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STATUS OF THE BROAD-WINGED AND RED-SHOULDERED HAWKS DURING FALL MIGRATION IN SOUTHWESTERN IDAHO, 1995–2006

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ABSTRACT: Twelve years of counting raptors during fall migration near Boise, Idaho, yielded 214 Broad-winged and 9 Red-shouldered Hawks, revealing these species as much more frequent in Idaho than previously known. The Broad-winged Hawk is an uncommon, annual fall migrant in Idaho. The Red-shouldered Hawk is at least casual, possibly nearly annual, during fall migration. These data match increased sightings from other western states that have likely resulted from a combination of increased observer coverage and possible range expansions and/or numerical increases for both species in the West.

Using 12 years of standardized migration monitoring data, we review and significantly update the status of the Broad-winged (*Buteo platypterus*) and Red-shouldered (*B. lineatus*) Hawks in Idaho during fall migration. The Broad-winged Hawk breeds mostly across eastern and central North America and tends to migrate east of the Rocky Mountains but is a rare to uncommon migrant in the West (McCaskie 1968, Goodrich et al. 1996). The Red-shouldered Hawk has a disjunct distribution, occurring in the eastern U.S. and southeastern Canada west to Minnesota and eastern Texas with a more restricted population centered in California (Crocoll 1994). Both species are currently considered rare in Idaho and are listed as review species by the Idaho Bird Records Committee (IBRC; http://idahobirds.net/ibrc/reviewspecies.html, accessed 5 August, 2007; Burleigh 1972, Stephens and Sturts 1998). As of August 2007, six records of the Red-shouldered Hawk and one of the Broad-winged Hawk had been accepted for Idaho, although additional reports of both species have been submitted (http://idahobirds.net/ibrc/reviewspecies.html). Therefore, our goal in this paper is to use recent data to update the status of these species in Idaho and to consider these results in the context of findings from surrounding states.

Methods

We conducted standardized autumn raptor-migration counts at Lucky Peak, Ada County, Idaho, from August 25 to October 31 of 1995–2006 (Kaltenecker et al. 2006). In addition, we captured and banded raptors at this site and at Boise Peak, Boise Co., approximately 6 miles to the north (see Kaltenecker et al. 2006 for exact locations and methods). Both sites are situated along the Boise Foothills, a ridgeline near Boise trending north–south. Lucky Peak is the site of the only full-season raptor-migration count in Idaho (Smith and Hoffman 2000). All Broad-winged Hawks we report were observed or captured at Lucky Peak, whereas most Red-shouldered Hawks were observed at Lucky Peak and one was captured at Boise Peak.

Hawk-counting methods were similar to those described by Hoffman and Smith (2003). Observers were well trained at identification of raptors in flight, primarily on the bases of Dunne et al. (1988), Clark and Wheeler (2001), and Wheeler (2003), and used 8× or 10× binoculars for scanning and a 20–60× spotting scope for identifying distant birds. At least two observers were present during all observations. The major field marks used to identify migrating Broad-winged Hawks were their small size (in comparison to the Red-tailed Hawk, *B. jamaicensis*, the most common *Buteo* counted at the site), relatively shorter wings, somewhat pointed wingtips, a less distinct (juveniles) to distinct (adults) dark trailing edge on an otherwise lightly marked underwing, and broad tail with alternating dark and light bands. The major field marks used to identify migrating Red-shouldered Hawks were size smaller than the Red-tailed Hawk, wingtips less pointed than in the Broad-winged Hawk, buffy (juveniles) to whitish (adults) crescent-shaped patch at the base of outer primaries, broad tail with many alternating dark and light bands, and an *Accipiter*-like "flap and glide" flight pattern.

Results and Discussion

We observed 214 Broad-winged Hawks over the 12 years of the study (17.8 birds per autumn), with annual totals ranging from 7 in 1996 to 33 in 1998 (Table 1). Two of these birds were captured, a light-morph adult (Figure 1) and a dark-morph immature (Figure 2). The yearly totals at Lucky Peak are within the range of those observed at other western sites of raptor-migration counts (4–103 per autumn), and the only sites with higher count rates are the Goshute Mountains in Nevada (40 per autumn; Hoffman and Smith 2003) and Golden Gate Raptor Observatory in California (103 per autumn; http://www.ggro.org/research.html, accessed 5 August 2007). At Lucky Peak, we recorded Broad-winged Hawks from late August through late October, but the majority of birds (91.6%) passed the site between September 10 and 30, a peak migration period similar to that observed at other raptor-migration count sites in both western and eastern North America (Table 1; Goodrich et al. 1996, Hoffman and Smith 2003). Observers recorded the age of nearly half (46.7%) of all Broad-winged Hawks counted, and the age ratio among these was biased slightly toward adults (54% adults vs. 46% juveniles). Observers also recorded the color morph of approximately 40% of the Broad-winged Hawks counted, and, as expected, the light morph was the most common (83.1%; 59 of 71 recorded). Broad-winged Hawks

Table 1 Temporal Distribution of Broad-winged Hawks during Fall Migration at Lucky Peak, Ada Co., Idaho, 1995–2006

Date	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
Aug 28				1									1
Aug 29													0
Aug 30						2							2
Aug 31													0
Sep 1													0
Sep 2				1									1
Sep 3				1									1
Sep 4													0
Sep 5													0
Sep 6													0
Sep 7	1												1
Sep 8							2				1		3
Sep 9											1		1
Sep 10	1											1	2
Sep 11	1	3				2						2	8
Sep 12						1						1	2
Sep 13				3		2		1	2				8
Sep 14					1		5	1	1				8
Sep 15				3		1	13					1	18
Sep 16				1	1		1						3
Sep 17						1	1						2
Sep 18					1		1				7	1	10
Sep 19			1		4		1		1		4		11
Sep 20			1			2	1		1		1		6
Sep 21	2		1	3	4				1	1	4		16
Sep 22	1	1		6	1			5		7	3		24
Sep 23	2	1	2	7		2		9		1		9	33
Sep 24			1	2			1	1	1[a]	1			7
Sep 25	1[a]	1	2					2		2			8
Sep 26		1	2			2	2		1		4		12
Sep 27				2			1			1			4
Sep 28			1	2	3					2	1		9
Sep 29				1						2			3
Sep 30					1		1						2
Oct 1													0
Oct 2								1					1
Oct 3												2	2
Oct 4					1				2				3
Oct 5													0
Oct 6											1		1
Oct 7–24													0
Oct 25							1						1
Total	9	7	11	33	17	15	31	20	10	17	27	17	214

[a]Bird captured.

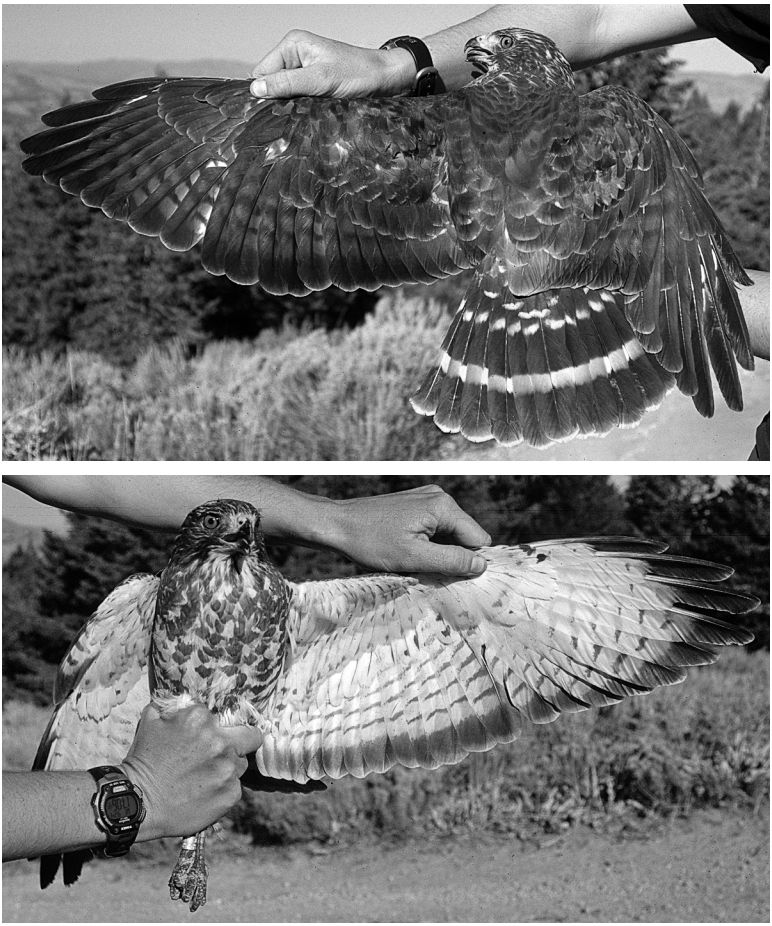

Figure 1. Light-morph adult Broad-winged Hawk captured at Lucky Peak, Ada Co., Idaho, on 24 September 2003.

Photos by Ryan Brady

were usually observed singly, migrating in conspecific groups of two to five individuals, or mixed with other migrating birds, primarily Turkey Vultures (*Cathartes aura*) and Red-tailed Hawks.

We recorded Red-shouldered Hawks much less frequently, observing nine over the 12 seasons of our study. Eight individuals were observed during standardized counts at Lucky Peak, and one bird was captured at Boise Peak (Figure 3). Like that of the Broad-winged Hawk, the number observed at Lucky Peak during this period is comparable to the number at other western raptor-migration count sites outside of California, with 3 and

Figure 2. Dark-morph juvenile Broad-winged Hawk captured at Lucky Peak, Ada Co., Idaho, on 25 September 1995.

Photo courtesy Idaho Bird Observatory

15, respectively, counted at the Goshute Mountains, Nevada, and at Bonney Butte, Oregon, between 1995 and 2006 (Smith 2001, Smith and Neal 2007a, b). The dates of our Red-shouldered Hawk sightings were 28 Sep and 18 Oct 1997, 23 Sep 1998, 11 Sep 1999 (the captured individual), 5 Oct 2001, 28 Sep 2002, 28 and 29 Sep 2003, and 19 Sep 2004. Thus, the sightings ranged from 11 September to 18 October, with four on either 28 or 29 September. The mean passage date for these nine Red-shouldered Hawks in Idaho was 28 September; this is slightly later than long-term means at the Goshute Mountains, Nevada (19 September, n = 6, 1983–2006), and Bonney Butte, Oregon (24 September, n = 15, 1995–2006; J. Smith pers. comm.). These dates are generally earlier than Red-shouldered Hawk migration in the East, which tends to begin in September for immatures and October for adults and to continue into December, with an overall peak in late October and early November (Crocoll 1994). Most likely this difference reflects a difference in the migratory behavior of the various subspecies. *Buteo l. elegans*, the western subspecies responsible for the vast majority of sightings in western states (Pyle et al. 2004), regularly disperses after breeding (Wheeler 2003), whereas *B. l. lineatus*, the migratory eastern subspecies, undertakes a more typical southward migration during mid- to late autumn (Crocoll 1994). We should note that all Red-shouldered Hawks observed in our study were moving from north to south.

All Red-shouldered Hawks encountered in this study were juvenile. We identified eight as *B. l. elegans* on the basis of having more black and white in the flight feathers and rufous in the underwing coverts (e.g., Figure 3). The bird seen on 28 September 2002, however, viewed soaring overhead at close range by many observers (including all authors, two of which have extensive experience with both eastern and western subspecies), appeared

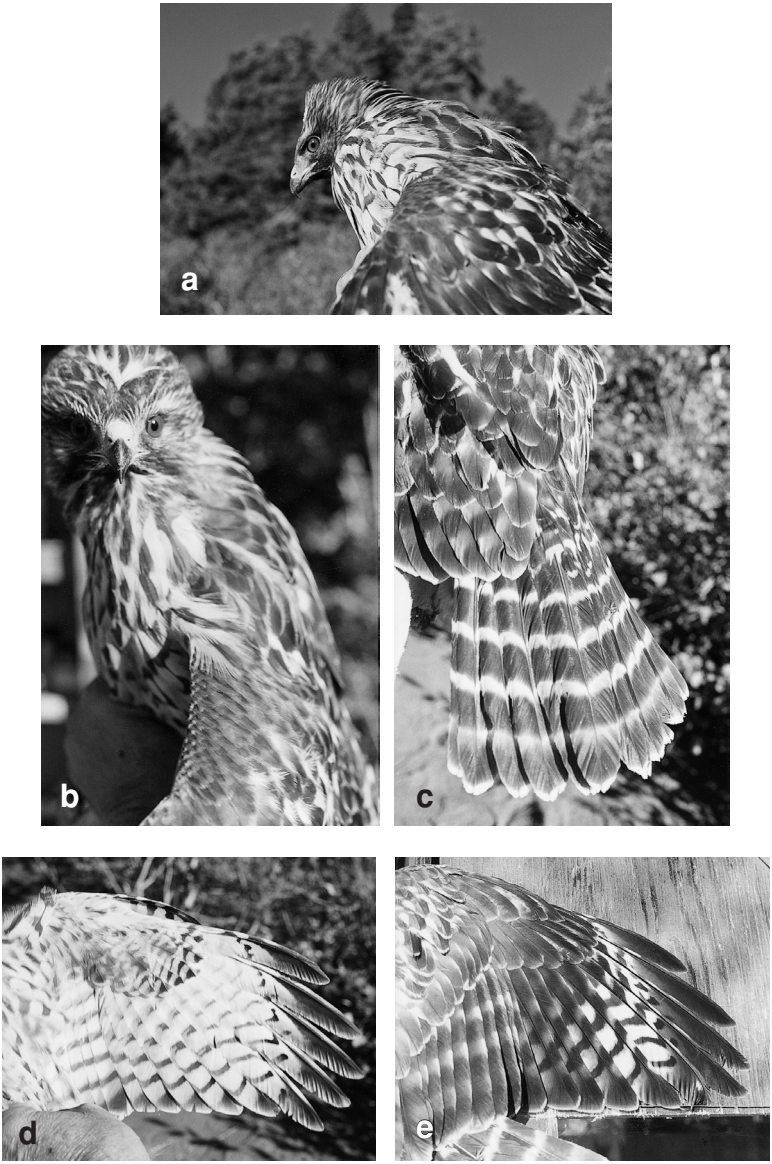

Figure 3. Juvenile Red-shouldered Hawk (*B. l. elegans*) captured at Boise Peak, Boise Co., Idaho, on 11 September 1999. Photos (d) and (e) show the underwing and upperwing, respectively.

Photos by LeRoy Fink

to be a juvenile of the eastern (nominate) subspecies, *B. l. lineatus,* on the basis of its browner flight feathers, distinct brown streaking on an otherwise whitish chest, and very little rufous in the underwing coverts. Although the plumage of juvenile *B. l. elegans* often resembles that of adults, this bird's plumage was not adultlike and exhibited the brown, white, and tawny tones expected for juvenile *B. l. lineatus* (Dunne et al. 1988, Clark and Wheeler 2001, and Wheeler 2003). We recognize that without photos or physical evidence it is difficult to rule out *B. l. alleni* or *B. l. extimus* (subspecies in the southern United States) definitively. However, the longer-distance migratory behavior of *B. l. lineatus*, combined with the northerly location of the sighting, makes *lineatus* the most likely of the eastern subspecies to occur in Idaho.

Implications

Results from our study significantly contribute to knowledge of the status of the Broad-winged and Red-shouldered Hawks in Idaho. These data demonstrate that during fall migration both species are more frequent in Idaho than previously realized. Further, our data show that the Broad-winged Hawk is an uncommon migrant in southwestern Idaho during fall, whereas the Red-shouldered Hawk is casual, occurring in 7 of the 12 seasons we studied. Our counts at Lucky Peak, maintained throughout the fall every year since 1995, placed well-trained observers in a place of high raptor concentration. As a result, and because this effort was the first of its kind in Idaho, we now have a more thorough understanding of the status and migration timing of many western raptor species in the state, including the migration and/or postbreeding dispersal of the Broad-winged and Red-shouldered Hawks. Although increased observer effort has undoubtedly contributed to this change in these species' known status, we should also consider the possibility that either or both species have undergone range expansions and/or population increases.

Are Broad-winged Hawks increasing in the West or are there simply more observers in more places (Stirling 2001)? Possibly both factors have contributed to increased sightings of this species in Idaho and elsewhere in the West. Some evidence suggests that the Canadian breeding range of the Broad-winged Hawk has expanded west in recent decades (White 1994, Hoffman and Smith 2003), and this is corroborated by increased sightings at several western raptor-migration count sites (Smith and Hoffman 2000, Hoffman and Smith 2003). At the Golden Gate Raptor Observatory, however, the site where this species is most numerous in the West, annual totals have fluctuated dramatically but since the mid-1990s there is no obvious trend (www.ggro.org/research.html). In addition to our fall migration data, there are 17 reports (presently awaiting voting) of the Broad-winged Hawk in Idaho, of birds observed from late April through early June, primarily in the last 15 years (http://idahobirds.net/ibrc/reviewspecies/kite_crane.html#broadwingedhawk, accessed 5 August 2007). This period coincides with timing of the species' spring migration in the eastern and central U.S. (Goodrich et al. 1998). As in Idaho, reports from Oregon are less frequent in spring than in fall, but spring reports there seem to fit the Idaho pattern (Mlodinow et al. 2006b). Our 12-year data show a nonsignificant increase in

Broad-winged Hawk numbers (J. Smith and G. Kaltenecker, unpubl. data), but they are not from a period long enough to corroborate data in Smith and Hoffman (2000) and Hoffman and Smith (2003) implying an increasing population. Whether or not the species is increasing in the West, an increase in coverage by knowledgeable observers has certainly contributed to the increase in sightings, and our data clearly suggest that the Broad-winged Hawk migrates through Idaho regularly.

Where are the Red-shouldered Hawks observed in Idaho coming from? Bloom (1985) reported that the western *B. l. elegans* is largely nonmigratory, whereas the widespread eastern *B. l. lineatus* is a regular migrant through the eastern and central U.S. (Crocoll 1994). Though nonmigratory, *B. l. elegans* does disperse regularly, beginning in August (J. L. Dunn pers. comm.). Wheeler (2003) noted that whereas most birds disperse less than 100 miles, dispersal is multidirectional and some birds move greater distances. Also, there is some evidence, including the Breeding Bird Survey, that the population of *B. l. elegans* has expanded in recent decades (Wilbur 1973, Pyle et al. 2004, Sauer et al. 2005). The Red-shouldered Hawk has been found recently breeding in Nevada (Floyd et al. 2007) and Oregon (Adamus et al. 2001), outside its historic range. Most relevant to Idaho, *B. l. elegans* has become more regular and numerous in Oregon and Washington in recent years, especially during fall (Mlodinow et al. 2005a, b, 2006a). Subspecies *elegans* is also a rare but regular vagrant in Arizona (Glinski 1982), and of 14 well-supported records for New Mexico, at least two (in winter) apparently represent *elegans* (S. O. Williams pers. comm.). Although an increase in observer effort has certainly contributed to the increase in sightings, Marshall et al. (2003) pointed to a clear range expansion in Oregon. Thus, given the increase in sightings in other western states, the Idaho sightings are not especially surprising. Dispersal of *B. l. elegans* in late summer and autumn is a likely source of Red-shouldered Hawks seen in Idaho, and, indeed, most of the individuals encountered in this study were identified as this subspecies. However, as mentioned above, the bird seen on 28 September 2002 was a juvenile of an eastern subspecies (likely *B. l. lineatus*, from the migratory behavior of that subspecies), marking a first record of an eastern subspecies in Idaho and one of few for the West. Pyle et al. (2004) reported a specimen of an adult female *lineatus* in California (first state record of this subspecies), discussed the lack of records of *lineatus* from west of the Rocky Mountains, and pointed to casual records of *B. l. lineatus* in eastern Colorado during fall migration. Thus, apparently, *B. l. lineatus* is either very rare or simply undocumented in many western states.

In addition to our migration data, the last decade has seen increasing reports of Red-shouldered Hawks during winter months in southwestern Idaho (http://idahobirds.net/ibrc/reviewspecies/kite_crane.html#redshoulderedhawk, accessed 5 August 2007). A similar pattern of increased occurrence in winter has emerged in Oregon and Washington (Mlodinow et al. 2005b). Thus, it appears that this dramatic increase in sightings of the Red-shouldered Hawk in Idaho and surrounding states, during both migration and winter, reflects the recent range expansion and population increase of *B. l. elegans* (Marshall et al. 2003, Sauer et al. 2005) as well as an increase in the number and skill of birders in the field.

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