BEDONG, KEDAH - A MAJOR RAPTOR MIGRATION SITE IN PENINSULAR MALAYSIA

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ABSTRACT

During the northern hemisphere autumn, one of the major routes taken by Far East Asian raptors migrating south is along coastal China into mainland South-east Asia and onwards to the Malay Peninsula, Sumatra, Java and beyond. The major "choke points" along this route are at the Isthmus of Kra, Thailand, where the Chumphon raptor watch site is located and at Tanjong Tuan, Melaka, which is the nearest distance between the land mass of Peninsular Malaysia and Sumatra across the Straits of Malacca. Both sites are world renowned as raptor migration watch sites. Over the years birders have noted raptors thermalling over the Gurun – Sungai Petani area, Kedah, an area of plains bordered on the west by Gunung Jerai and on the east by the Jeniang, Sik and Bukit Selambau hills. In autumn 2012 and 2013 volunteers from the Malaysian Nature Society (MNS) counted and identified the raptors migrating along this route from the district of Bedong, at a small hillock that gave good views of the plains below and all the way up to the summit of Gunung Jerai and northerly direction towards Gurun and Jeniang. The monitoring started from the 4th week of September till the 1st week of November, covering approximately 6 weeks. In autumn 2012, a total of 64,268 raptors represented by 13 migratory raptor species and eight resident raptor species were counted. In autumn 2013, a total of 55,915 migratory raptors were counted. The range of raptor species observed is the higher than any raptor watch site in Peninsular Malaysia, and the total number of raptors counted is comparable to that of Tanjung Tuan, Melaka and Taiping, Perak. Any location with 10,000 raptors or more per season is considered as a significant raptor watch site.

Keywords: counting, rmigratory raptors, monitoring, population trends, resident raptors

INTRODUCTION

Peninsular Malaysia lies on one of the major flyways of raptors, part of the autumn raptor migration flyway of eastern Asia, migrating from temperate northern Asia to warmer weather in South-east Asia and beyond (ARRCN, 2012; Lim; 2011a). Each autumn (from end Sept to mid Nov) hundreds of thousands of raptors migrate south along this path. Tanjung Tuan, in Melaka (DeCandido, 2006; Lim and Nina Cheung, 2011), and Taiping at Scott's Hill, Perak (ARRCN, 2012; Lim, 2011b), are major raptor migration watch sites. Further north in Thailand, the Isthmus of Kra, Khao Din Sor and Chumphon (ARRCN, 2012; DeCandido *et al*., 2004; DeCandido *et al*., 2008; DeCandido, 2013), are considered as world class raptor migration watch sites. For the past few years, from 2009 onwards, members of the MNS Penang Branch had been reporting big flocks of migratory raptors over Bedong (see Bird i-witness Malaysia, location – Bedong www.worldbirds.org/malaysia/). There were also previous reports of migratory raptors at Gunung Jerai and Gurun, Kedah (Wells, 1999; Wells, 2007).

In autumn 2012, with funding from Asian Raptor Research & Conservation Network (ARRCN), Malaysian Nature Society (MNS), Penang Branch and MNS-BCC (Bird Conservation Council) Raptor Study Group (RSG) together carried out a study of raptor migration at Bedong over a planned continuous 45 days period. A year later, in autumn 2013, with contributions from MNS Penang Branch and support from RSG, MNS Selangor and MNS Perak branch, another season of monitoring was carried out.

METHODOLOGY

Survey site

Bedong is located in Kedah, about 10 km north of Sungai Petani and 10 km south of Gurun. It is located near the centre of the plains that is bordered on the west by the Gunung Jerai massif and on the east by small hills that form part of the Kedah – Singgora range. The narrowest stretch of this plain is about 40 km. This area is also known as Bujang Valley, after the historical ancient Hindu civilization located around Gunung Jerai.

The survey site located east of Bedong township, near Kampong Kongsi Enam (Figure 1). The habitat is agricultural land with mainly rubber and oil palm estates. There were two observation points in the survey site: one nears an abandoned bungalow and another on a hillock (c 100 m a.s.l.), about two km away. Most of the observations were done from the latter site as it provided a better vantage point (Figure 2). Opportunistic observations were also made from the surrounding plantations and the two golf courses located in the surrounding area.

Figure 1. Location of Bedong count site, Kedah.

Figure 2. Hillock, Main Count Site – looking west towards Gunung Jerai.

Field methods

Monitoring of raptor migration was carried out by volunteers accompanied by at least one experienced raptor counter. Observers scanned for migrants by observing the sky in the northerly direction, sweeping from west to east and vice-versa. A range of binoculars were used, from 8 x 42 to 12 x 50, and spotting scopes, from objective up to 80 mm, with a range of magnifying eye-pieces. Digital cameras with a range of telephoto lens from 400 to 800mm were used to capture digital images for instantaneous identification and confirmation of raptor species.

All volunteers were taught the identification of the commonest five migratory raptor species found at Bedong (and for that matter also Peninsular Malaysia). These are the Oriental Honey Buzzard *Pernis ptilorhyncus*, Grey-faced Buzzard *Butastur indicus*, Black Baza *Aviceda leuphotes*, Chinese Goshawk *Accipiter soloensis* and the Japanese Sparrowhawk *Accipiter gularis*. Regional field guides for South-East Asian birds (King *et al*., 1975; Robson, 2008) and Peninsular Malaysia (Allen, 2012; Wells, 1999) were used to identify raptor species. Raptor field guides were also used (ARRCN, 2012; Chaiyan, 2008; Ferguson-Lees and Christie, 2007; Forsman; 2007).

During the autumn 2012 survey, migratory raptors were counted daily from 0900hrs to 1700hrs. The survey was conducted by at least two volunteers from 1st October to 5th November 2012 over a 35 days period. For the 2013 studies, due to insufficient volunteers, counts were sometimes made for less than the 0900 to 1700 hrs period. However, site visit was made for at least 2 hours, usually around noon, the hottest time of the day where raptors supposedly start to thermal and migrate.

RESULTS

Migratory Raptors

In all, 15 migrant raptor species were identified heading south during the two seasons of monitoring at Bedong. From the Bedong hillock count site, the raptors were seen flying overhead, or just to the west on the plains below, or further away against Gunung Jerai. Occasionally some raptors were seen to the east of the count site, overflying the Bukit Selambau area (Figure 10). Black Baza was the major migratory raptor species recorded (70.6%) followed by Oriental Honey Buzzard (8.4%), Chinese Goshawk (9.3%) and Japanese Sparrowhawk (2.4%). Grey-faced Buzzard, a not so common migratory raptor to Peninsular Malaysia, made up the 5th (1%) commonest raptor seen here, sometimes in small flocks.

Table 1. Bedong field data summary 2012.

Date	OHB	GFB	CG	JSH	Unid. accip.	Unid. raptor	Black Baza	Others	Total
1/10	0	0	0	0	0	62	0	0	62
2/10	0	0	0	0	0	0	0	0	0
3/10	30	0	0	19	0	0	0	0	49
4/10	246	3	194	103	0	0	0	0	546
5/10	147	0	31	1	0	0	0	0	179
6/10	5	0	0	0	5	0	0	0	10
7/10	10	0	22	1	158	1	0	0	192
8/10	291	2	73	351	381	4	0	1BK	1,103
9/10	82	2	172	3	22	17	0	1BK	299
10/10	529	0	87	0	21	1	0	0	638
11/10	42	0	0	0	7	1	0	0	50
12/10	369	1	0	0	78	35	230	1 Falco	714
13/10	635	1	261	2	7	1	0	0	907
14/10	826	0	1,039	3	703	3	0	2 PF	2,576
15/10	130	2	110	18	205	24	0	1GSE	490
16/10	8	0	181	6	536	24	0	0	755
17/10	0	0	4	1	11	0	0	0	16
18/10	24	0	27	3	145	4	0	0	203
19/10	20	3	72	0	335	5	0	0	435
20/10	215	0	20	24	202	27	0	2BK, 1F, 1OP	492
21/10	3	2	152	4	82	7	0	1PH	251
22/10	24	0	62	17	59	94	0	0	256
23/10	184	0	86	10	121	87	196	0	684
24/10	84	2	0	5	33	15	46	0	185
25/10	179	81	70	61	52	15	3,276	3BE, 1GSE, 1CB, 1BK	3,740

26/10	65	90	8	18	35	3	3,158	1BE, 1BK, 1H	3,380
27/10	469	41	18	20	42	18	12,540	3 OP, 3BE, 1GSE, 1BK	13,156
28/10	898	46	40	35	67	45	12,808	2BE, 3BK	13,944
29/10	574	11	1	18	41	8	6224	4BE, 1EMH, 2AQ, 1BK	6885
30/10	427	15	8	19	37	1	1,953	5AQ, 1H	2,466
31/10	359	10	16	38	29	1	2,713	0	3,166
1/11	530	8	3	22	57	0	1,765	1PH, 1AQ	2,387
2/11	67	15	2	20	8	4	2,431	1BK, 1AQ, 1H	2,550
3/11	95	0	0	1	130	0	333	2 BK	561
4/11	7	5	0	0	33	14	339	2BE, 2 OP	402
5/11	329	0	0	0	40	2	169	0	539
Total	**7,903**	**340**	**2,759**	**823**	**3,682**	**523**	**48,181**	**57**	**64,268**
%	12.3	0.5	4.3	1.3	5.7	0.8	75	0.1	100

Species: OHB (Oriental Honey-buzzard *Pernis ptilorhyncus*), GFB (Grey-faced Buzzard *Butastur indicus*), CG (Chinese Goshawk *Accipiter soloensis*), JSH (Japanese Sparrowhawk *Accipiter gularis*), Black Baza (*Aviceda leuphotes*), SKA (Shikra *Accipiter badius*), BK (Black Kite *Milvus migrans*), PF (Peregrine Falcon *Falco peregrinus*), BE (Booted Eagle *Hieraaetus pennatus*), GSE (Greater Spotted Eagle *Aquila clanga*), CB (Common Buzzard *Buteo buteo*), HM (Himalayan Buzzard *Buteo burmanicus*), EMH (Eastern Marsh Harrier *Circus spilonotus*), PH (Pied Harrier *Circus melanoleucos*) OP (Osprey *Pandion haliaetus*), AQ (Aquila spp.),
H (Harrier spp.), Buteo (Buteo sp), Falco (Falco spp.).

Figure 3. Oriental Honey Buzzard (left) and Grey-faced Buzzard (right)

Table 2. Bedong field data summary 2013

Date	OHB	GFB	CG	JSH	Unid. accip.	Unid. raptor	Black Baza	Others	Total
25/9	3	0	0	5	0	0	0	0	8
26/9	2	0	0	11	0	0	0	0	13
27/9	0	0	0	0	0	0	0	0	0
28/9	9	0	1	104	0	0	0	0	114
29/9	0	0	0	0	0	0	0	0	0
30/9	248	0	2	867	0	1	0	0	1,118
1/10	2	0	2	203	0	0	0	0	207
2/10	6	0	2	247	0	0	0	0	255
3/10	0	0	0	0	0	0	0	0	0
4/10	10	0	0	102	0	0	0	1EMH	113
5/10	4	0	0	1	31	0	0	0	36
6/10	0	0	0	0	0	0	0	0	
7/10	0	0	0	0	0	0	0	0	
8/10	16	0	987	15	1,970	0	0	0	2,988
9/10	8	0	43	6	10	0	0	1OP	68
10/10	57	0	0	0	0	0	0	2EMH	59
11/10	39	0	464	10	13	2	0	1BK	529
12/10	199	3	1,392	7	112	1	0	0	1,714
13/10	18	0	1,290	22	76	0	0	2BE, 1H, 1CB	1,410
14/10	1	0	18	2	9	0	0	0	30
15/10	15	86	20	6	320	20	0	0	467
16/10	164	227	2,508	16	468	157	8	3OP, 5BE, 2SKA	3,558
17/10	24	1	3	11	768	69	0	1BE	877
18/10	17	4	7	2	447	95	370	0	942
19/10	5	6	1	12	10	4	53	1BE, 1SKA	93
20/10	52	7	150	11	152	25	1,140	1OP, 1HB	1,539
21/10	1	0	5	4	2	4	207	2EMH	225
22/10	48	35	52	47	50	173	16	1BE, 1BK, 3H	426
23/10	221	66	294	30	193	51	1,007	2BK, 1PF, 2H, 1Falco 1AQ	1,869
24/10	178	231	809	150	55	32	355	1OP, 2BK	1,813
25/10	53	137	182	13	15	30	245	1OP, 1BE, 1PF, 4Buteo	682
26/10	97	0	59	13	12	2	811	1OP, 1EMH	996
27/10	269	16	29	5	123	92	367	1OP, 1BE	903
28/10	33	2	1	17	23	11	425	0	512
29/10	18	1	2	3	8	10	331	1BE	374
30/10	20	11		2	6	6	3,310	0	3,355
31/10	70	11	51	9	9	9	887	2BK	1,046
1/11	19	5	4	5	2	1	5,961	0	5,997
2/11	8	2	5	7	9	10	10,627	0	10,668
3/11	188	1	19	28	8	3	7134	2GSE, 1AQ	7384

4/11	35	1	7	22	16	40	3240	1GSE, 1H	3363
5/11	22	0	0	5	1	0	132	1GSE, 1EMH	162
Total	**2,179**	**853**	**8,409**	**2,020**	**4,918**	**848**	**36,626**	**62**	**55,915**
%	3.9	1.5	15.0	3.6	8.8	1.5	65.5	0.1	

Figure 4. Japanese Sparrowhawk

Figure 5. Chinese Goshawk

Figure 6. Osprey

Figure 7. Black Baza

Table 3: Bedong cumulative data 2012 & 2013

Date	OHB	GFB	CG	JSH	Unid. accip.	Unid. raptor	Black Baza	Others	Total
2012	7,903	340	2,759	823	3,682	523	48,181	57	64,268
2013	2,179	853	8,409	202	4,918	848	36,626	62	55,915
Total	**10,082**	**1,193**	**11,168**	**2,843**	**8,600**	**1,371**	**84,807**	**119**	**120,183**
Average/2 years	**5,041**	**596**	**5,584**	**1,422**	**4,300**	**685**	**42,403**	**59**	**60,091**
As %	**8.4**	**1.0**	**9.3**	**2.4**	**7.2**	**1.1**	**70.6**	**0.1**	

2012, Actual Count Days = 36, Average Hours per Day = 7
2013, Actual Count Days = 37, Average Hours per Day = 5.6

Figure 8. Booted Eagle

Figure 9. Shikra

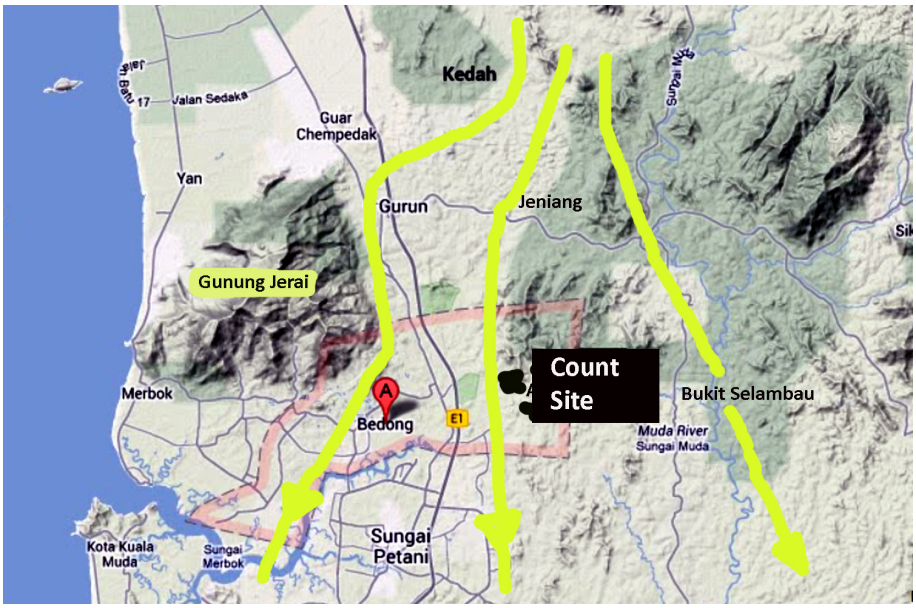

Figure 10. General flyways of migrant raptors at Bedong count site

An average of 15 Booted Eagles per season were seen among the passing migrants. This number is remarkably high for a migrant species regarded as rare in Peninsular Malaysia. Other migratory raptors found here, but not easily observed at other raptor watch sites, include the Greater Spotted Eagle, Black Kite, Osprey and harrier species. Both taxon of Common Buzzard, which was recently "split" into Common and Himalayan Buzzard (Robson 2008), were also recorded migrating at the survey site.

Table 4. The five major migratory raptors and selected raptors recorded in 2012 and 2013.

	Species	Average of total counted, 2012 & 2013	Peak time frame and or trend
1	Oriental Honey Buzzard	5041	Gradual peak end Oct but seen throughout
2	Grey-faced Buzzard	596	Peak mid to end October
3	Chinese Goshawk	5584	Peak at mid-October
4	Japanese Sparrowhawk	1422	Usually arrive earlier than CG and peak early to mid-October
5	Black Baza	42403	Usually arrive in huge flocks last week of October, but an earlier smaller flock noticed in 2012
6	Osprey	7	Seen throughout October
7	Greater Spotted Eagle and Aquila spp	9	Tend to arrive later, after mid-October
8	Black Kite	11	Seen throughout the season
9	Booted Eagle	14	Seen throughout with about two white morphs per season (15%)
11	Eastern Marsh Harrier and Harrier species	9.5 ~ 10	Seen throughout the season with EMH more common.

Bedong, with a high autumn count of about 65,000 raptors, is somewhat equivalent to Taiping and Tanjong Tuan watch sites and higher than Perlis State Park in terms of numbers of migrant raptors recorded. More significantly, the variety of raptor species seen at Bedong is much higher compared to all other raptor count locations in Peninsular Malaysia.

The average total number of raptors recorded per autumn season during the two years survey was 60,000. This is about a third to one-quarter of the migrating raptors recorded passing through in autumn at Chumphon, Thailand. This may be significant for the study of the migratory routes of raptors in East Asia. Bedong may be located very near the main route of migratory raptor using the Eastern Inland Corridor that lies south of Chumphon, Thailand.

Resident Raptors

A total of nine species of resident raptors were also observed: Changeable Hawk-eagle *Spizaetus cirrhatus,* Crested Serpent-eagle *Spilornis cheela*, Black-shouldered Kite *Elanus caeruleus*, Brahminy Kite *Haliastur indus*, Rufous-bellied Eagle *Hieraaetus kienerii*, Grey-headed Fish-eagle *Ichthyophaga ichthyaetus*, Crested Goshawk *Accipiter trivirgatus*, White-bellied Sea-eagle *Haliaeetus leucogaster* and Blyth's Hawk-eagle *Spizaetus alboniger*.

Figure 11. Changeable Hawk-eagle

Figure 12. Crested Serpent-eagle

DISCUSSION

Migration is a long and energy-consuming journey for the migrant raptors. Migrating raptors concentrate along main river valleys, mountain slopes and passes, and along shores (Ferguson-Lees and Christie, 2007). It is important that enough habitats along the major migration routes be preserved so they could rest at night or during bad weather. Data from these surveys should be made available to other relevant agencies such as forestry department, wildlife and national park department and conservation groups. It is hoped that these initial data will be useful for their planning and conservation efforts.

Raptors, or birds of prey, are the top predators in the food chain. It is generally believed that the total number and the greater range of raptor species are good indicators of the health of the environment. More systematic counts in future could help review the actual number of raptors passing through this site and the range of the species too. A suitable higher location than the present count site needs to be located, where a watch tower can be constructed.

Public awareness needed to be promoted to increase the appreciation and understanding of the migrant raptors. In this respect, a raptor workshop and migration watch for members of Malaysian Nature Society, government agencies and the public was conducted on 27 Oct 2013 at Bedong. The importance of migratory raptors was mentioned in the nature talks conducted for schools and public to improve the relationship between raptors and humans. Whenever possible, birdwatchers should explain the significance of raptors to farmers and the general public in order to promote the co-existence of people and raptors in a non-destructive way.

Bedong is not only important as a raptor count site in Malaysia because of the high total number of migratory, as any site above 10,000 raptors season is considered a major raptor migratory site (ARRCN, 2012; Heintzelman, 2004), but also the presence of many resident raptor species. It was noted that

some migratory raptors were observed to hunt at this site, either seen with prey or with full crop.

Bedong would be a good place to do raptor counting because of the variety of raptor species that come through the area. It can be also a good training ground for those who are interested in raptors. The raptors can be high up, making identification difficult, but the benefit is it has many different species compared to Tanjung Tuan which has mainly Oriental Honey Buzzard. The range of raptor species seen here are more similar to those in Taiping. Although the counts at Bedong are high, the total could be still higher if the counting period is extended longer, to say, 60 days.

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