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## SUMMARY OF DIURNAL MIGRANTS AT KHAO DINSOR AUTUMN 2015

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Not long after surveys initiated by Chukiat Nualsri since September 2008, Khao Dinsor (Bangson Subdistrict, Pathiu District, Chumphon Province) has become widely recognised as one of the best sites for observing migratory raptors worldwide. Complete annual counts conducted since autumn 2010 affirm the global significance of the site in monitoring raptors and other diurnal migrants. In 2014 the total numbers of raptors counted overall substantially increased ([Table 1](#)) as the Flyway Foundation Thailand operated an internship programme involving 3 interns as main counters at two fixed observatory stations located approximately 600m apart.

The official count for autumn 2015 was extended from two months (Sep and Oct) to cover 10 hours (0700–1700hr) daily from 1 Sep to 15 Nov as numbers of raptors were still observed passing the site after the end of Oct, particularly species little-known for the region and/or of conservation concern such as *Clanga* and *Aquila* eagles. This year's data collection was made possible by the Flyway Foundation through the increased number of counters comprising a Field Count Manager (Wichyanan Limparungpatthanakij), boarding and local volunteers, and staff from the Wildlife Research Division, Department of National Parks, Wildlife and Plant Conservation, in supplement to the 3 interns (Thanpisid Butprapai, Martha Nzisa Mutiso, and Attapon Chana). Weather variables consisting of temperature, wind speed, wind direction, barometric pressure, and cloud cover were also collected at the beginning of every hour.

Summary tables of species counted in autumn 2015 are on the following pages, including migratory diurnal raptors ([Table 2](#)), resident diurnal raptors ([Table 3](#)), and non-raptor diurnal migrants ([Table 4](#)). For majority of species, numbers appear to be higher than those of previous years ([Table 1](#), [5](#)). This apparently was mainly owing to better coverage by more counters. The total number of presumed migratory raptors this season is 397,329 – significantly higher than before as seasonal counts of migratory raptors never exceeded 300,000 ([Table 1](#)). At least 25 species are undoubtedly migrants. Note that *Buteo* buzzards, which apparently compose of multiple taxa, are grouped together due to unresolved taxonomic and identification issues.

There were 6 species of raptors with numbers counted higher than 10,000 ([Fig. 1–2](#)). They drastically outnumbered the rest of the raptors which comprised no more than a few hundred individuals per species. The highest count for the season belonged to Chinese Sparrowhawk *Accipiter soloensis* (170,925 individuals), outnumbering Black Baza *Aviceda leuphotes* (100,500 individuals) which had made the top spot for at least two years. It was the first season that the number of Chinese Sparrowhawk exceeded 100,000. This species and Oriental Honey-buzzard *Pernis ptilorhynchus orientalis* (65,899 individuals), which is the 3<sup>rd</sup> most numerous raptor passing the site, peaked around late Sep to early Oct ([Fig. 1–2](#)) during the South-West Monsoon.

The Black Baza and the 4<sup>th</sup> most numerous raptor, Grey-faced Buzzard *Butastur indicus* (24,007 individuals), peaked during the North-East Monsoon in mid- to late Oct ([Fig. 1–2](#)). The main cause of the Black Baza's decline ([Table 1](#)) is thought to be the vast haze from massive fires in

Sumatra that reduced visibility intensely. Despite the fact that Japanese Sparrowhawk *Accipiter gularis* (17,856 individuals) and Shikra *A. badius* (10,960 individuals) seemingly undertaking protracted migration strategies without obvious peaks, their numbers observed passing the site were comparatively higher during early to mid-Sep and mid-Oct to early Nov respectively (Fig. 2). Note that considerable numbers of both species still continued to pass through at the end of the official count period; 89 Japanese Sparrowhawks and 203 Shikras on 15 Nov. Note that Table 2 inevitably includes a small portion of resident population of the latter. The significant increase in Shikra's number counted (Table 1) were primarily due to the hitherto lack of systematic counts in Nov and possibly identification difficulties. Other notable increases; *i.e.*, Jerdon's Baza *Aviceda jerdoni*, Rufous-winged Buzzard *Butastur liventer*, and Besra *Accipiter virgatus*, may be attributable to the same reasons as Shikra.

Although all species with potential seasonal movement were recorded, only presumed diurnal migrants were included in Table 5. Unlike raptors, numbers of many non-raptor species may have passed through outside counting hours as considerable numbers were still observed in the first and the last hours (Fig. 3). The overwhelming increase of southbound heading Asian Openbill *Anastomus oscitans* (21,713 individuals) is thought to be due to population rise and range expansion rather than regular seasonal movement. There were 3 IUCN's globally near-threatened species namely Oriental Darter *Anhinga melanogaster* (16), Black-headed Ibis *Threskiornis melanocephalus* (10), and Painted Stork *Mycteria leucocephala* (1) which was previously unrecorded at Khao Dinsor. Gregarious egrets flying low, usually in early morning and late afternoon, were not counted as identification could not be made in most cases. This resulted in comparatively low numbers of Little Egret *Egretta garzetta* recorded in recent years (Table 5).

Pairs of the globally threatened Pale-capped Pigeon *Columba punicea* were recorded on 19 Sep and 14 Oct. The White-throated Needletail *Hirundapus caudacutus* (1,663 individuals) consists of two subspecies, with the nominate race seemingly being an earlier southbound migrant than the Himalayan-breeding *nudipes*. All 3 needletail species peaked on 11 Nov and the migration were apparently ongoing after the official count ended. Although observed heading south, the difference in extents of non-breeding migratory and resident Brown-backed Needletails *Hirundapus giganteus* (553 individuals) at Khao Dinsor still remains unclear.

Other species of uncertain seasonal status, likely involving local dispersants, include Pied Imperial Pigeon *Ducula bicolor* (2 individuals; 17 Sep), Cook's Swift *Apus cooki* (10; 13 Sep–3 Nov), Indian Roller *Coracias benghalensis* (14; 21 Oct–13 Nov), Ashy Woodswallow *Artamus fuscus* (7; 15 Oct–7 Nov), and Blue Whistling-thrush *Myophonus caeruleus* (30 Oct). All species, except Cook's Swift and Indian Roller, had never been recorded at the site before.

Most of the presumed nocturnal migrants were detected sparsely during daytime. These include an unidentified *Rallina* crane (5 Nov), Marsh Sandpiper *Tringa stagnatilis* (15 Sep), Common Snipe *Gallinago gallinago* (15 Sep–8 Oct), Hooded Pitta *Pitta sordida* (12 Nov), Brown Shrike *Lanius cristatus* (17 Sep–2 Oct), Crow-billed Drongo *Dicrurus annectans* (13 Sep–12 Oct), Black-naped Monarch *Hypothymis azurea* (13 Sep–2 Oct), Amur Paradise-flycatcher *Terpsiphone incei* (13 Sep–8 Oct), Yellow-browed Warbler *Phylloscopus inornatus* (29 Oct–13 Nov), Arctic Warbler *P. borealis* (12 Sep–21 Oct), Pale-legged Leaf Warbler *P. tenellipes* (4 Oct–15 Nov), Eastern Crowned Warbler *P. coronatus* (12 Sep–12 Oct), Thick-billed Warbler *Phragmaticola aedon* (5–

12 Nov), Dark-sided Flycatcher *Muscicapa sibirica* (7–31 Oct), Asian Brown Flycatcher *M. latirostris* (16 Sep–15 Nov), Siberian Blue Robin *Larvivora cyane* (13 Sep), and Yellow-rumped Flycatcher *Ficedula zanthopygia* (11 Sep–1 Oct).

Counters consisted of Thanpisid Butprapai, Martha Nzisa Mutiso, Attapon Chana, Chalernpol Pa-in, Phaothong Jan-ard, Warut Chaleekarn, Nattachai Daungsri, Pakaphol Sinlapanon, Chetsada Khunjob, Chalermchai Ouchan, Chuenchom Hansasuta, Thiti Sornsa, Pajaree Kongbun, Phonlugsamee Chompoopong, Anake Pengsuk, Wisanu Panchusri, Charoenchai Tothaisong, Sukanya Hemtanon, Nawapon Ketkanha, Jacky Soh, Henrietta Woo, Sayan Onmuangkong, Jannarong Rawesaeng, Wen Qing Ng, Abdulroning Seamae, Mariam Laerae, Nujjarin Tiwkong, Chanon Chirachitmicai, Natthapong Chantana, Suntorn Manthaeo, Nuttapon Gathinhom, Alyce Ang, Krairat Eiamampai, Bunyarit Dechochai, Ingkayut Sa-ar, David Gandy, Waorakrit Poonboon, Rongrong Angkaew, Vattikorn Sophonrat, Ben Petcharapirat, Narathip Sitthi, and Wichyanan Limparungpatthanakij. This year's effort would not be as successful without help from visitors assisting in pointing out and photographing birds, as well as invaluable support from various other people and organisations.

For more information, visit the Flyway Foundation's [official website](#) and [facebook page](#).

Summarised by Wichyanan Limparungpatthanakij

## Migratory raptor species

Species	2015	2014	2012	2011	2010
Western Osprey	76	47	51	50	57
Oriental Honey-buzzard	65,899	42,358	33,835	15,541	32,870
Jerdon's Baza	286	111	192	78	20
Black Baza	100,500	154,716	119,324	39,113	74,033
Crested Serpent Eagle	357	286	393	127	126
Short-toed Snake Eagle	8	-	3	1	<10
Greater Spotted Eagle	16	11	20	20	21
Booted Eagle	121	129	74	70	71
Steppe Eagle	2	-	-	-	-
Bonelli's Eagle	-	2	1	-	-
Rufous-winged Buzzard	40	2	9	4	1
Grey-faced Buzzard	24,007	12,016	10,159	5,589	14,434
Eastern Marsh Harrier	155	119	107	171	173
Pied Harrier	53	18	39	53	65
Shikra	10,960	2,179	6,086	1,970	2,772
Chinese Sparrowhawk	170,925	61,845	83,168	93,406	83,308
Japanese Sparrowhawk	17,856	10,405	11,907	12,047	5,452
Besra	40	9	9	3	<15
Eurasian Sparrowhawk	13	7	3	-	<10
Black-eared Kite	185	154	172	173	168
<i>Accipiter</i> spp.	5,655	2,845	N/A	N/A	N/A
<i>Buteo</i> spp.	46	24	36	47	83
Eurasian Kestrel	24	6	26	11	12
Amur Falcon	6	-	4	4	1
Eurasian Hobby	5	1	3	4	7
Peregrine Falcon	43	36	30	42	30
unidentified	6	60	4,193	N/A	N/A
<b>Total</b>	<b>397,329</b>	<b>287,386</b>	<b>269,844</b>	<b>168,524</b>	<b>213,704</b>

**Table 1.** Total numbers of presumed migratory diurnal raptors species counted in autumn 2010-2015. Note that data in 2013 is lacking.

## Migratory raptor species

Species	Total counted	Peak daily count	Time frame
Western Osprey	76	6 (7 Oct)	28 Sep–15 Nov
Oriental Honey-buzzard	65,899	15,943 (8 Oct)	29 Aug–15 Nov
Jerdon's Baza	286	45 (21 Oct)	11 Oct–15 Nov
Black Baza	100,500	17,669 (23 Oct)	17 Oct–15 Nov
Crested Serpent Eagle	357	51 (20 Oct)	15 Oct–14 Nov
Short-toed Snake Eagle	8	2 (22, 28 Oct)	21 Oct–5 Nov
Greater Spotted Eagle	16	4 (22–23 Oct)	20 Nov–7 Nov
Booted Eagle	121	18 (22 Oct)	5 Oct–13 Nov
Steppe Eagle	2	1	23 Oct–7 Nov
Rufous-winged Buzzard	40	10 (23 Oct)	18 Oct–15 Nov
Grey-faced Buzzard	24,007	5,488 (20 Oct)	10 Oct–15 Nov
Eastern Marsh Harrier	155	11 (12 Oct)	16 Sep–9 Nov
Pied Harrier	53	7 (15 Oct)	19 Sep–14 Nov
Shikra	10,960	838 (19 Oct)	30 Aug–15 Nov
Chinese Sparrowhawk	170,925	18,279 (8 Oct)	6 Sep–15 Nov
Japanese Sparrowhawk	17,856	1,936 (20 Sep)	29 Aug–15 Nov
Besra	40	4 (2, 12, 21 Oct)	2 Oct–15 Nov
Eurasian Sparrowhawk	13	2 (16, 23, 30 Oct, 1 Nov)	5 Oct–11 Nov
Black-eared Kite	185	19 (21 Oct)	25 Sep–11 Nov
<i>Accipiter</i> sp.	5,655	765 (14 Oct)	
<i>Buteo</i> sp.	46	11 (21 Oct)	30 Sep–12 Nov
Eurasian Kestrel	24	6 (31 Oct)	16 Oct–8 Nov
Amur Falcon	6	2 (7 Nov)	25 Oct–8 Nov
Eurasian Hobby	5	1	1–31 Oct
Peregrine Falcon	43	5 (6 - 7 Oct)	14 Sep–1 Nov
unidentified genus	6	4 (5 Nov)	
<b>Total</b>	<b>397,329</b>	<b>34,433 (8 Oct)</b>	<b>28 Aug–15 Nov</b>

**Table 2.** Total numbers of presumed migratory diurnal raptors species counted in autumn 2015. Numbers of Oriental Honey-buzzard and Peregrine Falcon in this table belong to the subspecies recognised as long-distance migrants only. A small portion of Shikra included here was resident.

## Presumed resident raptor species

Species	Peak daily count	Time frame
Black-winged Kite	1	8 Oct–23 Oct
Oriental Honey-buzzard ( <i>torquatus</i> )	1	12 Sep
Changeable Hawk Eagle	2	4 Sep–15 Nov
Black Eagle	1	8 Oct
Crested Goshawk	5	30 Aug–15 Nov
Brahminy Kite	3	10 Sep–15 Nov
White-bellied Sea Eagle	3	2 Sep–15 Nov
Peregrine Falcon ( <i>ernesti</i> )	1	22 Sep–1 Nov

**Table 3.** Total numbers of presumed resident diurnal raptors species counted in autumn 2015.

### Non-raptor diurnal migratory species

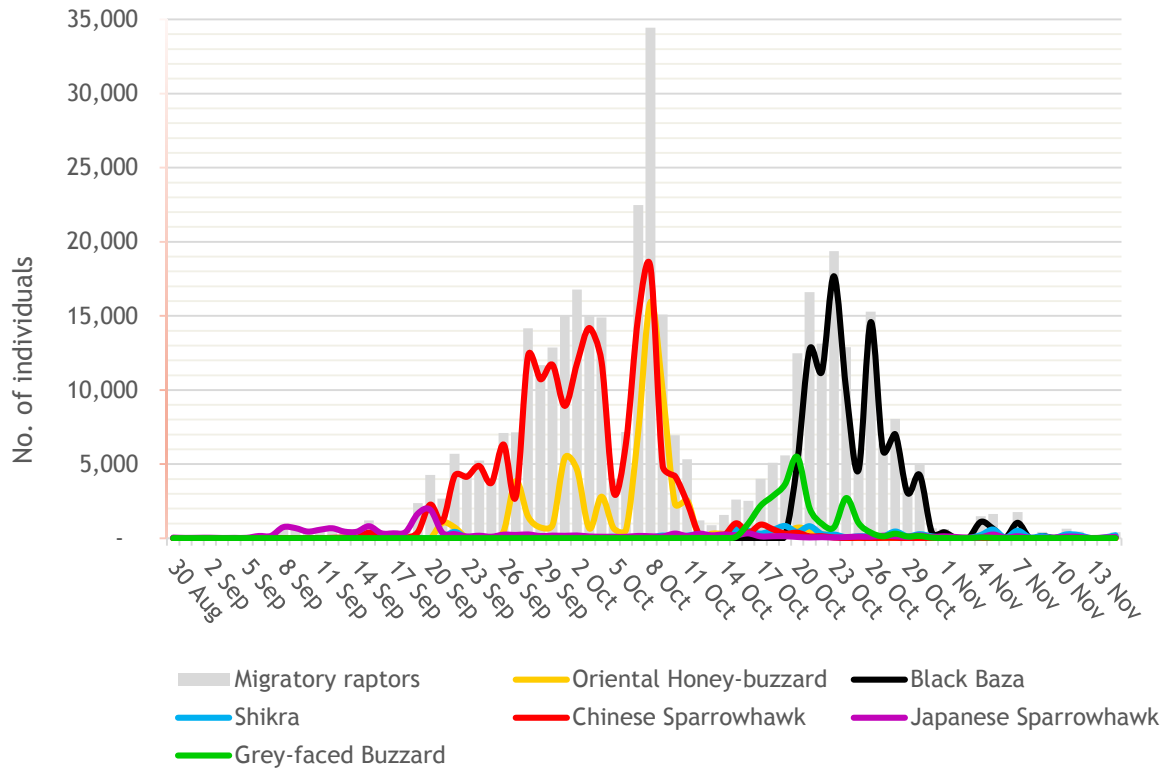
Species	Total counted	Peak daily count	Time frame
Asian Openbill	21,713	3,575 (7 Nov)	29 Aug–15 Nov
Painted Stork	1	1	16 Oct
Little Cormorant	4	1	3 Sep–7 Nov
Oriental Darter	16	3 (26 Sep, 10 Nov)	5 Sep–10 Nov
Grey Heron	15	6 (1 Nov)	31 Oct–11 Nov
Purple Heron	5	5	24 Oct
Great Egret	1	1	9 Nov
Intermediate Egret	11	10 (1 Nov)	2 Oct–1 Nov
Little Egret	24	13 (31 Oct)	16 Sep–31 Oct
Chinese Pond Heron	2	1	30 Sep–21 Oct
Black-headed Ibis	10	7 (2 Nov)	2–11 Nov
Oriental Pratincole	720	294 (24 Oct)	21 Sep–14 Nov
Whiskered Tern	1	1	1 Nov
Pale-capped Pigeon	4	2 (19 Sep, 14 Oct)	19 Sep–14 Oct
White-throated Needletail	1,663	173 (11 Nov)	11 Sep–15 Nov
Silver-backed Needletail	156	45 (11 Nov)	1–14 Nov
Brown-backed Needletail	553	87 (11 Nov)	4 Sep–15 Nov
unidentified needletail	2,153	500 (11 Nov)	
Common Swift	3	1	22 Oct–8 Nov
Pacific Swift	20,350	2,520 (16 Sep)	29 Aug–15 Nov
Blue-throated Bee-eater	1,676	219 (7 Sep)	29 Aug–6 Nov
Blue-tailed Bee-eater	46,887	5,543 (20 Oct)	29 Aug–15 Nov
Chestnut-headed Bee-eater	355	69 (2 Nov)	12 Sep, 19 Oct–15 Nov
Oriental Dollarbird	237	100 (20 Oct)	28 Sep–15 Nov
Ashy Minivet	8,819	860 (25 Oct)	4 Oct–15 Nov
Black-winged Cuckooshrike	2	1	16–19 Oct
Black-naped Oriole	256	30 (24 Oct)	30 Sep–15 Nov
Black Drongo	1,812	236 (24 Oct)	29 Sep–15 Nov
Ashy Drongo	138	16 (14 Oct)	24 Sep–10 Nov
Hair-crested Drongo	4	4 (13 Oct)	13 Oct
Common Sand Martin	55	20 (22 Oct)	2–24 Oct
Barn Swallow	88,733	6,204 (23 Sep)	29 Aug–15 Nov
Red-rumped Swallow	4,802	767 (17 Oct)	18 Sep–14 Nov
Asian House Martin	1,839	292 (30 Oct)	12 Sep–14 Nov
Chestnut-flanked White-eye	35	32 (15 Nov)	25 Oct–15 Nov
Blue Rock-thrush	4	1	8 Sep–16 Oct
Forest Wagtail	135	42 (15 Sep)	8 Sep–17 Oct
Eastern Yellow Wagtail	76	44 (10 Sep)	8 Sep–31 Oct
Grey Wagtail	36	8 (30 Aug)	28 Aug–29 Sep
Richard's Pipit	1	1	1 Oct
Olive-backed Pipit	2	2	17 Oct

Table 4. Total numbers of diurnal migratory non-raptor species counted in autumn 2015.

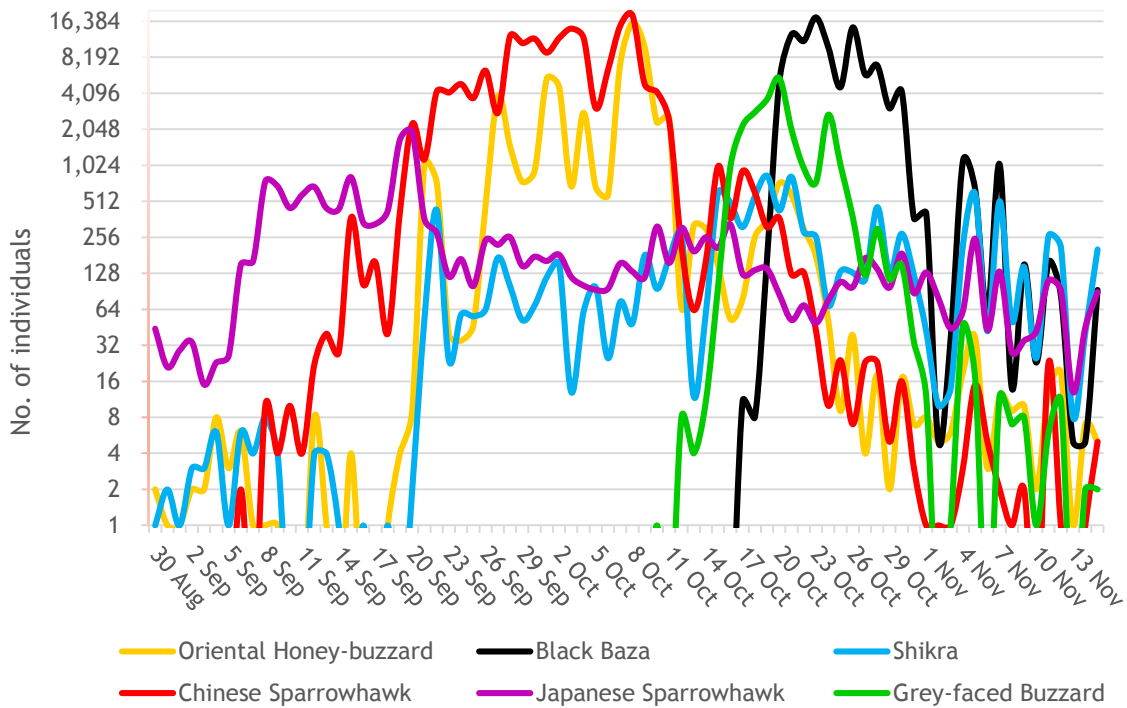
### Non-raptor diurnal migratory species

Species	2015	2014	2012	2011
Asian Openbill	21,713	2,612	1,321	49
Painted Stork	1	-	-	-
Christmas Island Frigatebird	-	1	-	-
Little Cormorant	4	N/A	N/A	N/A
Oriental Darter	16	5	N/A	N/A
Grey Heron	15	-	-	-
Purple Heron	5	-	-	-
Great Egret	1	-	7	4
Intermediate Egret	11	-	-	-
Little Egret	24	26	854	1,027
Chinese Pond Heron	2	-	-	-
Black-headed Ibis	10	-	18	-
Oriental Pratincole	720	27	143	153
Whiskered Tern	1	-	-	-
Pale-capped Pigeon	4	5	3	N/A
White-throated Needletail	1,663	203	724	745
Silver-backed Needletail	156	-	17	53
Brown-backed Needletail	553	25	37	121
unidentified needletail	2,153	78	N/A	N/A
Common Swift	3	1	-	-
Pacific Swift	20,350	11,858	20,666	22,816
Plain-pouched Hornbill	-	1	-	-
Blue-throated Bee-eater	1,676	788	1,863	2,265
Blue-tailed Bee-eater	46,887	14,944	26,888	24,869
Chestnut-headed Bee-eater	355	103	144	68
Oriental Dollarbird	237	8	53	33
Ashy Minivet	8,819	2,428	3,303	3,146
Black-winged Cuckooshrike	2	-	-	-
Black-naped Oriole	256	101	141	160
Black Drongo	1,812	253	2,012	1,514
Ashy Drongo	138	8	16	16
Hair-crested Drongo	4	-	2	-
Common Sand Martin	55	3	10	-
Barn Swallow	88,733	15,771	68,744	84,005
Red-rumped Swallow	4,802	2,119	2,849	2,834
Asian House Martin	1,839	107	272	207
Chestnut-flanked White-eye	35	-	-	-
Blue Rock-thrush	4	-	2	-
Forest Wagtail	135	3	4	N/A
Eastern Yellow Wagtail	76	12	N/A	N/A
Grey Wagtail	36	-	52	N/A
Richard's Pipit	1	-	1	-
Olive-backed Pipit	2	-	-	-

**Table 5.** Total numbers of important diurnal migratory non-raptor species counted in autumn 2011-2015. Note that data in 2010 and 2013 are lacking.

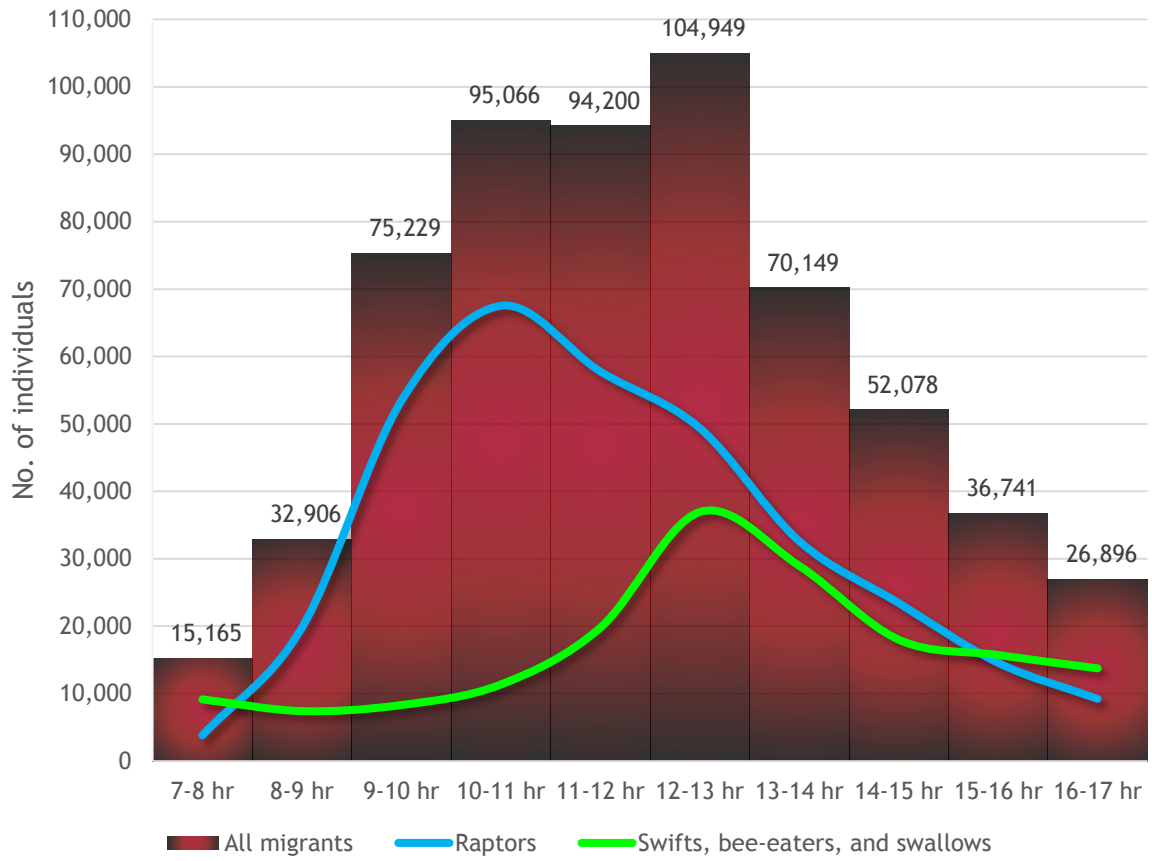


**Figure 1.** Numbers of raptors with highest counts throughout the season. Bar chart represents daily total numbers of migratory raptors for comparison.



**Figure 2.** Numbers of raptors with highest counts throughout the season. Logarithmic scale is applied for the ease in comparison of species trends.





**Figure 3.** Pattern of migration through the day (number of birds per hour) at Khao Dinsor: 1 Sep–15 Nov 2015.