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Living on the Edge: Current Status of Rare Sulu Endemic Avifauna

Wilhelmus A. C. van de Ven[1]
Richard N. Muallil[2]
Nikki Dyanne C. Realubit[1*]

ABSTRACT

The Sulu Archipelago, consisting of hundreds of islands, harbors unique and distinct endemic avian fauna. Due to the relatively small size of the islands and the rapid deforestation, many of these species are in danger of extinction. Some of the endemic bird species in the Sulu Archipelago have not been observed in the wild for decades and may already have gone extinct without being noticed. This study uses available information to describe the current status of endemic bird species in the area. Most of the information were gathered from anecdotal reports of birdwatchers who visited the area since very few scientific surveys have been done there. All of the Sulu endemic bird species are forest dependent and categorized as threatened on the IUCN Red List. The Sulu Bleeding-heart Gallicolumba menagei has not been recorded for over a century. The Sulu Hornbill Anthrococeros montani may have no more than 20 pairs left in the wild and not much more is known of the Sulu Hawk-Owl Ninox reyi apart from its name and call. The rapidly disappearing forests, combined with hunting and mining, make the Sulu Archipelago arguably one of the highest priority sites for conservation in the country. The Sulu Archipelago is not only located at the geographical edge of the Philippines, but it is also where unique species are on the edge of extinction. Immediate in situ conservation and comprehensive surveys of the avifaunal diversity in the Sulu Archipelago are urgently needed.

Key words: *avifauna, Sulu Hornbill, Sulu Bleeding-heart, Tawi-Tawi, Sulu*

[1] Buhay-ilang Research, Education and Conservation U607 Maia bldg. Mirea Residences, Amang Rodriguez Ave. Santolan, Pasig City
[2] Mindanao State University – Tawi-Tawi College of Technology and Oceanography, Bongao, Tawi-Tawi 7500, Philippines

*Corresponding author:
dyannerealubit@gmail.com

INTRODUCTION

The Philippine Islands support what may be the greatest concentration of unique biodiversity on Earth (*Heaney et al. 2016*). The large levels of endemism can be attributed to the country's geological history. Dating back to the Early Miocene, about 20 million years ago, the Philippine islands have never been connected to mainland Asia. Most islands of the country, including those of the Sulu Archipelago, came to exist through volcanoes and from uplift of landmasses out of the ocean. Due to the lowering of ocean levels during the latest glacial periods (ice ages) of the Pleistocene, the last of which ca 12,000 years ago, many islands have at some point in time been connected to each other, thus facilitating terrestrial dispersal. In the Philippines, six large clusters of islands, also called ice-age islands, can be distinguished, along with several smaller clusters and single islands (*Heaney et al. 2016*). These clusters represent Luzon, Mindoro, West Visayas, Mindanao, Sulu and Palawan, and have never been connected to each other, nor to mainland Southeast Asia, resulting in a very specific biodiversity, with many species unique to the faunal region.

Birdlife International uses similar faunal divisions to determine Endemic Bird Areas (EBA), where areas are recognized by the number of endemics (*Bibby et al. 1992*). The Sulu Archipelago is a separate and distinct EBA (*Mallari et al. 2001*) and contains four Important Bird Areas (IBAs), the largest number per hectare of any EBA in the country. These are Tawi-Tawi Island, Simunul and Manuk Mankaw Islands, Sibutu and Tumindao Islands, in Tawi-Tawi Province and Mt. Dajo National Park in Jolo Province. These four IBAs were also included as Key Biodiversity Areas (KBA); priority sites for conservation in the Philippines as highlighted in *Ambal et al.* (*2012*).

Finally, the Philippines as a whole is considered a biodiversity hotspot where incredible amounts of endemicity and biodiversity go hand in hand with threats to these species. *Myers et al.* (*2000*) listed the hottest hotspots in the world, and assigned the 2nd place to the Philippines, based on multiple threat factors, though the main driver of extinction is still habitat destruction and conversion. Forest cover in the 1900s was up to 90% of the land area but has decreased to 22.2% in 1998 (*ESSC 2000*). Forest cover seemed to be mostly intact in the Tawi-Tawi mainland up to the late 1990s but has continuously declined

due to illegal logging, land conversion due to agriculture, wildlife hunting and recently mining activities which pose significant threats to the avian biodiversity in the province (*Mallari et al 2001: Ambal et al. 2012, Birdlife 2017*).

Several of the species living in the area are considered so called 'EDGE' species. The term, as first coined by *Isaac et al.* (2007) refers to Evolutionary Distinct and Globally Endangered species. This criterion aimed to set conservation priorities based on phylogenetic diversity and threat. The Philippines has the highest number of endemic EDGE birds with nine species, three of which can be found in the Sulu Archipelago. With the current situation and different sets of criteria pointing to a very unique species assemblage and biogeographical history in mind, this study aims to summarize best available information from different sources to provide a current snapshot of threatened endemic avifauna in the Sulu Archipelago.

METHODOLOGY

A literature study was done to collect as much information as possible on Sulu endemic avifauna, evaluating their population and conservation status, and looking for conservation priorities. Almost all information gathered in this article came from birdwatchers visiting the area who made species status reports and few scientific surveys, mostly collection expeditions yielding species lists plus systematic bird splits.

The scope of this paper includes the Sulu Archipelago as an Endemic Bird Area (*Mallari et al. 2001*) which encompasses the political units of the provinces of Sulu and TawiTawi. This includes the Sulu Faunal region but also several smaller faunal regions, mainly Sibutu with Sitangkai and Simunul with Manuk Mankaw, and the Turtle Islands.

RESULTS

The Checklist of Philippine Birds 2019 (*WBCP 2019*) lists 700 species of birds that have been recorded in the Philippines. Thirty-four percent or 241 of these are endemic to the country and 97 are threatened with extinction (*IUCN 2019*). The total list of birds occurring in the Sulu Archipelago currently consists of 170+ species, based on published and unpublished trip reports (*Dickinson 1991, Kennedy et al. 2000, e-Bird 2017*).

Six species are endemic to the Sulu Archipelago, all are included in the IUCN threatened species list (**Figure 1**); the Sulu Bleeding-heart (*Gallicolumba menagei*, CR),

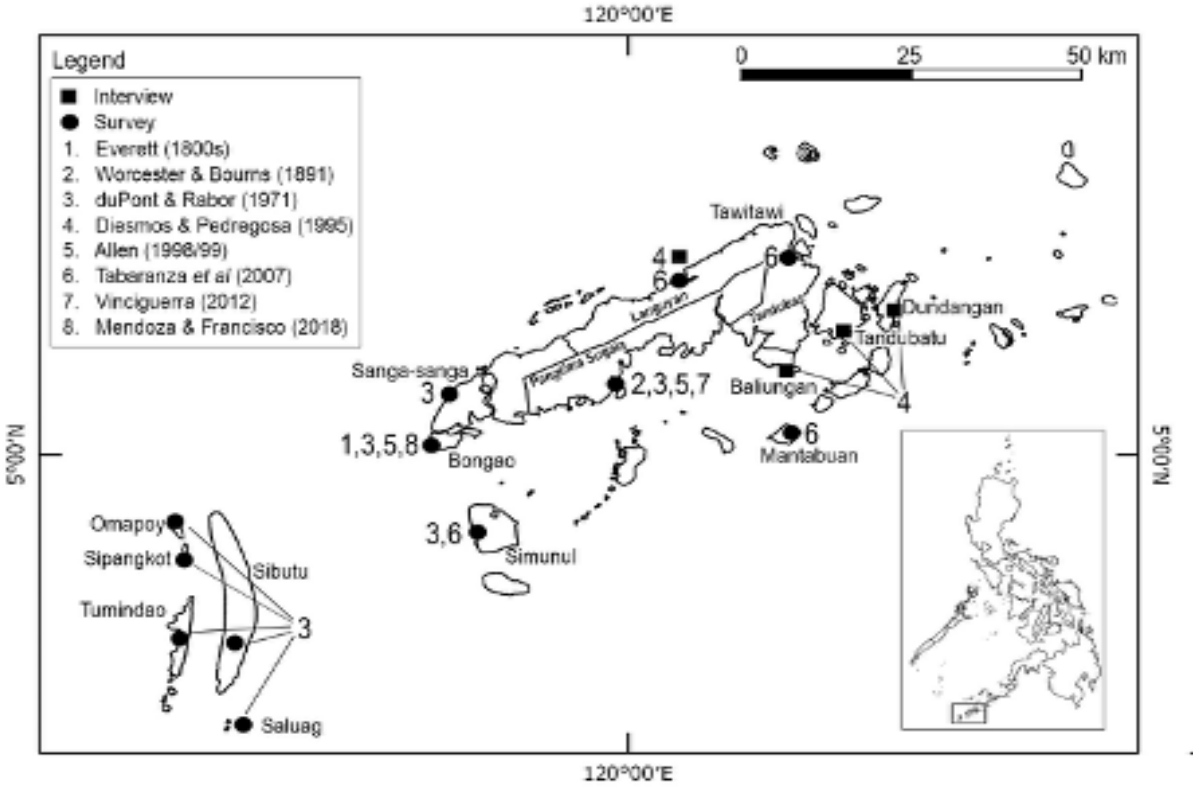

Figure 1. Map of Tawi-Tawi survey sites, derived from *Bourns and Worcester* (*1894*), *Dupont and Rabor* (*1973*), *Diesmos and Pedregosa* (*1995*), *Kennedy et al.* (*2000*), *Tabaranza et al.* (*2007*) and *e-Bird* (*2019*).

Sulu Hornbill (*Anthracoceros montani*, CR), Blue-winged Racket-tail (*Prioniturus verticalis*, CR), Tawi-Tawi Brown Dove (*Phapitreron cinereiceps*, EN), Sulu Pygmy Woodpecker (*Dendrocopos ramsayi*, VU) and Sulu Hawk-Owl (*Ninox reyi*, VU). *Mallari et al.* (*2000*) listed only five species that are restricted only to the Sulu Archipelago (**Table 1**). The Sulu Hawk Owl (*Ninox reyi*) has only been split as a separate species in 2012 (*Rasmussen et al 2012*). Threat levels for the Sulu archipelago are relatively high, with all range restricted species (100%) on the threatened species lists. In comparison, the other major faunal regions have six threatened species out of 22 endemic to Greater Palawan (27%), 7/35 on Luzon (20%), 7/51 on Mindanao (14%), 7/9 on Mindoro (78%) and 14/19 West Visayas (74%).

Besides these six full species, a number of subspecies are endemic to the area as well; the Sulu Hanging Parrot (*Lorriculus philippensis* bonapartei) and the Elegant Tit (*Periparus elegans*), of which in fact two endemic subspecies occur in the archipelago (*P. e. bongaoensis*, endemic to Bongao Island and *P.e. suluensis*). Although contested later (*Collar 2007*), *Peterson* (*2006*) also finds several subspecies to be strikingly different in morphology; the Rufous-lored Kingfiser *Todiramphus winchelli* alfredi, White-bellied Woodpecker *Dryocopus javensis* suluensis, Philippine Hanging parrot *Loriculus philippensis* bonapartei, Brown Tit-Babbler *Macronus striaticeps* kettlewelli, Coleto *Sarcops calvus* lowii and Everett's White-eye *Zosterops everetti* mandibularis. All the above perhaps warrant upgrading to full species level, which would make all of these Sulu endemics.

Four Philippine endemic threatened species occur on Tawi-Tawi Island (**Table 2**); The Red-vented Cockatoo (*Cacatua haematuropygia*, CR), Rufous-lored

Table 1. List of researchers and bird watchers surveying the archipelago

Researcher	Year	Location	Species*	Citation
Alfred H. Everett	?	Bongao	Sulu Hawk Owl	*Sharpe 1894*
Dean C. Worcester &	1891	Jolo, Sulu		*Bourns and Worcester 1894*
Frank S. Bourns	1891	Tataan, Languyan	Sulu Bleeding-heart	
John E. duPont &	1971	Sanga Sanga, Bongao	Philippine Cockatoo, Blue-winged	*Dupont and Rabor 1973ab*
Dioscoro S. Rabor			Racket-tail, Sulu Hawk Owl	
	1971	Bongao	Sulu Pygmy Woodpecker	
	1971	Simunul	Philippine Cockatoo	
	1971	Tandu Banak, Sibutu	Blue-winged Racket-tail, Sulu Hawk Owl	
	1971	Omapoy, Sitangkai		
	1971	Sipangkot, Sitangkai		
	1971	Tumindao, Sitangkai		
	1971	Saluag & Sikulan, Sibutu		
	1971	Batu-batu, Panglima Sugala	Philippine Cockatoo, Blue-winged Racket-tail, Sulu Hornbill, Sulu Pygmy Woodpecker, Sulu Hawk Owl	
	1971	Balimbing, Panglima Sugala	Sulu Hawk Owl	
Frank R. Lambert	1991	Flight over the islands		*Lambert 1993*
Arvin C. Diesmos	1995	Baliungan, Tandubas	Sulu Bleeding-heart, Sulu Hornbill	*Diesmos & pedregosa 1995*
& Marisol D.G.	1995	Dundangan, Tandubas	Sulu Bleeding-heart, Sulu Hornbill	
Pedregosa	1995	Tandubatu, Tandubas	Sulu Bleeding-heart, Sulu Hornbill	
	1995	Languyan	Sulu Bleeding-heart, Sulu Hornbill	
Desmond Allen	1998	Tarawakan, Bongao	Sulu Hawk Owl	*Allen 2001*
	1999	Lubbuk, Panglima Sugala	Sulu Hawk Owl	
Blas R. Tabaranza	2007	Tandubatu, Tandubas		*Tabaranza et al. 2008*
et al	2007	Mantabuan, Sapa-Sapa	Philippine Cockatoo	
	2007	Himba, Tandubas	Sulu Hornbill, Philippine Cockatoo, Tawi-Tawi Brown Dove	
	2007	Darusalam, Languyan	Tawi-Tawi Brown Dove, Philippine Cockatoo, Sulu Pygmy Woodpecker	
	2007	Simunul		
Lorenzo Vinciguerra	2012	Panglima Sugala	Sulu Hornbill	*eBird 2019*
Cathy Mendoza &	2018	Bongao	Tawi-Tawi Brown Dove	*eBird 2019*
Ruth Francisco				

*Only Sulu endemic species listed

Table 2: Threatened bird species recorded from islands of the Sulu Archipelago, compiled from *Bourns and Worcester* (*1894*), *Dupont and Rabor* (*1973*), *Kennedy et al.* (*2000*), *Tabaranza et al.* (*2007*) and *e-Bird* (*2019*)

#	English name	Scientific name	Recorded from the islands:	CS‡
1	Christmas Island Frigatebird	*Fregata andrewsi*	Tawi-Tawi	*CR*
2	Far Eastern Curlew	*Numenius madagascariensis*	Saluag, Sibutu	*EN*
3	Great Knot	*Calidris tenuirostris*	Sibutu, Sitanki, Tumindao	*EN*
4	Sulu Bleeding-heart*	*Gallicolumba menagei*	Tawi-Tawi	*CR*
5	Tawitawi Brown Dove*	*Phapitreron cinereiceps*	Tawi-Tawi	*EN*
6	Grey Imperial Pigeon	*Ducula pickeringii*	East Bolod, Jolo, Sibutu, Sipangkot, Tumindao, West Bolod	*VU*
7	Sulu Hawk-Owl*	*Ninox reyi*	Bongao, Jolo, Sanga Sanga, Siasi, Sibutu, Tawi-Tawi	*VU*
8	Rufous-lored Kingfisher	*Todiramphus winchelli*	Bongao, Jolo, Papahag, Sanga Sanga, Tawi-Tawi	*VU*
9	Sulu Hornbill*	*Anthracoceros montani*	Jolo, Sanga Sanga, Tawi-Tawi	*CR*
10	Sulu Pygmy Woodpecker*	*Dendrocopos ramsayi*	Bongao, Jolo, Papahag, Sanga Sanga, Sibutu, Tawi-Tawi	*VU*
11	Red-vented Cockatoo	*Cacatua haematuropygia*	Bongao, Jolo, Loran, Manuk Manka, Sanga Sanga, Simunul, Tawi-Tawi, Tumindao	*CR*
12	Blue-winged Racket-tail*	*Prioniturus verticalis*	Bongao, Manuk, Manka, Sibutu, Tawi-Tawi, Tumindao	*CR*
13	Black-bibbed Cuckooshrike	*Coracina mindanensis*	Bongao, Jolo, Lapac, Tawi-Tawi	*VU*
14	Celestial Monarch	*Hypothymis coelestis*	Tawi-Tawi	*VU*

Taxonomy follows IOC (2019). Names in bold font are Philippine endemics, with * are Sulu endemics. ‡ Conservation status according to IUCN (2017): CR = Critically Endangered, EN = Endangered, VU = Vulnerable

Kingfisher (*Todiramphus winchelli*, VU), Black-bibbed Cuckooshrike (*Coracina mindanensis*, VU), Celestial Monarch (*Hypothymis coelestis*, VU) (*WBCP 2019*, *IUCN 2019*). In addition, the archipelago hosts four non-endemic threatened residents (**Table 1**).

The EDGE species criterion (*Isaac et al 2007*) highlights the species that warrant special conservation attention due not only to threats but also represents evolutionary distinctiveness. *Jetz et al. 2014* lists three species endemic to Sulu (Sulu Hornbill, Sulu Bleeding-heart, Tawi-Tawi Brown Dove), and two more Critically Endangered species (Philippine Cockatoo, Christmas Island Frigatebird) that occur in the archipelago.

Literature on the threatened species in Sulu vary from detailed accounts of unsuccessful search for these species time and time again to just a citation for the perceived population status of several species.

Sulu Bleeding-heart *Gallicolumba menagei*

The Sulu Bleeding-heart was described based on two type specimens captured in 1891 (*Bourns and Worcester 1894*). It is assumed to live in primary forest, similar to other Bleeding-hearts and occurs only on Tawi-Tawi Island having never been reported from other locations. The species is described as Rare and Endangered (*Dickinson 1991, WCSP 1997, Kennedy 2000, Birdlife International 2001*), but no more information is listed anywhere, no sounds/calls are known, breeding biology or other population ecology information. No documented sighting or even hearing has been published since. Several ornithologists and birdwatchers have gone looking for it but failed. *Lambert* (*1993*) visited the island in 1990 and flew over the archipelago in 1991, merely described the state of deforestation. *Dutson et al.* (*1996*) profiled Tawi-Tawi for the Oriental Bird Club. *Butchart et al.* (*2005*) mentioned unconfirmed local reports in 1995 from Tawi-Tawi and the nearby islands of Siasi, Tandubatu, Dundangan, Baliungan and Simunul. Probably these came from an unpublished report *Diesmos and Pedregosa* (*1995*) who mentioned several unconfirmed reports from interviews on the islands. These claim that the species was quite abundant before the 1970s, but had declined dramatically and is now only rarely seen. *Tabaranza* (*2007*) also found no evidence for this species' existence despite specific surveys around several smaller islands as well as the main island of Tawi-Tawi (municipalities of Languyan, Sapa-Sapa, Tandubas and Simunul). It is not impossible that this species still survives as surveys have rarely gone inland and mainly focused on the municipality of Panglima Sugala, while there are forest tracts still also in Languyan, Sapa-Sapa and Tandubas. Furthermore this cryptic species would need specific surveys as they are ground birds making them harder to spot. Interviews with locals mostly show that they are unable to distinguish it from other dove species.

Sulu Hornbill *Anthracoceros montani*

Another Critically Endangered species, the Sulu Hornbill is better known as it is easier to find. It is large and loud with a larger foraging area; hornbills are easier to locate in a forest compared to other species. Indeed this species is still regularly seen and heard of, though known only from a handful of locations. Once common on three islands of the Sulu Archipelago (Jolo, Sanga-Sanga and Tawi-Tawi), it is now thought to be extirpated on Sanga-Sanga and Jolo due to large-scale deforestation (*Birdlife International 2016*). Previous undocumented records from Tandubatu, Dundangan and Baliungan (*Poonswad et al. 2013, IUCN 2017*) have not been verified. Only sporadic sightings are recorded. *DuPont and Rabor* (*1973*) reported it from Batu Batu, Panglima Sugala and Allen's surveys in the 90s (2017 in litt.) recorded individuals in Bongao and Panglima Sugala. For the municipality of Tandubas, *Tabaranza et al.* (*2007*) recorded it in Barangay Himba and *Diesmos and Pedregosa* (*1995*) reported it from interviews in Tandubatu, Dundangan and Baliungan (municipality of Tandubas) and from the municipaloty of Languyan. During a visit in February and June 2009, four individuals were reported in contiguous areas over two days in Tawi-Tawi (*Birdlife International 2016a*). Sarenas and Allen (*Birdlife International 2016a*) estimated that that there are potentially less than 20 pairs remaining in the wild, though this number is based mainly on the remaining population in Panglima Sugala. Preliminary interviews with locals in the area by N.D. Realubit suggest that the species can still be found on other locations on mainland Tawi-Tawi, which might significantly increase the current population estimate. Despite possible additional individuals or subpopulations in other sites, the species remains Critically Endangered due to a severely limited range and small population size.

Blue-winged Racket-tail *Prioniturus verticalis*

Besides bird lists and species reports on Tawi-Tawi and Sibutu (*Bourns and Worcester 1894, Dupon tand Rabor 1973*), there is no literature available for this species. As mentioned by *Collar* (*2000*): "The behaviour of parrots is calculated to defy the scientific investigator: slow-breeding, wide-ranging, unpredictable, non-territorial, cryptic when perched (i.e. most of the day) and capable (at least until recently) of detaching marking and tracking devices, they represent everything that is anathema to the fast-track academic research study." Consequently the scientific measurement of their ecological requirements remains in its earliest infancy". Specific studies focusing on this species are desperately needed to get a better idea of its population status. The current conservation status assessment (*Birdlife International 2016b*) is based solely on unpublished communications with Desmond Allen and Ivan Sarenas.

For the other Sulu endemics, even less information is published. The Sulu Hawk Owl records were previously discussed comprehensively by *Allen* (*2001*). Allen searched for and found the Hawk Owl on Tawi-Tawi Island at Tarawakan and Lubbuk. He also discussed previous reports of the species from Tawi-Tawi, Sanga Sanga and Bongao. *Dickinson* (*1991*) summarized findings on Bongao, Siasi and Jolo by *McGregor* (*1909-1910*). Although *Allen* (*2001*) reported it calling from nearby his campsite, sighting or the recording of its calls proved difficult as it was extremely shy, possibly due to hunting and persecution pressure. The Sulu Hawk Owl may be present on many of the islands from Jolo to Tawi-Tawi. However, almost nothing is known of its present distribution and status: very few of these islands have ever been visited by ornithologists or collectors, and hardly any at all since 1906 (*Allen 2001*).

Other species like the Tawi-Tawi Brown Dove, Sulu Pygmy Woodpecker and Black-bibbed Cuckoo-shrike are seen to be common (*Sarenas, pers. comm. 2016*). For the Red-vented Cockatoo, interviews with locals described them to come singly or in pairs to dig up sweet cassava (kamoteng kahoy) and other crops.

CONCLUSION

Scientific literature on birds of the Sulu Archipelago is very limited. Oftentimes, only personal accounts and unpublished reports are available. Also, the threat status has mostly been derived from such, as very few structural surveys have been done to the biological diversity on the islands. Most published information came from sporadic visits of bird watchers or ornithologists visiting the area. Undoubtedly, the plight of the Sulu endemics is perilously close to extinction, though perhaps not as gloomy as some sources suggest. The Blue-winged Racket-tail remains a mystery and needs more comprehensive specific studies before anything other than conjecture can be made. Despite a lack of evidence, the Sulu Bleeding-heart might still be around. With an increased survey effort, the population of Sulu Hornbill could turn out to be significantly larger than currently projected. Despite extremely small habitat sizes, Tawi-Tawi Brown Dove and Sulu Pygmy Woodpecker are locally common and can still be protected if suitable sanctuaries are set up.

It is clear that the interest and potential for

biodiversity research and conservation studies is high, and a need exists to fill up glaring gaps and best guess generalizations of different bird species in the area. The complicated political and security situation added to the long process of research permits has made the Sulu Archipelago a particularly difficult place for terrestrial biodiversity studies. However, the increased capacity of Mindanao State University – Tawi-Tawi College of Technology and Oceanography, the Department of Environment and Natural Resources and non-governmental organizations will hopefully advance research and community involvement in the conservation of endemic avifauna and the unique biodiversity in the area.

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