

**AUTUMN MIGRATION OF CHINESE SPARROWHAWK *ACCIPITER SOLOENSIS* AND JAPANESE SPARROWHAWK *ACCIPITER GULARIS* AT RADAR HILL, PRACHUAP KHIRI KHAN, THAILAND**

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**ABSTRACT**

Thailand is located on the East-Asian Australian flyway. Radar Hill in Prachuap Khiri Khan Province is a newly-established raptor-watch site in Thailand. Radar Hill is adjacent to the shoreline of Gulf of Thailand with a distance of approximately 15 kilometers. In the past three consecutive years, the site has been regularly monitored on weekends from late September to early November to record the number and species of migrating raptors. Nine-hour-long daily counts of migrating Chinese Sparrowhawk *Accipiter soloensis* and Japanese Sparrowhawk *Accipiter gularis*, were studied and compared for 3 years on selective dates of the same period, and those were the 24<sup>th</sup> -25<sup>th</sup> September 2005, 23<sup>rd</sup> -24<sup>th</sup> September 2006 and 22<sup>nd</sup> – 23<sup>rd</sup> September 2007. Totals of 3,768 positively-identified *Accipiter* were counted. The Chinese Sparrowhawk comprised 79.27% of the *Accipiter* individuals (2,987 birds) that could be identified. The Japanese Sparrowhawk was less in number, comprising 20.73 % of the total count (781 birds). The Chinese Sparrowhawk migrated through Radar Hill in a variety of flock sizes, ranged from 10 to 500 individuals per flock. The migration pattern of the Japanese Sparrowhawk reported here as mostly single individuals are in contrast to that has been recorded in literature. However, a few Japanese Sparrowhawks were occasionally joined the soaring kettles of Chinese Sparrowhawks. The flight direction of the sparrowhawks at Radar Hill appeared in relative to south-westerly winds which occurred during the study. It is likely that clear weather after raining increased the number of the counted *Accipiter* species. It appears that Radar Hill is a significant watch site for long-term study, and it has potential for continuous raptor study and conservation in Thailand.

**Keyword:** *Accipiter soloensis*, *Accipiter gularis*, migration, Radar Hill, Thailand

**INTRODUCTION**

Thailand is an important migration crossroad for East-Asian raptors that over-winter in Malaysia, Singapore, Bali, Sumatra, and elsewhere in Indonesian archipelago. Radar Hill, (10° 59 ' 29.69" N, 99° 21' 29.59" E; 195 meters above sea level) located at Ban Chairat sub-district, Bang Saphannoi district, Prachuap Khiri Khan Province, is a newly-established raptor-watch site in Thailand. Radar Hill is adjacent to the shoreline of Gulf of Thailand with a distance of approximately 15 km. (Figure 1.)

Chinese Sparrowhawk *Accipiter soloensis* is a diurnal bird of prey in the family *Accipitridae* which also includes many other diurnal raptors such as eagles, buzzards, kites and harriers. It breeds in Southeast China, Taiwan, Korea and Siberia; winters in Indonesia and Philippines, passing through the rest of South-East Asia. It is a species of wooded areas. Its size is 30-36 cm in length, with the female larger than the male. The Japanese Sparrowhawk *Accipiter gularis* is a diurnal bird of prey in the family *Accipitridae*.

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It breeds in China, Japan, Korea and Siberia; winters in Indonesia and Philippines, passing through the rest of South-East Asia. It is a bird of open and wooded areas. It is 23-30 cm in length, with the female larger than the male. Both species are mainly a passage migrant in Thailand (Robson, 2000).

In South-East Asia, both sparrowhawks reportedly travel in flocks with interspersing flapping flight and soaring in thermals whenever possible (Ferguson-Lees & Christie, 2001). The purpose of this study was to obtain comparative information between the migratory accipiter species in term of number and migration pattern.



**Fig.1. Location of Hawk hill, Prachuab Khirikhan Province, Thailand**

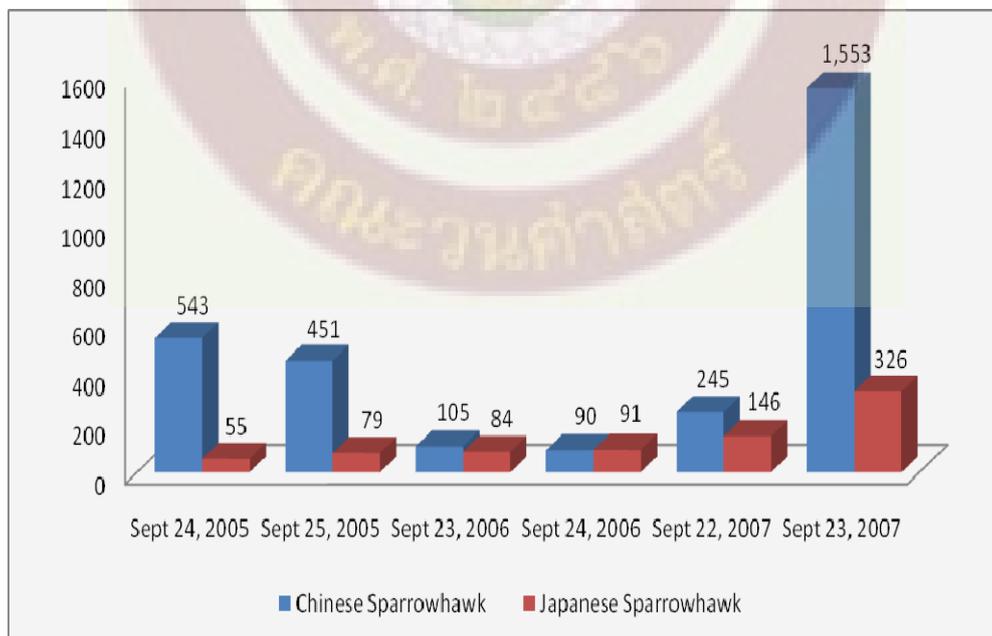
## **MATERIAL AND METHOD**

The migrant Chinese Sparrowhawk *Accipiter soloensis* and Japanese Sparrowhawk *Accipiter gularis* were counted on weekends during the period of autumn migration from late September to early November at Radar Hill. The raptor count was done for nine-hour long from 8am to 5pm on each counting day. The total results of the count are summarized in Thai Raptor Group (TRG) web database; <http://thairaptorgroup.com/TRG/modules.php?name=raptorcount>. The selective dates of study were chosen for the current study and those

are the 24<sup>th</sup> -25<sup>th</sup> September 2005, 23<sup>rd</sup>-24<sup>th</sup> September 2006 and 22<sup>nd</sup> – 23<sup>rd</sup> September 2007. Migrating raptors were mainly identified and counted by the authors with assistance of volunteer birders, using pairs of binoculars (8x and 10x) and a spotting scope (20x-60x). Field identification features used for positive identification at species level were followed Ferguson-Lees & Christie (2006) and Robson (2002). Counting protocols followed those described in Bildstein & Zalles (1995). Observers shared the responsibilities in two parts. First observer team scanned primarily in the northern direction for approaching migrants. An individual was considered a migrant if it made a flight passing in the north-to-south direction across an imaginary west-to-east line at the watch site, and continued southwards until it was disappeared. No attempt was made to determine the relative proportion of males versus females, nor of adult versus juvenile in the study. The second observer team then recorded the data into a record sheet. Weather conditions typically were hazy-cloudy with little wind and were sometimes raining. Wind direction was determined with a compass.

## RESULTS AND DISCUSSION

The site was regularly monitored on weekends from late September to early November to record the number of migrating raptors. The data of the studied dates are presented in Figure 2. and the following tables.



**Figure 2. Number of Chinese Sparrowhawk and Japanese Sparrowhawk counted at Radar Hill, Thailand.**

**Table 1, Autumn 2005.**

	Sept 24, 2005	Sept 25, 2005
Wind direction	SW*	SW
Weather condition	Clear	Clear

**Table 2, Autumn 2006.**

	Sept 23, 2006	Sept 24, 2006
Wind direction	SW	SW
Weather condition	Cloudy w/ intermittent rain	Cloudy w/ intermittent rain

**Table 3, Autumn 2007.**

	Sept 22, 2007	Sept 23, 2007
Wind direction	SW	SW
Weather condition	Cloudy w/ intermittent rain	Cloudy w/ 80-90% cloud

Table 1-3. Wind direction and weather condition at Radar Hill, Thailand.\* SW = South-west

A total of 3,768 positively-identified *Accipiter* were counted. The Chinese Sparrowhawk comprises 79.27% of the *Accipiter* (2,987 birds). The Japanese Sparrowhawk was significantly less in number than the Chinese Sparrowhawk, comprising 20.73 % of the total count (781 birds). There are 646 unidentified accipiters (not included in the aforementioned percentage) due to unsuitable conditions, thus the identification of these birds could not be positively identified to a species level. Japanese Sparrowhawk was seen throughout the day as individuals, and a few of them were found joining soaring flocks of Chinese Sparrowhawks during mid-days. In contrast to that of Japanese Sparrowhawk, Chinese Sparrowhawk mostly passed the watch site in flocks. Chinese Sparrowhawk was usually passing through Radar Hill in variable flock sizes, ranged from 10 to 500 individuals. Large flocks of Chinese Sparrowhawk were frequently observed from 10am to 3pm when the weather was warm and thus thermals were plenty. Thereafter in late afternoon between 3pm to 5pm, the flocks of Chinese Sparrowhawks were passing the site at lower elevation; many times at an eye level while the birds performed an active flight due to lack of thermals and particularly after the intermittent rain fall.

## DISCUSSION

Literature and previous published articles indicate that Chinese Sparrowhawk and Japanese Sparrowhawk migrate in flocks (Ferguson-Lees & Christie, 2001, Ash 1993, Wells 1999, Nijman 2001, Robson, 2002). Observations at Hawk Hill are in contrast to those notions, but are similar to those reported at Chumphon watch site (DeCandido *et al.*, 2004). However, a few Japanese Sparrowhawks were occasionally joined the kettles of Chinese Sparrowhawks. This may reflect different strategies of the species to adapt its migrating pattern according to variable geographical landscape e.g., overland traveling

versus sea crossing among islands. It is likely that clear weather after raining increases the number of the migrating *Accipiter* species at the watch site, probably due to higher visibility from lower height of the flight or stagnation of the number of raptors right before the watch site. The possibility that migrants were overlooked during the preceding cloudy days when visibility at Radar Hill was poor cannot be discounted. Occasionally, migrants did not pass the immediate area of the watch site but continued on a northeastern course over Radar Hill.

The number of Chinese Sparrowhawk is notably more than that of Japanese sparrowhawk, when observed on different time periods, and the finding is in accordance with previously published data (DeCandido *et al.*, 2004; Lim & Cheung, 2007; Nijman, 2001). This finding may reflect either the comparative global population of the two species in the breeding ground or the preference of different species in migration routes that each may have chosen different flyways i.e. inland routes through Siberia, China, Indochina, Thailand, peninsular Malaysia and Indonesia versus island hopping route through Japan, Philippines and Indonesia. The sparrowhawks counted at Radar Hill are certainly the same population reported in DeCandido, 2004 since Radar Hill is situated approximately 80 km from the reported Chumphon watch site, and are part of two major migration routes; (a) an Eastern Inland route covering southeastern Siberia through eastern China and Indochina (Laos, northern Vietnam), Thailand and peninsular Malaysia, and (b) a Coastal Pacific route covering the breeding grounds in north-eastern Siberia, Amurland, and Ussuriland through coastal China, Indochina, Thailand and peninsular Malaysia (DeCandido *et al.*, 2004; McClure, 1998; Zalles and Bildstein, 2000). A numerous number of the sparrowhawks also continue to make sea-crossing towards Indonesian islands (Germi, 2005; Nijman, 2001)

Weather conditions had a major influence on the number of raptors migrating. It is likely that clear weather after rainfall increases the number of the observed *Accipiter* species (Fig.2, Table 3) due to an increased visibility of raptors that fly at lower elevations.

## CONCLUSIONS AND RECOMMENDATION

Radar Hill appears to be a significant watch site for the autumn migration of raptors in Thailand. The site is adjacent with a distance of approximately 80 km to the previously-documented Chumphon raptor-watch site (DeCandido *et al.*, 2004). The timing and direction of raptor movement passing over Hawk Hill seems to be determined by weather conditions and wind directions. The raptor migration at Hawk hill affords an exceptional opportunity for research and education, and it has potential for continuous raptor study and raptor conservation through public awareness in Thailand.

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