

# The birds of the Togian islands, Central Sulawesi, Indonesia

MOCHAMAD INDRAWAN, SOEKARJA SOMADIKARTA, JATNA SUPRIATNA,  
MURRAY D. BRUCE, SUNARTO and GURITNO DJANUBUDIMAN

We carried out surveys on the Togian islands, situated between the northern and eastern peninsulas of Sulawesi, Indonesia, during 1996–2002, visiting all but one of the seven largest islands and two offshore islets. A total of 72 species was previously known for the islands, based on collections in 1871 and 1939 and some observations from the 1980s. We recorded 86 species including 34 new records, giving a total of 106 species for the islands. We regard as erroneous the records of five species previously listed for the islands: Yellow-crested Cockatoo *Cacatua sulphurea*, Blue-eared Kingfisher *Alcedo meninting*, Sulawesi Pygmy Woodpecker *Dendrocopos temminckii*, Zitting Cisticola *Cisticola juncidis* and Grey-sided Flowerpecker *Dicaeum celebicum*. The 20 species known only from earlier records include a number assumed to be resident and thus expected to be found. Five rails and four owls, (including a new species, Togian Hawk Owl *Ninox burhani*) were recorded, families previously unknown from the Togian islands. Three subspecies endemic to the Togian islands are currently recognised: Brown Cuckoo Dove *Macropygia amboinensis atrata*, Golden Bulbul *Alphoixus affinis aureus* and Sulawesi Babbler *Trichastoma celebense togianense*. However, we found two additional possible new species and several possible undescribed subspecies, suggesting a greater degree of avian endemism in these islands than hitherto known.

## INTRODUCTION

The Togian islands are a small archipelago of c. 35 islands scattered in the Gulf of Tomini at 0°7'–0°6'S 121°33'–122°24'E, between the northern and eastern peninsulas of Sulawesi (Fig. 1). They lie on a shallow submarine plateau less than 200 m deep, and are clustered fairly close together, except for the more isolated Una-una, which rests on deeper waters (500–2,000 m deep). The island group, which covers c. 59,000 ha of land and 108,000 ha of marine waters, features an outstanding biodiversity (e.g. Whitten *et al.* 2002, Allen and McKenna 2001), with natural ecosystems including forests, mangroves, seagrass, and coral reefs. The forest comprises monsoon and evergreen forest, and is interspersed with mixed gardens of coconut, clove, cocoa, and durian. Monsoon forest is found on nutrient-poor podzolic soils on smaller islands, such as Malenge, and is characterised by a preponderance of figs. Evergreen forest grows on limestone on larger islands such as Batudaka (D. Supriyadi *in litt.* 1997).

Reasonably detailed information on the vegetation structure and phenology of the lowland forest on Malenge is available (Supriyadi 1996). It is located on undulating to steep terrain, with a tall (>20 m), often discontinuous canopy, featuring trees dominated by a girth class of 30–

50 cm. It is dominated by 'manggis hutan' *Garcinia dulcis* (Rubiaceae), 'lasi' *Andinauclea flagifolia* (Clusiaceae) and 'ulos' *Streblus ilicifolius* (Moraceae). Forest fires in April 1998, following 18 months with virtually no rain, burnt two-thirds of Malenge (A. Dodoa verbally 1999), but it seems that both forest and wildlife in Malenge are quickly recovering from the fire impacts (A. Dodoa verbally 1999; MI personal observations 2000, 2001).

On Togian island, logging activities have left very few trees whose diameter exceeds 50 cm, and the remnant areas are characterised as 'moderately disturbed' (Sidiyasa 2000). However, many fruiting trees of economic value remain extensive, such as 'cempedak' *Artocarpus integer*, durian *Durio zibethinus*, 'rao' *Dracontomelon dao*, 'tea' *Artocarpus elastica*, mango *Mangifera foetida*, and aren palm *Arenga pinnata*. Secondary forest trees that are commonly encountered include 'kole' *Alphitonia excelsa*, 'ndolia' *Cananga odorata*, *Anthocephalus chinensis*, *Duabanga moluccana*, *Alstonia spectabilis*, *Mallotus* spp., and *Macaranga* spp. Two species that often dominate secondary forest on Sulawesi, *Alphitonia incana* and *Trichospermum morotaense*, were found to be abundant. Stands of *Duabanga moluccana* were frequent in valleys, often co-occurring with *Nauclea orientalis* and *Octomeles moluccana* (Sidiyasa 2000).

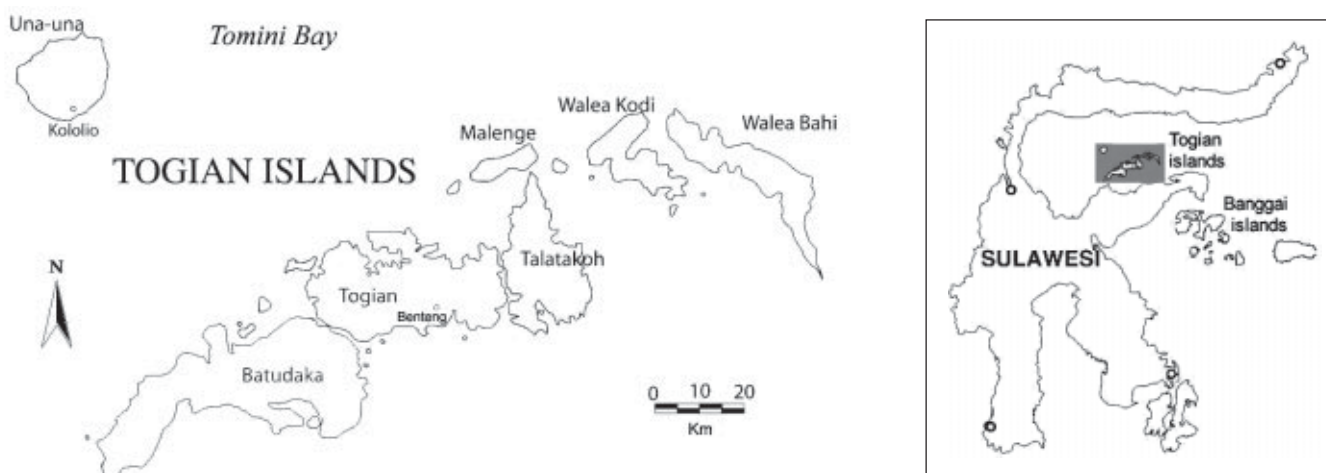


Figure 1. Map showing location of the Togian islands.

Batudaka has less-disturbed forest and fewer fruiting trees than Togian island; 'uru' *Emerilia ovalis*, 'siuri' *Koordersiodendron pinnatum* and 'aren' *Arenga pinnata* were scarce. Instead, 'kayu besi' *Intsia bijuga*, *Garuga floribunda*, *Sterculia macrocarpa*, *Dysoxylum aliaceum*, and members of Sapotaceae, which are rare on Togian island, occur in abundance. As on Togian island, *Alphitonia incana* and *Trichospermum morotaense*, were found to be abundant (Sidiyasa 2000).

### Ornithological studies

The avifauna of these islands has hitherto been poorly known. White and Bruce (1986) listed a total of 63 species for the islands. To our knowledge, A. B. Meyer was the first ornithologist to collect specimens from the islands, in August 1871 (Walden 1871, 1872, 1874, Meyer 1879; see also Meyer and Wiglesworth 1898 for a revised tabulation of Meyer's Togian records, including species overlooked by White and Bruce [1986]). According to Ripley (1941: 344), Meyer visited Togian island and recorded a total of 58 species. Shortly after his return to Germany in 1872, Meyer sold his collection, with most going to the Museum für Naturkunde der Humboldt-Universität zu Berlin (ZMB) and some to the Staatliches Museum für Tierkunde (MTD) in Dresden. Through later exchanges, a small number of specimens are now scattered amongst various museums, including the Naturhistorisches Museums Wien, Austria (NMW; see Schifter 1990), the Natural History Museum, Tring, U.K. (NHM; Meyer's specimens were received with the Tweeddale collection: see Sharpe 1906), and the Museo Civico di Storia Naturale (MSNM) in Milan, Italy (cf. Roselaar 2003). However, the actual number of specimens collected by Meyer and their current location has not been fully documented.

In 1939, the commercial collector J. J. Menden (or one or more of his assistants) briefly visited Una-una during 3–6 September, on his way to undertake a collecting expedition in northern Sulawesi. While the expedition was still in northern Sulawesi, Menden, or one or more of his assistants, collected on Malenge from 24 November 1939 for at least one month, based on Sody (1949) and specimen label dates in Zoological Museum of Amsterdam (ZMA; K. Roselaar *in litt.* 2004). The small number of specimens from this collection in ZMA suggests additional specimens may reside elsewhere, or that Menden's directive was to focus on mammals. Menden's collection was deposited in the Museum of Comparative Zoology in Cambridge, Massachusetts, (MCZ; Ripley 1941) with several specimens subsequently exchanged with other museums, including the Field Museum of Natural History, Chicago (FMNH). The small Malenge island collection was deposited by Sody at ZMA. There are additional specimens elsewhere including the National Museum of Natural History, Leiden (RMNH), and the Museum Zoologicum Bogoriense, Bogor (MZB).

In a summary of notable records from Sulawesi during 1978–1981, Watling (1983) also mentioned observations from the Togian islands in November 1980, but with no indication of exactly how long he was there and which island was visited. However, as only four conspicuous, coastal species were mentioned (two pigeons, a parrot, and a kingfisher), this suggests his visit was brief and probably transitory. During 6 August to 21 September 1987, 'Proyek Kelelawar' from Oxford University and the Research and Development Biology Centre, Indonesian

Institute of Sciences (LIPI) made opportunistic bird observations while studying bats (Owen *et al.* 1987), and recorded several species for the first time on the Togian islands.

Between 1996 and 2002, we carried out bird surveys during ecological and conservation studies mounted by the Indonesian Foundation for the Advancement of Biological Sciences (YABSHI), in collaboration with volunteers from Earthwatch (Supriadi 1996, Supriadi and Supriatna 1996, Supriatna *et al.* 1996), initially on Malenge, and subsequently on Togian and Talatakoh islands. Further studies in Batudaka, Una-una, and Walea Bahi were conducted by MI, occasionally assisted by Amir Dodoa and Yunus Masala (on Una-una island).

## METHODS

The surveys (Table 1) aimed to compile basic information on the status, distribution and natural history of the bird fauna. The habitats surveyed included closed primary forest, secondary vegetation, cultivated areas, freshwater wetlands, beaches and coasts, and brackish water (including mangroves). Field observations were done mainly by MI, S and GD, with the help of Earthwatch volunteers (in 1996–1998) and local villagers. Table 1 excludes dates spent travelling and conducting more general ecological or anthropological research, during which some bird observations were made. Prior to 1998 when we acquired Coates and Bishop (1997), we used identification guides for adjacent regions (MacKinnon and Phillipps 1993, Beehler *et al.* 1986), plus family monographs (e.g. Walters 1991). For regional endemics, detailed notes were taken in the field and subsequently compared to skins in MZB. Calls were noted and checked against published sources, especially Holmes and Phillipps (1996). Earthwatch volunteers, despite having mostly negligible previous experience of bird surveys in the tropics, became increasingly proficient and some detailed descriptions made a direct contribution to the species list. Local villagers' knowledge of birds was sought by showing them field guides and asking them to indicate which birds occurred in the area. This was checked against the authors' knowledge of previous records. Vernacular names for Togian birds were gathered with the help of local farmers (A. Dodoa and Taskir, both also former hunters). The local names were mainly Togianese, but when unavailable, the Saluanese name was noted (from the Poso region on the eastern peninsula of mainland Sulawesi); these are listed in Appendix 1 (see also Lowe [1999]).

**Table 1.** Dates and islands covered by the surveys.

Dates	Islands
1–28 August 1996	Malenge, Angkaiyo islet off Malenge
3–27 June 1997	Malenge, Talatakoh
20–30 November 1998	Malenge, Togian, Toule, Batudaka, Una-una
21 December 1999–	
2 January 2000	Togian
3–11 July 2000	Malenge, Batudaka, Una-una
17–24 February 2001	Togian, Walea Bahi
11–18 May 2001	Malenge, Togian, Batudaka
24 July–4 August 2001	Malenge, Togian, Batudaka
21 March–2 April 2002	Togian, Walea Bahi, Una-una

A limited number of specimens were collected for MZB, namely Blue-faced Rail *Gymnocrex rosenbergii* (two birds, trapped for food by local people), Ashy Woodpecker *Mulleripicus fulvus* (one), Togian Hawk Owl *Ninox burhani* (two), Sulawesi Owl *Tyto rosenbergii* (one), and a white-eye *Zosterops* sp. (one). Subsequently, specimens were examined at MZB, and curators at FMNH, MCZ, MTD, NMW, RMNH, ZMA and ZMB were consulted. Data on specimens at NHM were extracted from the *Catalogue of the birds in the British Museum* (e.g. Sharpe 1892, Saunders 1896, Salvadori 1893, Sharpe 1898). Taxonomy and nomenclature follow Inskipp *et al.* (1996) to the species level, with comments on subspecies following White and Bruce (1986), and gender agreement corrected following Dickinson (2003). Other taxonomic changes documented by Dickinson (2003) have also been highlighted.

## RESULTS

We recorded a total of 86 species, plus six species whose identification remains unconfirmed (Australian Koel, an undescribed scops owl taxon, Lesser Frigatebird, Elegant Pitta, White-rumped Triller, and an undescribed white-eye taxon). Our surveys added 34 species to the Togian islands' list, giving a total of 106 species with confirmed records, which are listed below. This includes one Vulnerable species (Blue-faced Rail *Gymnocrex rosenbergii*) and four Near Threatened species (Blue-crowned Racquet-tail *Prioniturus discurus*, Ochre-bellied Hawk Owl *Ninox ochracea*, Pied Cuckooshrike *Coracina bicolor* and Nicobar Pigeon *Caloenas nicobarica*; BirdLife International 2001, 2004). Unconfirmed records and erroneous records are indicated with square brackets.

### Annotated list of the birds of the Togian islands

#### PHILIPPINE SCRUBFOWL *Megapodius cumingii*

Single birds were occasionally seen in primary and secondary forests on Walea Bahi, Malenge and Togian; calls were heard frequently in the morning and afternoon (see also Firman 1996). No active nest mounds were found. Birds in the Togian islands are of the recently reinstated subspecies *gilbertii* (see Dickinson 2003).

#### BLUE-BREASTED QUAIL *Coturnix chinensis*

One male was seen crossing a path beside a paddyfield at Benteng, Togian island, on 30 July 2001.

#### RED JUNGLEFOWL *Gallus gallus*

This species was not seen during the study but its calls were heard in secondary and primary forest and it was identified by local farmers on Togian, Malenge and Walea Bahi. It is likely that the birds are of feral origin, although they have probably been resident on the Togian islands for a long time. The species is widely trapped and snared for food.

#### SPOTTED WHISTLING-DUCK *Dendrocygna guttata*

Groups of up to eight were seen regularly on the brackish pond behind Uemata, Malenge, in 1996 and 1997. A group of up to six birds was also seen on a pond in a logged area in Benteng, Togian island, on 22 December 1999.

#### SUNDA TEAL *Anas gibberifrons*

On Malenge, birds were found with whistling-ducks on the brackish pond behind Uemata, Malenge, in 1996 and 1997. The specific identity of all *Anas* sp. ducks observed could not be resolved confidently from our field observations. However, the diagnostic forehead bump of Sunda Teal was seen on at least three birds; presumably all or most birds were of this species, and not the similar-looking Grey Teal *Anas gracilis*. On 19 August 1996, three juveniles in a group of seven birds were observed on the shore of Kadoda (Malenge). Five birds were seen swimming at sea, c.100 m offshore on 7 July 2000. On Togian island, a sighting of six birds was made in a mangal forest at Baulu on 31 December 1999.

#### [SULAWESI PYGMY WOODPECKER *Dendrocopos temminckii*

The species was not found during the survey and its listing as occurring in the Togian islands appears to be erroneous. Neither Meyer (1879) nor Meyer and Wigglesworth (1898) listed it, nor did Menden (Ripley 1941). Peters (1948) included the Togian islands in the range of this species, although Voous (1947) had not. Peters had been curator at MCZ and had also received many of Menden's specimens, some of which were previously overlooked (see White and Bruce 1986). However, there is no Togian specimen of this species (A. Pirie *in litt.* 2004). The source of the error appears to be Sharpe (1900), whose listing of this bird for Togian seems to have been based on a misreading of the extensive distribution table provided by Meyer and Wigglesworth (1898).]

#### ASHY WOODPECKER *Mulleripicus fulvus*

This woodpecker was observed in hill forest and coconut groves on Togian, Malenge and Walea Bahi. Eleven males (including one subadult) which were seen well had the red area extending onto the whole of the crown, which is typical of the subspecies *M. f. wallacei* of central, east and south Sulawesi (Coates and Bishop 1997). Based on Meyer's record (1879), White and Bruce (1986) listed the Togian birds as *M. f. fulvus* and indeed at least one of Meyer's specimens from Togian can be identified as *M. f. fulvus* (S. Eck *in litt.* 2001). Assuming the correct provenance of Meyer's specimen and its correct identity as *M. f. fulvus*, Togian could be an area of intergradation between the two subspecies, or possibly a distinctive subspecies with mixed characters has evolved: further study is required.

#### KNOBBED HORNBILL *Aceros cassidix*

This species was encountered on all islands surveyed except Una-una. On Malenge, it was frequently observed roosting in flocks of up to 24 birds. On Togian island, a large flock of 22 birds was also seen at dusk. On Togian island and Malenge, the species appeared to be relatively abundant, and we assume that the birds probably move between fragmented forest patches. On Togian island, these hornbills descend to mangroves to feed, reportedly sometimes in quite large numbers. Unexpectedly, it was also found on the small, forested island of Angkaiyo, and our local guide reported that it is often seen flying to nearby larger islands.

Nesting was observed by a local farmer (I. Taskir verbally 2001) on a *Terminalia* sp. tree at the edge of a mixed garden and cultivated land in Benteng, Togian island. In August 2000, a pair began enlarging a natural tree c.15 m above the ground. Two eggs were laid in



September, but only one hatched. The fledgling was able to fly after just over a month. During incubation and chick-feeding, the female stayed at the nest cavity, but did not seal it, as typically happens (Kinnaird and O'Brien 1993, Suer Suryadi *in litt.* 2005). In February 2001, a pair were seen again attending the nest in the morning and evenings, but did not roost overnight, and no breeding was seen up until May 2001.

#### DOLLARBIRD *Eurystomus orientalis*

Singles and pairs were regularly seen on the coast of Bunawang (Malenge) during August 1996 and June 1997. The subspecies could not be determined, but the dates suggest that it was the southern *E. o. pacificus*, as it occurs more widely as a visitor in this region than the northern *E. o. orientalis*.

#### COMMON KINGFISHER *Alcedo atthis*

Single birds were seen on the coasts of Bunawang and Uemata (Malenge), Baulu and Lembanato (Togian island), Kenari (Walea Bahi) and Talatakoh. Most were probably of the resident subspecies *A. a. hispidoides*, but the migrant *A. a. bengalensis* could also occur. Meyer (1879) originally listed the Togian specimen as *A. asiatica*. Walden (1872, 1874), who named Meyer's new taxa from the specimens he sent to Walden, donated the specimen to the BMNH (=NHM) as part of the Tweeddale collection. Sharpe (1892) incorrectly identified and placed the specimen with *beavani*, which is now treated as Blue-eared Kingfisher *A. meninting*. Hence Common Kingfisher has hitherto been incorrectly omitted from the Togian list.

#### [BLUE-EARED KINGFISHER *Alcedo meninting*

As outlined above, Meyer's *A. atthis* specimen was previously treated incorrectly as this species. There is no evidence of Blue-eared Kingfisher occurring in the Togian islands.]

#### BLACK-BILLED KINGFISHER *Halcyon melanorhyncha*

This species was found to be common on the coasts of Batudaka, Togian, Talatakoh, Malenge and Walea Bahi. White and Bruce (1986) implied that the bird is scarce on the mainland of Sulawesi. However, it was also found to be common on the Banggai islands (Indrawan *et al.* 1997). This species was recently reinstated in the genus *Pelargopsis* by Dickinson (2003).

#### RUDDY KINGFISHER *Halcyon coromanda*

On Malenge, individuals were observed at Malangkat on 23 August 1996 and 23 November 1998. On Togian island it was regularly observed in secondary forest, logged forest and mixed gardens. Two birds on Togian island and the second bird on Malenge had bold, dark blue streaking on the back, suggesting they were of the resident subspecies *H. c. rufa*. During the northern winter this kingfisher appeared to be more numerous on Walea Bahi than on other islands; it is possible that residents are joined by individuals of the subspecies *H. c. major* from Japan and Korea, but confirmation is needed.

#### COLLARED KINGFISHER *Todiramphus chloris*

This kingfisher was common, especially in more open vegetation, on all islands. Sharpe (1892) originally gave the Togian birds species status as *Halcyon meyeri*, but this treatment has not been followed subsequently.

#### SACRED KINGFISHER *Todiramphus sanctus*

This species was found to be moderately common in August 1996 and June 1997, during the southern winter. Five individuals were seen along c.2 km of coast between Balantak and Kadoda (Malenge) on 24 August 1996.

#### RAINBOW BEE-EATER *Merops ornatus*

This species was found to be common in August 1996, June 1997 and July 2000. About 60 birds were counted in a single flock on Malenge at dusk on 15 August 1996. The earliest arrivals were recorded at Benteng, Togian island, on 11 May 2001. It was also observed on Una-una.

#### PLAINTIVE CUCKOO *Cacomantis merulinus*

This cuckoo was heard only, in secondary forests on Malenge in July 1997 and at Benteng, Togian island, in May 2001. Dickinson (2003) placed the birds on Sulawesi, and by implication the Togian islands, in the subspecies *lanceolatus*.

#### RUSTY-BREASTED CUCKOO *Cacomantis sepulcralis*

One was observed in secondary forest at Bunawang (Malenge) in September 1996.

#### BLACK-BILLED KOEL *Eudynamis melanorhynchus*

Two female specimens are held at ZMB, and a male is registered but not retained (C. Quaisser *in litt.* 2004). We did not record the species, suggesting that the earlier records may have referred to visitors rather than rare residents, perhaps because of an apparent absence of its preferred hosts (crows *Corvus* spp.). White-necked Myna has been suggested as a possible host species in Sulawesi (White and Bruce 1986) but it too was not found during the study (although the closely related Sulawesi Myna *Basilornis celebensis* occurs).

#### [AUSTRALIAN KOEL *Eudynamis cyanocephalus*

Koel calls with regularly ascending notes were heard, apparently differentiating these birds from Black-billed Koel (Y. Masala verbally 2002). One was seen in coconut groves and secondary forest on Una-una on 29 March 2002. These records could have referred to Australian Koel or Asian Koel *E. scolopaceus*. The dates suggest that the former is more likely, but the identity remains unconfirmed.]

#### YELLOW-BILLED MALKOHA

##### *Phaenicophaeus calyrorhynchus*

Meyer (1879) listed this bird for Togian; no specimen can be found at ZMB, although one is registered (C. Quaisser *in litt.* 2004). The species was not collected by Menden on Una-una (Ripley 1941), and it was not recorded by us. Assuming the record is valid, the species could be a rare resident or a visitor. It is tempting to speculate that the species's absence or rarity may be because of competition with the widespread Bay Coucal *Centropus celebensis*. Dickinson (2003) listed this species in the genus *Zanclotomus*.

#### LESSER COUCAL *Centropus bengalensis*

On Togian, Malenge and Walea Bahi this species was found to be moderately common, but it was scarcer on Una-una. Dickinson (2003) placed birds from Sulawesi, including by implication those from the Togian islands, into the subspecies *sarasinorum*.

BAY COUCAL *Centropus celebensis*

This species was observed only on a single occasion, in a mixed garden at Taninkola village, Batudaka on 18 May 2001. However its calls were often heard, indicating it was widespread on Togian, Talatakoh and Batudaka, but rare or absent on smaller islands. The call was typically a *coung coung* mellow hoot, repeated 3–25 times, increasing in tempo and pitch, and repeated within and between pairs. Compared to Lesser Coucal, this species appeared to prefer wooded habitat rather than grassland, and possibly slopes rather than flatter ground. At least one individual seen well had black lores, indicating that birds on Togian may be of the subspecies *C. c. rufescens* rather than *C. c. celebensis*, or perhaps an undescribed subspecies.

ORNATE LORIKEET *Trichoglossus ornatus*

Groups of up to five birds were encountered frequently on all islands surveyed, although on Una-una groups usually comprised only 2–3 birds. Birds were recorded mainly in secondary vegetation and cultivated areas.

[YELLOW-CRESTED COCKATOO *Cacatua sulphurea*

Meyer (1879) listed this species for Togian, but this was erroneous as in the first part of his paper (p. 45) he specifically stated that he did not meet it there. It was not listed for Togian in Meyer and Wilesworth (1898). MTD have no specimens from the Togian islands, only from north Sulawesi (S. Eck *in litt.* 2002). The species is listed among the Meyer specimens from north Sulawesi at NMW, and the origin of this single specimen (NMW 50.062; no date; no collection number) was reported to be 'Bai von Tomini 0°31'N 120°30'E' (see Schifter 1990), but the coordinates suggested that the locality is on the shore of the northern arm of the mainland, and not further south where the Togian islands lie.]

BLUE-CROWNED RACQUET-TAIL *Prioniturus discurus*

Near Threatened. Distinguishing this species from Golden-mantled Racquet-tail *Prioniturus platurus* in the field was difficult. From museum specimens we noted that the head markings in males were diagnostic. *P. d. flavicans* has a bright red circular patch on the crown surrounded by an extensive bright blue, whereas Golden-mantled Racquet-tail has an elongated dull red crown-patch bordered by purple that extends down to the nape. In flight, Golden-mantled has a contrasting grey wash on the lower mantle, which Blue-crowned lacks. Golden-mantled has a light flight action, with fast twisting and turning manoeuvres, whereas Blue-crowned has 'ponderous deep rowing wing-beats' (Coates and Bishop 1997). Male Blue-crowned Racquet-tails were identified positively only on two occasions on Malenge and once at Benteng, Togian island. The latter had a golden wash on the breast, an extensive blue patch surrounding a red crown patch, and a whitish-grey bill. A female, which had a blue wash on the head and a golden wash on the breast contrasting with the mantle and the rest of the underparts, was also observed. The species was observed in secondary growth, mangroves, and beach forest. Contrary to Coates and Bishop (1997), this species is not restricted to the northern peninsula of Sulawesi, as it is also found in the Togian and Banggai islands. While Inskipp *et al.* (1996) accepted merging Red-spotted Racquet-tail *P. flavicans* with *P. discurus*, this was not followed by Dickinson (2003).

GOLDEN-MANTLED RACQUET-TAIL *Prioniturus platurus*

This species appeared to be more common than Blue-crowned Racquet-tail and occurred in similar habitats. An adult male was positively identified at Benteng, Togian island, when the green breast, golden nape and red markings surrounded by a purple patch on top of the crown were clearly seen. A large flock of c.50 birds seen at Batu Engkang (Malenge) on 5 July 2000 was probably comprised largely or entirely of this species. Other records were tentatively identified as this species based on brief glimpses of plumage and flight action. It would be interesting to investigate niche partitioning between the two racquet-tails on the islands.

GREAT-BILLED PARROT *Tanygnathus megalorhynchus*

This species was identified positively only once at close range as it fed on mangos in the gardens of Tanjung (Malenge). It was considerably larger than the similar Azure-rumped Parrot *T. sumatranus*, with much more extensive blue on the primaries. However, some sightings assumed to be Azure-rumped Parrot may have referred to this species.

AZURE-RUMPED PARROT *Tanygnathus sumatranus*

This parrot appeared to be rather common in secondary forest, cultivation, and beach areas, with records from Malenge, Walea Bahi and probably also Togian island. The unconfirmed records of Great-billed Parrot by Watling (1983) may in fact refer to Azure-rumped Parrot.

SULAWESI HANGING PARROT *Loriculus stigmatus*

This species was seen and heard singly or in pairs and it was found to be common in coastal scrub, coconut groves, sago swamps and secondary forests, with records from Batudaka, Togian, Malenge and Walea Bahi. Most birds had an orange patch on the mantle, but this was lacking on one seen on 14 June 1997 in the gardens of Tanjung, Malenge, whereas one seen at Malangkat, Malenge, on 22 November 1998 had a crimson mantle-patch. A pair were seen allofeeding in the gardens of Uemata (Malenge) on 6 September 1996.

GLOSSY SWIFTLET *Collocalia esculenta*

Birds foraging singly or in small groups were seen in virtually every habitat on all islands surveyed. The subspecific identity was not confirmed, but *C. e. esculenta* of central Sulawesi or possibly *C. e. manadensis* of northern Sulawesi would be most likely.

GREY-RUMPED TREESWIFT *Hemiprocne longipennis*

Small groups of up to seven birds were seen in secondary forest, cultivation, and along beaches and coasts on all islands except Una-una. This species was listed by Meyer (1879) and Meyer and Wilesworth (1898) in both their tables and species accounts, but it was omitted in error by White and Bruce (1986). MTD has no specimens of *H. l. wallacii* from the Togian islands (only from Manado/north Sulawesi, dated March 1871; S. Eck *in litt.* 2002), but ZMB has a specimen registered under the name *Dendrochelidon wallacii* (F. Steinheimer *in litt.* 2003).

SULAWESI OWL *Tyto rosenbergii*

On 4 May 2003, a bird was collected by local people on Togian island and transported alive by MI to a wildlife

rescue centre in west Java for taxonomic study. From a preliminary examination the bird appears to be of the nominate subspecies (Bruce 1999).

[SCOPS OWL *Otus* sp.

Local people reported a small owl with ear-tufts from Benteng, Togian island, which clearly suggests a scops owl. Based on numerous local interviews this bird appears to be more localised, if not scarcer, than Ochre-bellied Hawk Owl *Ninox ochracea* and Togian Hawk Owl *N. burhani*. The presence of a scops owl on Togian could have been predicted, and it may well prove to be a new species. Sound recordings, photographs and specimens will be needed to investigate this.]

OCHRE-BELLIED HAWK OWL *Ninox ochracea*

Near Threatened. At 12h00 on 27 July 2001 in Belas, Benteng, Togian island, two birds were flushed from a roost 5 m up in a vine tangle in hilly scrub. The diagnostic ochre belly was seen well (Marks *et al.* 1999, Indrawan and Somadikarta 2004).

TOGIAN HAWK OWL *Ninox burhani*

Observations were made of what proved to be a new species of hawk owl (Indrawan and Somadikarta 2004). The species was observed in disturbed lowland and hill forest, mixed gardens and sago swamp, at elevations from sea level to 400 m. Although it is found regularly in scrubby forest, this was always within a mosaic of evergreen rainforest remnants. It was rare in gardens and villages. Observations and vocalisations indicate that it is resident and probably breeds on Malenge, Togian and Batudaka (personal observations; A. Dodoa, Alan and Salim verbally 2001). Croaking notes believed to be given by this species were detected further east, on Walea Bahi in March 2002, suggesting that it is widespread in moderate numbers through the archipelago. Although the species has a very small range, it does not seem to be at high risk of extinction (Indrawan and Somadikarta 2004).

SPOTTED DOVE *Streptopelia chinensis*

This species was commonly heard and seen in secondary forest and cultivation on Togian and Malenge, and was also common on scrubby lava fields on Una-una. One of Menden's specimens is registered at RMNH (R. W. R. J. Dekker *in litt.* 2004).

BROWN CUCKOO DOVE *Macropygia amboinensis*

This cuckoo dove was common, with twos and threes observed in secondary growth and cultivation on Una-una, Batudaka, Togian, Malenge and Talatakoh. Its call, an upslurred *wu-up* given every 5–10 seconds, was frequently heard. A nest containing one egg was found on 20 December 1999 in a mixed garden near Benteng, Togian island. It was located in a sugar palm tree 80 cm above ground and consisted of dried branches embedded on a broad leaf lying on top of one of the palm's pinnated leaves. Ripley (1941: 351) originally described Togian birds as *M. a. atrata*.

WHITE-FACED CUCKOO DOVE *Turacoena manadensis*

This species's characteristic *pu-ku-ku* call was heard frequently on Togian, Batudaka and Walea Bahi, but it was seen much less often. Three birds were seen in secondary forest at Bunawang, Malenge, on 22 August 1996.

EMERALD DOVE *Chalcophaps indica*

Singles were frequently seen in secondary growth and mangroves on Togian island, and the species was also recorded on Batudaka, Walea Bahi and Una-una. Two seen in primary forest on Malenge were thought to be either this species or possibly Stephan's Dove *C. stephani*.

NICOBAR PIGEON *Caloenas nicobarica*

Near Threatened. One was seen in secondary forest on Una-una on 28 November 1998. Local people reported it to be abundant on Angkaiyo, a small island off Malenge. In November 1998, two individuals kept by villagers at Lembanato, Togian island, were purportedly from nearby secondary forest at Bambu. On 21 December 1999, a local villager at Benteng, Togian island, showed us one that he claimed he had caught in nearby forest. Watling (1983) saw only one bird in the Togian islands but pointed out that local people indicated it to be very common.

PINK-NECKED GREEN PIGEON *Treron vernans*

This pigeon is moderately common on Malenge and Una-una. Small groups of up to 14 birds were seen regularly at Bunawang, Malenge.

GREY-CHEEKED GREEN PIGEON *Treron griseicauda*

This species was only seen twice, in small flocks feeding on fig trees at Tanempo and Taninkola, Batudaka, on 11 and 18 May 2001. Birds from Sulawesi were listed as *T. g. wallacei* instead of *T. g. griseicauda* by Dickinson (2003), but see White and Bruce (1986).

BLACK-NAPED FRUIT DOVE *Ptilinopus melanospilus*

On Malenge and Walea Bahi this species was mostly found in coastal areas, whereas on Togian island it was noted in secondary forest inland, even penetrating to the upper slopes of the mountain. On 29 December 1999, a female was observed at a nest with a single white egg, 3 m high in a mangrove tree at Benteng, Togian island. The nest was only 10 m from a path, and was made of twigs and dry branches. Two active nests were also found in beach vegetation on Walea Bahi in February 2001, but they were not studied further in order to minimise disturbance.

WHITE-BELLIED IMPERIAL PIGEON *Ducula forsteni*

This species was common in coastal and secondary forest on Una-una. One bird kept by local people at Katupat, Togian island, had apparently been caught in nearby forest. This species is not generally considered to occur on small islands (White and Bruce 1986); however, it was recently found in the Sula islands where it also occurs in coastal habitats (Coates and Bishop 1997).

GREEN IMPERIAL PIGEON *Ducula aenea*

This was one of the most common and widespread pigeons, occurring in coconut groves, mixed gardens and forests, on Batudaka, Togian, Talatakoh, Malenge and Walea Bahi. Although expected, it was not found on Una-una, probably because of the presence of White-bellied Imperial Pigeon. Walden (1874) originally described the Togian birds as *Carpophaga pulchella*; Peters (1937) treated them as a *D. a. pulchella*, but White and Bruce (1986) treated *pulchella* as a synonym of the Sulawesi form, *D. a. paulina*.

PIED IMPERIAL PIGEON *Ducula bicolor*

On Una-una this species was found to be the most common



pigeon on the island, mainly being found in coastal areas. The species was reported from the Togian islands by Watling (1983), but the exact island was not specified. Gibbs *et al.* (2001) also recorded this species from the Togian islands, with the map suggesting it occurred only on Una-una, but this is not specified in the text. Although we did not confirm its presence elsewhere, it probably occurs on other islands.

SILVER-TIPPED IMPERIAL PIGEON *Ducula luctuosa*

This pigeon was found in small groups of up to seven birds in mangroves at Malangkat, Malenge and Lohpon, Talatakoh, in June 1997. In the field it was difficult to distinguish from Pied Imperial Pigeon, but at least some birds were identified as Silver-tipped Imperial Pigeon by their creamy colour (instead of pure white), with the black-tipped wing having a silvery wash near the tip. Where both Pied and Silver-tipped Imperial Pigeons occur on the same islands, they appear to show some habitat segregation, with the latter more likely to be found inland than its congener. However, as with their distribution, further surveys are needed to confirm this. The Pied Imperial Pigeon group is usually recognised as a species complex (Bruce 1990, Gibbs *et al.* 2001), or all forms are merged in *D. bicolor* (see Dickinson 2003).

SLATY-LEGGED CRAKE *Rallina eurizonoides*

One was caught by a villager at Tanempo, Batudaka, on 10 May 2001. It was photographed and immediately released. The bill was bright green; according to Taylor and van Perlo (1998), the species has a green bill with dark brown on the distal half, so the record may refer to an undescribed form.

BARRED RAIL *Gallirallus torquatus*

This species's call (*kek-kak! kek-kak! bong! bong!*) was heard extensively in secondary forest, mangrove and swamp forest on Togian island, in scrub on Una-una, and in mangrove on Walea Bahi. Its vocalisations were not noted in Malenge, but were probably overlooked. One bird was seen at dusk on 8 June 1997 in a freshwater pond at Bunawang, Malenge. It had dark flanks, a barred white belly and a prominent white moustachial streak contrasting with the dark throat and ear-coverts. One was seen briefly in a sago swamp at Baulu, Togian island, on 31 December 1999.

BUFF-BANDED RAIL *Gallirallus philippensis*

One was snared on 23 July 2001 in a paddyfield at Benteng, Togian island, by a farmer who reported that the species is seen frequently in twos and threes. On Una-una, it was found to be common in late March and early April 2002 (Y. Masala *in litt.* 2004).

BLUE-FACED RAIL *Gymnocyrex rosenbergii*

Vulnerable. On 1 April 2001, one was caught by a snare in hill forest at Benteng. A second bird was snared on 8 April in a mixed garden 1 km from the first locality. Both died during transportation and were later prepared as specimens for MZB. On 20 March 2002, a third individual was snared at the first locality, but it was immediately released. A dry land rail with a prominent bright blue eye-patch, presumably this species, was reported by local farmers to occur in mixed gardens at Maelam and Benteng, Togian island, and the same species also reportedly occurs

on Malenge (A. Dodoa verbally 2001). Blue-faced Rail was previously thought to be restricted to the Sulawesi mainland and Peleng, Banggai islands.

WHITE-BREASTED WATERHEN *Amaurornis phoenicurus*  
This species was seen and heard on brackish ponds on Una-una, Malenge and Batudaka.

WHIMBREL *Numenius phaeopus*

This species was recorded on Malenge in August 1987 by Owen *et al.* (1987), but it was not found during the present surveys.

COMMON REDSHANK *Tringa totanus*

This species was recorded on Malenge in August 1987 by Owen *et al.* (1987), but it was not found during the present surveys.

WOOD SANDPIPER *Tringa glareola*

This species was not found during the present surveys, although it has been previously listed for the Togian islands (White and Bruce 1986).

COMMON SANDPIPER *Actitis hypoleucos*

Singles were recorded during the northern winter on the coasts of Una-una, Batudaka, Togian, Malenge and Walea Bahi.

RED-NECKED PHALAROPE *Phalaropus lobatus*

This species was not found during the present surveys, although it has been previously listed (White and Bruce 1986).

PACIFIC GOLDEN PLOVER *Pluvialis fulva*

A male and a female were collected by Menden (Ripley 1941), but the species was not recorded during the present surveys.

LESSER CRESTED TERN *Sterna bengalensis*

This tern was not found during the present surveys, but it was previously listed as *Pelecanopus medius* by Walden in 1874 (see also Meyer 1879, Saunders 1896).

ROSEATE TERN *Sterna dougallii*

This species was recorded by Owen *et al.* (1987), in August/September 1987 on Batudaka.

BLACK-NAPED TERN *Sterna sumatrana*

Mees (1977) pointed out that a Meyer specimen (ZMB B. 9174 ex B. 9194) identified as Whiskered Tern *Chlidonias hybrida* by Meyer and Wigglesworth (1898), and repeated by Stresemann (1941), actually referred to juvenile Black-naped Tern. Black-naped Tern was listed for the Togian islands by de Korte (1991) citing Mees (1977, 1982). However, Mees (1982) did not mention it, since this publication focused on records from the Moluccan islands, not the Togian islands. The species was also recorded by Owen *et al.* (1987) on Batudaka in August/September 1987.

WHISKERED TERN *Chlidonias hybrida*

Both *C. h. hybrida* and *C. h. javanica* have been listed from the islands (White and Bruce 1986), but the species was not found during the present surveys. NHM holds six of Meyer's specimens (five *C. h. fluvialis* and one *C. h. javanica*; Mees 1977).

OSPREY *Pandion haliaetus*

Single birds were recorded regularly along the coasts of Batudaka, Togian, Talatakoh, Malenge and Walea Bahi. The species was recorded by Owen *et al.* (1987) from Batudaka and Malenge, although no dates were noted.

JERDON'S BAZA *Aviceda jerdoni*

A single bird was observed in the canopy of a mango tree at Uemata, Malenge, on 7 August 1996.

BLACK KITE *Milvus migrans*

Two were seen soaring over the coast of Talatakoh on 28 June 1997.

BRAHMINY KITE *Haliastur indus*

Singles were commonly encountered on the coasts of all islands surveyed. Three different adults for which good views were obtained on Togian island had a white breast without dusky shaft-streaks. This identified them as *H. i. girrenera*, whereas White and Bruce (1986) indicated that only the streaked form *H. i. intermedius* occurs in the Togian islands. It is possible that both subspecies occur on different islands. However, a more plausible explanation is that the subspecies intergrade (see Ferguson-Lees and Christie 2001).

WHITE-BELLIED SEA EAGLE *Haliaeetus leucogaster*

Singles were occasionally encountered on the coasts of Una-una, Batudaka, Malenge and Walea Bahi. Owen *et al.* (1987) reported the species to be 'fairly common along the north coast of the main Togian group', but provided no further details.

SULAWESI SERPENT EAGLE *Spilornis rufipectus*

Singles were found in coconut groves at Uemata, Kadoda and Tanjung (Malenge) and in mixed gardens at Benteng (Togian), Tanempo (Batudaka) and Kenari (Walea Bahi).

SULAWESI GOSHAWK *Accipiter griseiceps*

One was observed perching on a bare-branched tree in scrub at Uemata (Malenge) in July 1996 (date not recorded), and another was seen in the mid-canopy of a forest tree on the slopes of Benteng, Togian island, on 14 May 2001.

RUFIOUS-BELLIED EAGLE *Hieraaetus kienerii*

One was observed flying over logged forest on the slopes of Benteng, Togian island, on 22 December 1999. It had dark cheeks contrasting with a white throat and chin, chestnut underparts, and it gave a rising shrill call three times (see Brown and Amadon 1968, Ferguson-Lees and Christie 2001).

SULAWESI HAWK EAGLE *Spizaetus lanceolatus*

An adult was observed on 1 January 2000 perched on top of a coconut tree in a mixed garden at Benteng, Togian island, before flying into nearby forest. It was large-bodied, powerfully built, with a relatively large head and bill (therefore excluding honey-buzzards, especially Barred Honey-buzzard *Pernis celebensis*). The breast was boldly streaked rufous and black, and the legs were feathered (again, differentiating it from honey-buzzards) and finely barred black and buffy, while the tail was evenly banded black and white, with black at the tip. In flight it showed broad wings with buff underwings barred black. The white

throat and black mesial stripe was not seen, perhaps being overlooked or indicating that the bird was not yet in full adult plumage (see Ferguson-Lees and Christie 2001).

SPOTTED KESTREL *Falco moluccensis*

A specimen was collected on Una-una by Menden (Ripley 1941). Birds were observed in twos and threes in beach forest at Bunawang, Malenge, during late August 1996, and one was seen on Una-una island on 9 July 2000.

PEREGRINE FALCON *Falco peregrinus*

This species was found to be relatively common on Una-una (e.g. three seen during five hours of observations 28 November 1998). In November 1998, good views were obtained of an individual with a white cheek-patch. The bird was thus identified as a migrant form, most probably *F. p. calidus*, although *F. p. japonensis* is a remote possibility. On 9 July 2000, a markedly small individual with a dark cheek-patch (characters of the resident subspecies, *F. p. ernesti*) was seen on Una-una island. A villager described this species at Benteng, Togian island.

LITTLE GREBE *Tachybaptus ruficollis*

This species was regularly observed in pairs on brackish ponds at Kadoda and Bunawang, Malenge. The birds were in breeding plumage during mid- to late August 1996, July 1997, late November 1998 and early May 2001. It is likely that this species is resident.

LITTLE EGRET *Egretta garzetta*

This species was not found during the present surveys, but was previously listed by White and Bruce (1986).

GREAT-BILLED HERON *Ardea sumatrana*

Singles were sighted on four occasions in August 1996 along the coast of Malenge. One was an immature, suggesting the possibility of local breeding. A single was also seen on mudflats at Baulu, Togian island, on 31 December 1999. On Walea Bahi a single was seen flying in the intertidal zone in February 2001 (no date recorded).

PURPLE HERON *Ardea purpurea*

A single was seen fishing by a small pond in Kololio village, Una-una, on 30 and 31 March 2002. Although listed by Meyer (1879), it was not included in the main text of Meyer and Wigglesworth (1898), and so the record was overlooked by White and Bruce (1986). MTD has no specimen from Togian (S. Eck *in litt.* 2002), but one of Meyer's specimens was registered at ZMB (F. Steinheimer *in litt.* 2003). As Meyer collected in 1871, the date of '1867' associated with this specimen is obviously an error.

JAVAN POND HERON *Ardeola speciosa*

One was observed on a brackish pond at Popongan, Malenge, on 16 August 1996.

LITTLE HERON *Butorides striata*

Birds were seen singly or in twos at three localities on Malenge in August 1996, two localities on Togian island in November 1998, on Talatakoh in June 1997 and on Batudaka in July 2000.

CINNAMON BITTERN *Ixobrychus cinnamomeus*

One was observed on a brackish pond at Popongan, Malenge, on 16 August 1996.



**WOOLLY-NECKED STORK** *Ciconia episcopus*

This species was previously listed by White and Bruce (1986). It was not found during the present surveys, although it was reported by villagers on Walea Bahi.

**[LESSER FRIGATEBIRD** *Fregata ariel*

Two frigatebirds seen at long distance foraging off the west coast of Malenge in August 1996 were thought to refer to this species, as one appeared to have white 'spurs' on the axillaries, but the identification remains unconfirmed.]

**RED-BELLIED PITTA** *Pitta erythrogaster*

Individuals were observed twice, both on the forested slopes of Benteng mountain, Togian island. The call was frequently heard at this site; it is a mournful whistle and not as disyllabic as that of Elegant Pitta *Pitta elegans*.

**[ELEGANT PITTA** *Pitta elegans*

A double note whistle *prrip-pruw*, presumed to be given by this species, was heard in wooded areas of Uemata, Malenge, in August 1996, and occasionally in June 1997 and July 2000. Attempts to see the bird were not successful. Pitta calls can vary (Lambert and Woodcock 1996) and confirmation of the identification is needed. This species may move between islands in Wallacea, and this may explain its possible occurrence.]

**SLENDER-BILLED CROW** *Corvus enca*

A female specimen is registered at ZMB (20909 B.9116), although no specimen can now be found (C. Quaisser *in litt.* 2004). Assuming this is not an error, the lack of records of this commensal species during the survey is surprising.

**WHITE-BREASTED WOODSWALLOW** *Artamus leucorhynchus*

Two specimens are held by ZMB (F. Steinheimer *in litt.* 2003; C. Quaisser *in litt.* 2004). It was not found during the present surveys.

**IVORY-BACKED WOODSWALLOW** *Artamus monachus*

This species was observed daily in small flocks in habitats ranging from coastal scrub to hill forest on Togian island and Malenge.

**BLACK-NAPED ORIOLE** *Oriolus chinensis*

This species was widespread and common in habitats ranging from open vegetation to hill forests on all islands surveyed, except Una-una. Most birds had a pink-red bill, but some had black bills, suggesting they were immatures (Coates and Bishop 1997). Individual variation was noted in the extent of the black eye-band, which ranges from a patch in front of the eye to a cap extending to the crown. Similar variation was also noted in the Banggai islands (Indrawan *et al.* 1997). These observations call into question the validity of using this character to define subspecies, and suggest a need for taxonomic revision (see Dickinson 2004).

**PIED CUCKOOSHRIKE** *Coracina bicolor*

Near Threatened. A single observation was made at Kenari, Walea Bahi, on 22 March 2002, when a pair were seen foraging close to a male Sulawesi Cicadabird *Coracina morio* in mangrove vegetation.

**WHITE-RUMPED CUCKOOSHRIKE** *Coracina leucopygia*

A male collected by Meyer is held in ZMB (B.9100; C.

Quaisser *in litt.* 2004), but the species was not recorded during the present surveys. Both Pied and White-rumped Cuckooshrikes may have been outcompeted by Sulawesi Cicadabird, although Meyer collected both White-rumped Cuckooshrike and Sulawesi Cicadabird on Togian island.

**SULAWESI CICADABIRD** *Coracina morio*

This species was observed in both closed forest and secondary vegetation on Togian, Talatakoh, Malenge and Walea Bahi. It was usually observed in flocks of 4–5 individuals. On Togian island it was relatively common during August 2001, with three flocks seen between Benteng and Baulu. On Walea Bahi the species was recorded in March 2002, but not in February 2001, suggesting the possibility of local movements. White and Bruce (1986) overlooked Meyer's record as it was omitted from the species account in the main text of Meyer and Wigglesworth (1898). However, ZMB has two of Meyer's specimens registered (F. Steinheimer *in litt.* 2003).

**[WHITE-RUMPED TRILLER** *Lalage leucopygialis*

A good view was obtained by an Earthwatch volunteer (R. Hong *in litt.* 1997) of what appeared to be a male this species in secondary forest on Talatakoh on 24 June 1997. It had a prominent white supercilium (distinguishing it from White-winged Triller *Lalage sueurii*), greyish-white belly and no white shoulder-patch on the wing. However, we treat the record as provisional. The separation of *L. leucopygialis* from Pied Triller *L. nigra* was not recognised by Dickinson (2003).]

**SPANGLED DRONGO** *Dicrurus hottentottus*

This species was seen daily in all habitats on Togian, Talatakoh, Malenge and Walea Bahi. One individual observed on Talatakoh had brown irides, possibly indicating that it was a juvenile (Vaurie 1949). Birds had white irides (elsewhere they have red irides), whereas Sulawesi Drongos *D. montanus* on the Togian islands had red irides. This may suggest that both taxa have co-existed on Togian for a long time, and the Togian population of Spangled Drongo may prove to be an undescribed subspecies.

**SULAWESI DRONGO** *Dicrurus montanus*

One was observed on the slopes of Benteng mountain, Togian island, on the morning of 25 July 2001. It had relatively dull plumage and a strongly forked tail. A female tending a nest in mangroves was found on Benteng on 27 July 2001.

**BLACK-NAPED MONARCH** *Hypothymis azurea*

This species was found to be common, singly or in pairs, in secondary forest on Batudaka, Togian, Malenge and Walea Bahi.

**MANGROVE BLUE FLYCATCHER** *Cyornis rufigastra*

A female was seen briefly (c.30 sec) sallying from a branch in the subcanopy of secondary vegetation at 50 m on Benteng, Togian island, on 15 May 2001. The bird was approximately the size of Black-naped Monarch (which is common in the area), with a slaty-blue mantle, rufous-orange underparts, relatively short tail, dark blue head, rufous-orange supercilium, lores and chin. The dull wash on the head and upper mantle characteristic of the female (Coates and Bishop 1997) was not seen. On 29 July 2001,

a male was observed in secondary vegetation at c.100 m on the slopes of Benteng. It had a bright indigo-blue mantle, rusty-ochre breast and belly and black chin. Togian birds may represent an undescribed subspecies.

#### ASIAN GLOSSY STARLING *Aplonis panayensis*

This starling was found to be common in open habitats on Una-una, Batudaka, Togian and Malenge. The species roosts communally, and hundreds were reported to roost on Papan islet, off Malenge.

#### SULAWESI MYNA *Basilornis celebensis*

Sightings of this species were made on Batudaka, Talatakoh and Togian, and it was reported on Malenge (A. Dodoa verbally 2000). On 24 June 1997, an Earthwatch volunteer (R. Hong *in litt.* 1997) observed two birds together in secondary forest on Talatakoh island. Pairs were seen on 22 and 30 December 1999 foraging in a forest clearing and mangrove forest, respectively, at Benteng, Togian island. A pair was seen foraging in a coconut grove at Taninkola, Batudaka, on 10 May 2001. It seems likely that the species was previously overlooked owing to its habit of spending long periods of time inactive in treetops, and having infrequent or seasonal vocalisations (soft but clear and melodious piping and whistling, occasionally with squeaks). Some of the local farmers interviewed in Benteng, Maelam and Baulu (eastern Togian) were familiar with the species, noting its crest, white patches on the side of head and breast, and rich, melodious call. An older man in Maelam called the bird 'burung jepang' (= Japanese bird) because it was apparently not seen until the 1942–1945 Japanese occupation. It appears to be patchily distributed and probably rare.

#### WHITE-NECKED MYNA *Streptocitta albigollis*

A female specimen is registered at ZMB (B.9115), although it cannot now be found (C. Quaisser *in litt.* 2004). The species was not recorded during the present surveys. Meyer (1879) stated that despite problems with the handling of his collections by his agent, he was confident in the correctness of the provenance of his collection from the Togian islands in August 1871. On this basis, Meyer's records have been accepted here, but the possibility of mislabelling, as suggested by his listing of the cockatoo, must be considered (see, for example, comments under Yellow-sided Flowerpecker *Dicaeum aureolimbatum*). This is recognised to be a problem with collections dating from that period (Rasmussen and Prys-Jones 2003). As with several species whose Togian records are based solely on A. B. Meyer's visit in 1871, White-necked Myna may simply be rare and very local. However, the discovery of previously unrecorded but closely related species (Sulawesi Myna in this case) may indicate species turnover and replacement, or errors among Meyer's records.

#### FINCH-BILLED MYNA *Scissirostrum dubium*

This species was found to be moderately common in a range of habitats from open vegetation to hill forest on Una-una, Togian, Malenge and Walea Bahi. Having examined four of Menden's specimens from Una-una, Ripley (1941) assigned them to *S. dubium pelingense* as described by Neumann in 1939 from Peleng, Banggai islands, because the birds are larger and slightly darker than the nominate form from mainland Sulawesi. He

commented that while the sample was small, the Togian specimens showed intermediate characters. White and Bruce (1986) did not recognise this subspecies, but further study may be warranted. Two apparently unstudied Menden specimens from Una-una collected on 5 September 1939 are held at MZB (13077 and 13078).

#### BARN SWALLOW *Hirundo rustica*

Meyer's collection at ZMB apparently listed only Pacific Swallow *H. tahitica* (F. Steinheimer *in litt.* 2003). Meyer (1879) originally identified all his swallow records as Barn Swallow, yet listed both species at the end of his paper and in Meyer and Wigglesworth (1898). No swallows were collected by Menden (Ripley 1941) and Barn Swallow was not found during the present surveys. It is possible that all the specimens are actually Pacific Swallow, and Barn Swallow may need to be removed from the Togian list, or it may have been overlooked, or it may only be a rare visitor or vagrant to the Togian islands: further investigation is needed.

#### PACIFIC SWALLOW *Hirundo tahitica*

This species was found to be common in all habitats surveyed, with records from Una-una, Togian, Malenge and Walea Bahi.

#### GOLDEN BULBUL *Alophoixus affinis*

On Malenge, a group of four birds was observed in hill forest at Tanjung on 11 June 1997. It was encountered relatively frequently in groups of up to five birds around Benteng and Bangkagi, Togian island. On Walea Bahi, it was relatively common, with groups up to five birds foraging in secondary forest near the village of Kenari on 20 February 2001. The species was often detected through its repeated nasal single-note call *ngaaat*, which was uttered in flight. The species has been recently reinstated in the genus *Thapsinillas* (see Dickinson 2003).

#### [ZITTING CISTICOLA *Cisticola juncidis*

This warbler was listed for Togian by Meyer (1879), but the record was later found to have been a misidentification of Bright-headed Cisticola *C. exilis* by Meyer and Wigglesworth (1898). White and Bruce (1986) inadvertently repeated this error.]

#### BRIGHT-HEADED CISTICOLA *Cisticola exilis*

This species was not found during the present surveys. A female is registered at ZMB (22110 B.9083), although the specimen could not be found (C. Quaisser *in litt.* 2004).

#### [WHITE-EYE *Zosterops* sp.]

A probable new species of white-eye was seen on Batudaka (Y. Masala *in litt.* 2003), Togian and Malenge. The bird is similar to Black-crowned White-Eye *Z. atrifrons*, but lacks an eye-ring. One (male?) specimen was collected on 27 July 2003 (MZB 30.366) and further details will be provided elsewhere.]

#### SULAWESI BABBLER *Trichastoma celebensis*

Birds foraging near ground level, singly or in pairs were seen and heard frequently in secondary forest, coconut groves and sago swamps on all islands surveyed, except Una-una. The holo- and paratypes of this taxon, described by Voous (1952) as *Malacocincla celebensis togianense*, are held at ZMA (10327–10329; K. Roselaar *in litt.* 2004).

**YELLOW-SIDED FLOWERPECKER** *Dicaeum aureolimbatum*  
This species was found to be common in secondary and closed-canopy forest on all islands except Una-una. Two active nests were observed in forest-edge on Malenge on an recorded date in August 1996 and on Talatakoh on 24 June 1997. The nests were pear-shaped, c.15 cm in height and made of mainly woven dry leaves and/or 'lalang' grasses. A male collected by Meyer is registered at ZMB (23272 B.9086), but no specimen could be found (F. Steinheimer *in litt.* 2003, C. Quaisser *in litt.* 2004). However, the record was listed as Grey-sided Flowerpecker *D. celebicum* by Meyer (1879) and Meyer and Wiglesworth (1898), and this was repeated in White and Bruce (1986). Until the actual specimen can be located and examined, we assume that it is Yellow-sided Flowerpecker, as apparently indicated on the specimen label.

[**GREY-SIDED FLOWERPECKER** *Dicaeum celebicum*  
Examination of the museum catalogue at ZMB suggests that Meyer's specimen was Yellow-sided Flowerpecker and not this species (see above). Grey-sided Flowerpecker was not found during the present surveys, and it is likely that it does not occur.]

**BROWN-THROATED SUNBIRD** *Anthreptes malacensis*  
This sunbird was found to be common in mangroves, secondary forest and coconut plantations on Togian, Talatakoh, Malenge and Walea Bahi. A male collected on Malenge is registered at ZMA (9741; K. Roselaar *in litt.* 2004).

**BLACK SUNBIRD** *Nectarinia aspasia*  
This species was common in coconut groves, secondary forest and hill forest on Togian, Malenge and Walea Bahi. Dickinson (2003) listed this taxon as *Leptocoma sericea*.

**OLIVE-BACKED SUNBIRD** *Nectarinia jugularis*  
This species was very common in all vegetation types and on all islands surveyed, except Una-una. Two juveniles were seen being fed by an adult in secondary vegetation on 20 August 1996, and nest-building was seen in a coconut grove 21 August 1996. Birds were identified as *N. j. plateni* by the yellow supercilium and lower ear-covert stripe. Dickinson (2003) listed the species in the genus *Cinnyris*.

**EURASIAN TREE SPARROW** *Passer montanus*  
Small numbers were seen in villages on Una-una, Batudaka, Togian, Walea Bahi and Papan islet off Malenge.

**GREY WAGTAIL** *Motacilla cinerea*  
A single individual was seen foraging along a dry riverbed on Una-una on 29 March 2002.

**BLACK-FACED MUNIA** *Lonchura molucca*  
This species was recorded on Malenge (five in coastal scrub near the village of Malenge, four near Kadoda), Batudaka (eight in a mixed garden), Togian (regular in paddyfields at Benteng), and Walea Bahi (a nest with five eggs found in scrub at Kenari on 17 February 2001). A previously overlooked juvenile female specimen collected by Menden on Malenge is held in ZMA (9744; K. Roselaar *in litt.* 2004).

**BLACK-HEADED MUNIA** *Lonchura malacca*  
Two of Meyer's specimen are registered in ZMB (B.9104: male, B.9105: female, specimen not found; C. Quaisser

*in litt.* 2004), but the species was not found during the present surveys.

## DISCUSSION

### Previous records

Six species previously collected by Meyer (Meyer 1879, F. Steinheimer *in litt.* 2003, C. Quaisser *in litt.* 2004)—Common Kingfisher, Grey-rumped Treeswift, Purple Heron, Sulawesi Cicadabird, Yellow-sided Flowerpecker and Black-faced Munia—were overlooked by White and Bruce (1986). We consider previous reports of five species on the Togian islands to be erroneous: Yellow-crested Cockatoo, Sulawesi Pygmy Woodpecker, Blue-eared Kingfisher and Zitting Cisticola and Grey-sided Flowerpecker (the cockatoo, woodpecker and flowerpecker were apparently listed in error for Togian; the kingfisher and cisticola were based on specimen misidentifications). Among the species previously reported that we did not record were several for which we found a closely related species occupying the same habitat and guild, e.g. we found Ivory-backed instead of White-breasted Woodswallow, Pied instead of White-rumped Cuckooshrike, and Sulawesi Myna instead of White-necked Myna. This suggests misidentification or mislabelling of specimens, or perhaps species turnover and replacement. Extensive long-term surveys will be needed to throw light on these issues

### Altitudinal distribution

The highest points in the Togian islands are Mt Colo (Una-una) and Benteng mountain (Togian island) at c.400 m and c.500 m respectively. We found no evidence of a distinct submontane bird community, although various species were provisionally listed only below certain altitudinal limits: 200 m for Philippine Scrubfowl, White-faced Cuckoo Dove, Sulawesi Hanging Parrot, Bay Coucal, Collared Kingfisher, Knobbed Hornbill, Red-bellied Pitta, Black-naped Monarch, Finch-billed Myna; 300 m for Ashy Woodpecker; 400 m for Togian Hawk Owl; and 500 m for Brahminy Kite, Black-naped Fruit Dove, Golden Bulbul, Sulawesi Drongo, and Black-naped Oriole. Two species that are characteristic of higher elevations elsewhere in their range were recorded down to sea-level in the Togian islands: White-bellied Imperial Pigeon and Sulawesi Drongo.

### Subspecies

The subspecific identities of some taxa remain to be determined e.g. Mangrove Blue Flycatcher. In other cases the subspecies we identified (and which were listed by Ripley [1941]) differed from those listed by White and Bruce (1986) e.g. Spotted Kestrel and Brahminy Kite. These discrepancies may be because of: (1) different taxonomic treatments; (2) different subspecies occurring on different islands; and/or (3) turnover of populations as they colonise and become extinct over time, a phenomenon which is common to many small islands found near large population source areas (e.g. Diamond and LeCroy 1979, Whittaker 1998).

### Endemism

No bird species (and only three subspecies) endemic to the Togian islands was recognised prior to this study. A



few other endemic vertebrates have been recognised, e.g. Togian macaque *Macaca togeanus* and Togian babirusa *Babyrousa togeanensis* (Sody 1949, Becking 1989, Supriatna *et al.* 1996). We found and named the endemic Togian Hawk Owl (Indrawan and Somadikarta 2004), and our results indicate that more endemic bird taxa are likely (including a scops owl and white-eye at the species level, and possibly Ashy Woodpecker, Bay Coucal, Slaty-legged Crake, Sulawesi Drongo, Mangrove Blue Flycatcher and Finch-billed Myna at the subspecies level).

## ACKNOWLEDGEMENTS

The surveys in 1996 and 1997 were supported by Earthwatch (awarded to YABSHI) and we appreciate the helpful participation of the volunteers, including Simon Brown, Carolyn Dayman, Dave Hassel, Amy Holland, Robin Hong, Steve Malone and Tom Slone. We thank Bob Franks and Reny Juita for skilfully coordinating the YABSHI Earthwatch surveys. The surveys in 1998–2000 were funded jointly by the Zoological Society for the Conservation of Species and Populations, the Oriental Bird Club and Gibbon Foundation South-East Asia. The surveys from 2000 to 2003 were supported by grants from Keidanren (awarded to YABSHI) and Nagao Environmental Funds (awarded to MI). We thank Pak Amir Dodoa, extraordinary tracker and master storyteller of the Togian islands, who provided us with indigenous knowledge and his boundless humour. We thank our excellent guides Iling Taskir and Burhan. Permission to examine bird skins was granted by MZB, and we thank Siti Nurmalianti Prijono, Daryono and Sudaryanti for their continued support and collaboration. Edward Dickinson kindly assisted with various queries. John Bates (FMNH), E. Bauernfeind (NMW), René Dekker (RMNH), Siegfried Eck (MTD), Jurgen Fiebig (ZMB), Alison Pirie (MCZ), Christiane Quaisser (MTD, ZMB), Kees Roselaar (ZMA) and Frank Steinheimer (ZMB) kindly responded to our queries. Simon Cook, Jared Diamond, the late Derek Holmes, Djoko T. Iskandar, Ani Mardiasuti, Yunus Masala, Dewi M. Prawiradilaga and Jim Wardill kindly provided valuable comments to earlier drafts of the manuscript; Celia Lowe, Jonathan Riley and the late Ian Thornton also helped with references. Further support to the project was provided by Andrio Adiwibowo, Keiko Ando, Kim Burton, Marcus Kohler, Makoto Komoda, Virginia MacKay, Mellyani Mantiri, Muchamad Muchtar, Leffrendy Pesik, Willie Smits, Yasuhiko Taki, Roland Wirth and Kazuhiro Yamase.

## REFERENCES

Allen, G. R. and McKenna, S. A., eds. (2001) *A marine rapid assessment of the Togian and Banggai Islands, Sulawesi, Indonesia*. RAP Bulletin of Biological Assessment 20. Washington, D.C.: Conservation International.

Becking, J. H. 1989. *Henry Jacob Victor Sody (1892–1959), his life and work: a biographical and bibliographical study*. Leiden: E. J. Brill.

Beehler, B. M., Pratt, K. and Zimmerman, D. A. (1986) *Birds of New Guinea*. Princeton: Princeton University Press.

BirdLife International (2001) *Threatened birds of Asia: the BirdLife International Red Data Book*. Cambridge, U.K.: BirdLife International.

BirdLife International (2004) *Threatened birds of the world 2004*. CD ROM. Cambridge, U.K.: BirdLife International.

Brown, L. and Amadon, D. (1968) *Eagles, hawks and falcons of the world*. London: Country Life Books.

Bruce, M. D. (1990) A reappraisal of species limits in the Pied Imperial Pigeon *Ducula bicolor* (Scopoli, 1786) superspecies. *Rivista Ital. Ornithol.* 59: 218–222.

Bruce, M. D. (1999) Family Tytonidae (barn-owls). Pp. 34–75. in J. del Hoyo, A. Elliott, and J. Sargatal, eds. *Handbook of the birds of the world*. Vol. 5. Barcelona, Spain: Lynx Edicions.

Coates, B. J. and Bishop, K. D. (1997) *A guide to the birds of Wallacea: Sulawesi, the Moluccas and Lesser Sunda islands, Indonesia*. Alderley, Queensland, Australia: Dove Publications.

Diamond, J. M. and LeCroy, M. (1979) Birds of Karkar and Bagabag Islands, New Guinea. *Bull. Am. Mus. Nat. Hist.* 164: 467–531.

Dickinson, E. C. (ed.). (2003) *The Howard and Moore complete checklist of the birds of the world*. Third edition. London: Christopher Helm.

Dickinson, E. C. (2004) Systematic notes on Asian birds. 42. A preliminary review of the Oriolidae. *Zool. Verh.* 350: 47–63.

Ferguson-Lees, J. and Christie, D. A. (2001) *Raptors of the world*. London: Christopher Helm.

Firman (1996) Note on a survey of the Philippine Megapode *Megapodius cumingi* on the Togeian islands. *Megapode Newsl.* 10(1): 3–4.

Gibbs, D., Barnes, E. and Cox, J. (2001) *Pigeons and doves: a guide to the pigeons and doves of the world*. Robertsbridge, Sussex, U.K.: Pica Press.

Holmes, D. and Phillipps, K. (1996) *The birds of Sulawesi*. Oxford, U.K.: Oxford University Press.

Indrawan, M., Masala, Y. and Pesik, L. (1997) Recent observations in the Banggai Islands, Sulawesi. *Kukila* 9 (1–2): 61–71.

Indrawan, M. and Somadikarta, S. (2004) A new hawk-owl from the Togian islands, Gulf of Tomini, Central Sulawesi, Indonesia. *Bull. Brit. Orn. Club* 124 (3): 160–171.

Inskipp, T., Lindsey, N. and Duckworth, W. (1996) *An annotated checklist of the birds of the Oriental region*. Sandy, U.K.: Oriental Bird Club.

Kinnaird, M. F. and O'Brien, T. G. (1993) Preliminary observation on the breeding biology of the endemic Sulawesi Red-knobbed Hornbill (*Rhyticeros cassidix*). *Trop. Biodiv.* 1(2): 107–112.

de Korte, J. (1991) Status and conservation of Indonesia's seabird colonies. Pp. 225–247 in J. P. Croxall, ed. *Seabirds: status and conservation*. Cambridge, U.K.: International Council for Bird Preservation. (ICBP Technical Publication 11).

Lambert, F. and Woodcock, M. (1996) *Pittas, broadbills and asities*. Robertsbridge, Sussex, U.K.: Pica Press.

Lowe, C. (1999) Cultures of nature: mobility, identity and biodiversity conservation in the Togeian Islands of Sulawesi, Indonesia. Ph.D. thesis, Yale University, U.S.A.

MacKinnon, J. and Phillipps, K. (1993) *A field guide to the birds of Borneo, Sumatra, Java and Bali*. Oxford, U.K.: Oxford University Press.

Marks, J. S., Cannings, R. J. and Mikkola, H. (1999) Family Strigidae (Typical owls). Pp. 76–242 in J. del Hoyo, A. Elliott and J. Sargatal, eds. *Handbook of the birds of the world*. Vol. 5. Barcelona, Spain: Lynx Edicions.

Mees, G. F. (1977) The subspecies of *Chlidonias hybridus* (Pallas), their breeding distribution and migrations (Aves, Laridae, Sterninae). *Zool. Verh.* 157: 1–64.

Mees, G. F. (1982) Bird records from the Moluccas. *Zool. Meded.* 56(7): 91–111

Meyer, A. B. (1879) Field notes on the birds of Celebes. *Ibis* 4(3): 43–70, 125–147.

Meyer, A. B. and Wilesworth, L. W. (1898) *The birds of Celebes and the neighbouring islands*. Berlin: Friedländer.

Neumann, O. (1939) A new species and a new race from Peling. *Bull. Brit. Orn. Club* 59: 47–48.

Owen, D., Bilton, D., Lonsdale, K. and Strathdee, S. (1987) Proyek Kelelawar: a study of bats and invertebrates in an archipelagos caves. Oxford University Expedition to the Togian islands, Sulawesi, Indonesia. Unpublished report.

Peters, J. L. (1937) *Check-list of birds of the world*. Vol. 3. Cambridge, Mass.: Harvard University Press.

Peters, J. L. (1948) *Check-list of birds of the world*. Vol. 6. Cambridge, Mass.: Harvard University Press.

- Rasmussen, P. C. and Prys-Jones, R. P. (2003) History vs mystery: the reliability of museum specimen data. *Bull. Brit. Orn. Club Suppl.* 123A: 66–94.
- Ripley, S. D. (1941) Notes on a collection of birds from Northern Celebes. *Occas. Papers Boston Nat. Hist. Soc.* 8: 343–358.
- Roselaar, K. (2003) An inventory of major European bird collections. *Bull. Brit. Orn. Club Suppl.* 123A: 253 – 337.
- Salvadori, T. (1893) *Catalogue of the birds in the British Museum*. Vol. 21. London: Trustees of the British Museum.
- Saunders, H. (1896) *Catalogue of the birds in the British Museum*. Vol. 25. London: Trustees of the British Museum.
- Schifter, H. (1990) Dr. Adolf Bernhard Meyer und die Vogelsammlung Naturhistorisches Museums Wien. *Zool. Abhand. Staat. Mus. Tierkunde Dresden* 46(3): 63–75.
- Sharpe, R. B. (1892) *Catalogue of the birds in the British Museum*. Vol. 17. London: Trustees of the British Museum.
- Sharpe, R. B. (1898) *Catalogue of the birds in the British Museum*. Vol. 26. London: Trustees of the British Museum.
- Sharpe, R. B. (1900) *A hand-list of the genera and species of birds*. Vol. 2. London: British Museum.
- Sharpe, R. B. (1906) Birds. Pp. 79–515 in *History of the collections contained in the natural history departments of the British Museum*. Vol. 2. London: British Museum.
- Sidiyasa, K. (2000) Laporan survei vegetasi dan tumbuhan di Kepulauan Togian, Sulawesi Tengah. [Survey report of vegetation and plants of the Togian islands, Central Sulawesi]. Report prepared for Tropenbos and the Gibbon Foundation. (In Indonesian).
- Sody, H. J. V. (1949) Notes on some primates, carnivora, and the babirusa from the Indo-Malayan and Indo-Australian regions (with descriptions of ten new species and subspecies). *Treubia* 20: 121–190.
- Stresemann, E. (1941) Die Vögel von Celebes. *J. Orn.* 89(1): 1–102.
- Supriadi, D. (1996) Habitat dan perilaku makan monyet Togian (*Macaca toqueanus*) di Pulau Malenge, Kepulauan Togean, Sulteng, serta beberapa perbedaan perilaku pencarian sumber pakan pada jantan dewasa yang hidup dalam kelompok dengan yang hidup soliter. [Habitat and foraging behaviour of the Togean monkey (*Macaca toqueanus*) on the island of Malenge, Togean Islands, Central Sulawesi, with references to different foraging behaviours between group-living and solitary adult males]. Postgraduate thesis. University of Indonesia, Depok. (In Indonesian).
- Supriadi, D. and Supriatna, J. (1996) Habitat description and feeding behaviour of Togean Macaque in Malenge Island, Central Sulawesi. Second International Conference on Eastern Indo-Australian Vertebrate Fauna, Lombok, December 1996. Unpublished abstract.
- Supriatna, J., Indrawan, M., Juita, R., Hutabarat, C. and Franks, R.G. (1996) Terrestrial vertebrate inventory in proposed Togean National Park, Central Sulawesi: joint effort by scientists and volunteers. Second International Conference on Eastern Indo-Australian Vertebrate Fauna, Lombok, December 1996. Unpublished abstract.
- Taylor, B. and van Perlo, B. (1998) *Rails: a guide to the rails, crakes, gallinules and coots of the world*. Robertsbridge, Sussex, U.K.: Pica Press.
- Vaurie, C. 1949. A revision of the bird family Dicruridae. *Bull. Am. Mus. Nat. Hist.* 93: 203–342
- Voous, K. H. (1947) On the history of the distribution of the genus *Dendrocopos*. *Limosa* 20: 1–142.
- Voous, K. H. (1952) A new race of babbler from the Togian islands, North Celebes. *Ardea* 40: 74.
- Walden, A. (1871) On the birds of the island of Celebes. *Proc. Zool. Soc. Lond.* 22: 329–337.
- Walden, A. (1872) On some new species of birds from Celebes and the Togian islands. *Ann. Mag. Nat. Hist.* 4(9): 398–401.
- Walden, A. (1874) Descriptions of some new species of birds. *Ann. Mag. Nat. Hist.* 4(14): 156–158.
- Walters, M. (1991) *Pocket guide to the birds of prey of the world*. London: Mitchell Beazley.
- Watling, D. (1983) Ornithological notes from Sulawesi. *Emu* 83: 247–261.
- White, C. M. N. and Bruce, M. D. (1986) *The birds of Wallacea (Sulawesi, the Moluccas and Lesser Sunda Islands, Indonesia): an annotated checklist*. London: British Ornithologists' Union.
- Whittaker, R. J. (1998) *Island biogeography: ecology, evolution and conservation*. Oxford, U.K.: Oxford University Press.
- Whitten, A. J., Henderson, G. and Mustafa, M. (2002) *The ecology of Sulawesi*. Singapore: Periplus.
- Mochamad Indrawan, Postgraduate Study Programme, Dept. of Biology, Faculty of Science and Mathematics, University of Indonesia, Depok Campus, Depok 16424, Indonesia. Email: jamblang@cbn.net.id
- Soekarja Somadikarta, Department of Biology, Faculty of Science and Mathematics, University of Indonesia, Depok Campus, Depok 16424, Indonesia. Email: soma30@indo.net.id
- Jatna Supriatna, Center for Biodiversity and Conservation Studies, Faculty of Science and Mathematics, University of Indonesia, Depok Campus, Depok 16424, Indonesia.
- Murray D. Bruce, P.O. Box 180, Turramurra, NSW 2074, Australia. Email: mdbruce@ozemail.com.au
- Sunarto and Guritno Djanubudiman, Jl. Soka III No. 14 Depok 16432, Depok 16421, Indonesia.

## APPENDIX 1

### Vernacular names of Togian birds

Species	Local name
PHILIPPINE SCRUBFOWL <i>Megapodius cumingii</i>	Moyo; monol (Saluan)
RED JUNGLEFOWL <i>Gallus gallus</i>	Manukakaju (Togian)
SPOTTED WHISTLING-DUCK <i>Dendrocygna guttata</i>	Tonsi lato (Togian)
SUNDA TEAL <i>Anas gibberifrons</i>	Tonsi lato (Togian)
ASHY WOODPECKER <i>Mulleripicus fulvus</i>	Balitutu (Togian and Saluan)
KNOBBED HORNBILL <i>Aceros cassidix</i>	Alo (Togian); Ngak (Saluan)
COMMON KINGFISHER <i>Alcedo atthis</i>	Tengkesik (Togian); Bukako
RUDDY KINGFISHER <i>Halcyon coromanda</i>	Takor merah (Togian)
COLLARED KINGFISHER <i>Todiramphus chloris</i>	Bukako
LESSER COUCAL <i>Centropus bengalensis</i>	Todoku (Saluan)

Species	Local name
ORNATE LORIKEET <i>Trichoglossus ornatus</i>	Kuyoe (Togian); Kureu (Saluan)
BLUE-CROWNED RACQUET-TAIL <i>Prioniturus discurus</i>	Keli (Togian)
GOLDEN-MANTLED RACQUET-TAIL <i>Prioniturus platurus</i>	Keli (Togian)
GREAT-BILLED PARROT <i>Tanygnathus megalorynchos</i>	Kea (Togian and Saluan)
AZURE-RUMPED PARROT <i>Tanygnathus sumatranus</i>	Kea (Togian and Saluan)
SULAWESI HANGING PARROT <i>Loriculus stigmatus</i>	Pinsi
BROWN CUCKOO DOVE <i>Macropygia amboinensis</i>	Liusa (Togian); Kua0 (Saluan)
WHITE-FACED CUCKOO DOVE <i>Turacoena manadensis</i>	Tangki-fufu
BLACK-NAPED FRUIT DOVE <i>Ptilinopus melanospilus</i>	Pune (Togian); Sibut (Saluan)
GREEN IMPERIAL PIGEON <i>Ducula aenea</i>	Kum kum; Takuaku (Togian); Takuhak (Saluan)
PIED/ SILVER-TIPPED IMPERIAL PIGEON <i>Ducula luctuosa/ bicolor</i>	Putia (Saluan and Togian)
WHITE-BREASTED WATERHEN <i>Amaurornis phoenicurus</i>	Tonsi gege (Togian)
COMMON SANDPIPER <i>Actitis hypoleucos</i>	Dik-dik (Saluan)
BRAHMINY KITE <i>Haliastur indus</i>	Tentenye (Saluan)
WHITE-BELLIED SEA EAGLE <i>Haliaeetus leucogaster</i>	Konia; Bangbang
SPOTTED KESTREL <i>Falco moluccensis</i>	Sikot (Saluan)
LITTLE HERON <i>Butorides striata</i>	Puk (Saluan)
RED-BELLIED PITTA <i>Pitta erythrogaster</i>	Pahabau
BLACK-NAPED ORIOLE <i>Oriolus chinensis</i>	Kurfaya; Taku-kalo-a
SPANGLED DRONGO <i>Dicrurus hottentottus</i>	Intaki (Togian)
BLACK-NAPED MONARCH <i>Hypothymis azurea</i>	Cing kui-kui
ASIAN GLOSSY STARLING <i>Aplonis panayensis</i>	Kuluri (Togian); Sempala (Saluan)
SULAWESI MYNA <i>Scissirostrum dubium</i>	Porkida (Togian)
GOLDEN BULBUL <i>Alophoixus affinis</i>	Kurfaya
SULAWESI BABBLER <i>Trichastoma celebense</i>	Piye-piye
BROWN-THROATED SUNBIRD <i>Anthreptes malacensis</i>	Tonsi pidi (Togian)
BLACK SUNBIRD <i>Nectarinia aspasia</i>	Tonsi pidi (Saluan)
OLIVE-BACKED SUNBIRD <i>Nectarinia jugularis</i>	Tonsi pidi (Saluan)

## APPENDIX 2

List of the birds of Togian islands

Species	Meyer	Menden	Watling (1983)	White & Bruce (1986)	Owen <i>et al.</i> (1987)	This study
PHILIPPINE SCRUBFOWL <i>Megapodius cumingii</i>	MTD, ZMB, NHM			x		x
BLUE-BREASTED QUAIL <i>Coturnix chinensis</i>						*
RED JUNGLEFOWL <i>Gallus gallus</i>	x			x		x
SPOTTED WHISTLING-DUCK <i>Dendrocygna guttata</i>						*
SUNDA TEAL <i>Anas gibberifrons</i>						*
ASHY WOODPECKER <i>Mulleripicus fulvus</i>	MTD, ZMB			x		x
KNOBBED HORNBILL <i>Aceros cassidix</i>	x			x		x
DOLLARBIRD <i>Eurystomus orientalis</i>						*
COMMON KINGFISHER <i>Alcedo atthis</i>	ZMB, NHM			†		x
BLACK-BILLED KINGFISHER <i>Halcyon melanorhyncha</i>	ZMB		x	x		x
RUDDY KINGFISHER <i>Halcyon coromanda</i>	x			x		x
COLLARED KINGFISHER <i>Todiramphus chloris</i>	Sharpe (1892), NHM, ZMB, RMNH	Ripley (1941), MCZ, RMNH		x		x
SACRED KINGFISHER <i>Todiramphus sanctus</i>	ZMB			x		x
RAINBOW BEE-EATER <i>Merops ornatus</i>	MTD, ZMB			x		x
PLAINTIVE CUCKOO <i>Cacomantis merulinus</i>	x			x		x
RUSTY-BREASTED CUCKOO <i>Cacomantis sepulcralis</i>						*
BLACK-BILLED KOEL <i>Eudynamis melanorhynchus</i>	ZMB			x		
YELLOW-BILLED MALKOHA <i>Phaenicophaeus calyrorhynchus</i>	ZMB			x		



Species	Meyer	Menden	Watling (1983)	White & Bruce (1986)	Owen <i>et al.</i> (1987)	This study
LESSER COUCAL <i>Centropus bengalensis</i>						*
BAY COUCAL <i>Centropus celebensis</i>	ZMB			x		x
ORNATE LORIKEET <i>Trichoglossus ornatus</i>	ZMB	Ripley (1941), MCZ		x		x
BLUE-CROWNED RACQUET-TAIL <i>Prioniturus discurus</i>	ZMB			x		x
GOLDEN-MANTLED RACQUET-TAIL <i>Prioniturus platurus</i>	x			x		x
GREAT-BILLED PARROT <i>Tanygnathus megalorynchos</i>	ZMB		x?	x		x
AZURE-RUMPED PARROT <i>Tanygnathus sumatranus</i>	MTD, ZMB			x		x
SULAWESI HANGING PARROT <i>Loriculus stigmatus</i>	Walden (1872), MTD, ZMB			x		x
GLOSSY SWIFTLET <i>Collocalia esculenta</i>						*
GREY-RUMPED TREESWIFT <i>Hemiprocne longipennis</i>	ZMB			†		x
SULAWESI OWL <i>Tyto rosenbergii</i>						*
OCHRE-BELLIED HAWK OWL <i>Ninox ochracea</i>						*
TOGIAN HAWK OWL <i>Ninox burhani</i>						*
SPOTTED DOVE <i>Streptopelia chinensis</i>	ZMB	Ripley (1941), FMNH, MCZ, RMNH		x		x
BROWN CUCKOO DOVE <i>Macropygia amboinensis</i>	ZMB	Ripley (1941), MCZ		x		x
WHITE-FACED CUCKOO DOVE <i>Turacoena manadensis</i>	x			x		x
EMERALD DOVE <i>Chalcophaps indica</i>	x			x		x
NICOBAR PIGEON <i>Caloenas nicobarica</i>	ZMB		x	x		x
PINK-NECKED GREEN PIGEON <i>Treron vernans</i>						*
GREY-CHEEKED GREEN PIGEON <i>Treron griseicauda</i>	x			x		x
BLACK-NAPED FRUIT DOVE <i>Ptilinopus melanospilus</i>	Salvadori (1893), NHM, ZMB			x		x
WHITE-BELLIED IMPERIAL PIGEON <i>Ducula forsteni</i>						*
GREEN IMPERIAL PIGEON <i>Ducula aenea</i>	Walden (1874), ZMB			x		x
PIED IMPERIAL PIGEON <i>Ducula bicolor</i>			x	†		x
SILVER-TIPPED IMPERIAL PIGEON <i>Ducula luctuosa</i>						*
SLATY-LEGGED CRAKE <i>Rallina eurizonoides</i>						*
BARRED RAIL <i>Gallirallus torquatus</i>						*
BUFF-BANDED RAIL <i>Gallirallus philippensis</i>						*
BLUE-FACED RAIL <i>Gymnocrex rosenbergii</i>						*
WHITE-BREASTED WATERHEN <i>Amaurornis phoenicurus</i>						*
WHIMBREL <i>Numenius phaeopus</i>					x	
COMMON REDSHANK <i>Tringa totanus</i>					x	
WOOD SANDPIPER <i>Tringa glareola</i>	ZMB			x		
COMMON SANDPIPER <i>Actitis hypoleucos</i>	ZMB			x		x
RED-NECKED PHALAROPE <i>Phalaropus lobatus</i>	ZMB			x		
PACIFIC GOLDEN PLOVER <i>Pluvialis fulva</i>	x	Ripley (1941) MCZ		x		
LESSER CRESTED TERN <i>Sterna bengalensis</i>	x			x		
ROSEATE TERN <i>Sterna dougallii</i>					x	
BLACK-NAPED TERN <i>Sterna sumatrana</i>	Mees (1977), ZMB			x	x	
WHISKERED TERN <i>Chlidonias hybrida</i>	Mees (1977), NHM			x		
OSPREY <i>Pandion haliaetus</i>					x	x
JERDON'S BAZA <i>Aviceda jerdoni</i>						*
BLACK KITE <i>Milvus migrans</i>						*
BRAHMINY KITE <i>Haliastur indus</i>	ZMB			x		x
WHITE-BELLIED SEA EAGLE <i>Haliaeetus leucagaster</i>					x	x
SULAWESI SERPENT EAGLE <i>Spilornis rufipectus</i>	ZMB			x		x
SULAWESI GOSHAWK <i>Accipiter griseiceps</i>	ZMB			x		x

Species	Meyer	Menden	Watling (1983)	White & Bruce (1986)	Owen <i>et al.</i> (1987)	This study
RUFIOUS-BELLIED EAGLE <i>Hieraetus kienerii</i>						*
SULAWESI HAWK EAGLE <i>Spizaetus lanceolatus</i>						*
SPOTTED KESTREL <i>Falco moluccensis</i>		Ripley (1941), MCZ		x		x
PEREGRINE FALCON <i>Falco peregrinus</i>						*
LITTLE GREBE <i>Tachybaptus ruficollis</i>						*
LITTLE EGRET <i>Egretta garzetta</i>	Sharpe (1898), NHM, ZMB			x		
GREAT-BILLED HERON <i>Ardea sumatrana</i>						*
PURPLE HERON <i>Ardea purpurea</i>	ZMB			†		x
JAVAN POND HERON <i>Ardeola speciosa</i>						*
LITTLE HERON <i>Butorides striata</i>						*
CINNAMON BITTERN <i>Ixobrychus cinnamomeus</i>						*
WOOLLY-NECKED STORK <i>Ciconia episcopus</i>	ZMB			x		
RED-BELLIED PITTA <i>Pitta erythrogaster</i>	x			x		x
SLENDER-BILLED CROW <i>Corvus enca</i>	ZMB			x		
WHITE-BREASTED WOODSWALLOW <i>Artamus leucorhynchus</i>	ZMB			x		
IVORY-BACKED WOODSWALLOW <i>Artamus monachus</i>						*
BLACK-NAPED ORIOLE <i>Oriolus chinensis</i>	ZMB			x		x
PIED CUCKOOSHRIKE <i>Coracina bicolor</i>	x			x		x
WHITE-RUMPED CUCKOOSHRIKE <i>Coracina leucopygia</i>	ZMB			x		
SULAWESI CICADABIRD <i>Coracina morio</i>	ZMB			†		x
SPANGLED DRONGO <i>Dicrurus hottentottus</i>	MTD ?ZMB			x		x
SULAWESI DRONGO <i>Dicrurus montanus</i>						*
BLACK-NAPED MONARCH <i>Hypothymis azurea</i>	MTD, ZMB	ZMA		x		x
MANGROVE BLUE FLYCATCHER <i>Cyornis rufigastra</i>						*
ASIAN GLOSSY STARLING <i>Aplonis panayensis</i>	ZMB	Ripley (1941), MCZ, RMNH		x		x
SULAWESI MYNA <i>Basilornis celebensis</i>						*
WHITE-NECKED MYNA <i>Streptocitta albigollis</i>	ZMB			x		
FINCH-BILLED MYNA <i>Scissirostrum dubium</i>	ZMB	Ripley (1941), MCZ, MZB		x		x
BARN SWALLOW <i>Hirundo rustica</i>				x		
PACIFIC SWALLOW <i>Hirundo tahitica</i>	ZMB			x		x
GOLDEN BULBUL <i>Alophoixus affinis</i>	Walden (1872), ZMB			x		x
BRIGHT-HEADED CISTICOLA <i>Cisticola exilis</i>	ZMB					
SULAWESI BABBLER <i>Trichastoma celebense</i>		Voous (1952), ZMA		x		x
YELLOW-SIDED FLOWERPECKER <i>Dicaeum aureolimbatum</i>	ZMB			†		x
BROWN-THROATED SUNBIRD <i>Anthreptes malacensis</i>	MTD, ZMB	ZMA		x		x
BLACK SUNBIRD <i>Nectarinia aspasia</i>	ZMB			x		x
OLIVE-BACKED SUNBIRD <i>Nectarinia jugularis</i>	ZMB			x		x
EURASIAN TREE SPARROW <i>Passer montanus</i>						*
GREY WAGTAIL <i>Motacilla cinerea</i>						*
BLACK-FACED MUNIA <i>Lonchura molucca</i>		ZMA		†		x
BLACK-HEADED MUNIA <i>Lonchura malacca</i>	ZMB			x		

**Key**

Meyer: recorded by A. B. Meyer in 1871, as listed in Walden (1871, 1872, 1874), Meyer (1879), Meyer and Wigglesworth (1898), and/or the museum register(s) of specimen records. Location of specimens is indicated where traced so far; a more complete listing is needed. Note that specimens described by Lord Walden (later the Marquis of Tweeddale) are now at NHM.

Menden: recorded by Menden in 1939, as listed in Ripley (1941), Voous (1952), and/or the museum register(s) of specimen records. Location of specimens indicated where traced.

White and Bruce (1986): x = listed; † = records overlooked.

This study: x = recorded; \* = first record for the Togian islands.