

AVIFAUNAL SURVEYS IN THE LOWLANDS OF KACHIN STATE, MYANMAR, 2003–2005

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ABSTRACT

During 2003–2005, BirdLife International and the Biodiversity and Nature Conservation Association conducted four avifaunal surveys in the lowlands of Kachin State, Myanmar (Burma). The principal objective of these surveys was to collect data on the current status and distribution of bird species, particularly globally threatened, restricted-range and congregatory species. Particular attention was paid to assessing the current status of Pink-headed Duck *Rhodonessa caryophyllacea*, a Critically Endangered species, which was historically recorded in Kachin State. The surveys focused on nine main sites: the Tanai River; the Warazup area; the Kamaing area; the Mogaung Chaung; Indawgyi Wildlife Sanctuary; Nawng Kwin wetland; the Ayeyarwady River between Myitkyina and Sinbo; the Ayeyarwady River and ox-bow lakes near Bhamo; and 96 Is. In addition, *ad hoc* observations were made en route between survey sites. At least 409 bird species were recorded during the surveys, one of which was new for Myanmar: Chestnut-crowned Bush Warbler *Cettia major*. A further 16 species were new records for North Myanmar: Spot-bellied Eagle Owl *Bubo nipalensis*; Jungle Owllet *Glaucidium radiatum* (provisional identification); Spotted Owllet *Athene brama*; Little Tern *Sterna albifrons*; Jerdon's Baza *Aviceda jerdoni*; Himalayan Griffon *Gyps himalayensis*; Indian Spotted Eagle *Aquila hastata*; Booted Eagle *Hieraetus pennatus*; Amur Falcon *Falco amurensis*; Laggar Falcon *F. jugger*; Crow-billed Drongo *Dicrurus annectans*; Crested Myna *Acridotheres cristatellus*; Asian Stubtail *Urosphena squamiceps*; Rusty-rumped Warbler *Locustella certhiola*; Arctic Warbler *Phylloscopus borealis*; Eastern Crowned Warbler *P. coronatus*; and Sand Lark *Calandrella raytal*. The results of the surveys also extended the known altitudinal ranges of 26 species in mainland South-East Asia. A total of 23 globally threatened and Near Threatened species were recorded during the surveys. Of these species, the results of the surveys indicate that the lowlands of Kachin State are of high global significance for the conservation of Green Peafowl *Pavo muticus*, White-winged Duck *Cairina scutulata*, Masked Finfoot *Heliopais personata*, Lesser Fish Eagle *Ichthyophaga humilis*, White-rumped Vulture *Gyps bengalensis*, Slender-billed Vulture *G. tenuirostris*, Darter *Anhinga melanogaster*, White-bellied Heron *Ardea insignis*, Chestnut-backed Laughingthrush *Garrulax nuchalis*, and of high regional significance for Ferruginous Pochard *Aythya nyroca*, Great Hornbill *Buceros bicornis*, Grey-headed Fish Eagle *I. ichthyaetus*, Spot-billed Pelican *Pelecanus philippensis*, Black-necked Stork *Ephippiorhynchus asiaticus*, Lesser Adjutant *Leptoptilos javanicus* and

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Rusty-bellied Shortwing *Brachypteryx hyperythra*. No confirmed records of Pink-headed Duck were made, although anecdotal reports were received from three sites and two possible sightings were made.

Key words: birds, Burma, Kachin State, lowlands, threatened species Myanmar, wetlands

INTRODUCTION

Kachin State is the northernmost state in Myanmar (Burma). Bordered by Arunachal Pradesh, India, to the north-west, Xizang Autonomous Region (Tibet), China, to the north, and Yunnan province, China, to the east, northern Kachin State is dominated by the high mountains of the eastern Himalayas, including Myanmar's highest peak, Mount Hkakabo Razi [5,881 m (19,290 ft) above sea level (asl)]. The topography of central and southern Kachin State is, in contrast, characterised by lowlands, which are drained by the Ayeyarwady (= Irrawaddy) River and its tributaries.

Several avifaunal surveys have been conducted in Kachin State since 1997 (e.g. THIEN AUNG & ZIN OO, 1999, VAN DER VEN, 2000, 2001, 2002, 2003, KING *ET AL.*, 2001, DAVIES *ET AL.*, 2004). These surveys followed a gap of around 50 years, during which almost no new information on the avifauna of the state was published in the scientific literature, apart from a small collection of birds made west of Putao by O. Milton in 1958–1960 (RIPLEY, 1961). These surveys: reconfirmed the presence of many species that had not been recorded in Kachin State or, in many cases, the country as a whole, since historical times; expanded knowledge of the status and distribution of many bird species in the state; added new species to the list of birds for Myanmar (e.g. KING *ET AL.*, 2001, VAN DER VEN, 2001); and resulted in the description of a new species for science, Naung Mung Scimitar Babbler *Jabouilleia naungmungensis* (RAPPOLE *ET AL.*, 2005). Several of these surveys focused on mountainous areas, such as Mount Hponkan Razi (KING *ET AL.*, 2001, JCE own data), Mount Hkakabo Razi (THIEN AUNG & ZIN OO, 1999), the Naung Mung area (THIEN AUNG & ZIN OO, 1999) and the Imaw Bum Range (JCE, own data). Other surveys focused on lowland areas, most notably a series of short surveys undertaken in January 2003 by the Wild Bird Society of Japan (WBSJ) in collaboration with the Nature and Wildlife Conservation Division (NWCD) of the Myanmar Forest Department, during the preparation of *A Wetland Inventory for Myanmar* (DAVIES *ET AL.*, 2004). A series of private expeditions were also undertaken from 1999 onwards by J. van der Ven (VAN DER VEN, 2000, 2001, 2002, 2003).

Historical (pre-1980) information on the avifauna of the lowlands of Kachin State is limited, because most historical surveys were of mountainous areas (e.g. STANFORD & TICEHURST, 1938–1939; STANFORD & MAYR, 1940–1941; SMYTHIES, 1949). Except for an exploration of the lowlands of the Ayeyarwady valley near Bhamo by Harington (1909–1910), the major ornithological study of the lowlands of Kachin State was the Vernay-Hopwood Chindwin Expedition (MAYR, 1938). This expedition collected around 400 bird specimens in the low hills to the north-west of Kamaing town and along the upper Chindwin River during January and February 1935, before continuing down the Chindwin into present-day Sagaing Division (MAYR, 1938).

Inspection of spatial data on the lowlands of Kachin State, including topographic maps and satellite images, reveals that the area supports some of the largest expanses of little-dis-

turbed seasonally inundated plains habitats remaining in Asia, as well as a concentration of other wetlands of apparent importance for waterbirds. These facts, combined with the relative lack of information on the area's avifauna, particularly with regard to the current status of globally threatened species recorded there historically, led BirdLife International and the Biodiversity and Nature Conservation Association (BANCA), a national NGO, to conduct a series of four avifaunal surveys there between 2003 and 2005. The principal objective of these surveys was to collect data on the current status and distribution of bird species, particularly globally threatened, restricted-range and congregatory species, in the lowlands of Kachin State, in order to enable definition of Important Bird Areas (IBAs): sites of international importance for bird conservation. Particular attention was paid to assessing the current status of Pink-headed Duck *Rhodonessa caryophyllacea*, a Critically Endangered species, which was historically recorded in Kachin State (BLYTH, 1875; HARINGTON, 1909; SMYTHIES, 1986) but for which there have been no records in Myanmar since 1910 or anywhere in its range since 1948–1949 (BIRDLIFE INTERNATIONAL, 2001); it is possible that the species is globally extinct (q.v. TORDOFF *ET AL.*, 2008).

This paper presents the results of the four surveys undertaken by BirdLife and BANCA. Notable bird records are presented in detail, and the significance of each of the main survey sites for bird conservation is briefly discussed. Bird names, sequence and species limits follow those used by ROBSON (2005). Place names for main towns and rivers follow *The Times Atlas of the World* (THE TIMES, 1998), while place names for villages, minor rivers and wetlands are transcriptions of names used by local people. The ornithological regions of Myanmar (North, South-west, West, Central, East, South and Tenasserim) follow those used by ROBSON (2005), which, in turn, follow (with revisions) those of KING *ET AL.* (1975).

SURVEY SITES AND METHODS

During 2003–2005, BirdLife and BANCA conducted four avifaunal surveys in the lowlands of Kachin State, totalling 66 survey days. The first survey was from 11 to 17 April 2003, the second was from 11 to 26 November 2003, the third was from 28 November to 15 December 2004, and the fourth from 10 October to 3 November 2005. The four surveys covered a number of sites (Figs. 1–4), some of which were visited on multiple occasions and others only once. In addition, *ad hoc* bird records were made en route between survey sites. The main survey sites and the methods used to survey birds at each are described below.

The surveys were concentrated in the winter months, with all but one week of observation falling in the period from October to December. This imbalance in survey coverage had important implications for the inferences that could be drawn on the status of various bird species and communities, especially river channel breeders. During the second 2003 survey and the 2004 survey, most survey days were affected by dense fog, which typically did not lift until mid-morning. During the 2005 survey, which took place earlier in the year, no survey days were affected by fog.

Tanai River

At 21,890 km² (5.4 million acres) in size, the proposed Hukaung Tiger Reserve will become the largest protected area in Myanmar. The tiger reserve is centred on the Hukaung

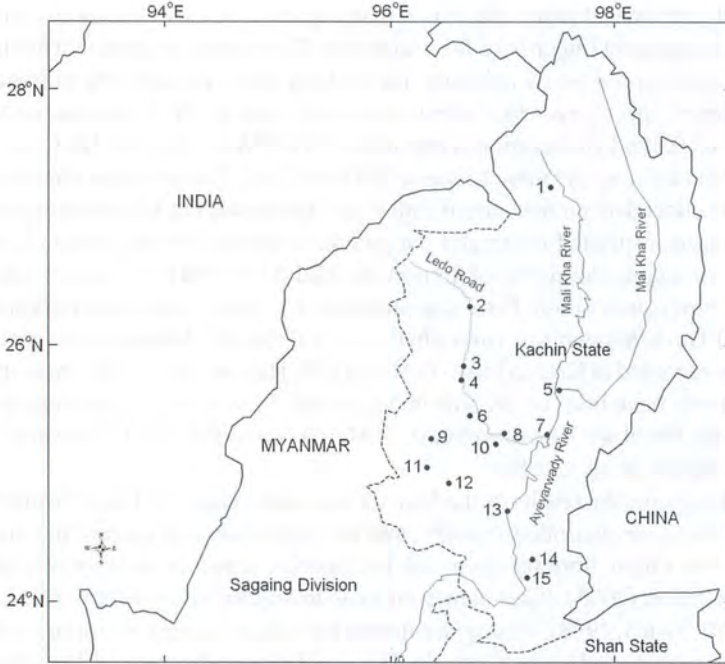


Figure 1. Kachin State, Myanmar, showing selected localities mentioned in the text (see also Figures 2 to 4). 1: Putao; 2: Tanai; 3: Shaduzup; 4: Warazup; 5: confluence of the Mali Kha and Mai Kha Rivers; 6: Kamaing; 7: Myitkyina; 8: Namti; 9: Nawng Kwin; 10: Mogaung; 11: Indawgyi Lake; 12: Hopin; 13: Sinbo; 14: 96 Ins; 15: Bhamo.

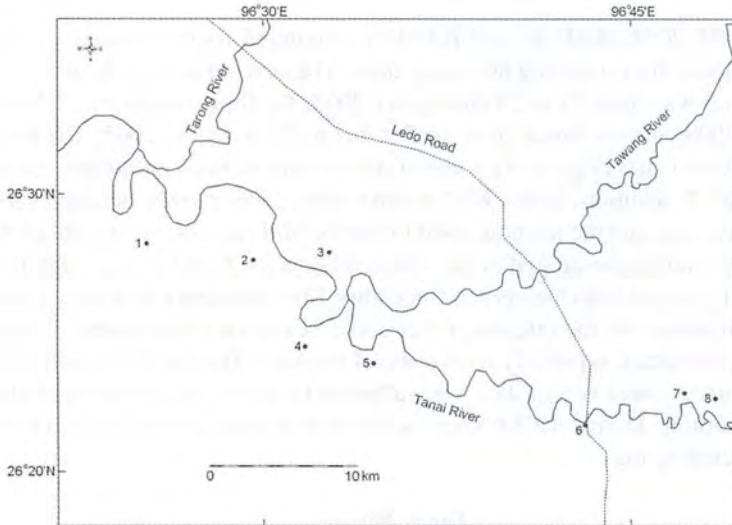


Figure 2. Tanai River, Kachin State, showing localities mentioned in the text. 1: Sagaing Uboq In; 2: Hin Kaw In; 3: Hla Maung In; 4: Se Hnaung In; 5: Khar Pyat In; 6: Tanai town; 7: 'Ox-bow 1'; 8: 'Ox-bow 2'.

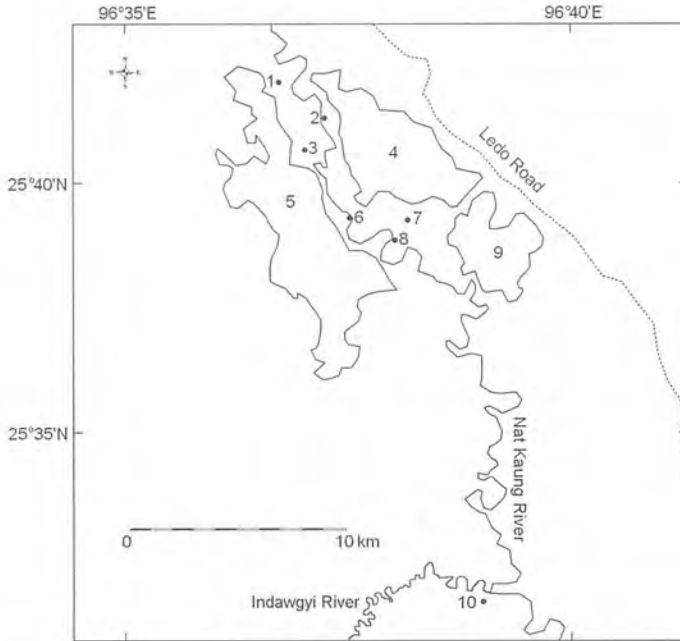


Figure 3. Kamaing area, Kachin State, showing localities mentioned in the text. 1: Nan Yo In; 2: Hkati In; 3: Phon Kyan In; 4: grasslands north-east of the Nat Kaung River; 5: grasslands south-west of the Nat Kaung River; 6: 'vulture restaurant'; 7: Kyaw In; 8: Kalan Kargyi camp; 9: That Bon grasslands; 10: Kamaing town.

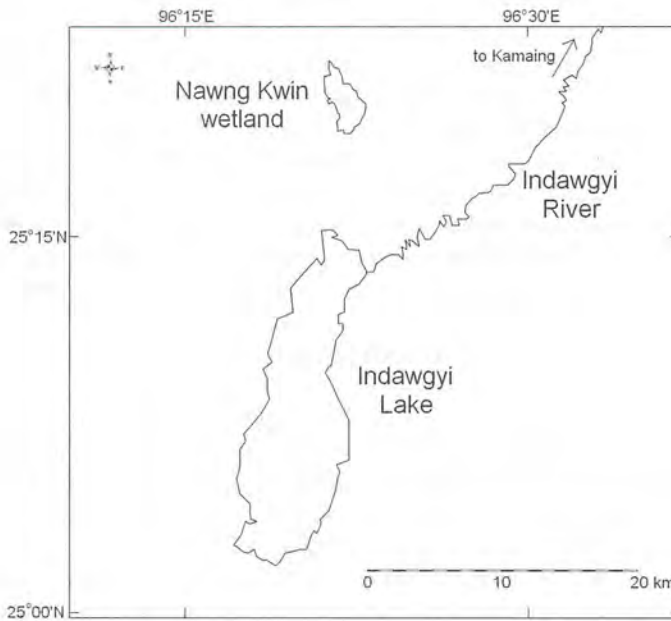


Figure 4. Indawgyi Lake and River and Nawng Kwin wetland, Kachin State.

Valley, a large area of lowlands bordered on three sides by a horseshoe of mountains. The Hukaung Valley lies mainly within the catchment of the Chindwin River. One of the major tributaries of the Chindwin, the Tanai River, meanders through the Hukaung Valley in a westerly direction. Downstream of Tanai town (26° 21' 45"N, 96° 43' 00"E; ca.200 m asl), the Tanai River is joined by the Tawang and Tarong Rivers, two other major tributaries of the Chindwin (Fig. 2). The meandering of these rivers and their tributaries through a wide alluvial floodplain has generated a large number of ox-bow lakes, known locally as 'ins' (a term used to describe various types of non-flowing freshwater wetland). These ox-bows vary in age, size and vegetation, with some supporting large expanses of emergent and/or floating vegetation and others having predominantly open water (Fig. 5). For most of its length, the Tanai River is flanked by gallery forest, which grades into lowland evergreen forest away from the river. The main channel is up to 200 m wide, with large sandbars and significant areas of riparian grassland, particularly at bends. Gravel bars and rocky outcrops are very limited in extent along the Tanai River (although less so along the Tawang and Tarong Rivers).

The Tanai River was surveyed between 12 and 24 November 2003 and again between 8 and 14 December 2004. The surveys covered the main channel, nearby ox-bows and, incidentally, forest areas close to the river. Motorboats were used to survey the main channel, while the ox-bows were accessed by rowing boats or on foot. During the 2003 survey, the total length of the Tanai River covered was c.60 km (37 miles), comprising ca.20 km upstream and ca.40 km downstream of Tanai town. During the 2004 survey, a 70-km stretch downstream of Tanai town was covered, although no more than 55 km was covered on any single day. Ten ox-bows were visited in 2003 and six were visited in 2004, including three that had been visited the previous year. Most of the ox-bows visited were being exposed to disturbance, ranging from occasional visits by individual fishermen to frequent visits by large number of fishermen, permanent fishing camps, commercial extraction of rattan from fringing forest and/or hunting of waterbirds, galliforms, hornbills, turtles and other quarry species. Considering the low density of permanent human settlements in the Hukaung Valley, the main channel of the Tanai River carried surprisingly heavy boat traffic, ferrying personnel and supplies between Tanai town and several large gold mines in the area. Apart from boat travel, levels of disturbance to birds along the river appeared to be moderately low during the two surveys, because mining and fishing activities were concentrated away from the river itself. This should not be taken to imply that levels of disturbance to birds were not higher later in the season, when water levels are lower and, importantly, more birds are breeding. Indeed, during the period December 2005 to January 2006, the exposed sedimentary features in the Tanai River were covered with itinerant people, many of whom possessed dogs (J. W. Duckworth *in litt.* 2007).

Warazup Area

A relatively small area in the south of the proposed Hukaung Tiger Reserve lies outside the catchment of the Chindwin River. This area is drained by the Nat Kaung River, which is up to 100 m wide with numerous sand and gravel bars and sandy banks. The Nat Kaung River flows in a southerly direction, from its origin north of Shaduzup village (25° 5' 00"N, 96° 39' 45"E; ca.275 m (900 ft) asl), to the point where it leaves the tiger reserve at Warazup village (25° 48' 15"N, 96° 38' 30"E; ca.250 m (820 ft) asl). Along this stretch, the river has formed a small number of ox-bows. Gold mining activities, ranging from artisanal gold panning to the use of large dredging machines, were observed at several points along this stretch.

The natural vegetation of the area between Shaduzup and Warazup villages is dominated by lowland evergreen forest, although this has been cleared for cultivation in some places, particularly close to the villages and along the Ledo Road (a World War II era road from Ledo, India, to Kunming, China), which links them.

The area around Warazup was visited between 29 October and 2 November 2005. The surveys concentrated on an area of degraded forest and scrub about 2 km north of Warazup village, the Nat Kaung River upstream and downstream of this village, and two ox-bows. The main channel of the river was surveyed by motorboat, as far as points 8 km upstream and 6 km downstream of Warazup village, while the ox-bows and forest were surveyed on foot. In addition, incidental observations were made from vehicles while travelling along the Ledo Road between Warazup and Shaduzup on 25 November 2003, and 7 and 15 December 2004 (Fig. 1).

Kamaing Area

From Warazup village, the Nat Kaung River meanders in a general south-south-easterly direction to Kamaing town (25° 31' 30"N, 96° 43' 00"E; ca. 175 m (570 ft) asl). Along the lower section (ca. 15 km in length), close to Kamaing town, the natural vegetation along the banks of the river has been largely cleared for cultivation. Along the upper section (ca. 45 km in length), the river is flanked by gallery forest, which contains a significant number of ox-bows. As is the case along the Tanai River, these ox-bows vary greatly with regard to age, size and vegetation. Most ox-bows visited showed signs of fishing activities but only a few appeared to be subject to fishing on a commercial scale, at least during the surveys. The gallery forest along the Nat Kaung varies from a few hundred metres to over 1 km in width, and is backed by large expanses of natural grassland in the floodplain of the river (Fig. 6). These are among the most extensive and little disturbed natural floodplain grasslands remaining in mainland South-East Asia. The most extensive of these grasslands are those to the north-east and south-west of the river, ca. 35 km upstream of Kamaing town, both of which cover over 1,500 ha, plus the That Bon grasslands, which lie a few km closer to Kamaing and cover around 800 ha; Fig. 3). These grasslands appeared to be fairly uniform with respect to vegetation structure and species composition, although the grasslands to the south-west of the river were the most extensive and least disturbed, and showed least evidence of burning.

The grasslands contained a small number of scattered pools, and were drained by deep streams. In drier areas and along the streams, small trees were distributed. In some areas, particularly those to the north-east of the Nat Kaung River, closer to the Ledo Road, the natural grasslands had been converted to rice cultivation. The grasslands lie outside of the proposed Hukaung Tiger Reserve, and are currently not under any form of conservation management.

Kamaing town was visited briefly on 6 and 7 December 2004, to follow-up anecdotal reports of Pink-headed Duck. However, it was not possible to procure a boat to survey upstream, so observations were limited to the river at Kamaing town and anthropogenic habitats between Kamaing town and the Ledo Road. A second, longer, visit was made between 11 and 26 October 2005, during which the Nat Kaung River was surveyed to a point 45 km upstream of Kamaing town. This survey also visited 12 ox-bows, three large grassland areas and, incidentally, several areas of forest close to the river. The main channel of the river was surveyed by motorboat, the ox-bows were surveyed by rowing boat or on foot, and the grasslands were

surveyed from elephant back. In addition, on 25 and 26 October 2005, an attempt was made to establish minimum estimates for each of the vulture species at the site, by establishing a 'vulture restaurant' on a sandbar on the Nat Kaung River (Fig. 3). The 'vulture restaurant' comprised a domestic buffalo carcass placed 20 m from a hide.

Mogaung Chaung

At Kamaing town, the Nat Kaung River is joined by the Indawgyi River, forming the Mogaung Chaung (Mogaung River). The Mogaung Chaung meanders south then east then south again, until it joins the Ayeyarwady River upstream of Sinbo town. During the surveys, only the upper section of the Mogaung Chaung was surveyed. This section begins at Kamaing town, and meanders in a general southerly direction for 43 km, before passing around the southern end of a ridge of low hills, and then meandering in a general easterly direction for a further 23 km, to Mogaung town (25° 18' 30"N, 96° 56' 30"E; ca. 150 m asl). There are a significant number of ox-bows along this section of the Mogaung Chaung, some of which are surrounded by forest. However, most of these ox-bows are bordered by cultivation, particularly in the lower section of the river, where cultivation extends up to riverbank in many places. Moreover, the gallery forest along the Mogaung Chaung is significantly reduced in extent and condition, compared with that along the Nat Kaung River. The Mogaung Chaung and its associated habitats are currently not under any form of conservation management.

The Mogaung Chaung was surveyed on 11 and 26–28 October 2005. These surveys covered the main channel, plus two ox-bows on the eastern bank, 13 km downstream of Kamaing town. The main channel was surveyed by motorboat, while the ox-bows were surveyed on foot. Additional bird observations were made 2 km west of the Mogaung Chaung, along the road between Hopin and Kamaing towns, on 6 December 2004.

Indawgyi Wildlife Sanctuary

Indawgyi Wildlife Sanctuary, which was established in 1999, covers an area of over 77,000 ha (190,000 acres), centred on Indawgyi Lake (25° 09' 00"N, 96° 20' 00"E; ca. 180 m asl), which, at ca. 12,000 ha in area, is one of the largest natural lakes in Myanmar. The lake is surrounded by a floodplain, up to 7 km wide, backed by low mountains, which reach over 1,000 m (3,280 ft) asl. The lake supports relatively little emergent vegetation and most of its surface is open water. There are, however, extensive marshy areas, particularly along the northern shore of the lake. Along the western, southern and eastern shores, cultivation extends up to the margin of the lake in most places. The lake is drained to the north-east by the Indawgyi River, which eventually joins the Mogaung Chaung at Kamaing town (Figs. 3–4). The Indawgyi River meanders through a marshy plain backed by cultivation, before entering a wide grassland, ca. 4,000 ha in area, about 12 km due north-east of the lake. Due to permission difficulties, this grassland was not visited during the surveys.

Indawgyi Lake and the first 17 km of the Indawgyi River were surveyed by motorboat on 30 November and 5 December 2004. In addition, incidental records were made from the lake shore, and in forest and anthropogenic habitats, while travelling by car through Indawgyi Wildlife Sanctuary on 29 November and 5 December 2004.

Nawng Kwin

Nawng Kwin (25° 20' 30"N, 96° 22' 00"E; ca. 200 m (660 ft) asl) comprises a medium-sized wetland, ca. 1,500 ha in area, located 7 km to the north of Indawgyi Lake (Fig. 4). Nawng Kwin is drained to the south-west by a small stream, which flows into Indawgyi Lake. The wetland is dominated by swamp forest and seasonally inundated grassland, with a few scattered, open pools, none of which is greater than 200 m in diameter. Judging from the topography of the area, the original extent of the wetland may have been as great as 4,000 ha. However, the margins of the wetland have been converted to rice agriculture, leaving natural vegetation restricted to lower-lying areas in the centre (Fig. 7), which remain inundated for longer periods during the wet season. Nawng Kwin lies outside the boundaries of Indawgyi Wildlife Sanctuary, and is currently not under any form of conservation management.

Nawng Kwin was visited between 1 and 5 December 2005. On 1–3 December, bird observations were made from a vantage point on a low rise overlooking the wetland, while some observers entered the wetland on foot or by rowing boat. On 4 December, the main grassland area was surveyed from elephant back.

Ayeyarwady River between Myitkyina and Sinbo

The 115 km long stretch of the Ayeyarwady River between Myitkyina (25° 23' 00"N, 97° 24' 00"E; 145 m asl) and Sinbo (24 46'45"N, 97°02'45"E; 120 m asl) towns (Fig. 4) is 700–800 m wide, and features extensive sand and gravel bars, high sandy banks and small rocky outcrops. This stretch of the Ayeyarwady River is currently not under any form of conservation management.

The Ayeyarwady River between Myitkyina and Sinbo was surveyed by motorboat on 11 April 2003. Because the channel of the Ayeyarwady River is structurally complex and because the survey took place close to the time of maximum channel bed exposure, covering such a long distance in a single day only permitted a preliminary assessment of the species present and their rough abundance; a number of priority species may have been present but overlooked. Additional bird observations were made from the bank of the Ayeyarwady River at Myitkyina town on 25 and 26 November 2003, 28 November 2004, and 2 and 3 November 2005.

Ayeyarwady River and Ox-bow Lakes near Bhamo

The 70 km long stretch between Sinbo and Bhamo (24°15'15"N, 97°13'30"E; 110 m asl) is faster flowing than the stretch between Myitkyina and Sinbo, particularly in the central section, about 20 km in length, where the river narrows into a gorge, 200–300 m wide, with steep sides of rock, sand and gravel, and a few sand and gravel bars. Below the gorge, the river broadens out into a very wide (up to 3 km), slow flowing river, with extensive sand bars. North and south of Bhamo town, the Ayeyarwady River is braided into a number of channels, and there are extensive marshy areas, including a number of ox-bows, some of which contain swamp forest. The stretch of the Ayeyarwady River near Bhamo and its associated habitats are currently not under any form of conservation management.

The gorge between Sinbo and Bhamo was surveyed by motorboat on 11 and 17 April 2003. The channel of the Ayeyarwady River from the southern end of the gorge downstream to Bhamo, plus associated ox-bows, were surveyed by motorboat and on foot on 12, 13 and 17 April 2003.

96 Ins

The area called 96 Ins ('Koe She Chauk In' in Burmese) comprises a complex of small wetlands along the Moe Le River, a minor tributary of the Ayeyarwady River, which meanders in a general south-westerly direction, from its origin on the international border with China to the Ayeyarwady north of Bhamo. Along its lower section, the Moe Le River has formed around 100 ox-bows, distributed across an area 13 km long and up to 3 km wide (24°24' 00"N, 97°15' 30"E; ca. 110 m asl). Much of this area has been given over to rice fields, many of which appear to have been established in the last decade, and cultivation now extends up to or around many of the ox-bows. Although some ox-bows are still surrounded by forest, all those visited during the survey showed signs of disturbance from fishing and other human activities. The 96 Ins area is currently not under any form of conservation management.

The site was surveyed between 14 and 16 April 2003. The main channel of the Moe Le River was surveyed by motorboat, while selected ox-bows were surveyed on foot.

RESULTS

The bird records made during the BirdLife/BANCA surveys in 2003–2005 are summarised in the Appendix. At all sites visited, observational effort was concentrated on wetland- and grassland-associated bird species, plus raptors; the avifaunas of forest or anthropogenic habitats were not surveyed in a systematic manner. The following discussion is focused most heavily on these species, because they include most of the highest conservation priorities in South-East Asia, due to the widespread declines they have undergone and the continued pressures their populations and habitats are under.

Tanai River

The main channel of the Tanai River supported a riverine bird community that was as close to its assumed original state, in terms of species richness and abundance, as that of any wide, lowland river in mainland South-East Asia. The river supported apparently healthy populations of several species characteristic of river-channel habitats, which have declined greatly along most wide, lowland rivers in mainland South-East Asia due to a combination of disturbance, hunting, habitat loss, pollution and altered flow regimes (THEWLIS ET AL., 1998; BIRDLIFE INTERNATIONAL, 2003). These species included Green Peafowl *Pavo muticus* (maximum daily count (daily max): 15), Pied Kingfisher *Ceryle rudis* (daily max: 8), Lesser Fish Eagle *Ichthyophaga humilis* (daily max: 4), Darter *Anhinga melanogaster* (daily max: 50), Great Cormorant *Phalacrocorax carbo* (daily max: 103) and Plain Martin *Riparia paludicola* (daily max: 460). Along the section of river surveyed, counts of sandbar-nesting birds were higher than along many similar rivers in mainland South-East Asia, although lower than along certain stretches of the Mekong River and its tributaries in Cambodia and Laos, with maximum daily counts of 6 Great Thick-knees *Esacus recurvirostris*, 7 River Lapwings *Vanellus duvaucelii* and 14 Small Pratincoles *Glareola lactea*. It should be noted that the surveys may have been too early in the dry season to pick up territorial birds of some river channel species, and that some species may have been under-recorded because full days were not spent solely surveying the channel and observations were generally restricted to birds viewable from the main channel.



Figure 5. View of Se Hnaung In, an ox-bow lake along the Tanai River. (Photograph by Jonathan C. Eames).



Figure 6. View of the grasslands south-west of the Nat Kaung River in the Kamaing area. (Photograph by Tim Appleton).



Figure 7. View of Nawnng Kwin wetland, showing conversion of the margins to agriculture (Photograph by Andrew W. Tordoff).



Figure 8. Third/fourth year sub-adult White-tailed Eagle *Haliaeetus albicilla* perched along the main channel of the Tanai River, 14 December 2004. (Photograph by Andrew W. Tordoff).



Figure 9. Adult White-rumped Vultures *Gyps bengalensis* at the 'vulture restaurant' on the Nat Kaung River, 26 October 2005. (Photograph by Jonathan C. Eames).



Figure 10. Adult Slender-billed Vulture *Gyps tenuirostris* in the grasslands south-west of the Nat Kaung River, 20 October 2005. (Photograph by Jonathan C. Eames).



Figure 11. Adult White-bellied Heron *Ardea insignis* feeding in the shallows along the Nat Kaung River, 1 November 2005. (Photograph by Jonathan C. Eames).



Figure 12. Adult Chestnut-crowned Bush Warbler *Cettia major* trapped in grassland along the Indawgyi River, 10 December 2006. (Photograph by Jonathan C. Eames).

Four species of stork were recorded along the Tanai River and/or at associated oxbows. Black-necked Stork *Ephippiorhynchus asiaticus* (daily max: 1) was only encountered in the river channel, Lesser Adjutant *Leptoptilos javanicus* (daily max: 3) was seen both along the river channel and at ox-bows, while Black Stork *Ciconia nigra* (daily max: 3) and Woolly-necked Stork *C. episcopus* (daily max: 2) were mainly seen soaring over ox-bows.

As well as being important for resident birds, the main channel of the Tanai River also supported small numbers of wintering waterfowl. The species recorded most frequently during the surveys were Ruddy Shelduck *Tadorna ferruginea* (daily max: 58 in December 2004) and Common Merganser *Mergus merganser* (daily max: 6 in November 2003). It appears that the timing of the surveys was prior to the peak wintering period for these species, because VAN DER VEN (2001) counted 426 Ruddy Shelducks and 68 Common Mergansers in the Tanai area in January 2001. Other wintering waterfowl species, such as Mallard *Anas platyrhynchos* (daily max: 25) and Common Teal *A. crecca* (daily max: 30), were observed in ox-bows along the Tanai River, with very few individuals recorded in the main channel. This may have been because these species feed on the main channel during the night but are flushed off the river by passing boats in the early morning (J. W. Duckworth *in litt.*, 2007).

The ox-bows along the Tanai River appeared to be very dynamic, with regard to physical form and vegetation, and several had changed visibly between the 2003 and 2004 surveys. Some ox-bows (presumably formed recently) were tree-lined, with relatively deep, open water. Others (presumably formed earlier) had experienced greater siltation, and supported significant areas of emergent (typically reeds) and floating vegetation. The deeper, more open ox-bows appeared to be more suitable for White-winged Duck *Cairina scutulata*, which was recorded at four separate ox-bows. The shallower, more vegetated ox-bows tended to support a greater diversity of wintering waterfowl, including Greylag Goose *Anser anser* (maximum count at a single ox-bow: 26), Gadwall *Anas strepera* (maximum count at a single ox-bow: 25), Spot-billed Duck *A. poecilorhyncha* (maximum count at a single ox-bow: 14), Red-crested Pochard *Rhodonessa rufina* (maximum count at a single ox-bow: 1), Ferruginous Pochard *Aythya nyroca* (maximum count at a single ox-bow: 30), and the only Common Goldeneye *Bucephala clangula* recorded on any of the surveys. The ox-bows were also important for Masked Finfoot *Heliopais personata*, which was recorded at three of them. During the 2003 survey, anecdotal reports were received of Pink-headed Duck occurring at ox-bow lakes along the Tanai River; the surveys were unable to confirm these reports, however (TORDOFF *ET AL.*, 2008).

The riparian grasslands and gallery forest along the Tanai River and around nearby ox-bows supported a number of wintering passerines, most notably Rusty-bellied Shortwing *Brachypteryx hyperythra*, a restricted-range species, which breeds in the Eastern Himalayas Endemic Bird Area (EBA). These species included many that are characteristic of montane habitats, for example Long-tailed Minivet *Pericrocotus ethologus*, Lesser Shortwing *Brachypteryx leucophrys*, Snowy-browed Flycatcher *Ficedula hyperythra*, Small Niltava *Niltava macgrigoriae*, White-tailed Robin *Myiomela leucura* and Winter Wren *Troglodytes troglodytes*. Their presence at low elevations along the Tanai River is not unexpected, given that they are all known to make seasonal altitudinal movements, breeding in montane habitats and wintering at lower elevations (RASMUSSEN & ANDERTON; 2005; SPIERENBURG, 2005). Resident grassland specialists recorded along the Tanai River included White-tailed Stonechat *Saxicola leucura*, Jerdon's Bushchat *S. jerdoni*, Striated Grassbird *Megalurus palustris* and Yellow-bellied Prinia *Prinia flaviventris*.

Warazup Area

The riverine bird community of the section of the Nat Kaung River in the Warazup area was similar in composition to that along the Tanai River. Higher counts of River Lapwings were made along the Nat Kaung River (maximum count of 30 along a 6-km long stretch) than along the Tanai River (maximum count of 7 along a 55-km long stretch) but whether this reflects a true difference in linear densities between the two rivers is unclear. Maximum daily counts of selected species characteristic of river channel habitats were as follows: Green Peafowl, 8; Pied Kingfisher, 10; Lesser Fish Eagle, 1; Grey-headed Fish Eagle *Ichthyophaga ichthyaetus*, 1; Darter, 8; Great Cormorant, 47; and Plain Martin, 100. In addition, a single White-bellied Heron *Ardea insignis* was recorded along the main channel on two days in October–November 2005, the only record of this globally threatened species made during the surveys.

Other species of conservation concern recorded in the Warazup area included White-winged Duck, which was observed at an ox-bow, Black-necked Stork, which was observed along the Nat Kaung River, and Lesser Adjutant, which was observed in flight between Shaduzup and Warazup villages. Significant numbers of Black Stork were recorded passing through the Warazup area during October 2005, including 32 birds over Warazup village on 31 October.

Areas of degraded forest and scrub to the north of Warazup village supported several species of laughingthrush, most notably Chestnut-backed Laughingthrush *Garrulax nuchalis*, a restricted-range species, known only from the Northern Myanmar Lowlands Secondary Area (SA) in Myanmar and north-eastern India. This species is also regular and probably common in similar habitats along the Tanai River (J. W. Duckworth *in litt.*, 2007).

Kamaing Area

The composition of the riverine bird community along the Nat Kaung River in the Kamaing area was similar to that further upstream in the Warazup area and along the Tanai River. However, while Green Peafowl was recorded in the Kamaing area, there were no records from along the main river channel, in contrast to the other two sites. The reason for the lack of records of Green Peafowl along the main channel, despite 15 days' survey effort, is unclear. Observed levels of human disturbance along the river were, if anything, lower than those at the other two sites. However, the timing of the survey (October) may have been too early to observe the peak period of human activity along the river channel, which would be expected to coincide with low water levels, later in the dry season.

Moderate numbers of Black Stork (daily max: 14) and Woolly-necked Stork (daily max: 6) were seen in flight over ox-bows and along the Nat Kaung River. The former species appeared to be on passage, while the latter species appeared to be utilising the habitats in the Kamaing area; birds were seen perched along the main channel of the river.

Except for small numbers of Lesser Whistling-duck *Dendrocygna javanica*, Common Moorhen *Gallinula chloropus* and Little Cormorant *Phalacrocorax niger*, the ox-bows near the Nat Kaung River supported very few waterbirds. In contrast with those near the Tanai River, wintering waterfowl were absent from the ox-bows near the Nat Kaung River (although a few Common Teal were seen in pools in the grasslands south-west of the river and a skein of 8 Greylag Geese was seen flying over the river). This difference was probably due to the timing of the surveys: the two surveys along the Tanai River were in November and December, while the one in the Kamaing area was in October.

The ox-bows along the Nat Kaung did support the globally threatened Masked Finfoot, a pair of which was seen during the 2005 survey. Another globally threatened species, White-winged Duck, was reported by local people to occur at ox-bows along the Nat Kaung River. Although this was not confirmed by the surveys, the species was recorded elsewhere in the Kamaing area. Anecdotal reports of Pink-headed Duck occurring at ox-bow lakes in the Kamaing area were received during the 2004 and 2005 surveys, although they could not be confirmed; and a possible sighting was made on 16 October 2005 (TORDOFF *ET AL.*, 2008).

Some of the most interesting and unique habitats, from an ornithological perspective, visited during the surveys were the grasslands in the Kamaing area. In the experience of the authors, these are among the most extensive and little disturbed natural floodplain grasslands remaining in mainland South-East Asia. During the time of the survey, large parts of these grasslands were wet underfoot or inundated to the depth of a few cm. The avifauna of these areas included Palearctic migrant shorebirds, such as Green Sandpiper *Tringa ochropus* (daily max: 5) and Wood Sandpiper *T. glareola* (daily max: 6), as well as a number of other waterbirds, including Greater Painted-snipe *Rostratula benghalensis* (daily max: 3); Yellow Bittern *Ixobrychus sinensis* (daily max: 15), Cinnamon Bittern *I. cinnamomeus* (daily max: 6) and Black Bittern *Dupetor flavicollis* (daily max: 6), the seasonal status of which was unclear. These counts are likely to be significant underestimates of the numbers of waterbirds occupying the grasslands away from pools, because they generally only include birds flushed by the survey team's elephants.

The grasslands also supported several resident passerines, including Jerdon's Bushchat (daily max: 23), Striated Grassbird (daily max: 50), Red Avadavat *Amandava amandava* (daily max: 20) and Black-headed Munia *Lonchura malacca* (daily max: 100), as well as small numbers of migratory passerines, such as Siberian Rubythroat *Luscinia calliope* (daily max: 3), White-tailed Rubythroat *L. pectoralis* (daily max: two), Bluethroat *L. svecica* (daily max: 10) and White-tailed Robin (daily max: 2). Although the counts of migratory passerines were relatively low, it should be noted that only a small proportion of the grasslands was covered on any given day, and that many winter visitors may not have arrived at the time of the survey (October).

The grasslands included a number of small pools, some of which were reportedly bomb craters dating from World War II. Small numbers of waterbirds were found on some of these pools, including Lesser Whistling-duck (daily max: 80), Cotton Pygmy-goose *Nettapus coromandelianus* (daily max: 14), Common Teal (daily max: 17), Purple Swamphen *Porphyrio porphyrio* (daily max: 5) and Little Cormorant (daily max: 34). Egrets, herons and storks were seen in flight over the grasslands, perched on scattered trees and on the ground in cleared areas. Great Egret *Casmerodius albus* (daily max: 200) was the most common species, while Little Egret *Egretta garzetta* (daily max: 25), Grey Heron *Ardea cinerea* (daily max: 4), Purple Heron *A. purpurea* (daily max: 11), Intermediate Egret *Mesophoyx intermedia* (daily max: 50), Black-necked Stork (daily max: 3) and Lesser Adjutant (daily max: 3) were also present.

One of the most notable features of the avifauna of the Kamaing area, from a conservation perspective, was the presence of globally significant numbers of White-rumped Vulture *Gyps bengalensis* and Slender-billed Vulture *G. tenuirostris*, 2 Critically Endangered species. During the 2005 survey, repeated sightings of both species were made along the Nat Kaung River and in nearby grasslands, with maximum daily counts of 62 White-rumped Vultures and 12 Slender-billed Vultures. The former species was also recorded at Kamaing town during the 2004 survey and both species were recorded in the same general area in January

2006 (J. W. Duckworth *in litt.*, 2007), suggesting that they may occur regularly at the site. Limited availability of food is one concern regarding the vulture populations that frequent the Kamaing area. Several local people reported significant declines in wild mammal populations at the site. For example, one informant reported that there had, at one time, been 400 Gaur *Bos gaurus* and over 50 Asian Elephant *Elephas maximus* in the area but that the Gaur population had been reduced to around 10 individuals, and few or no wild elephants now remained. Another indication that food was in short supply at the time of the survey came on 18 October 2005, when a flock of 62 White-rumped Vultures descended to pick over the remains of the survey team's lunch.

Mogaung Chaung

The main channel of the Mogaung Chaung supported a similar riverine bird community to those along the Tanai and Nat Kaung Rivers, with significant numbers of Pied Kingfishers (daily max: 29), Great Thick-knees (daily max: 6), River Lapwings (daily max: 37), Wire-tailed Swallows *Hirundo smithii* (daily max: 12) and Plain Martins (daily max: 750). A pair of Grey-headed Fish Eagles was seen copulating along the river, providing evidence of breeding. Darters were noticeably less common than along the Tanai and Nat Kaung Rivers (daily max: 2) and there were no records of Green Peafowl. Although fewer days were spent surveying along the Mogaung Chaung than along the other rivers, higher levels of disturbance may be the most likely explanation for these differences.

Only two ox-bows were surveyed near the Mogaung Chaung: Man Khaing and Man Tin Ins. The latter appeared to be very suitable for waterfowl, with pools of open water amid floating vegetation and grasses. However, only 5 Cotton Pygmy-geese were seen.

Indawgyi Wildlife Sanctuary

Of the sites visited during the surveys, Indawgyi Wildlife Sanctuary supported by far the greatest numbers of waterfowl. A total of 17 waterfowl species were recorded on the lake and along the Indawgyi River, of which the most abundant were Lesser Whistling-duck (daily max: 4,000), Tufted Duck *Aythya fuligula* (daily max: 2,000), Ferruginous Pochard (daily max: 380), Gadwall (daily max: 220), Ruddy Shelduck (daily max: 180), Common Teal (daily max: 125), Northern Pintail *Anas acuta* (daily max: 100) and Greylag Goose (daily max: 41). The site also supported large congregations of Purple Swampphen (daily max: 1,400), Common Coot *Fulica atra* (daily max: 1,000), Little Grebe *Tachybaptus ruficollis* (daily max: 100), Great Crested Grebe *Podiceps cristatus* (daily max: 50) and Little Cormorant (daily max: 250). Significant numbers of herons and egrets were also recorded on the lake and along the river, including maximum daily counts of 30 Purple Herons, 350 Intermediate Egrets, 500 Cattle Egrets *Bubulcus ibis* and 250 pond herons *Ardeola* sp. Furthermore, significant counts of Brown-headed Gull *Larus brunnicephalus* (daily max: 400) and Black-headed Gull *L. ridibundus* (daily max: 50) were made on the lake.

Shallow areas and patches of mud along the Indawgyi River supported moderate numbers of migrant shorebirds, including Wood Sandpiper (daily max: 50), Temminck's Stint *Calidris temminckii* (daily max: 50), Black-winged Stilt *Himantopus himantopus* (daily max: 20) and Grey-headed Lapwing *Vanellus cinereus* (daily max: 28), plus a single Glossy Ibis *Plegadis falcinellus*. Although the survey team was unable to proceed along the river as far as the large

grassland, a number of species of conservation concern were observed in flight over the section of the river that was visited, including Greater Spotted Eagle *Aquila clanga*, Lesser Adjutant and Spot-billed Pelican *Pelecanus philippensis*.

Another notable observation made at Indawgyi was a flock of vultures feeding at a domestic buffalo carcass in farmland north-east of the lake. This flock comprised 30 White-rumped Vultures, one Slender-billed Vulture and 11 Himalayan Griffons *Gyps himalayensis*; the former two species being Critically Endangered.

Nawng Kwin

At the time of the 2004 survey, the water level at Nawng Kwin was quite low (no more than 50 cm deep in the seasonally inundated grasslands) and open water was restricted to deep pools and a small stream. These pools and stream supported moderate numbers of waterfowl, including Ruddy Shelduck (daily max: 30), Gadwall (daily max: 25), Mallard (daily max: 42) and Spot-billed Duck (daily max: 62). Anecdotal reports of the presence of Pink-headed Duck at Nawng Kwin were received from several informants, and a possible sighting of this species was made on 1 December 2004 (TORDOFF *ET AL.*, 2008).

Several globally threatened species were recorded at Nawng Kwin in small numbers. These included Sarus Crane *Grus antigone*, White-rumped Vulture, Greater Spotted Eagle and Lesser Adjutant. In addition, a minimum count of 300 Common Cranes *Grus grus* was made at the site, representing 4% of the estimated South China population of this species (WETLANDS INTERNATIONAL, 2002).

The grassland at Nawng Kwin supported several species of passerine, including a number of grassland specialists, such as White-tailed Stonechat (daily max: 2), Jerdon's Bushchat (daily max: 2), Yellow-bellied Prinia (daily max: 10), Striated Grassbird (daily max: 10), Streaked Weaver *Ploceus manyar* (daily max: 100), Red Avadavat (daily max: 10) and Black-headed Munia (daily max: 100). Also of note, the grassland supported a large roost of Red-breasted Parakeets *Psittacula alexandri*, with up to 10,000 birds coming to roost at dusk and departing at dawn. People were catching parakeets with mist nets as they came in to roost; the reason for this was not clear.

Ayeyarwady River between Myitkyina and Sinbo

Although the stretch of the Ayeyarwady River between Myitkyina and Sinbo was only surveyed for one day, it produced the largest counts of sandbar-nesting birds made during the surveys, including 376 Small Pratincoles, 39 River Terns *Sterna aurantia* and 74 Little Terns *S. albifrons*. Although no Great Thick-knees and only 2 River Lapwings were recorded, this may have been due to limitations of the survey (i.e. only a single day, with insufficient time available to check braided sections and landward edges of sandbars).

The stretch of the Ayeyarwady River between Myitkyina and Sinbo also supported several wintering waterfowl species, the most numerous of which were Ruddy Shelduck (107 birds), Spot-billed Duck (81 birds) and Gadwall (15 birds). In contrast to the Tanai and Nat Kaung Rivers and the Mogaung Chaung, no fish eagles were recorded along this stretch of the Ayeyarwady, perhaps reflecting the much more restricted distribution of gallery forest. A significant count of Darters (40) was made, however.

Ayeyarwady River and Ox-bow Lakes Near Bhamo

The avifauna of the main channel of the Ayeyarwady River near Bhamo was similar in composition to that between Myitkyina and Sinbo, and included species such as Ruddy Shelduck, Pied Kingfisher, Small Pratincole and River Tern. However, because only relatively short sections of river were surveyed near Bhamo, counts of these species were much lower. Ox-bows near the Ayeyarwady River visited during the survey supported several species of resident and migratory waterfowl, including Lesser Whistling-duck (daily max: 207) and Spot-billed Duck (daily max: 44).

The stretch of the Ayeyarwady River between Sinbo and Bhamo presented few bird records of note. This is unsurprising, given that the river passes through a gorge at this point and features little river channel habitat.

96 Ins

The ox-bows in the 96 Ins area supported several species of resident and wintering waterfowl, the most abundant of which were Lesser Whistling-duck (daily max: 200), Ruddy Shelduck (daily max: 20) and Spot-billed Duck (daily max: at least 100). Areas of grassland around the ox-bows and along the Moe Le River supported a number of grassland-specialist passerines, including White-tailed Stonechat, Jerdon's Bushchat, Bright-headed Cisticola *Cisticola exilis*, Yellow-bellied Prinia, Striated Grassbird, Streaked Weaver, Red Avadavat and Black-headed Munia. These grasslands also supported 2 migrant passerines recorded nowhere else during the surveys: Firethroat *Luscinia pectardens*; and Rusty-rumped Warbler *Locustella certhiola*. Another notable record made at 96 Ins was that of 3 White-rumped Vultures, which were seen together with 3 unidentified *Gyps* vultures.

Seasonality

Significant seasonal differences in the avifauna of the lowlands of Kachin State were noticed between the survey in October 2005 and those in November 2003 and November–December 2004. For example, only 4 species of wintering waterfowl (Greylag Goose, Mallard, Spot-billed Duck and Common Teal) were recorded in the Kamaing area and along the Mogaung Chaung during 11–28 October 2005, compared with 15 species recorded along the Tanai River and at nearby ox-bows during 12–24 November 2003, and 12 species recorded there during 8–14 December 2004. Regarding wintering large waterbirds, Common Crane, which was commonly recorded during December 2004, with a maximum daily count of 300 birds, was much less common during October 2005, with a maximum daily count of 7 birds, and none recorded earlier than 26 October. On the other hand, Black Stork was recorded during October, November and December, with a maximum daily count of 32 birds on 1 November 2005.

Palaeartic migrant raptors were present from October onwards, and, while there were some differences in numbers among months, many species were recorded too infrequently for these to be significant. Palaeartic passerine migrants, such as *Phylloscopus* warblers, were present from October onwards, as were some species of presumed altitudinal migrant, such as White-tailed Robin, although other species were only recorded from mid-November onwards, for instance Snowy-browed Flycatcher, Small Niltava, Mountain Tailorbird *Orthotomus cuculatus* and Pygmy Wren Babbler *Pnoepyga pusilla*.

Selected Species Accounts

Accounts are given for all globally threatened, Near Threatened and restricted-range species recorded during the surveys, as well as for all species for which a congregation of over 1% of a flyway population was recorded, and for all species whose records represent extensions or clarifications of the ranges and/or elevations given in ROBSON (2005). Where a notable record is by a single observer, the observer's initials are given. Species accounts are split by location: **Tanai River** includes records from the Tanai River within the proposed Hukaung Tiger Reserve, including along the main channel, at nearby ox-bows and in forest close to the river; **Warazup** includes records from the south-east of the proposed Hukaung Tiger Reserve, between Warazup and Shadzup villages; **Kamaing** includes records from the Nat Kaung River between Kamaing town and the southern boundary of the proposed Hukaung Tiger Reserve, including along the main channel, at nearby ox-bows and from areas of grassland, forest and cultivation up to 4 km from the river; **Mogaung Chaung** includes records from the Mogaung Chaung between Kamaing and Mogaung towns, including along the channel, at nearby ox-bows and from areas of forest and cultivation up to 2 km from the river; **Indawgyi** includes records from Indawgyi Wildlife Sanctuary, including from the lake and shore, surrounding hills, and the southern section of the Indawgyi River; **Nawng Kwin** includes records from Nawng Kwin wetland and the immediate surrounding area; **Ayeyarwady River** includes records from the channel of the Ayeyarwady River between Myitkyina and Sinbo; **Bhamo** includes records from the channel of the Ayeyarwady River plus associated ox-bows near Bhamo town; **96 Ins** includes records from a complex of small wetlands along the Moe Le River, north-east of Bhamo town; and **Other** includes records from elsewhere in the lowlands of Kachin State.

Green Peafowl *Pavo muticus*

Globally threatened – Vulnerable

Tanai River: Commonly recorded on the riverbanks and sandbars along the Tanai River in 2003 and 2004, with 1 on 13 November, 1 heard on 15 November, 8 on 16 November, 9 on 17 November, 2 on 20 November and 7 on 24 November 2003, and 3 on 8 December, 15 on 9 December, 8 on 10 December, 3 on 11 December, 9 on 12 December, 3 on 13 December and 1 on 14 December 2004. **Warazup:** Seen on the banks of the Nat Kaung River on three days in 2005, with 2 birds on 30 October; 6 on 31 October and 8 on 1 November. **Kamaing:** 3 near Phon Kyan In on 14 October, heard on 19 October and 2 in the That Bon grasslands on 24 October 2005.

Despite the fact that levels of human activity, including fishing, artisanal gold mining and boat traffic, along the Tanai River and the Nat Kaung River near Warazup village were moderate to high during the surveys, the birds observed along these rivers were not noticeably shy, and were often observed in the open in the middle of the day. This would suggest that the species is not being subjected to high levels of hunting pressure in these areas. Although the surveys covered only a small proportion of the suitable habitat for this species that exists within the proposed Hukaung Tiger Reserve, the results indicate that this protected area is potentially of major global importance for its conservation.

It is a matter of some concern that Green Peafowl was only recorded at one site in the lowlands of Kachin State outside the proposed Hukaung Tiger Reserve: Kamaing. While it is difficult to precisely establish the species's historical status in the lowlands of Kachin State,

in the country as a whole it was plentiful in suitable localities in the latter half of the 19th century (OATES, 1883), and HARRINGTON (1909, 1909–1910) encountered it frequently in the lowlands of Bhamo district at the beginning of the 20th century. There are some indications, therefore, that the species may have undergone significant declines across large areas in the lowlands of Kachin State, mirroring the drastic declines undergone by the species in most other parts of its previous range (BIRDLIFE INTERNATIONAL, 2001).

White-winged Duck *Cairina scutulata*

Globally threatened – Endangered

Tanai River: A pair at ‘Ox-bow 2’ on 14 November and again on 15 November, 4 birds at Hin Kaw In on 18 November, a pair at Hla Maung In on 20 November, and a pair at Se Hnaung In on 22 November 2003. 1 at Hin Kaw In on 11 December and 3 at the same place on 14 December 2004. **Warazup:** 3 birds roosting and preening in a tree by a small pool near Warazup village on the evening of 1 November 2005, and 2 at the same place on the following morning. **Kamaing:** 1 seen flying over the grasslands to the south-west of the Nat Kaung River on 18 October, 1 heard coming in to roost at a pool near Za Baw village on 20 October and 1 seen at the same place on 21 October 2005. A pair reported to be regularly seen on Nan Yo In by Mr Kway Lwin, a local fisherman, on 15 October 2005.

Assuming that birds did not move between ox-bows during each survey, a minimum of ten birds were recorded on ox-bows along the Tanai River in 2003, and at least 3 birds were recorded there in 2004. The minimum count of 10 birds in 2003 represents 2% of the estimated India–Myanmar population of White-winged Duck (WETLANDS INTERNATIONAL, 2002). Given that the species was recorded at four out of the ten ox-bows visited in 2003, taking account of the fact that its shy nature would be expected to lead to it being under-recorded, and further considering the large number of potentially suitable ox-bows and other wetland habitats that exist within the proposed Hukaung Tiger Reserve, this protected area doubtless supports a population of White-winged Duck several times greater than the minimum count of ten birds. Indeed, given the large number of suitable wetlands within the proposed Hukaung Tiger Reserve and the moderate to low levels of human activity at many of them, this protected area potentially supports one of the largest populations of this species remaining in the world.

Spot-billed Duck *Anas poecilorhyncha*

Tanai River: Frequently recorded on ox-bows in November 2003, with a maximum daily count of 50 birds. 12 on 10 December, 3 on 12 December and 15 on 13 December 2004. **Mogaung Chaung:** 2 birds on 26 October 2005. **Indawgyi:** At least 4 on 29 November and one on 30 November 2004. **Nawng Kwin:** 3 on 1 December, 62 on 2 December and 60 on 4 December 2004. **Ayeyarwady River:** 81 between Myitkyina and Sinbo on 11 April 2003, and 9 at Myitkyina on 25 November 2003. **Bhamo:** 10 on 12 April and 44 on 13 April 2003. **96 Ins:** 40 on 14 April and over 100 on 15 and 16 April 2003.

Although not all birds observed were identified to subspecies, at least some were positively identified as *A. p. zonorhyncha*, which ROBSON (2005) describes as being doubtfully recorded in North Myanmar. These records thus confirm the occurrence of this subspecies in mainland South-East Asia.

Ferruginous Pochard *Aythya nyroca*

Near Threatened

Tanai River: Frequently recorded on ox-bows in November 2003, with a maximum daily count of 65 birds. 76 on 8 December and 25 on 12 December 2004. **Indawgyi:** Significant numbers seen on Indawgyi Lake during the 2004 survey, with 70 counted on 30 November and 380 on 5 December. **Nawng Kwin:** 11 on 1 December, 15 on 2 December, 4 on 3 December and 2 on 4 December 2004.

Larger counts of Ferruginous Pochard have been made on Indawgyi Lake during other recent surveys, with counts of 1,720 in January 2000, 1,178 in January 2001 and 809 in January 2004 (VAN DER VEN, 2000, 2001, DAVIES *ET AL.*, 2004). The counts of 1,720 and 1,178 represent more than 1% of the estimated East Asian biogeographic population of the species (BIRDLIFE INTERNATIONAL, 2001).

Common Merganser *Mergus merganser*

Tanai River: 6 on 12 November and 3 on 18 November 2003. 2 on 13 December 2004. **Ayeyarwady River:** 2 at Myitkyina on 25 November 2003.

ROBSON (2005) describes the species as an uncommon to fairly common winter visitor to eastern North Myanmar. The records from the Tanai River demonstrate the presence of the species in western North Myanmar, although there are previous records from along rivers in the Tanai area, including a total count of 68 birds in January 2001 (VAN DER VEN, 2001), as well as from north-west of Putao (KING *ET AL.*, 2001).

Great Spotted Woodpecker *Dendrocopos major*

Tanai River: Singles on 20 and 21 November 2003.

ROBSON (2005) describes the altitudinal range of the species as 1,000 to 2,745 m asl, sometimes down to 450 m in winter. The records from the Tanai River, at around 200 m, represent an extension of the species's known altitudinal range in South-East Asia. Given the timing of the records, the presence of the species at unusually low elevations is probably due to seasonal altitudinal range shift.

Common Flameback *Dinopium javanense*

Kamaing: Singles on 17 and 18 October 2005. **Nawng Kwin:** 1 on 3 December 2004.

ROBSON (2005) describes the species as an uncommon to common resident in mainland South-East Asia, except North Myanmar. The records presented here demonstrate the occurrence of the species in North Myanmar, although they are not the first from this region. The species was previously recorded at two sites north-east of Putao during surveys in 1997–1998 (THIEN AUNG & ZIN OO, 1999). Moreover, the species was recorded at two sites near the Ayeyarwady River in 2000–2001 (VAN DER VEN, 2001).

Blue-throated Barbet *Megalaima asiatica*

Tanai River: Recorded daily in November 2003, and frequently recorded in December 2004. **Warazup:** Recorded daily in October and November 2005, with a maximum daily count of 19 birds. **Kamaing:** Frequently recorded in October 2005, with a maximum daily count of 11 birds. **Indawgyi:** 1 seen on 29 November 2004. **Nawng Kwin:** Heard on 3 December 2004. **Bhamo:** Heard on 17 April 2003. **Other:** 2 seen at the confluence of the Mali Kha and Mai Kha Rivers on 10 October 2005.

ROBSON (2005) describes the altitudinal range of the species as 400 to 2,400 m asl. These records (from as low as 110 m at Bhamo) represent an extension of the species's known altitudinal range in South-East Asia. These records are consistent with the species's altitudinal range in India, where it is known from plains to 2,100 m (RASMUSSEN & ANDERTON, 2005).

Great Hornbill *Buceros bicornis*

Near Threatened

Tanai River: 2 on 14 November, heard on 15 November, 5 on 20 November, 1 on 22 November, 6 on 23 November and 6 on 24 November 2003. Singles on 13 and 14 December 2004. **Bhamo:** 3 on 17 April 2003. **Kamaing:** Heard on 17 October and 2 on 22 October 2005.

Given the large amount of lowland evergreen forest within the proposed Hukaung Tiger Reserve, this protected area potentially supports a Great Hornbill *Buceros bicornis* population of high regional, if not global, significance. However, a moderate amount of gun hunting was observed in areas of forest along the Tanai River, and the remains of several bird species, including Oriental Pied Hornbill *Anthracoceros albirostris* and Black Stork, were observed at hunters' camps. Although no remains of Great Hornbill were observed during the surveys, with its large size, loud call and congregatory habitats, it is an obvious quarry species, and the population at the proposed Hukaung Tiger Reserve may be expected to be facing hunting pressure.

Red-headed Trogon *Harpactes erythrocephalus*

Tanai River: 2 on 15 November, 1 on 19 November, heard on 20 November and a pair on 23 November 2003. 2 on 10 December and 1 on 12 December 2004. **Warazup:** 2 on 1 November 2005. **Kamaing:** A pair on 14 October and 2 on 17 October 2005. **Nawng Kwin:** 1 on 2 December 2004.

ROBSON (2005) describes the altitudinal range of the species as 305 to 2,590 m asl; locally down to 50 m in Indochina. These records (from as low as ca. 175 m at Kamaing) represent an extension of the species's known altitudinal range in Myanmar.

Blossom-headed Parakeet *Psittacula roseata*

Warazup: 5 on 2 November 2005. **Kamaing:** 3 on 13 October, 3 on 15 October, 3 on 19 October and 3 on 26 October 2005.

ROBSON (2005) describes the species as an uncommon to common resident (except North Myanmar). However, there is a published record from North Myanmar: HARRINGTON (1909–1910) lists the species as having been recorded in Bhamo district by one Colonel G. Rippon. The records made during the surveys confirm the continued occurrence of the species in North Myanmar.

Spot-bellied Eagle Owl *Bubo nipalensis*

Kamaing: A single bird was heard calling near Kalan Khargyi camp on 18, 19, 21, 22 and 24 October 2005.

These are the first records from North Myanmar. ROBSON (2005) describes the species as a scarce to uncommon resident in South and East Myanmar and northern Tenasserim.

[Jungle Owlet *Glaucidium radiatum*]

Warazup: 1 seen in daytime near the bank of the Nat Kaung River on 30 November 2005. **Other:** 1 seen in daytime at the confluence of the Mali Kha and Mai Kha Rivers on 10 October 2005.

The bird seen near the bank of the Nat Kaung River was viewed for several minutes by multiple observers through telescopes at distances of as close as 20 m. The bird seen at the confluence of the Mali Kha and Mai Kha Rivers was seen very briefly by two observers at a distance of around 5 m. Both birds were provisionally identified as Jungle Owlet on the basis of entirely barred underparts, lacking the brown-streaked white belly and flanks characteristic of Asian Barred Owlet *G. cuculoides* and Collared Owlet *G. brodiei*. The birds appeared closer in size to Asian Barred Owlet than Collared Owlet.

If confirmed, these would be the first records of Jungle Owlet from North Myanmar and, possibly, South-East Asia as a whole. ROBSON (2005) describes the species as an uncommon to fairly common resident in South-west and West Myanmar. However, RASMUSSEN & ANDERTON, (2005), without giving a reason, treat the reported occurrence of the species from Myanmar as “doubtful”.

Spotted Owlet *Athene brama*

Ayeyarwady River: 1 bird near the bank of the Ayeyarwady River in Myitkyina town on 28 November 2004.

This is the first record from North Myanmar. ROBSON (2005) describes the species as a common resident in South-west, West, Central, South and East Myanmar.

Hodgson’s Frogmouth *Batrachostomus hodgsoni*

Tanai River: Heard on 23 November 2003.

ROBSON (2005) describes the altitudinal range of the species as 900 to 1,900 m asl; locally down to 305 m. The record from the Tanai River, at ca.200 m, represents an extension of the species’s known altitudinal range in South-East Asia. Given the timing of the record, the presence of the species at an unusually low elevation could possibly be due to seasonal altitudinal range shift.

Wedge-tailed Green Pigeon *Treron sphenura*

Tanai River: 2 on 8 December 2004.

ROBSON (2005) describes the altitudinal range of the species as 770 to 2,565 m asl; rarely in plains outside the breeding season in North Laos and Central Annam. The record from the Tanai River, at ca.200 m, represents an extension of the species’s known altitudinal range in Myanmar. This is consistent with the species’s known altitudinal range in India, where it is known from plains to 2,500 m (RASMUSSEN & ANDERTON, 2005).

Sarus Crane *Grus antigone*

Globally threatened – Vulnerable

Kamaing: 3 between Kamaing town and the Ledo Road on 7 December 2004, together with 176 Common Cranes. **Nawng Kwin:** 3 on 1 December, 3 on 3 December and 8 on 4 December 2004.

There are historical reports of 2 subspecies of Sarus Crane from Myanmar: *G. a. sharpii*, which was, at least formerly, resident in North, Central, East and South Myanmar (ROBSON, 2005); and *G. a. antigone*, which was reported to occur in Rakhine (Arakan) State, South-west

Myanmar (HOPWOOD, 1912). Although it was not possible to confirm to which subspecies the birds recorded during the surveys belonged, they appeared indistinguishable from *G. a. sharpii*, a subspecies with which several of the survey team were very familiar from Cambodia and Vietnam. The tentative identification of these birds as *G. a. sharpii* also corresponds with what is known about the ranges of the two subspecies in Myanmar.

The records from Nawng Kwin suggested that eight birds were present: a family party of 3 seen on 1, 3 and 5 December plus a party of 5 seen on 5 December 2004. If the birds belonged to *G. a. sharpii*, these records represent nearly 1% of the estimated Myanmar population of this subspecies (WETLANDS INTERNATIONAL, 2002).

J. van der Ven recorded 7 Sarus Cranes in marshes and old agricultural fields surrounding Indawgyi Lake in January 2001, and 8 at the same site in December of that year (VAN DER VEN, 2001, 2002), while the WBSJ/NWCD survey team received (but were unable to confirm) anecdotal reports of 20 Sarus Cranes frequenting the western shore of the lake in January 2003 (DAVIES *ET AL.*, 2004). These records may refer to the same birds as those recorded at Nawng Kwin in 2004, or a different sub-population. Either way, there appears to be a small population of Sarus Crane in the Indawgyi–Nawng Kwin area. It is likely that this population breeds in the lowlands of Kachin State, although whether the species makes local movements away from the Indawgyi–Nawng Kwin area is not known.

Common Crane *Grus grus*

Warazup: 6 on 7 December 2004, 2 on 29 October and 3 on 31 October 2005. **Tanai River:** 1 along the main channel on 13 December 2004. **Kamaing:** 10 at Kamaing town on 6 December and 176 between Kamaing town and the Ledo Road on 7 December 2004, together with 3 Sarus Cranes. **Mogaung Chaung:** 9 on 6 December 2004; 6 on 26 October and 1 on 28 October 2005. **Indawgyi:** 107 on 30 November 2004. **Nawng Kwin:** 141 on 1 December, 300 on 2 December, 161 on 3 December and 50 on 4 December 2004. **Ayeyarwady River:** 7 along the main channel at Myitkyina on 2 November 2005. **Other:** 3 along the Ledo Road north of Kamaing town on 25 November 2003; 150 between Namti and Hopin towns on 15 December 2004.

The minimum count of 300 birds at Nawng Kwin represents 4% of the estimated South China population of Common Crane, which breeds on the Tibetan plateau and winters in south-western China and northern Myanmar (WETLANDS INTERNATIONAL 2002). The most important known wintering area for the species in Kachin State and, indeed, Myanmar as a whole, is the Ayeyarwady River and its environs, between Myitkyina and Bhamo, and the southern section of the Mogaung Chaung, where at least 3,000 birds were recorded in January 2000 (VAN DER VEN, 2000; DAVIES *ET AL.*, 2004).

Common Crane appears to arrive in the lowlands of Kachin State relatively late in the autumn and to leave relatively early in the spring. The earliest records during the surveys were during the last week of October 2004, despite over two weeks spent in suitable habitats earlier that month. The largest counts made to date have been in January, with 2,419 along the Ayeyarwady River between Myitkyina and Bhamo in January 2000 (VAN DER VEN, 2000) and 1,385 along the same stretch in January 2004 (DAVIES *ET AL.*, 2004); in April 2003, when the same stretch of river was surveyed by the BirdLife/BANCA team, no birds were present.

Masked Finfoot *Heliopais personata*

Globally threatened – Vulnerable

Tanai River: 2 at 'Ox-bow 1' on 13 November, 1 at Hin Kaw In on 17 November and 2 at the same ox-bow on 18 November, 2 birds (including 1 female) at Khar Pyat In on 23 November and 2 males at the same ox-bow on 24 November 2003. 1 at Se Hnaung In on 12 December 2004. **Kamaing:** A pair at Kyaw In on 17 October 2005.

Assuming that birds did not move between ox-bows during each survey, a minimum of 7 birds were recorded in ox-bows along the Tanai River in 2003. Considering the secretive habits of the species, the fact that it was recorded at three of the 10 ox-bows visited in 2003, and the fact that the proposed Hukaung Tiger Reserve includes a large amount of potentially suitable habitat for the species, including both ox-bows and river channels, this protected area likely supports a large population of this species, at least seasonally. The results of the surveys suggest that the proposed Hukaung Tiger Reserve is of high national and global significance for the conservation of the species.

Although the Kamaing area is smaller than the proposed Hukaung Tiger Reserve, it also supports a significant area of potentially suitable habitat for the species. This site may be of medium to high national significance for the species, and potentially of medium global significance.

The movements of Masked Finfoot remain poorly understood (BIRDLIFE INTERNATIONAL, 2001), and its seasonal status in North Myanmar is uncertain (ROBSON, 2005). The breeding ecology of the species is also poorly known, and details of nests are limited to the observations of HOPWOOD (1921) from South Myanmar, who found nests built on tangled branches of trees or shrubs in flooded forest. Several of the ox-bows visited along the Tanai River and in the Kamaing area contained patches of flooded forest, similar to those described by HOPWOOD (1921), suggesting that suitable breeding habitat for the species may potentially be present at these sites. Indeed, defensive behaviour observed and territorial calling heard during wet-season surveys in 2006 effectively confirm that the species breeds in the floodplain of the Tanai River (J. W. Duckworth *in litt.*, 2007).

The call of Masked Finfoot is poorly documented (ROBSON, 2000). One of the males seen at Khar Pyat In on 23 November 2003 was heard giving a loud, resonant, booming call, reminiscent of bubbles being blown under water.

On 15 October 2005, Mr Kway Lwin, a fisherman at Nan Yo In, in the Kamaing area, reported that he had recently caught two Masked Finfoots in his fishing nets. Fishing was evident at all ox-bows where the species was recorded, and accidental entanglement of birds in fishing nets may represent a significant threat to the species.

Little Tern *Sterna albifrons*

Ayeyarwady River: 74 between Myitkyina and Sinbo on 11 April 2003.

This is the first record from North Myanmar. ROBSON (2005) describes the species as a scarce to uncommon resident (and possible uncommon to fairly common winter visitor) in coastal Myanmar, and an inland resident in Central, South and East Myanmar. The species is nearly extinct as an inland breeding bird in the Mekong catchment (DUCKWORTH *ET AL.*, 1999), although it was historically abundant (e.g. ENGELBACH, 1932). Hence, the survival of significant numbers in North Myanmar (if they are resident birds) is highly significant and encouraging.

Jerdon's Baza *Aviceda jerdoni*

Tanai River: 2 on 16 November, three on 17 November and three on 18 November 2003. **Warazup:** 9 along the Nat Kaung River on 31 October and 4 on 1 November 2005. **Mogaung Chaung:** 2 on 6 December 2004.

These are the first records from North Myanmar. ROBSON (2005) describes the species as a scarce to uncommon resident in Tenasserim, and recorded (status uncertain) in South Myanmar.

White-tailed Eagle *Haliaeetus albicilla*

Tanai River: 1 3rd/4th-year sub-adult along the main channel on 14 December 2004 (Fig. 8).

The record from along the Tanai River is one of only a handful of records of the species from Myanmar. Other records include 3 on the Mogaung Chaung downstream of Mogaung town in January 2003, 1 along the Tarong River near Tanai in January 2001, a maximum count of 7 birds along the Ayeyarwady River between Myitkyina and Bhamo in December 2000 to January 2001 (VAN DER VEN, 2001, DAVIES *ET AL.*, 2004), and 4 single birds in the Hukaung Valley in January 2006 (J. W. Duckworth *in litt.*, 2007). There is also a record from West Myanmar, of a single bird along the Myit Thar, south of Kalay, Sagaing Division, in January 2004 (ROBSON, 2004). These records suggest that the species may be a regular winter visitor to North and West Myanmar.

Lesser Fish Eagle *Ichthyophaga humilis*

Near Threatened

Tanai River: Frequently recorded along the main channel and at ox-bows in 2003 and 2004, with 4 on 15 November, 2 on 16 November, 4 on 17 November, 4 on 18 November, 2 on 21 November and 1 on 24 November 2003, and 3 on 8 December, 1 on 9 December, 1 on 10 December and 1 on 13 December 2004. **Warazup:** 1 along the Nat Kaung River on 31 October 2005. **Kamaing:** Singles on 12, 22 and 24 October 2005.

The results of the surveys indicate that the Tanai River supports a significant population of this species. Although they were not visited during the surveys, this population has been subsequently found to extend along the major tributaries of the Tanai River (J. W. Duckworth *in litt.*, 2007), and is presumed to extend downstream, along the upper Chindwin River. Unlike many other protected areas in mainland South-East Asia, which are often small, fragmented and characterised by poor representation of riverine habitats, the proposed Hukaung Tiger Reserve has the potential to support a significant population of Lesser Fish Eagle over the long term. The total length of riverine habitat along the Nat Kaung River is less than that in the Tanai River system, and the extent and condition of riverine forest is, similarly, lower. However, given the proximity of the Nat Kaung River to the Tanai River system, it also appears to have the potential to support a Lesser Fish Eagle population over the long term.

Globally, this species is undergoing widespread declines as a result of loss of forest along rivers, increasing human disturbance along waterways, over-fishing and siltation (ROUND, 1988; DEL HOYO *ET AL.*, 1994). All of these threats are present within the proposed Hukaung Tiger Reserve and along the Nat Kaung River, although it is unclear whether any of them are currently at levels that threaten the persistence of the species.

Grey-headed Fish Eagle *Ichthyophaga ichthyaetus*

Near Threatened

Tanai River: 1 on 8 December, 1 on 12 December, and 2 at a nest on 13 December 2004. **Warazup:** Singles on 29 and 31 October and 1 November 2005. **Kamaing:** Recorded daily in October 2005, with a maximum daily count of 4 birds. **Mogaung Chaung:** 1 on 26 October, 1 on 27 October and a pair copulating in a tree on 28 October 2005.

Compared with the previous species, Grey-headed Fish Eagle was never encountered along the main channel of the Tanai River but only at ox-bows in the floodplain. Conversely, the species was more common than Lesser Fish Eagle along the Nat Kaung River and at associated ox-bows. These differences may reflect a difference between the two species' ecologies.

Both the floodplain of the Tanai River and the Kamaing area are potentially of high national significance for Grey-headed Fish Eagle. Although the species persists along the Mogaung Chaung, the extensive and continuing loss and degradation of habitat along this river suggests that it has lower potential for the long-term conservation of the species.

Globally, Grey-headed Fish Eagle faces a similar suite of threats to Lesser Fish Eagle: loss of undisturbed wetlands, over-fishing, siltation, pollution and persecution (DEL HOYO *ET AL.*, 1992). Apart from direct persecution, all of these threats were observed along the rivers visited during the surveys.

White-rumped Vulture *Gyps bengalensis*

Globally threatened—Critically Endangered

Tanai River: An unidentified *Gyps* vulture over 'Ox-bow 1' on 15 November 2003 was probably this species. **Warazup:** 2 between Shaduzup and Warazup villages on 29 November 2005. **Kamaing:** 7 adults over Kamaing town on 6 December 2004. 4 adults and 4 sub-adults over Kamaing town on 11 October 2005. 10 adults over the Nat Kaung River between Kamaing town and Hkati camp on 12 October 2005. 1 adult over Hkati camp on 14 October 2005. 15 birds over Hkati camp on 15 October 2005; the birds were mainly adults and only one sub-adult was identified. 15 adults and 1 sub-adult over Kalan Khargyi camp on 16 October 2005. 16 adults in the grasslands south-west of the Nat Kaung River on 17 October 2005. 62 birds in the grasslands south-west of the Nat Kaung River on 18 October 2005; the birds were almost all adults, with only 2 or 3 sub-adults and no juveniles. Up to 20 in the grasslands north-east of the Nat Kaung River on 19 October 2005. 40 birds perched near a buffalo carcass in the grasslands to the south-west of the Nat Kaung River on 20 October 2005; the birds were nearly all adults. 6 on 21 October 2005. 40 over the grasslands south-west of the Nat Kaung River on 22 October 2005. 4 over the That Bon grasslands at on 24 October 2005. 13 adults, five juveniles and 1 sub-adult at the 'vulture restaurant' on the Nat Kaung River on 25 October 2005, together with 12 Slender-billed Vultures; on the same day, 56 unidentified vultures were seen in flight, close to the vulture restaurant. 25 adults, 10 sub-adults and 6 juveniles at the 'vulture restaurant' on the Nat Kaung River on 26 October 2005 (Fig. 9), together with 12 Slender-billed Vultures. **Mogaung Chaung:** 4 adults and 1 sub-adult c.5 km south of Kamaing town on 6 December 2004, together with 1 Slender-billed Vulture and 23 Himalayan Griffons. 1 in flight over the Mogaung Chaung on 28 October 2005. **Indawgyi:** 30 birds (adults and sub-adults) feeding at a domestic buffalo carcass in farmland 8 km north-east of Indawgyi Lake on 30 November 2004, together with 11 Himalayan Griffons and 1 Slender-billed Vulture. **Nawng Kwin:** 2 in flight on 3 December and 2 on 4 December 2004. **96 Ins:** 3 adults together with 3 unidentified *Gyps* vultures on 14 April 2003. 1 adult

on 15 April 2003. **Other:** 1 together with 4 unidentified *Gyps* vultures along the Ledo Road north of Kamaing town on 25 November 2003. 15 adults and 2 sub-adults between Myitkyina and Kamaing towns on 11 October 2005. 8 along the Ledo Road north of Kamaing town on 2 November 2005.

Of the sites surveyed, the Kamaing area appears to be the most important for White-rumped Vulture. Based on the results of the 2005 survey, a minimum estimate of 75 birds can be made for this site, comprising a minimum of 59 adults, 10 sub-adults and 6 juveniles. This population is not only significant because of its size alone but also because of the significant numbers of sub-adults and juveniles recorded, which are evidence of breeding. Vultures range widely in search of food, and the birds recorded in the Warazup area, along the Mogaung Chaung and along the Ledo Road north of Kamaing town in 2005 could well have been part of the same population, as indeed could those observed in the Indawgyi-Nawng Kwin area in 2004. The species was also recorded at and around Kamaing town during the 2004 survey, which indicates that it is at least regular in the Kamaing area and, perhaps, breeds there.

The reasons why the Kamaing area is particularly important for the species may include the presence of large areas of open habitat, particularly grasslands, with relatively low levels of human disturbance. In such areas, vultures are better able to detect animal carcasses and descend to feed. In contrast, the vegetation of the proposed Hukaung Tiger Reserve is dominated by lowland evergreen forest, where detection of food and descent to the ground is difficult for vultures, with smaller areas of agricultural land, where animal carcasses are less likely to be left undisturbed. For similar reasons, the large area of grassland to the north-east of Indawgyi Lake is also expected to be important for vultures. Indeed, 42 vultures, of three species, were observed feeding near there in 2004.

Slender-billed Vulture *Gyps tenuirostris*

Globally threatened – Critically Endangered

Kamaing: 2 in flight over the Nat Kaung River between Kamaing town and Hkati camp on 12 October 2005. 1 over Hkati camp on 15 October 2005. 6 over Kalan Khargyi camp on 16 October 2005. 1 on 18 October 2005. 2 over the grasslands north-east of the Nat Kaung River on 19 October 2005. At least 6 perched around a buffalo carcass in the grasslands to the south-west of the Nat Kaung River on 20 October 2005 (Fig. 10). 4 on 21 October 2005. 5 near the buffalo carcass in the grasslands to the south-west of the Nat Kaung River on 22 October 2005. 1 over the Nat Kaung grasslands on 24 October 2005. 11 adults and 1 sub-adult at the 'vulture restaurant' on the Nat Kaung River on 25 October 2005, together with 19 White-rumped Vultures; on the same day, 56 unidentified vultures were seen in flight, close to the vulture restaurant. On 26 October 2005, 11 adults and 1 sub-adult (probably the same birds as on the previous day) were seen at the 'vulture restaurant', together with 41 White-rumped Vultures. **Mogaung Chaung:** 1 adult ca.5 km south of Kamaing town on 6 December 2004, together with 5 White-rumped Vultures and 23 Himalayan Griffons. 10 adults perched by the Mogaung Chaung on 28 October 2005. **Indawgyi:** 1 feeding at a domestic buffalo carcass in farmland 8 km north-east of Indawgyi Lake on 30 November 2004, together with 30 White-rumped Vultures and 11 Himalayan Griffons. **Other:** 1 between Myitkyina and Kamaing on 11 October 2005.

As is the case with the previous species, the Kamaing area appears to be the most important site for Slender-billed Vulture among those surveyed. Based on the results of the 2005 survey, a minimum estimate of 12 birds can be made for this site, comprising at least 11 adults

and 1 sub-adult. Also during the 2005 survey, 10 adult Slender-billed Vultures were seen perched along the Mogaung Chaung, ca. 25 km from where 12 birds had been counted at the 'vulture restaurant' two days earlier. It is unclear whether these were separate birds but, even if they were, the population of Slender-billed Vulture in the wider Kamaing area appears to be significantly lower than that of White-rumped Vulture. The fact that only 1 sub-adult and no juveniles were positively identified during the surveys is a further cause for concern.

The largest recent count of Slender-billed Vulture in Kachin State was that of at least 18 birds at a carcass north of Indawgyi Lake in December 2001 (VAN DER VEN, 2002). This record, taken together with the results of the present surveys, indicates a minimum population of Slender-billed Vulture in the lowlands of Kachin State of around 20 birds. While this population is relatively small and shows signs of limited breeding success, it is still one of the largest populations known in mainland South-East Asia, and, considering the rapid declines being experienced by this species in South Asia, of potentially high global significance.

Himalayan Griffon *Gyps himalayensis*

Kamaing: 1 adult at Kamaing town on 6 December 2004. **Mogaung Chaung:** 2 adults and 21 sub-adults c. 5 km south of Kamaing town on 6 December 2004, together with 5 White-rumped Vultures and one Slender-billed Vulture. **Indawgyi:** 4 adults and 7 sub-adults feeding at a domestic buffalo carcass in farmland 8 km north-east of Indawgyi Lake on 30 November 2004, together with 30 White-rumped Vultures and 1 Slender-billed Vulture.

Identification of the species was facilitated by the fact that it was seen together with White-rumped and Slender-billed Vultures on two occasions, facilitating comparison of size and plumage characteristics. On the former occasion, at Indawgyi, the birds were observed by multiple observers using telescopes for over an hour. The birds were identified on the basis of significantly greater size than both White-rumped and Slender-billed Vultures. At rest and in flight, the adults showed a combination of pale wing-coverts, contrasting strongly with dark primaries and secondaries. The wing-coverts were paler than those of Slender-billed Vulture, and combined with a pale, not dark, head and neck. Adults also had a very prominent pale ruff. Sub-adults had similar plumage to sub-adult White-rumped Vultures but were readily identified on the basis of size, appearing almost 50% larger.

These are the first records of the species from North Myanmar. ROBSON (2005) describes the species as a vagrant to North-west, Central, West (coastal) and South Thailand, Peninsular Malaysia, and Singapore. There is an earlier, unpublished record of the species from Myanmar: a carcass of a recently shot juvenile was photographed at Bwe Pa, Chin State, West Myanmar, during January–February 2004 (JCE, own data). The fact that no birds were recorded during the 2003 surveys can be attributed to the fact that the first survey focused on sites along the Ayeyarwady River in south-eastern Kachin State, and that the second focused on the proposed Hukaung Tiger Reserve, which, for reasons already mentioned, is less suitable for vultures. The fact that no birds were recorded during the 2005 survey might have been due to this survey's earlier timing, before the arrival of wintering birds. Indeed, the presence of fair numbers of birds along the southern border of the proposed Hukaung Tiger Reserve in January 2006 (J. W. Duckworth *in litt.*, 2007) suggests that the species may be a regular winter visitor, albeit possibly in low numbers.

Indian Spotted Eagle *Aquila hastata*

Globally threatened – Vulnerable

Kamaing: 3 birds in flight over Hkati camp on 13 October 2005. The birds were flying very low, almost at treetop height, presumably to avoid a storm that was forming.

This is the first record of the species from North Myanmar. ROBSON (2005) describes the species as having been recorded from (and possibly formerly resident in) South-west and South Myanmar.

Greater Spotted Eagle *Aquila clanga*

Globally threatened – Vulnerable

Kamaing: 1 adult between Kamaing town and the Ledo Road on 7 December 2004. 1 in flight over the grasslands south-west of the Nat Kaung River on 18 October 2005. **Indawgyi:** 1 adult along the Indawgyi River on 5 December 2004. **Nawng Kwin:** A single adult seen daily between 1 and 4 December 2004.

The bird seen at Indawgyi on 5 December 2004 was a different bird from that seen at Nawng Kwin on the four preceding days, demonstrating that at least 2 birds were wintering in the general area. In January 2003, 2 Greater Spotted Eagles were recorded at Indawgyi Lake (DAVIES *ET AL.*, 2004).

Booted Eagle *Hieraaetus pennatus*

Mogaung Chaung: 1 dark phase adult along the Mogaung Chaung on 28 October 2005. **Indawgyi:** 1 dark phase adult along the Indawgyi River on 30 November 2004.

These are the first records of the species from North Myanmar. ROBSON (2005) describes the species as a passage migrant through Tenasserim and a vagrant to Central, South and East Myanmar

Amur Falcon *Falco amurensis*

Kamaing: 1 female over Kalan Kargyi camp on 16 October and 4 over the grasslands north-east of the Nat Kaung River on 19 October 2005. **Bhamo:** 6 on 17 April 2003. **Other:** 5 birds flying north along the gorge of the Ayeyarwady River between Sinbo and Bhamo on 11 April 2003. 2 males and 3 immatures between Myitkyina and Kamaing town on 11 October 2005.

These are the first records of the species from North Myanmar. ROBSON (2005) describes the species as a scarce to uncommon passage migrant through West, Central, South and East Myanmar.

Laggar Falcon *Falco jugger*

Near Threatened

Tanai River: 1 on 13 November 2003. **Kamaing:** 1 at Kamaing town on 11 October 2005. **Nawng Kwin:** 1 on 1 December 2004 and 1 (probably the same individual) on the following day.

These are the first records of the species from North Myanmar. ROBSON (2005) describes the species as an uncommon resident in Central, South (north) and East Myanmar.

Darter *Anhinga melanogaster*

Near Threatened (as Oriental Darter)

Tanai River: Recorded daily along the main channel and at ox-bows in November 2003, with a maximum daily count of 40 birds. Recorded daily along the main channel and at ox-bows in December 2004, with a maximum daily count of 50 birds. **Warazup:** Recorded daily along the Nat Kaung River near Warazup village in October and November 2005, with a maximum daily count of 8 birds. **Kamaing:** 1 near Kamaing town on 6 December 2004. Recorded daily along the Nat Kaung River and at nearby ox-bows during October 2005, with a maximum daily count of 8 birds. **Mogaung Chaung:** 1 on 27 October and 2 on 28 October 2005. **Indawgyi:** 3 along the Indawgyi River on 30 November and 2 in the same area on 5 December 2004. **Nawng Kwin:** Single birds on 1 and 2 December 2004. **Ayeyarwady River:** 40 between Myitkyina and Sinbo on 11 April 2003.

ROBSON (2005) describes the species as a former resident (current status uncertain) in Myanmar, except in South Myanmar, where it is a scarce to locally fairly common resident (subject to local movements). These records confirm the continued occurrence of the species in North Myanmar. Although no evidence of breeding was found during the surveys, such evidence was subsequently found along the Tanai River, in the form of captive birds being fattened up by itinerant people and reports of several colonies (J. W. Duckworth *in litt.*, 2007).

The count of 50 birds along the Tanai River represents over 1% of the estimated East Asian biogeographic population of Darter (BIRDLIFE INTERNATIONAL, 2001). The total population of the Tanai, Tawan and Tarong Rivers can be inferred to be much higher than this, as many hundreds were recorded between December 2005 and January 2007, and the total actually present must exceed 1,000 (J. W. Duckworth *in litt.* 2007). The count of 40 birds along the Ayeyarwady River between Myitkyina and Sinbo represents 1% of the estimated biogeographic population (BIRDLIFE INTERNATIONAL, 2001). In January 2003, 65 Darters were counted along this stretch of the Ayeyarwady River, and a further 71 birds were counted at Indawgyi Lake (DAVIES *ET AL.*, 2004), indicating that this site also supports a significant congregation of the species.

White-bellied Heron *Ardea insignis*

Globally threatened – Critically Endangered

Warazup: A single flushed from a sandbar along the Nat Kaung River, 4 km upstream of Warazup village, on 31 October 2005; the bird immediately flew into gallery forest. Presumably the same bird seen standing in the shallows at the same place on 1 November 2005 (Fig. 11); the bird was watched undisturbed for 90 minutes after which it was flushed and flew to a sandbar further upstream.

There are recent records of White-bellied Heron from a number of sites in Kachin State, including along the Ayeyarwady River south-west of Bhamo in December 1999 (VAN DER VEN, 2000), along the Tanai River and its tributaries (e.g. VAN DER VEN, 2001), and at Hponkan Razi Wildlife Sanctuary (e.g. KING *ET AL.*, 2001). The lack of records of the species from along the Tanai River during the surveys is probably a reflection of the overall low density of the bird, its habit of making local movements and the limited suitable habitat along the stretches surveyed. Kachin State as a whole is unquestionably of high global importance for the conservation of the species. Currently, however, there is insufficient information on the species's status at individual sites to permit an assessment of their relative importance for it.

Glossy Ibis *Plegadis falcinellus*

Indawgyi: 1 along the Indawgyi River on 30 November 2004.

This is the second record of the species from North Myanmar, the first being a minimum of 10 birds seen along the Indawgyi River during December 2003–March 2004 (ROBSON, 2004). ROBSON (2005) describes the species as a rare to scarce winter/non-breeding visitor to South-west, South and East Myanmar and a former resident (current status unknown) in Central Myanmar.

Spot-billed Pelican *Pelecanus philippensis*

Near Threatened

Indawgyi: 40 birds soaring over grassland near the Indawgyi River on 30 November 2004.

This record represents 1% of the estimated South-East Asian population of Spot-billed Pelican (WETLANDS INTERNATIONAL, 2002), and is consistent with a count of 47 birds made at Indawgyi Lake in January 2003 (DAVIES *ET AL.*, 2004). The species appears to be either very localised in Kachin State or a seasonal visitor, having only been recorded once during the surveys. Away from Indawgyi, there are records from the Ayeyarwady River between Myitkyina and Bhamo, where 222 birds were counted in January 2000 (VAN DER VEN, 2000), from rivers around Tanai, where 87 were counted in January 2001 (VAN DER VEN, 2001), and from along the Mogaung Chaung downstream of Mogaung town, where 12 were seen in flight in January 2003 (DAVIES *ET AL.*, 2004). Clarification of whether or not the species breeds in Kachin State is a high priority.

Black-necked Stork *Ephippiorhynchus asiaticus*

Near Threatened

Tanai River: 1 on 23 November 2003. Singles on 8, 9, 11 and 13 December 2004. **Warazup:** 1 on 30 October 2005. **Kamaing:** 1 between Kamaing town and the Ledo Road on 7 December 2004. 1 on 15 October, 3 on 17 October, on 18 October, 1 on 19 October, 2 on 20 October, 1 on 21 October and 2 on 25 October 2005. **Nawng Kwin:** Singles on 1 and 2 December 2004.

Four Black-necked Storks were seen on the Mogaung Chaung upstream of Mogaung town in January 2003 and the species has also been recorded at Indawgyi Lake (DAVIES *ET AL.*, 2004). These records, together with the results of the present surveys, indicate that the species is quite widespread at low densities in the lowlands of Kachin State. The combined South and South-East Asian population of the species is estimated at only 1,000 birds (WETLANDS INTERNATIONAL, 2002), and, in this context, the population of the lowlands of Kachin State is of high regional significance. There are currently too few data to accurately assess the relative importance of individual sites for the species.

Lesser Adjutant *Leptoptilos javanicus*

Globally threatened – Vulnerable

Tanai River: Frequently seen along the main channel and at ox-bows in 2003 and 2004, with 2 on 15 November, 2 on 16 November, 3 on 17 November and singles on 18, 21, 22 and 24 November 2003, and 1 on 10 December, 1 on 12 December, 2 on 13 December and 2 on 14 December 2004. **Warazup:** 2 between Shaduzup and Warazup villages on 29 October and 1 near Warazup village on 30 October 2005. **Kamaing:** 4 between Kamaing town and

the Ledo Road on 7 December 2004. 8 on 12 October, 1 on 14 October, 2 on 16 October, 1 on 17 October, 1 on 19 October, 9 on 20 October, 10 on 21 October, 1 on 22 October, 2 on 24 October and 4 on 25 October 2005. **Mogaung Chaung:** 2 on 27 October 2005. **Indawgyi:** 4 on 30 November 2004. **Nawng Kwin:** 5 on 1 December, 5 on 2 December, 3 on 3 December and 5 on 4 December 2004. **Other:** 5 along the Ledo Road north of Kamaing town on 25 November 2003.

In January 2003, 17 Lesser Adjutants were recorded at Indawgyi Lake (DAVIES *ET AL.*, 2004). The combined population of the species in the lowlands of Kachin State may be one of the largest remaining in mainland South-East Asia, and is potentially comparable in significance to that in the Central Indochina Dry Forests Ecoregion of Cambodia, Laos and Vietnam (TORDOFF *ET AL.*, 2005). Of the sites where the species has been recorded, the Tanai River and nearby ox-bows, the Kamaing area and the Indawgyi-Nawng Kwin area all appear to support significant numbers and contain sufficient suitable habitat to potentially sustain a breeding population of the species.

Grey Treepie *Dendrocitta formosae*

Tanai River: Recorded on most survey days in November 2003. 1 on 12 December 2004. **Warazup:** 4 next to the Nat Kaung River on 30 October 2005. **Nawng Kwin:** Heard on 1 and 2 December and 5 seen on 3 December 2004.

ROBSON (2005) describes the altitudinal range of the species as 700 to 2,285 m asl, locally down to 450 m. These records (from as low as ca.200 m along the Tanai River), represent an extension of the species's known altitudinal range in South-East Asia. These records are consistent with the species's known altitudinal range in India, where it is known from the base of hills to 2,100 m asl (RASMUSSEN & ANDERTON, 2005).

Hooded Treepie *Crypsirina cucullata*

Near Threatened

Restricted-range species (EBA 132 – Irrawaddy Plains)

Warazup: 1 a few km south of Warazup village on 2 November 2005. **Mogaung Chaung:** 4 along the bank of the Mogaung Chaung on 28 October 2005. **Other:** 1 seen about 2 km north of Mogaung town on 29 November 2004 and a second bird seen near Hopin town, later on the same day.

Hooded Treepie is endemic to Myanmar. It occurs in dry dipterocarp forest and thorn scrub in the dry zone of Central Myanmar but also extends into secondary growth and cultivation borders up to about 915 m asl (SMYTHIES, 1986; ROBSON, 2005). Most birds seen during the surveys were in scrub and scattered trees near cultivation, often far from forest areas, although the 4 seen along the bank of the Mogaung Chaung were in cultivation and degraded evergreen forest. These observations suggest that the species is relatively tolerant of habitat degradation, and may not be associated with a particular forest type but, rather, a certain vegetation structure, at least outside of the breeding season.

The records presented here are some of the most northerly records of the species to date, although more northerly ones were made by VAN DER VEN (2002), who recorded a total of 9 birds between Myitkyina and Putao in December 2001.

Long-tailed Minivet *Pericrocotus ethologus*

Tanai River: 6 on 17 November, 5 on 19 November and 10 on 20 November 2003.

ROBSON (2005) describes the altitudinal range of the species as 900 to 3,100 m asl, down to 450 m in winter. These records, from ca.200 m, represent an extension of the species's known altitudinal range in South-East Asia. The species is a known altitudinal migrant and, in South Asia, is known to disperse to foothills and plains in winter (RASMUSSEN & ANDERTON, 2005).

White-throated Fantail *Rhipidura albicollis*

Tanai River: Singles on 14, 17, 19 and 20 November and heard on 23 November 2003. 2 on 8 December, 1 on 9 December and 2 on 10 December 2004. **Warazup:** 1 on 29 October 2005.

ROBSON (2005) describes the altitudinal range of the species as 460 to 3,050 m asl, locally down to sea level in Indochina. These records (from as low as ca.200 m along the Tanai River), represent an extension of the species's known altitudinal range in Myanmar. The species is known to make seasonal altitudinal movements (SPIERENBURG, 2005), and its presence at low elevations in Myanmar is consistent with its altitudinal range in South Asia, where it is known from plains to 2,300 m (RASMUSSEN & ANDERTON, 2005).

Crow-billed Drongo *Dicrurus annectans*

Tanai River: 1 on 16 November 2003. **Kamaing:** Recorded frequently during October 2005, with a maximum daily count of 5 birds.

These are the first records of the species from North Myanmar. According to ROBSON (2005), the species is an uncommon winter visitor to and passage migrant through Tenasserim, and has been recorded (with uncertain status) in East and South Myanmar. Given that the species breeds in north-eastern India, south-western China and northern parts of Thailand and Indochina (ROBSON, 2000), it is not unexpected that it should be found in North Myanmar. The timing of the records suggest that the species is a passage migrant through North Myanmar, although it may also occur there as a breeding visitor.

Rusty-bellied Shortwing *Brachypteryx hyperythra*

Globally threatened – Vulnerable

Restricted-range species (EBA 130 – Eastern Himalayas)

Tanai River: 1 in grassland along the Tanai River on 21 November and 2 in grassland near Se Hnaung In on 24 November 2003. **Warazup:** A shortwing heard calling between Shadzup and Warazup villages on 29 October 2005 may have been this or the following species.

ROBSON (2005) describes the altitudinal range of the species as 980 to 1,050 m asl. The records from the Tanai River, at ca.200 m, represent a major extension of the species's known altitudinal range in South-East Asia. These records are consistent with the species's altitudinal range in India, where it has been recorded from the base of hills to 2,900 m (RIPLEY, 1982). Records from India and China suggest that the species may undergo short-distance, altitudinal migration (BIRDLIFE INTERNATIONAL, 2001), and the timing of the record from the Tanai River (November) would be consistent with this. However, the first Myanmar records of the species were made between 980 and 1,050 m asl near Putao in November 1999 (KING *ET AL.*, 2001).

Lesser Shortwing *Brachypteryx leucophrys*

Tanai River: Heard on 13, 14 and 15 November and 3 seen on 21 November 2003.

ROBSON (2005) describes the altitudinal range of the species as 380 to 2,440 m asl. These records, from ca.200 m, represent an extension of the species's known altitudinal range in South-East Asia. These records are consistent with the species's altitudinal movements in India, where it is known to occur down to 250 m in winter (RASMUSSEN & ANDERTON, 2005).

Snowy-browed Flycatcher *Ficedula hyperythra*

Tanai River: 3 on 17 November and singles on 18, 21, 23 and 24 November 2003.

ROBSON (2005) describes the altitudinal range of the species as 1,000 to 2,590 m asl, locally down to 400 m in winter. These records, from ca.200 m, represent an extension of the species' known altitudinal range in mainland South-East Asia. The species is known to make marked altitudinal movements and to winter into plains in India (RASMUSSEN & ANDERTON, 2005).

Little Pied Flycatcher *Ficedula westermanni*

Tanai River: 1 on 9 December 2004. **Kamaing:** 2 on 21 October 2005. **Nawng Kwin:** 1 on 3 December and heard on 4 December 2004.

ROBSON (2005) describes the altitudinal range of the species as 200 to 2,565 m asl. These records (from as low as ca. 175 m at Kamaing), represent a minor extension of the species's known altitudinal range in mainland South-East Asia. The species is a known altitudinal migrant (SPIERENBURG, 2005).

Slaty-blue Flycatcher *Ficedula tricolor*

Tanai River: Singles on 18 and 21 November 2003. 1 on 12 December 2004.

ROBSON (2005) describes the altitudinal range of the species as 1,500 to 2,565 m asl, locally down to 450 m asl in winter. The records from the Tanai River, at ca. 200 m, represent an extension of the species's known altitudinal range in South-East Asia. This is consistent with what is known about the species in South Asia, where it is known to make marked altitudinal movements, descending to foothills and adjacent plains in winter (RASMUSSEN & ANDERTON, 2005).

Small Niltava *Niltava macgrigoriae*

Tanai River: 1 on 15 November, a pair on 17 November, and singles 19, 20 and 25 November 2003. 1 on 12 December 2004. **Nawng Kwin:** 1 on 5 December 2004.

ROBSON (2005) describes the altitudinal range of the species as 700 to 2,565 m asl, locally down to 275 m in winter. The records from the Tanai River and Nawng Kwin, at ca.200 m, represent a minor extension of the species's known altitudinal range in South-East Asia. The species is known to be altitudinal migrant (SPIERENBURG, 2005).

Pygmy Blue Flycatcher *Muscicapella hodgsoni*

Tanai River: 2 on 14 November 2003.

ROBSON (2005) describes the altitudinal range of the species as 610 to 2,565 m asl. This record, from ca. 200 m, represents an extension of the species's known altitudinal range in mainland South-East Asia. This is consistent with what is known about the species's altitudinal movements in South Asia, where it breeds up to 2,100 m and descends to plains in winter (RASMUSSEN & ANDERTON, 2005).

Firethroat *Luscinia pectardens*

Near Threatened

96 Ins: 1 male on 15 April 2003.

This record was presumably of a wintering bird or, possibly, a passage migrant. The species is known to breed at 2,800–3,700 m asl in Sichuan, Yunnan and south-east Tibet, China (BIRDLIFE INTERNATIONAL, 2001), and it is not inconceivable that the species also breeds at high elevations in North Myanmar. Given that it was only recorded once during the surveys, the species appears to be uncommon in the lowlands of Kachin State.

White-capped Water Redstart *Chaimarrornis leucocephalus***Ayeyarwady River:** 1 between Myitkyina and Sinbo on 11 April 2003.

ROBSON (2005) describes the altitudinal range of the species as 215 to 4,265 m asl. The record from along the Ayeyarwady River, at ca. 125 m, represents an extension of the species's known altitudinal range in South-East Asia. This is consistent with what is known about the species's altitudinal movements in South Asia, where it breeds up to 5,000 m and winters down to plains (RASMUSSEN & ANDERTON, 2005).

Plumbeous Water Redstart *Rhyacornis fuliginosus***Tanai River:** Singles on 13 and 19 November 2003.

ROBSON (2005) describes the altitudinal range of the species as 300 to 2,285 m asl. These records, from ca. 200 m, represent an extension of the species's known altitudinal range in South-East Asia. These records are consistent with what is known about the species's altitudinal movements in South Asia, where it breeds up to 4,300 m and winters in plains to 2,500 m (RASMUSSEN & ANDERTON, 2005).

White-tailed Robin *Myiomela leucura***Tanai River:** 2 on 14 November and one on 24 November 2003. **Kamaing:** 2 on 17 October, 1 on 18 October, 2 on 19 October and 1 on 21 October 2005.

ROBSON (2005) describes the altitudinal range of the species as 1,000 to 2,285 m asl, locally down to 150 m in winter. The records from the Tanai River and Kamaing, at ca. 200 m, represent an extension of the species' known altitudinal range in Myanmar. The species is known to be an altitudinal migrant (SPIERENBURG, 2005).

Crested Myna *Acridotheres cristatellus***Indawgyi:** 2 on 30 November 2004. **Nawng Kwin:** 2 on 1 December and at least 1 on 3 December 2004.

These are the first records of the species from North Myanmar. According to ROBSON (2005), the species has been recorded (status unknown) in East Myanmar.

Chestnut-bellied Nuthatch *Sitta castanea***Tanai River:** 5 on 13 November and 3 on 16 November 2003.

ROBSON (2005) describes the altitudinal range of the species as 305 to 1,525 m asl. The records from the Tanai River, at ca. 200 m, represent an extension of this range. However, the species is a standard member of the bird communities of lowland deciduous dipterocarp forest in Indochina and there are numerous records of the species from altitudes below 305 m (e.g. THEWLIS *ET AL.*, 1996, BRICKLE *ET AL.*, 1998). The altitudinal range given by ROBSON (2005) would appear, therefore, to be in error.

Winter Wren *Troglodytes troglodytes*

Tanai River: 1 on 10 December 2004 (by HH).

ROBSON (2005) describes the altitudinal range of the species as 1,830 to 2,800 m asl. This record, from ca. 200 m, represents a major extension of the species's known altitudinal range in South-East Asia. Winter Wren is known to be an altitudinal migrant (SPIERENBURG, 2005). Nevertheless, this record is highly unexpected, given what is known about the species's altitudinal range in South Asia, where it breeds between 2,550 and 5,500 m asl and winters occasionally down to 1,200 m (RASMUSSEN & ANDERTON, 2005).

Flavescent Bulbul *Pycnonotus flavescens*

Kamaing: 2 on 18 October 2005.

ROBSON (2005) describes the altitudinal range of the species as 900 to 2,590 m asl. This record, from ca. 175 m, represents a major extension of the species's known altitudinal range in mainland South-East Asia. In South Asia, the species is known to be an altitudinal migrant, ranging down to 500 m in winter (RASMUSSEN & ANDERTON, 2005). Seasonal altitudinal range shifts may account for the unusually low elevation record at Kamaing.

Slaty-bellied Tesia *Tesia olivea*

Tanai River: 1 seen and several heard on 14 November, and single birds seen on 16 and 24 November 2003. 1 on 12 December 2004. **Kamaing:** 1 on 14 October 2005.

ROBSON (2005) describes the altitudinal range of the species as 700 to 2,565 m asl, locally down to 455 m in winter. The records from the Tanai River and Kamaing, at ca. 200 m, represent an extension of the species's known altitudinal range in South-East Asia. These records are consistent with what is known about the species's seasonal altitudinal movements in South Asia, where it winters from plains to 1,000 m.

Asian Stubtail *Urosphena squamiceps*

Kamaing: 1 on 17 October 2005.

This is the first record of the species from North Myanmar. ROBSON (2005) describes the species as an uncommon to fairly common winter visitor to West, Central, East and South Myanmar, and Tenasserim.

Chestnut-crowned Bush Warbler *Cettia major*

Tanai River: 1 seen in reeds at the edge of Se Hnaung In on 12 December 2004 (by AWT), plus 1 seen in riverine grassland along the main channel of the Tanai River on the same day (by HH). Both records were at ca. 200 m asl.

The bird seen at Se Hnaung In gave a distinctive alarm call: "tsut - tsut - tsut". The bird became agitated in response to mimicked calls of Collared Owlet and hopped around in reeds about 20 cm above the ground and up to 50 cm from the water's edge. The bird was viewed for over 1 minute at a distance of around 5 m, and was identified on the basis of its chestnut crown and lores, contrasting with dark brown upperparts and a buffy supercilium, which did not extend in front of the eye. The bird's upper mandible was dark while its lower mandible was pale.

During a subsequent survey to those discussed in this paper, a single Chestnut-crowned Bush Warbler was trapped and photographed by a BirdLife/BANCA team in a patch of tall grassland next to the Indawgyi River (25° 19' 12" N, 96° 30' 49" E; ca. 180 m asl) on 10 December 2006 (Fig. 12).

These are the first records of the species from Myanmar. ROBSON (2005) describes the species as a vagrant to North-west Thailand. In South Asia, the species is described as breeding in rhododendron forest and patches, grass and scrub towards or at the treeline, and wintering in reedbeds and grass and scrub in open wet woodland (RASMUSSEN & ANDERTON, 2005).

Rusty-rumped Warbler *Locustella certhiola*

96 Ins: 1 on 15 April 2003.

This is the first record of the species from North Myanmar. ROBSON (2005) describes the species as a fairly common/uncommon winter visitor to Myanmar, except the North, West, South-west and Tenasserim.

Mountain Tailorbird *Orthotomus cuculatus*

Tanai River: 3 on 14 November, heard on 15, 18 and 19 November, 1 on 20 November and heard on 21 November 2003. Heard on 12 December 2004.

ROBSON (2005) describes the altitudinal range of the species as 1,000 to 2,200 m asl, locally down to 450 m in North Myanmar. The records from the Tanai River, at ca. 200 m, represent an extension of the species's known altitudinal range in mainland South-East Asia. These records are consistent with the species known altitudinal movements in India, where it winters to the duars and plains adjacent to the Himalayas (RASMUSSEN & ANDERTON, 2005).

Arctic Warbler *Phylloscopus borealis*

Kamaing: 1 on 14 October 2005 (by HH).

This is the first record of the species from North Myanmar. ROBSON (2005) describes the species as a scarce to common winter visitor to East Myanmar and Tenasserim.

Eastern Crowned Warbler *Phylloscopus coronatus*

Tanai River: 1 at Khar Pyat In on 23 November 2003.

This is the first record of the species from North Myanmar. ROBSON (2005) describes the species as an uncommon to fairly common winter visitor to Tenasserim, and uncommon to fairly common passage migrant through South Myanmar.

Grey-cheeked Warbler *Seicercus poliogenys*

Tanai River: Recorded on 14 November, heard on 19 and 20 November, 3 on 21 November, 2 on 22 November and 1 on 23 November 2003.

ROBSON (2005) describes the altitudinal range of the species as 700 to 2,135 m asl. These records, from ca.200 m, represent an extension of the species's known altitudinal range in South-East Asia. In South Asia, the species is known to make marked altitudinal movements, commonly wintering to the edge of plains (RASMUSSEN & ANDERTON, 2005).

Rufous-faced Warbler *Abroscopus albogularis*

Tanai River: Recorded on 6 days during November 2003, with a maximum daily count of 12. **Kamaing:** 1 on 21 October 2005.

ROBSON (2005) describes the altitudinal range of the species as 450 to 1,800 m asl. The records from the Tanai River and Kamaing, at 200 m, represent an extension of the species's known altitudinal range in South-East Asia. In South Asia, the species is known to make altitudinal movements, reaching the edge of plains in winter (RASMUSSEN & ANDERTON, 2005).

Chestnut-backed Laughingthrush *Garrulax nuchalis*

Near Threatened

Restricted-range species (SA079 – Northern Myanmar Lowlands)

Warazup: 2 in a mixed flock together with Lesser Necklaced Laughingthrushes and White-crested Laughingthrushes about 2 km north of Warazup village on 29 October, plus a pair in the same general area later the same day, 6 in the same area on 30 October and 8 in the same area on 31 October 2005.

ROBSON (2005) describes the altitudinal range of the species as 305 to 915 m asl. The records from Warazup, at ca. 250 m, represent a minor extension of the species' known altitudinal range in South-East Asia. These records are consistent with the known altitudinal range of the species in India: 140 to 900 m (RASMUSSEN & ANDERTON, 2005).

Laughingthrushes heard singing along the Tanai River on 23 and 24 November 2003 and 12 and 13 December 2004, and at 96 Ins on 15 April 2003 were either this species or Black-throated Laughingthrush *G. chinensis*; the two species having similar songs (the song of Chestnut-backed Laughingthrush is more musical with shorter phrases). Black-throated Laughingthrush is known from Central, East and South Myanmar and Tenasserim but not from North Myanmar (ROBSON, 2005). Moreover, Chestnut-backed Laughingthrush was recorded at various sites in the floodplain of the Tanai River between December 2005 and January 2007 (J. W. Duckworth *in litt.*, 2007). On the basis of range and other records from the general area, the birds heard along the Tanai River were very probably Chestnut-backed Laughingthrush, and the birds heard at 96 Ins possibly were too.

The Vernay-Hopwood Chindwin Expedition collected this species at three localities in the south-west of the proposed Hukaung Tiger Reserve in January 1935 (MAYR, 1938). The species was also recorded north-west of Putao by KING *ET AL.*, (2001) in 1998 and 1999.

Rufous-capped Babbler *Stachyris ruficeps*

Tanai River: 3 on 19 November, 5 on 21 November, 6 on 23 November and 2 on 24 November 2003.

ROBSON (2005) describes the altitudinal range of the species as 455 to 2,195 m asl. The records from the Tanai River, at ca. 200 m, represent an extension of the species's known altitudinal range in South-East Asia. In South Asia, the species is known to make some local altitudinal movements, although not to descend below 600 m in winter (RASMUSSEN & ANDERTON, 2005). Nevertheless, given their timing, seasonal altitudinal range shift may possibly explain the records from along the Tanai River.

Golden Babbler *Stachyris chrysaea*

Nawng Kwin: Heard in forest near Nawng Kwin wetland on 1 December 2004.

ROBSON (2005) describes the altitudinal range of the species as 450 to 2,600 m asl. The record from Nawng Kwin, at ca. 200 m, represents an extension of the species's known altitudinal range in mainland South-East Asia. In South Asia, the species is known to make minor altitudinal movements, and to descend to 300 m in winter (RASMUSSEN & ANDERTON, 2005).

Blue-winged Minla *Minla cyanouroptera*

Kamaing: 1 on 18 October and 3 on 20 October 2005.

ROBSON (2005) describes the altitudinal range of the species as 900 to 2,600 m asl, locally down to 460 m in North Myanmar. These records, from ca. 200 m, represent an extension of the species's known altitudinal range in South-East Asia.

Nepal Fulvetta *Alcippe nipalensis*

Tanai River: 15 on 23 November and 10 on 24 November 2003. **Kamaing:** 20 on 20 October 2005.

ROBSON (2005) describes the altitudinal range of the species as 440 to 2,400 m asl. The records from the Tanai River and Kamaing, at ca. 200 m, represent an extension of the species's known altitudinal range in South-East Asia. These records are consistent with what is known about the species's altitudinal movements in South Asia, where some birds descend as low as 250 m in winter (RASMUSSEN & ANDERTON, 2005).

Greater Rufous-headed Parrotbill *Paradoxornis ruficeps*

Tanai River: Heard on 12 December 2004.

ROBSON (2005) describes the altitudinal range of the species as 500 to 1,850 m asl. The record from the Tanai River, at ca. 200 m, represents an extension of the species's known altitudinal range in South-East Asia. This is consistent with the species's known altitudinal range in South Asia: 200 to 1,950 m (RASMUSSEN & ANDERTON, 2005).

Sand Lark *Calandrella raytal*

Bhamo: 4 on 13 April 2003. **96 Ins:** 1 on 15 April 2003.

These are the first records of the species from North Myanmar. ROBSON (2005) describes the species as a common resident in Central and South Myanmar.

Yellow-breasted Bunting *Emberiza aureola*

Near Threatened

Nawng Kwin: 2 on 2 December 2004.

ROBSON (2005) describes the species as a scarce to locally common winter visitor to Myanmar. The lack of records from sites away from Nawng Kwin may reflect the fact that the surveys of these sites were mainly timed prior to the main wintering period for buntings, rather than any underlying unsuitability of these sites for the species.

DISCUSSION

A total of 23 globally threatened and Near Threatened species were recorded during the surveys, comprising 3 Critically Endangered, 1 Endangered, 7 Vulnerable and 12 Near Threatened species. The results of the surveys indicate that the lowlands of Kachin State are of high global significance for the conservation of eight of these species: Green Peafowl; White-winged Duck; Masked Finfoot; Lesser Fish Eagle; White-rumped Vulture; Slender-billed Vulture; Darter; and Chestnut-backed Laughingthrush. Taken in combination with other survey data (VAN DER VEN, 2000, 2001, J. W. Duckworth *in litt.*, 2007), the results of the present surveys reveal that the lowlands of Kachin State are also of high global significance for a ninth species, White-bellied Heron, although there is currently insufficient information available about the status of this species or its movements to enable an analysis of the relative importance of lowland wetlands in Kachin for its conservation, compared with montane wetlands in the state and elsewhere in the eastern Himalayas.

The results of the surveys indicate that the lowlands of Kachin State support populations of at least seven globally threatened and Near Threatened species that are potentially of high

significance at the regional (mainland South-East Asia) level: Ferruginous Pochard; Great Hornbill; Grey-headed Fish Eagle; Spot-billed Pelican; Black-necked Stork; Lesser Adjutant; and Rusty-bellied Shortwing. The global significance of these populations is influenced by the existence of larger populations outside of the region. Nevertheless, several of these populations are potentially of, at least, medium global significance.

In spite of considerable survey effort, it was not possible to confirm the continued existence of Pink-headed Duck in the lowlands of Kachin State. Seemingly suitable habitat for the species still persists along the Tanai River, in the Kamaing area, at Nawng Kwin wetland and in the grasslands along the Indawgyi River to the north of Indawgyi Lake (which were not surveyed). Failure to detect the species at these sites, despite recording almost all other resident and migratory waterfowl species known from North Myanmar, suggests that either there are features of the species's behavioural ecology that make it particularly difficult to detect (e.g. nocturnal feeding, extreme shyness, etc.), or that it may have become extinct in the lowlands of Kachin State (TORDOFF *ET AL.*, 2008).

In addition to globally Threatened and Near Threatened species, the surveys revealed the lowlands of Kachin State to be of potentially high regional significance for the conservation of a number of other bird species. While this paper does not attempt to undertake a comprehensive review of these species, attention must be drawn to the lowlands' importance for Common Crane, Black Stork and Woolly-necked Stork, three large waterbird species that have undergone significant declines in the region, as well as a suite of riverine and grassland bird species, mentioned below.

Given that the surveys were very brief relative to the size and complexity of the survey area, and strongly seasonally concentrated, it can be assumed that further studies will reveal that the lowlands of Kachin State have high regional or global significance for various other species.

Apart from their high significance for individual species, the lowlands of Kachin State are also of high regional significance for several bird communities. Most notable among these are riverine bird communities, characterised by such species as Green Peafowl, Great Thick-knee, River Lapwing, River Tern, Little Tern, Lesser and Grey-headed Fish Eagles, Darter and Plain Martin. There is a pattern of major regional decline in riverine bird species (DUCKWORTH *ET AL.*, 2002 and references therein), to the point that the riverine bird communities that persist along the Tanai, Nat Kaung and Ayeyarwady Rivers are among the best remaining examples in mainland South-East Asia. Also of high regional significance are grassland bird communities, characterised by the presence of such species as White-tailed Stonechat, Jerdon's Bushchat, Striated Grassbird, Streaked Weaver, Red Avadavat, and Black-headed Munia. Natural grasslands in the terai of northern India and southern Nepal have declined precipitously in area and quality, following conversion to agriculture and plantation (BIRDLIFE INTERNATIONAL, 2003), and similar, if not more pronounced, trends have been witnessed in South-East Asia. The grasslands in the Kamaing area, in particular, are among the most extensive and little disturbed natural floodplain grasslands remaining in mainland South-East Asia. It is notable, therefore, that these grasslands, together with those at Nawng Kwin, are currently not included within any existing or proposed protected area.

The bird communities of the lowlands of Kachin State are currently facing a range of threats. Wetland bird communities are threatened by disturbance, arising from human activities such as fishing and rattan collection on and around ox-bows. Similarly, riverine bird communities are threatened by disturbance arising from dry season encampments on sandbars

and other sedimentary features upon which these birds might breed. Although the timing of the surveys was unsuitable to assess levels of disturbance to breeding birds in river channels, observations later in the dry season indicate that this pressure has risen enormously in the last few years (J. W. Duckworth *in litt.*, 2007). Because birds are long-lived, current populations are not a reliable indicator of conservation outlook.

In addition to the threat posed by disturbance, a number of hydropower projects have been proposed for development along the upper Chindwin River, and these threaten to negatively affect riverine bird communities. It is not clear, however, to what extent these developments will affect riverine bird communities along the Tanai River and its tributaries, which are some distance upstream of the proposed dam sites.

Habitat loss is also a major threat to non-river channel, non-forest bird communities in the lowlands of Kachin State. Burning and conversion of grasslands was observed in the Kamaing area and at Nawng Kwin, with anecdotal reports indicating that much of the conversion had taken place within the last decade. Conversion of forest to agriculture was also observed along most of the rivers visited during the surveys, as well as along the Ledo Road within the proposed Hukaung Tiger Reserve. In the case of the proposed tiger reserve, forest loss is probably a relatively minor threat to the populations of most bird species, given the vast area that remains, even in the level lowlands.

Between 2001 and 2004, a preliminary list of IBAs in Myanmar was prepared (BIRDLIFE INTERNATIONAL, 2004). This list incorporated the results of the two surveys by BirdLife and BANCA in 2003, the survey by WBSJ and NWCD in 2003, and the private expeditions by J. van der Ven in 1999–2003. The preliminary list of IBAs in Myanmar includes 13 IBAs in Kachin State, of which 8 were visited during the BirdLife/BANCA surveys in 2003–2005: Tanai River; Hukaung Valley Wildlife Sanctuary; Kamaing; Upper Mogaung Chaung Basin; Indawgyi Lake and Indawgyi River; Ayeyarwady River: Myitkyina-Sinbo; 96 Ins; and Ayeyarwady River: Bhamo-Shwegu. Of these sites, all but the last were confirmed to meet the criteria for qualification as an IBA. Although Ayeyarwady River: Bhamo-Shwegu was not confirmed to meet the IBA criteria during the surveys, they only covered a small portion of the site. Moreover, the site has been demonstrated to meet the IBA criteria by other surveys (e.g. VAN DER VEN, 2000).

In addition to the IBAs mentioned previously, the surveys also demonstrated that Nawng Kwin meets the criteria for qualification as an IBA, due to its importance for globally threatened and congregatory species. In a future analysis of IBAs in Myanmar, this site would be worthy of inclusion, either as a separate IBA or as part of Indawgyi Lake and Indawgyi River IBA.

Although grassland habitats received significant attention during the surveys, they were not surveyed systematically. In particular, neither mist nets nor taped calls were used to survey skulking birds. In addition to the birds recorded during the surveys, two grasslands specialists of conservation concern are likely to occur in the lowlands of Kachin State, and future surveys should pay attention to determining the status of these species. The first species, Jerdon's Babbler *Chrysomma albirostre* (Vulnerable), is characteristic of tall riverine grasslands. The species has previously been recorded near Bhamo (HARINGTON, 1909) and Indawgyi Lake (STANFORD & TICEHURST, 1938–1939), although there have been no records from Myanmar since 1941 (BIRDLIFE INTERNATIONAL, 2001). The second species, Rufous-rumped Grassbird *Graminicola bengalensis* (Near Threatened), is characteristic of tall emergent vegetation in or bordering freshwater swamps or along the banks of lowland rivers (BIRDLIFE INTERNATIONAL, 2001). This species has been historically recorded in Myanmar only from Tenasserim

(ROBSON, 2005) but its occurrence in northern India and southern Nepal suggests that it could be expected to occur in North Myanmar. In fact, two largish warblers repeatedly flushed in the grassland south-west of the Nat Kaung River on 22 October 2005 may have been this species; although the birds never perched openly, precluding a positive identification.

In addition to more comprehensive surveys of grassland habitats, further surveys are required to clarify the status of Pink-headed Duck in Myanmar. While surveys for this species should include the lowlands of Kachin State, they should not be limited to this area, as the species is also known historically from other parts of the country (TORDOFF *ET AL.*, 2008).

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Appendix 1. Bird species recorded in the lowlands of Kachin State during BirdLife/BANCA surveys in 2003–2005

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeayawady River			Bhamo	96 Ins		Other			Status
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005		
Blue-breasted Quail <i>Coturnix chinensis</i>																P					
Scaly-breasted Partridge <i>Arborophila chloropus</i>							P														
Red Junglefowl <i>Gallus gallus</i>	P	P	P	P	P		P	P	P		C					P					
Kalij Pheasant <i>Lophura leucomelanos</i>	P				P		P														
Grey Peacock Pheasant <i>Polyplectron bicalcaratum</i>							P														
Green Peafowl <i>Pavo muticus</i>	P	C			P		P														VU
Fulvous Whistling-duck <i>Dendrocygna bicolor</i>										P											
Lesser Whistling-duck <i>Dendrocygna javanica</i>	P						P			C					P	P					
Greylag Goose <i>Anser anser</i>	P	P			P		P			C											
Bar-headed Goose <i>Anser indicus</i>	P																				
Ruddy Shelduck <i>Tadorna ferruginea</i>	C	C			P					P	C	P	P	P	P	P					
Common Shelduck <i>Tadorna tadorna</i>										P											
White-winged Duck <i>Cairina scutulata</i>	P	P			P		P														EN

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeyarwady River			Bhamo	6 Ins	Other			Status	
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005		
Cotton Pygmy-goose <i>Nettapus coromandelianus</i>	P						P		P	P					P	P					
Gadwall <i>Anas strepera</i>	P	P								P	C	P									
Eurasian Wigeon <i>Anas penelope</i>	P									P		P									
Mallard <i>Anas platyrhynchos</i>	P	P							P	P	C	P									
Spot-billed Duck <i>Anas poecilorhyncha</i>	P	P							P	P	P	P			P	P					
Northern Shoveler <i>Anas clypeata</i>	P									P	P				P	P					
Northern Pintail <i>Anas acuta</i>	P				P					P		P									
Garganey <i>Anas querquedula</i>										P											
Common Teal <i>Anas crecca</i>	P	P					P		P	P											
Red-crested Pochard <i>Rhodonessa rufina</i>	P	P				P				P	P										
Common Pochard <i>Aythya ferina</i>	P	P																			
Ferruginous Pochard <i>Aythya nyroca</i>	P	P								P	C										NT
Tufted Duck <i>Aythya fuligula</i>	P	P									C	P	P			P	P				
Common Goldeneye <i>Bucephala clangula</i>		P																			

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayejawady River			Bhamo	96 Ins	Other			Status	
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005		
Common Merganser <i>Mergus merganser</i>	P	P										P									
Barred Buttonquail <i>Turnix suscitator</i>							P									P					
buttonquail species <i>Turnix sp.</i>																P					
Eurasian Wryneck <i>Jynx torquilla</i>					P				P												
Speckled Piculet <i>Picumnus innominatus</i>					P		P														
White-browed Piculet <i>Sasia ochracea</i>	P	P			P						P										
Grey-capped Pygmy Woodpecker <i>Dendrocopos canicapillus</i>							P		P												
Fulvous-breasted Woodpecker <i>Dendrocopos macei</i>					P		P														
Great Spotted Woodpecker <i>Dendrocopos major</i>	P																				
Rufous Woodpecker <i>Celeus brachyurus</i>	P	P			P		P				P										
White-bellied Woodpecker <i>Dryocopus javensis</i>					P		P	P	P												
Lesser Yellownape <i>Picus chlorolophus</i>	P	P			P		P		P												
Greater Yellownape <i>Picus flavinucha</i>	P	P			P		P		P												
Grey-headed Woodpecker <i>Picus canus</i>	P	P			P		P														P
Common Flameback <i>Dinopium javanense</i>							P				P										

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeyarwady River			Bhamo	96 Ins	Other		Status	
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005	
Greater Flameback <i>Chrysocolaptes lucidus</i>	P				P	P	P		P											
flameback species <i>Dinopium/Chrysocolaptes sp.</i>					P		P									P				
Bay Woodpecker <i>Blythipicus pyrrhotis</i>	P	P					P													
Great Slaty Woodpecker <i>Mulleripicus pulverulentus</i>							P													
Lineated Barbet <i>Megalaima lineata</i>		P			P	P	C		C	P	P				P	P				P
Blue-throated Barbet <i>Megalaima asiatica</i>	C	P			P		P			P	P				P					P
Blue-eared Barbet <i>Megalaima australis</i>							P													
Coppersmith Barbet <i>Megalaima haemacephala</i>					P	P	P		P		P					P				P
Oriental Pied Hornbill <i>Anthracoceros albirostris</i>	P	P		P	P		C			P	C				P	P				
Great Hornbill <i>Buceros bicornis</i>	P	P					P								P					NT
Wreathed Hornbill <i>Aceros undulatus</i>	P	P													P	P				
Common Hoopoe <i>Upupa epops</i>	P				P		P									P				
Red-headed Trogon <i>Harpactes erythrocephalus</i>	P	P			P		P				P									
Indian Roller <i>Coracias benghalensis</i>	P	P		P	P		P	P	P						P	P		P	P	
Dollarbird <i>Eurystomus orientalis</i>	P				P		P		P							P				P
Common Kingfisher <i>Alcedo atthis</i>	P	P			P	P	C		P	C	P	P				P				P
Blue-eared Kingfisher <i>Alcedo meninting</i>	P	P			P		P													

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeerwady River			Bhamo	96 Ins	Other			Status	
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005		
Black-backed Kingfisher <i>Ceyx erithacus</i>							P														
Stork-billed Kingfisher <i>Halcyon capensis</i>	P	P			P		P		P												
White-throated Kingfisher <i>Halcyon smyrnensis</i>	P	C			P	P	C		C	C	C	P			P	P				P	
Black-capped Kingfisher <i>Halcyon pileata</i>	P														P						
Crested Kingfisher <i>Megaceryle lugubris</i>															P	P					
Pied Kingfisher <i>Ceryle rudis</i>	P	C			P	P	C		C			P			P	P					
Blue-bearded Bee-eater <i>Nyctyornis athertoni</i>	P	P			P		P				P										
Green Bee-eater <i>Merops orientalis</i>	P				C	P	C	P	C	C	P					P		P	P		
Blue-tailed Bee-eater <i>Merops philippinus</i>	P	P					P					P				P					
Chestnut-headed Bee-eater <i>Merops leschenaulti</i>					P		C		P							P					
Chestnut-winged Cuckoo <i>Clamator coromandus</i>	P						P														
Large Hawk Cuckoo <i>Hierococcyx sparveriioides</i>	P																				
Indian Cuckoo <i>Cuculus micropterus</i>	P														P						
Eurasian Cuckoo <i>Cuculus canorus</i>															P	P					
Banded Bay Cuckoo <i>Cacomantis sonneratii</i>	P															P					
Plaintive Cuckoo <i>Cacomantis merulinus</i>	P				P		P			P						P					
Drongo Cuckoo <i>Surniculus lugubris</i>							P								P	P					

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeyarwady River			Bhamo	96 Ins	Other			Status	
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005		
Asian Koel <i>Eudynamis scolopacea</i>	P															P					
Green-billed Malkoha <i>Phaenicophaeus tristis</i>	P				P	P	P		P		P				P					P	
Greater Coucal <i>Centropus sinensis</i>	P	P			P		P		P		P				P	P				P	
Lesser Coucal <i>Centropus bengalensis</i>				P			P			P	C										
Alexandrine Parakeet <i>Psittacula eupatria</i>													P								
Blossom-headed Parakeet <i>Psittacula roseata</i>					P		P														
Red-breasted Parakeet <i>Psittacula alexandri</i>	P				P		C		P		C					P				P	
Himalayan Swiftlet <i>Collocalia brevirostris</i>							P														
Silver-backed Needletail <i>Hirundapus cochinchinensis</i>									P												
Brown-backed Needletail <i>Hirundapus giganteus</i>					P		P		P			P				P					
Asian Palm Swift <i>Cypsiurus balasiensis</i>	P	P		P	C		P	P	P		P	P				P			P	P	
Fork-tailed Swift <i>Apus pacificus</i>	P																				
House Swift <i>Apus affinis</i>	P																			P	
Crested Treeswift <i>Hemiprocne coronata</i>					P		P									P					
Mountain Scops Owl <i>Otus spilocephalus</i>	P						P														
Collared Scops Owl <i>Otus bakkamoena</i>	P						P														
Spot-bellied Eagle Owl <i>Bubo nivalensis</i>							P														

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeaywady River			Bhamo	96 Ins	Other			Status
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005	
Brown Fish Owl <i>Ketupa zeylonensis</i>															P	P				
Brown Wood Owl <i>Strix leptogrammica</i>	P	P																		
Collared Owlet <i>Glaucidium brodiei</i>	P	P					P				P									
Asian Barred Owlet <i>Glaucidium cuculoides</i>	P	P					P									P				
[Jungle Owlet <i>Glaucidium radiatum</i>]					P															P
Spotted Owlet <i>Athene brama</i>													P							
Brown Hawk Owl <i>Ninox scutulata</i>							P													
Hodgson's Frogmouth <i>Batrachostomus hodgsoni</i>	P																			
Large-tailed Nightjar <i>Caprimulgus macrurus</i>					P		P		P											
Rock Pigeon <i>Columba livia</i>																P	P	P	P	
Oriental Turtle Dove <i>Streptopelia orientalis</i>					P		P		P							P				
Spotted Dove <i>Streptopelia chinensis</i>	C	C		P	C	P	C		C	C	C				P	P		P	P	
Red Collared Dove <i>Streptopelia tranquebarica</i>																P				
Eurasian Collared Dove <i>Streptopelia decaocto</i>																			P	
Barred Cuckoo Dove <i>Macropygia unchall</i>															P					
Emerald Dove <i>Chalcophaps indica</i>	P	P			P		P								P	P				
Orange-breasted Green Pigeon <i>Treron bicincta</i>	P						P		P						P	P				

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeyarwady River			Bhamo	96 Ins	Other			Status	
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005		
Pompadour Green Pigeon <i>Treron pompadora</i>	P	P					P														
Thick-billed Green Pigeon <i>Treron curvirostra</i>	P	P			P		P					P				P					
Yellow-footed Green Pigeon <i>Treron phoenicoptera</i>							P								P	P					
Pin-tailed Green Pigeon <i>Treron apicauda</i>		P																			
Wedge-tailed Green Pigeon <i>Treron sphenura</i>		P																			
Green Imperial Pigeon <i>Ducula aenea</i>	P	P			P		P			P					P	P					
Mountain Imperial Pigeon <i>Ducula badia</i>	P				P		P		P		P										
Sarus Crane <i>Grus antigone</i>						P					P										VU
Common Crane <i>Grus grus</i>	P		P	P	P		P	P	P	C			P			P	P				
Masked Finfoot <i>Heliopais personata</i>	P	P					P														VU
Slaty-breasted Rail <i>Gallirallus striatus</i>										P											
White-breasted Waterhen <i>Amaurornis phoenicurus</i>	P	P			P		P								P	P					
Ruddy-breasted Crane <i>Porzana fusca</i>																P					
Watercock <i>Gallixrex cinerea</i>							P														
Purple Swampphen <i>Porphyrio porphyrio</i>	P	P					P			P	P				P	P					
Common Moorhen <i>Gallinula chloropus</i>	P	C			P	P	P			P	C				P	P					
Common Coot <i>Fulica atra</i>	P	P			P					C											

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Naung Kwin	Ayeyarwady River			Bhamo	96 Ins	Other			Status
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005	
Common Snipe <i>Gallinago gallinago</i>											P					P				
snipe species <i>Gallinago</i> sp.							P								P					
Eurasian Curlew <i>Numenius arquata</i>												P								
Common Redshank <i>Tringa totanus</i>										P										
Marsh Sandpiper <i>Tringa stagnatilis</i>		P																		
Common Greenshank <i>Tringa nebularia</i>	P	P			P		P		C			P			P	P				
Green Sandpiper <i>Tringa ochropus</i>	P	P			P	P	P		C		P				P					
Wood Sandpiper <i>Tringa glareola</i>	P				P		P			P					P	P				
Common Sandpiper <i>Actitis hypoleucos</i>	P	P			P		P		C			P			P	P			P	
Temminck's Stint <i>Calidris temminckii</i>	P	P			P				C	P					P					
Greater Painted-snipe <i>Rostratula benghalensis</i>							P									P				
Pheasant-tailed Jacana <i>Hydrophasianus chirurgus</i>	P						P			P						P				
Bronze-winged Jacana <i>Metopidius indicus</i>	P				P		P			C	P				P	P				
Great Thick-knee <i>Esacus recurvirostris</i>	P	P			P		P		C											
Black-winged Stilt <i>Himantopus himantopus</i>										P										
Pacific Golden Plover <i>Pluvialis fulva</i>										P		P		P	P					
Long-billed Plover <i>Charadrius placidus</i>					P															

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeyarwady River			Bhamo	96 Ins	Other			Status
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005	
Little Ringed Plover <i>Charadrius dubius</i>	P	C			P		P		C	P					P	P				
Kentish Plover <i>Charadrius alexandrinus</i>	P	P			P				C						P	P				
Northern Lapwing <i>Vanellus vanellus</i>	P			P																
River Lapwing <i>Vanellus duvaucelii</i>	P	C			C		P		C			P			P	P				
Grey-headed Lapwing <i>Vanellus cinereus</i>	P			P			P		P	P					P	P			P	
Red-wattled Lapwing <i>Vanellus indicus</i>							P		P		P				P	P			P	
Oriental Pratincole <i>Glareola maldivarum</i>												P				P				
Small Pratincole <i>Glareola lactea</i>	P	P										P			P	P				
Pallas's Gull <i>Larus ichthyaetus</i>		P										P								
Brown-headed Gull <i>Larus brunnicephalus</i>					P					C		P			P	P				
Black-headed Gull <i>Larus ridibundus</i>	P								P	C										
River Tern <i>Sterna aurantia</i>							P					P			P	P				
Little Tern <i>Sterna albifrons</i>												P								
Osprey <i>Pandion haliaetus</i>	P	P			P		P		P			P			P					
Jerdon's Baza <i>Aviceda jerdoni</i>	P				P			P												
Black Baza <i>Aviceda leuphotes</i>	P				P															
Oriental Honey-buzzard <i>Pernis ptilorhynchus</i>	P	P	P		C	P	P		C	P	P				P	P	P	P	P	

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeerwady River			Bhamo	96 Ins	Other			Status
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005	
Black-shouldered Kite <i>Elanus caeruleus</i>					P	P	P		C	P	P					P	P			
Black Kite <i>Milvus migrans</i>							P												P	
Brahminy Kite <i>Haliastur indus</i>		P			P	P	C		C	P	C					P	P			
White-tailed Eagle <i>Haliaeetus albicilla</i>		P																		
Lesser Fish Eagle <i>Ichthyophaga humilis</i>	P	P			P		P													NT
Grey-headed Fish Eagle <i>Ichthyophaga ichhyaetus</i>		P			P		C		C											NT
White-rumped Vulture <i>Gyps bengalensis</i>					P	P	P	P	P	P	P					P	P		P	CR
Slender-billed Vulture <i>Gyps tenuirostris</i>							P	P	P	P									P	CR
Himalayan Griffon <i>Gyps himalayensis</i>						P		P		P										
vulture species <i>Gyps sp.</i>	P															P	P			
Crested Serpent Eagle <i>Spilornis cheela</i>	P	P	P	P	P	P	P	P		P	P				P	P	P		P	
Western Marsh Harrier <i>Circus aeruginosus</i>	P						P			P	P								P	
Eastern Marsh Harrier <i>Circus spilonotus</i>		P				P				P	P								P	
Hen Harrier <i>Circus cyaneus</i>																P				
Pied Harrier <i>Circus melanoleucos</i>					P	P	P		P	P	C	P			P	P		P	P	
Crested Goshawk <i>Accipiter trivirgatus</i>	P				P		P								P					
Shikra <i>Accipiter badius</i>	P														P	P				

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeaywady River			Bhamo	96 Ins	Other			Status	
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005		
Besra <i>Accipiter virgatus</i>	P																				
Eurasian Sparrowhawk <i>Accipiter nisus</i>	P						P														
hawk species <i>Accipiter sp.</i>							P					P								P	
Rufous-winged Buzzard <i>Butastur liventer</i>				P	P	P															
Common Buzzard <i>Buteo buteo</i>	P				P		P		P											P	P
Black Eagle <i>Ictinaetus malayensis</i>										P										P	
Indian Spotted Eagle <i>Aquila hastata</i>							P														VU
Greater Spotted Eagle <i>Aquila clanga</i>						P	P			P	C										VU
Tawny Eagle <i>Aquila rapax</i>					P																
Steppe Eagle <i>Aquila nipalensis</i>						P														P	
eagle species <i>Aquila sp.</i>									P												
Booted Eagle <i>Hieraaetus pennatus</i>									P	P											
Rufous-bellied Eagle <i>Hieraaetus kienerii</i>		P			P																
Changeable Hawk Eagle <i>Spizaetus cirrhatus</i>	P				P		P		P							P					
Mountain Hawk Eagle <i>Spizaetus nipalensis</i>					P											P					
Collared Falconet <i>Microhierax caerulescens</i>					P		P		P	P	P										
Common Kestrel <i>Falco tinnunculus</i>	P	P		P	P		P		P	P		P			P					P	P

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeyarwady River			Bhamo	96 Ins	Other			Status	
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005		
Amur Falcon <i>Falco amurensis</i>							P										P			P	
Eurasian Hobby <i>Falco subbuteo</i>	P																				
Oriental Hobby <i>Falco severus</i>		P																			
Laggar Falcon <i>Falco jugger</i>	P						P				P										NT
Peregrine Falcon <i>Falco peregrinus</i>	P	P			P		P				P	P									
Little Grebe <i>Tachybaptus ruficollis</i>	P	P								C	P										
Great Crested Grebe <i>Podiceps cristatus</i>										C											
Darter <i>Anhinga melanogaster</i>	C	C			P	P	C		C	P	P	P									NT(1)
Little Cormorant <i>Phalacrocorax niger</i>	P	P			P	P	P			P	C	P			P	P					
Indian Cormorant <i>Phalacrocorax fuscicollis</i>	P																				
Great Cormorant <i>Phalacrocorax carbo</i>	P	C		P	C	P	P		P	C	C	P			P	P	P				
Little Egret <i>Egretta garzetta</i>	P	C			P				C	P	P	P			P	P			P		
Grey Heron <i>Ardea cinerea</i>	P	P					P		P	P		P			P	P					
White-bellied Heron <i>Ardea insignis</i>					P																EN
Purple Heron <i>Ardea purpurea</i>	P	P				P	P			P	C				P	P					
Great Egret <i>Casmerodius albus</i>	P	C			P		C		C	P	P	P			P	P				P	
Intermediate Egret <i>Mesophoyx intermedia</i>	P	C			P	P	P		P	C	C								P	P	

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeyarwady River			Bhamo	96 Ins	Other			Status
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005	
Cattle Egret <i>Bubulcus ibis</i>	P				P	P	P		C	P	P	P			P	P		P	P	
Indian Pond Heron <i>Ardeola grayii</i>							P									P				
Chinese Pond Heron <i>Ardeola bacchus</i>																P				
pond heron species <i>Ardeola sp.</i>	P			C	P	C		C	C	C					P		P	P		
Little Heron <i>Butorides striatus</i>	P	P			P		P		P			P			P	P		P		
Black-crowned Night Heron <i>Nycticorax nycticorax</i>	P				P		P		P		P									
Yellow Bittern <i>Ixobrychus sinensis</i>	P						P			P	P									
Cinnamon Bittern <i>Ixobrychus cinnamomeus</i>							P				P					P				
Black Bittern <i>Dupetor flavicollis</i>	P						P				P									
Glossy Ibis <i>Plegadis falcinellus</i>										P										
Spot-billed Pelican <i>Pelecanus philippensis</i>										P										NT
Asian Openbill <i>Anastomus oscitans</i>				P						P										
Black Stork <i>Ciconia nigra</i>	P	P	P	P	P	P	P	P		P	C					P	P	P		
Woolly-necked Stork <i>Ciconia episcopus</i>	P	P	P		P	P	P	P	P	P	P	P			P	P	P			
Black-necked Stork <i>Ephippiorhynchus asiaticus</i>	P	P			P	P	P				P									NT
Lesser Adjutant <i>Leptoptilos javanicus</i>	P	P			P	P	P		P	P	C							P		VU
Long-tailed Broadbill <i>Psarisomus dalhousiae</i>	P	P																		

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeerwady River			Bhamo	96 Ins	Other			Status	
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005		
Silver-breasted Broadbill <i>Serilophus lunatus</i>	P	P					P		P												
Asian Fairy Bluebird <i>Irena puella</i>		P													P						
Blue-winged Leafbird <i>Chloropsis cochinchinensis</i>		P					P														
Golden-fronted Leafbird <i>Chloropsis aurifrons</i>	P	P			P		P									P					P
Orange-bellied Leafbird <i>Chloropsis hardwickii</i>	P	P																			
Brown Shrike <i>Lanius cristatus</i>		P			P		P		P	P						P					P
Long-tailed Shrike <i>Lanius schach</i>	P				P	P	P		P	C	C									P	P
Grey-backed Shrike <i>Lanius tephronotus</i>	P	C			C	P	C		P	P	P				P					P	P
Common Green Magpie <i>Cissa chinensis</i>	P	P			P		P														
Rufous Treepie <i>Dendrocitta vagabunda</i>						P	P		P							P					P
Grey Treepie <i>Dendrocitta formosae</i>	P	P			P						P										
Collared Treepie <i>Dendrocitta frontalis</i>	P	P					P														
Hooded Treepie <i>Crypsirina cucullata</i>					P				P											P	NT,RRS
House Crow <i>Corvus splendens</i>					P					C				P						P	P
Large-billed Crow <i>Corvus macrorhynchos</i>	C	C		P	C	P	P		C	P	C			P	P	P					P
Ashy Woodswallow <i>Artamus fuscus</i>					P		P				P					P					
Black-hooded Oriole <i>Oriolus xanthornus</i>		P			C	P	P		C		C				P	P	P				

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeerwady River			Bhamo	96 Ins	Other			Status
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005	
Maroon Oriole <i>Oriolus traillii</i>	P										P									
Large Cuckooshrike <i>Coracina macei</i>					P		P									P				
Black-winged Cuckooshrike <i>Coracina melaschistos</i>		P									P									
Long-tailed Minivet <i>Pericrocotus ethologus</i>	P																			
Scarlet Minivet <i>Pericrocotus flammeus</i>	P	P			P						P									
Bar-winged Flycatcher-shrike <i>Hemipus picatus</i>	P	P			P		P				P				P					
Yellow-bellied Fantail <i>Rhipidura hypoxantha</i>	P	P																		
White-throated Fantail <i>Rhipidura albicollis</i>	P	P			P															
Black Drongo <i>Dicrurus macrocercus</i>					P		P			C	P				P	P		P	P	
Ashy Drongo <i>Dicrurus leucophaeus</i>		P			P	P	P				P					P			P	
Crow-billed Drongo <i>Dicrurus annectans</i>	P						P													
Bronzed Drongo <i>Dicrurus aeneus</i>	P	P			P		P	P	P	P	P					P				P
Lesser Racket-tailed Drongo <i>Dicrurus remifer</i>	P						P													
Spangled Drongo <i>Dicrurus hottentottus</i>	P				P		P	P	P							P		P	P	
Greater Racket-tailed Drongo <i>Dicrurus paradiseus</i>	C	P			P	P	P		P		P					P				
Black-naped Monarch <i>Hypothymis azurea</i>	P				P		P		P							P				
Asian Paradise-flycatcher <i>Terpsiphone paradisi</i>							P													

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeaywady River			Bhamo	96 Ins	Other			Status
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005	
Common Iora <i>Aegithina tiphia</i>	P	P			P		P									P				
Large Woodshrike <i>Tephrodornis gularis</i>		P			P		P													
Common Woodshrike <i>Tephrodornis pondicerianus</i>																P				
Blue Rock Thrush <i>Monticola solitarius</i>		P		P	P					P	P	P				P				P
Blue Whistling Thrush <i>Myophonus caeruleus</i>										P										
Black-breasted Thrush <i>Turdus dissimilis</i>		P																		
Eurasian Blackbird <i>Turdus merula</i>		P																		
Rusty-bellied Shortwing <i>Brachypteryx hyperythra</i>	P																			VU, RRS
Lesser Shortwing <i>Brachypteryx leucophrys</i>	P																			
shortwing species <i>Brachypteryx</i> sp.					P															
Red-throated Flycatcher <i>Ficedula parva</i>	P	P			P	P	P		P	P						P				P
Snowy-browed Flycatcher <i>Ficedula hyperythra</i>	P																			
Little Pied Flycatcher <i>Ficedula westermanni</i>		P					P				P									
Slaty-blue Flycatcher <i>Ficedula tricolor</i>	P	P																		
Verditer Flycatcher <i>Eumyias thalassina</i>	P	P																		
Small Niltava <i>Niltava macgrigoriae</i>	P	P									P									
Pale Blue Flycatcher <i>Cyornis unicolor</i>	P																			

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeerwady River			Bhamo	96 Ins	Other			Status	
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005		
Blue-throated Flycatcher <i>Cyornis rubeculoides</i>					P		P				P										
Pygmy Blue Flycatcher <i>Muscicapella hodgsoni</i>	P																				
Grey-headed Canary Flycatcher <i>Culicicapa ceylonensis</i>	P	P			P		P		P		P				P	P				P	
Siberian Rubythroat <i>Luscinia calliope</i>								P			P										
White-tailed Rubythroat <i>Luscinia pectoralis</i>								P													
Bluethroat <i>Luscinia svecica</i>					P		P									P					
Firethroat <i>Luscinia pectardens</i>																P					NT
Oriental Magpie Robin <i>Copsychus saularis</i>	P	P			P		C		P	P	P					P			P		
White-rumped Shama <i>Copsychus malabaricus</i>					P		P				P				P	P	P				
Hodgson's Redstart <i>Phoenicurus hodgsoni</i>	P	P			P	P			P												
White-capped Water Redstart <i>Chaimarrornis leucocephalus</i>												P									
Plumbeous Water Redstart <i>Rhyacornis fuliginosus</i>	P																				
White-bellied Redstart <i>Hodgsonius phaenicuroides</i>											P										
White-tailed Robin <i>Myiomela leucura</i>	P							P													
Black-backed Forktail <i>Enicurus immaculatus</i>					P		P														
Slaty-backed Forktail <i>Enicurus schistaceus</i>		P																			
White-crowned Forktail <i>Enicurus leschenaulti</i>	P						P			P					P						

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeaywady River			Bhamo	96 Ins	Other			Status	
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005		
Siberian Stonechat <i>Saxicola maura</i>	P	P		P	P	P	P		P	C	C					P	P		P	P	
White-tailed Stonechat <i>Saxicola leucura</i>	P										P					P					
Pied Bushchat <i>Saxicola caprata</i>					P		P		P	C						P	P	P	P	P	
Jerdon's Bushchat <i>Saxicola jerdoni</i>	P	P					P			P	C					P					
Grey Bushchat <i>Saxicola ferrea</i>		P																			
Spot-winged Starling <i>Sarglossa spiloptera</i>	P	P			P																P
Chestnut-tailed Starling <i>Sturnus malabaricus</i>	P				C		C		P	P	P					P	P				P
Asian Pied Starling <i>Sturnus contra</i>	P	P			P		P	P	C	P	P					P	P				
Black-collared Starling <i>Sturnus nigricollis</i>	P				P	P	P		P	P						P	P				P
Vinous-breasted Starling <i>Sturnus burmannicus</i>					P		P		C		P					P					
Common Myna <i>Acridotheres tristis</i>					P					C											P
White-vented Myna <i>Acridotheres grandis</i>					C		P	P	C	P	C					P	P	P			P
Collared Myna <i>Acridotheres albocinctus</i>	P	C		P	C		C	P	C	C	C					P	P			P	
Crested Myna <i>Acridotheres cristatellus</i>										P	P										
Hill Myna <i>Gracula religiosa</i>	P				P		P		P							P				P	P
Chestnut-bellied Nuthatch <i>Sitta castanea</i>	P																				
Velvet-fronted Nuthatch <i>Sitta frontalis</i>	P	P			P		P														

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeayarwady River			Bhamo	96 Ins	Other			Status	
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005		
Winter Wren <i>Troglodytes troglodytes</i>		P																			
Sultan Tit <i>Melanochlora sultanea</i>	P	P			P		P		P		P										
Sand Martin <i>Riparia riparia</i>							P			P	P										
Plain Martin <i>Riparia paludicola</i>	C	C		P	C	P	P		C				P			P					
Barn Swallow <i>Hirundo rustica</i>	P	P			P	P	P		P	C	C	P				P		P	P		
Wire-tailed Swallow <i>Hirundo smithii</i>	P	P			P		P		P		P							P			
Red-rumped Swallow <i>Hirundo daurica</i>		P			P	P	P		P	P	P										
Striated Swallow <i>Hirundo striolata</i>																P					
Red-rumped/Striated Swallow <i>Hirundo daurica/striolata</i>																P					
Asian House Martin <i>Delichon dasypus</i>											P	P			P						
Black-crested Bulbul <i>Pycnonotus melanicterus</i>		P			P		P			P	P					P					
Red-whiskered Bulbul <i>Pycnonotus jocosus</i>	C	C		P	C	P	C		C	P	C				P	P				P	
Red-vented Bulbul <i>Pycnonotus cafer</i>	P	P			C	P	P		C	C	C					P		P	P		
Flavescent Bulbul <i>Pycnonotus flavescens</i>							P														
White-throated Bulbul <i>Alophoixus flaveolus</i>	P	P			P		P				P										
Olive Bulbul <i>Iole virescens</i>											P				P	P					
Black Bulbul <i>Hypsipetes leucocephalus</i>											P				P						

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeayarwady River			Bhamo	96 Ins	Other			Status	
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005		
Zitting Cisticola <i>Cisticola juncidis</i>					P		P				C										
Bright-headed Cisticola <i>Cisticola exilis</i>																P					
Rufescent Prinia <i>Prinia rufescens</i>			P																		
Grey-breasted Prinia <i>Prinia hodgsonii</i>																			P		
Yellow-bellied Prinia <i>Prinia flaviventris</i>	P	P				P	P				P					P					
Plain Prinia <i>Prinia inornata</i>	P															P					
white-eye species <i>Zosterops</i> sp.	P																				
Slaty-bellied Tesia <i>Tesia olivea</i>	P	P					P														
Grey-bellied Tesia <i>Tesia cyaniventer</i>	P																				
Asian Stubtail <i>Urosphena squamiceps</i>								P													
Brownish-flanked Bush Warbler <i>Cettia fortipes</i>						P															
Chestnut-crowned Bush Warbler <i>Cettia major</i>		P																			
Aberrant Bush Warbler <i>Cettia flavolivacea</i>																P					
bush warbler species <i>Cettia</i> sp.															P						
Spotted Bush Warbler <i>Bradypterus thoracius</i>	P						P														
Rusty-rumped Warbler <i>Locustella certhiola</i>																P					
Oriental Reed Warbler <i>Acrocephalus orientalis</i>					P		P														

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeerwady River			Bhamo	96 Ins	Other			Status	
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005		
Mountain Tailorbird <i>Orthotomus cuculatus</i>	P	P																			
Common Tailorbird <i>Orthotomus sutorius</i>	P	P			P	P	P		P		P					P				P	
Dark-necked Tailorbird <i>Orthotomus atrogularis</i>					P		P														
Dusky Warbler <i>Phylloscopus fuscatus</i>	P	C			P	P	C		C	P	P					P				P	
Tickell's Leaf Warbler <i>Phylloscopus affinis</i>						P															
Yellow-browed Warbler <i>Phylloscopus inornatus</i>	P	P				P				P	P					P				P	
Arctic Warbler <i>Phylloscopus borealis</i>							P														
Two-barred Warbler <i>Phylloscopus plumbeitarsus</i>	P				P		P		P												
Eastern Crowned Warbler <i>Phylloscopus coronatus</i>	P																				
Blyth's Leaf Warbler <i>Phylloscopus reguloides</i>	P																				
Grey-crowned Warbler <i>Seicercus tephrocephalus</i>	P	P																			
Grey-cheeked Warbler <i>Seicercus poliogenys</i>	P																				
Rufous-faced Warbler <i>Abroscopus albogularis</i>	P						P														
Yellow-bellied Warbler <i>Abroscopus superciliosus</i>	P				P																
Striated Grassbird <i>Megalurus palustris</i>	P	P			P		P		P	C	C					P					
White-crested Laughingthrush <i>Garrulax leucolophus</i>	P	P			P		P													P	
Lesser Necklaced Laughingthrush <i>Garrulax monileger</i>	P	P			P		P									P					

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeyarwady River			Bhamo	96 Ins	Other			Status
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005	
Greater Necklaced Laughingthrush <i>Garrulax pectoralis</i>					P		P													
Rufous-necked Laughingthrush <i>Garrulax ruficollis</i>	P	P					P											P	P	
Chestnut-backed Laughingthrush <i>Garrulax nuchalis</i>					P															NT, RRS
laughingthrush species <i>Garrulax</i> sp.	P	P													P					
Rufous-vented Laughingthrush <i>Garrulax gularis</i>	P	P																		
Buff-breasted Babbler <i>Pellorneum tickelli</i>	P																			
Puff-throated Babbler <i>Pellorneum ruficeps</i>	P	P			C		P				P					P				
Large Scimitar Babbler <i>Pomatorhinus hypoleucos</i>	P															P				
White-browed Scimitar Babbler <i>Pomatorhinus schisticeps</i>	P	P			P		P													
Pygmy Wren Babbler <i>Pnoepyga pusilla</i>	P	P									P									
Rufous-fronted Babbler <i>Stachyris rufifrons</i>							P													
Rufous-capped Babbler <i>Stachyris ruficeps</i>	P																			
Golden Babbler <i>Stachyris chrysaea</i>											P									
Grey-throated Babbler <i>Stachyris nigriceps</i>	P	P					P									P				
Striped Tit Babbler <i>Macronous gularis</i>	P	P			P		P		P		P					P				
Chestnut-capped Babbler <i>Timalia pileata</i>	P	P					C				P					P				
Yellow-eyed Babbler <i>Chrysomma sinense</i>						P														

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeerwady River			Bhamo	96 Ins	Other			Status	
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005		
White-hooded Babbler <i>Gampsorhynchus rufulus</i>	P																				
Blue-winged Minla <i>Minla cyanouoptera</i>							P														
Rufous-throated Fulvetta <i>Alcippe rufogularis</i>	P	P			P																
Brown-cheeked Fulvetta <i>Alcippe poioicephala</i>	P	P			P		P		P		C										
Nepal Fulvetta <i>Alcippe nipalensis</i>	P						P														
White-bellied Yuhina <i>Yuhina zantholeuca</i>	P	P			P		P														
Greater Rufous-headed Parrotbill <i>Paradoxornis ruficeps</i>		P																			
Sand Lark <i>Calandrella raytal</i>															P	P					
Oriental Skylark <i>Alauda gulgula</i>																				P	
Yellow-vented Flowerpecker <i>Dicaeum chrysorrheum</i>	P				P		P									P					
Plain Flowerpecker <i>Dicaeum concolor</i>	P				P		P														
Scarlet-backed Flowerpecker <i>Dicaeum cruentatum</i>																P					
Ruby-cheeked Sunbird <i>Anthreptes singalensis</i>	P				P		P														
Black-throated Sunbird <i>Aethopyga saturata</i>	P	P			P																
Crimson Sunbird <i>Aethopyga siparaja</i>	P	P			P		P				P										
Little Spiderhunter <i>Arachnothera longirostra</i>	P	P			P		P				P										
Streaked Spiderhunter <i>Arachnothera magna</i>	P	P			P	P				P	P										

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeaywady River			Bhamo	96 Ins	Other			Status	
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005		
House Sparrow <i>Passer domesticus</i>										P											
Eurasian Tree Sparrow <i>Passer montanus</i>		P			P		P							P			P	P	P		
White Wagtail <i>Motacilla alba</i>	C	C		P	C	P	P		C	C	P				P	P		P	P		
Citrine Wagtail <i>Motacilla citreola</i>	P	P			P		P		P	C	P	P			P	P					
Yellow Wagtail <i>Motacilla flava</i>		P			P		P		P	P						P					
Grey Wagtail <i>Motacilla cinerea</i>												P									
Paddyfield Pipit <i>Anthus rufulus</i>	P				P		P		P		P					P					
Olive-backed Pipit <i>Anthus hodgsoni</i>	P	P			C	P	P		P		C					P					
Red-throated Pipit <i>Anthus cervinus</i>					P		P			P											
Rosy Pipit <i>Anthus roseatus</i>							P		P						P	P					
Streaked Weaver <i>Ploceus manyar</i>							P			P	P				P	P					
Baya Weaver <i>Ploceus philippinus</i>							P		P							P					
Red Avadavat <i>Amandava amandava</i>					P	P	P				P					P					
White-rumped Munia <i>Lonchura striata</i>					P																
Scaly-breasted Munia <i>Lonchura punctulata</i>	P					P	P		P		P									P	
Black-headed Munia <i>Lonchura malacca</i>					P	P	P				P					P					
Common Rosefinch <i>Carpodacus erythrinus</i>							P				P										

Species	Tanai River		Warazup			Kamaing		Mogaung Chaung		Indawgyi	Nawng Kwin	Ayeyarwady River			Bhamo	96 Ins	Other			Status
	2003	2004	2003	2004	2005	2004	2005	2004	2005	2004	2004	2003	2004	2005	2003	2003	2003	2004	2005	
Chestnut-eared Bunting <i>Emberiza fucata</i>											P									
Little Bunting <i>Emberiza pusilla</i>	P																			
Yellow-breasted Bunting <i>Emberiza aureola</i>											P									NT
Black-faced Bunting <i>Emberiza spodocephala</i>	P										P				P	P				

Key:

Square brackets [] denote provisional identification.

Abundance codes: C = common (recorded daily at sites visited for three or more days); P = present (not recorded daily at sites visited for three or more days or recorded at sites visited for less than three days).

Status codes: CR = Critically Endangered; EN = Endangered; VU = Vulnerable; NT = Near Threatened, as per IUCN (2004). RRS = restricted-range species, as per Stattersfield *et al.* (1998).

Note: (1) = as Oriental Darter *Anhingha melanogaster*.

Species names (vernacular and scientific), sequence and limits follow ROBSON (2000), apart from Slender-billed Vulture *Gyps tenuirostris*, which follows RASMUSSEN & PARRY (2001), and Indian Spotted Eagle *Aquila hastata*, which follows PARRY *ET AL.* (2002).