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Cover: Tamil Lacewing *Cethosia nietneri* with colour pencils and watercolours for the background; detailing with fine liners by Elakshi Mahika Molur.



## Noteworthy comments on birds for mega-diverse Myanmar

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**Abstract:** Myanmar, recognized for its rich biodiversity in South, Southeast, and East Asia, continues to unveil new avian taxa and record significant species range extensions. This study presents and analyzes bird observations from 2010 to 2023, emphasizing less accessible regions like the Hkakabo Razi Landscape, Shan States, Tanintharyi, and the Ayeyarwady delta. Utilizing audio-visual records, we document 13 bird species, including range extensions and novel sightings. Our findings highlight Myanmar's critical role in avian biodiversity, underscoring the importance of conservation efforts. This research contributes to narrowing the knowledge gap on bird species distributions within Myanmar, revealing a thriving community of bird enthusiasts and the potential for future discoveries.

**Keywords:** Biodiversity, distributional range extension, lack of information for conservation, new bird records.

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**Author contributions:** SCR, MSR wrote the first draft. TA, LW, TDWA, SM, MK, KTM provided information. LW scrutinized Table 1 for errors and revised contents. PJJ, TDWA, SMOM wrote the discussion. Photos were made and provided by TA, MK, LW, SM, Namar Johnsins, Koye, Kyaw Zaw Ya, Sein Myint, Thet Zaw Naing, Thirisandar Zaw, and Ye Htike Soe. We thank the latter photographers for providing the photos and allowing us to publish these.

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## INTRODUCTION

Myanmar is one of the most biodiverse countries in southern, southeastern, and eastern Asia (Suarez-Rubio et al. 2020; Bates et al. 2021). The country's avian diversity is regularly amended by the discovery of new bird taxa (Rappole et al. 2005, 2008; Renner et al. 2008, 2015, 2017). In addition, species recorded for the first time in Myanmar are frequent, underscoring Myanmar's role for new avian findings (Suarez-Rubio et al. 2016, 2023; Sai Sein Lin Oo et al. 2018, 2019a,b, 2020, 2022; Renner & Bates 2020; Myint Kyaw et al. 2021). Additionally, species' range extensions within Myanmar occur regularly (Rappole et al. 2005, 2008; Renner et al. 2008, 2009; Hla Naing et al. 2015; Thet Zaw Naing 2015; Suarez-Rubio et al. 2016, 2020; Zhang et al. 2017; Sai Sein Lin Oo et al. 2018, 2019a,b, 2020, 2022; Zöckler et al. 2020; Myint Kyaw et al. 2021). Particularly, the easy access to formerly restricted areas turned Myanmar into haven for bird enthusiasts worldwide during the democratic interlude from 2011 to 2021. Consequently, numerous records have emerged, encompassing new descriptions, range extensions, novel sightings of bird species, and observations in specific aspects of ecology and behaviour of birds.

While the compilation of recently added avian species in Myanmar is impressive (Thet Zaw Naing et al. 2020), there remains discoveries and particularly range extensions to be reported. In this context, we present and analyse a series of observations spanning from 2010 to 2023. Our focus lies on regions that have been relatively less accessible due to geographical constraints and administrative limitations. These observations are significant for Myanmar as they either introduce novel records at the species or subspecies level, or provide additional insights into behaviour and other ecological aspects, conservation biology related issues, or species' range distributions within Myanmar and beyond in southeastern Asia. Through this compilation, we aim at narrowing down the existing knowledge gap on bird species and their distributions within Myanmar. These insights reflect a lively community of birders with a profound interest in nature and birds, but also the potential for many more discoveries in the future.

## METHODS

The observations reported here are exclusively based on audio-visual records. All records originated after 2010 and are situated within Myanmar's territory (formerly

Burma) but may have relevance for all of Southeast Asia. Each observation is accompanied by photographic evidence, dates, detailed localities including corresponding coordinates. When applicable, additional insights regarding behaviour and observed habitats are provided. Cases in which our species identification was uncertain or not entirely conclusive have been omitted from this report. Additional records, where there was the slightest doubt about the bird identification, were omitted until further information and confirmation is available.

Our surveys were not systematic, but rather focused on regions within Myanmar that have undergone varying degrees of exploration over the past two decades. Our survey focus on ad hoc reports from Myanmar; the areas can be summarized as: (1) the Hkakabo Razi Landscape (as defined by Suarez-Rubio et al. 2020; Bates et al. 2021), including Sagaing and Kachin north of Myitkyina, (2) the Shan States in eastern Myanmar, (3) the Tanintharyi region, and (4) Ayeyarwady delta area in southern Myanmar, extending north to Yangon metropolitan area. Regions more centrally located within Myanmar, such as the metropolitan areas of Mandalay and Bagan, as well as several protected areas (e.g., around Pyin Oo Lwin, Inle Lake, Chatthin Wildlife Sanctuary), have undergone consistent surveying efforts by others. As of now, our dataset lacks any novel records from these central parts of Myanmar.

**Note:** Some bird species face increased conservation concern since they are facing high hunting pressure or are overwhelmed by intense birdwatching and unethical bird photographers. To protect these species, we have not disclosed exact coordinates or village names. These data are available through the corresponding author on request only.

## RESULTS

We present findings concerning 13 species, each with interesting aspects (a summarized compilation of all records is provided in Table 1). For most species we documented notable range extensions within Myanmar. For all species, we provide accounts of any other notable findings in terms of breeding biology or ecology that we encountered.

Our results display a geographical bias within Myanmar, as our access was primarily concentrated on the above-mentioned regions. Consequently, we organize our reporting into distinct blocks, each corresponding to one area: (1) Northern Myanmar with a focus on the

Hkakabo Razi Landscape; (2) Shan States; (3) Tanintharyi (Tenasserim); and (4) the Ayeyarwady delta region. Otherwise we follow a systematic order within each of these three regions. Regarding taxonomy, we follow the IOC version 13.1 (Gill et al. 2023) for scientific names and adjust the English names as recommended.

1. Snow Partridge *Lerwa lerwa* (Image 1) has been found in the Hkakabo Razi Landscape before, but we extend the species range westwards by a new record from the western part of the Hkakabo Razi Landscape, i.e., Hponkan Razi Wildlife Sanctuary (Table 1). This constitutes a rather small-scale distributional range-extension within northern Myanmar (GBIF 2023l). The Putao museum holds a skin from the Tibet staff of the Hkakabo Razi National Park, which means that the specimen is from the higher elevations of the Tahaundam area.

2. Yellow Bittern *Ixobrychus sinensis* (Image 2) constitutes a new record for the Hkakabo Razi Landscape. *I. sinensis* has been found in Myanmar before, the closest record from Myanmar to our knowledge is from Hukaung Valley Wildlife Sanctuary (Tordorf et al. 2007; GBIF 2023m). The record from Hkakabo Razi Landscape is noteworthy (Table 1), because this enigmatic species has not yet been recorded in this area with high incidence of birders and ornithologists for the last nine decades. Moreover, the adequate habitat for the species is regionally abundant.

3. Common Buzzard *Buteo buteo* (Image 3) was found close to Putao between Machanbaw and Naung Mung (Table 1). While recorded before in Myanmar, these 37 records in Myanmar are sparse and occur mostly in the country's centre (GBIF 2023c). With our record, we add probably a vagrant individual to northern Myanmar. Common Buzzards are generally rare in southeastern Asia and have been recorded sparsely from Thailand, and especially from northern Myanmar (King et al. 2001). Birds recorded during two expeditions to northern Myanmar (Burma). While subspecies determination is difficult for many *Buteo* species, we assume we encountered *B. buteo vulpinus* (Dickinson & Christidis 2014).

4. We found Black-naped Oriole *Oriolus chinensis* (Image 4) in the Hponkan Razi part of the Hkakabo Razi Landscape (Table 1), which constitutes a new record for northern Myanmar. *O. chinensis* has been found frequently in Myanmar and within adjacent Arunachal Pradesh (India) as well Yunnan (China), but not yet for Kachin (GBIF 2023k).

5. Crow-billed Drongo *Dicrurus annectens* is a rare bird throughout its range in continental southeastern

Asia (GBIF 2023e). We have recorded the species in Putao (Table 1). Until today we found all other *Dicrurus* species, i.e., *leucophaeus*, *aeneus*, *remifer*, *hottentottus*, *paradiseus* in the Hkakabo Razi Landscape (Renner & Rappole 2011a; Renner et al. 2015), except for *D. annectens*. Nevertheless, we always hypothesized *D. annectens* to occur in the Hkakabo Razi Landscape (e.g., Renner et al. 2015) and can finally confirm the species with photo evidence (Image 5). *D. annectens* is uncommon in northern Myanmar (Tordorf et al. 2007) but common in other parts of southeastern Asia (Thailand, Laos, Vietnam, Malaysia, Singapore, Cambodia).

6. A Warbling White-eye *Zosterops japonicus* was photographed (Image 6) in Ma Khunkan village just north of Putao (Table 1). The species has been recorded once from Maymyo (Pyn Oo Lwin), Myanmar in the 1920s as a skin specimen, today stored in the St. Barbara Museum (GBIF 2023h), but never again from Myanmar. There are other sparse records of *Zosterops montanus* and *Z. japonicus* in Myanmar, and while *Z. palpebrosus* is reported as common throughout the country (Robson 2008), the photo (Image 6) clearly distinguishes *Z. japonicus* (Indian White-eye) as in the Hkakabo Razi Landscape from *Z. palpebrosus*. Hence, the record confirms presence of *Z. japonicus* in Myanmar (Table 1). Other records of the species from southeastern Asia are mainly as winter visitor or resident to Vietnam, Thailand, Laos, or Singapore.

7. We recorded several Golden-crested Myna *Ampeliceps coronatus* (Image 7) from Zeyerdam and Naung Mung (Table 1), which constitutes a range extension. The species is widespread in southeastern Asia, including the southern half of Myanmar (Craig & Feare 2020b; GBIF 2023g). *A. coronatus* has been recorded also from Namdapha National Park in Northeast India bordering to Myanmar, but so far not anywhere north of Indawgyi, Kachin (GBIF 2023g).

8. Daurian Starling *Agropsar sturninus* (Image 8) was recorded several times in the Hkakabo Razi Landscape (Table 1), which is a range extension to Hkakabo Razi Landscape. The record is interesting since several starlings and mynas have been recorded as new for Myanmar recently (e.g., Soe Naing et al. 2016), which is astonishing, since mynas and starlings are relatively large, charismatic and rather in open than in dense habitat. Daurian Starlings are widespread in eastern and southeastern Asia, including sparse records from Bangladesh and India, but have been hardly found in Myanmar so far. Several references, e.g., Craig & Feare (2020a), show the species further east of Myanmar only,

**Table 1. New and noteworthy records of birds in Myanmar. The sequence refers and cross-references to the species list in the text. Taxonomy follows IOC (Gill et al. 2023).**

English Name	Species	Locality	What's new	Day	Month	Year	North	East
Snow Partridge	<i>Lerwa lerwa</i>	Hkakabo Razi National Park	Range extension	20	March	2016	28.068	97.505
Snow Partridge	<i>Lerwa lerwa</i>	Hkakabo Razi National Park	Range extension	10	January	2004	28.068	97.505
Snow Partridge	<i>Lerwa lerwa</i>	Hkakabo Razi National Park	Range extension	1	January	2019	n/a	n/a
Snow Partridge	<i>Lerwa lerwa</i>	Hkakabo Razi National Park, Madine	2 specimens in Putao museum	23	August	2004	n/a	n/a
Snow Partridge	<i>Lerwa lerwa</i>	Near Mt. Phangram Razi, Hponkan Razi Wildlife Sanctuary	Range extension	10	May	2015	27.607	96.918
Yellow Bittern	<i>Ixobrychus sinensis</i>	Ngarwar field, Hkakabo Razi National Park	Range extension	21	July	2017	27.758	97.818
Common Buzzard	<i>Buteo buteo</i>	Between Machanbaw and Naung Mung	Range extension	7	April	2018	27.281	97.704
Black-naped Oriole	<i>Oriolus chinensis</i>	3 in Myitsone (Ayeyarwady confluence)	Range extension	4	February	2009	25.708	97.497
Black-naped Oriole	<i>Oriolus chinensis</i>	6 in Banbane	Range extension	4	February	2009	25.716	97.860
Black-naped Oriole	<i>Oriolus chinensis</i>	Warsardam, Hponkan Razi Wildlife Sanctuary	Range extension	26	May	2016	27.514	97.195
Crow-billed Drongo	<i>Dicrurus annectens</i>	Putao	Range extension	15	August	2015	27.376	97.402
Warbling White-eye	<i>Zosterops japonicus</i>	Ma Khunkan village	Range extension	9	February	2018	27.643	98.244
Golden-crested Myna	<i>Ampeliceps coronatus</i>	Naung Mung	Range extension	28	November	2017	27.506	97.822
Golden-crested Myna	<i>Ampeliceps coronatus</i>	several records Zyerdam, Hponkan Razi Wildlife Sanctuary	Range extension	23	November	2013	27.579	97.098
Daurian Starling	<i>Agropsar sturninus</i>	several records in Makhwunkan village, Hkakabo Razi Landscape	Range extension	30	April	2012	27.644	98.244
Pin-tailed Parrotfinch	<i>Erythrura rasine</i>	Machanbaw road to Madwe, Upper Mali Raing	Range extension	27	February	2016	27.577	97.371
Oriental Magpie	<i>Pica serica</i>	1 in Hai Sheng, Laihka, Southern Shan; Paddy field, forest	Range extension	31	March	2023	21.241	97.77
Oriental Magpie	<i>Pica serica</i>	1 in Lwae Sai, Namhsan, Northern Shan; Tea plantation, forest at pagoda	Range extension	31	May	2005	22.867	97.229
Oriental Magpie	<i>Pica serica</i>	2 in Keng Tung village, Eastern Shan, Paddy field, forest	Range extension	2	August	2016	21.398	99.627
Oriental Magpie	<i>Pica serica</i>	2 between Weng Kao and Wan Nawngnio, Southern Shan, in forest patches	Range extension	5	June	2023	21.708	98.115
Baikal Bush Warbler	<i>Locustella davidi</i>	A Ma Phya, Grassland, Ayeyarwady delta	Range extension	16	February	2023	16.781	95.25
Baikal Bush Warbler	<i>Locustella davidi</i>	Tat Seik, Grassland, Ayeyarwady delta	Range extension	15	February	2023	16.763	95.257
Baikal Bush Warbler	<i>Locustella davidi</i>	Tat Seik, Grassland, Ayeyarwady delta	Range extension	20	January	2023	16.781	95.25
Baikal Bush Warbler	<i>Locustella davidi</i>	Tat Seik, Grassland, Ayeyarwady delta	Range extension	12	March	2023	16.781	95.25
Blue-and-White Flycatcher	<i>Cyanoptila cyanomelana</i>	Kyauk Taung Camp, Tanintharyi	Range extension	27	March	2012	17.029	96.098
Rufous-bellied Swallow	<i>Cecropis badia</i>	29 individuals at Ngawun Reserve Forest, Tanintharyi	Breeding confirmation	3	September	2020	11.175	99.164
Rufous-bellied Swallow	<i>Cecropis badia</i>	5 females Forest river 27miles village Pyigymandai, Tanintharyi	Breeding confirmation	12	May	2012	11.188	99.159
Rufous-bellied Swallow	<i>Cecropis badia</i>	8 at Lenya Reserve Forest, Bokepyin, Tanintharyi	Breeding confirmation	6	April	2022	11.244	99.184
Rufous-bellied Swallow	<i>Cecropis badia</i>	documentation of the nest	Breeding confirmation	20	May	2012	11.188	99.159
Rufous-bellied Swallow	<i>Cecropis badia</i>	further 5 individuals at Ponekani Camp, Tanintharyi	Breeding confirmation	15	May	2012	11.628	99.259

mainly in Thailand/Indonesia/Malaysia. The species is supposedly wintering and breeding in northeastern China (Craig & Feare 2020a); however, *A. sturninus* has been found all over southern Asia, too. The so far northernmost record in Myanmar was in Chanayethazan, Mandalay (GBIF 2023d). Note: several synonymies are found and these include Purple-backed Starling *Sturnus sturninus*.

9. Pin-tailed Parrotfinch *Erythrura prasina* (Image 9) from Machanbaw is a new record for northern Myanmar (Table 1), possibly for all northern half of Myanmar, since in the Shan-Thai border area the detailed occurrence remains imprecise (Payne 2020; GBIF 2023i). From distribution and plumage, we conclude that our individual photographed is from the subspecies *Erythrura prasina prasina*, occurring in Thailand and southern Myanmar (Tenasserim), Peninsular Malaysia, Cambodia, Laos, Vietnam, Sumatra, and Java. The species was recently recorded in China, specifically southern Yunnan (Sreekar et al. 2014), relatively close to our location, as well as in southern Bhutan (GBIF 2023i). We assume it is a female or immature male based on the plumage (Image 9: if the contrast of the photo is increased, red is visible and hence it should be considered an immature male; tail is relatively short and round, not pointed). The record is a substantial range extension towards north, while the species is considered resident in Tанинtharyi and Thailand, Malaysia, Cambodia, Laos, and Viet Nam.

10. We recorded one Oriental Magpie *Pica serica* (Image 10, Table 1) in Lwae Sai Pagoda in a Tea plantation with forest patches wandering around the pagoda compound and perching on tree top; two individuals in Keng Tung village in paddy fields and some forest flying across from east to west direction (Image 10); one individual in Hai Sheng village in paddy field and some forest; and two individuals between Weng Kao and Wan Nawngnio villages in forest patches around primary school surrounded by paddy field. So far only two records of *P. serica* (Monywa and Maymyo; GBIF records 3243563386 and 3216275901) are known. An additional record from Kutkai in Northern Shan State is a specimen (GBIF record 1039546472) from 1958 (as *P. pica serica* stored in Yale Peabody Museum, 23.517 N 97.95 E). *P. serica* was recognised as a separate species following the revision of the *P. pica* species complex (Lee et al. 2003; Song et al. 2018), mtDNA phylogeny suggests that Eurasian Magpie comprises several potential species including Oriental (Korean) Magpie *P. serica*, Maghreb Magpie *P. mauritanica* and Asir Magpie *P. asirensis*. Oriental (Korean) Magpie should be split to address paraphyly with Nearctic species (Lee et al. 2003; Gill et

al. 2023).

11. We recorded the Baikal Bush Warbler *Locustella davidi* (Image 11) from the Ayeyarwady delta area (Tat Seik and A Ma Phyar; Table 1). It is likely a rare winter visitor to the region. Previously Baikal Bush Warbler have been found in Myanmar, but mainly from central Kachin (Mohnyin and Wara Zup and Shan States (Dhan Ma Kan Wetland, Inle Lake, Pine Hill Resort in Shan (GBIF 2023a)).

12. We found Blue-and-White Flycatcher *Cyanoptila cyanomelana* (Image 12) twice in Kyauk Taung Camp, Tанинtharyi (Table 1). This constitutes a range extension south, since so far the species has been found at Mount Popa (central Myanmar) and two at Hlawga Park just north of Yangon (GBIF 2023b).

13. Rufous-bellied Swallow *Cecropis badia*: Our documentation of the nest is likely the first proof of breeding attempt of *C. badia* in all of Myanmar (Image 13). We recorded five females at the river in the forest at Pyigymandai, further five individuals at Ponekani Camp; 29 individuals at Ngawun Reserve Forest, and further eight at Lenya Reserve Forest (Table 1). The species has been recorded in the border area of Myanmar and Thailand for some time and is likely common in the area (Thet Zaw Naing et al. 2020; Kirwan & Turner 2021; GBIF 2023j).

## DISCUSSION

The quantification of bird species within specific territories is often challenging and offers typically a rough approximation rather than an exact number. However, despite this inherent imprecision, general estimates are possible. Myanmar is believed to host bird species ranging from around 1,022 to 1,216 species Naing (Thet Zaw Naing et al. 2020; BirdLife International 2023; GBIF 2023f).

Since the year 2000, noteworthy developments include the addition of several avian taxa to Myanmar's records. The endemic *Napoothera naungmungensis*, two new subspecies *Alcippe cinereiceps hkakaboraziensis* and *Malacocincla abbotti kachinensis* (Renner et al. 2015), the taxa splitting of *Cyornis magnirostris* (Renner et al. 2009), *Tesia olivea olivea* (Renner et al. 2008), and first records of Rosy Starling *Pastor roseus* (Sai Sein Lin Oo et al. 2020), and White-throated Laughingthrush *Garrulax albogularis* (Sai Sein Lin Oo et al. 2019a) have added new taxa for Kachin alone. In addition, the Parasitic Jaeger *Stercorarius parasiticus* has been newly recorded in Shan (Sai Sein Lin Oo et al. 2022).



Image 1. Snow Partridge *Lerwa lerwa*, Nama Jason.



Image 2. Yellow Bittern *Ixobrychus sinensis*, Hkakabo Razi.



Image 3. Common Buzzard *Buteo buteo*, Putao.



Image 4. Black-naped Oriole *Oriolus chinensis*, Hponkan Razi.



Image 5. Crow-billed Drongo *Dicrurus annectens*, Putao.



Image 6. Warbling White-eye *Zosterops japonicus*, Hkakabo Razi.



Image 7. Golden-crested Myna *Ampeliceps coronatus*, Hponkan Razi.



Image 8. Daurian Starling *Agropsar sturninus*, Hkakabo Razi.

The Brahminy Starling *Sturnia pagodarum* (Soe Naing et al. 2016) and 42 other species have been designated as new records for Myanmar between 2005 and 2019 (Thet Zaw Naing et al. 2020). This accumulates to over 51 new recorded taxa since 2000 – an achievement that might be unparalleled globally and possible through the period of roughly 10 years open access to most parts of Myanmar. This achievement holds particular significance considering the scarcity of additions in the temperate regions, whereas in the Global South and the tropical regions, only selected geographic hotspots foster the description of new bird taxa (Renner et al. 2015), with the northern Andes (Colombia/Peru) and the eastern Himalayan, including northern Myanmar, serving as prominent examples (Renner & Rappole 2011b). In light

of this rapid progress, we predict that a substantial part of undetected faunal diversity in Myanmar still is prone for discovery (Päckert et al. 2019).

From 2010 to 2023 we comment on 19 taxa, each with new aspects. Among these, three species stand out as new additions to Myanmar, with one of the three even new to southeastern Asia. While our findings have a strong focus on northern Kachin state, our additional two “hotspots”, namely Shan state and Tanintharyi Region, are very important landscapes because of the diverse ecosystems (Murray et al. 2020). Myanmar’s ecosystem diversity is highest along the Himalayan foothills in the north of Kachin state, where the Shan plateau meets the central dry zone; along the Rakhine range in the west; and much of the Tanintharyi lowlands. These



Image 9. Pin-tailed Parrotfinch *Erythrura prasina*, Machan Baw.



Image 10. Oriental Magpie *Pica serica*, Keng Tung village, Eastern Shan.



Image 11. Baikal Bush Warbler *Locustella davidi*, Ayeyarwady delta area.



Image 12. Blue-and-White Flycatcher *Cyanoptila cyanomelana*, Putao.



Image 13. Rufous-bellied Swallow *Cecropis badia* on 12 May 2012. Payar Dan Cave near Kawthoung (Bokepyin Township), Tanintharyi.



three habitats encompass a rich array of ecosystems and habitats, ranging from mountain conifer forests and montane temperate broadleaf forests to semi-evergreen forests, rainforests, limestone tropical evergreen forests, coastal wetlands, and mangroves. This ecological variety provides a favourable environment for many bird species. Given their irreplaceable nature, these areas warrant prioritized conservation efforts to ensure the protection of both known and potentially undiscovered species.

Among the 19 species considered, 13 were observed in northern Myanmar, predominantly within Kachin's northern parts. An additional six species were identified in the Shan and Tanintharyi Regions. Considering over 1,200 bird species existing within Myanmar (Thet Zaw Naing et al. 2020), 60 are globally threatened (IUCN Red List), 10 are country endemics, 873 land birds, 21 seabirds, 352 migratory (or visiting), and 158 water birds (BirdLife International 2023). Our records comprise approximately 1.6% of the known birds of Myanmar, but still each of our records is important, because each

addition has its own unique habitat preferences and ecological requirements, allowing them to survive in various environments.

The presence of these bird species in a variety of ecosystems in Kachin, Shan states, Tanintharyi Region, and Ayeyarwady region highlights the importance of safeguarding and preserving diverse habitats for maintaining bird biodiversity. Different habitats provide essential resources like food, nesting sites, and shelter, supporting the survival of these bird species throughout their range. Conservation efforts should prioritize the protection of these ecosystems to ensure the continued existence of birds and their contributions to ecological resilience.

Last but not least, it is worth noting that particularly the far north of Myanmar hold potential for new species to be discovered, since not only birds, but also other vertebrates are continuously being added and new descriptions are not rare: species of bats (Soisook et al. 2017) and additions in bat diversity (Bates et al. 2021) are ongoing and several other mammal species such

as the Leaf Deer (Rabinowitz et al. 1999) have been described relatively recently.

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