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Cover photo: Indo-Chinese Sand Snake *Psammophis indochinensis.* © A.T. Prasetya.

Reptile Rap
SARN
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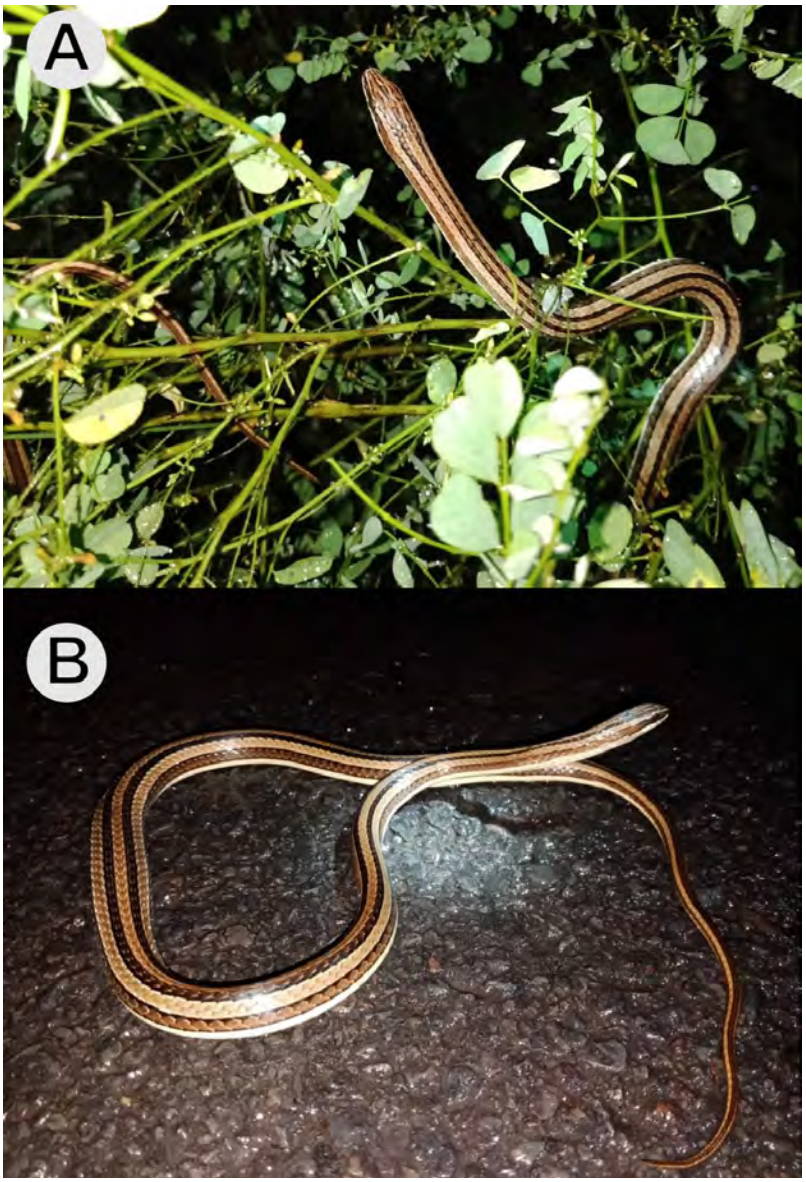
#225
21 September 2022

Additional photographic record of Indo-Chinese Sand Snake in Baluran National Park, Java

Java is home to a wide variety of cryptic and endemic snake species, where snake discoveries began in the 19th century. Literature reveals that more than 100 species of snakes have been reported from Java (Uetz et al. 2022), and it is likely that further species are yet to be discovered.

Additionally, some known introduced snakes were reported in East Java (Hodges 1993). Nonetheless, there is a lack of surveying and monitoring of the populations to help with their conservation status, as well as confirmations of these dubious data, e.g., the presence of Eastern Russell's Viper and Indo-chinese Sand Snake (Kurniawan et al. 2021). Indo-Chinese Sand Snake is the only species of psammophiid snake found in Indochina.



Indo-Chinese Sand Snake *Psammophis indochinensis* Smith from Baluran National Park, East Java, Indonesia, displaying the surrounding vegetations (A), and after displacement to the trails (B). © A.T. Prasetya.

Intriguingly, there were also reports of this species in Indonesia, where it was seen in East Java and Bali regions (Kurniawan et al. 2021). Based on photographic evidence, we confirm the presence of *Psammophis indochinensis* in Baluran National Park, East Java.

Psammophis indochinensis Smith, also known as Indo-Chinese Sand Snake was found in Baluran National Park, Situbondo Regency, East Java Province, Indonesia (7.840 S, 114.437 E; WGS 84; 32 m elevation) in February 2021 by A.T. Prasetya. The individual was found among shrubs adjacent to the main road in the Bekol savannah, surrounded by *Acacia* sp., Poaceae, Fabaceae, and Asteraceae plants.

This is an additional record for the species in the province of East Java, as well as the third most recent confirmed report for Indonesia, as it was seen in Bali Barat National Park (Amarasinghe et al. 2021) and Buleleng Regency (Kurniawan et al. 2021) of Bali Province. Baluran National Park represents the westernmost population of this species in Java, about 222 km east of the nearest dubious records in Gresik of East Java (Mertens 1957). This species is primarily known from southeastern Asia, which means that this species has a highly disjunct distribution.

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Luhur Septiadi[1], Aldi Tri Prasetya[2], Haikal Aqshal Arisprijadi[3] & Muhammad Fathoni[4]

[1] Department of Biology, Faculty of Science, Chulalongkorn University, Pathumwan 10330, Bangkok, Thailand.

[2&3] Department of Forestry, Faculty of Agriculture-Animal Science, Universitas Muhammadiyah Malang, Malang 65145, East Java, Indonesia.

[4] Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Brawijaya, Malang 65145, East Java, Indonesia.

Email: luhur.septiadi@gmail.com (corresponding author)

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#226
21 September 2022

Diversity and distribution of gekkonids of the Andaman & Nicobar Islands:

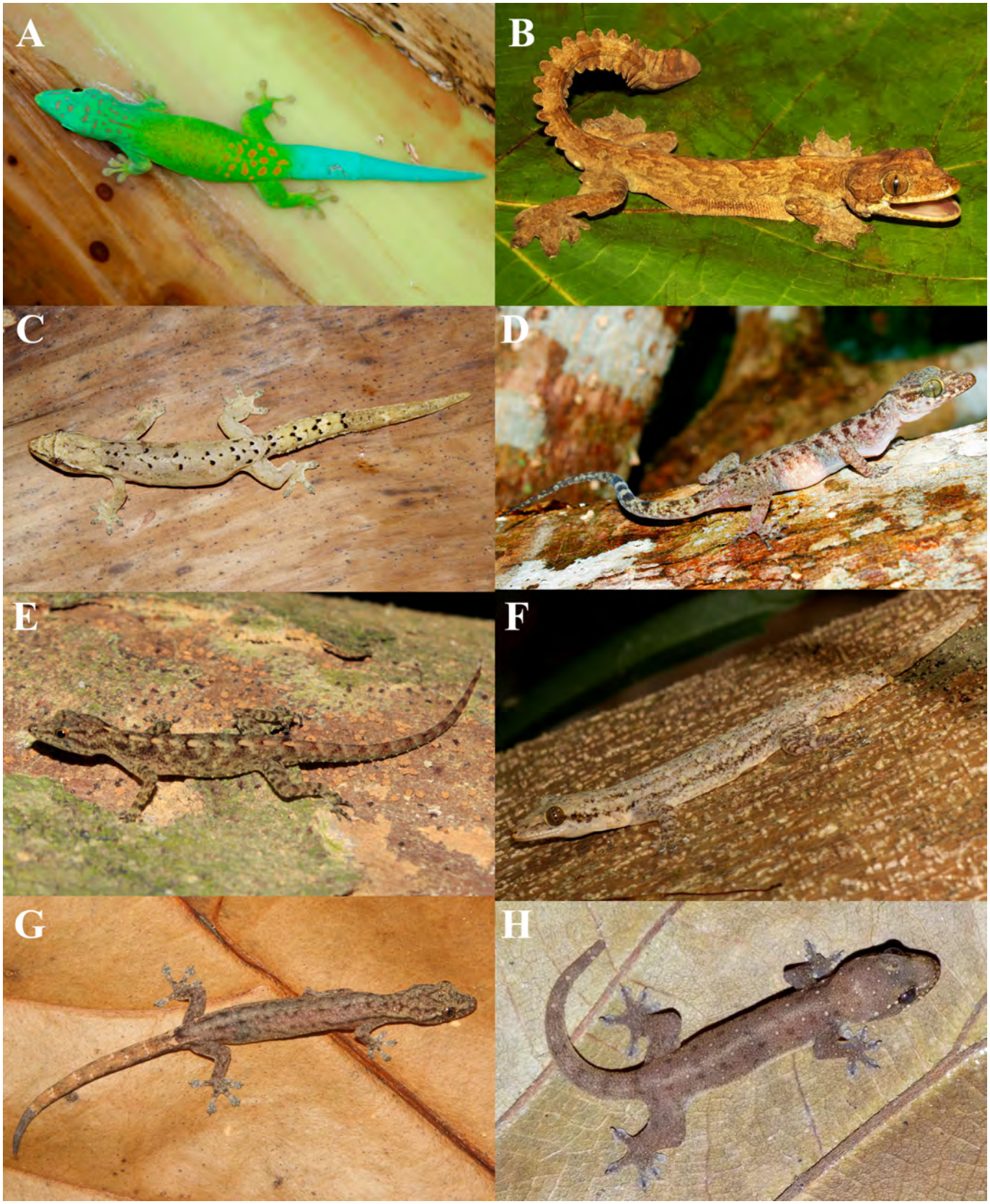
An overview of past studies to the present scenario, with an updated checklist and future prospects

Gekkonids are one among the most diverse and relatively ancient group of reptiles and currently comprise about 1,472 species worldwide (Uetz et al. 2021). Southeastern Asia is one of the global hotspots of gekkonid diversity and is home to several major regional radiations such as *Cyrtodactylus*, *Cnemaspis*, *Gekko*, *Hemiphyllodactylus* etc. (Uetz et al. 2021).

Within the southeastern Asian region, the Andaman & Nicobar Islands situated to the south of the Burmese Peninsula and to the north of the Sundaic Island of Sumatra span across the extremities of two global biodiversity hotspots namely Indo-Burma (Andamans) and the Sundaland (Nicobars). Together, their land area totals to about 8250 km^2. Habitats in these islands range from mangrove creeks along the coast through littoral, dry evergreen, tropical wet evergreen up to stunted montane forests on hilltops, thus providing a fairly vast array for the species to occupy.

Studies on Gekkonidae in the Andaman & Nicobar Islands date back to the discovery of two new species *Puellula rubida* (now *Cyrtodactylus rubidus*) and *Phelsuma andamanense* (now *Phelsuma andamanensis*) described in the report of the erstwhile curator of the Asiatic Society of Bengal (Blyth 1861). Three years later, Tytler (1865) described the large bodied species *Gekko verreauxi* from the Andaman Islands. Steindachner (1867) reported *Ptychozoon homalocephalum* (now *Gekko nicobarensis*) from the Nicobars. This was followed by that of Stoliczka (1873), who described the dwarf gecko *Gymnodactylus wicksi* (now *Cnemaspis*) from Preparis Island (a part of the Andaman chain) that is currently within the political boundary of Myanmar.

Subsequently, Annandale (1905) described *Gonatodes andersonii* (now *Cnemaspis*) from the isolated eastwardly island of Narcondam, in the Andaman archipelago. He reported some additional species such as *Hemidactylus frenatus*, *Gehyra mutilata*, *Gekko stentor*, *G. verticillatus*, and *Lepidodactylus lugubris* in addition to those known previously.



Representative gekkonids from various genera occurring in the Andaman & Nicobar Islands: A—*Phelsuma andamanensis* | B—*Gekko nicobarensis* | C—*Lepidodactylus* cf. *lugubris* | D—*Cyrtodactylus rudidus* | E—*Cnemaspis andersonii* | F—*Hemidactylus* cf. *platyurus* | G—*Hemiphyllodactylus* cf. *typus* | H—*Gehyra* cf. *mutilata*.

Smith (1935) in his monograph on lizards of British India and the adjacent regions listed nine species of gekkonids from the Andaman & Nicobar Islands. He also synonymized the two *Cnemaspis* species, *andersonii* and *wicksi* under the Ceylonese taxon *Cnemaspis kandiana* (see Smith 1940). Decades later, Biswas & Sanyal (1977) reported four species of gekkonids from Great Nicobar Island, which included two more additional species, namely—*Hemiphyllodactylus typus typus* (now *H. typus*) and *Platyurus platyurus* (now *Hemidactylus platyurus*)—bringing the total number of geckos in these archipelagos to 11. Within a short while, Biswas & Sanyal (1980) listed and retained the same 11 species of gekkonids from the Andaman & Nicobar Islands. Ota et al. (1991) revalidated *Gekko verreauxii* from the synonymy of *Gekko smithii*. Ratnam (1992) studied the distribution and behavior of *Phelauma andamanensis*.

The subsequent list of Geckos from the Andaman & Nicobar Islands by Das (1994) included 10 species, and lacked the mention of *Hemidactylus platyurus* while still retaining *Gekko gekko*. Later, Das (1997) added another new gekkonid *Cyrtodactylus adleri* from the Nicobar Islands. Subsequently, Das (1999) listed eight species each from the Andaman & Nicobar archipelagos respectively, with four species being shared between the two, totaling to 12 species in the Andaman & Nicobar archipelago in total.

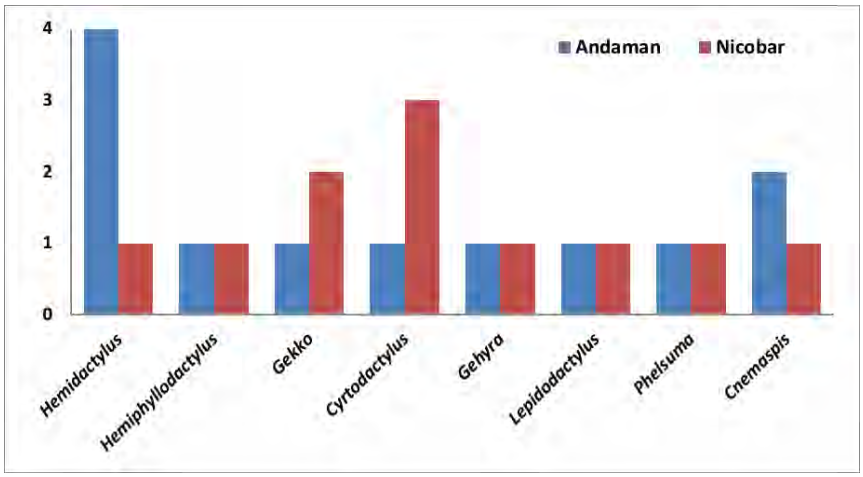
The next list of Gekkonids by Vijayakumar (2005) included nine species from the Nicobar Islands including a doubtful record of *Hemidactylus garnotii* and a purported new species of *Cyrtodactylus*. Also, he considered the *Cnemaspis* cf. *kandiana* to represent a potentially new species. However, no attempt was made to resolve any of these uncertainties. Manamendra-Arachchi et al. (2007) revalidated *Cnemaspis andersonii* and *C. wicksi* as distinct species from the Sri Lankan endemic *C. kandiana*. Later, Das & Vijayakumar (2009) described a new species *Ptychozoon nicobarensis* from the Nicobar archipelago, which has been transferred to the genus *Gekko* recently (Wood et al. 2020).

The next list of geckos of the Andaman & Nicobar Islands by Harikrishnan et al. (2010) included 13 species and excluded one of the purported new *Cyrtodactylus* sp. listed by Vijayakumar (2005). Chandramouli et al. (2012) reported *Hemiphyllodactylus typus* from the Andaman Archipelago for the first time. Later, Chandramouli (2015) reported *Hemidactylus* aff. *brookii* (now *H.* cf. *murrayi* fide Mahony 2011; Lajmi et al. 2016) from Port Blair. Subsequently, the till then Andaman endemic *Phelsuma andamanensis* was reported for the first time from the Nicobar archipelago (Chandramouli 2017). This was followed by the first report of a predominantly south Asian gekkonid *Hemidactylus leschenaultii* from the Andaman Islands by Gokulakrishnan et al. (2019). Further observations on courtship and breeding behaviour of *Phelsuma andamanensis* were reported by Chandramouli (2020a).

Very recently, three new gekkonids namely *Cnemaspis nicobaricus*, *Cyrtodactylus nicobaricus*, and *Cyrtodactylus camortensis* have been described from the Nicobar

Islands, bringing the total species of geckos to 18 in the Andaman & Nicobar archipelago (Chandramouli 2020b,c). Mohan (2020) provided an update on island-wise occurrence records of gekkonids in the Andaman & Nicobar Islands, albeit overlooking the previously published record of *Cnemaspis nicobaricus* from Little Nicobar (Chandramouli 2020b) and the description of two new *Cyrtodactylus* species from the Nicobar Islands (Chandramouli 2020c). Lastly, the systematic status of the Nicobar population of *Gekko smithii* was reassessed by Chandramouli et al. (2021), who described it as a distinct species, *Gekko stoliczkai* endemic to the southern Nicobar Islands.

Trend-line showing the rate of addition of gekkonids to the Andaman & Nicobar Islands.



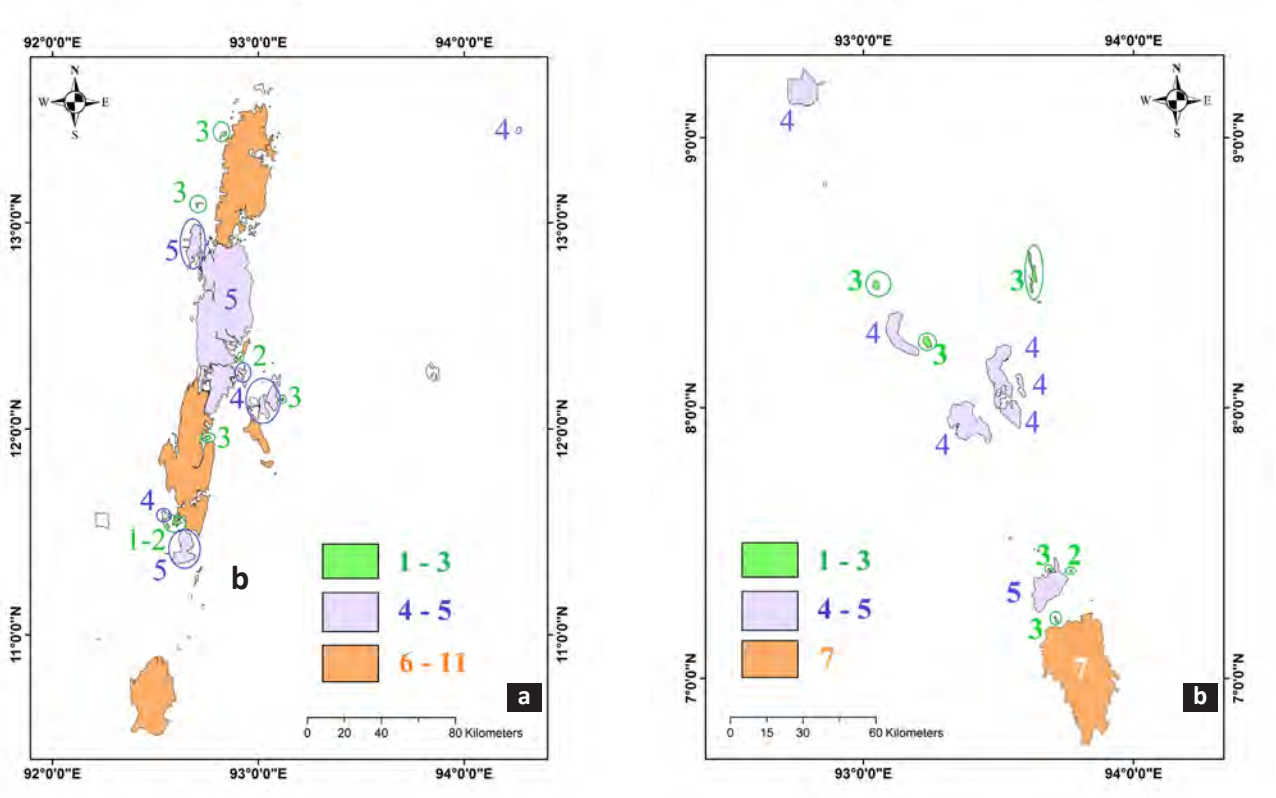
Taxonomic composition of the gekkonid fauna of the Andaman & Nicobar Islands.

The current diversity of gekkonids in the Andaman & Nicobar archipelago is dominated by the genera *Hemidactylus* and *Cyrtodactylus* with four species each, of which, the former constitutes the more cosmopolitan species while the latter comprises of regional endemics (Chandramouli 2020c; Uetz et al. 2021). They are closely followed by the genera *Cnemaspis* and *Gekko*, which are represented by three species each. The largely Melanesian genera *Gehyra* and *Lepidodactylus* as well as the genus *Hemiphyllodactylus* constitute one species each along with another unique representative from the predominantly Malagasy genus *Phelsuma*. The generic diversity between the Andaman and the Nicobar archipelagos is nearly similar with eight genera (*Cnemaspis*, *Cyrtodactylus*, *Gehyra*, *Gekko*, *Phelsuma*, *Hemidactylus*, *Lepidodactylus*, and *Hemiphyllodactylus*) being common between the two island groups. At the species level, 12 species are known from the Andaman Islands

while 11 species have been reported from the Nicobar Islands. Five species namely *Hemidactylus frenatus*, *Hemiphyllodactylus* cf. *typus*, *Phelsuma andamanensis*, *Lepidodactylus* cf. *lugubris*, and *Gehyra* cf. *mutilata* are shared between the Andaman & Nicobar group of Islands. The presence of *H.* cf. *platyurus* in the Nicobars reported by Tiwari & Biswas (1973) needs further confirmation. Hence, its presence in the Nicobar Islands is not regarded authentic herein until further confirmation.

The proportion of endemism is 41% (5/12) for the Andaman Islands while it is higher, at 64% (7/11) for the Nicobar Islands, owing to the addition of four newly described endemic species (Chandramouli 2020b,c; Chandramouli et al. 2021).

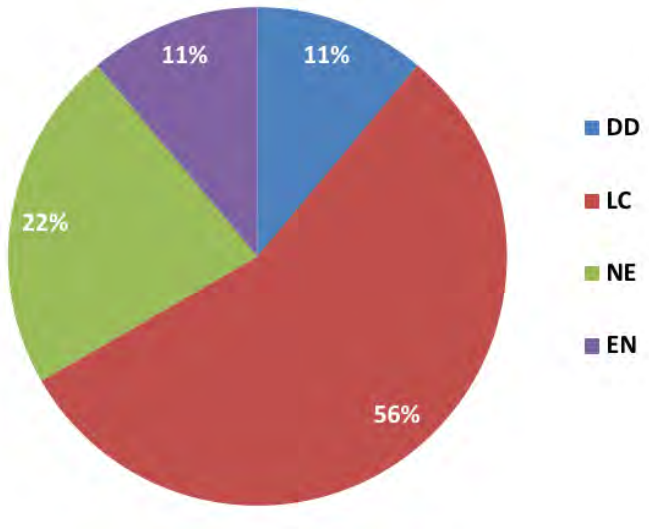
A map of species richness patterns of gekkonids of the Andaman & Nicobar Islands shows that it varies from 1–11 in the Andaman archipelago. North, South, Little Andaman Havelock, Neil, and Long Island among the sampled ones had 6–11 species, while Middle Andaman, Interview, Baratang, Rutland, Tarmugli, John Lawrance, and Henry Lawrance Islands had 4–5 species of geckos. Kyd, Inglis, North Reef, Paget, other islands of the Labyrinth archipelago and Guitar Island had 1–2 species of geckos. In the Nicobar archipelago, the island-wise species richness ranged from 2–7, with the majority of the islands having 4–5 species of gekkonids, with just six islands having 2–3 species.



Map of the Andaman (a) & Nicobar Islands (b) showing gekkonid species richness.

Table 1. Checklist of geckos of the Andaman & Nicobar Islands with their respective distribution ranges within the Islands.

Species	Distribution in A&N Islands	IUCN Red List status
Cnemaspis andersonii (Annandale, 1905)	Andaman Islands	DD
Cnemaspis nicobaricus Chandramouli, 2020	Great and Little Nicobar Islands	NE
Cnemaspis wicksi (Stoliczka, 1873)	Preparis Island, Andaman (now in Myanmar)	DD
Cyrtodactylus adleri Das, 1997	Southern Nicobar Islands	EN
Cyrtodactylus camortensis Chandramouli, 2020	Central Nicobar Islands	NE
Cyrtodactylus nicobaricus Chandramouli, 2020	Car Nicobar	NE
Cyrtodactylus rubidus (Blyth, 1861)	Andaman Islands	LC
Gehyra cf. *mutilata* (Weigmann, 1834)	Andaman & Nicobar Islands	LC
Gekko nicobarensis (Das & Vijayakumar, 2009)	Northern & central Nicobar Islands	EN
Gekko stoliczkai Chandramouli et al., 2021	Southern Nicobar Islands	NE
Gekko verreauxi Tytler, 1864	Andaman Islands	LC
Hemidactylus frenatus Dumeril & Bibron, 1836	Andaman & Nicobar Islands	LC
Hemidactylus leschenaultii Dumeril & Bibron, 1836	South Andaman	LC
Hemidactylus cf. *platyurus* (Schneider, 1792)	Andaman Islands	LC
Hemidactylus cf. *murrayi* Gleadow, 1887	Andaman Islands	LC
Hemiphyllodactylus cf. *typus* Bleeker, 1860	Andaman Islands & Great Nicobar	LC
Lepidodactylus cf. *lugubris* (Dumeril & Bibron, 1836)	Andaman Islands & Great Nicobar	LC
Phelsuma andamanensis Blyth, 1861	Andaman Islands & Car Nicobar	LC



Conservation status of gekkonids as per the IUCN Red List.

An analysis of the conservation status of gecko fauna of the Andaman & Nicobar Islands reveals that a fairly high proportion (56%) are of 'Least Concern', followed by those that still remain yet to be assessed formally (22%), 11% still remain in the 'Data Deficient' category while 11% are under the 'Endangered' category. Taxonomic status of five species—*Gehyra* cf. *mutilata*, *Hemidactylus* cf. *platyurus*, *Hemidactylus* cf. *murrayi*, *Hemiphyllodactylus* cf. *typus*, and *Lepidodactylus* cf. *lugubris*—are currently uncertain and are in need of further rigorous

assessment based on various criteria (pers. obs.). It is speculated that future studies on some of these species could possibly prove some of them to be specifically distinct from the nominate forms, thereby increasing the uniqueness of the gekkonid fauna of the Andaman & Nicobar Islands further.

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S.R. Chandramouli
Department of Ecology and Environmental Sciences, School of Life Sciences, Pondicherry University, Puducherry 605014, India.
Email: findthesnakeman@gmail.com (corresponding author)

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Reptile Rap
SARN
S. Asian Reptile Network
#227
21 September 2022

Record of Collared Reed Snake at Nokrek National Park, Meghalaya, India

***Calamaria pavimentata* – whole body. © Sachin Ranade.**

The repeated sightings of the Collared Reed Snake *Calamaria pavimentata* Duméril, Bibron & Duméril, 1854 at the Nokrek National Park (NNP) in Meghalaya State of India are reported in this short note.

NNP was visited during the April–May month of 2002, 2003, 2011, and 2015 for the nationwide vulture surveys by Bombay Natural History Society. During these surveys, a transect of 4 km from Daribokgrey towards the Nokrek peak (25.45 N & 90.32 E; 1,261.5 m) was undertaken on foot. The terrain of this area is hilly, dominated by evergreen and semi-evergreen forest patches (Prabhu et al. 2010). During every visit, there was mist indicating the cool and humid air in the forest patches and hill slopes. The ground was largely covered by leaf litter. During the transects, interesting flora and fauna was photographed

Lateral view – longitudinal stripes. © Sachin Ranade.

Dorsal view showing collar mark. © Sachin Ranade.

Habitat – a path in the hill forest. © Sachin Ranade.

opportunistically. The number of individuals of the Collared Reed Snake sighted were- two (2002), one (2003), one (2011), and one (2015).

The sighting time was between 0900 and 1200 h when the individuals were crossing the jungle path at a slow pace. On 26 April 2011, a scale was kept in the path to be taken by the snake and the snake obliged me by passing very close by the scale and that was photographed. In the low light, the snake appeared simply dark brown coloured, but in the photographs with flash its longitudinal dark bands and shiny scales are visible. The photographs show the distinct collar pattern that gave the snake its common name, the Collared Reed Snake. Inger & Marx (1965) had described variations in the colour pattern of the collar, where yellow and complete collar is common on mainland. The snake was not touched, handled or captured and hence there is no data on the scale count.

The species is well known from China, Japan, and southeastern Asia; but only a few of its records are from India, mentioning Assam and Mizoram states (Smith 1943; Inger & Marx 1965; Uetz et al. 2021). The habit and habitat of this snake species are least discussed. The species is known to lay eggs in August in Taiwan (Yang 2018). My observations provide the first photographic record and information about its presence in Meghalaya, India along with its preferred habitat.

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Acknowledgements

I would express my gratitude to the chief wildlife warden and PCCF (WL) Meghalaya for the kind permission to carry out the vulture surveys and visits to protected areas in Meghalaya. Thanks to the authorities of Nokrek National Park and the forest staff accompanied during the surveys. I am grateful to Mr. Vivek Sharma who identified the species from photograph posted in the Facebook Group Indian Snakes. Thanks to the Bombay Natural History Society for their constant support and encouragement.

Sachin Ranade
Vulture Conservation Breeding Center, Rani, Kamrup, Assam 781131, India. Email: s.ranade@bnhs.org

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Notes on *Papilio krishna krishna* Moore, [1857] of Sikkim Himalaya

***Papilio krishna krishna* Moore. ©HARCFOREST.**

Not only is *Papilio krishna* Moore, [1857] commonly found in sub-tropical forest, but it is also found in sub-temperate forest of Sikkim. There are two intraspecific subspecies of this large Swallowtail Butterfly, namely, *Papilio krishna* ssp. *manipuri* Tytler, 1939 and *Papilio krishna* ssp. *krishna* Moore, [1857] (Kishimoto 2021; Sagara & Tokushige 2021). The species, *Papilio krishna* Moore, [1857], is distributed in China, Bhutan, India, and Vietnam (Alfred 2003).

Its status is 'Not Rare' (Gupta & Majumdar 2012). The species represents an altitudinal range of 915–2,750m (Table 1), have charismatic appearance, and educational value among students and butterfly lovers.

Papilio krishna ssp. *manipuri* Tytler, 1939. BMNH(E)149341, 149340 Kabur, Manipur, NHMUK (Natural History Museum, London).
Papilio krishna ssp. *krishna* Moore, 1857. K-24193, Sandakper (Sandakhphu?), Darjeeling, HCSM, Himeji City Science Museum.

Habitat: Sunny place, not moist, east-west facing hills.

Distribution: India (Sikkim: Dzongu, Rhenock,

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Table 1. Distribution matrix of *Papilio krishna krishna* recorded in Sikkim during the study.

Place	Altitude	GPS	Suitable host plants
Rimbi, West Sikkim	1,227 m	27.316 N 88.196 E	*Citrus* [Rutaceae]
Passingdong Dzongu, North Sikkim	820 m	27.533 N 88.514 E	*Citrus rotunda* Blanco [Rutaceae]
Linko, North Sikkim	1,511 m	27.549 N 88.485 E	*Belamcanda chinensis* L. (D.C) [Iradaceae], Tagetes L. [Asteraceae]
Rhenock, East Sikkim	938 m	27.171 N 88.648 E	*Citrus* [Rutaceae]
Namprick, North Sikkim	1,398 m	27.545 N 88.479 E	*Evodia fraxinifolia* (Hook) Benth. [Rutaceae], *Citrus sinensis* (L.) Osbeck [Rutaceae], *Zanthoxylum acanthopodium* DC. [Rutaceae]
Yuksum, West Sikkim	1,738 m	27.381 N 88.214 E	*Zanthoxylum acanthopodium* DC. [Rutaceae], *Evodia fraxinifolia* (Hook) Benth. [Rutaceae]

Yuksum, Rimbi); China; Bhutan; Myanmar; and Vietnam.

In India, many states have reported butterfly species as their state species, such as *Troides minos* Cramer, 1779 the Southern Birdwing in Karnataka, *Papilio polymnestor* Cramer, 1775 the Blue Mormon in Maharashtha, *Papilio bianor* Cramer, 1777 the Common Peacock in Uttarakhand.

This short communication deals with the distribution matrix of *Papilio krishna krishna* Moore, 1857 recorded in Sikkim along with the host plants species.

Acknowledgements
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Durga Kumar Pradhan
Quality Control Laboratory-HARC- Sikkim State Forest Herbarium (SSFH), Forests and Environment Department, Govt. of Sikkim, Deorali, Gangtok, Sikkim 777102, India.
Email: pradhansikkim@gmail.com

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Observations on butterflies recorded during winter in Andaman Islands, India

This paper reports the findings of a 10 day butterfly survey (27 December 2018–06 January 2019) carried out on butterflies from the Andaman Islands. Forested areas were surveyed at 10 locations while travelling from Chidia Tapu in the South through Port Blair right up to Diglipur & Ross & Smith Islands in the north along with Havelock and Neil Islands.

Sampling was carried out at each site for 1–2 hours in a stretch between 1000–1600 h by 'Pollard Walk' method (Pollard 1977; Pollard & Yates 1993). All the species and the number of individuals up to 20 m on both sides of the transect/trail were recorded and photographed while walking on foot. Abundances of each species observed were and then ranked from lowest to highest.

Map of Andaman Islands depicting the locations of sites surveyed for butterflies.

The sites surveyed are mentioned below:

	District	Locations
1	North Andaman	Diglipur, Roth & Smith Islands
2	Middle Andaman	Rangat, Baratang, Lime Stone Caves, Mud Volcano, Parrot Island
3	South Andaman	Mount Harriet NP, Chidiyatapu & Port Blair, Havelock Island, Neil Island.

The species were then divided into different classes from most abundant to least abundant [Common>Locally Common>Uncommon>Rare]. Common-Species commonly observed at all the locations; Fairly common species commonly observed only at two locations; Locally

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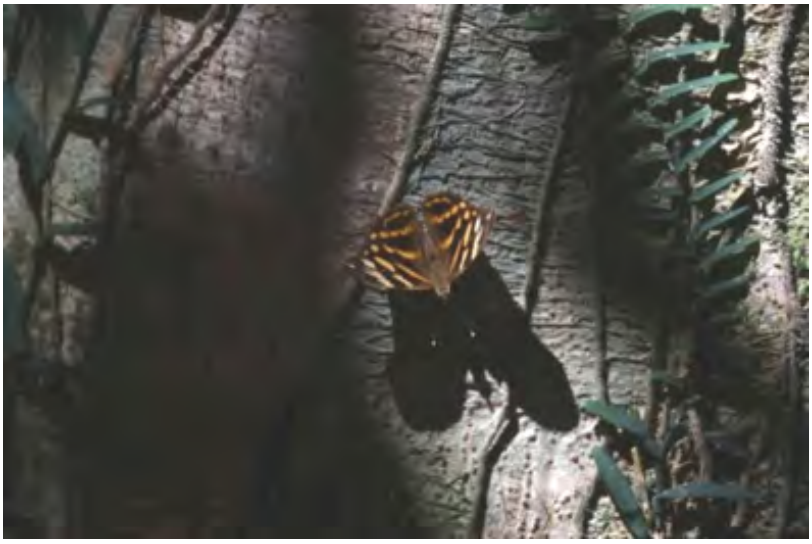
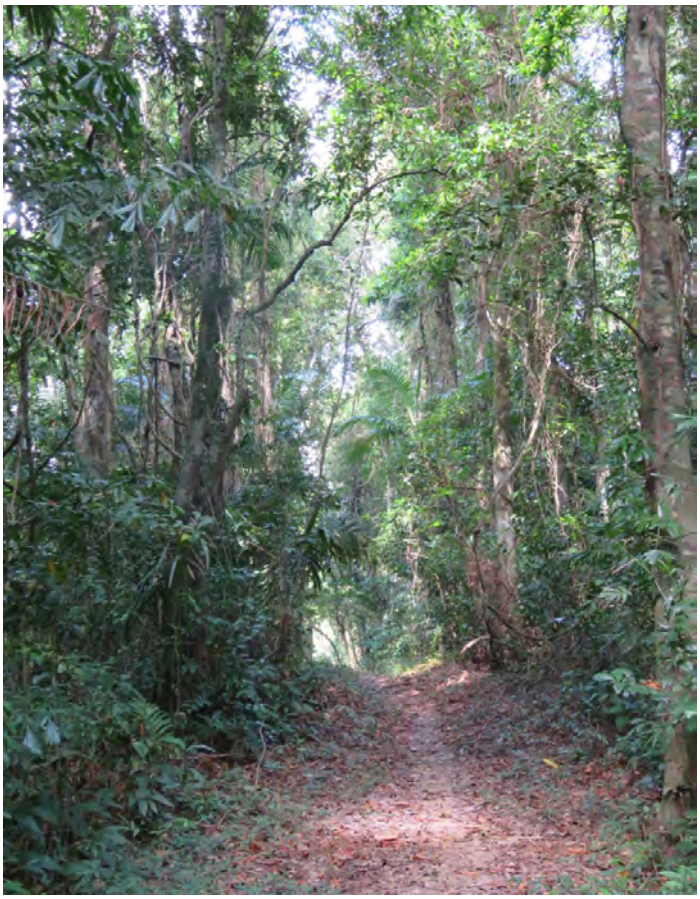


Andaman Pasha, *Herona marathus andamana* Moore, 1877 (♂) in Mt. Harriet National Park, Andaman Islands (31 December 2018).

species from Baratang, Central Andaman (16.x.2014) and Chidyia Tapu, South Andamans (17. iv.2017) (Anon 2022); however, this is the first record of this species from Mt. Harriet National Park, South Andaman. The flight period of the species given in literature (Kehimkar 2016) and earlier records (Anon 2022) and museum specimens at National Insect Collection Forest Research Institute, Dehradun, India (♂15.

Common species commonly observed at single location; Uncommon – 2 or 3 records; Rare – single record.

A total of 62 species were recorded (Table 1). Three species *Papilio mayo* Atkinson,1873, *Losaria rhodifer* (Butler, 1876), *Ixias pyrene andamana* Moore, 1877 amongst these are endemic and restricted to Andaman Islands, while most of the subspecies are endemic to Andaman & Nicobar Islands. Nine species are protected and listed under various Schedules of the Wildlife Protection Act 1972 (Table 1). The highlight of the survey was the rediscovery of the rare Andaman Pasha, *Herona marathus andamana* Moore, 1877, which was earlier believed to be extinct from Andaman Islands (Khatri 1993; Mohanraj & Veenakumari 2011) (Table 1). Although there are two recent photographic records of this



Tropical evergreen forest, habitat of Andaman Pasha, *Herona marathus andamana* Moore, 1877 in Mt. Harriet National Park (31 December 2018).

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Table 1. Butterflies species observed in Andaman Islands (27 December 2018–06 January 2019).

	Species	Common Name	Wildlife Protection Act 1972/ Endemism	Place	Date	Status*
A.	**Papilionidae**					
1	*Losaria rhodifer* (Butler, 1876)	Andaman Clubtail	Endemic	Mt Harriet NP	31Dec2018	Uncommon
2	*Troides helena heliconoides* (Moore, 1877)	Andaman Common Birdwing		Neil Island	04Jan2019	Locally Common
3	*Papilio polytes stichioides* Evans, 1912	Andaman Common Mormon		North Andamans	29Dec2018	Locally Common
4	*Papilio mayo* Atkinson, 1873	Andaman Mormon	Sch II, Part II; Endemic	Mt Harriet NP, Chiria Tapu	31Dec2018 & 6Jan2019	Rare/Uncommon
5.	*Graphium agamemnon andamana* (Lathy, 1907)	Andaman Tailed Jay		South Andaman	29 Dec2018	Fairly Common
B	**Pieridae**					
6	*Delias hyparete indica* (Wallace, 1867)	Painted Jezebel		S. Andaman	27Dec2018	Locally Common
7	*Gandaca harina andamana* Moore, 1906	Andaman Tree Yellow		Mt Harriet NP; Central Andaman	30-31Dec2018	Fairly Common
8	*Eurema blanda silhetana* Wallace, 1867	Andaman Three Spot Grass Yellow		Mt Harriet NP; Chiria Tapu	31Dec2018 & 6Jan2019	Locally Common
9	*Catopsilia pomona pomona* (Fabricius, 1775)	Oriental Lemon Emigrant		S. Andaman	27Dec2018	Common
10	*Ixias pyrene andamana* Moore, 1877	Andaman Yellow Orange Tip	Endemic	North & Central Andamans	30-31Dec2018	Common
11	*Hebomoia roepstorfii* Wood-Mason, 1880	Andaman Great Orange Tip		Mt Harriet NP	31 Dec2018	Fairly Common
12	*Pareronia ceylanica* naraka (Moore, 1877)	Andaman Dark Wanderer		North Andaman	29Dec2018	Locally Common
13	*Appias albina darada* (C. & R. Felder, [1865])	Sylhet Common Albatross	Sch II, Part II	Mt Harriet NP	31Dec2018	Common
14	*Cepora nadina andamana* (Swinhoe, 1889)	Andaman Lesser Gull		Central Andaman-Mud Volcano	30Dec2018	Locally Common
15	*Cepora nerissa lichenosa* (Moore, 1877)	Andaman Common Gull		North & South Andaman	27-30 Dec2018	Locally Common
C.	**Lycaenidae**					
16	*Spindasis lohita zoilus* (Moore, 1877)	Andaman Long-banded Silverline	Sch II, Part II	North Andaman	29 Dec2018	Uncommon
C.	**Lycaenidae**					
17	*Prosotas nora fulva* (Evans, [1925])	Andaman Common Lineblue		South Andaman's	30Dec2018	Common
18	*Jamides celeno blairana* Evans, 1925	Andaman Common Cerulean		Mt Harriet NP	31Dec2018	Common
19	*Neopithecops zalmora andamanus* Eliot & Kawazoé, 1983	Andaman Quaker		Central Andaman-Lime stone caves	28Dec2018	Common
20	*Chilades pandava pandava* (Horsfield, [1829])	Oriental Plains Cupid		Central & South Andamans	27–30Dec2018	Common

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	Species	Common Name	Wildlife Protection Act 1972/ Endemism	Place	Date	Status*
21	*Zizeeria karsandra* (Moore, 1865)	Dark Grass Blue		South Andamans	30Dec2018	Fairly Common
22	*Amblypodia anita andamanica* (Riley, 1922)	Andaman Purple Leaf Blue		N. Andaman	29Dec2018	Uncommon
23	*Hypolycaena erylus andamana* Moore, 1877	Andaman Common Tit		N. Andaman	29Dec2018	Uncommon
24	*Loxura atymnus prabha* (Moore, 1877)	Andaman Yamfly		Mt Harriet NP	31Dec2018	Locally Common
25	*Abisara bifasciata bifaciata* Moore1877	Plum Judy		N. Andaman	29Dec2018	Locally common
D.	**Nymphalidae**					
26	*Idea agamarschana cadelli* (Wood-Mason & de Nicéville, 1881)	Andaman Tree -Nymph		Mt Harriet NP	31Dec2018	Local
27	*Parantica aglea melanoleuca* Moore, 1877	Andaman Glassy Tiger		Central Andaman-Mud Volcano	30Dec2018	Locally Common
28	*Euploea core andamanensis* Atkinson, [1874]	South Andaman Crow		Central & South Andamans	28–30Dec2018	Locally Common
29	*Elymnias cottonis cottonis* (Hewitson, 1874)	Andaman Common Palmfly		Central & South Andamans	28–30Dec2018	Common
30	*Mycalesis anaxias radza* Moore, 1877	Andaman Eyed-Bush Brown	Sch II, Part II	Central Andaman-Lime stone caves	28Dec2018	Rare
31	*Mycalesis visala andamana* (Moore, [1892])	Andaman Long-Brand Bushbrown		Central & South Andaman-Chiria Tapu	28 Dec2018 & 6Jan2019	Locally common
D.	**Nymphalidae**					
32	*Lethe europa nudgara* Fruhstorfer, 1911	Andaman Bamboo Treebrown		Mt Harriet NP	31Dec2018	Uncommon
33	*Cethosia biblis andamanica* Stichel, 1902	Andaman Red Lacewing		Central & South Andamans	28–31Dec2018	Fairly Common
34	*Cethosia cyane cyane* (Drury, [1773])	Leopard Lacewing		South Andamans	28–30Dec2018	Common
35	*Phalanta alcippe andamana* (Fruhstorfer, 1904)	Andaman Small Leopard	Sch II, Part II	Mt Harriet NP	31Dec2019	Locally Common
36	*Vindula erota pallida* Staudinger, 1885	Andaman Crusier		N. Andaman	29Dec2018	Locally Common
37	*Cupha erymanthis andamanica* Moore, [1900]	Andaman Rustic		Central Andaman-Baratang	28Dec2018	Locally Common
38	*Parthenos sylvia roepstorfii* Moore, [1897]	Andaman Clipper		North & South Andaman	28–31Dec2018	Locally Common
39	*Herona marathus andamana* Moore, 1877	Andaman Pasha		Mt Harriet NP	31Dec2018	Rare
40	*Neptis nata evansi* Eliot 1969	Andaman Clear Sailer		Central Andaman & Chiria Tapu	30Dec2018 & 6Jan2019	Locally Common
41	*Neptis hylas andamana* Moore, 1877	Andaman Common Sailer		North Andaman	29Dec2018	Common
42	*Neptis jumbah amorosca* Fruhstorfer, 1905	Andaman Chestnut-streaked Sailer		N. Andaman	29Dec2018	Locally Common

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	Species	Common Name	Wildlife Protection Act 1972/ Endemism	Place	Date	Status*
43	*Euthalia acontius acontius* (Hewitson, 1874)	Andaman Baron	Sch II, Part II	N. Andaman	29Dec2018	Locally Common
44	*Euthalia teuta teutoides* (Moore, 1877)	Andaman Banded Marquis		N. Andaman	29Dec2018	Rare
45	*Tanaecia cibaritis* (Hewitson, 1874)	Hewitson's Andaman Viscount		N. & S.Andaman	29–30Dec2018	Locally Common
46	*Polyura athamas andamanica* (Fruhstrofer,1906)	Indian Nawab		Mt Harriet NP	31Dec2018	Uncommon
47	*Cyrestis cocles formosa* C. & R. Felder,1867	Marbled Map		N. Andaman	29Dec2018	Rare
48	*Laringa horsfieldii andamanensis* de Nicéville, 1895	Andaman Banded Dandy		N. Andaman	29Dec2018	Rare
49	*Junonia atlites atlites* (Linnaeus, 1763	Grey Pansy		Central Andaman-Lime stone caves	28Dec2018	Locally Common
50	*Junonia almana almana* (Linnaeus, 1758).	Peacock Pansy		Central Andaman-Lime stone caves	28Dec2018	Locally Common
51	*Doleschallia bisaltide andamanensis* Fruhstorfer, 1899	Andaman Autumn Leaf	Sch I, Part IV	North Andaman	29Dec2018	Uncommon
52	*Moduza procris anarta* (Moore, 1877)	Commander		Middle Andaman -Baratang	30Dec2018	Uncommon
E.	**Hesperiidae**					
53	*Hasora vitta manda* (Evans,1949)	Indian Plain Banded Awl	Sch II, Part II	North Andaman	29Dec2018	Uncommon
54	*Tagiades gana alica* Moore, 1877	Andaman Suffused Snowflat		North Andaman	29Dec2018	Common
55	*Tagiades japetus ravina* Fruhstorfer, 1910	Common Snow Flat		Mt Harriet NP	31Dec2018	Common
56	*Oriens gola gola* (Moore, 1877)	Andaman Common Dartlet		Central & South Andaman	30–31Dec2018	Common
57	*Notocrypta curvifascia curvifascia* (C. & R. Felder, 1862)	Restricted Demon		Mt Harriet NP	31Dec2018	Common
58	*Pelopidas conjunctus* (Herrich-Schäffer, 1869)	Conjoined Swift		Mt Harriet NP	31Dec2018	Uncommon
59	*Pelopidas agna agna* (Moore, [1866])	Large Branded Swift		North Andaman	29Dec2018	Common
60	*Pelopidas mathias mathias* (Fabricius,1798)	Small Branded Swift		Mt Harriet NP	31Dec2018	Common
61	*Baoris farri scopulifera* Moore, [1884]	Complete Paintbrush Swift	Sch IV.	Central Andaman-Mud Volcano	30Dec2018	Uncommon
62	*Matapa aria aria* (Moore, [1866])	Common Branded Redeye		Central Andaman	30Dec2018	Uncommon

*Status as observed during the present survey

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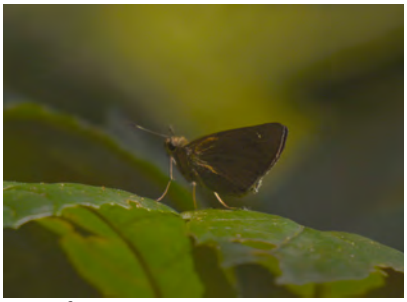
Abisara bifasciata bifaciata.


Baoris farri.


Cepora nadina andamana.


Cepora nerissa lichenosa.


Cethosia cyane cyane.


Chilades pandava pandava.


Cupha erymanthis andamanaica.


Cyrestis cocles formosa.


Delias hyparete indica.

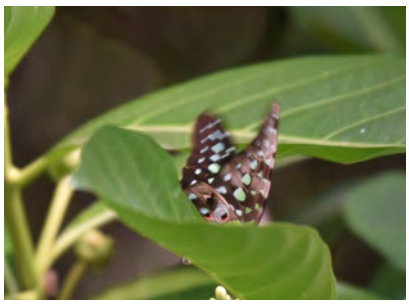

Doleschallia bisaltide andamanensis.


Elymnias cottonis cottonis.


Euploea core andamanensis.


Eurema blanda silhetana.


Gandaca harina andamana.


Graphium agamemnon andamana.

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Hasora vitta.


Herona marathus andamanus.


Hypolycaena erylus andamana.


Idea agamarschana cadelli.


Ixias pyrene andamana.


Jamides cleno blairana.


Junonia almana almana.


Junonia atlites atlites.


Lethe europa nudgara.

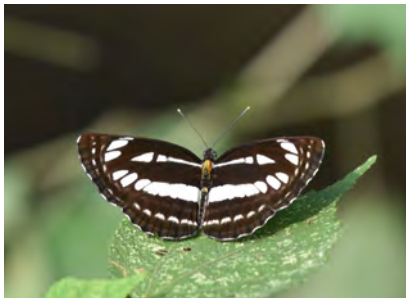

Loxura atymnus prabha.


Matapa aria.


Moduza procris anarta.


Mycalesis visala andamana.


Neopithecops zalmora andamanus.


Neptis hylas andamana.

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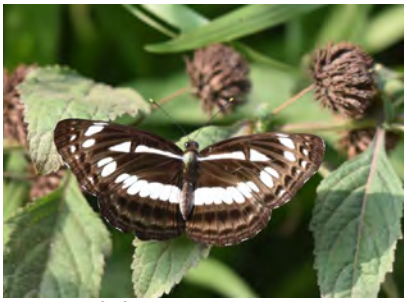
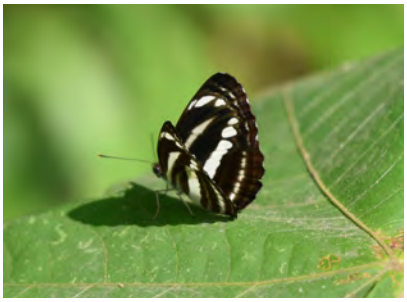

Neptis jumbah amorosca.


Neptis nata evansi.


Notocrypta curvifascia.


Oriens gola gola.

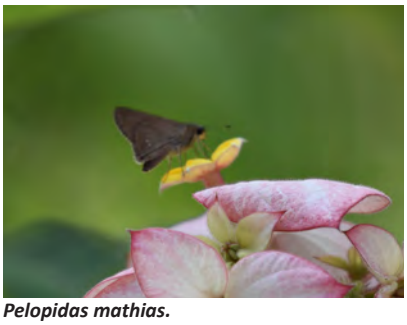

Papilio polytes stichioides.


Parantica aglea melanoleuca.


Pareronia ceylanica naraka.


Parthenos sylvia roepstorfii.


Pelopidas conjunctus.


Pelopidas mathias.


Phalantha alcippe andamana.


Spindasis lohita zoilus.


Tagiades gana alica.


Tagiades japetus ravina.


Tanaecia cibraitis.

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Troides helena heliconoides.

Vindula erota pallida.

Photos © Arun Pratap Singh.

vi.1909 & ♀17.ix.1915; Accession no. 11269) collected from Andaman Islands are all between April–October. However, in Mt. Harriet National Park the species was in flight during December–January. Its habitat here was a typical 'dense tropical evergreen forest' with closed canopy, where one individual (♂) was observed sulking in the darkness and then settling down on a tree trunk patch close to the ground lit with sunlight late in the afternoon (1438 h).

Besides, the Common Branded Redeye, *Matapa aria aria* (Moore, [1866]) was also recorded from Central Andaman, which was also believed to be extinct from Andaman Islands (Khatri 1993; Mohanraj & Veenakumari 2011). However, this species which mainly breeds on bamboos, is common in its entire distribution range which includes the entire Indian Sub-Continent and there is also one recent photographic record (30.iii.2015) of this species from Chidiyatapu, South Andaman (Saji et al. 2022).

The findings of the present study thus add to the existing knowledge on site specific locations and seasonality of uncommon, rare and endemic butterfly taxa of Andaman Islands.

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Arun Pratap Singh
Entomology Branch, Forest Protection Division,
Forest Research Institute, P.O. New Forest, Dehradun,
Uttarakhand 248006, India
Email: ranoteaps@gmail.com

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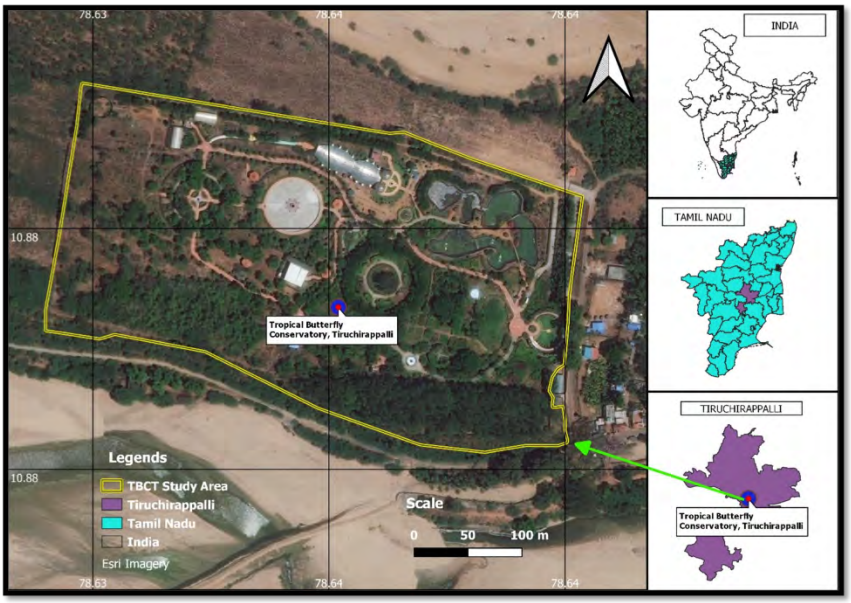
A preliminary checklist of butterflies in Tropical Butterfly Conservatory, Tiruchirappalli, India

The Tropical Butterfly Conservatory, Tiruchirappalli was conceived by the Tamil Nadu Forest Department to conserve and propagate the awareness amongst the public and help them to understand the ecology and importance of butterflies. It is located at Srirangam in the upper Anicut Forest Reserve spanning over 27 acres.



Location of the Tropical Butterfly Conservatory in Tiruchirappalli District, Tamil Nadu.

It houses an indoor conservatory, an outdoor conservatory, nakshatravanam, raasivanam, breeding lab for non-scheduled species, amphitheatre, plant nursery, host patch, nectar patch, aroma garden, shade houses, artificial island and humidifies for maintaining the temperature. The location of the Tropical Butterfly Conservatory is 10.877 N & 78.636 E and the elevation is 72 m.

The butterfly survey was conducted for a period of one year from July 2020 to August 2021. The visual encounter survey was done five times in a week 0900–1200 h and 1500–1700 h. Photographic documentation of butterflies was done using an SLR camera B600 Nikon. Observed butterflies were identified with the help of standard field guides (Kehimkar 2016; Bhakare & Ogale 2018).

A total of 113 species of butterflies belonging to five families were recorded in the study area (Table 1). Among the families, Lycaenidae recorded the maximum number of butterfly species.

The diversity and abundance of species are highly correlated with the availability of food/host plants in the surroundings as reported by Kunte (2000). Among the family, Lycaenidae, Nymphalidae and Pieridae showed the maximum richness during the study period, which coincided well with the availability of their host plants in Tropical Butterfly Conservatory. The

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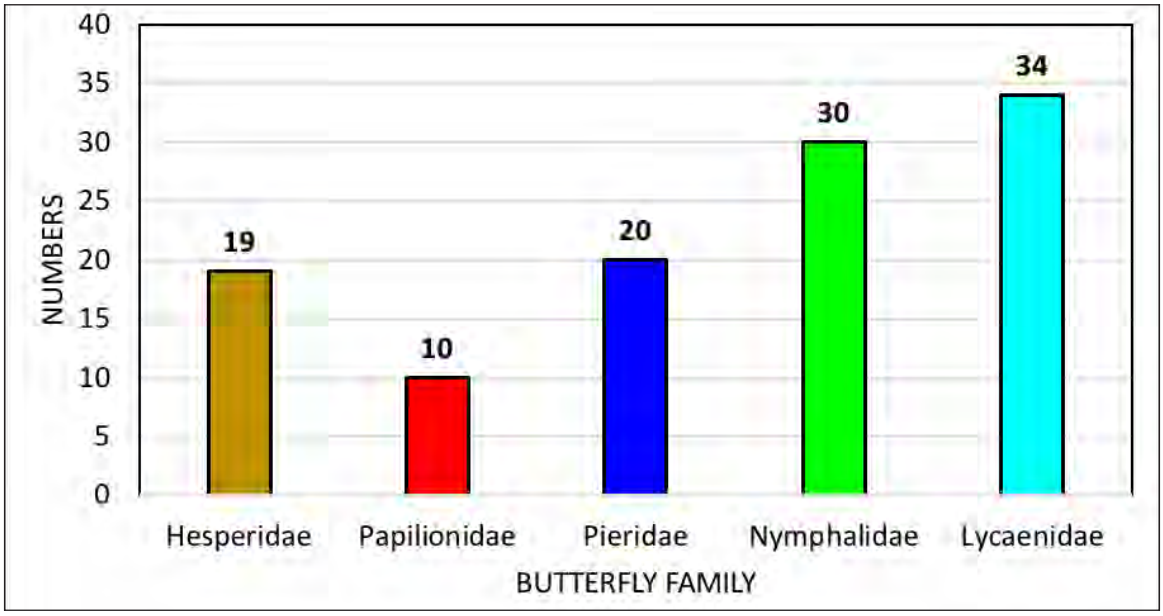
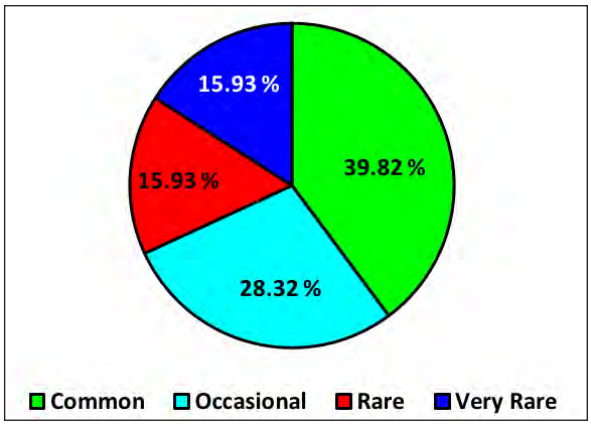


Family-wise number of butterflies recorded in the Tropical Butterfly Conservatory.

main larval food plants include *Aristolochia indica, Asclepias curassavica, Calotropis gigantea, Senna alata, Cassia biflora, Cassia fistula, Caesalpinia pulcherrima, Cleodendrum inerme, Citrus limon, Citrus maxima, Citrus medica, Ficus benghalensis, Ficus racemosa, Ixora coccinea, Loranthus* spp., *Mangifera indica, Magnolia champaca, Murraya koenigii, Nerium oleander, Passiflora incarnata, Pentas lanceolata, Plumbago auriculata, Polyalthia longifolia, Millettia pinnata, Ricinus communis, Senna occidentalis, Sesbania bispinosa, Sesbania grandiflora, Turnera subulata, Turnera ulmifolia*, and *Zizypus jujupa*.

Ten species of swallowtails are reported from our study area. Among them, the Lime Butterfly *Papilio demoleus*, Crimson Rose *Pachliopta hector*, Common Rose *Pachliopta aristolochiae* are the most abundant.



Occurrence of butterflies based on the abundance (%).

Only one study on the diversity of butterflies in Tiruchirappalli District is available. Siva & Neelanarayanan (2019) reported 72 species of butterflies in Nehru Memorial College campus. This is the maiden study assessing the occurrence and abundance of butterflies in Tropical Butterfly Conservatory, thus the information collected considered as baseline data for future reference. Detailed study on the diversity of butterflies along with conservation issues are highly warranted.

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Table 1. Checklist of Butterflies recorded in Tropical Butterfly Conservatory in Tiruchirappalli District.

	Common Name	Scientific name	C	O	R	VR	WPA Schedule
Hesperiidae (Skippers)							
1	Common Banded Awl	*Hasora chromus*		–	–	–	-
2	Brown Awl	*Badamia exclamationls*	–	–	–	✓	-
3	Tricolour Pied Flat	*Coladenia indrani*	–	–	–	✓	-
4	Common Snow Flat	*Tagiadas japetus*	–	–	–	✓	-
5	Indian Skipper	*Spialia galba*	–	✓	–	–	-
6	African Marbled Skipper	*Gomalia elma*	–	✓	–	–	-
7	Common Grass Dart	*Taractroceva maevius*	✓	–	–	–	-
8	Dark Palm Dart	*Telicota bambusae*	–	✓	–	–	-
9	Pale Palm Dart	*Telicota colon*	–	✓	–	–	-
10	Plain Palm Dart	*Cephrenes acalle*	–	–	✓	–	-
11	Dart species	*Potanthus sp.*	–	–	✓	–	-
12	Rice Swift	*Borbo cinnata*	–	✓	–	–	-
13	Straight Swift	*Parnara guttaus*	✓	–	–	–	-
14	Kanara Swift	*Caltoris canaraica*	–	–	✓	–	-
15	Small Branded Swift	*Pelopidas mathias*	✓	–	–	–	-
16	Bush Hopper	*Ampittia dioscorides*	–	–	–	✓	-
17	Chestnut Bob	*Lambrix salsala*	–	–	✓	–	-
18	Indian Palm Bob	*Suastus gremius*	✓	–	–	–	-
19	Grass Demon	*Udaspes folus*	–	✓	–	–	-
Papilionidae (Swallowtails)							
20	Common Jay	*Graphium doson*	✓	–	–	–	-
21	Tailed Jay	*Graphium agamemnon*	✓	–	–	–	-
22	Spot Swordtail	*Graphium nomius*	–	–	–	✓	-
23	Common Mormon	*Papilio polytes*	✓	–	–	–	-
24	Blue Mormon	*Papilio polymnestor*	–	✓	–	–	-
25	Lime Butterfly	*Papilio demoleus*	✓	–	–	–	-
26	Southern Birdwing	*Troides minos*	–	✓	–	–	-
27	Common Banded Peacock	*Papilio crino*	–	–	–	✓	-
28	Common Rose	*Pachliopta aristolochiae*	✓	–	–	–	-
29	Crimson Rose	*Pachliopta hector*	✓	–	–	–	I
Pieridae (Whites and Yellows)							
30	Common Grass Yellow	*Eurema hecabe*	✓	–	–	–	-
31	Three-Spot Grass Yellow	*Eurema blanda*	–	✓	–	–	-
32	Small Grass Yellow	*Eurema brigitta*	–	✓	–	–	-
33	Mottled Emigrant	*Catopsilia pyranthe*	✓	–	–	–	-
34	Common Emigrant	*Catopsilia pomona*	✓	–	–	–	-
35	Small Salmon Arab	*Colotis amata*	–	✓	–	–	-
36	Crimson Tip	*Colotis danae*	–	✓	–	–	-
37	Little Orange Tip	*Colotis etrida*	–	✓	–	–	-

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	Common Name	Scientific name	C	O	R	VR	WPA Schedule
Pieridae (Whites and Yellows)							
38	Plain Orange Tip	*Colotis aurora*	–	✓	–	–	-
39	White Orange tip	*Colotis Marianne*	–	–	✓	–	-
40	Yellow Orange Tip	*Ixais pyrene*	–	✓	–	–	-
41	Great Orange Tip	*Hebomoia glausippe*	–	✓	–	–	-
42	Psyche	*Leptosia nina*	✓	–	–	–	-
43	Common Wanderer	*Parerania hippia*	–	✓	–	–	-
44	Dark Wanderer	*Pareronia ceylania*	–	–	–	✓	-
45	Common Albatross	*Appias albina*	–	–	✓	–	II
46	Striped Albatross	*Appias libythea*	–	–	✓	–	IV
47	Common Gull	*Cepora nerissa*	✓	–	–	–	II
48	Pioneer	*Belenois aurota*	–	–	✓	–	-
49	Common Jezebel	*Delias eucharis*	✓	–	–	–	-
Nymphalidae (Brush-footed Butterflies)							
50	Striped Tiger	*Danaus genutia*	✓	–	–	–	-
51	Plain Tiger	*Danaus chrysippus*	✓	–	–	–	-
52	Blue Tiger	*Tirumala limniace*	✓	–	–	–	-
53	Dark Blue Tiger	*Tirumala septentrionis*	✓	–	–	–	-
54	Common Crow	*Euploea core*	✓	–	–	–	IV
55	Double Branded Crow	*Euploea Sylvester*	–	✓	–	–	-
56	Common Nawab	*Polyura athamas*	–	–	–	✓	-
57	Anomalous Nawab	*Polyura agrarius*	–	–	–	✓	-
58	Black Rajah	*Charaxes solon*	–	–	✓	–	II
59	Common Evening Brown	*Melantis leda*	✓	–	–	–	-
60	Bamboo Tree Brown	*Letha europa*	–	–	–	✓	I
61	Common Bushbrown	*Mycalesis perseus*	✓	–	–	–	-
62	Tamil Bush Brown	*Mycalesis subdita*	–	✓	–	–	-
63	Tawny Coster	*Acraea terpsicore*	✓	–	–	–	-
64	Common Leopard	*Phalanta phalanta*	–	✓	–	–	-
65	Commander	*Modusa Procris*	–	–	–	✓	-
66	Common Sailor	*Neptis hylas*	–	✓	–	–	-
67	Chestnut-steaked Sailer	*Neptis jumbah*	–	✓	–	–	I
68	Common Lascar	*Pantoporia hordonia*	–	–	–	✓	-
69	Common Castor	*Ariadne merione*	✓	–	–	–	-
70	Angled Castor	*Ariadne ariadne*	✓	–	–	–	-
71	Joker	*Byblia ilithyia*	–	–	–	✓	-
72	Blue Pansy	*Junonia orithyra*	–	–	✓	–	-
73	Yellow Pansy	*Junonia hierta*	–	✓	–	–	-
74	Chocolate Pansy	*Junonia iphita*	✓	–	–	–	-
75	Grey Pansy	*Junonia atlies*	–	–	✓	–	-

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	Common Name	Scientific name	C	O	R	VR	WPA Schedule
Nymphalidae (Brush-footed Butterflies)							
76	Peacock Pansy	*Junonia ahnana*	–	✓	–	–	-
77	Lemon Pansy	*Junonia lemonias*	✓	–	–	–	-
78	Great Eggfly	*Hypolimnas bolina*	✓	–	–	–	I
79	Danaid Eggfly	*Hypolimnas misipus*	✓	–	–	–	II
Lycaenidae (Blues)							
80	Indian Sunbeam	*Curetius thetis*	–	✓	–	–	-
81	Apefly	*Spalgis epeus*	–	–	–	✓	-
82	Large Oak Blue	*Arhopala amantes*	–	✓	–	–	-
83	Red Spot	*Zesius chryomallus*	–	–	✓	–	-
84	Monkey Puzzle	*Rathinda amer*	–	–	✓	–	-
85	Peacock Royal	*Tajuria cippus*	–	✓	–	–	II
86	Common Guava Blue	*Virachola isocrates*	–	–	✓	–	-
87	Slate Flash	*Rapla manea*	–	–	–	✓	-
88	Common Silverline	*Spindasis vulcanus*	✓	–	–	–	-
89	Common Shot Silverline	*Spindasis ictis*	–	–	–	✓	-
90	Plumbeous Silverline	*Spindasis schistacea*	✓	–	–	–	-
91	Zebra Blue	*Leptotes plinius*	✓	–	–	–	-
92	Pointed Ciliate Blue	*Anthene lycaenina*	–	✓	–	–	II
93	Banded Blue Pierrot	*Discolampa rthion*	–	–	✓	–	-
94	Common Pierrot	*Castalius rosimon*	✓	–	–	–	I
95	Striped Pierrot	*Tarucus nara*	–	–	–	✓	-
96	Black-spotted Pierrot	*Tarucus balkanicus*	–	✓	–	–	-
97	Common Line Blue	*Prosotas nora*	✓	–	–	–	-
98	Tailless Line Blue	*Prosotas dubiosa*	✓	–	–	–	-
99	Dark Cerulean	*Jamides bochus*	–	–	✓	–	-
100	Common Cerulean	*Jamides celena*	–	✓	–	–	-
101	Forget-Me-Not	*Catochrysops straba*	✓	–	–	–	-
102	Pea Blue	*Lampides boeticus*	–	–	✓	–	II
103	Pale Grass Blue	*Pseudozizeeria maba*	✓	–	–	–	-
104	Dark Grass Blue	*Zizeeria karasandra*	✓	–	–	–	-
105	Lesser Grass Blue	*Zizina otis*	–	✓	–	–	-
106	Tiny Grass Blue	*Zizula hylax*	✓	–	–	–	-
107	Grass Jewel	*Freyeria trochylus*	✓	–	–	–	-
108	Oriental Grass Jewel	*Freyeria putli*	✓	–	–	–	-
109	Indian Cupid	*Everes lacturnus*	–	–	✓	–	-
110	Plains Cupid	*Chilades pandava*	–	✓	–	–	-
111	Small Cupid	*Chilades parabasis*	–	–	–	✓	-
112	Gram Blue	*Euchrysops cnejus*	✓	–	–	–	II
113	Lime Blue	*Chilades lajus*	✓	–	–	–	-

C—Common | O—Occasional | R—Rare | VR—Very Rare | WPA—Wildlife Protection Act.

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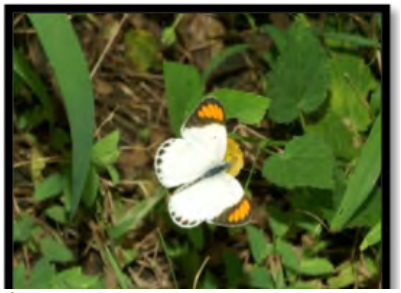
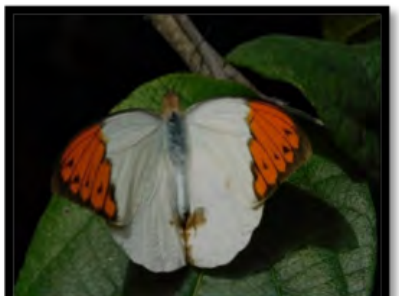
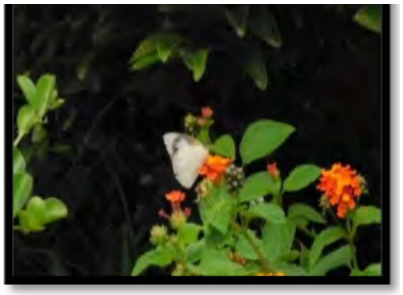
Southern Birdwing.

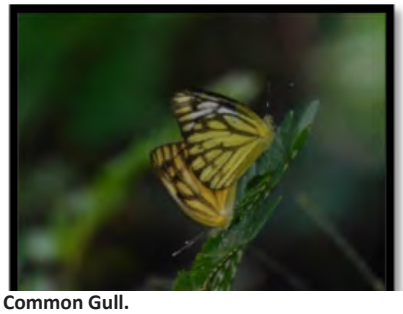

Plain Orange Tip.


White Orange Tip.


Great Orange Tip.


Yellow Orange Tip.


Common Albatross.


Common Gull.


Common Jezebel.


Striped Tiger.


Plain Tiger.


Blue Tiger.


Crimson Rose.


Dark Blue Tiger.


Common Crow.


Common Nawab.

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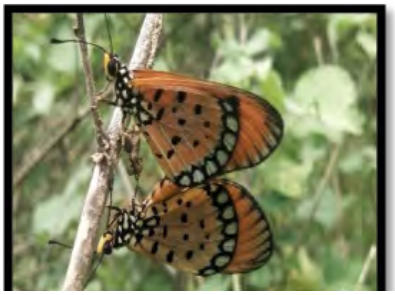
Black Rajah.


Tawny Coster.

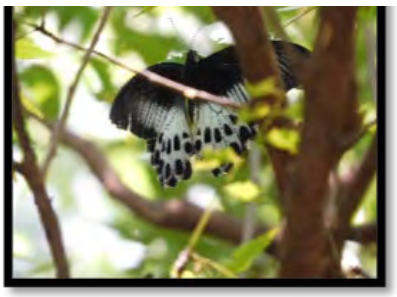

Common Leopard.


Common Sailer.


Chestnut-streaked Sailer.


Common Lascar.


Common Castor.


Blue Mormon.


Angled Castor.


Joker.


Yellow Pansy.


Chocolate Pansy.


Grey Pansy.


Peacock Pansy.


Lemon Pansy.

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Blue Pansy.


Commander.


Great Eggfly.


Tailed Jay.


Danaid Eggfly.


Common Bushbrown.


Common Evening Brown.


Bamboo Treebrown.


Tamil Bush Brown.


Indian Sunbeam.


Large Oak Blue.


Red Spot.


Monkey Puzzle.


Slate Flash.


Mottled Emigrant.

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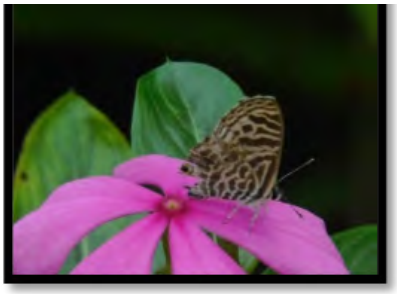
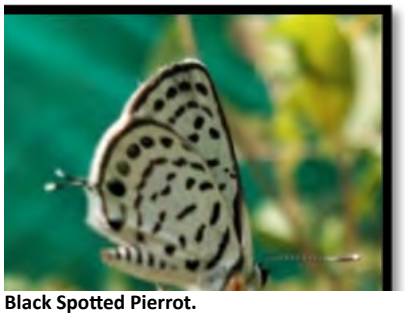
Peacock Royal.


Guava Blue.


Common Silverline.


Plumbeous Silverline.


Zebra Blue.


Black Spotted Pierrot.


Banded Blue Pierrot.


Common Lineblue.


Tailless Lineblue.


Dark Cerulean.


Common Emigrant.


Common Cerulean.


Forget-Me-Not.


Pea Blue.


Tiny Grass Blue.

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Lesser Grass Blue.


Small Grass Jewel.


Indian Cupid.


Small Cupid.


Plains Cupid.


Lime Blue.

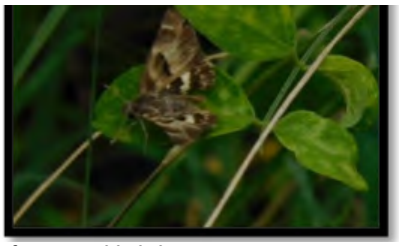

Small Salmon Arab.


Gram Blue.


Common Banded Awl.


Brown Awl.


Common Snow Flat.


African-Marbled Skipper.


Common Grass Dart.


Dark Palm Dart.


Bush Hopper.


Chestnut Bob.


Kanara Swift.


Crimson Tip.

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Grass Demon.

Little Orange Tip.

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R. Santhosini[1], T. Siva[2], S. Saravana Karunamoorthy[3] & A. Muthusamy[4]

[1] Junior Research Fellow, Tropical Butterfly Conservatory, Trichy (TBCT), Trichy Forest Division, Tamil Nadu Forest Department, Tamil Nadu 620 006, India.

[2&4] Research Department of Zoology, Nehru Memorial College (Autonomous and Affiliated to Bharathidasan University), Puthanampatti, Tiruchirappalli District, Tamil Nadu 621 007, India.

[3] M.Sc. Ecology, Department of Ecology & Environmental Sciences, School of Life Sciences, Pondicherry University, Pondicherry 605 014, India.

Emails: [1]santhosini97@gmail.com, [2]sivanaturewild@gmail.com (corresponding author), [3]saravanannaturalist@gmail.com, [4]muthusamy9514@gmail.com

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ZOOREACH
ZOO OUTREACH ORGANIZATION

Breeding and year-round presence of Oriental Dwarf Kingfisher and remarks on Alcedinidae members at Buxa Tiger Reserve, West Bengal

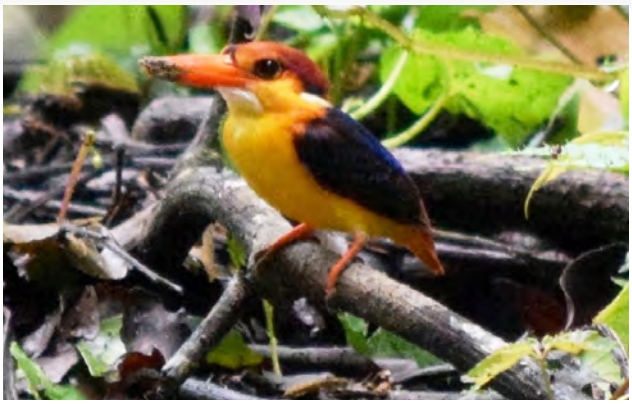
Distribution of nine species of Kingfisher (Family: Alcedinidae) is known from northwestern Bengal (Rasmussen & Anderton 2012) and their sightings are well documented from time to time in Buxa Tiger Reserve (BTR) (Inglis et al. 1920; Allen et al. 1996). Here, I report the breeding of the Oriental Dwarf Kingfisher, also known as Black-backed Dwarf-Kingfisher *Ceyx erithaca* for the first time from BTR.

On 20 June 2017 at 1250 h while passing by a jungle road, a bright red bird swiftly crossed in front of our vehicle. We stopped and looked for the bird. Soon, a pair appeared that was identified as the Oriental Dwarf Kingfisher. The pair had a nest in the bund on the road side, about two feet from ground level.

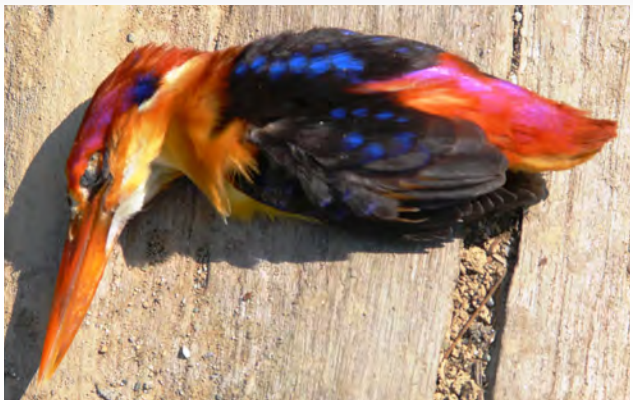
The area surrounding the nest was covered with common balsam *Impatiens balsamina* and wild turmeric *Curcuma pseudomontana* while the whole habitat was under thick canopy of tall trees. In front of the nest, there was a puddle which was formed due to rainwater. I observed the pair visiting the nest tunnel in turns. They were calling continuously. The male was once sighted carrying a small land crab in the beak to the nest. The pair was hunting along the nullah and perching low on branches half to seven feet tall. On the 6 and 7 July the nest was found deserted, probably the young birds fledged out. Adults were not sighted but could be heard calling around the nesting site. In 2018, the bund was cut partially during the road repair and widening. The new nest could not be located in the breeding season of 2018 and 2019 though the adults were sighted in same areas during rainy season (June–August).

The Oriental Dwarf Kingfisher was sighted rarely in Buxa Tiger Reserve during my stay and visits from 2005 to 2019. The sightings were during the summer-monsoon season only. Interestingly, a dead bird was noticed and photographed in the peak of winter season on 10 January 2010 at Rajabhatkhawa. It appeared that the bird died due to an accident/collision with window or wall. It suggests the presence of this species throughout the year in the area.

In the Indian subcontinent, the northeastern population of this species is known to visit the foothills of Himalaya – the area ranging from northwestern Bengal to Assam Valley including lower parts of southern Assam hills and northeastern Bangladesh in summer for breeding (Rasmussen & Anderton 2012). Rasmussen & Anderton (2012) suggested that the species is perhaps resident to this area and this observation supports it. In the eBird's data documentation, the species is well recorded in north Bengal (Limparungpatthanakij & Hansasuta 2022). BirdLife International (2022)



Oriental Dwarf Kingfisher resting near nest.



Oriental Dwarf Kingfisher – death recorded in winter.

Stork-billed Kingfisher.

Lesser Pied Kingfisher.

Common Kingfisher.

Blue-eared Kingfisher.

White-throated Kingfisher.

Photos © Sachin Ranade.

mentions its population trend is decreasing though the species is yet in the 'Least Concern' category.

Buxa Tiger Reserve has a very crucial location at the confluence of three bio-geographic zones such as the Gangetic plain, central Himalaya, and Brahmaputra Valley (Rodgers & Panwar 1988). During 2005 to 2019, I have observed eight out of nine Kingfisher species - six resident and two visitor in the area.

Opportunistically, the breeding attempts of six species witnessed in Buxa Tiger Reserve were - Stork-billed Kingfisher *Pelargopsis capensis* (Volka Range), White-throated Kingfisher *Halcyon smyrnensis* (Rajabhatkhawa Range), Himalayan Pied Kingfisher *Ceryle lugubris* (Rydak Range), Lesser Pied Kingfisher *Ceryle rudis* (Jayanti Range), Common Kingfisher *Alcedo atthis* (Rydak Range), and recently Oriental Dwarf Kingfisher *Ceyx erithaca* (Jayanti Range). The Blue-eared Kingfisher *Alcedo meninting* and Ruddy Kingfisher *Halcyon coromandra* were sighted just a couple of times, in the Jayanti Range during the 2016–2018.

Out of 13 species of Kingfisher recorded in southern Asia, nine could be sighted in the Buxa Tiger Reserve. Systematic efforts should be carried out to gain knowledge about these beautiful species and their ecology.

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Sachin P. Ranade
Vulture Conservation Breeding Centre, Rajabhatkhawa (BTR), Alipurduar, West Bengal 735227, India.
Email: sachinranade@yahoo.com (corresponding author)

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First record of Arctic Skua from Rameswaram Island, southeastern coast of India

This is the first documented record of the Arctic Skua *Stercorarius parasiticus* (IUCN Red List status Least Concern) from Rameswaram Island, Tamil Nadu in southern India. Since it has never been observed in the Gulf of Mannar Biosphere Reserve, this observation from the southeastern coast area is noteworthy. This seabird belongs to the Stercorariidae family of skuas. The bird is also known as Arctic Jaeger, Parasitic Jaeger, or Parasitic Skua. The word 'Jaeger' is derived from a related German word that means hunter.

Arctic Skua. © Sakthi Kumar.

Arctic Skuas are carnivores. All jaegers chase other birds like terns and puffins and steal their food (kleptoparasitism). Hence, they are also called pirates of the sea. They supplement their diet with lemmings and small birds during the breeding season and also visit boats to scavenge discarded waste.

The Arctic Skua looks like a slender gull-like seabird having a long bill breeding adults have a long-pointed tail. Arctic Skua species breed in the north of Eurasia and North America, with significant populations as far south as northern Scotland. They will then migrate to spend the winter along the southern tip of South America, parts of Africa, and along the coast of Australia and New Zealand. It nests on dry tundra, higher fells, and islands, laying up to four olive-brown eggs. It is usually silent except for mewing and wailing notes while on the breeding grounds. In the British Isles, they breed in Shetland and Orkney, the Outer Hebrides, Sutherland, Caithness, and some islands in Argyll (Rasmussen & Anderton 2012).

Among the five Skuas seen in India, namely Brown Skua, Long-tailed Skua, Pomarine Skua, South Polar Skua, and Arctic Skua, the Arctic Skua is mostly found on the western coast of India (Karuthedathu 2019), frequently during pelagic birding. The only other sighting records of Arctic Skua is from Alleppey Beach on the west coast as we are not considering the pelagic bird sighting records (Kerala Bird Watch 2017).

Both the authors while on their routine bird monitoring and research programme in the Gulf of Mannar on 16 June 2022, documented the bird on

the Dhanush Kodi lagoon (9.164 N, 79.436 E) in the Rameswaram island of the Gulf of Mannar Biosphere Reserve.

Juvenile Skua identification can be challenging, but in this case, because it was clearly visible and photographed, the identification of the bird as an Arctic Skua juvenile was confirmed mainly to its small fine bill, small head, streaked neck, and upper parts with a rufescent tinge. For identification, Olsen & Larsson (1997) were used as the primary reference, supplemented by other sources like Howell (2007); Grimmett et al. (2011); Rasmussen & Anderton (2012). No previous records of sightings exist other than the e bird records accessed based on the east coast of India from Hare Island, Thoothukudi in October 2017 and from Pulicat Lake (Tamil Nadu part) in June 2022 (ebird 2022). So, this is the first record from the Gulf of Mannar Biosphere Reserve area and the third from the eastern coast of Tamil Nadu.

Arctic Skuas spend most of their time far from land in pelagic or offshore areas. Birds occasionally approach the coast. Rarely, you can spot them resting on sandbars. Off the west coast of India, the Arctic Skua is the skua species that winters there most frequently. The first flocks of birds arrive in late August, and their numbers increase in September and October. While some may migrate further south, others may spend the winter in Indian waters. The general population of parasitic jaegers appears to be lower on the eastern coast when compared to the west coast based on the number of observations based on the pelagic birding records reviewed based on E bird recorded sightings from identical journeys (Karuthedathu 2019).

As a result, in addition to pelagic birding, coastal birding is also highlighting some unusual and incredible bird sightings of pelagic birds. This find also sheds light on bird migration away from well-known and established routes and sites.

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H. Byju[1] & N. Raveendran[2]
[1] Centre of Advanced Study in Marine Biology, Annamalai University, Parangipettai, Tamilnadu 608502, India.
[2] Iragukal Amritha Nature Trust, 61, Ramachandra Thadaga Street, Thirumangalam, Madurai, Tamil Nadu 625706, India.
Email: [1]byjuhi@gmail.com (corresponding author)

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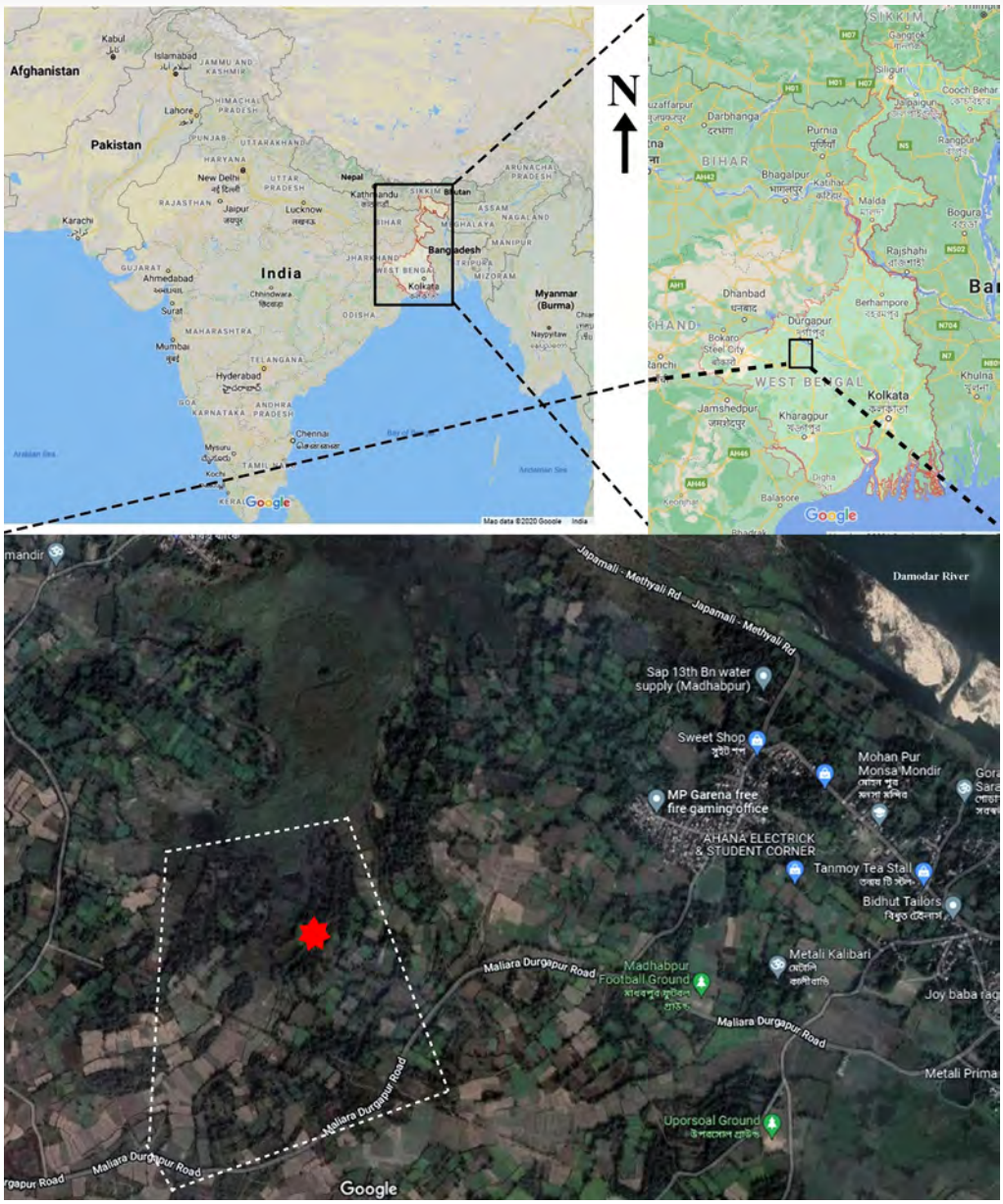
Report of occurrence of Eastern Marsh Harrier from Bankura District, West Bengal, India

The Eastern Marsh Harrier *Circus spilonotus* Kaup, 1847 is a bird of prey of the family Accipitridae, is categorised as Least Concern on the IUCN Red List of Threatened Species and the population trend for this bird is stable (BirdLife International 2022). Previously, it was considered as a race of Western Marsh Harrier *Circus aeruginosus* (Linnaeus, 1758) (Naoroji 2007) but in the present time it is considered a separate species. Eastern Marsh Harrier generally prefers marshlands, flooded fields, cultivated lands, paddy fields, and open grasslands with source of water nearby (Grimmett et al. 2011). According to the available literatures, it is a winter migrant to northeastern India and vagrant elsewhere (Naoroji 2007; Grimmett et al. 2011). Naoroji (2007) describes its distribution from northeastern portion of West Bengal to Arunachal Pradesh and is most commonly seen in the regions between Assam and Manipur. In India, the Eastern Marsh Harrier is reported from Assam, Arunachal Pradesh, Manipur, West Bengal, Jharkhand, Chhattisgarh, Odisha, Telangana, Andhra Pradesh, Tamil Nadu, and Kerala (Naoroji 2007; eBird 2022).

Eastern Marsh Harrier female in flight showing the underparts.

Eastern Marsh Harrier female in flight.

The species was recorded earlier from various districts of West Bengal like Jalpaiguri, Kolkata, South 24-Parganas, Hooghly, Paschim Medinipur, Birbhum, Purba Bardhaman



Study site under present investigation (surrounded by white dotted lines and the point where the bird spotted marked with red coloured star) in Bankura District, West Bengal, India. Source: Google Maps.

and Paschim Bardhaman (eBird 2022) but there is still no occurrence report of the Eastern Marsh Harrier from the district of Bankura in any of the previous literatures (Mukherjee et al. 2015; Payra et al. 2017; Chatterjee 2021) or online citizen science platforms (eBird 2022; Lepage 2022; Oriental Bird Images 2022). Although there may be some scattered doubtful records of the species in social media platforms but it was not considered in the present study due to lack of confirmations. Gauntlett (1986) reported about the regular sightings of Marsh Hairier *Circus aeruginosus* (Linnaeus, 1758) from Durgapur Barrage and Rondhia Dam adjacent areas in 1970–1971. In this regard, the author would like to mention that previously *C. spilonotus* was considered to be a subspecies of *C. aeruginosus* and later identified as a separate species (Global Raptor Information Network 2022), so it is impossible to confirm the identity of the bird mentioned in this report (Gauntlett 1986). Hence, in this present communication,

author reports the first confirmed sighting of the Eastern Marsh Harrier from the district of Bankura in West Bengal through photographic documentation.

The present study was conducted on 30 March 2022 in Maliyara-Durgapur road adjacent areas situated in Barjora block, Bankura District to survey the fauna of the mentioned site. The study area (23.484 N, 87.254 E) is situated approximately 10 km upstream far from the Durgapur Barrage, constructed over the Damodar River. The study area is mainly cultivated land with source of water from an unnamed small irrigation canal. Beside the canal, water for irrigation is mainly supplied using a submersible pump situated in the field. The study area is agricultural field in rural landscape with a variety of trees and shrubs. At about 0950h, the author found a bird hovering and gliding over a cultivated field nearby and captured few images for the identification of the species. Nikon D5300, NikkorAf-P 70–300 mm lens were used for observation and photography during the present study. Later, the bird was identified as female Eastern Marsh Harrier using standard field guides (Naoroji 2007; Grimmett et al. 2011; Grewal et al. 2016). In comparison to the Eurasian Marsh Harrier, the Eastern Marsh Harrier is bigger in size (48–56 cm) and both the sexes of Eastern Marsh Harrier have distinct markings in upperparts and underparts of the body, which eliminate it from Eurasian Marsh Harrier (Naoroji 2007). Eastern Marsh Harrier has stouter body and prominent head and is marked heavily than other harriers which makes it easy to identify (Grimmett et al. 2011). Female Eastern Marsh Harrier can be confused with female Pied Harrier *Circus melanoleucos* (Pennant 1769) in the field, but the former is bigger in size than Pied Harrier and also has broader wings and tail (Grimmett et al. 2011). Juvenile male of the species looks very similar to Pied Harrier female but small size, prominent barring across tail are useful keys to identify the female of Pied Harrier (Grimmett et al. 2011). There is a fine structural difference in adult females of Pied Harrier and Eastern Marsh Harrier, the latter has heavily marked underbody and underwing (Grimmett et al. 2011). Adult female Eastern Marsh Harrier has white upper tail coverts, greyish flight feathers and tail with dark barring, heavily streaked head and breast and broad diffuse rufous streaking on underparts (Grimmett et al. 2011).

As this bird mainly prefers water-saturated cultivated fields, flooded areas, marshlands and open grassland wet naturally or manmade, so the major threats to the species are increasing anthropogenic activities in open lands and loss of habitat, chemical pest control in agricultural field, urbanization, deforestation and declining prey availability. Since the study area has no threat at present hence the author suggests no conservation strategies for the protection of the concerned species. Since this is the first confirmed report of the species from Bankura District, the author recommends a long-term survey in different patches and habitats of the district for a complete documentation of avian species found here which could unveil several new mysteries.

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Amar Kumar Nayak
Searsole Junior Basic School, SearsoleRajbari, Paschim Bardhaman, West Bengal 713358, India.
Email: amarnayak.stat@gmail.com

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