

ID FORUM

Flight identification and migration pattern of the Oriental Honey Buzzard *Pernis ptilorhynchus orientalis* in southern Thailand, 2007–2014

ROBERT DeCANDIDO, MARTTI SIPONEN, HENK SMIT, ANDREW PIERCE & DEBORAH ALLEN

The Oriental Honey Buzzard *Pernis ptilorhynchus orientalis* is the largest *Pernis* in the world (Ferguson-Lees & Christie 2001); a long-distance migrant, it breeds in southern Siberia, northern Mongolia, north-east China, North Korea and Japan (Wells 1999) and winters mainly in South-East Asia, Indonesia and the Philippines (Wells 2001, Higuchi *et al.* 2005, Shiu *et al.* 2006). In this article we summarise migration patterns of this taxon in Thailand and Malaysia during northbound and southbound migration. We also propose three plumage categories to aid in-flight identification of adult males, females and juveniles of this highly variable raptor.

The first Oriental Honey Buzzards are seen as early as late January on their northbound spring migration at Tanjung Tuan, Malacca, Malaysia (Wells 2001), with a median peak on 14–15 March in 2009–2010 (Yeap *et al.* 2014). In Thailand, at Promsri Hill, Chumphon province (Figure 1), the peak northbound migration is mid- to late March,

with the median peak on 19 March in 2007–2008 (Figure 2, DeCandido & Nualsri 2009). Migration counts at Tanjung Tuan are the highest in the region with about 31,500 individuals in spring 2009 and 63,500 in spring 2010, returning to the Asian mainland from Sumatra (Yeap *et al.* 2014). At Promsri Hill in spring, peak counts were 200–300 per day in 2007–2008 (DeCandido & Nualsri 2009), with 90% of the migrants passing in a 22-day period (Figure 2). Northbound totals for this species in Thailand were up to 3,000 in spring 2007 and 2008.

During southbound migration through Thailand in 2011–2012, the first migrants were seen at Khao Dinsor, Chumphon (Figure 1), in late August (RDC unpubl. data), with a peak in late September and the first half of October (Figure 3). Peak counts were of the order of 2,000–7,000 per day. In both years, more than 90% of adult migrants passed

Figure 1. The three major raptor migration sites in southern Thailand: Promsri Hill (spring), Radar Hill (autumn) and Khao Dinsor (autumn).

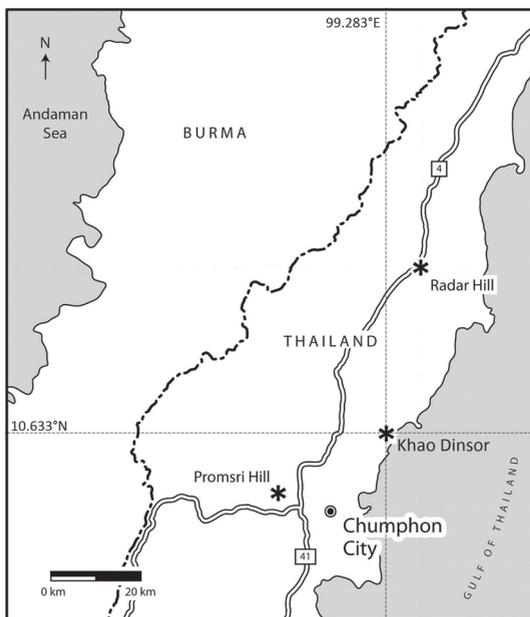


Figure 2. Daily counts of migrant Oriental Honey Buzzards on northbound migration in spring 2007–2008 at Promsri Hill, Thailand.

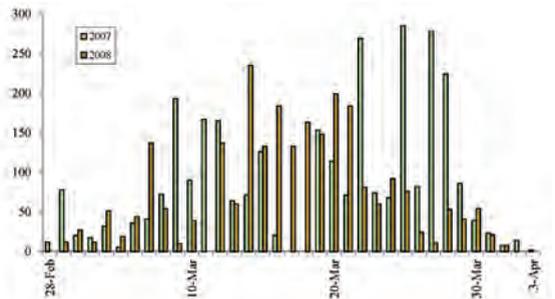
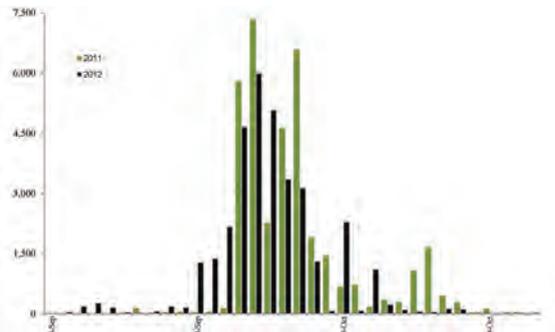


Figure 3. Number of migrant Oriental Honey Buzzards per day on southbound migration at Khao Dinsor, Thailand, in autumn 2011 and 2012.



our watch site in a 13-day period, from 30 September to 12 October. Yamaguchi *et al.* (2012) have shown that the southbound migration of *orientalis* over the South China Sea in autumn is greatly affected by weather factors. Honey Buzzards delay their departure from western Japan to take advantage of north-east tail-winds associated with low pressure systems moving over the Gotô-rettô Islands to the west of Kyushu, Japan. When north-east tail-winds prevail (a feature only of the autumn), *orientalis* migrate across the East China Sea, assisted by that wind (H. Higuchi *in litt.*). Figure 3 shows that, even after *orientalis* have been travelling for several days, their movement en masse is still evident in the data from Khao Dinsor, with a significant peak in numbers around 2–8 October in both 2011 and 2012.

Autumn migration is more protracted than spring; *orientalis* passes across southern Thailand between late August and mid-November, a period of 88 days, compared with about 55 days in spring, between mid-February and early April. In terms of

historical numbers, in 1963 and 1964 Wells (2001) estimated that 121,000 birds migrated south across the Selangor plain, Malaysia, between October and November. Our counts at Khao Dinsor from 2009 to 2013 indicate that 30,000–40,000 are seen annually, with another 15,000–25,000 observed a few km inland at localities such as Radar Hill (Figure 1). Adults comprise 99% of the passage until around 15 October, but after 20 October more juveniles than adults were seen (Figure 4). After winds associated with the north-east monsoon intensify in late October, most *orientalis* migration drifts further inland in Thailand, with reports of birds over Sri Phang Nga, Phang Nga province (N. Parker *in litt.*) and others as far west as Phuket on the Andaman Sea (I. Suriwong *in litt.*). By the end of October, the bulk of the migrants are juveniles, with observers in Singapore counting as many as 400 juveniles per day in early to mid-November (A. Ow Yong *in litt.*). All southbound juveniles will spend the next 14 months in South-East Asia, and then return north to breed for the first time.

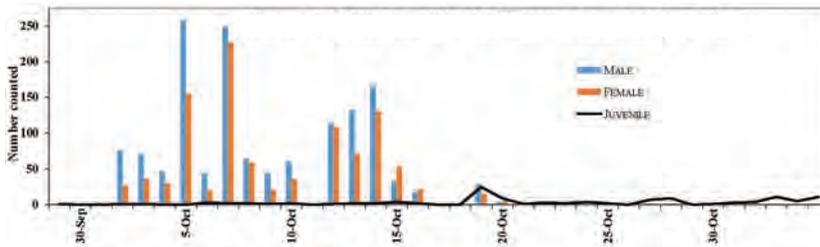


Figure 4. Numbers of adult male, adult female and juvenile Oriental Honey Buzzards identified per day on southbound migration at Khao Dinsor, Thailand, autumn 2014.

Plate 1. Oriental Honey Buzzard *Pernis ptilorhynchus*, adult male *orientalis* light morph, showing full crop, Khao Dinsor, Thailand, 25 September 2012.





ROBERT DECANDIDO

Plate 2. Adult female *orientalis* carrying a Hymenopteran honey comb during migration, Khao Dinsor, Thailand, 30 September 2013.

At Khao Dinsor, we estimate that up to 5% of the migrant *orientalis* on southbound migration have a full or distended crop (Plate 1), and each year individuals are occasionally seen carrying food including Hymenopteran honeycombs (Plate 2). We believe that the migrating Oriental Honey Buzzard is a 'fly-and-forage' strategist (*sensu* Strandberg & Alerstam 2007), travelling south through the Kra Isthmus without the need for a lengthy stop-over. It is interesting that some authors believe that the Western Honey Buzzard *Pernis apivorus* does not feed during migration (see Gensbøl 1992).

Plumage types

Perhaps the most striking feature of *orientalis* is the variability of its plumage when viewed from below. We have observed three basic plumage types at Khao Dinsor: intermediate, light and dark, with intermediate being the most common. These are discussed and illustrated below.

Distinguishing adult males, adult females and juveniles in flight is fairly straightforward. The crucial field marks that we use to identify adult males are: dark brown (almost black) eye, greyish cere and solid grey head; broad black band on trailing edge of the wing, black tips to the primary feathers; three visible broad bands (black-light-



ROBERT DECANDIDO

Plate 3. Adult male *orientalis* showing dark eye, grey head, thick black trailing edge to the wing and dark primary tips, and the boldly barred tail; this male has molted the innermost of its six primary fingers, Khao Dinsor, Thailand, 1 October 2013.

black) on the tail—a broad terminal black band, a light (almost white) sub-terminal band (equal in width to the terminal band) and another thick black band, partially obscured by the feathers of the vent. Plate 3 shows a typical adult male in flight from below.

Plate 4 shows a typical adult female in flight. Note that the female's sub-terminal light (white) band is the broadest of the tail bands. Females also have a partially grey head, grey cere and deep yellow eye. The primary tips and trailing edge of the wing are dark grey. There is no evidence of a crest on birds of either sex, in flight or perched. Males and females have comparable wingspans but females are approximately 25% heavier than males (Ferguson-Lees & Christie 2001).

Juvenile *orientalis* resemble females, but note the yellow cere and the dark olive-tan eye (Plate 5). The secondaries are more heavily barred than those of adults, and there is no continuous (dark) trailing edge to the wing. Although the tail pattern is similar to that of the adult female, observers at Khao Dinsor noted that the dark bands are equal in width to one another. In the adult female, the black terminal bar is the widest. We cannot as yet distinguish juvenile males from juvenile females in flight.



ROBERT DECANDIDO

Plate 4. Adult female *orientalis* showing yellow eye, partially grey head, dark grey trailing edge to the wing, grey primary tips and barred tail, with the light sub-terminal band being the broadest, Khao Dinsor, Thailand, 1 October 2013.

Plate 5. Juvenile *orientalis* showing yellow cere with olive-tan eye; note that the secondaries are more heavily barred than in the adult, there is no solid dark trailing edge to the wing and black tail bands are approximately equal in width, Khao Dinsor, Thailand, 13 October 2013.



ROBERT DECANDIDO



LAURENCE POH

Plate 6. Adult female and male *torquatus*, resident in Peninsular Malaysia; both have a crest and yellow eye; the female (left), crest lowered, has a brown head; the male (right) has a grey head, Ipoh, Malaysia, 29 January 2003.

Plate 7. Adult female *torquatus* of the 'Tweeddale' morph; both males and females have yellow eyes, dark heads and a prominent crest, Khao Dinsor, Thailand, 10 September 2013.



ROBERT DECANDIDO

ROBERT DECANDIDO



Plate 8. Juvenile *ruficollis*; this race is resident in north Thailand, Myanmar, south-central China, India and Nepal, Thoolakharka, Nepal, 24 November 2012.



Plate 10. Adult male Western Honey Buzzard on migration; note the five (not six) visible primaries, dark carpal patch and different tail band pattern that distinguishes this species from Oriental Honey Buzzard, Spain, 4 September 2013.

DICK FORSMAN

Plate 9. Western Honey Buzzard *Pernis apivorus* adult male, note the grey head with a yellow eye, Israel, 22 April 2003.

ROBERT DECANDIDO



Plate 11. Adult female Western Honey Buzzard on migration, showing the differences from Oriental Honey Buzzard (see Plate 10), Spain, 6 May 2011.



DICK FORSMAN



ROBERT DECANDIDO

Plate 12. Adult male *orientalis*, intermediate morph; the dark gorget is clearly visible across the lower throat and foreneck, and separates the white chin and throat from the tannish body, Khao Dinsor, Thailand, 5 October 2012.



ROBERT DECANDIDO

Plate 14. Adult male *orientalis*, dark morph; the gorget is almost impossible to see against the dark body, Khao Dinsor, Thailand, 27 September 2013.



ROBERT DECANDIDO

Plate 13. Adult male *orientalis*, light morph; note the incomplete gorget which is reduced to just a few marks, Khao Dinsor, Thailand, 30 October 2013.

Oriental Honey Buzzard race *torquatus* is resident in extreme south-west Indochina, Peninsular Malaysia, Sumatra and Borneo. The adult male *torquatus* in comparison with *orientalis* has a grey head, yellow eyes and a long crest (Poh & Clark 2003); females are similar to males but have a brown head (Plate 6). However, the

'Tweeddale' morph of *torquatus* (see Ferguson-Lees & Christie 2001) is present, and possibly breeds, in the Khao Dinsor area (Plate 7); adult males and females of this colour morph also have yellow eyes and a prominent crest. Oriental Honey Buzzard race *ruficollis* breeds in northern Thailand, Myanmar, south-central China, India and Nepal, where it is primarily a resident, although some individuals may migrate a short distance each year. According to Naoroji (2008), adult *ruficollis* is similar to adult *orientalis*, except that *ruficollis* is slightly smaller with more rounded wings. Plate 8 illustrates a juvenile *ruficollis*. Finally, Western Honey Buzzard also has a yellow eye (Plate 9), but is smaller than *orientalis* and has only five (rather than six) 'fingers' on the open wing (Plates 10 & 11).

To distinguish the three *orientalis* morphs, we look at the gorget, that part of the throat that appears as a dark, almost black band across the lower throat and foreneck.

In the intermediate morph, the gorget is clearly defined, the throat is often white with a dark mesial streak, and the overall base body colour is different, often tan (Plate 12). In the light morph, the gorget is reduced to a few incomplete streaks, or is absent. It does not form a solid band across the lower throat. The mesial streak is also

reduced or even absent. The base colour of the body is often the same colour as the throat (Plate 13). Finally, the gorget in the dark morph is difficult or impossible to see against the dark base colour of the body. The throat is almost all dark (a small white patch may be present near the chin) but the throat is essentially the same dark colour as the body (Plate 14).

We propose this classification scheme so that researchers at different migration sites in the region may determine which colour morphs are most common at their watch sites, and if the pattern changes during the season. We realise that there is some overlap in the categories proposed herein, and a measure of judgement is needed to classify some birds. However, given how common this species is at several migration sites in Asia, we hope that the information and proposed classification scheme will provoke discussion and may be useful.

Acknowledgements

Our sincere thanks go to our many colleagues including Audrey Shanta, Chiu Sein Chiong, Chongleong Puan, Chukiat Nualsri, Chuenchom Hansasuta, Dick Forsman, Edmund Pease, Emmet and Mary Logan, Hiroyoshi Higuchi, Jonathan Poh, Kaset Sutasha, Khemthong Tonsakulrungruang, Lim Aun Tiah, Lim Kim Chye, Neil Parker, Ooi Beng Yean, Philip Round, Sergio Seipke, Syafiq Sivakumaran, Tulsi Subedi, Wat Krab and Wanna Phatara-Atikom, as well as the Bird Conservation Society of Thailand and the Hawk Mountain Sanctuary of North America. This study was partially funded by the Flyway Foundation of Thailand, as well as by major donations from Emmet and Mary Logan and other interested individuals.

References

DeCandido, R., Nualsri, C., Allen, D. & Bildstein, K. L. (2004) Autumn 2003 raptor migration at Chumphon, Thailand: a globally significant raptor migration watch site. *Forktail* 20: 49–54.

DeCandido, R. & Nualsri, C. (2009) Timing and abundance of Grey-faced Buzzards *Butastur indicus* and other raptors on northbound migration in southern Thailand, spring 2007–2008. *Forktail* 25: 91–96.

DeCandido, R., Siponen, M., Sutasha, K., Forsten, A., Nualsri, C., Round, P. D., Lindholm, A. & Phatara-Atikom, W. (2013) Khao Dinsor Thailand – raptor migration summary 2012: Year III. Available at <https://www.dropbox.com/s/8urns9xj4capwgb/KhaoDinsor.2012.DeCandido.pdf>

Ferguson-Lees, J. & Christie, D. A. (2001) *Raptors of the world*. London: Christopher Helm.

Gensbøl, B. 1992. *Guida ai rapaci diurni d'Europa, Nord Africa e Medio Oriente*. Bologna, Italy: Zanichelli. (In Italian.)

Higuchi, H., Shiu, H. J., Nakamura, H., Uematsu, A., Kuno, K., Saeki, M., Hotta, M., Tokita, K., Moriya, E., Morishita, E. & Tamura, M. (2005) Migration of Honey-buzzards *Pernis ptilorhynchus* based on satellite tracking. *Orn. Science* 4: 109–115.

Naoraji, R. (2008) *Birds of prey of the Indian subcontinent*. New Delhi: OM Books International.

Poh, L. & Clark, W. S. (2003) Adult male Oriental Honey Buzzards (race *torquatus*) have yellow eyes. *Oriental Bird Club Bull.* 37: 50–51.

Shiu, H. J., Tokita, K., Morishita, E., Hiraoka, E., Wu, Y., Nakamura, H. & Higuchi, H. (2006) Route and site fidelity of two migratory raptors: Grey-faced Buzzards *Butastur indicus* and Honey-buzzards *Pernis ptilorhynchus*. *Orn. Science* 5: 151–156.

Strandberg, R. & Alerstam, T. (2007) The strategy of fly-and-forage migration, illustrated for the osprey (*Pandion haliaetus*). *Behav. Ecol. Sociobiol.* 61: 1865–1875.

Yamaguchi, N. M., Arisawa, Y., Shimada, Y. & Higuchi, H. (2012) Real-time weather analysis reveals the adaptability of direct sea-crossing by raptors. *J. Ethology* 30: 1–10.

Yeap, A. Y., Lim, K. C., Lim, A. T., Khoo, S. S. & Cheung, N. (2014) Northbound migration count of raptors at Tanjung Tuan, Peninsular Malaysia: magnitude, timing and flight behavior. *J. Raptor Res.* 48(2): 162–172.

Wells, D. R. (1999) *The birds of the Thai-Malay Peninsula* 1. London: Academic Press.

Robert DeCANDIDO
1831 Fowler Avenue
The Bronx, New York 10462 USA
Email: rdcny@earthlink.net

Martti SIPONEN
livissyjä 2 A, 02260 Espoo, Finland
Email: Martti.Siponen@elisanel.fi

Henk SMIT
Vlinderbalg 7, 9976 VL Lauwersoog
Netherlands
Email: HenkJSmit@home.nl

Andrew J. PIERCE
Conservation Ecology Group, School of Bioresources
& Technology
King Mongkut's University of Technology Thonburi
49 Soi Tientalay 25, Bangkokhunting-Chaitalay Road
Bangkok 10150, Thailand
Email: AndyP67@gmail.com

Deborah ALLEN
P.O. Box 1452 Peter Stuyvesant Station
New York, New York 10009 USA
Email: DAllenyc@earthlink.net