NAT. HIST. BULL. SIAM SOC. 30 (1) : 1–14, 1982.

NOTES ON BREEDING BIRDS IN NORTH-WEST THAILAND

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ABSTRACT

The confirmed or probable breeding of 78 bird species in Chiang Mai Province, NW Thailand, was noted during February to May, 1979 to 1981, but there was no evidence of breeding activity among these species in December or January. Among species previously considered to be winter visitors only, breeding was proven in the Grey Bushchat *Saxicola ferrea*, and three pairs of Chestnut-bellied Rock Thrushes *Monticola rufiventris*, were present in suitable breeding habitat on Doi Inthanon in late May.

INTRODUCTION

There is little published information on the breeding ecology of birds in Thailand, notwithstanding the comparatively high level of ornithological activity in the country in recent years. Important contributions for Central Thailand have been made by HERBERT (1923–26) who described the nests and eggs of 108 species, and MCCLURE (1974), who gave a monthly breakdown of nesting activity for 39 species at Khao Yai National Park. For Northern Thailand, DEIGNAN (1945) gave details of gonad condition and occurrence of juvenile plumage in collected specimens, but little precise information on the timing of nesting activity.

This paper reports the occurrence of breeding activity in birds observed at various localities in Chiang Mai Province, NW Thailand. A total of 86 days was spent in the field during 1979–81, covering the periods Dec 16–Jan 4, Jan 17–Feb 14, April 3–20 and May 15–29. All but 10 days was spent on two mountains, Doi Pha Hom Pok (approximately 150 km north of Chiang Mai) and Doi Inthanon (approximately 60 km south–west). Most observations were made at elevations of 1600–2500 m, though a few visits were made to areas as low as 500 m on Doi Inthanon.

Although roughly equal time periods were spent on both these mountains, the timing of visits differed. The first and last periods were spent almost wholly on Doi Inthanon, the second and third mainly on Doi Pha Hom Pok. Other localities visited for one to five days each were Doi Suthep and Doi Pui (c. 1100-1600 m) close to Chiang Mai city and lowland areas in the province: Chiang Mai University campus; Mae Sa (12 km north) and the foot of Doi Chiang Dao, 60 km north of Chiang Mai.

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METHODS

Activities of birds indicative of breeding were noted. These were grouped into those which suggested probable breeding and those which confirmed breeding, based on criteria used in breeding bird atlas schemes in the temperate zones (eg. SHARROCK, 1976). Song was not used as a criterion for probable breeding as it was heard in many species known to be winter visitors, shortly before their departure. Also, the exact role of some vocalisations or apparent 'songs' is poorly understood in tropical birds. Unusually prolonged or high intensity agitation was taken as evidence of probable rather than confirmed breeding. Food soliciting behaviour was regarded only as evidence of probable breeding unless the individual concerned was identifiable as a juvenile. The presence of recently-fledged juveniles often served to confirm breeding. Their identification was often facilitated by examination in the hand after capture in mist nets.

RESULTS

Breeding was confirmed in 63 species, while a further 15 species were recorded as probable breeders (Table 1). No nesting activity was evident in either December or January though 8 species were recorded in the early stages of breeding during the first half of February. In April and May, 71% and 73% of breeding confirmations respectively were due to records of fledglings. If those species in which juveniles may have already been independent of adults are excluded, this gives a total of 34 species breeding in April compared with 25 in May.

Notes on selected species are given below. All dates refer to 1981 unless otherwise specified.

Cuckoos, Cuculidae

Recently-fledged juveniles of both the Large Hawk-Cuckoo *Cuculus sparverioides* and the Indian Cuckoo *Cuculus micropterus* were seen on Doi Inthanon in May, although there was no definite indication of the host species involved for either. The adults of both these species were still calling vociferously at the end of May, even though the main period of breeding of potential host species appeared to be over. The reasons for such a protracted period of vocalisation are not known, but it could perhaps serve to imprint the species' calls on the juveniles which would otherwise have no contact with their parents.

A juvenile Banded Bay Cuckoo *Cacomantis sonnerati* was also seen on 16 May, being fed by Bar-winged Flycatcher-shrikes *Hemipus picatus* in an area of dry dipterocarp woodland at about 600 m elevation. An adult had been seen previously in the same area on 18 April, when it was being mobbed by Large Wood-shrikes *Tephrodornis virgatus*.

Blue-Bearded Bee-eater *Nyctyornis athertoni*

Two adults were seen carrying food into a 1-2 m wide gully in a roadside earth bank in an area of forest and secondary growth at about 1650 m, Doi Inthanon, on 19 and 20 April. When the site was revisited on 17 May, the birds had already left the area but the nest burrow was found. It was situated about 1 m from the top of a vertical earth bank and about 3 m above the base. The burrow entrance was about 8 cm in diameter and it extended horizontally for about 140 cm (measured by inserting a thin stick). Beneath the burrow entrance were two small U-shaped indentations which appeared to have been made by the birds in perching while entering or leaving the nest. In April, the adults were seen perched on a horizontal stick which protruded near the gully entrance, about 5 m from the burrow. The ground beneath was littered with the remains of dung beetles (*Scarabaeidae*), which were among the most abundant large flying insects in the area.

The birds may have started prospecting the site and excavating the burrow long before the commencement of nesting, as an adult *Nyctyornis* was seen in exactly the same location as early as 30 December 1980.

Bulbuls, Pycnonotidae

The lack of breeding records for many common bulbuls may be a reflection of the small amount of time spent searching in more open areas.

A nest of Flavescent Bulbul *Pycnonotus flavescens* with 2 newly-hatched young was found on Doi Pha Hom Pok on 12 April. It was situated about 0.5 m off the ground in coarse grasses on an open hillside with scattered trees. The cup-shaped nest was built of fine grasses and was about 8 cm in external diameter.

A nest of Puff-throated Bulbul *Criniger pallidus* was found in semi-evergreen forest on Doi Suthep on 21 May. It was not possible to determine the contents as it was situated 4-5 m up in a small understorey tree. It was a rather flimsy-looking, shallow cup constructed of large dead leaves bound together with gossamer.

A recently-fledged juvenile Mountain Bulbul *Hypsipetes mcclellandii* caught in a mist net on 7 April on Doi Pha Hom Pok differed in iris colour from accompanying adults (Table 2).

Red-headed Tit *Aegithalos concinnus*

Doi Pha Hom Pok is the only known locality for this species in Thailand (Boonsong & Cronin, 1974). One pair, seen on 8 April, made repeated visits to the crown of a tree 8 m tall in a rather even-aged stand of thin, low stature, secondary evergreen trees. Only one bird appeared to be carrying nest material on these visits,

but it was always accompanied by the other member of the pair. The location of the nest could not be determined. At another site in more natural forest two birds were seen together collecting nest material in an understorey shrub on 13 April. These observations were made at 1600 m and 1700 m, respectively, and would appear to be the first good indications that the species is resident in Thailand.

Yellow-cheeked Tit *Parus spilonotus*

One bird was seen carrying nest material on 6 Feb. 1979 on Doi Pui, and adults were seen feeding fledged juveniles on Doi Pha Hom Pok on 8 April. However, DICKINSON & SOMTOB (1967) found both nests and recently-fledged young on Doi Suthep during the period 19 Feb. to 5 March.

Brown-throated Treecreeper *Certhia discolor*

A pair was seen at the nest on Doi Inthanon on 10 Feb 1979. The nest was situated in a hollow tree stump at the side of a stream bed in evergreen forest at 1600 m and the entrance was an irregularly-shaped hole or crack about 2.5 m from the base.

Babblers, Timaliidae

Breeding was confirmed in 14 species of babblers, with three other species recorded as 'probables'. A fledgling Rusty-cheeked Scimitar Babbler *Pomatorhinus erythrogenys* trapped on 9 April on Doi Pha Hom Pok was still growing its flight feathers and two adults were in attendance. The iris colour of juveniles of this and four other species of babbler is compared with that of adults in Table 2.

A nest and eggs of Red-faced Liocichla *Liocichla phoenicea* was found on Doi Pha Hom Pok on 6 April. The nest was situated 2 5 m up in the crown of a tree 4 m tall, at the edge of a small forest clearing at 1650 m. It was a cup-shaped nest 10 cm deep, woven of coarse grasses and lined with finer grass. The internal and external diameters of the cup were about 8 cm and 10 cm, respectively. It was placed in thin twigs approximately 1 m from the trunk and held in place with 'basket handles'. The two eggs were turquoise in colour, with sparse maroon spotting and scribbling. The tree was situated close by a path and as it was approached, the incubating bird would slip quietly off the nest and drop into dense scrub and herbage below. As the tree was climbed, both parents emerged at the top of the low cover, calling vociferously with a loud, scolding rattle. Because of this mobbing behaviour, Liocichlas appeared much more conspicuous in April than in January or February. Two other pairs were heard alarm-calling frequently in the same locations on successive days.

A nest of Chestnut-headed Yuhina *Yuhina castaniceps* containing three eggs was found at 1100 m on Doi Suthep on 4 Feb 1979. It was situated in a small recess in an earth bank, abott 1 m above the ground, at the side of a forest track.

Lesser Shortwing *Brachypteryx leucophrys* and Blue Shortwing *Brachypteryx montana*

Although both shortwings were recorded during December-February, they were highly inconspicuous at this time and seen only infrequently in dense cover on the forest floor. However, both species showed much territorial activity in April when they were easily detected by their loud songs. On 9 April on Doi Pha Hom Pok, 3 adult Lesser Shortwings were seen within 2-3 m of each other, possibly indicating some territorial interaction as one bird appeared to be chased by another. Frequent male-female chases by Blue Shortwings were observed on the summit of Doi Inthanon on 18-19 April. These took place not only on the ground but also along the limbs and in the crowns of trees up to 8 m high. Periods of male chasing female were interspersed by the male making jerky bowing movements to the female with the tail fanned, at the same time uttering a quiet, throaty warble. One or two male birds were even seen at the forest edge along the roadside in contrast to their highly skulking behaviour in winter. It thus appeared that breeding activity for both species of shortwing was at an early stage and considerably less advanced than in most babblers and resident warblers at this time. Both shortwings were still singing strongly in May. A female Blue Shortwing was seen carrying food on the summit of Doi Inthanon on 24 May and a recently-fledged juvenile Lesser Shortwing was seen with an adult on 27 May.

Although, on Doi Inthanon, no Lesser Shortwings were heard singing above 2100 m while no Blue Shortwings were heard below 2170 m, this apparent altitudinal segregation may be due to the patchiness of forest cover along the roadside, from which these observations were made. In the winter months, KING (1966) collected Blue Shortwing as low as 1495 m.

White-tailed Robin *Cinclidium leucurum*

A male and female White-tailed Robin were seen together in dense evergreen forest along a streamside on Doi Inthanon at 1650 m on 19 April. Both birds appeared highly agitated, the male uttering a repeated thin, short whistle. They remained in the same understorey shrub for several minutes in response to the observer's presence suggesting the proximity of either nest or young. This was the only sighting of a female White-tailed Robin throughout the study. A total of 9 other sightings and 13 birds caught in mist nets were all males. This could be due either to an imbalance in the sex ratio or, more likely, to a behavioural difference between the sexes which rendered the male more conspicuous or more easily trapped. When the birds are

paired, the male would almost certainly play a more active role in territorial defence while the female was laying or incubating eggs. Nonetheless, 8 of the birds were trapped before 31 January when there was no evidence of breeding behaviour in other species.

Grey Bushchat *Saxicola ferrea*

At least two breeding pairs of Grey Bushchats were found in an area of open secondary growth on Doi Pha Hom Pok at 1650 m on 4-5 April. The adults of one pair were seen carrying food and the other pair gave frequent alarm calls. On Doi Inthanon, Grey Bushchats were found breeding commonly in open areas along the verge where the road passsed through the forest from about 1535 m to the summit. A few pairs were seen carrying food on 18-19 April, while in May most pairs appeared to have recently-fledged young. These appear to be the first breeding records for Thailand.

In December and January, when their numbers were probably augmented by many winter visitors, Grey Bushchats were found commonly on Doi Inthanon in deforested areas at 1200–1300 m and along the roadside verge at least as low as 825 m. In April and May these areas were occupied exclusively by breeding Pied Stonechats *Saxicola caprata*. There appeared to be a limited altitudinal overlap, however, as Pied Stonechats were found breeding up to about 1600 m.

Chestnut-bellied Rock Thrush *Monticola rufiventris*

This species is not listed in Table 1 as no evidence of breeding was obtained. However, three pairs of Chestnut-bellied Rock Thrushes appeared to be holding territories along a 3.5-km length of road on Doi Inthanon between 2000–2300 m and were seen on several occasions during 18-19 April and 16-28 May. They were usually perched either on newly-installed electric wires or in the tops of trees at the forest edge. The male of one pair was recorded singing both from a perch and in flight.

Although this species is known as a winter visitor to NW Thailand (DEIGNAN, 1963), it breeds in adjacent parts of Burma between 900 and 2400 m (KING et al., 1975). These sightings of apparently territorial birds, yet without evidence of breeding, could suggest that the species is in an early phase of colonisation of Doi Inthanon. The construction of the road to the military installation on the summit has probably opened up suitable nesting areas in what was formerly closed forest. SMYTHIES (1953) records that this species builds its nests in road cuttings in Burma, while ALI & RIPLEY (1973) note that rocks and cliffs are essential to its habitat requirements in India.

Ashy-throated Leaf Warbler *Phylloscopus maculipennis*

This species is only known in Thailand from the upper slopes of Doi Inthanon and appears to be the commonest *Phylloscopus* at all times of year in the immediate vicinity of the summit. A nest with young was found on 21 March by visiting English birdwatchers (J. RIDLEY, pers. comm.) but no description has been furnished. On 18 and 19 April, adults were seen feeding fledged juveniles. These were readily separable from adults at this time by their less grey, more olive crowns and throats and brighter, more orange-tinged wingbars. There was no evidence of any resurgence of nesting activity in May, suggesting that this species is single-brooded.

White-tailed Leaf Warbler *Phylloscopus davisoni*

On 8 February 1979, a bird was seen carrying nest material to a location on or near the ground on a sloping bank at the forest edge, with protruding rocks, tree-stumps and low herbage at 2300 m, Doi Inthanon. On 9 April 1981, a nest with two eggs found, situated on the ground, on a sloping, lightly-wooded bank at the edge of a forest clearing at 1700 m, Doi Pha Hom Pok. At this time however, many birds were already feeding fledged juveniles. One adult was seen carrying food and alarm-calling as early as 29 February 1980 on Doi Pui (D.S. MELVILLE, pers. comm.).

Brown Flycatcher *Muscicapa latirostris*

A pair was seen carrying food in an area of dry dipterocarp woodland on Doi Inthanon at about 800 m on 18 May 1981. This appears to be the first proven instance of the breeding of Brown Flycatcher in continental Southeast Asia, although the race *siamensis* has been assumed to be resident in NW Thailand on the basis of collected specimens (DEIGNAN 1945 and op. cit.). Full details of the record may be found in WELLS (in prep.).

Large Niltava *Niltava grandis*

In both April and May, a number of pairs were encountered displaying agitated behaviour and on 10 April, one pair was seen with a recently-fledged, speckled brown juvenile. The characteristic song described by BOONSONG and CRONIN (op. cit) was uttered at such times by adults of both sexes in the context of alarm. A juvenile male seen on 24 May had already moulted in blue wing and tail feathers.

Blue-throated Flycatcher *Cyornis rubeculoides* and Hill Blue Flycatcher *Cyornis banyumas*

In both species, a short, whistled song was uttered in the context of alarm by adults of both sexes. Speckled brown, recently-fledged juveniles accompanied by adults were seen in May.

Burmese Shrike *Lanius collurioides* and Long-tailed Shrike *Lanius schach*

On 17 May an adult Burmese Shrike was seen offering food to a full grown, barred juvenile bird of the same species within 50 m of a pair of Long-tailed Shrikes with one recently-fledged young. These observations were made in an area of scrub with scattered trees at near 1300 m on Doi Inthanon. Adult and juvenile *collurioides* were seen together at another site on Doi Inthanon at 1400 m. These appear to be the first published records which confirm the breeding of this species in Thailand. Although KING et al. (op. cit.) list *collurioides* as resident, it is described by BOONSONG & CRONIN (op. cit.) as a winter visitor. It appears to be an altitudinal migrant. Burmese Shrikes were not recorded on Doi Inthanon or Doi Pha Hom Pok during December-February although they were common in the lowlands at this time. In April, it was seen commonly on Doi Pha Hom Pok at 1400–1700 m.

Ecological segregation based on size seems to allow *schach* and *collurioides* to coexist in the same areas. *L. schach* is considerably larger with a more massive bill.

DISCUSSION

It appears that in the tropics, as in temperate zones, food is the principal ultimate factor which influences the timing of breeding. As pointed out by IMMELMANN (1971) and others, food availability could also be important as a proximate factor in the tropics where seasonal fluctuations are of low amplitude, through acting directly on a bird's nutritional state (eg. WARD, 1969; FOGDEN, 1972). Of the species treated in Table 1, all but three, *Glaucidium cuculoides*, *Megalaima asiatica* and *Ploceus philippinus*, fall into the broad dietary grouping of insectivores and partial insectivores (after WELLS, Chapter 1 in MEDWAY and WELLS, 1976). While in many, such as bulbuls and some babblers, vegetable matter (particularly fruits) may be important in the diets of adult birds, most probably feed their young largely on insects and other small invertebrates. In the Malay Peninsula, the peak of nesting activity in insectivorous birds is in March and April and broadly coincides with a period of high insect abundance following on from the north-east monsoon (WELLS, loc. cit). In Northern Thailand, the wettest months are from May to October and the hottest from March to May. Little seasonal monitoring of insect abundance has been carried out, though herbivorous and saprophagous scarab beetles in forest habitats in NE Thailand reached peak abundance in the first half of the wet season (SUKAPANPOTHARAM, 1979).

The onset of nesting in the bird species studied appeared to be in February. Breeding continued throughout the hot season so that most species had fledged young before the onset of the rains. As no observations were made after the end of May, it

was not possible to determine whether breeding continued in the succeeding months. However, there was no indication of renewed nesting activity in May among those species known to have fledged young in April. At Khao Yai, Central Thailand (600–700 m), McCLURE (1974) found peak nesting activity among insectivorous birds during March to June. In the mostly open lowlands around Bangkok, the majority had nests and eggs during the first half of the wet season, from May to July (HERBERT, 1923–26).

Regardless of the actual abundance of insects during the wettest months, it seems likely that the prolonged bouts of rain and the persistent mists which occur in the cooler conditions of high elevations in so-called 'cloud forests' would diminish food availability through restricting foraging at this time. There would, therefore, be a strong selective advantage for hill birds is raising the young to virtual independence before the onset of the rains. SERLE (1981) attributed the almost complete cessation of breeding among montane forest birds in West Cameroon during the wet season to the prevalence of misty conditions at this time. He found that lowland birds, though subject to a similar seasonal distribution of rainfall, showed a fairly even distribution of breeding throughout the year.

ACKNOWLEDGEMENTS

I wish to thank Bob Dobias, Roland Eve, Ann-Marie Guigue, David Melville and Dr. David Wells for their assistance in making the observations. David Melville and David Wells made many useful comments on a draft of this paper. I am grateful to the Royal Thai Forest Dept. for providing assistance and accommodation on Doi Inthanon and Doi Pha Hom Pok. I am indebted to Dr. Boonsong Lekagul for his advice and support. The bulk of the observations were made during the course of expeditions funded by the Smithsonian Institution,

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WELLS, D.R. In prep.

Table 1. Evidence of breeding or probable breeding in birds in Chiang Mai Province, NW Thailand, during December to May. Confirmed breeding (B) : ON = occupied nest; NE = nest and eggs; NY = nest and young; FY = adult carrying food; DJ = dependent juvenile (growing flight feathers or fully-fledged but with adult (s) still in attendance); J = fledged juvenile, apparently independent. Probable breeding : A = adults showing extreme agitation, suggesting presence of nest or young; NM = adult carrying nest material or nest-building; FS = bird of unknown age soliciting food.

Species		Dec 16 – Jan 4	Jan 17 – Feb 14	Apr 3 – Apr 20	May 15 – May 29
Cuculus sparverioides	B				J
Cuculus micropterus	B				J
Cacomantis sonnerati	B				DJ
Glaucidium cuculoides					A
Hemiprocne coronata	B			NY	DJ
Nyctyornis athertoni	B			FY	
Megalaima asiatica	B				ON
Sasia ochracea	B				DJ
Picus erythropygius	B				ON
Picus flavinucha	B			NY	DJ
Blythipicus pyrrhotis	B			NY	
Hemipus picatus	B				FY
Coracina novaehollandiae				A	
Pericrocotus solaris	B			DJ	J
Chloropsis aurifrons	B		NM	NM, FY	
Pycnonotus flavescens	B			NY, DJ	J
Criniger pallidus	B				ON
Hypsipetes propinquus			NM		
Hypsipetes mcclellandii	B			DJ	
Hypsipetes madagascariensis					A
Dicrurus leucophaeus	B				DJ
Dicrurus aeneus	B			DJ	
Dicrurus remifer	B				DJ

Species	Dec 16–Jan 4	Jan 17–Feb 14	Apr 3–Apr 20	May 15–May 29
Dicrurus paradiseus				A
Oriolus xanthornus	B		DJ	
Aegithalos concinnus			NM	
Parus spilonotus	B	NM	DJ	
Sitt nagaensis	B		DJ	
Sitta frontalis	B		J	
Certhia discolor	B	ON	DJ	
Pomatorhinus erythrogenys	B		DJ	
Pomatorhinus schisticeps	B			DJ
Napothera epilepidota	B			FY
Stachyris chrysaea	B		DJ	
Stachyris nigriceps	B		NM, DJ	
Chrysomma sinense				NM
Garrulax pectoralis			A	
Garrulax erythrocephalus	B		FY	
Liocichla phoenicea	B		NE	
Pteruthius flaviscapis	B		DJ	
Pteruthius melanotis	B			J
Minla cyanouroptera	B		NM, DJ	
Minla strigula	B		DJ	
Alcippe castaneceps	B	NM	DJ	
Alcippe morrisonia	B		DJ	FS
Heterophasia melanoleuca				FS
Yuhina castaniceps	B	NE	DJ	
Brachypteryx leucophrys	B			DJ
Brachypteryx montana	B			FY
Copsychus malabaricus	B			J
Cinclidium leucurum			A	
Enicurus schistaceus	B		DJ	
Enicurus leschenaulti	B			J
Saxicola caprata	B		DJ	
Saxicola ferrea	B		FY	DJ
Seicercus castaniceps	B		NM	DJ
Phylloscopus maculipennis	B		DJ	J

Species	Dec 16–Jan 4	Jan 17–Feb 14	Apr 3–Apr 20	May 15–May 29
Phylloscopus davisoni	B	NM	NE, DJ	
Prinia flaviventris			NM	
Prinia atrogularis	B		NM, DJ	
Muscicapa latirostris	B			FY
Muscicapa thalassina			A	
Ficedula monileger				A
Ficedula hyperythra	B			DJ
Ficedula westermanni	B			FY
Niltava grandis	B		DJ	A, J
Cyornis rubeculoides	B			DJ
Cyornis banyumas	B			DJ
Culicicapa ceylonensis	B		DJ	
Rhipidura hypoxantha	B			J
Rhipidura albicollis	B		DJ	
Terpsiphone paradisi	B			DJ
Lanius collurioides	B			DJ
Lanius schach	B			DJ
Sturnus nigricollis	B			ON
Aethopyga nipalensis	B			NM
Dicaeum concolor		NM		
Ploceus philippinus	B		ON	

Table 2. Iris colour in adults and juveniles of some insectivorous birds examined in the hand in April

Species	Adult	Juvenile
Hypsipetes mcclellandii	chestnut	dull brownish-grey
Pomatorhinus erythrogenys	ruby-red	dark brownish-grey
Stachyris chrysaea	dark crimson	brownish
Stachyris nigriceps	dull creamy-orange	creamy-grey
Alcippe castaneceps	dark crimson	grey-brown
Alcippe morrisonia	dark crimson	grey