

AN ANNOTATED LIST OF BIRDS RECORDED IN THE BHUMIPHOL DAM AREA, TAK PROVINCE, THAILAND

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ABSTRACT

A survey of birds was carried out in the Bhumiphol Dam area, Sam Ngao District, Tak Province, from January 1993 to February 1994, and the results were compared with data from previous literature. A total of 117 species of both resident and migrant bird was identified. Insectivorous species were well represented as were the commoner nectar eaters, but frugivores were scarce and woodpeckers were almost totally absent. Many wetland species previously recorded in this area were not seen. These results reflect the changes in habitat and human use of the area over the last few decades. Migration dates were established for a number of species and incidental notes on feeding habits and breeding dates are included in the annotated list.

INTRODUCTION

The Ping River has its source at Chiang Dao, in Chiang Mai Province, and flows south for 715 km, converging with the Wang River near Ban Tak, Tak Province, and the Nan River at Nakhon Sawan. The combined waters form the Chao Phraya River, which continues south a further 370 km to the Gulf of Thailand (CHULALONGKORN UNIVERSITY, 1991). In 1964 the waters of the Ping were dammed 40 km upstream of Ban Tak to provide irrigation and hydroelectric power and to control flooding. Bhumiphol Dam is the largest concrete arch dam in Thailand, and the reservoir created, Yanhee Lake, is over 100 km long. The low hills around the reservoir and east to Sam Ngao were logged at the time of the dam's construction. The predominant vegetation is now dry deciduous dipterocarp forest. Bhumiphol Dam is operated by the Electricity Generating Authority of Thailand (EGAT) which administers a town site with landscaped parks and gardens, immediately south of the dam. South of Sam Ngao the valley widens into the central alluvial plain and is used predominantly for agriculture. Previous literature on the birds of this area is scant, and the region lies between the relatively well documented areas of Northern Thailand (particularly Chiang Mai) and the southern Central Plains.

The bird species list presented below is based on casual observations over a one year period during which I lived in Bhumiphol town site. My house overlooked the secondary growth forest on the hillside south-west of the dam. During the year I kept detailed diary notes of species sightings on this hillside and also of birds seen on walks in the nearby areas. In addition, a regular early morning trip to Tak town afforded opportunities for identifying some species in the farmland and scrub along the Tak Road (Phahon Yothin Road).

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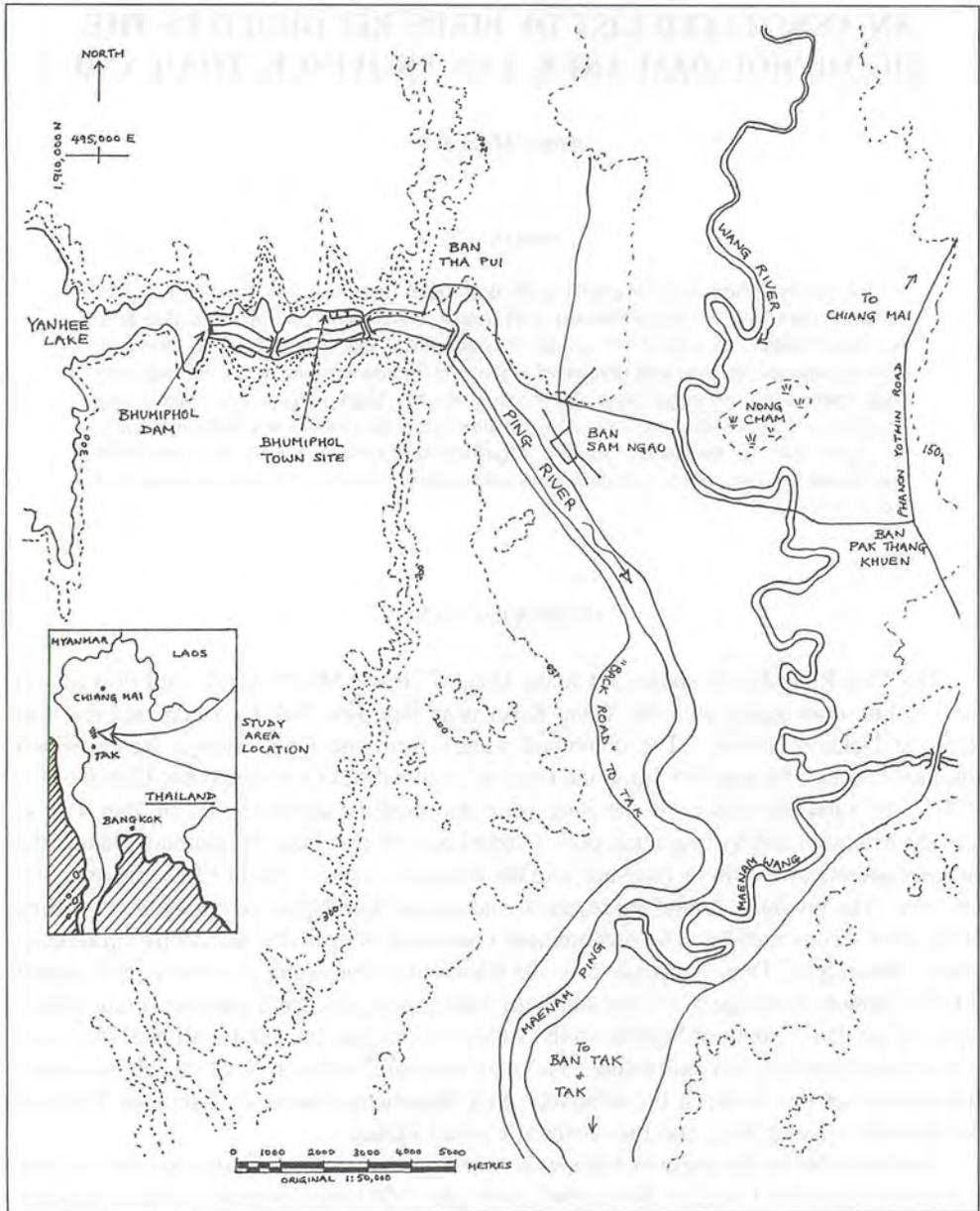


Figure 1. Map of study area.

Migration and breeding dates were established for some species. This report presents a reasonably complete picture of bird activity in secondary growth forests, 30 years after logging.

STUDY AREA

Topography and Climate

The study area included the Bhumiphol Dam town site, east of the dam to Ban Tha Pui, and the valley of the Ping River between Sam Ngao and the town of Tak (Figure 1). The dam crest is at 261 m elevation and is surrounded by hills rising to about 400 m. These hills continue north and westward to the Burmese border. To the south and east the land flattens out, forming the flood plain of the Ping River as it flows south to the Central Plains. Tak province has a hot, dry climate. There are three seasons: the hot season from March to June, the wet (monsoon) season from July to October, and the cool season from November to February. Details of daily rainfall and temperature are shown in Table 1.

Table 1. Rainfall and Temperature Data for Bhumiphol Dam Area¹

Rainfall (mm)											30 year mean values 1956–1985
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
8.1	3.0	15.0	33.7	209.7	70.5	91.4	102.4	254.1	205.5	58.2	8.4
Mean for Year: 1060.1 mm											
Temperature (C)											Mean per month; 1956–1985
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
24.0	27.5	30.6	32.1	30.0	28.7	28.4	28.1	27.5	26.9	25.4	23.5
Mean for Year 27.7 C											
Prevailing Wind											
February to September: west											
October to January: east											

¹Data from: Bhumiphol Hydroelectric Project Climatological Data and Rainfall, June 1992.

Ecology

The dam was built in 1964 and at that time the hillsides around were clear-cut, using elephants to haul the logs. As far as I have been able to ascertain there was no ecological inventory prior to the tree cutting. Prior to 1964, the hillsides were covered with dry deciduous dipterocarp forest, sometimes referred to as *Pa Daeng* (red forest) or as *Pa Taeng Rang*. Deignan described this as “deciduous open forest of small and medium-sized trees, the dominant species being *Shorea obtusa* and *S. siamensis* (Dipterocarpaceae), with an abundant herbaceous undergrowth, chiefly of grasses. It is usually found at elevations below 750 m on rather poor lateritic, sandy or rocky soils” (DEIGNAN, 1945). Oak and chestnut species grew on some hills while others were covered in bamboo (MCCLURE & LEKAGUL, 1961). The broader floodplains, where the soil is richer and moister, probably had mixed deciduous forest with valuable timber trees.

The present hillside vegetation is shrubby deciduous forest, with trees reaching a maximum height of about 10 m, and substantial bamboo growth. The forest undergrowth is burned by the local people each year in January and February. Along the valley bottom and in side valleys sheltered from the sun, the vegetation growth is more lush. Around the town site itself, and in the parks and golf course, EGAT has planted a large number of flowering shrubs and trees and keeps the grounds looking very attractive with copious irrigation. Flame trees, *Delonix regia*, flowering in January and February, golden trumpet, *Allamanda cathartica*, bougainvillea, *Bougainvillea spectabilis*, and frangipani, *Plumeria alba*, with year-round blooms; and *Cassia didymobotrya* flowering in August and September, were some of the commoner ornamentals planted throughout the grounds. Many fruit trees had self-set from discarded seeds, for example: Mango, *Mangifera indica*, Jack fruit, *Artocarpus heterophyllus*, Tamarind, *Tamarindus indica*, and paw-paws *Carica papaya*. A rich variety of dragonflies, butterflies, beetles, scorpions, spiders, frogs, snakes and lizards shared the forests, forest margins and gardens. Mammals included several varieties of squirrel and the slow loris, *Nycticebus coucang*.

METHODS

The study began January 22, 1993, and ended February 6, 1994. Most of the study was based on bird sightings at the forest margins on the hillsides and in woodland, in three locations (Figure 2): (1) a 2-km path along the southern perimeter of the Ping River, from the golf course to Ban Tha Pui; (2) a 1-km path up the northern hillside, from the dam crest road; and (3) a 1 km path around the south side of the reservoir, just above the dam. Surveys of these areas were made on foot at least once a month in the case of the first two paths and on two occasions for path 3. Observations of the forest margin were made on a daily basis, with at least four sessions of watching between 0700–0900 hours every month. In addition casual observations elsewhere in the town site and environs were recorded. Observations along the Ping valley were based on driving either Route 1 from km 463 to km 420, and back, regularly, five times per week, or on driving the ‘back road’ between Sam Ngao and Ban Tak, as an alternative route. Obviously car observations only permit a cursory identification of some of the larger species. These observations have been

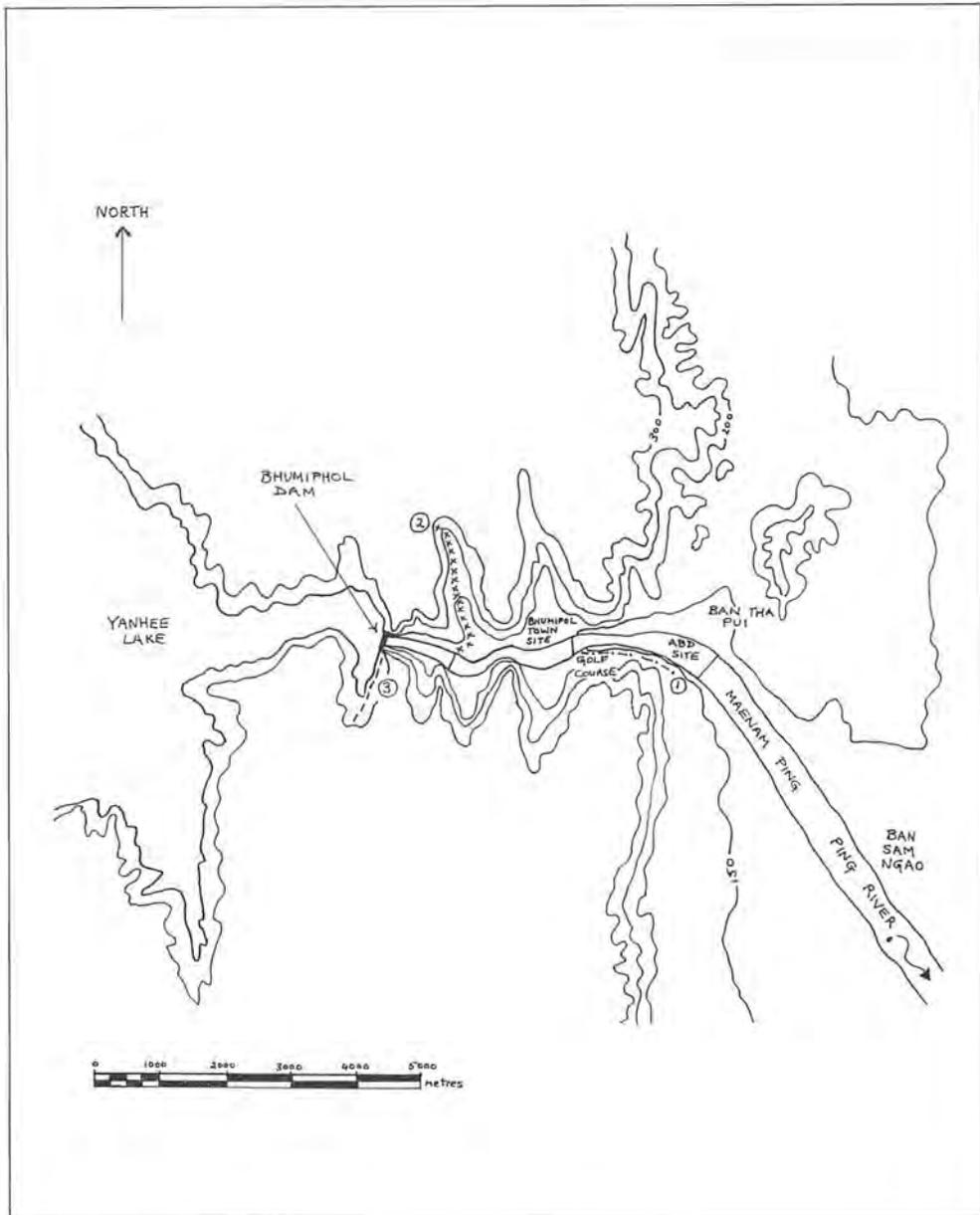


Figure 2. Study Locations: (1) Path along the Ping River bank; (2) Path up valley north of the Ping; (3) Path along south side of Yanhee Lake.



Figure 3. Author's house and garden at Bhumiphol, looking east.



Figure 4. Hillside forest margin, immediately south of house.

identified in the text.

Species identification was based on LEKAGUL & ROUND (1991) and KING ET AL. (1975). Every attempt was made to observe and identify as many species as possible. However, it is probable that some species were present in the area but were overlooked.

PREVIOUS WORK

In 1859 Sir Robert Hermann Schomburgk, H.B.M. Consul at Bangkok, embarked on a journey to the Lao cities on the River Ping. He left Bangkok by boat on December 12 1859 and reached Raheng, the southernmost Lao settlement, and site of present-day Tak, on January 9, 1860. He continued his journey by elephant, arriving in Chiangmai on February 11, and then crossing over to Moulmein in Burma. He published some brief notes on bird species recorded on this trip (SCHOMBURGK, 1864). A few early explorers traveled to the countryside around present-day Tak. In 1914 C.S. Barton recorded 57 bird species in Me Taw (River Taw) forest, east of Raheng, which at that time was a "fair-sized forest.....including evergreen, fir, pure bamboo, ordinary mixed tree jungle and 'paa' or laterite jungle" (BARTON, 1914). This area is now a suburb of Tak town. Among his observations were two species of woodpecker (Common Flameback *Dinopium javanense* and Lesser Yellownape *Picus chlorolophus*), Asian Fairy Bluebird *Irena puella* and Brahminy Kite *Haliastur indus*, the latter being "very common everywhere".

K.G. Gairdner and C. Boden Kloss were the next naturalists to explore the Ping valley, making a comprehensive collection from around Raheng and up the Taw River, from April to July, 1924. They collected specimens of 166 species, including such wetland birds as Cotton Pygmy-Goose *Nettapus coromandelianus*, Purple Swamphen *Porphyrio porphyrio*, Small Pratincole *Glareola lactea*, and both jacana species: 15 species of woodpecker, 4 species of forest pigeon, 4 species of parrot, Brahminy Kite, Brown Hornbill *Ptilolaemus tickelli* and Oriental Pied Hornbill *Anthracoceros albirostris*; 7 cuckoo species, 5 barbet species and many flycatchers, laughing-thrushes and babblers. Altogether the collection reflected a rich and varied bird fauna (CHASEN & KLOSS, 1924).

Two brief studies have been made of the middle Ping valley, in the general area of Bhumiphol Dam. H.G. Deignan made a short trip down the Ping River between Chom Tong and Raheng in December 1935. Many wetland species were observed in the marshes and swamps that covered the riversides. The Brahminy Kite was the commonest raptor north and south of the "gorges" but was not seen within them. The Peregrine Falcon *Falco peregrinus* was seen "flying about high crags in the rapids, and between Ban Tha Pui and Ban Mai Ngam" (DEIGNAN, 1936). The latter village is now part of Tak; presumably the rapids and gorges were located where Bhumiphol Dam now stands.

Finally, in December 1957, seven years prior to the dam's completion, a group of delegates to the 9th Pacific Science Congress, under the direction of Mr. Jumchet, rafted more than 150 km down the section of the Ping River which is now flooded by Yanhee Lake. On the fifth, and final, day of their trip they camped at the dam site. In total they observed 3226 individual birds of 86 species. River Lapwing *Vanellus duvaucelii* was the most conspicuous wading bird, in places where the river was broad and shallow. They also saw Green-billed Malkoha *Phaenicophaeus tristis*, Wire-tailed Swallow *Hirundo smithii*,

Red-headed Vulture *Sarcogyps calvus* and River Tern *Sterna aurantia*. Chestnut-headed Bee-eaters were abundant (398 individuals counted), as were Spotted Doves (214) and Large-billed Crow (203) (MCCLURE & LEKAGUL, 1961). These three latter species are still common in the area.

Other authoritative works, for example, DEIGNAN (1945) and DICKINSON (1966), do not include Tak Province. There has been no bird study since the Bhumiphol Dam was built.

ANNOTATED LIST

Nomenclature follows LEKAGUL & ROUND, 1991; the order follows KING ET AL., 1975. Species headings for which the identification was only probable or unconfirmed are placed in brackets.

Grey Heron *Ardea cinerea*. At least one individual present near Yanhee Lake (location 3) January – April 1993.

Little Heron *Butorides striatus*. One or two birds beside Yanhee Lake and the Ping River at Bhumiphol in January, February, March and November.

Chinese Pond Heron *Ardeola bacchus*. Common winter visitor. First autumn arrival was August 27 1993; spring departure in early April, with most individuals then in breeding plumage.

Great Egret *Egretta alba*. Occasional birds in the paddy fields around Sam Ngao and vicinity of Nong Cham.

Little Egret *Egretta garzetta*. Flocks of up to 18 birds in paddy fields from January to March, near Nong Cham.

Lesser Whistling Duck *Dendrocygna javanica*. Wet season visitor; flocks of 15–40 during June – August 1993; individuals occasionally seen in other months. Most common around Nong Cham in the early morning.

Osprey *Pandion haliaetus*. Single birds seen January 2, 1994, February 21, 1993, June 26 1993, and during October and early November.

Crested Honey-Buzzard *Pernis ptilorhyncus*. One November 3 over Tak Road.

Black-shouldered Kite *Elanus caeruleus*. A common resident in the farmland areas between Sam Ngao and Tak. Frequent sightings especially in November and December.

Black Kite *Milvus migrans*. Passage migrant; single individuals seen in flight near the Tak Road on November 8, December 16 and January 13.

Japanese Sparrowhawk *Accipiter gularis*. Only one sighting. This individual was much smaller than the commonly seen Shikra, and was pale and finely barred below, with a strongly barred tail. It was seen in low flight over rough scrubland on the back road to Tak, just south of Sam Ngao, on November 7.

Shikra *Accipiter badius*. The commonest resident raptor in the area, observed most frequently between May and October. An immature was seen December 15.

White-rumped Falcon *Polihierax insignis*. Single individuals observed in January, May and several times in December 1993, in the Bhumiphol area.

Eurasian Kestrel *Falco tinnunculus*. A single bird at Bhumiphol, beside the Ping River on October 11 and 12 1993.

Rufous-winged Buzzard *Butastur liventer*. Seen December – March in areas of scrub and woodland near the Tak road. One in January 1994 on the hillside in Bhumiphol.

[Scaly-breasted Partridge *Arborophila chloropus*]. Dark-backed partridges frequently flushed when walking in hillside forest were almost certainly this species, but a “head-on” view was never obtained.

Red Junglefowl *Gallus gallus*. Common resident of the scrub and woodland around Bhumiphol. Downy young observed in April and birds heard calling from March to June and during November – December.

Barred Buttonquail *Turnix suscitator*. Resident in Bhumiphol, seen infrequently in scrubby undergrowth on hillsides. Downy young observed May 14; most sightings were during August when presumably juvenile birds were dispersing.

White-breasted Waterhen *Amaurornis phoenicurus*. Common resident, usually seen beside roads early in the morning, in Bhumiphol and Sam Ngao – Ban Tak areas. Seen every month during February – August; moulting presumably takes place in September during which time numbers of plucked birds were on sale in local markets.

Grey-headed Lapwing *Vanellus cinereus*. A single bird in a dried up paddy field near the Tak Road on March 1, 1993 and another in a similar location near Phahon Yothin Road, north of Ban Pak Thang Khuen, in January 1994.

Red-wattled Lapwing *Vanellus indicus*. Observed on shore of Yanhee Lake (location 3) and in paddies, March, April, July and August.

Little Ringed Plover *Charadrius dubius*. Passage migrant, observed September 11 and October 10 near the Ping River, Bhumiphol.

Green Sandpiper *Tringa ochropus*. Passage migrant: one bird on a sandbank in the Ping River at Bhumiphol (location 1) on September 26, 1993.

Common Sandpiper *Actitis hypoleucos*. Passage migrant; quite frequent along the Ping River (location 1) during September – early November.

[**Common Snipe *Gallinago gallinago* or Pintail Snipe *Gallinago stenura*]. A single bird in flight near the Tak Road, November 10.**

[**Unidentified Tern, probably *Chlidonias* sp.**]. One observed over paddyfields near Ban Tak, twice during September 1993.

Rock Pigeon *Columba livia*. Common resident in Bhumiphol, where a colony lives on the dam, and also around the town of Tak.

Red Turtle-Dove *Streptopelia tranquebarica*. Pairs sometimes seen on the gravel verges of the Tak Road in the early morning, especially December through July.

Spotted Dove *Streptopelia chinensis*. Resident. The commonest dove around Bhumiphol; very vocal in February, March and October.

Zebra Dove *Geopelia striata*. Infrequently seen in Tak and near roadsides, mainly February – April.

Grey-headed Parakeet *Psittacula finschii*. Small flocks seen in March and November in wooded valleys off the Ping River valley at Bhumiphol (locations 2 & 3) and in January 1994 over the Tak Road. Other flocks of unidentified parakeet species were also seen in February, March and June. This and other parakeet species are occasionally seen as cage birds in Tak.

Greater Coucal *Centropus sinensis*. Resident and commonly seen; particularly noisy and noticeable during February, March and September. A juvenile was seen September 6 1993, on the hillside in Bhumiphol. According to Cheke (1972), the Coucal is one of the few bird species in Thailand considered inedible!

Collared Scops-Owl *Otus lempiji*. Heard calling from jackfruit trees in Bhumiphol on several nights in March and again in October.

Asian Barred Owlet *Glaucidium cuculoides*. A very noisy caller, heard from November to February, mostly at dusk and during the night but occasionally in the daytime. One bird became very tame and was photographed at close range.

Spotted Owlet *Athene brama*. Resident. One was seen February 28 being mobbed by other birds in Bhumiphol Park, and two birds were seen in the same location in July and November. Three Spotted Owlets were seen in a tamarind tree near Ban Tha Pui in daylight on November 27.

Large-tailed Nightjar *Caprimulgus macrurus*. Birds heard and sometimes seen from November through to February around Bhumiphol.

Asian Palm-Swift *Cypsiurus balasiensis*. Resident. Seen around palm trees near the Tak Road, particularly during the hot season.

House Swift *Apus affinis*. Common resident. A number of nests were situated under the parapet of Bhumiphol Dam and large flocks of these swifts could be observed feeding in the area and downstream.

Crested Treeswift *Hemiprocne coronata*. Common resident, and recorded every month. Flocks of 30 – 100 birds on the high tension wires at Bhumiphol townsite and at Ban Tha Pui, from September through to February. Smaller numbers were recorded during the other months.

Common Kingfisher *Alcedo atthis*. A juvenile was seen September 26 and single adults on November 5 and 19, all near the Ping River in Bhumiphol (location 1 & elsewhere).

Stork-billed Kingfisher *Halcyon capensis*. One sighting at less than 10 m range of a single bird in thick foliage beside the Ping River on June 16. It showed the characteristic enormous red bill, brilliant orange underparts and blue back, but had a dirty white head, rather than the normal dark grey.

White-throated Kingfisher *Halcyon smyrnensis*. Resident and the most commonly seen species in the Bhumiphol, Sam Ngao, and Tak area. Very vocal in March, and three birds seen together, May 16.

Black-capped Kingfisher *Halcyon pileata*. Passage migrant. Two individuals seen September 26 in Bhumiphol.

Chestnut-headed Bee-eater *Merops leschenaulti*. Passage migrant. Flocks passed through the Bhumiphol valley between August 14 and early October, being particularly numerous in the area in mid to late September, when they were frequently observed chasing and eating large dragonflies.

Green Bee-eater *Merops orientalis*. A frequently observed resident of the Ping valley, their numbers seemingly being augmented from the end of November through to early June by winter visitors. This species also seems to favour a diet of dragonflies.

Blue-throated Bee-eater *Merops viridis*. Passage migrant. The least common bee-eater in the valley; small groups of 10 to 12 birds were observed flying along the ridge above the river on September 12 and 13 1993.

Indian Roller *Coracias benghalensis*. Resident and common, this species was frequently seen sitting on roadside wires between Tak and Bhumiphol and also around Bhumiphol

townsite. One seen giving the rolling display flight on November 20.

Hoopoe *Upupa epops*. Resident. Regularly seen around Bhumiphol townsite, particularly in the quieter, wooded areas and near the golf course. Very vocal at the end of May and beginning of June. Three seen together in August and then less frequently seen at end of September, beginning of October. One observed dust-bathing June 14.

Coppersmith Barbet *Megalaima haemacephala*. Resident and regularly heard calling from wooded areas around Bhumiphol. Particularly vocal from the end of October to January.

[**White-bellied Woodpecker *Dryocopus javensis*.**] A probable sighting of two in flight over a farmland area near Ban Pak Thang Khuen, in February 1993. This area has a number of mature deciduous trees. This was the only woodpecker sighting in the whole study.

Barn Swallow *Hirundo rustica*. Mainly a winter visitor. Earliest autumn arrival date was July 13, with numbers increasing steadily through August and September around the paddy-fields. Birds seen in October and November generally lacked tail streamers. By December and January large numbers of adult birds were present in Bhumiphol townsite and Tak. Spring departure was in April. Most birds were white-breasted, but occasionally a pink-breasted bird, of the race *H. r. tytleri*, was seen.

Red-rumped Swallow *Hirundo daurica*. An irregular visitor in small numbers. Individuals were recorded in February (1), May (2), June (2), October (several), December (1) and January 1994 (small flocks, several occasions). All had the heavily streaked breasts of the "*striolata*" group of races, sometimes treated as a separate species, Striated Swallow *H. striolata*. The June records suggest that it may breed in the area.

Asian House-Martin *Delichon dasypus*. Winter visitor. Small flocks, together with Barn Swallows, were seen in December, with numbers increasing through January.

Bar-winged Flycatcher-shrike *Hemipus picatus*. Common and usually in mixed feeding flocks with flycatchers, minivets, bulbuls, sunbirds, *etc.* These mixed flocks move through the secondary vegetation areas on the hillsides around Bhumiphol. I only saw this species in the winter, but may have overlooked it prior to September 1993.

Common Wood-shrike *Tephrodornis pondicerianus*. Uncommon: seen only in March (small group, location 1) and November (on individual) in woodland near Bhumiphol.

[**Indochinese Cuckoo-shrike *Coracina polioptera*.**] Two sightings of cuckoo-shrikes in flight near the Tak road were thought to be this species rather than Black-winged, *C. melaschista*, because of their extensive white tail-feather tips.



Figure 5. Hillsides overlooking Ping Valley, at Bhumiphol Dam.



Figure 6. Ping River, immediately east of Bhumiphol Dam.



Figure 7. Ping River at Ban Tak, looking north.



Figure 8. Rice paddies near Ban Tak, looking east.

Small Minivet *Pericrocotus cinnamomeus*. Resident, frequently seen in flocks of 3 to 20 birds, often associated with other species. A flock of 18 birds, mixed male, female and juvenile, in Bhumiphol on September 30, were feeding on caterpillars. Not seen in April and May.

Rosy Minivet *Pericrocotus roseus*. Winter visitor. Flocks of 3 to 17 birds of the race *P. r. roseus* seen between the end of November and January, in Bhumiphol valley.

Common Iora *Aegithina tiphia*. Common resident, often associated with bird waves. Very vocal during June–September. Usually seen in ones and twos but a flock of at least 10 birds was seen on September 5, on the hillside in Bhumiphol.

Golden-fronted Leafbird *Chloropsis aurifrons*. Presumed resident. All sightings were on the hillside at Bhumiphol; single birds seen on June 7, September 9, December 25, and then a pair frequently in January 1994.

Black-crested Bulbul *Pycnonotus melanicterus*. Resident in Bhumiphol valley. Generally seen either singly or in pairs, in wooded areas.

Red-whiskered Bulbul *Pycnonotus jocosus*. Only observed near Ban Pak Thang Khuen and the Tak Road, not in the Bhumiphol area, which is probably too dry to suit this species.

Sooty-headed Bulbul *Pycnonotus aurigaster*. Resident. This is the commonest bulbul species in the area and usually occurs in small parties of 4 to 6 birds. It is vocal and conspicuous throughout the year. An adult was seen feeding two mature young on June 1. Birds are often seen eating fruit from the tree tops.

Streak-eared Bulbul *Pycnonotus blanfordi*. Resident. Another common bulbul species, often heard calling noisily from undergrowth and deep foliage. One was seen feeding a fully-fledged juvenile on June 30. Individuals seen eating caterpillars September 30.

Black Drongo *Dicrurus macrocercus*. Probably an uncommon resident, but a very common winter visitor. Large numbers were seen everywhere in the area at the end of October and although some of these dispersed the species remained extremely common until April. No obvious visible movements were noted, however. Only occasional birds were seen in other months, with no sightings at all in June and July. One seen eating a large grasshopper on January 3.

Ashy Drongo *Dicrurus leucophaeus*. Resident. Quite commonly seen around Bhumiphol, especially location 2, either singly or in pairs. Seen throughout the year, except April to June.

Hair-crested Drongo *Dicrurus hottentottus*. A winter visitor to Bhumiphol where it was seen in December and January feeding at unidentified white flowers in the canopy. Also seen in March near the Tak Road.

Greater Racket-tailed Drongo *Dicrurus paradiseus*. Resident. One or two birds of this species were seen in March near Ban Tha Pui and in January (1994), May, June, July and August in various woodland or riverside locations around Bhumiphol. On May 15 one was seen chasing a Shikra.

Black-hooded Oriole *Oriolus xanthornus*. Only recorded for the winter months on the hillside in Bhumiphol. It was heard more often than seen.

Blue Magpie *Urocissa erythrorhyncha*. Positively identified in the Bhumiphol area only on January 12 1994, although two birds, possibly this species, were seen in August 1993. One was also seen flying across Phahon Yothin Road. The harsh, "char chark" call sounded somewhat familiar so I suspect this species is more common than the limited sightings suggest. When seen in January it was feeding at canopy flowers, together with Hair-crested Drongos and Purple Sunbirds.

Large-billed Crow *Corvus macrorhynchos*. Resident and frequently seen in ones or twos, both around Bhumiphol and along the Tak Road.

Puff-throated Babbler *Pellorneum ruficeps*. An excellent view obtained beside Ping River (location 1) on April 6 1993 was the only sighting.

Chestnut-capped Babbler *Timalia pileata*. A group of three birds seen in December 1993.

Yellow-eyed Babbler *Chrysomma sinense*. Only seen in Bhumiphol in March, July and September. The above three babbler species are considered very common residents in Thailand but seemed to be scarce in the Bhumiphol valley.

Lesser Necklaced Laughingthrush *Garrulax monileger*. May prefer denser woodland to the rather open scrub forest around Bhumiphol. Only two sightings of small flocks in lush foliage during August and September (location 2).

Greater Necklaced Laughingthrush *Garrulax pectoralis*. A very noisy flock of about 6 birds was seen in the hillside forest, Bhumiphol, on December 15.

Oriental Magpie-Robin *Copsychus saularis*. Common resident, seen every month both in Bhumiphol and along the Tak Road. This species was most vocal and conspicuous between February and April, and a juvenile with a speckled breast was seen on June 26. Other young were also seen in July and August.

White-rumped Shama *Copsychus malabaricus*. Common around Bhumiphol but heard more often than seen. Two males seen giving a territorial display on November 2. Four together, including a juvenile on September 12.

Stonechat *Saxicola torquata*. A passage migrant through the Ping valley. Individuals

were seen in Bhumiphol during February and March 1993 and one on a fence near the dam site road on November 24.

Pied Bushchat *Saxicola caprata*. Generally seen singly, sitting on fences near the Tak Road or in farmland. Sightings were recorded for October, November, December, January and February, but usually in small numbers.

Blue Rock Thrush *Monticola solitarius*. This species is a common winter visitor to the dam site and surroundings. It can be seen perched on trees and rock faces in the valley and even on the dam itself. First fall date was September 10 and departure was in April. On November 5 one was seen to consume a blue butterfly.

Dusky Warbler *Phylloscopus fuscatus*. Sightings in April and December of single birds, in a damp location near the Ping River, Bhumiphol (location 1).

Radde's Warbler *Phylloscopus schwarzi*. Regularly seen in winter months, on the ground in scrubby areas in Bhumiphol, particularly in forest margins.

Inornate Warbler *Phylloscopus inornatus*. Various sightings, usually in mixed feeding flocks, during November, December and January.

Lemon-rumped Warbler *Phylloscopus proregulus*. One seen in small trees on a hillside on 25 January, together with *P. inornatus* and *P. plumbeitarsus*, belonged to the race *P. chloronotus*, being rather drab, apart from its yellow rump patch. This species, like the preceding *Phylloscopus* species, may be a fairly common winter visitor.

Arctic Warbler *Phylloscopus borealis*. One or two birds seen at the end of January 1993 and beginning of February, then not until September 26, when several were seen on the hillside in Bhumiphol, together with Red-throated Flycatchers. Other sightings were of occasional birds in mixed feeding flocks during November and December.

Pale-legged Leaf Warbler *Phylloscopus tenellipes*. One sighting only, April 4, at forest margin.

Two-barred Warbler *Phylloscopus plumbeitarsus*. Several in mixed feeding flocks of flycatchers and sunbirds during November and January, on the hillside in Bhumiphol.

Greenish Warbler *Phylloscopus trochiloides*. Positively identified only in January 1994, but probably present throughout the winter.

Common Tailorbird *Orthotomus sutorius*. Common resident. A pair nested behind the house in an area of low trees and scrubby bushes. A fledged young one was seen being fed black beetles on June 30 1993. A second brood was reared in November: two tail-less but fledged young were seen being fed November 25 and December 17 and were still with their parents on January 12.

Grey-breasted Prinia *Prinia hodgsonii*. Common resident and frequently seen. Breeding probably took place in the rainy season as a party including fledged young was seen July 10 and 12, and small flocks were common September onwards.

Rufescent Prinia *Prinia rufescens*. Common resident in the same habitat as *Prinia hodgsonii* but never seen at the same time. Very vocal, and in small flocks, September and October.

Asian Brown Flycatcher *Muscicapa dauurica*. Common visitor to Bhumiphol area. First fall sightings were September 26, 1993. Departure was in March.

Verditer Flycatcher *Eumyias thalassina*. Winter visitor, recorded from the hillside in Bhumiphol. A male was present on December 22, 1993, together with flycatcher-shrikes, minivets, and bee-eaters, and a female frequented the area in late January 1994.

Red-throated Flycatcher *Ficedula parva*. Common winter visitor. Earliest fall sighting on September 26, 1993, together with a number of other migrants. Departures in early April; the last one seen was in breeding plumage on April 4. This species appeared to be the commonest flycatcher around Bhumiphol.

Hill Blue Flycatcher *Cyornis banyumas*. Recorded from one location near the Ping River in Bhumiphol (location 1) on October 10, December 31, and April 4 and 6, all in 1993.

Grey-headed Flycatcher *Culicicapa ceylonensis*. Winter visitor, quite common in Bhumiphol area. Particularly vocal and easy to locate at dusk, unlike the majority of birds which are most active at dawn. First fall sighting was November 2.

Pied Fantail *Rhipidura javanica*. Usually seen in areas of bushy growth, particularly location 1. Sightings scattered throughout the year but not common in Bhumiphol.

White Wagtail *Motacilla alba*. Winter visitor, arriving early October and departing in March. Frequently observed in Tak and Bhumiphol townsites, in open areas especially near the Ping River.

Grey Wagtail *Motacilla cinerea*. Also a winter visitor, with the first fall sighting on September 5 and departure in April.

Olive-backed Pipit *Anthus hodgsoni*. One frequented the forest edge behind our house in January 1994 and another was seen in mid-March 1993 in scrubby underbrush near Yanhee Lake (location 3).

Richard's Pipit *Anthus novaeseelandiae*. Winter visitor, commonly seen near roadsides and around Bhumiphol townsites. Presumably *A. n.richardi*. First autumn date September 28, but not frequently seen until January. Departure was in April.

Ashy Wood-swallow *Artamus fuscus*. Common resident in Bhumiphol townsite. It roosts on pylons in the Ping River.

Brown Shrike *Lanius cristatus*. Winter visitor. First fall sighting was November 14, near the golf course in Bhumiphol. Last sighting in spring was April 3, at the same location.

Burmese Shrike *Lanius colluriooides*. Winter visitor. Occasionally seen in farmland areas and on fences near the Tak Road. First fall sighting was September 26, 1993, an excellent day for migrant arrivals. Departure was in March.

White-shouldered Starling *Sturnus sinensis*. Several feeding in the canopy of a flowering tree in February 1993, near the Ping River, Bhumiphol.

Black-collared Starling *Sturnus nigricollis*. Resident and common along the Tak Road and in Tak town site, but only once seen in the Bhumiphol area. Birds carrying food (indicating breeding) were seen on several occasions at the end of May.

Common Myna *Acridotheres tristis*. A very common resident of disturbed areas, around the houses in Bhumiphol town site and beside roads and villages. Frequently seen in flocks on roads at dawn. It is not present in the secondary forest on the hillsides surrounding Bhumiphol.

White-vented Myna *Acridotheres javanicus*. Common along roads and in farmland, but much less frequently seen in Bhumiphol town site than the above species. Often in flocks on roads at dawn. It especially favoured flooded paddyfields in July to September.

Olive-backed Sunbird *Nectarinia jugularis*. Rather erratic in occurrence, probably following the flowering of trees and shrubs. It was recorded in Bhumiphol in January 1993 and 1994, May, and June (eclipse plumage).

Purple Sunbird *Nectarinia asiatica*. The commonest sunbird in the Bhumiphol area, with large numbers on flowering trees in the winter months. Flocks were seen in mid-May but then no further sightings until the end of August, when an eclipse male and a female were seen in Tak. Bird waves included this species in mixed eclipse/breeding plumage through November. Full breeding plumage was seen from the end of November.

Scarlet-backed Flowerpecker *Dicaeum cruentatum*. Two separate sightings, in March near Ping River, Bhumiphol.

Japanese White-eye *Zosterops japonicus*. Winter visitor. Two or three were in a mixed feeding flock on the hillside, November 21, and a flock of 10 were in the same location on January 23, 1994.

Eurasian Tree-Sparrow *Passer montanus*. Common resident. Seen carrying nest material in June.

Plain-backed Sparrow *Passer flaveolus*. Resident. Small flocks around Bhumiphol in March, April and May and one sighting near the Tak Road in August.

White-rumped Munia *Lonchura striata*. Occasionally seen in Bhumiphol area in small groups of 2 to 5 birds.

Scaly-breasted Munia *Lonchura punctulata*. Resident. The common munia around Bhumiphol. Nest building was observed in June and again in November; in each case long strands of grass were being carried to a mango tree. 3 juveniles, together with 2 adults, were seen on November 28.

DISCUSSION

Effects of Habitat Changes

The present survey identified a diverse population of birds in the Bhumiphol Dam area, either as breeding populations, wintering visitors or during migration. Most species recorded were those which are fairly common and widespread in Thailand. Forest and wetland or riparian species were under-represented. The creation of the dam caused major environmental changes to the region. The hillside forests were logged, human disturbance along the riverside increased and daily controlled fluctuating river water levels replaced seasonal flows. However, the variety of natural secondary growth vegetation, the artificial planting of flowering shrubs and the limited use of pesticides, have maintained suitable food supplies for over 60 passerine species, 12 species of raptor and a total of 117 species. The types of birds present are a reflection of the food sources available. Flowering trees and shrubs attracted a number of nectar eaters, such as drongos and sunbirds, but by far the most numerous species were insectivorous. Warblers, flycatchers, bee-eaters, minivets and owlets were well represented. In contrast, forest fruit-eaters, such as pigeons, parrots, barbets and hornbills, were either scarce or absent. In 1924 Gairdner and Boden Kloss collected four species of forest pigeon, four species of parrot, two species of hornbill and five barbet species (CHASEN & KLOSS, 1928). The Coppersmith Barbet was the only barbet recorded in the present study, and Grey-headed Parakeet was the only parrot identified, although flocks of unidentified species were occasionally seen. No hornbills or forest pigeons were recorded. Woodpeckers, which are insectivorous and depend on old and rotting wood, have almost completely disappeared. Common Flameback and Lesser Yellownappe were described by BARTON (1914) as "very common" in forest near Raheng and CHASEN & KLOSS (1928) recorded 43 individuals from 15 species of woodpecker. In the present study there was only an unconfirmed sighting of two White-bellied Woodpeckers. This may be due to the loss of old growth trees and the break in continuity of the forest ecosystem following clear-cutting. The 30 year-old secondary growth forest was relatively uniform, the trees were thin and spindly, with few rotten snags to provide nest-holes. Fruiting trees were scarce in the deciduous dipterocarp forest, and thus there was insufficient food to support many frugivores.

The reservoir, with its deep water and lack of shallow margins and wetlands, harboured

very few species. Rare riverine species, previously found in the north-west and dependent on sand bars for nesting, such as the River Lapwing Great Thick-knee *Esacus recurvirostris* and River Tern, *Sterna aurantia*, were not recorded and are unlikely to return to these disturbed areas. DEIGNAN (1936) described the River Lapwing as "the most abundant bird on the river" in the gorges, with every sand bar and beach possessing a flock or pair. Not even one River Lapwing was recorded on the Ping in the present study. River Terns were seen as recently as 1957 (MCCLURE & LEKAGUL, 1961), but the daily fluctuating levels of water below the dam affects the location of sand-bars, and would probably have disrupted nesting. BARTON (1914) observed several wetland birds (e.g., Cotton Pygmy-Goose, Bronze-winged Jacana *Metopidius indicus* and Pheasant-tailed Jacanas *Hydrophasianus chirurgus*, and Painted Snipe *Rostratula benghalensis*) which have also disappeared. The Brahminy Kite, which featured so prominently in earlier studies, is no longer found in the area. Its loss is puzzling: the river at Tak still has numerous fish and less urban development than some coastal rivers where Brahminy Kite are still abundant. CHEKE (1972) attributed the loss of kites in the Chiang Mai area to the use of DDT for killing fish.

It is clear that bird diversity has decreased greatly following the logging of forests and increased human use. CHASEN & KLOSS (1928) recorded 166 species around present-day Tak. DICKINSON (1966) recorded 103 species in a two week period in October–November 1964 in the northern Ping valley. In contrast, the present study recorded 117 species in a 13 month period. CHEKE (1972) found that in the Chiang Mai area urbanisation had resulted in 18 very common species decreasing in number over a 20 year period, while a number of raptors and parrots had been locally extirpated. Only the Eurasian Tree-Sparrow had increased in numbers and the Greater Coucal was the only non-passerine to have remained stable in numbers. These two species were also common in the Bhumiphol area.

Effects of Human Disturbance

Apart from habitat loss, direct disturbance has also played a role in bringing about this decline in bird diversity. Many bird species are still caught for human consumption, e.g., Junglefowl and White-breasted Waterhen. Others are kept as pets, e.g., Spotted and Zebra Doves. While the government has acted to suppress exports of wild birds, there is a large domestic trade: it was quite common to see Alexandrine Parakeets *Psittacula eupatria*, Common Koels *Eudynamys scolopacea* and Hill Mynas *Gracula religiosa* in cages in local towns, although none of these were seen in the wild.

Several species of large raptor had disappeared from the study area, including Brahminy Kite and Red-headed Vulture, the latter being recorded by both MCCLURE & LEKAGUL (1961) and CHEKE (1972). Cheke attributed the extirpation of vultures from the Chiang Mai area to the placing of poisoned meat to kill dogs. I was not aware of any poisoning in the Bhumiphol and Tak areas. Shortage of carrion combined with human interference with nests and the shooting of adult birds may have been the most important factors.

Migration and Breeding Dates

A number of migration and breeding dates were ascertained and these are noted in the systematic list. Notable was the large influx of Black Drongos in October. This migration corresponds with that described by MCCLURE (1970) who comments on DEIGNAN'S (1945)

record of juveniles appearing in Chiang Mai in October and November. SMYTHIES (1953) also reported a striking southward migration from October 1st onward. Various species of bee-eater migrated through the study area. The Chestnut-headed Bee-eater lingered several days in September and fed on large dragonflies. MCCLURE & LEKAGUL (1961) recorded this species as the most numerous bee-eater in December. Possibly movements, such as those recorded in this study, may be fairly local ones. MELVILLE & FLETCHER (1982) noted migrant bee-eaters feeding on dragonflies in Samut Prakan Province and observed that diurnal movements were probably not unusual, despite the lack of records from Thailand.

CONCLUSIONS

While a number of nectar-eating and insectivorous birds have apparently adapted to increased human activity around the Bhumiphol area over the last 30 years, those species dependent on old growth forests, and on riverine habitats, as well as many larger birds, have largely disappeared. It would be interesting to consider some habitat creation schemes. Indigeneous fruit-bearing trees could be planted on the hillsides and along the river, to encourage the return of parrots, pigeons, barbets and hornbills. The area is also well suited to the creation of artificial shallow wetland areas, for example, ponds and marshes, adjacent to the reservoir and the river. This would greatly help increase the numbers of rails, herons, ducks and waders, as well as providing nursery grounds for fish.

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