

4 Cases of Hybridization

“What is that bird?” How many times have we heard this question or something similar while out birding in a group? The bird in question is often a raptor, shorebird, flycatcher, warbler, or some other hard-to-distinguish bird. Thankfully, there are excellent field guides to help us with these difficult birds, including more-specialized guides for difficult-to-identify families such as raptors, warblers, gulls, and shorebirds. But when we encounter hybrids in the field, even the specialty guides are not sufficient.

Herein we discuss and present photographs of four individuals that the three of us agree are interspecific hybrids in the genus *Buteo*. Note: In this article, we follow the age and molt terminology of Howell et al. (2003).

Hybrid 1 – Juvenile Rough-legged × Swainson’s Hawk

This hybrid (Figs. 1 & 2) was found by MR, who first noticed it on the morning of 19 November 2002 near Fort Worth, Texas. The hunting hawk was seen well and rather close up, both in flight and perched. An experienced birder, MR had never seen a raptor that had this bird’s conflicting features: Its wing shape was like that of Swainson’s Hawk, but it had dark carpal patches and feathered tarsi, like those of Rough-legged Hawk. MR placed digiscoped photos of this hawk on his web site <www.martinreid.com> and posted a description on TexBirds <birdingonthe.net/maillinglists/TEXS.html>. WSC and BKW examined these materials and agreed with MR that it was a hybrid, and in early January 2003 WSC

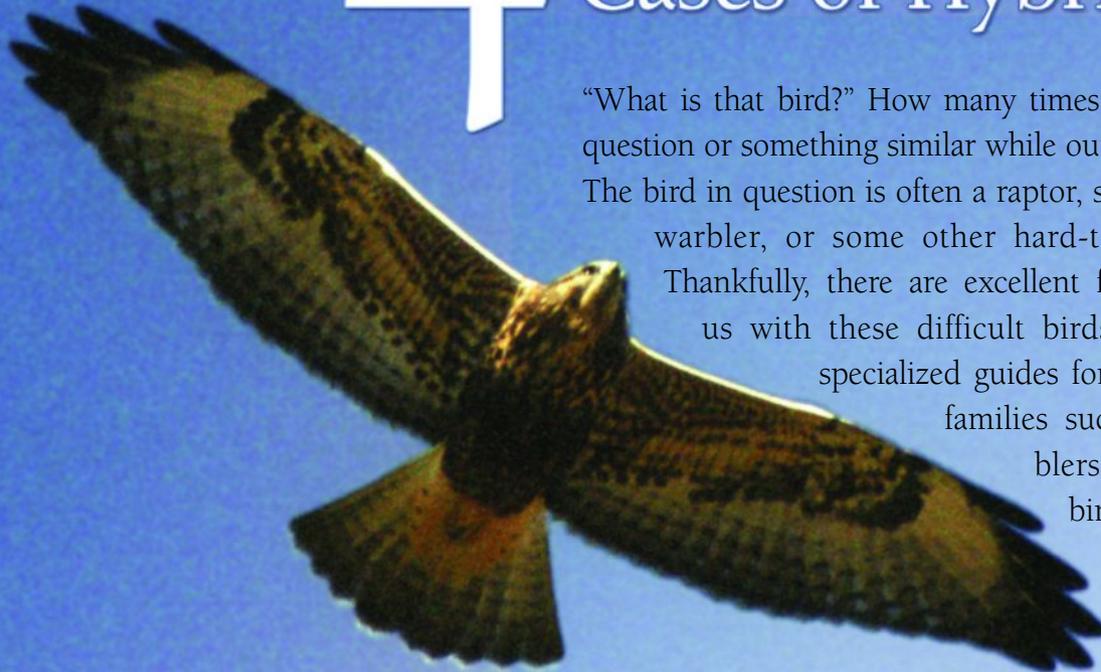


Fig. 1. Hybrid Juvenile Swainson’s × Rough-legged Hawk. Wing shape is like that of Swainson’s Hawk, with four notched primaries. But the dark carpal patches, the dark belly-band, the white bases of the tail feathers, and the feathered tarsi are characters of juvenile Rough-legged Hawk. *Tarrant County, Texas; 19 November 2002. © Martin Reid.*

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in North American Buteos

traveled to Fort Worth and joined MR to try to capture this hawk. WSC and MR were not successful during 2½ days, as the bird was well fed on the abundant cotton rats (*Sigmodon hispidus*) in the area and ignored the lures placed out for it. The bird stayed in the same area until 1 February and was seen by many birders but did not return the next year.

This hawk is clearly a juvenile, as there are no signs of any molt in the flight and tail feathers. It has pale eyes and lacks the wide, dark subterminal band of birds in later plumages. Also, the tips of the secondaries are rather pointed. It has rather pointed wing-tips, with four primary “fingers” (Fig. 1) with three long spaces: between Primary (P) 10 and P9, between P9 and P8, and between P8 and P7, but not between P7 and P6. This character is shown by North American buteos only on Swainson’s, White-tailed, and Broad-winged Hawks; all other buteos show five “fingers”. Because our mystery buteo has feathered tarsi (Fig. 2) and none of those three species do, we can also rule them out. That

leaves us with no candidate buteos, suggesting that this raptor is a hybrid. But of what?

Almost certainly, one of the parents had feathered tarsi and therefore was either a Rough-legged or a Ferruginous Hawk, as these are the only North American buteos with this character. The other parent is most likely to have been one of the species with four primary “fingers”, either Swainson’s, White-tailed, or Broad-winged. But the breeding ranges of the latter two do not overlap with either feathered-tarsus species. So we are left with a Swainson’s mating with either a Ferruginous or a Rough-legged. We can probably rule out Ferruginous because the hawk in question has a dark belly-band and a diffuse but noticeable dark carpal patch (Fig. 1), characters that are absent in Ferruginous but present in Rough-legged.

The characters of this bird are a mix of the two species. The wing shape is more like that of Swainson’s (Fig. 1), but it is wider through the middle than is typical of that species. The legs are feathered, as on Rough-legged (Fig. 2), but perhaps

Fig. 2. Hybrid Juvenile Swainson’s × Rough-legged Hawk. Note that the tarsi are feathered, but not all the way down to the toes. The beak is like that of Swainson’s Hawk, and the feet are small as on Rough-legged Hawk.

Tarrant County, Texas; 9 January 2003. © William S. Clark.





Fig. 3. Hybrid Adult Harlan's × Rough-legged Hawk. The tarsi are feathered, but the head, beak, and feet are more like those of Harlan's Hawk. In this pose, the underside of the tail also appears like that of adult Harlan's. Prowers County, Colorado; 30 December 1990. © Brian K. Wheeler.

not all the way to the toes, as in that species. The underparts show a breast pattern typical of a juvenile Swainson's, with dark patches on the sides, but the belly shows a solid band typical of juvenile Rough-legged. Note, however, that a few darkly marked immature Swainson's have dark belly-bands; cf. Fig. SH12 in Wheeler and Clark (1995) and Pl. 312 in Wheeler (2003). The tail pattern seems to present characters of the tail pattern of both juvenile Swainson's and juvenile Rough-legged (Fig. 1). The same holds true for the undersides of the flight feathers; on juvenile Swainson's these are uniformly light gray, but those of juvenile Rough-legged are uniformly whitish. This bird's flight feathers are light gray at the tips and whitish on the bases, but with a dusky subterminal band. The head looks like that of a juvenile Swainson's, but the beak is small as on Rough-legged (Fig. 2) The upper-sides of the primaries are dark, like those of juvenile Swainson's and unlike those of juvenile Rough-legged, which are contrastingly paler than the primary upperwing coverts and secondaries. The scapulars are dark, as on a juvenile Rough-legged, and not pale-spotted on the edges, as they would be on a juvenile Swainson's. This bird appeared more like a Rough-legged when hovering.

There is a large area in the open taiga of northwestern Canada and Alaska where Swainson's may breed in low den-

sity and has contact with the breeding range of Rough-legged (Clark and Wheeler 2001, Sinclair et al. 2003). This breeding population of Swainson's is not contiguous with the core range of the species, well to the south.

A specimen in the Louisiana State University collection (LSUMZ 159785) is almost identical to this bird. A paper describing it as a hybrid between Rough-legged and Swainson's Hawks using both DNA and topographical analyses has been submitted to *Wilson Bulletin* (Clark and Witt, in review).

Hybrid 2 – Adult Rough-legged × Harlan's Hawk

Our second hybrid (Figs. 3 & 4) was encountered by BKW on 30 December 1998 in Prowers County, Colorado. He first identified the perched adult buteo as a dark-morph Rough-legged Hawk, as the tarsi were feathered (Fig. 3). An intermediate-morph adult Harlan's Hawk (*Buteo jamaicensis harlani*) was perched nearby. This county has many wintering dark buteos, especially Rough-legged and Harlan's Hawks. The hawk in question did not have any rufous or warm brown coloration characteristic of Western Red-tailed Hawk (*B. j. calurus*). After taking photos, BKW noticed that the bird's feet and head were rather large and more like those of Harlan's Hawk. Its head showed Harlan's-like all-white lores, a stout bill, and a pale bluish area on the base of the upper mandible; all of these are black on Rough-legged Hawks. The eyes were medium brown, as is typical of Basic II Rough-legged and Harlan's.

The forehead had a small white area but neither the large white mask nor the dark inner lores of an adult Rough-legged Hawk. The body was uniformly dark brown. Unlike those of Rough-legged Hawk, its feet were large and Harlan's-like. The

Fig. 4. Hybrid Adult Harlan's × Rough-legged Hawk. Wing shape is more like that of adult Harlan's Hawk, with a bulge in the secondaries and a shorter tail. Note the retained juvenal outer primaries, which are like those of juvenile Harlan's and unlike those of juvenile Rough-legged. In this pose, the underside of the tail appears like that of adult Rough-legged. Prowers County, Colorado; 30 December 1990. © Brian K. Wheeler.



dorsal surface of the tail was never seen or photographed. The underside of the tail on the perched hawk appeared much like that of adult Harlan's—gray with a dusky subterminal band (Fig. 3; but see also in-flight discussion below and Fig. 4).

When the bird took flight, it had all the body proportions of an adult Harlan's Hawk (Fig. 4). The wings were fairly long and broad with a bowed trailing edge (Rough-legged Hawks have even longer wings and parallel front and rear edges). The trailing edge of the wings also had a broad black band, typical of adult buteos. The outer primaries ("fingers") were solid black on P6–P8 (a feature found on many *harlani* and most adult Rough-leggeds), but P9 and P10 were retained juvenal feathers; thus, this is a Basic II bird. P9 and P10 are the same as those of most juvenile Harlan's—pale brown with narrow dark bars. (Outer primaries of most juvenile Rough-leggeds are solidly dark). All secondaries (S) had been replaced on this hawk, but often S4 and S8 or S9 can be retained juvenal feathers on this age in both species (Clark and Wheeler 2001, Wheeler 2003).

In flight, this hawk's wings were held almost level, as is typical of Harlan's. Rough-legged Hawks, in contrast, hold their wings in a medium dihedral. The tail length also appeared to be similar to that of adult Harlan's Hawk.

The underside of the tail on the flying hawk appeared pale gray with a neat, broad, black terminal band and several narrow inner gray bands (Fig. 4). This tail pattern was more similar to that of an adult Rough-legged Hawk than to that of Harlan's; Harlan's shows an irregularly-formed moderate-width dark terminal band. Adult Harlan's can have a similarly banded tail pattern (Wheeler and Clark 1995, Clark and Wheeler 2001, Wheeler 2003), but the terminal or subterminal band is usually narrower than that of Rough-legged Hawk.

The breeding ranges of Harlan's and Rough-legged Hawks overlap in much of Alaska (Mindell 1983) and the Yukon Territory (Sinclair et al. 2003).

Hybrid 3 – Juvenile Rough-legged × Harlan's Hawk

Jeff Poklen took photographs of the third hybrid (Figs. 5–7) on 20 December 2000 near Davenport, California. A photograph of this hawk in flight was posted on the Santa Cruz, California, Bird Club web site <santacruzbirdclub.org> as a Rough-legged



Fig. 5. Hybrid Juvenile Harlan's × Rough-legged Hawk. This hawk appears similar to a juvenile Rough-legged Hawk, with feathered tarsi, but its undertail has narrow dark bands and lacks a wide dusky terminal band. The dark streaking on the sides of the breast is not shown by juvenile Rough-legged. Davenport, California; 20 December 2000. © Jeff Poklen.

Hawk. In e-mail correspondence regarding Hybrid 1 above, Joe Morlan alerted MR and WSC to the possibility that the Santa Cruz bird, too, might be a hybrid. We agree that this is a hybrid, most likely between light-morph Rough-legged Hawk and light-morph Harlan's Hawk. This hawk is a juvenile, which is clearly indicated by its pale eyes, by the pointed tips of the secondaries, and by the lack of a wide dark band on the trailing edge of the wings (Figs. 5 & 6).



Fig. 6. Hybrid Juvenile Harlan's × Rough-legged Hawk. In flight this individual appears much like a juvenile Rough-legged Hawk, with dark carpal patches and a dark belly-band. But the narrow dark banding on the tail and underwings are features of juvenile Harlan's Hawk. Davenport, California; 20 December 2000. © Jeff Poklen.

It appears more like a juvenile Rough-legged, with feathered tarsi (Fig. 5), dark carpal patches, and a uniformly dark belly-band (Fig. 6). It clearly has five “fingers” and four notched primaries (Fig. 5) and, as a result, is most likely not a hybrid of Swainson’s Hawk (see Fig. 1), which shows only four “fingers”. The dark narrow banding on the tail and underside of the flight feathers (Fig. 6) is not shown on any Rough-legged Hawk but appears like that of juvenile Harlan’s Hawk. It has pale upperwing primary coverts that contrast with the darker secondary coverts (Fig. 7), a feature of Harlan’s but not of Rough-legged. Its primaries have whitish inner webs and darker outer webs (Fig. 7), a feature of juvenile Rough-legged Hawk; those of juvenile Harlan’s are uniformly colored.

There are only two other buteos that breed within the range of Rough-legged Hawk, namely, Swainson’s and Harlan’s Hawks. Non-*harlani* Red-tailed Hawks do not breed within the range of Rough-leggeds.



Fig. 7. Hybrid Juvenile Harlan’s × Rough-legged Hawk. Upsidesides of the primaries and primary coverts show features of both Harlan’s and Rough-legged Hawks. Davenport, California; 20 December 2000. © Jeff Poklen.

Hybrid 4 – Juvenile Swainson’s × Red-backed Hawk

For many years an adult male Swainson’s Hawk was paired with an adult female Red-backed Hawk (*B. polysoma*), a South

American species, near Durango, Colorado (Allen 1988, Wheeler 1988). (Red-backed Hawk is also known as Red-backed Buzzard.) Joey Mason and Mike Maurer captured a recently fledged juvenile of this pair on 13 August 1988 (Figs 8–10); this bird is definitely a hybrid. It has traits of the juveniles of both species, which are quite similar in plumage. It would pass cursory inspection as a juvenile Swainson’s (Fig. 10), as that species shows considerable plumage variation. However, its P7 shows a notch (Fig. 8), shown by Red-backed Hawk, but not by Swainson’s. Its beak is deeper than that of Swainson’s, and the barred pattern on the underside of the secondaries and the heavy rufous wash on the breast and



Fig. 8. Hybrid Juvenile Swainson’s × Red-backed Hawk. This individual appears much like a juvenile Swainson’s Hawk, but the notch on P7, the rufous wash on the breast and underwing coverts, and the barring pattern on the secondaries are characters of Red-backed Hawk. Gunnison County, Colorado; 13 August 1988. © Mike Maurer.

underwing coverts are more typical of juvenile Red-backed. Most of the other characters are within the range of variation of juvenile Swainson's Hawks.

It is most likely that the occurrence of the adult female Red-backed in Colorado was human caused. However, we cannot eliminate the slim possibility that the mixed couple "met and fell in love" in South America and that she followed her mate back to Colorado, as Red-backed Hawks are migratory in southern South America, although only within that continent. Also, the possibility that this bird was another South American species, the Puna Hawk (*B. poecilochrous*), has been raised by AOU (1998); however, we feel strongly that it was not a Puna Hawk.

Captive-bred Hybrids

Seeing captive-produced hybrids in the field is also a possibility, as falconers and raptor breeders are producing many such birds. However, most of their hybrids are falcons. Only a few hybrids involve buteonines. Some bizarre examples have included Harris's Hawk crossed with



Fig. 9. Hybrid Juvenile Swainson's x Red-backed Hawk. The uppersides are difficult to distinguish from those of juvenile Swainson's Hawk. Gunnison County, Colorado; 13 August 1988. © Mike Maurer.

each of the following: Cooper's, Ferruginous, and Red-tailed Hawks. An example of a Harris's x Red-tailed hybrid is shown in Fig. 11. Only a small percentage of falconry birds escape,

Table 1. Published Records of Hybrids Involving the Genus *Buteo*. Documentation and citations for all data are provided in full by Clark and Witt (in review).

SPECIES 1	SPECIES 2	LOCATION	FLEDGED?
Red-shouldered Hawk	Gray Hawk [†]	Big Bend, Texas	No
Long-legged Buzzard (<i>Buteo rufinus</i>)	Common Buzzard (<i>B. buteo</i>)	Hungary	Yes
Common Buzzard	Red-tailed Hawk [‡]	Scotland	Yes
Long-legged Buzzard	Upland Buzzard (<i>B. hemilasius</i>)	Kazakhstan	Yes
Common Buzzard	Black Kite [†] (<i>Milvus migrans</i>)	Italy	Yes

[†]Not considered a *Buteo* by AOU (1998) [‡]Escaped falconry bird

and most are retrieved quickly, thanks to radio transmitters on the birds. Nowadays, there is little chance that a hybrid buteo will escape and not be quickly retrieved.

Other *Buteo* Hybrids

Table 1 is a summary of published records of hybrids in which one or both parents were in the genus *Buteo*. Notable is the Gray Hawk and Red-shouldered Hawk pair that produced one or more chicks but with none fledging. Note that Gray Hawk is considered by AOU (1998) to be in the near-*Buteo* genus *Asturina*, but that Reisling et al. (2003), using molecular methods, have shown that it is a *Buteo*. And the most bizarre case is a hybrid between Common Buzzard (*Buteo buteo*) and Black Kite (*Milvus migrans*) in Italy. Two rather odd-looking young were produced by this improbable pair.

Non-*Buteo* Hybrids

Other cases of hybrid raptors are summarized in Table 2. There is also an interesting case of a female Gyrfalcon and a female Peregrine occupying a nest in Norway for two years. Needless to say, they produced no young.



Fig. 10. Hybrid Juvenile Swainson's × Red-backed Hawk. In this pose, this individual would probably be misidentified as a juvenile Swainson's Hawk. Gunnison County, Colorado; 13 August 1988. © Mike Maurer.

Concluding Remarks

Hybridization often occurs in areas where one or both species occur in low densities, such that they might not always find a mate of their own species. Species boundaries in the genus *Buteo* can be rather vague, and hybrids, as we have seen, have been reported in wild situations on several conti-

Table 2. Published Records of Hybrids in non-*Buteo* Raptor Genera. Documentation and citations for all data are provided in full by Clark and Witt (in review).

SPECIES 1	SPECIES 2	LOCATION	FLEDGED?
Black Kite (<i>Milvus migrans</i>)	Red Kite (<i>M. milvus</i>)	Germany, Sweden	Yes
Rueppell's Vulture (<i>Gyps rueppellii</i>)	Cape Vulture (<i>G. coprotheres</i>)	Botswana	Unknown
Montagu's Harrier (<i>Circus pygargus</i>)	Pallid Harrier (<i>C. macrourus</i>)	Finland	Yes
Western Marsh Harrier (<i>C. aeruginosus</i>)	Eastern Marsh Harrier (<i>C. spilonotus</i>)	Russia	Yes
Levant Sparrowhawk (<i>Accipiter brevipes</i>)	Shikra (<i>A. badius</i>)	Israel	Yes
Brown Goshawk (<i>A. fasciatus</i>)	Gray Goshawk (<i>A. novaehollandiae</i>)	Australia	Yes
Greater Spotted Eagle (<i>Aquila clanga</i>)	Lesser Spotted Eagle (<i>A. pomarina</i>)	Estonia, Latvia	Yes
Peregrine Falcon	Prairie Falcon	Canada	Yes



Fig. 11. Hybrid Adult Harris's × Red-tailed Hawk. This unusual raptor (foreground) was produced in captivity by artificial insemination. It appears much like an adult Harris's Hawk, but with an unusual tail. *Bakersfield, California; 12 November 2004. © William S. Clark.*

nents. Recognizing hybrid buteos in the field or museum is difficult but not impossible. We recommend taking good and multiple photographs of any suspected hybrid.

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