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CHAPTER 5

THE BREEDING AVIFAUNA OF THE SUB-HIMALAYAN ZONE OF NORTHERN KACHIN STATE, MYANMAR

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Abstract.—The breeding avifauna of northern Myanmar is extremely poorly known, largely because of unfavorable rainy-season conditions. Previous breeding-season surveys in this high-biodiversity region are lacking, and very few voucher specimens document breeding altitudes and periods. During June to July 2006, we conducted mist-netting, visual, and auditory surveys of the sub-Himalayan avifauna in Putao District, northern Myanmar. A total of 138 species were definitely recorded. Because of the preliminary nature of the surveys, only specific records and general patterns are discussed here. We netted juveniles of two species (*Cyornis magnirostris* and *Dicrurus annectans*) not previously known to breed in northern Myanmar. Most babblers (Timaliinae) were present in the same areas during the nonbreeding and breeding seasons, which supports the hypothesis that few, if any, migrate altitudinally. However, *Jabouilleia naungmungensis* was not encountered at the same low elevations in the breeding season as in the nonbreeding season. Many sylviine warbler and muscicapine flycatcher species, as expected but not previously documented here, show evidence of altitudinal migration, being recorded at low elevations during the nonbreeding season but not at the same levels during the breeding season.

Key words: breeding birds, Burma, Kachin State, Myanmar.

Avifauna Reproductiva de la Zona Sub-Himalaya del Norte del Estado de Kachin, Birmania

Resumen.—Se conoce muy poco la avifauna reproductiva del norte de Birmania (Myanmar), principalmente debido a las condiciones desfavorables de la estación de lluvias. No existen estudios previos durante la estación reproductiva en esta región de alta biodiversidad y muy pocos especímenes en las colecciones documentan las altitudes y los períodos reproductivos. Durante junio y julio de 2006, realizamos muestreos con redes de niebla, visuales y auditivos de la avifauna sub-himalaya en el distrito de Putao, al norte de Birmania. Se registró un total definitivo de 138 especies. Se discuten aquí sólo los registros específicos y los patrones generales, debido al carácter preliminar de los muestreos. Atrapamos en las redes individuos jóvenes de dos especies (Cyornis magnirostris y Dicrurus annectans) que antes no se sabía que anidaban en el norte de Birmania. La mayoría de los Timaliinae estuvieron presentes en las mismas áreas durante las estaciones no-reproductivas y reproductivas, lo que apoya la hipótesis de que pocos, si acaso alguno, migran altitudinalmente. Sin embargo, Jabouilleia naungmungensis no se encontró a las mismas bajas elevaciones en la estación reproductiva que en la estación no reproductiva. Muchas especies de sylviinos y de muscicapinos, tal como se esperaba pero no se había documentado previamente aquí, mostraron evidencias de migración altitudinal. Estas especies fueron registradas a bajas elevaciones durante la estación no reproductiva pero no a los mismos niveles durante la estación reproductiva.

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The avifauna of northern Myanmar (Burma) has remained among the most poorly known in the world, despite the fact that this area lies within one of the world's major biodiversity hotspots (e.g., BirdLife International 2010, Conservation International 2010). Historically, although small, scattered collections, usually of just a few specimens each, had been made opportunistically in various areas, only one major ornithological expedition, the Vernay-Cutting Expedition of 1939 to 1941 (Stanford and Mayr 1940, 1941a, b, c, d), ever took place in the entire region north of Upper Chindwin in the west and Myitkyina in the east. Subsequently, ornithological work became virtually impossible throughout the country until the 1990s and, even after limited opening of the country, the northeast remains off-limits to foreigners, unless they can obtain special security permits. The little-known nature of this avifauna is reflected in the fact that recent surveys in northern Myanmar by King, Rappole, Renner, and others have resulted in the discovery of multiple new taxa (e.g., King et al. 2001, Renner et al. 2008; cf. Chapter 6 of the present volume), and much remains to be learned about the most basic aspects of avian species composition and distributions. These surveys have begun to greatly improve our knowledge of the region's avifauna; however, they have been conducted mostly during drier seasons.

Like other areas of the eastern Himalayas, northern Myanmar experiences a highly seasonal climate, with a pronounced rainy season during the months of May to about September. Conditions during this time are unfavorable to travel by any means because of the high humidity and heavy, frequent rains that cause flooded rivers and streams, bridge washouts, and slippery trails, and because of the high prevalence of several species of terrestrial leeches in the forests. Consequently, collectors and other field observers have largely avoided the region during this season and very little ornithological work has been done in these areas during this time of year. The lack of surveys has contributed to a major deficit in our knowledge of the region's breeding avifauna. Most historical specimens from the eastern Himalayas (including Myanmar) lack any indication of elevation of collection, and very often of precise locality, so it has not been possible to confidently reconstruct differential seasonal elevational and geographic distributions for most east Himalayan species. The state of knowledge of breeding distributions for birds of northern Myanmar is very largely based on supposition, with few documented nesting records for most species.

Methods and Materials

To partially address the lack of knowledge of the breeding avifauna, during June and July 2006, T.A. and P.C.R. undertook field work in the Putao area (21–25 June 2006; centered at 27°34′N, 97°40′E, elevation ~450 m), Nam Ti (localities are transcribed in Chapter 6 of the present volume; 28 June to 2 July and 19–20 July; 27°41′N, 97°67′E, elevation 900 m), and Naung Mung (alternatively spelled Nogmung or other variants; 5 to 16 July, 27°50′N, 97°79′E, elevation ~550 m) of northern Kachin State, Myanmar. These areas are 29 and 31 km southwest of the border of Hkakabo Razi National Park, a protected area with one of Southeast Asia's largest remaining tracts of largely undisturbed rainforest. All of our field work was done within or at the edge of primary forest. Using porters, we trekked from near Putao to Nam Ti (a 1-day trek), where we did 5 days of field work, and then from Nam Ti to Naung Mung (a 2-day trek), for 12 days of field work, then back through Nam Ti for two more field days. Despite sustained daily rains, we were able to conduct intensive netting operations, using 20 to 22 nets daily. Because of the warm and humid conditions, and the placement of nets within canopied forest, we were able to leave nets open except at night and during periods of heavy rain without harm to the birds, which generally stayed fairly dry because of the shelter and frequency of net checks. Photographs, measurements, descriptions of soft-part colors, and weights were taken of most individuals netted, with the exception of repeated captures of the most common species. Standard banding data such as presence of cloacal protuberance and brood patch were also noted. Voucher specimens were collected for certain species, especially to document the presence of adults in breeding condition and juveniles, which indicate local breeding. Many of the specimens were later seriously damaged by flooding during storage in Myanmar, but all had been photographed and these are available on request. Species order and names follow Rasmussen and Anderton (2005).

Results and Discussion

Sustained rain occurred virtually every morning, typically clearing for part of each afternoon.

We found that during this period bird activity was generally very low, with no marked early-morning activity peak and little song. Instead, protracted but low-level activity meant that netting at any time of day could be productive.

Summer avifaunal composition.—One hundred and thirty-eight avian species were definitely recorded in the study area during June to July 2006 (Table 1). For most groups, such as woodpeckers, barbets, cuckooshrikes, and babblers, the avifaunal composition at Nam Ti and Naung Mung was similar between breeding and nonbreeding surveys (compare Table 1 with total list in Chapter 2 of the present volume). The groups that formed the principal exceptions to this pattern include the phylloscopine warblers, muscicapine flycatchers, and saxicoline chats. For example, although several species in the genera *Phylloscopus* and *Seicercus* are found at these elevations during the nonbreeding season and are then among the most commonly netted birds, only a single *Phylloscopus* species, the Yellow-vented Warbler (*P. cantator*), and no *Seicercus* were captured or observed during the survey. Again, all three Himalayan species in the genus *Tesia* are frequent during the nonbreeding season, but none were encountered during our breeding-season survey. Similarly, several species of muscicapine flycatcher present or even common at Nam Ti or Naung Mung during the nonbreeding season were not detected during the breeding season. The detected species composition of this group comprised just four species, of which three were common, including the southern migrant the Large Blue Flycatcher (*Cyornis magnirostris*), which was not present during the nonbreeding season, after September. As for the drongos, six species were present during the breeding season, more than during the nonbreeding season because of the addition of the southern migrant Crow-billed Drongo (*Dicrurus annectans*) to the breeding avifauna (details provided below).

The breeding-season timaliine babbler avifauna was very similar to that recorded during the nonbreeding season, although, despite intensive efforts, the recently described Naung Mung Scimitar-Babbler (*Jabouilleia naungmungensis*) could not be located, even at the exact sites at which it had been netted in March 2008 (Rappole et al. 2008). It is unclear whether this was due simply to chance or to elevational migration of the species. The latter is certainly possible even for presumably weak fliers such as *Jabouilleia*, because the sites worked are at the base of the hills and very short movements could take them out of these elevations seasonally. Further field work is required to establish the breeding grounds and movements of *Jabouilleia*. According to most of the literature (e.g., Ripley 1961, Inskipp and Inskipp 1985, Spierenburg 2005), altitudinal movements are common among timaliid babblers, but there are few data to substantiate such movements, especially in northern Burma, and further study is required to validate the generality of this assumed pattern.

Evidence of breeding was obtained for numerous species. For example, we obtained a Drongo-cuckoo (*Surniculus lugubris*) that laid a shelled egg during handling on 16 July 2006, and a Spot-throated Babbler (*Pellorneum albiventre*) with an oviduct egg on 15 July 2006. For numerous other species, examination of adults provided evidence of breeding (Table 2). A fledgling Common Green Magpie (*Cissa chinensis*) still with a very short tail and accompanied by parents was netted on 9 July 2006. A late nestling Black-naped Blue Monarch (*Hypothymis azurea*) was obtained on 5 July 2006; this bird was nearly ready to fledge but was still in nestling plumage. We collected juvenile birds of 38 species, which provided strong evidence of local breeding (Table 3). Much further research will be required to fully document the breeding phenology of birds of this region.

Cyornis magnirostris

Two species encountered during the surveys are highly migratory and present in northern Myanmar only during the breeding season. Of these, one had previously been found in northern Myanmar only in September 2005, this being the Large Blue Flycatcher (*Cyornis magnirostris*; see Renner et al. 2009). During September 2005, Renner netted two *magnirostris*, establishing that it occurs in northern Myanmar but not whether on transit or on the breeding grounds (Renner et al. 2009). During June to July 2006, we found by netting recoveries that *C. magnirostris* was among the most common understory passerines at Nam Ti. We netted 12 *magnirostris* (11 at Nam Ti) during seven field days. Only one individual was netted at Naung Mung during nearly two weeks of field work. These records provide the first evidence on the breeding elevation, habitat, definite localities, and dates of this heretofore enigmatic species. Although *C. magnirostris* appears to be inconspicuous (at least during June and July) on its breeding

TABLE 1. Avian species recorded in northern Kachin State, Myanmar, June to July 2009.

Common name	Scientific name	Putao area	Nam Ti	Naung Mung	Netted	Seen	Heard only	Notes
Great Cormorant	*Phalacrocorax carbo*	x				x		
Eastern Cattle Egret	*Bubulcus coromandus*			x		x		Breeding plumage
Striated Heron	*Butorides striatus*			x		x		
Lesser Whistling-duck	*Dendrocygna javanica*	x				x		
Crested Serpent-eagle	*Spilornis cheela*	x	x	x		x		
Crested Goshawk	*Accipiter trivirgatus*	x	x		1	x		Came into net after a caught *Dendrocitta frontalis*
Besra Sparrowhawk	*Accipiter virgatus*	x		x	1	x		Came into net after, and was eating, a *Pycnonotus cafer*
Shikra	*Accipiter badius*	x				x		
Changeable Hawk-eagle	*Spizaetus limnaeetus*		x			x		A group of several individuals flying around ridge
Red-wattled Lapwing	*Vanellus indicus*	x				x		
River Lapwing	*Vanellus duvaucelii*			x		x		
Rock Pigeon	*Columba livia*	x						
Speckled Woodpigeon	*Columba hodgsonii*		x			x		
Ashy Woodpigeon	*Columba pulchricollis*	x	x			x		
Mountain Imperial-pigeon	*Ducula badia*		x	x		x		
Thick-billed Green-pigeon	*Treron curvirostra*	x	x			x		
Pin-tailed Green-pigeon	*Treron apicauda*	x	x			x		
Spotted Dove	*Streptopelia chinensis*	x		x		x		
Emerald Dove	*Chalcophaps indica*			x	1			
Barred Cuckoo-dove	*Macropygia unchall*					x		Seen en route from Nam Ti to Naung Mung
Finsch's Parakeet	*Psittacula finschii*	x		x		x		
Rosy-headed Parakeet	*Psittacula roseata*	x				x		
Large Hawk-cuckoo	*Hierococcyx sparverioides*	x	x	x		x		
Indian Cuckoo	*Cuculus micropterus*	x	x	x			x	
Drongo-cuckoo	*Surniculus lugubris*			x	1	x		
Greater Coucal	*Centropus sinensis*	x				x		
Asian Barred Owlet	*Glaucidium cuculoides*		x	x		x		
Himalayan Swiftlet	*Aerodramus brevirostris*		x	x		x		
Brown-throated Needletail	*Hirundapus giganteus*	x				x		Several seen; dark throat and dark back noted

TABLE 1. Continued.

Common name	Scientific name	Putao area	Nam Ti	Naung Mung	Netted	Seen	Heard only	Notes
White-throated or Silver-backed Needletail	*Hirundapus* sp. (*caudacutus* or *cochinchinensis*)	x				x		Several seen in flight; throat did not look white but back patches did
Asian Palm-swift	*Cypsiurus balasiensis*		x	x	2	x		
Pacific Swift	*Apus pacificus*	x				x		
Red-headed Trogon	*Harpactes erythrocephalus*			x	1	x		
Common Kingfisher	*Alcedo atthis*			x		x		
Blue-eared Kingfisher	*Alcedo meninting*	x						Hit airport window
White-throated Kingfisher	*Halcyon smyrnensis*			x		x		
Himalayan Pied Kingfisher	*Ceryle lugubris*	x		x	1	x		
Blue-bearded Bee-eater	*Nyctyornis athertoni*		x			x		
Great Pied Hornbill	*Buceros bicornis*					x		Seen en route from Nam Ti to Naung Mung
Great Barbet	*Megalaima virens*		x			x		
Lineated Barbet	*Megalaima lineata*		x	x			x	
Blue-throated Barbet	*Megalaima asiatica*	x	x	x		x		
Golden-throated Barbet	*Megalaima franklinii*		x			x		
Speckled Piculet	*Picumnus innominatus*		x	x	1	x		
White-browed Piculet	*Sasia ochracea*	x	x	x	Several			
Fulvous-breasted Pied Woodpecker	*Dendrocopos macei*			x		x		
Lesser Yellownape	*Picus chlorolophus*			x	1	x		
Greater Yellownape	*Picus flavinucha*		x	x		x		
Bay Woodpecker	*Blythipicus pyrrhotis*		x	x	2	x		
Silver-breasted Broadbill	*Serilophus lunatus*			x	Several	x		
Oriental Skylark	*Alauda gulgula*	x				x		
Barn Swallow	*Hirundo rustica*			x		x		
Nepal House-martin	*Delichon nipalense*	x				x		Extensively black throat seen
Paddyfield Pipit	*Anthus rufulus*	x				x		
Black-winged Cuckooshrike	*Coracina melaschistos*		x		1	x		
Pied Flycatcher-shrike	*Hemipus picatus*			x	1			
Large Woodshrike	*Tephrodornis gularis*			x		x		
Gray-chinned Minivet	*Pericrocotus solaris*			x		x		
Scarlet Minivet	*Pericrocotus speciosus*		x	x		x		
Black-naped Blue Monarch	*Hypothymis azurea*		x	x	few	x		Includes record of nest with two fledged chicks and third (collected) still in nest; parents in attendance

(*continued*)

TABLE 1. Continued.

Common name	Scientific name	Putao area	Nam Ti	Naung Mung	Netted	Seen	Heard only	Notes
Asian Paradise Flycatcher	*Terpsiphone paradisi*		x	x	Many			
White-throated Fantail	*Rhipidura albicollis*		x		1			
Red-whiskered Bulbul	*Pycnonotus jocosus*	x	x	x	1	x		
Red-vented Bulbul	*Pycnonotus cafer*	x		x		x		
White-throated Bulbul	*Alophoixus flaveolus*	x	x	x	Many	x		
Ashy Bulbul	*Hemixos flavala*	x		x	3	x		
Mountain Bulbul	*Hypsipetes mcclellandi*					x		Seen en route from Nam Ti to Naung Mung
Himalayan Black Bulbul	*Hypsipetes leucocephalus*	x	x	x		x		
Orange-bellied Leafbird	*Chloropsis hardwickii*		x	x	2	x		
Long-tailed Shrike	*Lanius schach*	x				x		
Orange-headed Thrush	*Zoothera citrina*		x	x	Many			
Verditer Flycatcher	*Eumyias thalassinus*		x			x		
Small Niltava	*Niltava macgrigoriae*		x	x	Several			
Pale Blue Flycatcher	*Cyornis unicolor*		x	x	2			
Blue-throated Flycatcher	*Cyornis rubeculoides*	x	x	x	Many	x		
Large Blue Flycatcher	*Cyornis magnirostris*		x	x	12			
Gray-headed Canary-flycatcher	*Culicicapa ceylonensis*		x	x	Several	x		
Oriental Magpie-robin	*Copsychus saularis*	x		x		x		
White-tailed Blue Robin	*Myiomela leucura*		x		Several			
Slaty-backed Forktail	*Enicurus schistaceus*			x	1	x		
White-crowned Forktail	*Enicurus leschenaulti*		x			x		
White-crested Laughingthrush	*Garrulax leucolophus*		x	x	Several	x		
Lesser Necklaced Laughingthrush	*Garrulax monileger*	x		x	4	x		
Chestnut-backed Laughingthrush	*Dryonastes nuchalis*			x	1	x		
Rufous-vented Laughingthrush	*Dryonastes gularis*		x	x	2			
Spot-breasted Laughingthrush	*Stactocichla merulina*		x		1			
Spot-throated Babbler	*Pellorneum albiventre*			x	3	x		
Buff-breasted Babbler	*Pellorneum tickelli*		x	x	Several	x		

(*continued*)

TABLE 1. Continued.

Common name	Scientific name	Putao area	Nam Ti	Naung Mung	Netted	Seen	Heard only	Notes
Puff-throated Babbler	*Pellorneum ruficeps*	x	x	x	Several	x		
Coral-billed Scimitar-babbler	*Pomatorhinus ferruginosus*			x	7	x		
Streaked Wren-babbler	*Napothera brevicaudata*		x	x	Several	x		
Eyebrowed Wren-babbler	*Napothera epilepidota*		x		Several	x		1 killed by child with catapult
Rufous-capped Babbler	*Stachyris ruficeps*	x			2	x		
Golden Babbler	*Stachyris chrysaea*		x			x		
Gray-throated Babbler	*Stachyris nigriceps*		x	x	Many	x		
Snowy-throated Babbler	*Stachyris oglei*			x	2			
Blue-winged Minla	*Minla cyanouroptera*		x			x		1 killed by child with catapult
Red-tailed Minla	*Minla ignotincta*					x		Seen en route from Nam Ti to Naung Mung
Silver-eared Mesia	*Leiothrix argentauris*		x		3	x		
Rufous-throated Fulvetta	*Alcippe rufogularis*	x	x	x	Many	x		
Gray-cheeked Fulvetta	*Alcippe morrisonia*	x	x	x	Many	x		
Rusty-fronted Barwing	*Actinodura egertoni*					x		Seen en route from Nam Ti to Naung Mung
Rufous-backed Sibia	*Heterophasia annectans*		x		1	x		
Gray-headed Parrotbill	*Paradoxornis gularis*			x		x		Large flock (~45) in forest edge bamboo; second day several in edge bamboo with *Garrulax monileger*
Striated Yuhina	*Staphida castaniceps*		x	x	Many	x		Always netted in groups
Black-chinned Yuhina	*Yuhina nigrimenta*		x	x	1	x		
White-bellied Erpornis	*Erpornis zantholeuca*	x	x	x	1	x		
Hill Prinia	*Prinia superciliaris*			x		x		
Gray-breasted Prinia	*Prinia hodgsonii*			x		x		
Common Tailorbird	*Orthotomus sutorius*	x		x		x		
Yellow-vented Warbler	*Phylloscopus cantator*		x			x		
Rufous-faced Warbler	*Abroscopus albogularis*		x	x	Several	x		
Sultan Tit	*Melanochlora sultanea*			x		x		
Chestnut-bellied Nuthatch	*Sitta castanea*		x			x		
Velvet-fronted Nuthatch	*Sitta frontalis*		x			x		
Plain Flowerpecker	*Dicaeum minullum*	x		x	2	x		
Yellow-vented Flowerpecker	*Dicaeum chrysorrheum*	x				x		
Crimson Sunbird	*Aethopyga siparaja*	x				x		

(*continued*)

TABLE 1. Continued.

Common name	Scientific name	Putao area	Nam Ti	Naung Mung	Netted	Seen	Heard only	Notes
Black-breasted Sunbird	*Aethopyga saturata*	x	x	x	Several	x		
Streaked Spiderhunter	*Arachnothera magna*		x	x	6	x		
Oriental White-eye	*Zosterops palpebrosus*	x				x		
Scaly-breasted Munia	*Lonchura punctulata*	x				x		
White-rumped Munia	*Lonchura striata*					x		
Eurasian Tree Sparrow	*Passer montanus*	x		x		x		
Common Myna	*Acridotheres tristis*	x				x		
Collared Myna	*Acridotheres albocinctus*	x				x		Several seen feeding fledglings, 23 June
Common Hill-myna	*Gracula religiosa*	x				x		
Maroon Oriole	*Oriolus traillii*		x			x		Near Maza (about half-way between Nam Ti and Naung Mung)
Black Drongo	*Dicrurus macrocercus*	x				x		
Ashy Drongo	*Dicrurus leucophaeus*		x	x		x		
Crow-billed Drongo	*Dicrurus annectans*		x		1	x		PCR 06-101
Bronzed Drongo	*Dicrurus aeneus*	x	x	x	1	x		
Lesser Racket-tailed Drongo	*Dicrurus remifer*		x	x	several	x		
Hair-crested Drongo	*Dicrurus hottentottus*			x	1	x		
Common Green Magpie	*Cissa chinensis*			x	1	x		
Gray Treepie	*Dendrocitta formosae*	x	x	x		x		
Collared Treepie	*Dendrocitta frontalis*		x	x	4	x		
Jungle Crow	*Corvus macrorhynchos*	x		x		x		

TABLE 2. Adult birds that provided evidence of breeding in northern Kachin State, Myanmar, June to July 2009.

Common name	Scientific name	Date	Locality	Gonad size	Other	Specimen number
Drongo-cuckoo	*Surniculus lugubris*	16 July 2006	Naung Mung	Preserved in alcohol	Laid shelled egg while being handled	PCR 06-94
White-browed Piculet	*Sasia ochracea*	6 July 2006	Naung Mung	Ovary 4 × 3 mm, largest follicle <1 mm	Brood patch present	PCR 06-49
White-browed Piculet	*Sasia ochracea*	12 July 2006	Naung Mung	Ovary 4 × 3 mm, largest follicle 1 mm	Brood patch present	PCR 06-73
Pied Flycatcher-shrike	*Hemipus picatus*	6 July 2006	Naung Mung	Ovary 5 × 3 mm, granular	Brood patch present	PCR 06-49
Ashy Bulbul	*Hemixos flavala*	9 July 2006	Naung Mung	Ovary 12 × 8 mm, largest follicle 2 mm		PCR 06-58
White-throated Bulbul	*Alophoixus flaveolus*	11 July 2006	Naung Mung	Left testis 20 × 18 mm		PCR 06-69
Orange-headed Thrush	*Zoothera citrina*	11 July 2006	Naung Mung	Left testis 8 × 5 mm		PCR 06-70
Pale Blue Flycatcher	*Cyornis unicolor*	19 July 2006	Nam Ti	Ovary 7 × 3 mm, granular	Brood patch present	PCR 06-
Large Blue Flycatcher	*Cyornis magnirostris*	28 June 2006	Nam Ti	Left testis 9 × 6 mm		PCR 06-12
Large Blue Flycatcher	*Cyornis magnirostris*	28 June 2006	Nam Ti	Left testis 8 × 5 mm		PCR 06-19
Large Blue Flycatcher	*Cyornis magnirostris*	30 June 2006	Nam Ti	Ovary 7 × 4 mm, largest follicle 1 mm	Brood patch present	PCR 06-21
Large Blue Flycatcher	*Cyornis magnirostris*	30 June 2006	Nam Ti	Left testis 9 × 5 mm		PCR 06-26
Large Blue Flycatcher	*Cyornis magnirostris*	2 July 2006	Nam Ti	Ovary 7 × 3 mm, largest follicle 1 mm	Brood patch present	PCR 06-21
White-crested Laughingthrush	*Garrulax leucolophus*	14 July 2006	Naung Mung	Left testis 12 × 6 mm		PCR 06-85a
Lesser Necklaced Laughingthrush	*Garrulax monileger*	7 July 2006	Naung Mung	Ovary 15 × 8 mm, largest follicle 7 mm		PCR 06-52
Rufous-throated Fulvetta	*Alcippe rufogularis*	21 June 2006	Putao	Ovary 6 × 4 mm, largest follicle 1 mm	Oviduct large, flaccid	PCR 06-04
Gray-cheeked Fulvetta	*Alcippe morrisonia*	22 June 2006	Putao	Ovary 10 × 5 mm, largest follicle 4 mm		PCR 06-06
Gray-cheeked Fulvetta	*Alcippe morrisonia*	29 June 2006	Nam Ti	Ovary 7 × 5 mm, largest follicle 2 mm (yolky)	Oviduct well developed, brood patch present	PCR 06-18
Spot-throated Babbler	*Pellorneum albiventre*	15 July 2006	Naung Mung	Ovary 10 × 8 mm	Oviduct egg 15 × 11, next largest 9 × 7	PCR 06-84b
Spot-throated Babbler	*Pellorneum albiventre*	15 July 2006	Naung Mung	Left testis 7 × 4 mm		PCR 06-87
Eyebrowed Wren-babbler	*Napothera epilepidota*	29 June 2006	Nam Ti	Ovary 7 × 3 mm, granular	Oviduct collapsed, brood patch present	PCR 06-20
Eyebrowed Wren-babbler	*Napothera epilepidota*	30 June 2006	Nam Ti	Ovary 6 × 3 mm, two 1 × 1 mm yolky follicles	Brood patch present	PCR 06-23
Snowy-throated Babbler	*Stachyris oglei*	16 July 2006	Naung Mung	Left testis 9 × 5 mm		PCR 06-90
Plain Flowerpecker	*Dicaeum minullum*	12 July 2006	Naung Mung	Left testis 5 × 3 mm		PCR 06-77

TABLE 3. Juvenile and subadult birds collected in northern Kachin State, Myanmar, June to July 2009.

Common name	Scientific name	Date	Locality	Age category	Skull ossification (%)	Bursa size (mm)	Specimen number
Speckled Piculet	*Picumnus innominatus*	2 July 2006	Nam Ti	Juvenile	0	Damaged	PCR 06-38
White-browed Piculet	*Sasia ochracea*	13 July 2006	Naung Mung	Hatch-year	15	Decomposed	PCR 06-76
Lesser Yellownape	*Picus chlorolophus*	15 July 2006	Naung Mung	Juvenile	Not recorded	5 × 5	PCR 06-88
Silver-breasted Broadbill	*Serilophus lunatus*	10 July 2006	Naung Mung	Juvenile	0	10 × 5	PCR 06-67
Silver-breasted Broadbill	*Serilophus lunatus*	5 July 2006	Naung Mung	Juvenile	0	Not found	PCR 06-44b
Asian Paradise Flycatcher	*Terpsiphone paradisi*	6 July 2006	Naung Mung	Juvenile	25	3 × 2	PCR 06-51
Asian Paradise Flycatcher	*Terpsiphone paradisi*	1 July 2006	Nam Ti	Hatch-year	25	4 × 3	PCR 06-33
Black-naped Blue Monarch	*Hypothymis azurea*	5 July 2006	Naung Mung	Nestling about to fledge	0	Present	PCR 06-41
Red-whiskered Bulbul	*Pycnonotus jocosus*	14 July 2006	Naung Mung	Juvenile	Not recorded	Not recorded	PCR 06-82a
Red-vented Bulbul	*Pycnonotus cafer*	22 June 2006	Putao	Juvenile	skull eaten in net by *Accipiter virgatus*	8 × 5	PCR 06-09
White-throated Bulbul	*Alophoixus flaveolus*	29 June 2006	Nam Ti	Juvenile	15	10.5 × 6.4	PCR 06-19
Orange-headed Thrush	*Zoothera citrina*	7 July 2006	Naung Mung	Juvenile	0	10 × 8	PCR 06-55
Slaty-backed Forktail	*Enicurus schistaceus*	7 July 2006	Naung Mung	Juvenile	0	8 × 5	PCR 06-56
White-tailed Blue Robin	*Myiomela leucura*	28 June 2006	Nam Ti	Juvenile			Not collected
Pale Blue Flycatcher	*Cyornis unicolor*	15 July 2006	Naung Mung	Juvenile	0	5 × 3	PCR 06-86
Blue-throated Flycatcher	*Cyornis rubeculoides*	29 June 2006	Nam Ti	Juvenile	0	6 × 3	PCR 06-16

TABLE 3. Continued.

Common name	Scientific name	Date	Locality	Age category	Skull ossification (%)	Bursa size (mm)	Specimen number
Blue-throated Flycatcher	*Cyornis rubeculoides*	9 July 2006	Naung Mung	Juvenile	0	3 × 4	PCR 06-59
Large Blue Flycatcher	*Cyornis magnirostris*	12 July 2006	Naung Mung	Juvenile	10	6 × 3	PCR 06-72
Large Blue Flycatcher	*Cyornis magnirostris*	20 July 2006	Nam Ti	Juvenile	15	7 × 4	PCR 06-99
Large Blue Flycatcher	*Cyornis magnirostris*	20 July 2006	Nam Ti	Juvenile	5	7 × 5	PCR 06-102
Gray-headed Canary-flycatcher	*Culicicapa ceylonensis*	16 July 2006	Naung Mung	Juvenile	Preserved in alcohol	Preserved in alcohol	PCR 06-93
White-crested Laughingthrush	*Garrulax leucolophus*	30 June 2006	Nam Ti	Juvenile	Not recorded	11 × 7	PCR 06-25
Lesser Necklaced Laughingthrush	*Garrulax monileger*	9 July 2006	Naung Mung	Juvenile	0	10 × 8	PCR 06-63
Chestnut-backed Laughingthrush	*Dryonastes nuchalis*	6 July 2006	Naung Mung	Juvenile	0	8 × 6	PCR 06-48
Spot-breasted Laughingthrush	*Stactocichla merulina*	30 June 2006	Nam Ti	Juvenile	0	10 × 6	PCR 06-24
Buff-breasted Babbler	*Pellorneum tickelli*	10 July 2006	Naung Mung	Juvenile	10	4 × 3	PCR 06-65
Puff-throated Babbler	*Pellorneum ruficeps*	13 July 2006	Naung Mung	Juvenile	30	Not noted	PCR 06-75
Coral-billed Scimitar-babbler	*Pomatorhinus ferruginosus*	14 July 2006	Naung Mung	Juvenile	0	10 × 5	PCR 06-81
Streaked Wren-babbler	*Napothera brevicaudata*	5 July 2006	Naung Mung	Juvenile	0	6 × 6	PCR 06-43
Eyebrowed Wren-babbler	*Napothera epilepidota*	20 July 2006	Nam Ti	Juvenile	Preserved in alcohol	Preserved in alcohol	PCR 06-100
Rufous-capped Babbler	*Stachyris ruficeps*	22 June 2006	Putao	Juvenile	0	5 × 4	PCR 06-07
Gray-throated Babbler	*Stachyris nigriceps*	12 July 2006	Naung Mung	Juvenile	5	7 × 3	PCR 06-74
Blue-winged Minla	*Minla cyanouroptera*	19 July 2006	Nam Ti	Juvenile	10	10 × 5	PCR 06-97
Rufous-throated Fulvetta	*Alcippe rufogularis*	28 June 2006	Nam Ti	Juvenile	0	6 × 3.5	PCR 06-14
Rufous-throated Fulvetta	*Alcippe rufogularis*	29 June 2006	Nam Ti	Juvenile	0	6 × 4	PCR 06-17

(*continued*)

TABLE 3. Continued.

Common name	Scientific name	Date	Locality	Age category	Skull ossification (%)	Bursa size (mm)	Specimen number
Rufous-throated Fulvetta	*Alcippe rufogularis*	10 July 2006	Naung Mung	Juvenile	10	5 × 3	PCR 06-68
Rufous-throated Fulvetta	*Alcippe rufogularis*	14 July 2006	Naung Mung	Juvenile	0	Present	PCR 06-84a
Gray-cheeked Fulvetta	*Alcippe morrisonia*	1 July 2006	Nam Ti	Juvenile	0	Not found	PCR 06-31
Gray-cheeked Fulvetta	*Alcippe morrisonia*	12 July 2006	Naung Mung	Juvenile	5	4 × 3	PCR 06-71
Rufous-backed Sibia	*Heterophasia annectans*	19 July 2006	Nam Ti	Juvenile	30	5 × 4	PCR 06-96
Striated Yuhina	*Staphida castaniceps*	6 July 2006	Naung Mung	Juvenile	0	5 × 3	PCR 06-54
Rufous-faced Warbler	*Abroscopus albogularis*	28 June 2006	Nam Ti	Juvenile	0	3 × 2	PCR 06-15
Rufous-faced Warbler	*Abroscopus albogularis*	13 July 2006	Naung Mung	Juvenile	0	Decomposed	PCR 06-15
Crow-billed Drongo	*Dicrurus annectans*	20 July 2006	Nam Ti	Juvenile	10	8 × 6	PCR 06-101
Bronzed Drongo	*Dicrurus aeneus*	14 July 2006	Naung Mung	Juvenile	20	Not found	PCR 06-85b
Lesser Racket-tailed Drongo	*Dicrurus remifer*	2 July 2006	Nam Ti	Juvenile	0	7 × 5	PCR 06-36
Hair-crested Drongo	*Dicrurus hottentottus*	9 July 2006	Naung Mung	Juvenile	0	3 × 4	PCR 06-61
Common Green Magpie	*Cissa chinensis*	9 July 2006	Naung Mung	Juvenile	0	10 × 6	PCR 06-57
Collared Treepie	*Dendrocitta frontalis*	2 July 2006	Nam Ti	Juvenile	25	10 × 9	PCR 06-39

grounds, the lack of previous records for northern Myanmar surely reflects the lack of observer effort there during its breeding season. A second possible contributing factor is that taxonomic and field identification confusion have been engendered by the long treatment of *magnirostris* as conspecific with *banyumas* (Ripley 1961, Inskipp and Inskipp 1985, Dickinson 2003). The song of *C. magnirostris* remains undocumented, and further study is required to determine whether this species is sympatric with the Hill Blue Flycatcher (*C. banyumas whitei*), which occurs both to the west in extreme northeastern India and to the east in northeastern Myanmar and Yunnan (Renner et al. 2009).

Dicrurus annectans

The second highly migratory species documented was a new breeding species for northern Myanmar, the Crow-billed Drongo (*Dicrurus annectans*). P.C.R. observed a juvenile *D. annectans* with diagnostically white-spotted underparts on 19 July 2006, at ~0730 hours in drizzling weather. The bird was seen well in a fast-moving drongo-dominated flock in the company of two or more Lesser Racket-tailed Drongos (*D. remifer*), two or more Ashy Drongos (*D. leucophaeus*), some Gray-cheeked Fulvettas (*Alcippe morrisonia*), a Golden-throated Barbet (*Megalaima franklinii*), a Streaked Spiderhunter (*Arachnothera magna*), a Black-winged Cuckooshrike (*Coracina melaschistos*), and a Blue-winged Minla (*Minla cyanouroptera*). P.C.R.'s field notes on the identification taken immediately after the sighting were as follows: "medium-sized, heavily built drongo with large straight bill and no LRTD [Lesser Racket-tailed Drongo] flat crest. Tail broad and nearly unforked and distinctly upcurved at tips. White spangles on underparts distinctly visible. Habitat large trees in dense forest. Perched in canopy."

On 20 July, this individual or another similarly plumaged juvenile *D. annectans* was captured, along with two juvenile *D. remifer*, in a net placed very near the location of the sighting on 19 July. This *D. annectans* was preserved as a voucher specimen. *Dicrurus annectans* is known to breed in the Himalayas from Uttaranchal Pradesh eastward to Arunachal Pradesh (India). Photographs were taken in comparison with *D. remifer* and of the *D. annectans* specimen after preparation. It is also known as a breeding species from southern North China and through much of the rest of Southeast Asia (Robson 2000), so its presence in northern Myanmar is expected. It is migratory, wintering in the Malaysian subregion. Thus, the species is almost certainly absent from northern Myanmar during the nonbreeding season, when most observers have been there and other collections have been made. It is expected that *D. annectans* will prove to be a regular, if low-density, breeding species in northern Myanmar.

Threatened Species

Several species with small global ranges, some of which have been listed by BirdLife International in various IUCN threat categories other than "least concern" were recorded during the breeding-season survey. The Collared Treepie (*Dendrocitta frontalis*), previously proposed for near-threatened status (and now considered of least concern), was fairly common in both main study sites, which supports its present status of least concern. Young juveniles were also netted, which demonstrated local breeding. The Snowy-throated Babbler (*Stachyris oglei*), a "vulnerable" (BirdLife International 2009c) species that has only recently been recorded in Myanmar for the first time (King et al. 2001), was captured on one occasion at Naung Mung; despite the range extension into northern Myanmar this little-known species still has a tiny world range, comprising only extreme eastern Arunachal Pradesh, India, and extreme northwestern Myanmar. However, its "vulnerable" status is based mostly on the supposition that it occurs primarily in Namdapha National Park, Arunachal Pradesh, and given its presence at Naung Mung, that status may need re-evaluation. The Chestnut-backed Laughingthrush (*Dryonastes nuchalis*), a "near-threatened" species (BirdLife International 2009a), Rufous-vented Laughingthrush (*D. gularis*), and Spot-breasted Laughingthrush (*Stactocichla merulina*) (both previously listed as near-threatened and now as least-concern) were present in low numbers in the survey areas. The Collared Myna (*Acridotheres albocinctus*), once proposed for near-threatened status but now considered of least concern, was very common in garden vegetation in Putao town. This strongly supports its current least-concern status. Conversely, although several species of hornbills occur in the region, throughout the survey only a single individual Great Hornbill (*Buceros bicornis*, a near-threatened species; BirdLife International 2009b) was seen. Given that large hornbills are typically conspicuous, this suggests that hornbill

numbers may be low in this area, probably as a result of hunting.

This breeding-season survey was preliminary in nature, and much more work is needed to obtain a comprehensive understanding of the species composition, breeding phenology, and seasonal elevational distributions of the avifauna of northern Myanmar. These data will likely be of importance in providing baseline data as human pressures on the land increase and as climate change affects montane forest habitats.

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