Autumn 2003 Raptor Migration in Central Nepal

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Abstract. A count of migrating Steppe Eagles (*Aquila nipalensis*) and other species of raptors was made at Dhikur Pokhari, Pamdurkot, a raptor migration watchsite in central Nepal, for 39 days from 24 October to 5 December 2003. A total of 6,503 migrating Steppe Eagles was recorded, comprising 94 percent of the total migration. Other species seen included Bearded Vulture (*Gypaetus barbatus*), Egyptian Vulture (*Neophron percnopterus*), White-rumped Vulture (*Gyps bengalensis*), Himalayan Griffon Vulture (*Gyps himalayensis*), Red-headed Vulture (*Sarcogyps calvus*), Hen Harrier (*Circus cyaneus*), Long-legged Buzzard (*Buteo rufinus*), Booted Eagle (*Hieraaetus pennatus*), and Eurasian Sparrowhawk (*Accipiter nisus*). Long-term monitoring of raptors, particularly Steppe Eagles, is expected to continue at this watchsite. This study is the first to include raptor counts from the latter half of November into December.

Introduction

Although it is well known that raptors and other birds, particularly non-passerines, migrate across the Himalayas, details of the magnitude and timing of their flights are incomplete (Ali and Ripley, 1978; Inskipp and Inskipp, 1991; Grimmett, *et al,* 1999; DeCandido, *et al*, 2001). The Steppe Eagle is a complete migrant, with breeding populations occurring from southeast Europe across central Asia. The species winters mainly in Africa, India, and parts of the Middle East. Steppe Eagles migrate in large numbers in the western part of their range, concentrating in Israel and the Arabian peninsula, and crossing to eastern and southern Africa. Their movements into India and southeast Asia, which are not as concentrated, are less well studied (Welch and Welch, 1991; Ferguson-Lees and Christie, 2001). In Nepal, Steppe Eagles migrate mainly in late October to early November, and may occur in small groups where updrafts create favorable flight conditions (Fleming *et al*, 1976).

Since the 1970s there have been many reports of Steppe Eagles migrating through Nepal. From 2 to 5 November 1976, 732 *Aquila* eagles were seen moving east-to-west at Dhampus, central Nepal (Fleming, 1983). Bijlsma (1991) reported a high count of 817 Steppe Eagles on 27 October 1984 while along the trekking route from Pokhara. During 18 days in 1985, from 20 October to 7 November, a total of 7,852 Steppe Eagles was seen migrating over Khare, south of Annapurna, near Pokhara, with counts peaking in early November (de Roder, 1989). During another count from Khare on 27 October to 4 November 1999, 821 migrating Steppe Eagles were recorded (DeCandido, *et al*, 2001), and from 20 October to 6 November 2002, a total of 1,881 Steppe Eagles was seen migrating during about 145 hours of observation at this watchsite (Surya Gurung, unpublished data). Here, we report on observations made in Nepal during the autumn of 2003.

Study Area and Methods

Dhikur Pokhari, Pamdurkot, Kaski district, Gandaki zone (28 degrees 40 minutes North, 83 degrees 40 minutes East) south of Annapurna range is one of the best Nepal sites to study migrating raptors, especially Steppe Eagles. It falls along the path of the

famous trekking route from Pokhara to the Annapurna base camp (see Zalles and Bildstein, 2000, and DeCandido, *et al*, 2001, for details of this watchsite and study area.

Observations were done by one or two, and occasionally up to five observers from approximately 0900 hours to 1700 hours each day. During their observations, Surya Gurung and Shanti Gurung, assisted by Sumit Gurung, were able to identify Steppe Eagles (Grimmett, *et al*, 2000) but were not able to positively identify to species level many of the falcons and some of the other raptor species. Similar species of *Aquila* eagles are a potential source of confusion, although only *Aquila heliaca* has been reported as a migrant at or near the site (Clark, 1999; DeCandido, *et al*, 2001).

Results and Discussion

A total of 6,932 raptors migrated from 23 October to 5 December 2003, with a high count of 571 on 23 November (Table 1). In addition to 6,503 Steppe Eagles, smaller numbers of nine other raptor species were recorded, including Bearded Vulture (seasonal count of 10), Egyptian Vulture (23), White-rumped Vulture (3), Himalayan Griffon Vulture (233), Red-headed Vulture (14), Hen Harrier (12), Long-legged Buzzard (30), Booted Eagle (8), Eurasian Sparrowhawk (7), and 89 unidentified raptors.

Table 1
Daily Count of Migrating Raptors in Central Nepal, Autumn 2003

Date	Total Raptors	Date	Total Raptors
24 October	7	15 November	22
25 October	11	16 November	135
26 October	27	17 November	154
27 October	Rain	18 November	63
28 October	29	19 November	35
29 October	100	20 November	31
30 October	418	21 November	189
31 October	355	22 November	Rain
1 November	162	23 November	571
2 November	338	24 November	419
3 November	241	25 November	104
4 November	267	26 November	398
5 November	390	27 November	145
6 November	298	28 November	34
7 November	109	29 November	Rain
8 November	31	30 November	49
9 November	229	1 December	423
10 November	133	2 December	152
11 November	327	3 December	66
12 November	161	4 December	88
13 November	191	5 December	21
14 November	Rain		

Winds blew primarily from the south or southeast to north or northwest at the watchsite. Sunny conditions prevailed on most mornings up to 1100 hours, after which clouds began to build and thicken. Although almost all days were warm, it rained on four days and prevented observation.

Higher numbers of raptors were counted on slightly cool days with a slow breeze than on hot and sunny or cold and cloudy days. While there appeared to be two peaks in the migration, one in late-October-early November, and another in the last third of November, flights of hundreds of eagles and other raptors occurred throughout the observation period, and it is not clear if the bimodal pattern was a product of weather or other factors. The flight-line of raptors relative to the watchsite is known to shift several kilometers during the course of the day from north to south during the periods of heavy cloud cover (Fleming, 1983; DeCandido, 2001), and this may have affected the numbers of raptors we counted.

The current study, the first to include counts from the latter half of November into December, demonstrates that significant numbers of raptors migrate through Nepal at this time, and that the migration season extends beyond a 30-day period as suggested by de Roder (1985).

Conclusion

Along with partial-season data collected prior to this study, our counts of Steppe Eagles form the foundation for long-term monitoring that is planned to continue at this watchsite, and which eventually may shed more insights into the routes of these trans-Himalayan migrants, as well as their flight behavior, and the effects of weather on raptor migration in the region.

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