. See Figure 1. Immatures are similar to adults, but have a whitish cross-banded tail. In flight, Krider's has a distinctive white-headed appearance. Both adult and immature Krider's commonly show large whitish rectangular patches on the upper wings, leading to confusion with the immature light morph Ferruginous Hawk (*Buteo regalis*). See the excellent illustrations of Krider's on page 195 of the National Geographic Guide (Scott 1987) and the perched adult and flying immature on Plate 11 in the Peterson hawk guide (Clark and Wheeler 1987).

Currently most authorities follow the A.O.U. Check-list (1957) in treating Krider's as a subspecies of the Red-tailed Hawk. However, Taverner (1936) and Palmer (1988) do not recognize Krider's as a valid subspecies but consider it to be a colour morph. Dr. W. Earl Godfrey (pers. comm. 1993) now also believes that Krider's may be a morph because "it occurs side by side with other Red-tailed Hawks in the same breeding population". The A.O.U. (1957) stated that "there are extensive areas of intergradation with *B. j. borealis* on the east and *B. j. calurus* on the west". Since Krider's coexists (and interbreeds) over a large breeding range "where it is

outnumbered by the Eastern form" (Clark and Wheeler 1987); therefore, Krider's is by definition a morph and not a valid subspecies. In any case, typical Krider's are distinctly recognizable in the field.

"Harlan's" Red-tailed Hawk

(*B. j. harlani*)

Harlan's Hawk is "a variable population in Alaska and western Canada formerly regarded as a distinct species" (Sibley and Monroe 1990). It migrates through the prairie provinces and winters mainly in the south-central United States. There is a specimen record from Pennsylvania (Dickerman and Parkes 1987), and Gerry Smith (pers. comm. 1993) has seen Harlan's twice in spring migration at Derby Hill, New York, at the southeast corner of Lake Ontario. There are a few sight records for southern Ontario.

Classic adult Harlan's Hawks are quite recognizable if the distinctive tail is seen well. They are similar to the other dark morph Redtails but lack the diagnostic red tail, and usually they have "much white speckling on breast and underwing coverts" (Clark and Wheeler 1987). The tail is "mottled and freckled with black, grey, white and red in various proportions and with longitudinal streaks instead of transverse bars" (Godfrey 1986). See Figure 1. Immatures have barred tails and are difficult to separate from other dark morph Redtails (Clark and Wheeler 1987). Harlan's interbreeds with other subspecies; for example, there are recognizable intergrades between Harlan's and Western Redtails showing characteristics of both subspecies. Harlan's Hawk is normally a dark morph bird;

however, it is reported that Harlan's has both a light morph and a rare barred-tailed morph (Clark and Wheeler 1987, Mindell 1985). It is questionable whether these morphs are pure Harlan's or birds showing intergrade traits with other subspecies.

The taxonomic status of Harlan's Hawk has changed several times between species and subspecies since its discovery by Audubon in 1829 (Julian 1971). The A.O.U. Check-list (1957) listed it as a distinct species. Since Harlan's Hawks interbreed freely with other Red-tailed Hawks, it cannot be a separate species under the biological species concept. The A.O.U. (1973) reassigned Harlan's to subspecies status. However, the debate continued whether Harlan's was a valid subspecies or a colour morph having no taxonomic status. Mindell (1983) appears to have settled the matter. He presented very convincing evidence that Harlan's has an extensive core breeding range exclusive of other Red-tailed Hawk subspecies, although a small number of intergrades occur throughout its range. Harlan's is therefore a valid subspecies (Mindell 1983). Nevertheless, Palmer (1988) still preferred to consider Harlan's a morph.

In summary, Cade (1990) believes that the Harlan's Hawk represents "a breeding population that became isolated in a Pleistocene refugium, where these hawks achieved distinctive morphological differentiation from other Red-tailed Hawk populations but failed to achieve reproductive isolation, so that on recontact of formerly separated populations, there has been exchange of genes".

Conclusion

For those hawkwatchers wanting more information, there are two field guides to the hawks that I highly recommend: The Peterson Guide to the Hawks (Clark and Wheeler 1987) and Hawks in Flight (Dunne *et al.* 1988). Both books cover Red-tailed Hawk subspecies and morphs in considerable detail.

Acknowledgements

I thank Dan Brunton, Peter Burke, Bill Crins, Bob Curry, Kim Eckert, Earl Godfrey, Michel Gosselin, Ron Tozer and Mike Turner for much valuable help in the preparation of this note. Peter Burke kindly provided the illustrations which greatly enhance this note.

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Publication Notice

Population Ecology, Habitat Requirements, and Conservation of Neotropical Migratory Birds. 1991. By *Deborah M. Finch*. Publications Distribution, Rocky Mountain Forest and Range Experiment Station, 3825 E. Mulberry, Fort Collins, CO, U.S.A. 80524. No charge.

Recent analyses of local and regional bird population counts, radar migration data, and capture data from banding stations show that forest-dwelling bird species, many of which are neotropical migrants, have experienced population declines in many areas of North America. The factors that have been advanced to explain the population declines include forest fragmentation on the breeding grounds, deforestation of wintering habitats, pesticide poisoning, or the cumulative effects of habitat changes. This literature review summarizes current information on population trends of neotropical migratory birds and the factors affecting migrant populations on the breeding and wintering grounds.