

The avifauna of Kabaena Island, south-east Sulawesi, Indonesia

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Kabaena is a satellite island of mainland Sulawesi, located off the south-east peninsula. Despite the relatively extensive surveys on the nearby larger islands of Buton and Muna, Kabaena has remained ornithologically neglected. Researchers visited the island several times between 1999 and 2016 to collect data for avian biogeographic research. Data collection between 1999 and 2003 focused mainly on mist-netting small passerines. The 2016 expedition focused on transect surveys, allowing for a wider assessment of the island's avifauna. During these visits all bird species encountered were recorded, providing the first scientific assessment of the avifauna of Kabaena. In total 89 species were recorded, of which 27 are regional endemics, three are classified as Near Threatened and one as Endangered.

INTRODUCTION

Since the pioneering work of Alfred Russel Wallace, Wallacea has been of great interest to naturalists (Wallace 1860, 1869). The unique faunal composition of this biogeographical region makes it one of the world's top 25 biodiversity hotspots (Myers *et al.* 2000). Sulawesi, the largest island in Wallacea, is an important centre of endemism in the region (Michaux 2010). However, it possesses a relatively depauperate avifauna compared to some other Indonesian islands such as Java, but boasts a high degree of endemism (BirdLife International 2016a) due to an extended period of geological isolation from continental landmasses (Watling 1983). The island's east and south-east peninsulas, including their satellite islands, have received little attention from ornithologists compared to the north, south and central provinces. Extensive ornithological surveying has yet to be carried out in much of south-east Sulawesi (White & Bruce 1986, Rheindt *et al.* 2014).

Kabaena is the third-largest satellite island (873 km²) of south-east Sulawesi and lies 18 km south of the south-east peninsula (Figure 1). The island is rugged, with a central mountainous region of limestone and igneous material, with a maximum altitude of 1,570 m. Although accounts from the nearby islands of Buton (Butung) and Muna have been published from the colonial period to the present (Hartert 1903, van Bemmelen & Voous 1951, Schoorl 1987, Catterall 1996, Martin *et al.* 2012), none of these surveys included Kabaena. This is surprising, given its proximity, and may be a result of logistical constraints. Currently the primary ornithological information on Kabaena comes from White & Bruce (1986), who noted that Kabaena is '[almost] ornithologically unknown'. In their species accounts, White & Bruce (1986) mentioned only four species 'known to occur' on Kabaena: Jerdon's Baza *Aviceda jerdoni*, Grey-rumped Treeswift *Hemiprocne longipennis*, Sulawesi Cicadabird *Ediloscops morio* and Black-naped Oriole *Oriolus chinensis*. Coates & Bishop (1997) repeated the same four in their accounts, although neither of these authors revealed the source(s) of these data. Three of these species have been recorded on Kabaena in the modern era, the only exception being the Near Threatened Jerdon's Baza, although Catterall (1996) recorded it on Buton. Aside from this, very little ornithological information is available for Kabaena and the only other published information on the avifauna of the island is the discovery of a new endemic subspecies of Red-backed Thrush *Geokichla erythronota kabaena* (Robinson-Dean *et al.* 2002).

The islands of Kabaena, Muna and Buton are presently separated from each other and the mainland by shallow seas, but historically these islands have been linked during earlier glacial periods (Carstensen *et al.* 2012). As a result, the islands would be likely to have comparable avifauna, however some variation in Kabaena's avifauna could be expected due to the island's different geology.

The underlying geology of the island is an unusual combination of Pompageo Schist and ultramafic rocks, whereas the larger islands of Muna, Buton and the extreme southern tip of Sulawesi's south-east peninsula are mostly comprised of sedimentary rock (Hall & Wilson 2000). In contrast to Kabaena, Muna has a maximum altitude of only 250 m, whilst the highest part of Buton, the largest of the three islands, attains 1,100 m. It is possible that this geological difference has caused significant differences in the flora and fauna of Kabaena in comparison to its neighbours. Kabaena, Buton and Muna have a tropical climate with temperatures ranging from 22–32°C; there is a dry season between June and September and a rainy season between December and March (Whitten *et al.* 1987). The mountainous centre and less accessible valleys of Kabaena hold areas where relatively undisturbed forest persists (Gillespie *et al.* 2005, Tweedley *et al.* 2013). However, much of the lowlands has been deforested and the remaining vegetation is characterised by open forest, savannah woodlands and grasslands occurring on exposed ridges (Gillespie *et al.* 2005).

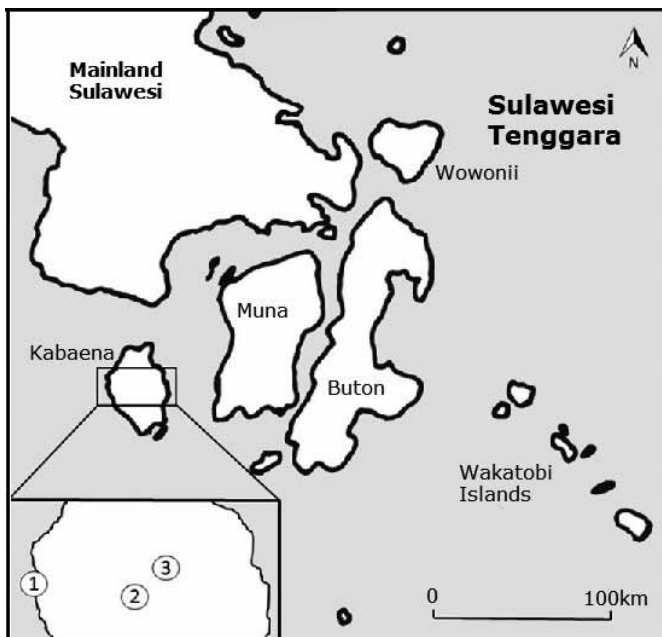
The main purpose of the field expeditions to Kabaena between 1999 and 2016 was to gather data for biogeographical research being carried out by DOC, DJK, NMM, KA, AB and AK. However, all avian species encountered were recorded in order to better understand the island's avian community structure. This paper provides the first scientific assessment of the avifauna of Kabaena and details a number of geographical range extensions which were recorded during this fieldwork.

METHODS

Records of Kabaena's avifauna were collected mainly during line transect surveys in June 2016. Although the primary purpose of the 1 km-long transects was to gather behavioural data from a guild of small passerines (Nectariniidae, Dicaeidae and Zosteropidae), all bird species seen or heard were recorded. Data were collected by DOC, AK and SS between 06h00–08h15 and 15h15–17h30 each day. Observations were made using 8 × 42 binoculars. During the 2016 field season, 110.4 hours of transect surveying was carried out covering 35 routes, each surveyed in the morning and evening. Informal observations were also recorded whenever sightings were made, e.g. during exploration of new sites and when undertaking floral surveys.

The areas surveyed were in the vicinity of the villages of Enano (10 transect routes), Tangkeno (11 transect routes) and Sikeli (14 transect routes) (Figure 1). Enano (5.263°S 121.969°E) is an inland lowland site, where transect altitudes varied between 85 and 170 m, with the habitats surveyed comprising scrub, mixed farmland, mixed plantation and forest edge. Tangkeno (5.279°S 121.923°E) is an

Figure 1. Kabaena Island. The three sites where these surveys were carried out are shown in the inset panel on the left: ① Sikeli, ② Tangkeno, ③ Enano.



inland upland site, where transect altitudes varied between 430 and 710 m, with the habitats comprising secondary forest, scrub and mixed plantation. Sikeli (5.263°S 121.796°E) is a coastal lowland site, where the transect altitude varied between sea level and 50 m, with habitats comprising coconut plantation, cashew plantation, mangrove and scrub. There was much more evidence of intensified mono-cropping around the more heavily populated village of Sikeli than at the other two sites.

Further records were obtained from mist-netting data and informal sight records made during the previous explorations undertaken in late August and September 1999, 2001 and 2003; these were added to the information obtained in 2016. Researchers also visited Kabaena during 2000 to obtain further information on the possible new subspecies of Red-backed Thrush first found in 1999, but unfortunately we cannot trace records of other species that may have been recorded during visits to Kabaena by Robinson-Dean and Catterall in 2000. During survey work in 2000, focused on finding sites suitable for trapping Red-backed Thrush specimens, 10 days were spent in the Tangkeno area and habitats up to 1,400 m were explored (Robinson-Dean *et al.* 2002). The mist-netting activity was part of avian biogeographic research focused on small passerines and during this fieldwork specimens of Red-backed Thrush were obtained which resulted in the description and procurement of type specimens of the endemic *kabaena* subspecies (Robinson-Dean *et al.* 2002). Mist-nets were placed in habitat types suited to the capture of small passerines, such as abandoned farmland, forest edge and mangrove. The nets were regularly opened between 06h00–10h00 and were checked every 15 minutes; some additional roost catches were made at dusk, between 17h30–18h00. Approximately 127 hours of mist-netting were carried out between 1999 and 2003. The 2016 transect surveys were carried out in the vicinity of the same three villages (Enano, Tangkeno and Sikeli) as the earlier mist-netting fieldwork.

Species identification was confirmed using Coates & Bishop (1997), Eaton *et al.* (2016) and del Hoyo *et al.* (2016), as well as by consulting relevant literature (e.g. White & Bruce 1986). Sulawesi endemics followed Coates & Bishop (1997) and were defined as those found only on mainland Sulawesi and its satellite islands, including Buton, Muna and the Talaud, Sangihe, Togian, Banggai, Sula and Wakatobi (formerly Tukangbesi) island groups. The

abundance estimates for each species were based on frequency of sightings, following Martin *et al.* (2012). The designated categories were: abundant (usually recorded several times each day in suitable habitat); common (usually recorded at least once per day); fairly common (typically recorded at least once per week); locally common (usually recorded daily, but restricted to specific habitats); uncommon (recorded less than five or six times in a season); and rare (known only from one or two records).

RESULTS

In total, 89 bird species were recorded on Kabaena Island between 1999 and 2016. Of that total, 27 species (30.3%) are endemic to Sulawesi, three species are defined as Near Threatened and one as Endangered (BirdLife International 2016b). No species were observed outside their usually reported altitudinal range, all range extensions detailed are geographic in nature. A full list of the species recorded can be found in Appendix 1.

The following annotated list provides details of species listed as Near Threatened or Endangered; Sulawesi endemic species occurring on Kabaena; and significant range extensions. Sulawesi endemics are marked with an *.

Ashy Woodpecker *Mulleripicus fulvus* *

Present on mainland Sulawesi and some satellite islands, including Muna and Buton (Winkler & Christie 2016). Observed to be locally common in secondary forest and forest edge habitats.

Black-billed Kingfisher *Pelargopsis melanorhyncha* *

Widespread on mainland Sulawesi and its offshore islands, including Muna and Buton (Woodall & Kirwan 2017). A single individual was seen in 2016 perched along the coast in coconut plantation near Sikeli, making occasional plunge dives for food.

Yellow-billed Malkoha *Rhamphococcyx calyborhynchus* *

Widespread on mainland Sulawesi and also present on Buton (Payne 2016b). An uncommon species on Kabaena, it was recorded in forest edge habitats.

Bay Coucal *Centropus celebensis* *

Present on mainland Sulawesi and some satellite islands, including Muna and Buton (Payne 2016a). A rarely recorded species during the study, its distinctive call was heard from areas of relatively pristine forest.

Ornate Lorikeet *Trichoglossus ornatus* *

Present on mainland Sulawesi and some satellite islands, including Muna and Buton (Collar 2016b). Recorded once during the 2001 expedition.

Golden-mantled Racquet-tail *Prioniturus platurus* *

Widespread on mainland Sulawesi, also occurs on several satellite islands, including Muna and Buton (Collar 2016a). An uncommon species on Kabaena, observed flying overhead in small groups.

Sulawesi Hanging Parrot *Loriculus stigmatus* *

Widespread on mainland Sulawesi, also occurs on Muna, Buton and the Togian islands (Collar 2016d). Regularly recorded, it is an abundant species on the island, occurring in most habitats.

Pygmy Hanging Parrot *Loriculus exilis* * NT

Fragmented distribution on mainland Sulawesi (Collar & Kirwan 2016) and also recorded on Buton (Catterall 1996, Martin *et al.* 2012). Uncommon on Kabaena, recorded in forest edge habitats. Much rarer than the similar Sulawesi Hanging Parrot.

Sulawesi Masked Owl *Tyto rosenbergii* *

Present on mainland Sulawesi and Buton (Bruce & Marks 2016). A pair of birds feeding a chick on the crossbar of a soccer goal frame near Rahadopi village (5.279°S 121.882°E) was seen by NMM and DJK in 1999.

Sulawesi Scops Owl *Otus manadensis* *

Present on mainland Sulawesi and some satellite islands, including Muna and Buton (Holt *et al.* 2017). Locally common, heard calling at night in secondary forest areas.

Sulawesi Nightjar *Caprimulgus celebensis* *

Patchily distributed in northern and central Sulawesi, also Taliabu and Buton islands (Cleere 2017). Recorded once during the 2003 expedition.

White-faced Cuckoo Dove *Turacoena manadensis* *

Present on mainland Sulawesi and some satellite islands, including Muna and Buton, east to the Sula islands (Baptista *et al.* 2016). An uncommon species on Kabaena, usually identified by call in forest edge habitats.

White-bellied Imperial Pigeon *Ducula forsteni* *

Widespread and fairly common on Sulawesi and several satellite islands, including Togian, Banggai and Sula islands (Baptista *et al.* 2016), also recorded from Buton (Catterall 1996, Martin *et al.* 2012). A rare species on Kabaena, only identified by calls from relatively untouched forested areas.

Sulawesi Serpent Eagle *Spilornis rufipectus* *

Present on mainland Sulawesi and some satellite islands, including Muna and Buton, east to the Sula islands (Clark & Kirwan 2016b). Infrequently observed on Kabaena; single birds were seen flying over open habitat.

Spot-tailed Goshawk *Accipiter trinotatus* *

Present on mainland Sulawesi, Muna and Buton (Clark *et al.* 2016). Rarely recorded calling from thick secondary forest re-growth in 2016. Two individuals were mist-netted near Tangkeno in September 2001.

Sulawesi Hawk Eagle *Nisaetus lanceolatus* *

Found on mainland Sulawesi and some satellite islands, including Muna and Buton, east to the Sula islands (Clark & Kirwan 2016a). Rarely observed.

Milky Stork *Mycteria cinerea* EN

This Endangered species (Birdlife International 2016b) has a fragmented distribution in Cambodia, Malaysia, Sumatra, Java and south and south-east Sulawesi (Elliott *et al.* 2016). Up to 21 individuals, including one immature, reported on three dates in November 1996 from south-east Buton (Catterall 1996). On Kabaena there is one record, a pair seen at a nest close to Sikeli in early September 1999, although further evidence of breeding (incubation or feeding) was not confirmed.

Ivory-backed Woodswallow *Artamus monachus* *

Found on mainland Sulawesi and some satellite islands, including Buton, east to the Sula islands (Rowley *et al.* 2016). Locally common in mixed farmland habitats in the vicinity of Enano, seen singly and in pairs, occasionally in groups with White-breasted Woodswallow *A. leucorhyn.*

Pied Cuckooshrike *Coracina bicolor* * NT

Recorded on mainland Sulawesi and several satellite islands,

including Kabaena, Buton and Muna, according to Taylor (2016a). The report of the species's occurrence on Kabaena in Taylor (2016a) is a mystery, as we are unable to find any prior record from the island (see White & Bruce 1986). Neither Taylor (2005) nor Eaton *et al.* (2016) show Kabaena as part of the species's range. Generally uncommon to rare on Sulawesi, with an apparently fragmented range—it is absent from large parts of the central and eastern regions, locally common in the north and uncommon on Buton (Taylor 2016a). It was recorded on Kabaena only once (in a coconut plantation) during the 2016 surveys.

White-rumped Cuckooshrike *Coracina leucopygia* *

Present on mainland Sulawesi and some satellite islands, including Muna and Buton (Taylor 2016b). Uncommon on Kabaena; observed in overgrown farmland singly and in pairs.

Sulawesi Cicadabird *Edilosoma morio* *

Present on mainland Sulawesi and some satellite islands, including Muna and Buton (Taylor 2017). Found at all three sites on Kabaena and common in coastal farmland areas.

Sulawesi Myna *Basilornis celebensis* *

Present on mainland Sulawesi and some satellite islands, including Muna and Buton (Craig & Feare 2016b). Rarely observed; seen singly and as a group of three in 2016 on the edge of Enano village.

Grosbeak Starling *Scissirostrum dubium* *

Present on mainland Sulawesi and some satellite islands, including Buton (Craig & Feare 2016a). Locally common, observed in groups of up to seven individuals, although no breeding colonies were located.

Red-backed Thrush *Geokichla erythronota* * NT

Kabaena is home to the subspecies *G. e. kabaena* of the Sulawesi endemic Red-backed Thrush (Robinson-Dean *et al.* 2002), a species known from the Sulawesi mainland and Buton (Collar 2016c). A secretive and probably under-recorded species on Kabaena, largely found in forest habitats, it was first recorded in 1999. A small number of birds were mist-netted in forest and forest edge habitat in 1999, 2000 and 2001 as part of the research into the Kabaena Red-backed Thrush's taxonomy (Robinson-Dean *et al.* 2002). Recorded once during the 2016 field season in forest edge habitat.

Pale-bellied White-eye *Zosterops consobrinorum* *

Present on the south-eastern peninsular arm of Sulawesi and on Buton (van Balen 2017). Found to be widespread and common in inland areas of Kabaena, in mixed farmland and forest edge habitats. Replaced by the Lemon-bellied White-eye *Z. chloris* in coastal areas. Observed regularly in pairs and small groups.

Sulawesi Babbler *Trichastoma celebense* *

Widely distributed on mainland Sulawesi and also recorded on Buton (Collar & Robson 2016). Found to be abundant in most habitats. Several individuals were often heard calling at all three sites.

Yellow-sided Flowerpecker *Dicaeum aureolimbatum* *

Widespread on mainland Sulawesi and its offshore islands, including Muna and Buton (Cheke & Mann 2017a). Abundant at all sites on Kabaena in most habitats.

Grey-sided Flowerpecker *Dicaeum celebicum* *

Widespread on mainland Sulawesi and its offshore islands, including Muna and Buton (Cheke & Mann 2017b). Common at all sites on Kabaena in most habitats.

DISCUSSION

Despite the Sulawesi region being a hotspot of endemism (Myers *et al.* 2000), knowledge of the avifauna of the area is fragmentary (Noske 2017). This study has shed new light on the avian community of one of the more neglected satellite islands of Sulawesi and is the first scientific assessment of the avifauna of Kabaena, during which 89 species were recorded. Many of these records for Kabaena are unsurprising as the species are already well known on the neighbouring islands, Buton and Muna and the south-east peninsula, all of which lie close by, allowing free dispersal between them.

The check-list provided in Appendix 1 is not representative of the complete avian community present on Kabaena. Our surveys were not designed specifically for recording avian biodiversity, but to maximise behavioural observations of Nectariniidae, Dicaeidae and Zosteropidae as part of research into biogeographic patterns in south-east Sulawesi. This determined the location and timing of surveys, as well as the habitat types covered. As a result, marine species, nocturnal species and those restricted to primary forest habitat may have been overlooked. In order to assess the migratory species that utilise Kabaena, surveys at several different times of the year would be required.

While surveys have been carried out on Kabaena for a variety of taxa, such as fish (Tweedley *et al.* 2013), reptiles and amphibians (Gillespie *et al.* 2005, Hayden *et al.* 2008), mammals (Froehlich *et al.* 2003) and plants (Keim 2009, Low 2013), there is undoubtedly further biodiversity to be uncovered. This paper makes an initial assessment of the little-known biodiversity of Kabaena's avian community. The island is experiencing continued habitat loss and degradation, lending urgency to the need for more rigorous biodiversity surveying. It is hoped that this paper will draw attention to the neglected fauna of this island.

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Appendix 1.

All species recorded on Kabaena in the years 1999, 2001, 2003 and 2016.

Key:

Sulawesi endemics are indicated by *.

Abundance estimates are given for species recorded during the 2016 field season: A = abundant; C = common; F = fairly common; L = locally common; U = uncommon; R = rare; M = seasonal migrant.

Species recorded in 1999, 2001 & 2003 are marked ✓ as no abundance estimates are available.

Conservation status: NT = Near Threatened, EN = Endangered (BirdLife International 2016b).

Species	1999	2001	2003	2016	Species	1999	2001	2003	2016
Asian Blue Quail <i>Synoicus chinensis</i>		✓	✓		Barred Rail <i>Hypotaenidia torquata</i>				R
Barred Buttonquail <i>Turnix suscitator</i>				R	Whimbrel <i>Numenius phaeopus</i>				R(M)
Red-backed Buttonquail <i>Turnix maculosus</i>				R	Common Sandpiper <i>Actitis hypoleucos</i>		✓		
Ashy Woodpecker <i>Mulleripicus fulvus</i> *				L	Brahminy Kite <i>Haliastur indus</i>				U
Common Kingfisher <i>Alcedo atthis</i>		✓	✓	R	White-bellied Sea Eagle <i>Haliaeetus leucogaster</i>				U
Blue-eared Kingfisher <i>Alcedo meninting</i>		✓			Sulawesi Serpent Eagle <i>Spilornis rufipectus</i> *				U
Black-billed Kingfisher <i>Pelargopsis melanorhyncha</i> *				R	Spot-tailed Goshawk <i>Accipiter trinitatus</i> *			✓	R
Ruddy Kingfisher <i>Halcyon coromanda</i>		✓			Sulawesi Hawk Eagle <i>Nisaetus lanceolatus</i> *				U
Collared Kingfisher <i>Todiramphus chloris</i>	✓	✓	✓	C	Spotted Kestrel <i>Falco moluccensis</i>				R
Sacred Kingfisher <i>Todiramphus sanctus</i>				L	Great-billed Heron <i>Ardea sumatrana</i>				R
Rainbow Bee-eater <i>Merops ornatus</i>				C	Purple Heron <i>Ardea purpurea</i>				U
Plaintive Cuckoo <i>Cacomantis merulinus</i>		✓	✓	U	Green-backed Heron <i>Butorides striata</i>				U
Brush Cuckoo <i>Cacomantis variolosus</i>			✓	U	Milky Stork <i>Mycteria cinerea</i> EN		✓		
Moluccan Drongo Cuckoo <i>Surniculus musschenbroeki</i>				U	Golden-bellied Gerygone <i>Gerygone sulphurea</i>		✓	✓	C
Little Bronze Cuckoo <i>Chrysococcyx minutillus</i>				R	Slender-billed Crow <i>Corvus enca</i>				L
Eastern (Black-billed) Koel <i>Eudynamis orientalis</i>	✓				White-breasted Woodswallow <i>Artamus leucoryn</i>				F
Yellow-billed Malkoha <i>Rhamphococcyx calyphorhynchus</i> *				U	Ivory-backed Woodswallow <i>Artamus monachus</i> *				U
Lesser Coucal <i>Centropus bengalensis</i>				L	Black-naped Oriole <i>Oriolus chinensis</i>			✓	C
Bay Coucal <i>Centropus celebensis</i> *		✓		U	Pied Cuckooshrike <i>Coracina bicolor</i> * NT				R
Ornate Lorikeet <i>Trichoglossus ornatus</i> *		✓			White-rumped Cuckooshrike <i>Coracina leucopygia</i> *				U
Golden-mantled Racquet-tail <i>Prioniturus platurus</i> *		✓		U	Sulawesi Cicadabird <i>Edilosoma morio</i> *				F
Blue-backed Parrot <i>Tanygnathus sumatranus</i>				R	White-shouldered Triller <i>Lalage sueurii</i>		✓	✓	C
Sulawesi Hanging Parrot <i>Loriculus stigmatus</i> *				A	Hair-crested Drongo <i>Dicrurus hottentottus</i>		✓	✓	F
Pygmy Hanging Parrot <i>Loriculus exilis</i> * NT				U	Black-naped Monarch <i>Hypothymis azurea</i>		✓	✓	C
Glossy Swiftlet <i>Collocalia esculenta</i>	✓	✓	✓	C	Red-backed Thrush <i>Geokichla erythronota</i> * NT	✓	✓	✓	R
Moluccan Swiftlet <i>Aerodramus infuscatus</i>				R	Citrine Canary Flycatcher <i>Culicicapa helianthea</i>	✓	✓	✓	
Uniform Swiftlet <i>Aerodramus vanikorensis</i>				U	Pied Bushchat <i>Saxicola caprata</i>	✓	✓	✓	L
Asian Palm Swift <i>Cypsiurus balasienis</i>				R	Short-tailed Starling <i>Aplonis minor</i>				R
Grey-rumped Treeswift <i>Hemiproctus longipennis</i>				C	Sulawesi Myna <i>Basilornis celebensis</i> *				U
Sulawesi Masked Owl <i>Tyto rosenbergii</i> *	✓				Grosbeak Starling <i>Scissirostrum dubium</i> *			✓	U
Sulawesi Scops Owl <i>Otus manadensis</i> *	✓			L	House Swallow <i>Hirundo javanica</i>				C
Great Eared Nightjar <i>Lyncornis macrotis</i>				U	Lemon-bellied White-eye <i>Zosterops chloris</i>		✓	✓	A
Savanna Nightjar <i>Caprimulgus affinis</i>	✓			L	Pale-bellied White-eye <i>Zosterops consobrinorum</i> *	✓	✓	✓	C
Sulawesi Nightjar <i>Caprimulgus celebensis</i> *			✓		Sulawesi Babbler <i>Trichastoma celebense</i> *	✓	✓	✓	A
Rock Pigeon <i>Columba livia</i>			✓	L	Yellow-sided Flowerpecker <i>Dicaeum aureolimbatum</i> *	✓	✓	✓	A
Eastern Spotted Dove <i>Spilopelia chinensis</i>			✓	U	Grey-sided Flowerpecker <i>Dicaeum celebicum</i> *	✓		✓	C
Slender-billed Cuckoo Dove <i>Macropygia amboinensis</i>			✓	U	Brown-throated Sunbird <i>Antheptes malacensis</i>	✓	✓	✓	A
White-faced Cuckoo Dove <i>Turacoena manadensis</i> *			✓	L	Black Sunbird <i>Leptocoma aspasia</i>				A
Grey-capped Emerald Dove <i>Chalcophaps indica</i>		✓	✓	U	Olive-backed Sunbird <i>Cinnyris jugularis</i>	✓	✓	✓	A
Pink-necked Green Pigeon <i>Treron vernans</i>				U	Crimson Sunbird <i>Aethopyga siparaja</i>	✓			U
Grey-cheeked Green Pigeon <i>Treron griseicauda</i>			✓	U	Eurasian Tree Sparrow <i>Passer montanus</i>	✓	✓	✓	A
Black-naped Fruit Dove <i>Ptilinopus melanospilus</i>	✓		✓	C	Black-faced Munia <i>Lonchura molucca</i>	✓	✓	✓	C
White-bellied Imperial Pigeon <i>Ducula forsteni</i> *			✓	U	Scaly-breasted Munia <i>Lonchura punctulata</i>				U
Green Imperial Pigeon <i>Ducula aenea</i>			✓	U	Chestnut Munia <i>Lonchura atricapilla</i>	✓	✓		U
Pied Imperial Pigeon <i>Ducula bicolor</i>				R					