

Extreme



Adult Harlan's Hawk.
Yukon Territory, June;
photo by © William S. Clark.

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Variation in the

John J. Audubon in 1831 described Harlan's Hawk and sent the type specimen to the British Museum. It has been alternately considered a separate species, *Buteo harlani* (from the 1830s to 1891, as well as from 1944 to 1973), and a subspecies of the Red-tailed Hawk, *B. jamaicensis harlani* (from 1891 to 1944 and from 1973 to the present). Harlan's Hawk breeds in Alaska (except for the coastal southeast), the Yukon Territory, extreme northwestern British Columbia, and much of the Northwest Territories. Its winter range is large, including southwestern British Columbia and most of the western and central U.S., east to Illinois and Louisiana. Throughout the winter range, Harlan's Hawk occurs locally with and less commonly than various other subspecies of Red-tailed Hawk.

Overview of Variation in Harlan's Hawk

Tails of adult Harlan's Hawks are illustrated in various field guides as pale to medium gray with some dark mottling and a more-or-less well-defined darker subterminal band (e.g., Peterson 1980, Robbins et al. 1983, Sibley 2000, Dunn and Alderfer 2006). Several of these guides include just one illustration. Specialty raptor guides (Wheeler and Clark 1999, Clark and Wheel-

NOTE: Figures mentioned in the text and preceded by a 'W' (i.e., Figs. W18-W22) appear in an expanded online version of this article: aba.org/birding/v41n1p36w1.pdf



Tails of

Adult Harlan's

The distinctive “**Harlan’s Hawk**”, currently classified as a subspecies (*harlani*) of the widespread Red-tailed Hawk, shows extreme variation in the color and pattern of the tail. This article summarizes and presents extensive photographic documentation of variation in the tails of Harlan’s Hawks.



Adult Harlan's Hawk.
Texas, December;
photo by © William S. Clark.

's Hawks



Fig. 1. Adult Red-tailed Hawk tail; this pattern is shown by most adult Eastern and some adult Western Red-tailed Hawks. *New Jersey, October; photo by © William S. Clark.*



Fig. 2. Adult Red-tailed Hawk tail; this pattern is shown by many adult Western Red-tailed Hawks. *Washington, January; photo by © William S. Clark.*



Fig. 3. Typical adult Harlan's Hawk tail. *From Burke Museum, University of Washington; photo by © William S. Clark.*

er 2001, Wheeler 2003, Liguori 2005) show more variation, including adult tails with dark banding and more rufous near the tips. Mindell (1985) has in-hand photos of five adult Harlan's showing the upper tail; three show dark banding, and three show noticeable rufous. Wheeler (2003) has nice photographs of 23 adult Harlan's Hawks (although some are not labeled as such), no two of which are exactly alike.

Taverner (1927) first wrote about the variation in adult Red-tailed Hawk tails. He showed in his *Plates 1 & 2* three tails of adult Red-tailed Hawks but 13 tails of adult Harlan's Hawks. (Most of those labeled as Krider's Hawks were actually Harlan's.) Lish and Voelker (1986) showed six adult Harlan's tails and only three of adult Red-tails in their article on Red-tailed Hawk tail patterns from Oklahoma. Wood (1932) noted the variation in adult Harlan's tail patterns and commented, "There is quite a variation in the color of the tail, more than even in the body color."

I have examined photos of more than 150 adult tails and inspected more than 800 adult specimens. My conclusion is that tail variation in this taxon is extreme. Indeed, *no two tails are exactly alike in color and pattern.*

Adult Harlan's Hawks are easy to distinguish from adults of other Red-

Table 1. Amount of Rufous in 467 Adult harlani Tails. Sampled from tails of museum specimens and adults in hand for banding. All had only traits of Harlan's Hawks.

Amount of Rufous	Number	Percent of Total
None	152	33%
<10%	124	26%
10-50%	61	13%
>50%	130	28%



Fig. 4. Medium-gray adult Harlan's Hawk tail. *From Royal British Columbia Museum; photo by © William S. Clark.*



Fig. 5. Dark gray adult Harlan's Hawk tail. *From private collection of William Voelker; photo by © Jim Lish.*

tailed Hawk subspecies by their different tails, as well as by their cold black plumage with white feather bases, whitish throats, and often unmarked or mottled secondaries. Further, light-morph adult Harlan's have white throats and white (not rufous-buff) underwing coverts and underparts. All of the tails depicted in this article are from individuals with characters of pure adult Harlan's Hawks.

Analysis of Museum Specimens and Birds Captured for Banding

Tails of adult Red-tailed Hawks of other subspecies differ from those of Harlan's Hawks and show little variation among them; >97% are like the adult tails shown in Figs. 1 & 2, with variation only in the width of the subterminal band and the number of the other narrow dark bands. Tails of some adults, especially those from southeastern Alaska, show more irregular narrow dark banding.

Harlan's Hawk adult tails, on the other hand, vary greatly in color: white; gray; rufous; and every shade in between, including gray-brown, chestnut, or some combination of these. Further, they can be marked with dark longitudinal mottling, dark grizzling (like fine paint spatter), irregular dark banding, or some mix of these. Tail banding is almost always wavy and can vary from partial to complete, narrow to medium to wide, with



Fig. 6. Typical adult Harlan's Hawk tail with rufous band near the tip. *From private collection of William Voelker; photo by © William S. Clark.*



Fig. 7. Adult Harlan's Hawk tail with outer half rufous. *Alaska, September; photo by © Ted Swem.*

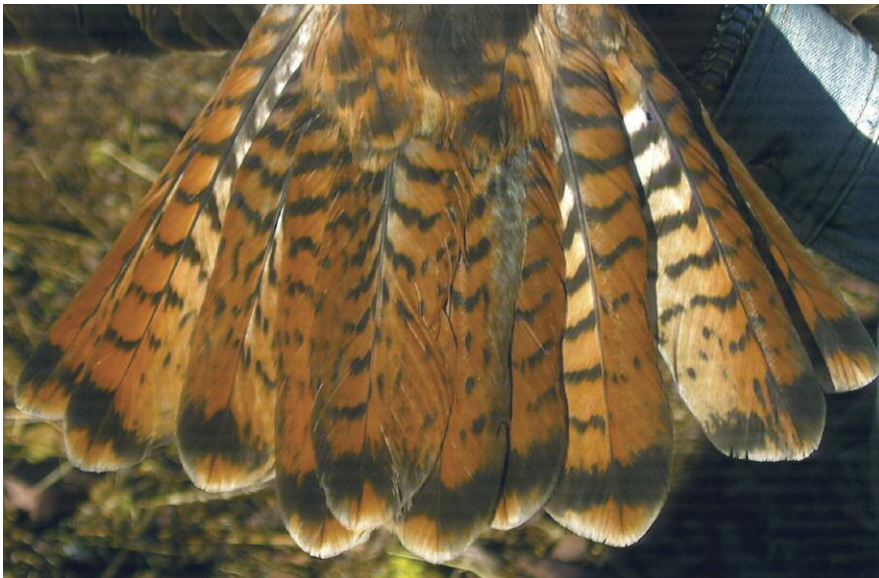


Fig. 8. Adult Harlan's Hawk with rufous tail. *Montana, September; photo by © William S. Clark.*



Fig. 9. Adult Harlan's Hawk tail with narrow dark bands. *From Sam Noble Museum of Natural History, University of Oklahoma; photo by © William S. Clark.*



Fig. 10. Adult Harlan's Hawk tail with wide dark bands. *From Royal British Columbia Museum; photo by © William S. Clark.*

the subterminal tail band absent, narrow to wide, dusky to black, or faint to crisp. Often individual tail feathers differ from others in the same tail. More than half are grayish with some mottling and a more-or-less obvious dusky subterminal band (Fig. 3), others are medium gray (Fig. 4), and a few are dark gray (Fig. 5).

Other adult tails differ in color and pattern, many appearing quite different, some with rufous coloration, some heavily banded, and none appearing like those of adult Red-tailed Hawks of other subspecies. More than half of adult tails show some rufous, varying from a little near the tip (Fig. 6) to half of the tail (Fig. 7) to extensively rufous (Fig. 8). Table 1 shows the relative number in a large sample of adult tails with rufous. Other tails show dark irregular banding, regardless of the background color of the tail: a shade of gray, white, or rufous. Tail bands can be complete and narrow (Fig. 9), wide (Fig. 10), or incomplete (Fig. 11). Table 2 shows the relative number in a large sample of adult tails that are completely or partially banded. A few tails are plain gray-brown (Fig. 12). Fig. 13 is the tail of Audubon's type specimen, housed at the British Museum, showing that often individual feathers within a tail differ in pattern and color. Figs. 14 & 15 show a mix of characters and appear quite different from the others shown; they also show in-

Table 2. Extent of Banding in 467 Adult *harlani* Tails. Sampled from tails of museum specimens and adults in hand for banding. All had only traits of Harlan's Hawks.

Extent of Banding	Number	Percent of Total
No Banding	294	63%
Partially Banded	93	20%
Fully Banded	80	17%



Fig. 11. Adult Harlan's Hawk tail with incomplete dark bands. From Museum of Vertebrate Zoology, University of California; photo by © William S. Clark.



Fig. 12. Adult Harlan's Hawk tail showing great differences between feathers. From Museum of Vertebrate Zoology, University of California; photo by © William S. Clark.

dividual feathers differing in pattern and color within their tails. All adult Harlan's tails that are completely banded also show the dark banding on the undersides (Fig. 16); this isn't true for the banded tails of adult Red-tails of other races.

In light of the preceding analysis, one might reasonably say that adult Harlan's Hawks' tails show almost as much variation in color and pattern as adult tails do in the entire genus *Buteo*.

Some juvenile Harlan's Hawks have adult-like tails, lacking the usual wide irregular banding (Fig. 17). This adult-like plumage aspect has not been reported for juvenile Red-tailed Hawks. Normal juvenile tails, particularly those of dark-morph hawks, also differ from those of juvenile Red-tails in being wider and more irregular, with a dark spike or "I-beam" at the tip of each feather.

One's idea as to what an adult Harlan's tail should look like somewhat depends on which museum one visits; Fig. W18 shows five "typical" tails of all of the adults in one museum (California Academy of Science). Most collections have fewer than six adult Harlan's specimens, e.g., British Museum ($n=4$), Philadelphia Academy of Natural Sciences ($n=3$), and University of Alaska ($n=1$). Only a few museums have more than 20 adult specimens: University of



Fig. 13. Adult Harlan's Hawk tail; Audubon's type specimen. Image courtesy of © Museum of Natural History, Tring; photo by Katrina Cook.



Fig. 14. Adult Harlan's Hawk tail with a mix of rufous, pale gray, and dark gray. From Canadian National Museum; photo by © William S. Clark.



Fig. 15. Adult Harlan's Hawk tail with unusual banding on its base. From Canadian National Museum; photo by © William S. Clark.



Fig. 16. Adult Harlan's Hawk undertail showing dark banding. From Field Museum; photo by © William S. Clark.



Fig. 17. Juvenile Harlan's Hawk tail; some are adult-like, as here. California, November; photo by © Steve Rock.

Michigan ($n=112$), Field Museum ($n=28$), Canadian Museum of Nature ($n=25$), Royal Ontario Museum ($n=24$), and U.S. National Museum ($n=23$). It is only when one views a larger selection of adult tails that the extent of variation in color and pattern is realized (Fig. W19). Figs. W20–W22 are composite photographs showing some of the variation in gray tails, rufous tails, and banded tails.

I am currently at work on a manuscript addressing the taxonomic status of Harlan's Hawk, so I'll not comment here on that subject. Suffice it to say, Harlan's Hawks are unique among raptors for the extreme amount of tail variation that they show.

Acknowledgments

Thanks to Bill Voelker for permission to use photos of his spread tails. Thanks to the curators of numerous museums for permission to examine specimens and to the many photographers for sharing their photos.

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Five additional figures of Harlan's Hawks' tails appear in a web-only supplement to this article: aba.org/birding/v31n1p26w1.pdf