

Birds of Mondulkiri, Cambodia: distribution, status and conservation

THOMAS N. E. GRAY, EDWARD H. B. POLLARD, THOMAS D. EVANS, FREDERIC GOES, MARK GRINDLEY, KEO OMALISS, PAUL H. NIELSEN, ORN SAMBOVANNAK, PHAN CHANNA & SANH SOPHOAN

Since the late 1990s conservation activities have been carried out in a protected area complex centred on Mondulkiri province, eastern Cambodia. We provide a comprehensive bird list for this area and information on the status and distribution of all globally threatened, near threatened and restricted-range species. The total of 374 species includes 5 Critically Endangered, 3 Endangered, 7 Vulnerable and 16 Near Threatened species as well as five species recorded for the first time in Cambodia. Three main forest types—deciduous dipterocarp, lowland evergreen and semi-evergreen, and hill evergreen—each have distinctive avian communities. Evergreen forests on the Vietnam border comprise probably the largest least-disturbed lowland forests in the southern Annamites. There are important populations of several restricted-range and biome-restricted species. The area's populations of Green Peafowl *Pavo muticus*, White-rumped Vulture *Gyps bengalensis*, Slender-billed Vulture *G. tenuirostris*, Red-headed Vulture *Sarcogyps calvus*, White-shouldered Ibis *Pseudibis davisoni* and Giant Ibis *Thaumatibis gigantea* are evidently of high global conservation importance. Further surveys are required to clarify the status of a number of other potentially important species, including Masked Finfoot *Heliopais personata*, White-winged Duck *Cairina scutulata* and Sarus Crane *Grus antigone*. Major threats to the area include habitat loss, both unplanned encroachment and large-scale plantations, infrastructure development and hunting. Active conservation management is reducing these threats.

INTRODUCTION

The birds of Cambodia are relatively poorly known, and it is only earlier this year that the first avifaunal review of the country was published (Goes 2014). The country can be divided into eight ornithological landscapes, each of which supports its own characteristic habitats and distinctly different associated bird communities (Seng *et al.* 2003). In this paper we provide a first overview of the birds of the eastern area, centred on Mondulkiri province. The 17,500 km² study area which is bordered by Vietnam to the east and north includes all Mondulkiri province, eastern

Cambodia, together with the following protected areas which lie partly in Mondulkiri and partly in adjacent provinces: Snoul Wildlife Sanctuary (WS) and Seima Protected Forest (PF) to the south-west lie partly in Kratie province while Lumphat WS and O Ya Dao PF to the north and north-east lie partly in Ratanakiri province (Figure 1).

Most of the area forms part of the Lower Mekong Dry Forest Ecoregion (Tordoff *et al.* 2005). These rolling lowlands, generally under 150 m, are characterised by extensive deciduous dipterocarp forest, including *veal* (open grassland areas) which experience frequent fires, and smaller patches of mixed deciduous and semi-evergreen forests on higher ground and along watercourses. The deciduous forest is dissected by a number of rivers including the Srepok, a major tributary of the Mekong, and is characterised by *trapeang* (small seasonal wetlands). The extreme south and east of the area forms an extremity of the Annamite Range Moist Forests Ecoregion (Baltzer *et al.* 2001) with dominant wetter closed-canopy evergreen forest, particularly along the Vietnam border, rising to 1,070 m in the Phnom Nam Lyr WS (12.5°N 107.5°E).

Figure 1. The study area, comprising Mondulkiri province (dotted boundary) and those parts of Lumphat Wildlife Sanctuary, Snoul Wildlife Sanctuary, Seima Protection Forest and O Ya Dao Protected Forest that lie in adjacent Kratie and Ratanakiri provinces.



Table 1. Summary of protected areas (see Figure 1) showing the government departments and partnerships responsible for their management. FA = Forestry Administration; MoE = Ministry of Environment; WCS = Wildlife Conservation Society; WWF = World Wide Fund for Nature; PRCF = People Resources and Conservation Foundation; BL = BirdLife International. Forest cover estimated from JICA (2006). DDF = deciduous dipterocarp forest; MDF = mixed deciduous forest; SEGF/EGF = semi-evergreen and evergreen forest.

Protected area	Management organisation	Area (km ²)	Altitudinal range (m)	Forestcover (%)		
				DDF	MDF	SEGF/EGF
Seima PF	FA & WCS	2,990	70–650	42	15	31
Mondulkiri PF	FA & WWF	3,730	120–450	82	9	1
Phnom Prich WS	MoE & WWF	2,200	100–640	69	23	5
Lumphat WS	MoE & PRCF/BL	2,510	100–260	78	6	6
Snoul WS	MoE	750	70–130	3	8	65
Phnom Nam Lyr WS	MoE	540	320–1,070	28	16	44
O Ya Dao PF	FA	1,010	100–320	72	14	7

Almost 80% of the study area (13,730 km²) is protected, with four wildlife sanctuaries managed by the Ministry of Environment's General Department for Administration of Nature Conservation and Protection (MoE) and three protected forests managed by the Ministry of Agriculture, Forestry and Fisheries' Forestry Administration (FA) (Table 1). Two adjacent areas of Vietnam are gazetted as national parks: Bu Gia Map (12.2°N 107.2°E) (260 km²), and Yok Don (12.8°N 107.7°E), the largest national park in Vietnam (1,155 km²) (Figure 1).

Most of the area, except parts of the Sen Monorom plateau around the Mondulkiri provincial capital Sen Monorom town (12.45°N 107.20°E), has been designated as several Important Bird Areas (Seng *et al.* 2003). Mondulkiri is the least populated Cambodian province, with a population density of less than 5 people/km², and much of the area remains heavily forested supporting, despite the recent history of conflict and associated hunting, almost all the large mammal species found in Indochina (Timmins & Ou 2001, Walston *et al.* 2001, Pollard *et al.* 2007, Phan *et al.* 2010, Gray *et al.* 2012 a,b).

HISTORICAL BIRD SURVEYS AND METHODS

Although visited by Wharton (1957) during his research on Kouprey *Bos sauveli* in the 1950s, few birds were recorded before the mid-1990s (Thomas & Poole 2003) due to several decades of conflict. The improved political and security situation from the mid-1990s allowed wildlife surveys in north and east Cambodia (Olivier & Woodford 1994, Desai & Lic 1996) which initially focused on large mammals; these surveys also highlighted the region's potential importance for bird conservation (Timmins & Men 1998, Long *et al.* 2000, Timmins & Ou 2001, Walston *et al.* 2001). Subsequently, the Wildlife Conservation Society (WCS) and World Wildlife Fund (WWF) developed programmes in collaboration with government, and have documented bird distribution and abundance (Bird *et al.* 2006, Claassen & Ou 2007). Visits by recreational birdwatchers and, since 2008, commercial bird tours have generated additional information (Goes & Davidson 2002, Evans & Goes 2010–2011, authors' pers. obs.). This paper summarises significant bird records in the area up to 31 December 2011, and includes some later species-specific monitoring results plus updated information on threatened species. Most records are from grey literature and internal databases of conservation organisations; all such reports are referenced. Unreferenced records are from the authors' personal observations in the area since 2005, with most from 2008 to 2011. Data sources for each area are summarised in Appendix 1. Appendix 2 is a comprehensive list of the bird species recorded in the area during the study period. Taxonomy, order and nomenclature follows Inskipp *et al.* (1996) updated where necessary. The initials NP, PF and WS after a place name stand for National Park, Protected Forest and Wildlife Sanctuary, respectively.

RESULTS

Of 374 bird species recorded in the area (Appendix 2), five are Critically Endangered, three Endangered, seven Vulnerable and 16 Near Threatened, whilst five species have not previously been documented from Cambodia. Text accounts for the above and for restricted-range species as defined by Stattersfield *et al.* (1998) follow below.

Orange-necked Partridge *Arborophila davidi*

Near Threatened and restricted-range. Recorded from a small area of Seima PF (12.12°N 106.97°E) close to the Vietnam border. The

first record was from a camera-trap photograph in 2002. Following increased targeted search effort (particularly the use of playback) since 2006 there have been regular dry-season records from many observers (Evans & Goes 2010–2011), with breeding confirmed in April 2011 (J. Schwillk *in litt.* 2011). Most records are from three easily accessible trails near the forestry headquarters with only two brief targeted searches further afield (Claassen 2008), so overall distribution and habitat use remain poorly known. Recorded locations are mostly mapped as bamboo forest (WCS unpubl. data) and at the micro-scale usually have a high percentage of non-thorny large-stem bamboos; but extensive bamboo stands seem to be avoided and the presence of bamboo patches with a canopy of broadleaved trees appears to be important for the species. All records have been in hilly terrain at 130–240 m and within 6 km of the Seima PF headquarters, an area of about 2,000 ha. The whole bamboo forest habitat covered about 6,300 ha in 2009 (WCS unpubl. data).

Germain's Peacock Pheasant *Polyplectron germaini*

Near Threatened and restricted-range. Abundant in the main stands of evergreen and semi-evergreen forest in the south and west parts of Seima PF but has not been recorded north of about 12.15°N. It was also common in parts of Snoul WS (12.08°N 106.67°E) in 2000 (Walston *et al.* 2001) but has not been recorded there since, presumably due to the reduced number of recent surveys (Appendix 2), or from any of the other protected areas. The species appears to be quite tolerant of bamboo-dominated and heavily logged habitat, although recent loss of natural forest cover in Snoul WS may have reduced its suitability.

Green Peafowl *Pavo muticus*

Endangered. Regularly recorded in most areas of deciduous dipterocarp and mixed deciduous forests throughout Seima PF, Mondulkiri PF, Phnom Prich WS (12.71°N 106.96°E) and Lumphat WS (13.36°N 106.75°E). No systematic surveys have assessed population level: statements of a minimum 1,000 individuals in Seima PF (Goes 2009) are unsubstantiated. A minor pest of the rice crop in some settlements in Seima PF (Scally *et al.* 2007). There are records from Snoul WS in 2000 (Walston *et al.* 2001) and recent (February 2012) records from unprotected forest on the edge of the Sen Monorom plateau, south of Mondulkiri PF (TDE pers. obs.). Family parties with large chicks are frequently observed and camera-trapped in Seima PF, Phnom Prich WS and Mondulkiri PF in the early wet season (June to August) and the species presumably breeds throughout the area. It was the bird species most frequently recorded by camera traps set in forest in Phnom Prich WS and Mondulkiri PF (Phan *et al.* 2010).

White-winged Duck *Cairina scutulata*

Endangered. Distribution and status of this shy and elusive species is poorly known. Recorded from Phnom Nam Lyr WS on the Cambodia–Vietnam border in May 1998 (Brickle *et al.* 1998). Singles recorded from Seima PF in the core area on the Mahoach and Pour rivers (WCS/FA 2006); occasionally recorded from south-west Phnom Prich WS, where probably resident, since 2009 with singles or pairs at three locations on the Katoh River (Phan *et al.* 2010). Records in Phnom Prich WS and Seima PF are from seasonal streams in semi-evergreen forest with beds typically 5–15 m wide, which retain water in deep pools during the dry season. The extent of suitable habitat suggests it occurs more widely than the few documented records show; there are unconfirmed reports from several other streams in Seima PF, Phnom Prich WS and Mondulkiri PF.

Great Slaty Woodpecker *Mulleripicus pulverulentus*

Vulnerable. Present in semi-evergreen and evergreen forest in Seima

PF where encountered frequently. Recorded from mixed deciduous and semi-evergreen forest in Mondulkiri PF (Long *et al.* 2000) and Phnom Prich WS (Timmins & Ou 2001); recorded daily in Phnom Prich WS in May and June 2000, in areas of mixed deciduous, semi-evergreen and tall closed-canopy deciduous dipterocarp forest. There are no post-2008 records from either Mondulkiri PF or Phnom Prich WS suggesting a decline. The species appears to be absent from the area's extensive low-stature deciduous dipterocarp forest.

Great Hornbill *Buceros bicornis*

Near Threatened. Recorded regularly throughout the main semi-evergreen/evergreen forest stands in Seima PF and in the smaller patches of similar habitat in Phnom Prich WS and Mondulkiri PF. Recorded regularly in 2000 in Snoul WS (Walston *et al.* 2001) but no records since. No confirmed records from Lumphat WS although unidentified *Buceros/Aceros* hornbills have been recorded from semi-evergreen forest patches. Large congregations have occasionally been observed at fruiting trees or flying over the forest; the largest was 44 birds in January 2005 about 15 km east of Seima PF headquarters.

Alexandrine Parakeet *Psittacula eupatria*

Near Threatened. Recorded, in relatively small numbers, throughout the study area. One 1997 record from 900 m at Dak Dam, Sen Monorom plateau (Duckworth & Hedges 1998) and a single recorded from 700 m on the Sen Monorom plateau in October 2011 (OS pers. obs.). The scarcest parakeet in Mondulkiri PF and Phnom Prich WS with <10 observations between 2008 and 2012 with most observations being singles or pairs (TNEG pers. obs.). Chicks confiscated from Mondulkiri PF indicate breeding but also highlight the threat to the species from nest-raiding by humans. Current sightings of the species are substantially lower than during the 1990s (e.g. Timmins & Men, 1998; Timmins & Ou 2001) suggesting decline.

Grey-headed Parakeet *Psittacula finschii*

Near Threatened. Patchily distributed throughout the area (although no records from Lumphat WS); recorded most frequently in lowland open deciduous dipterocarp forest and degraded evergreen forest around Sen Monorom. Seasonally abundant with large groups (up to 100 individuals) in Mondulkiri PF and on Sen Monorom plateau between 2008 and 2010 (TNEG pers. obs.). Locally common in deciduous dipterocarp forest in Seima PF (Walston *et al.* 2001, Bird *et al.* 2006).

Blossom-headed Parakeet *Psittacula roseata*

Near Threatened. Recorded from all protected areas, favouring deciduous dipterocarp forest. It is probably seen more frequently than Alexandrine but there are fewer records than for Grey-headed both from recent observations (TNEG pers. obs.) and older surveys (Walston *et al.* 2001). As with Alexandrine Parakeet sighting rates seem to have declined since the 1990s (Timmins & Men 1998, Timmins & Ou 2001, TNEG pers. obs.).

Red-breasted Parakeet *Psittacula alexandri*

Near Threatened. The commonest and most frequently recorded parakeet in the study area, found in all protected areas. Common in deciduous dipterocarp forest with multiple encounters daily throughout the landscape (MPF, PPWS, SPF, LWS) but rarely in groups >20 individuals.

Pale-capped Pigeon *Columba punicea*

Vulnerable. Fifteen records of singles or small groups, all in the dry season (January–May) except one at Dak Dam, Sen Monorom plateau (12.372°N 107.319°E), in October 2011. Five records from

degraded semi-evergreen forest patches in grassland on the Sen Monorom plateau (Evans & Goes 2010 2011, Gray 2012), and three from hill evergreen forest (600–850 m) around Dak Dam (Brickle *et al.* 1998, Evans & Goes 2010 2011). Three records from Seima PF were in extensive hilly semi-evergreen forest at 350 m in the south (February) and two from gallery forest in a deciduous forest area at 100 m in the west (January–February) (Bird *et al.* 2006). Lack of records from lowland deciduous dipterocarp forest elsewhere suggests genuine scarcity. A record of at least 11 individuals from Ramis River on the Sen Monorom plateau in January 2011 (Gray 2012) appears to be the largest flock recorded from Cambodia.

Ashy-headed Green Pigeon *Treron phayrei*

Near Threatened. Recorded from semi-evergreen and evergreen forest patches in Seima PF, Mondulkiri PF, Phnom Prich WS and Lumphat WS. A single record from 445 m on the Sen Monorom plateau (T. Kuenzel *in litt.* 2012). Most frequently recorded in Seima PF, with 1–5 birds regularly recorded at different locations since 2002 and a maximum of 20 birds in November 2010 (WCS internal data). Fewer records from the other protected areas, probably because the forest is more open.

Sarus Crane *Grus antigone*

Vulnerable. Occurs at low densities in *veal* and *trapeang* in deciduous dipterocarp forest across wide areas of Mondulkiri PF and Lumphat WS, with fewer records from Phnom Prich WS and Seima PF. Aerial surveys in September 2001 (Barzen 2004) documented 14 nests in and around Lumphat WS and two in Mondulkiri PF. Adults with juveniles have been observed several times in east Mondulkiri PF close to the Srepok River. Three were seen in west Seima PF in May 2008, with an abandoned nest mound there in 2006 (Bird *et al.* 2006). Populations in Cambodia are generally migratory, with large dry-season congregations in lowland Cambodia (van Zalinge *et al.* 2010), but records from Mondulkiri PF and Phnom Prich WS show no clear seasonal pattern (WWF internal data) and the species appears at least partly resident at these sites.

Masked Finfoot *Heliopais personata*

Endangered. Recorded on the Srepok River in Lumphat WS with two records in May and June 1998 (Timmins & Men 1998) and in Mondulkiri PF near the Vietnam border—one record March 2004 (M. van Kashike *in litt.*). No later records from the Srepok in Mondulkiri PF despite the entire river being surveyed by kayak. One was seen repeatedly on a small pool in evergreen forest in Seima PF between March and June 2006 and in March 2007 (EHBP pers. obs.). All these records are from the late dry and early wet seasons, in contrast to records from the Tonle Sap and Preah Vihear province, which peak between July and November (Mulligan *et al.* 2012).

Grey-headed Fish Eagle *Ichthyophaga ichthyaetus*

Near Threatened. Recorded widely at low densities on the larger rivers; one record from a reservoir (12.991°N 107.319°E) in Kaoh Nhek district (Timmins & Ou 2001). Recorded relatively frequently by Claassen & Ou (2007) on the Te River in south-west Phnom Prich WS, with at least one presumed nest documented. It is regular at several locations along the Srepok in Mondulkiri PF, there are six scattered records from west Seima PF (WCS/FA 2006), and two records from Snoul WS in 2000 (Walston *et al.* 2001) but no documented records from Lumphat WS.

Lesser Fish Eagle *Ichthyophaga humilis*

Near Threatened. One record (April 2000) in east Mondulkiri PF (Long *et al.* 2000).

Slender-billed Vulture *Gyps tenuirostris*

Critically Endangered. Breeds in the area with 2–6 nests documented annually from north-west Lumphat WS and 3–10 nests between 2006 and 2010 in unprotected forest at Phnom Taprom (13.383°N 106.421°E) in the extreme north-west. Maximum counts at supplementary feeding stations (restaurants) are: 15 at Lumphat WS (July 2004), 9 at Phnom Prich WS (December 2007), and 4 at Mondulkiri PF (January 2008). The June 2011 annual census recorded two birds at Lumphat WS and two at Mondulkiri PF restaurants. The species has not been recorded away from restaurants in Mondulkiri PF or Phnom Prich WS and there are no confirmed records from Seima PF.

White-rumped Vulture *Gyps bengalensis*

Critically Endangered. Nesting colonies recorded from Mondulkiri PF (5–10 nests) and Lumphat WS (about 8 nests) (Clements *et al.* 2012). Since 2004, vulture populations have been monitored via monthly supplementary feeding stations (restaurants) located in Mondulkiri PF, Phnom Prich WS and Lumphat WS with additional restaurants in Preah Vihear and Stung Treng provinces to the north and west (Clements *et al.* 2012). The vultures' large home-ranges result in extensive fluctuations in monthly counts between feeding stations (Clements *et al.* 2012). Maximum counts at each restaurant are: 47 at Phnom Prich WS (April 2008), 44 at Lumphat WS (June 2008), and 29 at Mondulkiri PF (May 2010). The June 2011 annual census recorded 20 individuals in Lumphat WS, 18 in Mondulkiri PF, and five in Phnom Prich WS. Apart from feeding stations and breeding colonies, there are few records, with fewer than 10 from central Mondulkiri PF, a few around Kaoh Nhek district and one (February 2006) from the western buffer of Seima PF (Bird *et al.* 2006).

Red-headed Vulture *Sarcogyps calvus*

Critically Endangered. Recorded from Lumphat WS, Phnom Prich WS, Mondulkiri PF and Seima PF with a few nests documented from Lumphat WS and Phnom Taprom (Clements *et al.* 2012). Maximum counts at supplementary feeding stations (restaurants) are: 20 at Phnom Prich WS (December 2007), 18 at Lumphat WS (May 2006) and 10 at Mondulkiri PF (May 2009). The June 2011 annual census recorded five individuals in Mondulkiri PF, three in Lumphat WS, and one in Phnom Prich WS. The species is encountered more frequently than *Gyps* vultures away from feeding stations, presumably because it is less social and feeds on smaller prey (Clements *et al.* 2012); there are several records from central Mondulkiri PF along the Srepok.

White-rumped Falcon *Polihierax insignis*

Near Threatened. Recorded from Seima PF, Mondulkiri PF, Lumphat WS and Phnom Prich WS. Relatively widespread in deciduous dipterocarp forest below 200 m in all four protected areas, but distribution appears patchy and/or the species is elusive. This may be due to its unobtrusive behaviour but it may have specific habitat requirements. A preference for recently burnt areas of forest, which may facilitate hunting, has been noted (Bird *et al.* 2006).

Oriental Darter *Anhinga melanogaster*

Near Threatened. Often recorded on larger rivers such as the Srepok and Rovei in the early wet season (pre-breeding season) in Mondulkiri PF, with occasional records from the Srepok in Lumphat WS (Timmins & Men 1998). There are also records from the Te River in Phnom Prich WS (Claassen & Ou 2007) and small pools within evergreen forest in Seima PF. No nesting colonies have been found but habitat is suitable and copulation has been observed in Seima PF.

White-shouldered Ibis *Pseudibis davisoni*

Critically Endangered. One adult recorded (September 2001) in

O Ya Dao PF (Barzen 2004). Two individuals recorded (January 2006) in Seima PF (Bird *et al.* 2006). Records from Mondulkiri PF, Lumphat WS, and Phnom Prich WS are from *trapeangs* (seasonal wetlands) in deciduous dipterocarp forest and from low-intensity agricultural areas. White-shouldered Ibis populations in Cambodia have been monitored since 2009 through coordinated roost-counts in the non-breeding (rainy) season, when birds congregate (Wright *et al.* 2012). Coordinated roost-counts in Lumphat WS recorded 76 individuals (September 2009) rising to a maximum of 278 (August 2012) as roost locations became better understood (Wright *et al.* 2013). The first roost-counts in north-east Phnom Prich WS and west Mondulkiri PF recorded a maximum of 36 individuals in September 2012 (Wright *et al.* 2013). In Mondulkiri PF the species has been recorded regularly, and camera-trapped in small numbers, at *trapeang* in deciduous dipterocarp forest in the east close to the Srepok and in areas adjacent to Lumphat WS.

Breeding has recently been confirmed in Lumphat WS (Sum *et al.* 2011), with 11 nests documented in the 2010 dry season and 15 in the 2011 dry season (H. Wright *in litt.* 2012), and it is probable that nesting occurs, albeit at lower densities, in Mondulkiri PF and north-east Phnom Prich WS. Surveys in east Mondulkiri PF during the 2010 dry season recorded the species's distinctive probe-marks from 10 of about 90 *trapeang* that were studied (Wright 2010). Comparable surveys in west Seima PF and adjacent south-west Phnom Prich WS found no White-shouldered Ibis probe marks at 271 *trapeang* surveyed (Bird *et al.* 2006, Claassen & Ou 2007). This, combined with the rarity of direct sightings, suggests that it is much less common there. The absence of suitable deciduous dipterocarp habitat over large parts of Seima PF probably explains why there is only one record from this protected area.

Giant Ibis *Thaumatibis gigantea*

Critically Endangered. Recorded from west Seima PF and adjacent unprotected forest (Bird *et al.* 2006, Claassen & Ou 2007, Gray *et al.* 2012a). Groups of up to five have been photographed in Mondulkiri PF close to the Srepok in the east and in deciduous dipterocarp forest in the west (Long *et al.* 2000, Gray *et al.* 2012a). The species has also been recorded in south-west Phnom Prich WS (Claassen & Ou 2007), and widely in Lumphat WS south and west of the Srepok (Timmins & Men 1998, Sum *et al.* 2011). There are two records of singles from Snoul WS prior to 2002 (Tan Seta 2002 *in litt.*) and Barzen (2004) recorded two in O Ya Dao PF in September 2001. The species relies heavily on undisturbed *trapeang* in deciduous dipterocarp forest below 200 m, although there are observations in grassland patches away from *veal* and in river channels (Timmins & Men 1998, Claassen & Ou 2007). It is thought to breed at low densities in suitable habitat in the area; a nest was documented in south-east Lumphat WS (Sum *et al.* 2011). The presence of the characteristic bill probe-marks at *trapeang* allows crude comparisons of abundance during the non-breeding (dry) season. The area's two main concentrations of probe-marks correspond with the (less numerous) concentrations of direct sightings. During 2006, in west Seima PF and adjacent south-west Phnom Prich WS, probe-marks were found at 22 of 161 *trapeang* examined by Bird *et al.* (2006) and 48 of 110 visited by Claassen & Ou (2007) in a nearby but different area. In east Mondulkiri PF probe-marks were found at 9 of 119 *trapeang* during the 2010 dry season (Wright 2010).

Asian Woollyneck *Ciconia episcopus*

Vulnerable. Recorded from deciduous dipterocarp and semi-evergreen forest in Seima PF, Mondulkiri PF, Phnom Prich WS, Lumphat WS and Snoul WS. An aerial survey of northern Cambodia in September 2001 recorded a total of 180 birds—about half the number of Lesser Adjutants (Barzen 2004). At *trapeang* in

deciduous dipterocarp forest in Mondulkiri PF and Phnom Prich WS, Asian Woollyneck is the second most frequently observed and camera-trapped large waterbird after Lesser Adjutant. Groups of 10+ individuals are recorded (2–3 records per year) and a small number of nests, largely singly or in pairs, have been recorded in riverine forest from Mondulkiri PF (TNEG pers. obs.).

Black-necked Stork *Ephippiorhynchus asiaticus*

Near Threatened. Although it is the least recorded large waterbird in Mondulkiri PF, there are at least 30 records from the area between November and July and it has been widely observed and camera-trapped (singles and groups of two) from *trapeang* in deciduous dipterocarp forest. Two records resulted from aerial surveys of Lumphat WS in September 2001 (Barzan 2004) and one was seen there in July 2007 (MG pers. obs.). One record in March 2002 from Snoul WS by a pool in lowland semi-evergreen forest (Tan Setha *in litt.* 2002).

Lesser Adjutant *Leptoptilos javanicus*

Vulnerable. Widely distributed and recorded in all protected areas. Found in *trapeang*, grasslands and river channels in deciduous dipterocarp and occasionally in semi-evergreen and evergreen forest up to at least 400 m, with one record from the Sen Monorom plateau at over 800 m (Evans & Goes 2010–2011). During the dry season it is the most frequently recorded large waterbird. Both Bird *et al.* (2006) and Claassen & Ou (2007) encountered groups of the species almost twice as frequently as Asian Woollyneck in deciduous dipterocarp forest in west Seima PF and adjacent parts of Phnom Prich WS. The situation was similar in Mondulkiri PF where the species is present at most *trapeang* visited during the dry season, although group size (1–3) is smaller than Asian Woollyneck (typically 4–10). The pattern is reversed in the predominantly semi-evergreen and evergreen areas in south Seima PF, where Lesser Adjutant is rarely recorded. Two breeding colonies, consisting of four and 15 nests, were recorded in gallery forest along rivers in Mondulkiri PF (January 2006), whilst colonies of nine nests in Phnom Prich WS found in February 2002 and two nests found in Seima PF in 2006 indicate that the species breeds at low densities in deciduous dipterocarp forest throughout the area.

Rufous-browed Flycatcher *Ficedula solitaria*

First record for Cambodia. A single was photographed in evergreen forest at 900 m close to Dak Dam, Sen Monorom plateau, in October 2011 (SS pers. obs.).

Manchurian Reed Warbler *Acrocephalus tangorum*

Vulnerable. During February 2006, at least six birds were found at two locations in west Seima PF in sedge beds in open grassy meadows in flat semi-evergreen forest at about 100 m; identification was confirmed by mist-netting (Bird *et al.* 2006). Although most Cambodian records are from tall grasslands around the Tonle Sap, recent observations indicate that the non-breeding range of this species covers much of Cambodia, southern Lao PDR and the borders with Vietnam (Bird *et al.* 2012).

White-cheeked Laughingthrush *Garrulax vassali*

Restricted-range. Recorded from semi-evergreen and evergreen forest above 650 m on the Sen Monorom plateau; the first Cambodian records were close to the Dak Dam border checkpoint in January 1997 (Duckworth & Hedges 1998). Subsequently recorded regularly from remnant semi-evergreen forest patches above 800 m in the area (Evans & Goes 2010–2011). One record from north-east Seima PF at about 650 m, of a group of 20 individuals in an overgrown cashew plantation close to degraded semi-evergreen forest on the edge of the Sen Monorom plateau (TDE pers. obs.).

Spot-throated Babbler *Pellorneum albiventre*

First record for Cambodia. A single recorded from hill evergreen forest at 900 m close to Dak Dam, Sen Monorom plateau, in October 2011 (SS, OS pers. obs.), with additional records from the same area in February 2012 (SS, OS & PHN pers. obs.).

Yellow-eyed Babbler *Chrysomma sinense*

First record for Cambodia. Small groups recorded from grassland and degraded semi-evergreen forest on the Sen Monorom plateau in January 2009 (TNEG pers. obs.) and deciduous dipterocarp forest in east Mondulkiri PF in March 2009 (TNEG pers. obs.) and February 2012 (J. Schwilck *in litt.* 2012).

Grey-faced Tit Babbler *Macronous kelleyi*

Restricted-range. Common in evergreen and semi-evergreen forest in Seima PF with additional old records from Snoul WS and evergreen forest above 800 m on the Sen Monorom plateau (Duckworth & Hedges 1998). Not recorded from other protected areas but probably overlooked.

Chestnut-fronted Shrike Babbler *Pteruthius aenobarbus*

First record for Cambodia. Three individuals in evergreen hill forest at 900 m close to Dak Dam, Sen Monorom plateau, in October 2011 (SS, OS pers. obs.).

Collared Babbler *Gampsorhynchus torquatus*

First record for Cambodia. Three to five individuals were recorded in mixed bamboo/semi-evergreen forest in the core area of Seima PF in May 2011 (J. Schwilck *in litt.* 2011).

Black-headed Parrotbill *Paradoxornis margaritae*

Near Threatened and restricted-range. Found in evergreen hill forest close to the Dak Dam border post and north of Sen Monorom town on the plateau, with records above 800 m but lower than the previously reported minimum of 850 m (Robson 2008). It is presumably resident and may be quite widespread in the limited areas of suitable altitude.

Mekong Wagtail *Motacilla samveasnae*

Near Threatened and restricted-range. Recorded on two reaches of the Srepok River—in Lumphat WS below Lumphat town (Duckworth *et al.* 2001, Eames 2007) and in Mondulkiri PF from the Rovei River (13.14°N 107.21°E) to the Vietnam border—it may not be present in between these locations. Suitable habitat, a combination of rocks and channel-bed emergent bushes (Duckworth *et al.* 2001), is quite common at both locations, but numbers are low—only seven were counted on a kayak trip along the length of the Mondulkiri PF reach in March 2011 (TNEG pers. obs.).

Asian Golden Weaver *Ploceus hypoxanthus*

Near Threatened. Individuals in non-breeding plumage were photographed with unidentified weavers in west Seima PF in February 2006 (Bird *et al.* 2006).

Yellow-breasted Bunting *Emberiza aureola*

Vulnerable. One record: two individuals in a grassland patch in deciduous dipterocarp forest in west Seima PF in February 2006 (Bird *et al.* 2006).

DISCUSSION

Coverage

Ornithological coverage has been fairly extensive in several locations which together constitute a good cross-section of the area, enabling

broad conclusions about the biogeography and conservation significance to be drawn. However, overall coverage is low given the size and diversity of the area so that further discoveries can be anticipated—several large areas of habitat potentially important for threatened species have been visited only once or not at all. A very important population of White-shouldered Ibis in Lumphat WS was overlooked until recently, and in 2011 the Collared Babbler, new for Cambodia, but presumably a resident, was found a few km from the Seima PF headquarters—an intensively studied area. Survey work has mostly been restricted to small areas of deciduous dipterocarp forest near the Srepok River in east Mondulkiri PF and to semi-evergreen forest in south-west Phnom Prich WS, two of the largest and most remote protected areas, whilst the small number of species confirmed in Lumphat WS is testament to the very limited observer effort.

Survey work has probably been insufficient to find several globally threatened species which may occur—wintering Greater Spotted Eagle *Aquila clanga* and resident Indian Spotted Eagle *A. hastata* use deciduous dipterocarp forest in west Siem Pang, Stung Treng province (BirdLife International Cambodia Program 2012), whilst Greater Adjutant *Leptoptilos dubius* occurs at low density in the deciduous dipterocarp forest of north Cambodia (Barzen 2004). The surprising lack of confirmed records from the study area contrasts with records of up to 44 of these storks visiting vulture supplementary feeding stations in west Siem Pang, Stung Treng province (BirdLife International Cambodia Program 2012).

Biogeographical patterns

The Lower Mekong Dry Forest and the Annamite Range Moist Forest ecoregions overlap this area and major patterns of avian distribution are determined by their distinctive habitats—deciduous dipterocarp forest supports a distinct avifauna that differs from that found in denser lowland forest (evergreen, semi-evergreen and mixed deciduous), and both differ from that in hill evergreen forest.

Fifty-seven species listed in Seng *et al.* (2003) or Ounekham & Inthapatha (2003) as biome-restricted have been recorded (Appendix 2): birds of the Indo-Malayan Tropical Dry Zone biome are typical of deciduous dipterocarp forest, whilst those of the Indochinese Moist Tropical Forest biome and Sino-Himalayan Subtropical Forest biome are more frequently associated with denser evergreen lowland and evergreen hill forest respectively. The variation in altitude and forest type across the landscape determines the number and composition of the biome-restricted species found in each of the protected areas (Table 2).

Deciduous dipterocarp forest

Areas dominated by deciduous dipterocarp forest lie in the Lower Mekong Dry Forest ecoregion (Tordoff *et al.* 2005) and cover most of the north and centre of the study area. The distinctive avian community found here was once widespread in the dry forests of

mainland South-East Asia, and includes several endemics, e.g. Black-headed Woodpecker *Picus erythropygius*, White-rumped Falcon and distinctive forms of Chestnut-bellied Nuthatch *Sitta castanea neglecta* and Fulvous-breasted Woodpecker *Dendrocopos macei longipennis*.

Few of the deciduous dipterocarp specialists are globally threatened, thanks to the extensive forests presently remaining in lowland Cambodia and Myanmar. In south and central Lao PDR Duckworth (2007) identified several deciduous dipterocarp specialists that were in decline or range-restricted. These species are present in the study area and most are widespread and common in Mondulkiri PF and Phnom Prich WS, although given extensive declines in lowland forest cover and quality outside and within protected areas in east and north Cambodia (see Threats) there is cause for concern and an ongoing monitoring programme is needed.

Evergreen forests

Areas in the south of the study area dominated by evergreen, semi-evergreen and mixed deciduous lowland forest lie in the Greater Annamites ecoregion (Baltzer *et al.* 2001) and the more restricted Southern Vietnamese Lowlands Endemic Bird Area (EBA) (Stattersfield *et al.* 1998). They lack most deciduous dipterocarp specialists but all three restricted-range species that define this EBA—Orange-necked Partridge, Germain's Peacock Pheasant and Grey-faced Tit Babbler—are found here with several that occur more widely in Indochina—Red-vented Barbet *Megalaima lagrandieri*, Bar-bellied Pitta *Pitta elliotii*, Blue-rumped Pitta *P. soror* and Pale-headed Woodpecker *Gecinulus grantia*—and notable populations of more widespread dense forest species—Great Hornbill, Siamese Fireback *Lophura diardi* and Golden-crested Myna *Ampeliceps coronatus*. Differences between the species present in lowland mixed deciduous, semi-evergreen and evergreen forest are minor.

The transition to evergreen hill forest is gradual with a marked increase in montane bird species above 700–800 m. This area lies in both the Greater Annamites ecoregion and the smaller Da Lat Plateau EBA (Stattersfield *et al.* 1998), supporting at least two—White-cheeked Laughingthrush and Black-headed Parrotbill—of the nine species that define the EBA. A recent increase in observation around Dak Dam (800–900 m) near the Cambodia–Vietnam border has led to the recording of three new species for Cambodia and montane species rarely recorded in the country, including Maroon Oriole *Oriolus traillii*, Silver-eared Mesia *Leiothrix argentauris*, Blue-winged Minla *Minla cyanouroptera*, Ashy Bulbul *Hemixos flavala* and Ratchet-tailed Treepie *Temnurus temnurus*. The races of Black-browed Barbet *Megalaima oorti annamensis* and Black-throated Tit *Aegithalos concinnus annamensis* are shared endemics with adjacent central Vietnam and south Lao. The five additions to the Cambodian list documented here also inhabit adjacent South Annam, Vietnam (Robson 2008).

Conservation significance of the area

Of the 15 globally threatened species recorded in the study area, nine—Green Peafowl, Sarus Crane, Slender-billed Vulture, White-rumped Vulture, Red-headed Vulture, White-shouldered Ibis, Giant Ibis, Asian Woollyneck and Lesser Adjutant—rely primarily on deciduous dipterocarp forest. The region's deciduous dipterocarp forests are therefore a global conservation priority, particularly important for Green Peafowl, vultures and large waterbirds. The combination of important populations of globally threatened birds, almost all the large mammal species found in Indochina (see below) and the abundance of non-threatened deciduous dipterocarp specialist avian species suggests that the area is the most globally significant remnant of lowland deciduous dipterocarp forest in South-East Asia.

Few accurate population estimates exist, so assessing the proportion of global populations of many threatened species in the

Table 2. Numbers of bird species recorded in Seima Protected Forest (SPF), Mondulkiri Protected Forest (MPF), Phnom Prich Wildlife Sanctuary (PPWS), Sen Monorom plateau (SMP), and Lumphat Wildlife Sanctuary (LWS) and numbers of biome-restricted and globally threatened/Near Threatened species in each.

	SPF	MPF	PPWS	SMP	LWS
Indochinese Moist Tropical Forest (A)	15	7	9	8	3
Indo-Malayan Tropical Dry Zone (B)	23	25	22	14	17
Sino-Himalayan Subtropical Forest (C)	10	3	3	13	1
Globally threatened	14	11	11	4	10
Near Threatened	12	12	9	5	6
Total number of species	331	231	215	235	111

area is difficult. Subjective assessment suggests populations of six species—Green Peafowl, Slender-billed Vulture, White-rumped Vulture, Red-headed Vulture, White-shouldered Ibis and Giant Ibis—are of high global conservation value. Green Peafowl is the most widespread of the globally threatened species in the area. It appears abundant in both deciduous dipterocarp forest and denser mixed deciduous/semi-evergreen forest throughout. The population is contiguous with that in Dak Lak province, Vietnam, where a substantial population is documented in Yok Don NP, adjacent to Mondulkiri PF (Brickle *et al.* 1998, Eames *et al.* 2004). It is probable that this area supports more numbers of this threatened species than any other location in its residual range.

Assessing the relative importance of Cambodian sites for vulture conservation is complicated because individuals of the three species range widely over the area (Clements *et al.* 2012), despite vultures being among the few species with abundance datasets and trends in this area. All sites supporting vultures are of high conservation significance at the present time. For example, the area contains all the known nesting sites of Slender-billed Vulture in South-East Asia, except for one in west Siem Pang. There one nest has been recorded annually since 2009, although at different sites and thus potentially more than one pair may be breeding there (BirdLife International Cambodia Program 2012). Mondulkiri PF is the only area with a substantial population of large wild ungulates within the ranges of vultures in Indochina (Gray *et al.* 2013).

Cambodia is of enormous global significance for large waterbirds (Davidson 2006, Wright *et al.* 2012, Clements *et al.* 2013). The study area holds particularly important populations of Giant Ibis and White-shouldered Ibis—possibly over 50% of the global population (Wright *et al.* 2012)—and probably also Sarus Crane, Asian Woollyneck and Lesser Adjutant. Many breeding Sarus Cranes may remain undetected as survey work has not been carried out in some areas. Nesting populations of all large waterbirds should be estimated following methodologies of Clements *et al.* (2013). White-winged Duck and Masked Finfoot require further research, particularly given the paucity of recent records of both species from most of Indochina (Mulligan *et al.* 2012).

In addition to its ornithological importance Mondulkiri province supports almost all the large mammal species found in the lower Mekong. This includes the largest global population of Banteng *Bos javanicus* (Gray *et al.* 2012b), and important populations of Leopard *Panthera pardus*, Wild Water Buffalo *Bubalus arnee*, Eld's Deer *Cervus eldii*, Gaur *Bos gaurus* and Asian Elephant *Elephas maximus* (Pollard *et al.* 2008, Gray & Prum 2012, Gray *et al.* 2012b, 2013, O'Kelly *et al.* 2012). The semi-evergreen and evergreen forests contain globally important primate populations (Pollard *et al.* 2007) whilst Mondulkiri PF supports a small population of the Critically Endangered Siamese Crocodile *Crocodylus siamensis* (Phan *et al.* 2010).

Threats

This once remote, poorly developed region is changing rapidly and many of the threats widespread in South-East Asia (Sodhi *et al.* 2004) now loom. Forests and wetlands are being destroyed by encroachment and large-scale plantation development. Translocation from other parts of Cambodia has greatly increased the human population and stimulated extensive habitat clearance (Pollard & Evans 2009). Much bamboo forest in the only Orange-necked Partridge site in Cambodia has been cleared since 2005 (Evans *et al.* 2009). Several areas of grassland and pools are threatened by conversion to rice production. However, a more serious threat is the poorly regulated development of large plantations; between 2007 and 2009 at least eight concessions of about 10,000 ha each were granted for rubber and other commodities. Since early 2010 this has accelerated: almost all natural habitat in Snoul WS has been cleared for rubber and cassava, and

there have been major clearances in and around Phnom Nam Lyr WS, Phnom Prich WS and Lumphat WS. These agricultural developments cause massive destruction, particularly to deciduous dipterocarp forest—often viewed by government as unproductive land.

The several hydropower dams proposed on the rivers in the area (JICA 2007, Middleton 2008) will, if developed, damage riparian zones and their wildlife—of greatest concern are two large developments on the Srepok that will destroy not only some of the least disturbed river ecosystems remaining in South-East Asia, but also inundate much forest in Lumphat WS and Mondulkiri PF (Middleton 2008). Other large-scale developments include a new road system linking Mondulkiri province with Vietnam and Lao, whilst mineral extraction concessions greatly overlap the protected area network. Implementation of all approved concessions would destroy Phnom Prich WS and the southern half of Mondulkiri PF.

Disturbance of nests is a problem elsewhere in Cambodia (Sok *et al.* 2012, Clements *et al.* 2013) but the extent of the damage it causes in Mondulkiri is not known. Hunting and snaring, particularly of Sarus Crane and galliforms, occurs principally for subsistence, although Green Peafowl feathers are traded (Walston *et al.* 2001). Other species at risk from hunting and trade include pigeons and parakeets, which are occasionally trapped in large numbers at mineral licks.

The dramatic decline in wild large mammals (Loucks *et al.* 2009) since the 1950s is thought to be the major driver of vulture declines in the area, with the current low numbers of large mammals (both wild and domestic) resulting in fewer carcasses and scarcity of food for scavengers (Clements *et al.* 2012). Recently the veterinary drug diclofenac, responsible for the rapid collapse of the South Asia vulture population, has been on sale in Sen Monorom town. WCS-Cambodia is working with the Cambodian Ministry of Agriculture, Fisheries and Forestry to ensure it does not enter the livestock-vulture food chain.

Conservation in Mondulkiri

Since 2002 WCS and WWF have worked closely with the Cambodian Ministry of Environment and the Forestry Administration of the Ministry of Agriculture Forestry and Fisheries. Active management in Seima PF, Phnom Prich WS and Mondulkiri PF has reduced the threats in these areas (Evans *et al.* 2009). Support for protected area management in Lumphat WS, given the importance of the site for the conservation of the Critically Endangered vultures and White-shouldered Ibis and the increasing threat of agro-industrial concessions, is far from adequate. Key conservation strategies successfully implemented in Seima PF, Phnom Prich WS and Mondulkiri PF have included enforcing the Cambodian forest, land, and protected areas laws, targeting protection of nest colonies of vultures, creating vulture supplementary feeding stations, and engaging with local communities and the provincial government to plan land-use, and national-level initiatives to increase support for biodiversity conservation. Continued successful application and expansion of these strategies would mitigate the worst of the threats outlined above.

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Thomas N. E. GRAY, WWF Greater Mekong – Cambodia Country Programme, #21, Street 322, Sangkat Boeun keng Kang 1, Phnom Penh, Cambodia.
Email: tomnegrays@hotmail.com

Edward H. B. POLLARD & Thomas D. EVANS, Wildlife Conservation Society Global Conservation Program, Bronx, New York, USA.
Email: ehbpollard@gmail.com & tevans@wcs.org

Frederic GOES, Palmente, 20129 Bastelicaccia, France.
Email: fredbaksey@yahoo.com

Mark GRINDLEY, People Resources and Conservation Foundation, Chiang Mai, Thailand.
Email: markgrindley@gmail.com

KEO Omaliss, Department of Wildlife and Biodiversity, Forestry Administration, Ministry of Agriculture Forestry and Fisheries, 40 Norodom Blvd, Phnom Penh, Cambodia.
Email: omaliss@gmail.com

Paul H. NIELSEN, ORN Sambovannak & SANH Sophoan, Sam Veasna Centre, Siem Reap, Cambodia

PHAN Channa, Department of Wildlife and National Parks, Ministry of Environment, 48 Samdech Preah Sihanouk, Phnom Penh, Cambodia

Appendix 1. Data sources and estimated extent of ornithological coverage for areas covered in the study.

Seima Protected Forest

Key data sources: Walston *et al.* (2001), Goes & Davidson (2002), Bird *et al.* (2006), WCS/FA (2006), Claassen & Ou (2007), Claassen (2008), Evans & Goes (2010–2011). **Other data sources:** site records database including peafowl quantitative survey data and numerous tourist and visitor trip reports (held on file by WCS/FA), EHBP & TDE unpubl. records.

Ornithological coverage: locally high, almost entirely in dry season. Major initial survey around headquarters and accessible areas of the southern core area 2000; same area often visited for shorter periods 2001–2012; intensive part surveys of the western buffer and adjacent core area in 2006. Very little coverage of central and northern core area, valleys closest to Vietnam, areas above 600 m or eastern buffer zone.

Snoul Wildlife Sanctuary

Key data sources: Walston *et al.* (2001). **Other data sources:** incidental records by people using National Route 76.

Ornithological coverage: very brief, localised and out of date.

Phnom Prich Wildlife Sanctuary

Key data sources: Timmins & Ou (2001), Claassen & Ou (2007), Evans & Goes (2010–2011), Phan *et al.* (2010), Clements *et al.* (2012). **Other data sources:** site camera-trap records database and vulture and White-shouldered Ibis monitoring results. TNEG unpubl. records.

Ornithological coverage: limited and localised with rapid targeted surveys in 2000 (throughout) and in 2006 (south-west). Additional limited coverage (2008–2011), almost entirely during the dry season, of areas in east and south-east particularly semi-evergreen forest. Monitoring of vultures since 2005 and White-shouldered Ibis since 2012.

Mondulkiri Protected Forest

Key data sources: Timmins & Men (1998), Long *et al.* (2000), Barzen (2004), Evans & Goes (2010–2011), Phan *et al.* (2010), Wright (2010). **Other data sources:** site camera-trap records database and vulture monitoring results. TNEG & PHN unpubl. records.

Ornithological coverage: locally high in east of core area beside Srepok River and in west of protected area with numerous dry-season visits (2008–2011). Very limited coverage of extensive areas of deciduous dipterocarp forest east and north of the Srepok river and riverine forest along major tributaries of the Srepok. Monitoring of vultures since 2005.

Lumphat Wildlife Sanctuary

Key data sources: Timmins & Men (1998), Barzen (2004), Evans & Goes (2010–2011), Sum *et al.* (2011), Clements *et al.* (2012), Wright *et al.* (2012).

Ornithological coverage: very limited with a number of brief visits to some areas. However, monitoring and nest protection work for ibis and vultures, including restaurants and roost counts, since 2009 and 2005 respectively.

Phnom Nam Lyr Wildlife Sanctuary

Key data sources: Brickle *et al.* (1998), Duckworth & Hedges (1998)

Ornithological coverage: very brief, localised and out of date.

O Ya Dao Protected Forest

Key data sources: Barzen (2004)

Ornithological coverage: none apart from aerial survey in 2001 (Barzen 2004).

Sen Monorom plateau (outside protected area network)

Key data sources: Brickle *et al.* (1998), Duckworth & Hedges (1998), Evans & Goes (2010–2011), TNEG, PHN, OS, SS & TDE unpubl. records.

Ornithological coverage: relatively frequent during dry season in 2–3 patches of remnant evergreen hill forest >600 m close to Sen Monorom town and in Dak Dam district (2009–2011). Elsewhere extremely limited/no coverage.

Appendix 2. Birds recorded from the Mondulkiri study area.

CR = Critically Endangered; EN = Endangered; VU = Vulnerable; NT = Near Threatened; RR = restricted-range; A = Indochinese Moist Tropical Forest Biome; B = Indo-Malayan Tropical Dry Zone Biome; C = Sino-Himalayan Subtropical Forest Biome. SPF = Seima Protected Forest; MPF = Mondulkiri Protected Forest; PPWS = Phnom Prich Wildlife Sanctuary; SMP = Sen Monorom plateau; LWS = Lumphat Wildlife Sanctuary.

Species	Biome					Species	Biome					
	restricted SPF	MPF	PPWS	SMP	LWS		restricted SPF	MPF	PPWS	SMP	LWS	
Chinese Francolin <i>Francolinus pintadeanus</i>		x	x	x	x	x			x	x	x	x
Blue Quail <i>Coturnix chinensis</i>						x			x	x	x	x
Orange-necked Partridge <i>Arborophila davidi</i> (NT/RR)		x						x	x	x	x	x
Scaly-breasted Partridge <i>Arborophila charltonii</i>	A	x		x		x		x	x	x	x	
Red Junglefowl <i>Gallus gallus</i>		x	x	x	x	x		x	x	x		
Siamese Fireback <i>Lophura diardi</i>	A	x	x	x				x	x	x		
Germain's Peacock Pheasant <i>Polyplectron germaini</i> (NT/RR)		x					B	x	x	x		x
Green Peafowl <i>Pavo muticus</i> (EN)	B	x	x	x	x	x		x	x	x		
Lesser Whistling-duck <i>Dendrocygna javanica</i>		x	x	x	x			x	x	x	x	x
White-winged Duck <i>Cairina scutulata</i> (EN)		x		x				x	x	x	x	x
Cotton Pygmy-goose <i>Nettapus coromandelianus</i>		x	x	x	x			x				
Spot-billed Duck <i>Anas poecilorhyncha</i>		x					C	x			x	x
Small Buttonquail <i>Turnix sylvatica</i>		x	x				A	x				
Yellow-legged Buttonquail <i>Turnix tanki</i>		x						x	x	x		x
Barred Buttonquail <i>Turnix suscitator</i>		x	x	x				x	x	x		x
Speckled Piculet <i>Picumnus innominatus</i>		x			x			x		x		
White-browed Piculet <i>Sasia ochracea</i>		x					A	x		x	x	
Grey-capped Pygmy Woodpecker <i>Dendrocopos canicapillus</i>		x	x	x	x	x		B	x	x	x	x
Fulvous-breasted Woodpecker <i>Dendrocopos macei</i>		x	x	x	x			A	x		x	x
Yellow-crowned Woodpecker <i>Dendrocopos mahtrattensis</i>	B	x	x		x			x	x	x	x	x
Rufous-bellied Woodpecker <i>Dendrocopos hyperythrus</i>		x	x	x				x	x	x	x	x
Rufous Woodpecker <i>Celeus brachyurus</i>								x	x	x		x
White-bellied Woodpecker <i>Dryocopus javensis</i>								x	x	x		x
Lesser Yellownappe <i>Picus chlorolophus</i>								x	x	x	x	
Greater Yellownappe <i>Picus flavinucha</i>								x	x	x	x	
Laced Woodpecker <i>Picus vittatus</i>								x	x	x		
Streak-throated Woodpecker <i>Picus xanthopygaeus</i>								x	x	x		
Black-headed Woodpecker <i>Picus erythropygus</i>							B	x	x	x		x
Grey-headed Woodpecker <i>Picus canus</i>								x	x	x		
Common Flameback <i>Dinopium javanense</i>								x	x	x	x	x
Greater Flameback <i>Chrysocolaptes guttacrastatus</i>								x	x	x	x	x
Pale-headed Woodpecker <i>Gecinulus grantia</i>								x				
Bay Woodpecker <i>Blythipicus pyrrhotis</i>							C	x			x	x
Black-and-buff Woodpecker <i>Meiglyptes jugularis</i>							A	x				
Heart-spotted Woodpecker <i>Hemicircus canente</i>								x	x	x		x
Great Slaty Woodpecker <i>Mulleripicus pulverulentus</i> (VU)								x	x	x		x
Red-vented Barbet <i>Megalaima lagrandieri</i>							A	x		x	x	
Lineated Barbet <i>Megalaima lineata</i>							B	x	x	x	x	x
Green-eared Barbet <i>Megalaima faiostrica</i>							A	x		x	x	x
Black-browed Barbet <i>Megalaima oorti</i>								x			x	
Blue-eared Barbet <i>Megalaima australis</i>								x	x	x	x	x
Coppersmith Barbet <i>Megalaima haemacephala</i>								x	x	x	x	x

Species	Biome					Species	Biome						
	restricted	SPF	MPF	PPWS	SMP		LWS	restricted	SPF	MPF	PPWS	SMP	LWS
Oriental Pied Hornbill <i>Anthracoceros albirostris</i>		x	x	x	x	x	Green Imperial Pigeon <i>Ducula aenea</i>		x	x	x		
Great Hornbill <i>Buceros bicornis</i> (NT)		x	x	x			Mountain Imperial Pigeon <i>Ducula badia</i>		x			x	
Wreathed Hornbill <i>Aceros undulatus</i>		x	x	x		x	Sarus Crane <i>Grus antigone</i> (VU)		x	x	x		x
Common Hoopoe <i>Upupa epops</i>		x	x	x	x	x	Masked Finfoot <i>Heliopais personata</i> (EN)	A	x	x			x
Orange-breasted Trogon <i>Harpactes oreskios</i>		x	x	x		x	Slaty-breasted Rail <i>Gallirallus striatus</i>		x				
Red-headed Trogon <i>Harpactes erythrocephalus</i>		x			x		White-breasted Waterhen <i>Amaurornis phoenicurus</i>		x	x	x	x	
Indian Roller <i>Coracias benghalensis</i>		x	x	x	x	x	Ruddy-breasted Crake <i>Porzana fusca</i>		x				
Asian Dollarbird <i>Eurystomus orientalis</i>		x	x	x	x	x	Common Moorhen <i>Gallinula chloropus</i>		x	x	x		
Common Kingfisher <i>Alcedo atthis</i>		x	x	x	x	x	Purple Swampphen <i>Porphyrio porphyrio</i>				x		
Blue-eared Kingfisher <i>Alcedo meninting</i>		x					Watercock <i>Gallix creta cinerea</i>			x	x		
Banded Kingfisher <i>Lacedo pulchella</i>		x		x			Pintail Snipe <i>Gallinago stenura</i>		x	x	x		
Stork-billed Kingfisher <i>Halcyon capensis</i>		x	x	x		x	Common Sandpiper <i>Actitis hypoleucos</i>		x	x			x
White-throated Kingfisher <i>Halcyon smyrnensis</i>		x	x	x	x	x	Common Greenshank <i>Tringa nebularia</i>				x		
Black-capped Kingfisher <i>Halcyon pileata</i>		x	x	x	x		Green Sandpiper <i>Tringa ochropus</i>		x	x			x
Blue-bearded Bee-eater <i>Nyctornis athertoni</i>		x		x			Red-necked Phalarope <i>Phalaropus lobatus</i>		x	x			
Green Bee-eater <i>Merops orientalis</i>		x	x	x	x	x	Pheasant-tailed Jacana <i>Hydrophasianus chirurgus</i>		x				x
Blue-throated Bee-eater <i>Merops viridis</i>			x				Bronze-winged Jacana <i>Metopidius indicus</i>		x	x	x		
Blue-tailed Bee-eater <i>Merops philippinus</i>		x		x			Black-winged Stilt <i>Himantopus himantopus</i>			x			
Chestnut-headed Bee-eater <i>Merops leschenaulti</i>		x	x	x	x	x	Eurasian Thick-knee <i>Burhinus oedicnemus</i>		x				
Chestnut-winged Cuckoo <i>Clamator coromandus</i>		x	x	x			Red-wattled Lapwing <i>Vanellus indicus</i>		x	x	x	x	x
Large Hawk Cuckoo <i>Hierococcyx sparveriooides</i>		x	x				Oriental Pratincole <i>Glareola maldivarum</i>		x				
Hodgson's Hawk Cuckoo <i>Hierococcyx fugax</i>		x					Whiskered Tern <i>Chlidonias hybridus</i>						x
Indian Cuckoo <i>Cuculus micropterus</i>		x	x	x	x	x	Osprey <i>Pandion haliaetus</i>			x			
Oriental Cuckoo <i>Cuculus saturatus</i>		x			x		Japanese Buzzard <i>Buteo japonica</i>		x				x
Banded Bay Cuckoo <i>Cacomantis sonneratii</i>		x	x	x	x	x	Pied Harrier <i>Circus melanoleucos</i>			x			
Plaintive Cuckoo <i>Cacomantis merulinus</i>		x	x	x	x		Jerdon's Baza <i>Aviceda jerdoni</i>		x				
Violet Cuckoo <i>Chrysococcyx xanthorhynchus</i>		x	x				Black Baza <i>Aviceda leuphotes</i>		x	x	x	x	x
Drongo Cuckoo <i>Surniculus lugubris</i>		x	x	x	x		Booted Eagle <i>Hieraetus fasciatus</i>						x
Asian Koel <i>Eudynamis scolopacea</i>		x	x	x	x	x	Oriental Honey Buzzard <i>Pernis ptilorhynchus</i>		x	x	x	x	
Green-billed Malkoha <i>Phaenicophaeus tristis</i>		x	x	x	x		Black-shouldered Kite <i>Elanus caeruleus</i>		x	x			x
Greater Coucal <i>Centropus sinensis</i>		x	x	x	x		Brahminy Kite <i>Haliastur indus</i>		x	x	x		
Lesser Coucal <i>Centropus bengalensis</i>		x	x	x	x		Grey-headed Fish Eagle <i>Ichthyophaga ichthyaeus</i> (NT)		x	x	x		
Vernal Hanging Parrot <i>Loriculus vernalis</i>		x	x	x	x	x	Lesser Fish Eagle <i>Ichthyophaga humilis</i> (NT)			x			
Alexandrine Parakeet <i>Psittacula eupatria</i> (NT)		x	x	x	x	x	Slender-billed Vulture <i>Gyps tenuirostris</i> (CR)	B		x	x		x
Grey-headed Parakeet <i>Psittacula finschii</i> (NT)	C	x	x	x	x		White-rumped Vulture <i>Gyps bengalensis</i> (CR)	B	x	x	x		x
Blossom-headed Parakeet <i>Psittacula roseata</i> (NT)	B	x	x	x	x		Red-headed Vulture <i>Sarcogyps calvus</i> (CR)	B	x	x	x		x
Red-breasted Parakeet <i>Psittacula alexandri</i> (NT)		x	x	x	x		Crested Serpent Eagle <i>Spilornis cheela</i>		x	x	x	x	x
White-throated Needletail <i>Hirundapus caudactus</i>		x					Crested Goshawk <i>Accipiter trivirgatus</i>		x	x	x	x	
Brown-backed Needletail <i>Hirundapus giganteus</i>					x		Shikra <i>Accipiter badius</i>		x	x	x	x	x
Silver-backed Needletail <i>Hirundapus cochinchinensis</i>		x	x	x			Japanese Sparrowhawk <i>Accipiter gularis</i>		x				
Asian Palm Swift <i>Cypsiurus balasensis</i>		x	x	x	x	x	Besra <i>Accipiter virgatus</i>		x				
Fork-tailed Swift <i>Apus pacificus</i>		x	x	x	x		Rufous-winged Buzzard <i>Butastur liventer</i>	B	x	x	x		x
Crested Treeswift <i>Hemiprocne coronata</i>		x	x	x	x	x	Grey-faced Buzzard <i>Butastur indicus</i>		x	x			x
Oriental Bay Owl <i>Phodilus badius</i>		x			x		Rufous-bellied Eagle <i>Hieraetus kienerii</i>		x	x			
Mountain Scops Owl <i>Otus spilocephalus</i>		x			x		Black Eagle <i>Ictinaetus malayensis</i>			x			x
Oriental Scops Owl <i>Otus sunia</i>		x	x	x	x		Changeable Hawk Eagle <i>Spizaetus cirrhatus</i>		x	x	x	x	x
Collared Scops Owl <i>Otus bakkamoena</i>		x	x	x	x	x	Mountain Hawk Eagle <i>Spizaetus nipalensis</i>		x				x
Spot-bellied Eagle Owl <i>Bubo nipalensis</i>		x		x			Common Kestrel <i>Falco tinnunculus</i>						x
Brown Fish Owl <i>Ketupa zeylonensis</i>		x	x	x	x	x	White-rumped Falcon <i>Polihierax insignis</i> (NT)	B	x	x	x		x
Collared Owlet <i>Glaucidium brodiei</i>		x		x	x	x	Collared Falconet <i>Microhierax caerulescens</i>		x	x	x		x
Asian Barred Owlet <i>Glaucidium cuculoides</i>		x	x	x	x	x	Oriental Hobby <i>Falco severus</i>		x				
Spotted Owlet <i>Athene brama</i>		x					Little Grebe <i>Tachybaptus ruficollis</i>		x	x	x	x	
Brown Hawk Owl <i>Ninox scutulata</i>		x	x	x	x		Oriental Darter <i>Anhinga melanogaster</i> (NT)		x	x	x		
Javan Frogmouth <i>Batrachostomus javensis</i>		x					Little Cormorant <i>Phalacrocorax niger</i>		x	x			
Great Eared Nightjar <i>Eurostopodus macrotis</i>		x	x	x		x	Little Egret <i>Egretta garzetta</i>		x	x	x		
Large-tailed Nightjar <i>Caprimulgus macrurus</i>		x	x	x	x	x	Grey Heron <i>Ardea cinerea</i>			x	x		
Indian Nightjar <i>Caprimulgus asiaticus</i>	B	x	x			x	Purple Heron <i>Ardea purpurea</i>		x	x			
Savanna Nightjar <i>Caprimulgus affinis</i>		x	x	x	x		Great Egret <i>Casmerodius albus</i>		x	x	x		
Pale-capped Pigeon <i>Columba punicea</i> (VU)		x			x		Intermediate Egret <i>Mesophoxys intermedia</i>		x		x		
Oriental Turtle Dove <i>Streptopelia orientalis</i>		x	x	x	x		Cattle Egret <i>Bubulcus ibis</i>		x	x	x	x	
Spotted Dove <i>Streptopelia chinensis</i>		x	x	x	x	x	Chinese Pond Heron <i>Ardeola bacchus</i>		x	x	x	x	x
Red Collared Dove <i>Streptopelia tranquebarica</i>		x	x	x	x	x	Little Heron <i>Butorides striatus</i>		x	x	x	x	
Barred Cuckoo Dove <i>Macropygia unchall</i>		x			x		Black-crowned Night Heron <i>Nycticorax nycticorax</i>		x	x	x		
Emerald Dove <i>Chalcophaps indica</i>		x	x	x	x		Malayan Night Heron <i>Gorsachius melanolophus</i>		x				
Pink-necked Green Pigeon <i>Treron vernans</i>		x		x			Cinnamon Bittern <i>Ixobrychus cinnamomeus</i>		x	x	x		
Orange-breasted Green Pigeon <i>Treron bicincta</i>		x	x	x	x		White-shouldered Ibis <i>Pseudibis davisoni</i> (CR)		x	x	x		x
Ashy-headed Green Pigeon <i>Treron phayrei</i> (NT)		x	x	x		x	Giant Ibis <i>Thaumatibis gigantea</i> (CR)		x	x	x		x
Thick-billed Green Pigeon <i>Treron curvirostra</i>		x	x	x	x	x	Asian Openbill <i>Anastomus oscitans</i>			x	x		
Yellow-footed Green Pigeon <i>Treron phoenicoptera</i>	B	x	x	x	x		Asian Woollyneck <i>Ciconia episcopus</i> (VU)		x	x	x		x
Pin-tailed Green Pigeon <i>Treron apicauda</i>		x			x		Black-necked Stork <i>Ephippiorhynchus asiaticus</i> (NT)			x			

Species	Biome					Species	Biome					
	restricted	SPF	MPF	PPWS	SMP		LWS	restricted	SPF	MPF	PPWS	SMP
Lesser Adjutant <i>Leptoptilos javanicus</i> (VU)		x	x	x	x	x		x				
Blue-rumped Pitta <i>Pitta soror</i>	C	x						x				x
Blue Pitta <i>Pitta cyanea</i>	A	x			x			x	x	x	x	x
Bar-bellied Pitta <i>Pitta elliotii</i>	A	x						x	x	x	x	x
Hooded Pitta <i>Pitta sordida</i>		x					C	x				x
Blue-winged Pitta <i>Pitta moluccensis</i>	A	x	x	x				x	x	x	x	x
Dusky Broadbill <i>Corydon sumatranus</i>		x				x		x	x	x	x	
Black-and-red Broadbill <i>Cymbirhynchus macrorhynchus</i>		x						x				x
Banded Broadbill <i>Eurylaimus javanicus</i>		x						x	x	x	x	
Silver-breasted Broadbill <i>Serilophus lunatus</i>		x			x			x	x	x	x	
Long-tailed Broadbill <i>Psarisomus dalhousiae</i>		x						x	x	x	x	
Asian Fairy Bluebird <i>Irena puella</i>		x	x	x	x	x		x				x
Blue-winged Leafbird <i>Chloropsis cochinchinensis</i>		x	x	x	x			x	x	x	x	
Golden-fronted Leafbird <i>Chloropsis aurifrons</i>		x	x	x	x	x		x				x
Brown Shrike <i>Lanius cristatus</i>		x	x	x	x			x	x	x	x	
Burmese Shrike <i>Lanius collurioides</i>		x	x	x	x			x	x	x	x	x
Long-tailed Shrike <i>Lanius schach</i>		x						x	x	x		x
Eurasian Jay <i>Garrulus glandarius</i>		x	x	x	x			x	x	x	x	
Red-billed Blue Magpie <i>Urocissa erythrorhyncha</i>		x	x	x	x	x		x	x	x		
Indochinese Green Magpie <i>Cissa hypoleuca</i>	C	x				x						x
Rufous Treepie <i>Dendrocitta vagabunda</i>		x	x	x	x	x		x	x	x	x	
Racket-tailed Treepie <i>Cypsiirina temia</i>	B	x	x	x		x		x			x	
Ratchet-tailed Treepie <i>Temnurus temnurus</i>						x						
Large-billed Crow <i>Corvus macrorhynchus</i>		x	x	x	x					x		
Ashy Woodswallow <i>Artamus fuscus</i>	B	x	x			x				x	x	x
Black-naped Oriole <i>Oriolus chinensis</i>		x	x	x	x	x			x	x	x	
Black-hooded Oriole <i>Oriolus xanthornus</i>		x	x	x	x	x						x
Maroon Oriole <i>Oriolus traillii</i>	C					x						
Large Cuckooshrike <i>Coracina macei</i>		x	x	x	x	x						
Indochinese Cuckooshrike <i>Coracina polioptera</i>	B	x	x	x	x							
Black-winged Cuckooshrike <i>Coracina melaschistos</i>	C	x										
Swinhoe's Minivet <i>Pericrocotus cantonensis</i>	C	x	x	x								
Ashy Minivet <i>Pericrocotus divaricatus</i>		x	x	x								
Grey-chinned Minivet <i>Pericrocotus solaris</i>						x						
Small Minivet <i>Pericrocotus cinnamomeus</i>	B	x	x	x	x	x						
Scarlet Minivet <i>Pericrocotus flammeus</i>		x	x	x	x	x						
Bar-winged Flycatcher-shrike <i>Hemipus picatus</i>		x	x	x	x	x						
White-throated Fantail <i>Rhipidura albicollis</i>						x						
White-browed Fantail <i>Rhipidura aureola</i>	B	x	x	x		x						
Pied Fantail <i>Rhipidura javanica</i>						x						
Black Drongo <i>Dicrurus macrocercus</i>		x	x	x	x							
Ashy Drongo <i>Dicrurus leucophaeus</i>		x	x	x	x	x						
Bronzed Drongo <i>Dicrurus aeneus</i>		x	x	x	x	x						
Lesser Racket-tailed Drongo <i>Dicrurus remifer</i>		x				x						
Spangled Drongo <i>Dicrurus hottentottus</i>		x	x	x	x	x						
Greater Racket-tailed Drongo <i>Dicrurus paradiseus</i>		x	x	x	x	x						
Black-naped Monarch <i>Hypothymis azurea</i>		x	x	x		x						
Asian Paradise-flycatcher <i>Terpsiphone paradisi</i>		x	x	x	x	x						
Common Iora <i>Aegithina tiphia</i>		x	x	x	x	x						
Great Iora <i>Aegithina lafresnayei</i>		x	x	x	x							
Large Woodshrike <i>Tephrodornis gularis</i>		x	x	x	x							
Common Woodshrike <i>Tephrodornis pondicerianus</i>	B	x	x	x	x	x						
White-throated Rock Thrush <i>Monticola gularis</i>		x				x						
Blue Rock Thrush <i>Monticola solitarius</i>		x				x						
Blue Whistling Thrush <i>Myophonus caeruleus</i>		x	x			x						
Orange-headed Thrush <i>Zoothera citrina</i>		x				x						
Scaly Thrush <i>Zoothera dauma</i>						x						
Eyebrowed Thrush <i>Turdus obscurus</i>		x	x	x	x							
Dark-sided Flycatcher <i>Muscicapa sibirica</i>		x				x						
Asian Brown Flycatcher <i>Muscicapa dauurica</i>		x	x	x	x							
Mugimaki Flycatcher <i>Ficedula mugimaki</i>		x										
Red-throated Flycatcher <i>Ficedula parva</i>		x	x	x	x							
Rufous-browed Flycatcher <i>Ficedula solitaria</i>						x						
Blue-and-white Flycatcher <i>Cyanoptila cyanomelana</i>		x				x						
Verditer Flycatcher <i>Eumyias thalassina</i>		x	x	x	x	x						
Hainan Blue Flycatcher <i>Gyornis hainanus</i>	A	x										
Blue-throated Flycatcher <i>Gyornis rubeculoides</i>		x										
Tickell's Blue Flycatcher <i>Gyornis tickelliae</i>		x	x	x	x	x						
Grey-headed Canary Flycatcher <i>Culicicapa ceylonensis</i>		x	x	x	x							
Siberian Rubythroat <i>Luscinia calliope</i>		x				x						
Bluethroat <i>Luscinia svecica</i>								x				
Siberian Blue Robin <i>Luscinia cyane</i>								x				x
Oriental Magpie Robin <i>Copsychus saularis</i>								x	x	x	x	x
White-rumped Shama <i>Copsychus malabaricus</i>								x	x	x	x	x
Slaty-backed Forktail <i>Enicurus schistaceus</i>							C	x				x
Common Stonechat <i>Saxicola torquata</i>								x	x	x	x	
Pied Bushchat <i>Saxicola caprata</i>								x	x	x	x	
Grey Bushchat <i>Saxicola ferrea</i>								x				x
Chestnut-tailed Starling <i>Sturnus malabaricus</i>							B	x	x	x	x	
Black-collared Starling <i>Sturnus nigricollis</i>							B	x	x	x	x	
Vinous-breasted Starling <i>Sturnus burmannicus</i>								A	x	x	x	x
Asian Pied Starling <i>Sturnus contra</i>								x				x
Common Myna <i>Acridotheres tristis</i>								x	x	x	x	
White-vented Myna <i>Acridotheres cinereus</i>								x				x
Golden-crested Myna <i>Ampeliceps coronatus</i>							A	x	x	x	x	
Hill Myna <i>Gracula religiosa</i>								x	x	x	x	x
Chestnut-bellied Nuthatch <i>Sitta castanea</i>								x	x	x		x
Velvet-fronted Nuthatch <i>Sitta frontalis</i>								x	x	x	x	
Great Tit <i>Parus major</i>								x	x	x		
Black-throated Tit <i>Aegithalos concinnus</i>							C					x
Barn Swallow <i>Hirundo rustica</i>								x	x	x	x	
Red-Rumped Swallow <i>Hirundo daurica</i>								x	x		x	
Striated Swallow <i>Hirundo striolata</i>								x				
Asian House Martin <i>Delichon dasypus</i>								x		x		
Black-headed Bulbul <i>Pycnonotus atriceps</i>								x		x	x	x
Black-crested Bulbul <i>Pycnonotus melanicterus</i>								x	x	x	x	
Red-whiskered Bulbul <i>Pycnonotus jocosus</i>								x	x			x
Sooty-headed Bulbul <i>Pycnonotus aurigaster</i>							B	x	x	x	x	x
Stripe-throated Bulbul <i>Pycnonotus finlaysoni</i>								x	x	x	x	x
Yellow-vented Bulbul <i>Pycnonotus goiavier</i>								x			x	x
Streak-eared Bulbul <i>Pycnonotus blanfordi</i>							B	x	x	x	x	x
Puff-throated Bulbul <i>Alophoixus pallidus</i>								x	x	x	x	x
Grey-eyed Bulbul <i>Iole propinqua</i>							A	x	x	x	x	
Ashy Bulbul <i>Hemixos flavala</i>								x				x
Black Bulbul <i>Hypsipetes leucocephalus</i>							C	x	x	x	x	
Zitting Cisticola <i>Cisticola juncidis</i>								x				x
Bright-headed Cisticola <i>Cisticola exilis</i>								x				
Brown Prinia <i>Prinia polychroa</i>							B	x	x	x	x	
Rufescent Prinia <i>Prinia rufescens</i>								x	x	x	x	x
Grey-breasted Prinia <i>Prinia hodgsonii</i>								x	x	x	x	
Yellow-bellied Prinia <i>Prinia flaviventris</i>								x		x		
Plain Prinia <i>Prinia inornata</i>								x		x	x	
Chestnut-flanked White-eye <i>Zosterops erythropleurus</i>												x
Oriental White-eye <i>Zosterops palpebrosus</i>								x				x
Lanceolated Warbler <i>Locustella lanceolata</i>								x	x			x
Rusty-rumped Warbler <i>Locustella certhiola</i>								x				
Blunt-winged Warbler <i>Acrocephalus concinens</i>								x				
Manchurian Reed Warbler <i>Acrocephalus tangorum</i> (VU)								x				
Oriental Reed Warbler <i>Acrocephalus orientalis</i>								x				
Thick-billed Warbler <i>Acrocephalus aedon</i>								x	x			x
Common Tailorbird <i>Orthotomus sutorius</i>								x	x	x	x	
Dark-necked Tailorbird <i>Orthotomus atrogularis</i>								x	x	x	x	x
Dusky Warbler <i>Phylloscopus fuscatus</i>								x	x	x	x	
Rade's Warbler <i>Phylloscopus schwarzi</i>								x				
Yellow-browed Warbler <i>Phylloscopus inornatus</i>								x	x	x	x	
Two-barred Greenish Warbler <i>Phylloscopus trochiloides</i>								x	x			x
Arctic Warbler <i>Phylloscopus borealis</i>								x	x			x
Pale-legged Leaf Warbler <i>Phylloscopus tenellipes</i>								x	x	x	x	
Eastern Crowned Warbler <i>Phylloscopus coronatus</i>									x			x
Plain-tailed Warbler <i>Seicercus soror</i>								x				
Yellow												

Species	Biome					Species	Biome						
	restricted	SPF	MPF	PPWS	SMP		LWS	restricted	SPF	MPF	PPWS	SMP	LWS
Scaly-crowned Babbler <i>Malacopteron cinereum</i>		x	x	x	x	Purple-naped Sunbird <i>Hypogramma hypogrammicum</i>		x					
Large Scimitar Babbler <i>Pomatorhinus hypoleucos</i>		x			x	Purple-throated Sunbird <i>Nectarinia sperata</i>		x		x			
White-browed Scimitar Babbler <i>Pomatorhinus schisticeps</i>		x	x		x	x	Olive-backed Sunbird <i>Nectarinia jugularis</i>		x	x	x	x	
Striped Tit Babbler <i>Macronous gularis</i>		x	x	x	x	x	Purple Sunbird <i>Nectarinia asiatica</i>		x	x	x	x	x
Grey-faced Tit Babbler <i>Macronous kelleyi</i> (RR)		x			x	Black-throated Sunbird <i>Aethopyga saturata</i>	C				x		
Chestnut-capped Babbler <i>Timalia pileata</i>		x	x	x	x	Crimson Sunbird <i>Aethopyga siparaja</i>		x			x		
Yellow-eyed Babbler <i>Chrysomma sinense</i>			x		x	Little Spiderhunter <i>Arachnothera longirostra</i>		x			x	x	
Silver-eared Mesia <i>Leiothrix argenteauris</i>					x	Streaked Spiderhunter <i>Arachnothera magna</i>	C	x			x		
White-browed Shrike Babbler <i>Pteruthius flaviscapis</i>					x	Eurasian Tree Sparrow <i>Passer montanus</i>		x	x		x		
Chestnut-fronted Shrike Babbler <i>Pteruthius aenobarbus</i>					x	Plain-backed Sparrow <i>Passer flaveolus</i>	B		x	x			
Blue-winged Minla <i>Minla cyanouroptera</i>	C				x	Forest Wagtail <i>Dendronanthus indicus</i>		x	x				
Black-browed Fulvetta <i>Alcippe grotei</i>		x			x	Mekong Wagtail <i>Motacilla samveasnae</i> (NT/RR)			x			x	
Mountain Fulvetta <i>Alcippe peracensis</i>	C				x	White Wagtail <i>Motacilla alba</i>			x				
Black-chinned Yuhina <i>Yuhina nigrimenta</i>	C				x	Citrine Wagtail <i>Motacilla citreola</i>		x					
White-bellied Yuhina <i>Yuhina zantholeuca</i>		x	x	x	x	Yellow Wagtail <i>Motacilla flava</i>		x			x		
Black-headed Parrotbill <i>Paradoxornis margaritae</i> (NT/RR)					x	Grey Wagtail <i>Motacilla cinerea</i>		x	x	x	x		
Australasian Bushlark <i>Mirafra javanica</i>		x				Richard's Pipit <i>Anthus richardi</i>		x		x	x		
Indochinese Bushlark <i>Mirafra erythrocephala</i>	B	x	x	x	x	Paddyfield Pipit <i>Anthus rufulus</i>		x	x	x	x		
Oriental Skylark <i>Alauda gulgula</i>		x			x	Olive-backed Pipit <i>Anthus hodgsoni</i>		x	x	x	x		
Thick-billed Flowerpecker <i>Dicaeum agile</i>		x			x	Streaked Weaver <i>Ploceus manyar</i>		x					
Yellow-vented Flowerpecker <i>Dicaeum chrysorrheum</i>		x			x	Baya Weaver <i>Ploceus philippinus</i>		x	x				
Plain Flowerpecker <i>Dicaeum concolor</i>		x			x	Asian Golden Weaver <i>Ploceus hypoxanthus</i> (NT)		x					
Fire-breasted Flowerpecker <i>Dicaeum ignipectus</i>					x	Pin-tailed Parrotfinch <i>Erythrura prasina</i>		x					
Scarlet-backed Flowerpecker <i>Dicaeum cruentatum</i>		x	x	x	x	White-rumped Munia <i>Lonchura striata</i>		x	x	x	x		
Brown-throated Sunbird <i>Anthreptes malacensis</i>		x			x	Scaly-breasted Munia <i>Lonchura punctulata</i>		x	x		x		
Ruby-cheeked Sunbird <i>Anthreptes singalensis</i>		x	x		x	Yellow-breasted Bunting <i>Emberiza aureola</i> (VU)		x					