

Raptor Migration Summary

Nepal – Autumn 2012

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Herein we provide a brief overview of east to west raptor migration in central Nepal in autumn 2012. Tulsi Subedi with help from others, monitored this site (called Thoolakharka) from 15 September through to 4 December, a total of 80 days of continuous observation. The watch site is located in the foothills of the Himalayan Mountains within the Annapurna Conservation Area, about an hour from the city of Pokhara.

The 2012 season's totals of the species seen and total number counted are provided in Table 1 (p. 3). We also provide a brief summary of migration highlights and trends for different raptor groups such as Eagles, Falcons, Harriers, Sparrowhawks, etc. along with photos (pages 7-16). In all, we identified 30 migrant raptor species, 9 resident (non-migratory) species and counted approximately 10,000 individuals heading east to west from China and Mongolia through Nepal to India, with some continuing on to the Middle East, and even Africa. Our goal is to determine what bird species migrate east to west by day in Nepal; how many individuals of each pass this way (and how that number varies year-to-year); as well as the timing of migration: beginning, peak time frame and last stragglers for each species. For several raptor migrants, we have also made some observations on behavior during migration. On the ground, with advice from Dr. Jeffrey Lincer and Dr. James Hannan, we established a raptor trapping and banding program, with the full legal support of the Department of National Parks and Wildlife Conservation/Government of Nepal. Behind the scenes, Tim and Carol Inskipp provided historical information on bird migration in Nepal. We wish to acknowledge Surya Bahadur Gurung, whose study in autumn 2004-05 in this area provided a foundation for our work today, and into the future. Finally, our friend and science consultant, Hem Sagar Baral, drew on his vast experience with Nepalese birds to advise us. Thank You all.

Historically, the first notes on the **east to west migration** of raptors in the foothills of the Himalayas were made in India in 1923 by Donald Fleming. The first written accounts in Nepal were completed in the early 1970s by Robert Fleming, Jr. Later, Rob Bjilmsa and Frank De Roder (1980s), Robert DeCandido and Deborah Allen (late 1990s), and Surya Gurung and colleagues (autumn 2004-05) also studied this migration. The present study, directed by Tulsi Subedi, is the first to begin in mid-September and run through early December. Our watch site at Thoolakharka gives an unobstructed view into the nearby high mountains and associated foothills, while also allowing us to see the many migrants that pass through the lowlands to our south – providing us with spectacular views. Do visit us in 2013 to see for yourself.



Cover photo and above: Steppe Eagle (first plumage) and Tulsi Subedi, in infra-red, at the Thoolakharka Watch Site (el. 2,050 m.), Nepal; photos © 2011-2013, Robert DeCandido PhD.

Species	Total Counted	Peak Time Frame*
1. Osprey	3	15 Oct – 25 Oct (1)
2. Oriental Honey-buzzard	381	25 Oct – 31 Oct (34)
3. Black Kite	324	5 Oct – 10 Oct (18)
4. Egyptian Vulture	24	22 Sept – 30 Sept (4)
5. Griffon Vulture	85	25 Nov – 30 Nov (14)
6. Himalayan Vulture	1,270	10 Nov – 20 Nov (103)
7. Cinereous (Black) Vulture	73	20 Nov – 30 Nov (10)
8. Hen Harrier	19	30 Oct – 7 Nov (4)
9. Pallid Harrier	1	21 Oct (1)
10. Eurasian Sparrowhawk	107	5 Oct – 12 Oct (7)
11. Northern Goshawk	3	10 Oct – 5 Nov (1)
12. Common Buzzard	180	10 Oct – 25 Oct (11)
13. Long-legged Buzzard	4	5 Oct – 10 Oct (2)
14. Upland Buzzard	4	10 Nov – 15 Nov (2)
15. Steppe Eagle	6,597	3 Nov – 16 Nov (572)
16. Booted Eagle	155	20 Oct – 31 Oct (15)
17. Greater Spotted Eagle	3	7 Nov – 16 Nov (1)
18. Indian Spotted Eagle	3	15 Oct – 25 Oct (1)
19. Short-toed Eagle	2	26 Sept – 20 Oct (1)
20. Crested Serpent -eagle	26	20 Sept – 30 Sept (4)
21. Pallas's Fish-eagle	2	15 Oct – 22 Nov (1)
22. Bonelli's Eagle	13	20 Nov – 30 Nov (8)
23. Golden Eagle	7	10 Nov – 15 Nov (1)
24. Mountain Hawk-eagle	1	18 Oct (1)
25. Amur Falcon	78	25 Oct – 1 Nov (18)
26. Eurasian Kestrel	83	20 Sept – 30 Sept (8)
27. Lesser Kestrel	66	20 Oct – 30 Oct (29)
28. Eurasian Hobby	80	10 Oct – 25 Oct (6)
29. Saker Falcon	5	20 Sept – 30 Sept (3)
30. Peregrine Falcon ssp. <i>calidis</i>	29	28 Sept – 10 Oct (3)
<i>Unidentified Raptors</i>	127	-----
Total 2012	9,754	15 Sep. – 4 Dec.

Table 1 (above). Raptor species identified and number counted at Thoolakharka (Nepal), 15 September through 4 December 2012 including unidentified raptors. *Number in parentheses in “Peak Time Frame” is the highest **daily** count within the peak migration period. The 2012 total comes from daily observations made of migrants heading east to west by Tushi Subedi, Henk Smit, Vanessa Zembal, Carol and Tim Inskipp, Surya Bahadur Gurung, Robert DeCandido and others. Note: individuals of certain species such as Himalayan Griffon can be both migrants through the region and residents of the area.

Overall, the best time to see the most species in one day is in early November – but different species peak at different times during the autumn migration. For example, in 2012 the Amur Falcon and Lesser Kestrel migration peaked from approx. 20 October through 5 November. On the other hand, the largest movement of Steppe Eagles occurred in early to mid-November. Even in late November, the Steppe Eagle migration can be strong (up to 300/day), and species such as Himalayan Vulture and Cinereous Vulture can regularly be seen moving east to west past us.

For hawk watchers, the best weather conditions for migration watching at Thoolakharka occur when clouds obscure the famous Annapurna Range, approx. 20 km to our north (photo p. 19, top). When dense clouds fill the high mountain passes, migrants – particularly Steppe Eagles – shift their flight south and into the foothills and lower valleys. At such times eagles and other raptor migrants often pass directly over us at Thoolakharka. This allows us to age and sex approx. 60% of the Steppe Eagles we see. The migrants fly past in a leisurely fashion – the photos we provide in this report show how close the migrants pass above *and* below us. Raptors are not afraid of people in Nepal because no one shoots them, nor pays them much attention. People and raptors share the same agricultural fields that dominate the landscape of this country, particularly the foothills of the Himalayas (photo p. 5).

Typically, weather early in the migration period (from mid-September through approx. 20 October) is dominated by the lingering effects of the summer monsoon. The Annapurna range is frequently shrouded in clouds, and rain may occur, though rarely. Beginning in late October and continuing through approx. 20 November, high pressure dominates the area. Generally clear conditions prevail and some migration shifts back to the north, away from our watch site and into the mountain passes. Rain is rare during this time but weather becomes increasingly cool (25C during the day up to 20 November, and 5-10C at night; and by 30 November, it is closer to 20-23C by day, and down to 5C at night). For the 20 November through 15 December time frame, the weather becomes unsettled again – and clouds and fog are common. In some years, clouds only obscure the mountains, while in other years, fog and clouds may envelope the region, and visibility at the watch site is on the order of 50m or less. Temperatures during the day might only reach 15C if overcast, and at night, it can be very cold – sometimes 0C.

In the area of our watch site (the Pokhara region), weather can be very variable from year-to-year – especially in the highlands. A few previous studies, conducted for 2-3 week time frames, have estimated somewhere between 10,000-40,000 Steppe Eagles migrating along this east to west route each autumn. If clouds persist in the highlands because of a particularly strong monsoon season, we can expect to see many more than the 6,000+ Steppe Eagles we counted in 2012. However, no matter how many Steppe Eagles we count in migration, nothing can describe seeing several (up to 15) passing overhead at one time. In other words, the close looks we get at Steppe Eagles are better than any numbers written on any page. And vultures...we get even better looks at them:



Himalayan Vulture (adult) pursued by Large-billed Crow; 12 November 2012 – rdc



Typical landscape in the lowlands near Thoolakharka – autumn flowering cherry tree at far left

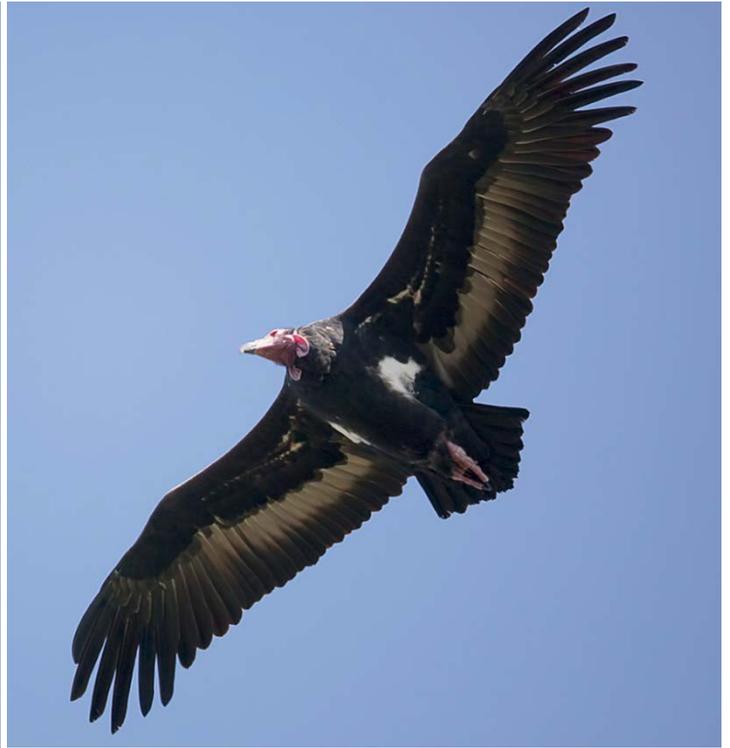


Above: Mountain Hawk-eagle – adult (resident of the area)

Resident Raptors in the area of the Thoolakharka Watch Site



Lammergeier (Bearded Vulture) – sub-adult (3rd plumage?)



Adult Red-headed Vulture – female



Black Eagle – adult



Himalayan Vulture – sub-adult

Eagles

Eleven (11!) eagle species were observed in autumn 2012. Ten are migrants and listed in Table 1. Another (Black Eagle) is a local resident and frequently seen hunting over the nearby forested hills. Most eagle migration occurs in the latter half of October through November. Steppe Eagles (*Aquila nipalensis nipalensis*) are our most notable migrants, and most (approx. 60%) pass close enough so we can age them as either hatch-year birds (juveniles); second to fourth year (sub-adults); or adults (≥ 5 years): see Figure 1 and Fig. 2, on the following pages (p. 8-9). We are the only watch site in Asia that sees significant numbers of this particular subspecies. Indeed, the number of *Aquila n. nipalensis* counted at Thoolakharka is the highest anywhere in the world. (The European subspecies, *A. n. orientalis*, is the migrant at Eilat, Israel.) In 2012, peak migration occurred in the first half of November with 500-600 counted on some days.



Steppe Eagle – 1st Plumage



Steppe Eagle – sub-adult



Steppe Eagle – sub-adult

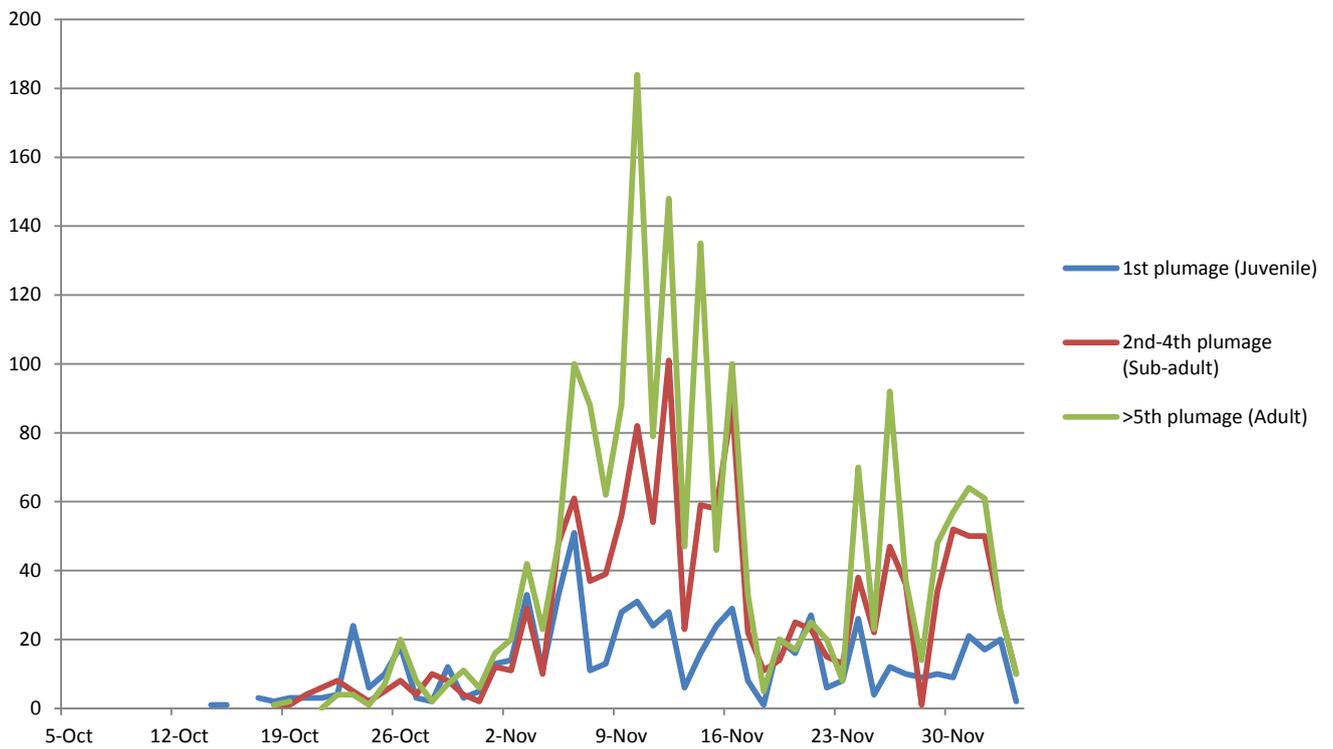


Steppe Eagle – sub-adult



Steppe Eagle – adult

Figure 1. Age composition by week of Steppe Eagle (out of 3,956 eagles aged) passing the Thoolakharka Watch site in Nepal during autumn 2012. © Tulsi Subedi



Other eagles seen on migration this year include Bonelli’s Eagle, Booted Eagle and Golden Eagle. See images below. Imperial Eagle has been recorded as a migrant in prior studies, and in the coming years, we hope to obtain some images of this rare raptor. Mountain Hawk-eagles (photo p. 5, bottom) usually in pairs, are seen several times per week, often interacting with local pairs of Black Eagles. We were frequently thrilled to watch display flights of Black Eagles and Mountain Hawk-eagles, sometimes just over our heads.

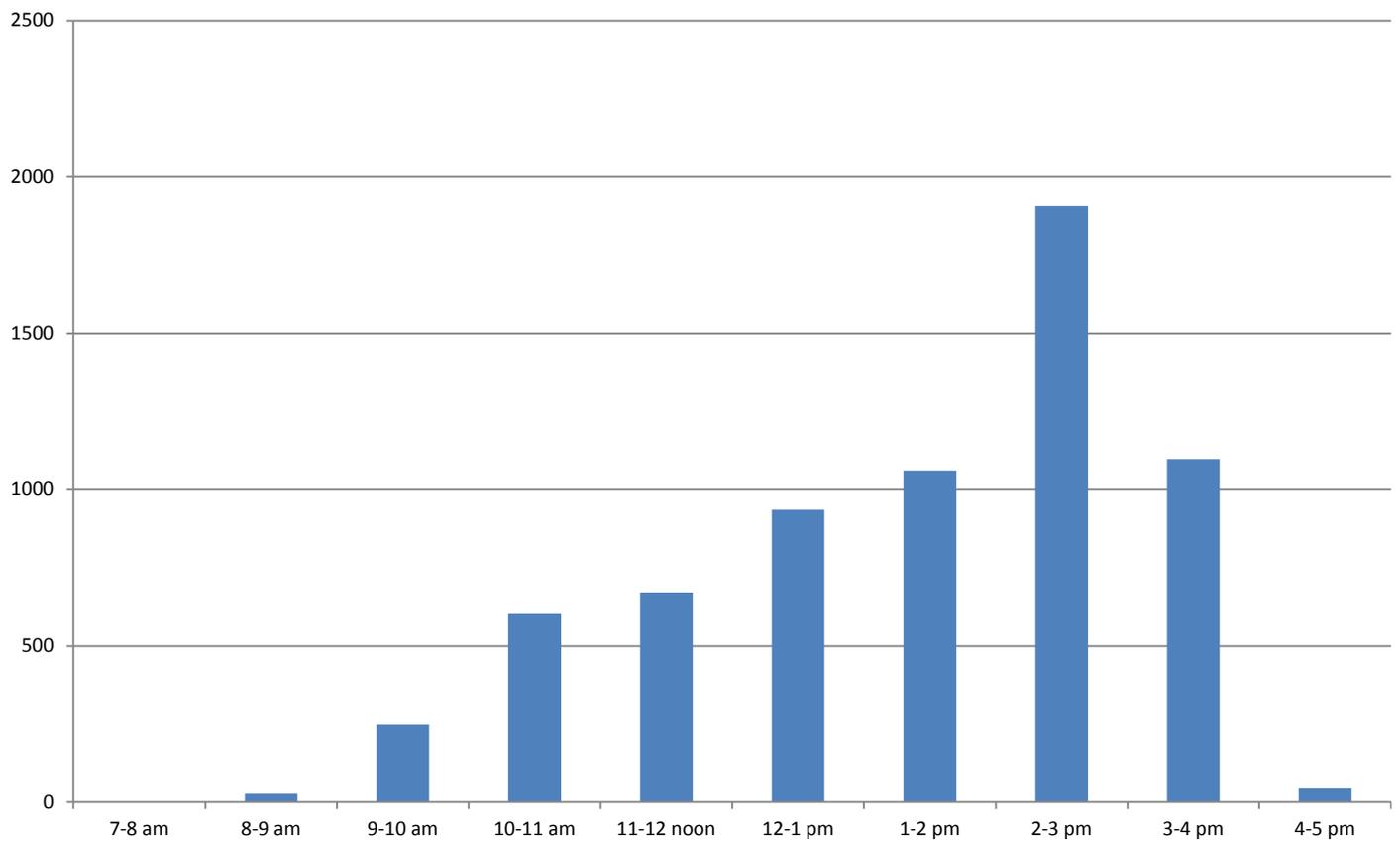


Golden Eagle – juvenile



Bonelli's Eagle – juvenile

Figure 2. The number of Steppe Eagles on migration counted per hour at the Thoolakharka Watch site in Nepal during autumn 2012. © Tulsi Subedi



Steppe Eagle – sub-adult (2nd – 3rd plumage)



Booted Eagle (dark morph) – sub-adult

Vultures

Of the nine vulture species that inhabit the Indian sub-continent, eight passed the watch site at Thoolakharka this year. We considered individuals of four species to be migrants: Egyptian Vulture, Cinereous (Black) Vulture, Griffon Vulture and Himalayan Vulture. In addition, flocks of resident Himalayan Vultures regularly pass overhead – or at eye-level. Several times per week we had the Lammergeier (Bearded Vulture) not more than a stone's throw away – sometimes carrying a prey item. Red-headed Vultures pass close too – we could see the yellow eyes of the males. The accompanying photos on this and the following two pages tell the story. It is possible to get full-frame images of some of the vultures with a 400mm lens...



Lammergeier (Bearded Vulture) – adult



Cinereous (Black) Vulture – sub-adult



Lammergeier (Bearded Vulture) – adult



Himalayan Vulture – sub-adult



White-rumped Vulture – adult



Cinereous (Black) Vulture – sub-adult



Egyptian Vulture – juvenile



Egyptian Vulture – adult



Griffon Vulture – sub-adult



Himalayan Vulture – sub-adult

As can be seen in the photo above, distinguishing between the Griffon Vulture and the Himalayan Vulture is not too difficult at Thoolakharka...but looking in the field guides the differences are not as apparent. Again, the proximity with which the vultures pass us at the watch site cannot be overstated. Certain vulture species are some of the most endangered birds in the world – in the last decade several species declined by more than 95%. We only hope more people can visit in the coming years to see these magnificent birds in flight – to hear the wind whip through their wings. They may be ungainly on the ground, but they are oh so elegant in flight.



Himalayan Vulture – juvenile

Black Kites, Buzzards and Oriental Honey-buzzards (OHBs)

Kites and Honey-buzzards present a small puzzle for us. For the Black Kite we know there are two subspecies (or two species depending upon whose taxonomy one follows): the spp. *govinda* (the Pariah Kite *Milvus migrans govinda*) and ssp. *lineatus* (the Black-eared Kite *M. migrans lineatus*). It is our general sense at this time that the individuals we see on migration at the watch site at Thoolakharka are primarily Black-eared Kites...while the kites we see in and around Pokhara and Katmandu are mostly Pariah Kites. Below we present photos of both subspecies for comparison – can you tell the difference(s) between *lineatus* (below) and *govinda* (next page)? Hint: compare the vent area of the two subspecies. *Lineatus* has a light vent and darker body, while *govinda* is dark(er) throughout. This appears to be true for juvenile through adult plumages.



These three images show Black-eared Kites (ssp. lineatus)



Pariah (Black) Kite ssp. govinda – juvenile



Pariah (Black) Kite ssp. govinda – adult

Regarding the honey-buzzards – we saw many juveniles on migration and these (as is the case with juveniles of many raptor species), do not always show the best character set for identification (see below, right). Nevertheless, we felt we saw all Oriental Honey-buzzards (*Pernis ptilorhynchus orientalis*) – note six (6) “finger” primaries. The OHBs we see in Nepal are different in plumage than those seen and photographed in Thailand at our “brother” hawk watch (Khao Dinsor) where migrants head north to south.



Oriental Honey-buzzard – female



Oriental Honey-buzzard – juvenile

We saw three species of buzzards: Himalayan Buzzard *Buteo buteo burmanicus*; Upland Buzzard *Buteo hemilasius*; and Long-legged Buzzard *Buteo rufinus* during the migration count. Himalayan Buzzard had a similar migration time to the Oriental Honey-buzzard, and we counted 180 individuals. Some buzzards we saw had a very dark throat, rufous tail and barred underparts. Tim Inskipp suggested that these might be a different subspecies, Steppe Buzzard *Buteo buteo vulpinus*, which occurs in Pakistan and western India.

Harriers

Two species, the Pallid and Hen Harrier, are migrants at Thoolakharka – but only the latter is regularly seen in the late October through early November time frame (see below). The foothills of the Himalayas seem ideal for harriers hunting on migration – see bottom image. Perhaps, as at other raptor watch sites in the world, harriers do not follow a fairly fixed route, but are broad front migrants through the region.



Hen Harrier – juvenile, likely male



Millet and Maize farm near the watch site

Sparrowhawks (*Accipiters*) and Falcons



Eurasian Sparrowhawk – adult male



Besra – adult male



Peregrine Falcon ssp. peregrinator – adult male



Eurasian Kestrel – adult male

Accipiters (Sparrowhawks) are another problem group – some are definite migrants (Eurasian Sparrowhawk), but others may be resident in the area and/or migrants (Northern Goshawk and Besra). We have yet to see a Crested Goshawk at Thoolakharka but given the quality of the forest in the Annapurna Conservation area where we do this research, we should see them...perhaps in 2013.

Regarding the Falcons: the latter half of October is the time to see the Amur Falcon on its way to Africa, as well as the Lesser Kestrel: both species travel in small flocks here. During this time the Eurasian Hobby is also migrating – and feeding on the abundant dragonflies in the genus *Pantala*, probably *P. flavescens* (Wandering Glider). These insects occur in large swarms in most of the northern hemisphere (except Europe), preferring moist winds and thermals. Their occurrence in Nepal coincides with the end of the monsoon season. From Nepal, Wandering Gliders migrate through India along the foothills of the Himalayas to reach Africa by crossing the Arabian Sea or the Indian Ocean – in much the same way as do Amur Falcons. By comparison, the migrant Peregrine in the area is the tundra subspecies – a pale (“blonde”) bird known as ssp. *calidis*. Locally the ssp. *peregrinator* with its orange chest is seen on a regular basis (photo above), sometimes even chasing dragonflies. We also saw a small number (3) of the globally endangered Saker Falcon *Falco cherrug* in late September.

Other Birds

The most common non-raptor migratory species seen at Thoolakharka were Swallows (Barn Swallow and Red-rumped Swallows). More than 18,700 swallows were counted in 2012, and roughly 87% were Red-rumped Swallows. The migration of swallows begins in late September and continues through the first three weeks of October, coinciding with most of the dragonfly migration. The peak date for the Red-rumped Swallow was 10 October with 3,181 birds counted. Swallow migration peaked before 10am, very different than the raptor movement that peaked in the afternoon (see Fig. 2 on p. 9). Besides swallows we had small numbers of Sand Martins, House Swifts and Eurasian Crag Martins on migration.



Steppe Eagle (sub-adult): 2nd to 3rd plumage

Raptors of Nepal Blog: <http://raptorsofnepal.blogspot.com/>

Portfolio of Raptors of Nepal:

http://photo.net/photodb/folder?folder_id=1021128

Directions to the Raptor Watch Site in Nepal

28°18.188' North and 083°49.788' East

To reach the watch site at Thoolakharka (“Tool – la – kar – ka”), you must first get to the city of Pokhara in central Nepal, about a 7 hour bus ride (\$10 USD) from the capitol city Kathmandu, or a one hour plane ride (\$90) from the national (not international) airport there. Once in Pokhara, take a taxi – and there are many – to the small town of Khare (sometimes called Khande or even Kande), about 35 km to the northwest along the Pokhara-Baglung highway near Lumle. It is a one hour drive (\$7) through agricultural lowlands and then climbing into the foothills. At Khare (1,250m el.), you need to make the trek uphill (1-1.5 hr. walk to 2,050m). You can hire a porter to take your backpack/equipment (\$7) up the wide (three meter) “stairway” that climbs 750 meters to Thoolakharka. Snacks and supplies can be purchased at Khare (limited selection) or back in Pokhara (better). At Thoolakharka expect to pay about \$10/night for a room (basic) with 1-2 single beds. Hot water (via solar panels) is very good, and each room has its own bathroom (basic). However, at night there is no heat provided, so please make sure to bring warm clothes (fleece, hat and mittens are essential). Food is about \$4/meal and consists mostly of vegetables, potatoes (rice) with some chicken – quite tasty though somewhat spicy (can be adjusted upon request). You will not go hungry. Ginger Lemon tea is home-made, serving as a hot refreshing drink for cold nights *and* mornings. Electricity (220v) is available and your satellite phone/web access will work...but there is no internet or TV at Thoolakharka.

If you are budgeting for the trip, figure on \$20-\$25 USD per day, and you will be quite comfortable. International flights from Bangkok (Thai Air and Jet Air), Malaysia (Malaysian Airlines and Air Asia) and Singapore (Singapore Airlines) all go to Kathmandu more or less daily. If flying from North America or Europe, look to make your final connection to Nepal via India. Flights within Nepal can be booked on-line. If traveling by bus from Kathmandu, we recommend overnighing in the capitol city and then taking the 7am bus to Pokhara (several buses each morning) – arriving at approx. 2pm. Have your hotel book the bus ticket (\$10) for you in advance. Consider a travel guidebook (eg., Rough Guide to Nepal, or Lonely Planet Nepal). Our preferred hotel in Kathmandu is the Tasi Dhargey Inn (www.HotelTashiDhargey.com), which will send a cab to pick you up (sometimes free; otherwise \$8) from the airport.



Raptor Watch site at Thoolakharka – we sit on comfortable chairs looking to the east, and can walk barefoot on the closely cropped grass. In the background are 8-10 hotels and associated small restaurants. The best known is “Australian Camp” – that we highly recommend. From left to right: Vanessa Zembal; Tulsi Subedi and his spotting scope; Henk Smit; Robert DeCandido PhD (with lens); Hemanta Dhakal; and an unknown guest. Photo by Krishna Mani Baral on 21 Nov 2012. The nearby forest within the Annapurna Conservation Area features Green Magpie and many, many other bird species.



View looking North into the Annapurna Conservation area from the raptor watch site at Thoolakharka, Nepal – 22 November 2012. In this mid-morning (10am) photo, notice how the clouds are already building over the Himalayas – the big peak is the sacred Machapuchare (Fishtail Mountain). By 1pm, the mountains and associated foothills/valleys will be completely obscured, and all raptor migration will move south, directly overhead of our watch site, Thoolakharka. (rdc)

There are actually two watch sites we use in Nepal: Thoolakharka (discussed above), and another (Khare) from 15 September until approximately 28 October. During this early period it is not uncommon for clouds/fog to obscure the Thoolakharka watch site area, with visibility only about 50m. However, moving a bit further south and across a wide valley to a site just above the small town of Khare, allows us to look for and easily see migrants such as Amur Falcon, Lesser Kestrel and Eurasian Hobby. Contact us for directions and where to stay (in nearby Khare) if you are planning a trip earlier in the season.



View looking East from the lookout at Khare, Nepal (Photo by Tulsi Subedi); Lake Phewa and the city of Pokhara are in the distance. Thoolakharka is to the north (far left) by about 5 km.



Adult Steppe Eagle on migration, 14 November 2012 (rdc)

Acknowledgements

This first full season study along the globally significant raptor migration corridor of Nepal was possible due to the joint effort of many people and organizations. We thank Sharad Singh, Director of Himalayan Nature for his support to develop this project. We thank our friends, Dr. Hem Sagar Baral, senior ornithologist of Nepal, and Dr. Keith Bildstein, Director of Hawk Mountain Sanctuary USA for their encouragement and advice. Carol and Tim Inskipp provided different books and literature which are very useful for identifying migrants we are not familiar with (yet). Dr. Jeffery Lincer and Dr. James Hannan played a leading role for the foundation of a raptor banding station. Idea Wild supplied scientific equipment, including a weather meter, and we appreciate their support. Hawk Mountain Sanctuary of the USA donated a spotting scope for use in this study. The Nagao Natural Environment Foundation, Japan and National Birds of Prey Trust, UK provided the financial support to conduct this study – and it would be impossible to do this research without them. For permission and legal support to trap and band migrant raptors, we thank the Department of National Parks and Wildlife Conservation, Nepal, particularly Dr. Maheshwar Dhakal. Tulsi Subedi wishes to thank his wife Kamala (Bhattarai) Subedi, for her love and encouragement – and newborn son, Pernis, too! At the watch site, we thank the “elder statesman” Surya Bahadur Gurung and his family. We also received help from Bijay Gurung and Sanjeev Gurung, who kindly allowed us to store our equipment when we did our counts from Paudur Hill at Khare. Krishna Mani Baral took many photos of us, and has been an inspiration in encouraging our knowledge of Nepalese vultures. Wakako Matushita helped us count raptors in 2012; in 2011, Martti Siponen and Matti Pajunen (both of Finland!) contributed their time, equipment and considerable knowledge to making us better raptor watchers. And of course, Henk Smit and Vanessa Zembal were our constant companions at Thoolakharka in 2012 – we could not have done the field work without them. Thanks also to Deborah Allen, Raju Acharya, and Anand Chaudhary. Finally, we thank the owners of the Australian Camp Hotel for allowing us to use their chairs, and for many wonderful meals and cups of tea.

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