Indian BIRDS

Vol. 21 No. 4

Christmas Island Frigatebird
Ladakh raptors
Whinchat x Stonechat hybrid

Indian BIRDS

www.indianbirds.in Vol. 21 No. 4

Date of Publication: 27 September 2025

ISSN 0973-1407

Address for correspondence:
New Ornis Foundation, 2nd Flr, BBR Forum, Rd. No. 2, Banjara Hills, Hyderabad 500034, India.

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Photographer: Lenin Dani Raj

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Status and identification of the Christmas Island Frigatebird *Fregata andrewsi* in South Asia

David J. James, Paul Pop, Dipu Karuthedathu, Moditha Kodikara Arachchi, Lahiru Walpita & Gehan de Silva Wijeyeratne

James, D. J., Pop, P., Karuthedathu, D., Kodikara Arachchi, M., Walpita, L., & Wijeyeratne, G. de S., 2025. Status and identification of the Christmas Island Frigatebird *Fregata andrewsi* in South Asia *Indian BIRDS* 21 (4): 97–108.

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Manuscript received on 26 April 2025.

Abstract

Christmas Island Frigatebird *Fregata andrewsi* is a rare visitor to South Asia. Through this study, we sought to enumerate the number of sightings of this species through verification of all the published and unpublished records, and map their distribution within South Asia. In the process, we documented the character traits for distinguishing this species from other frigatebird species recorded in the area, using annotated photographs of these birds. We recorded a total of 22 records of the species in South Asia—12 in India and ten in Sri Lanka. Nine of these have been published previously and 13 are published here. Lastly, we assessed the status of Christmas Island Frigatebird as a vagrant bird in South Asia.

Introduction

Frigatebirds are spectacular, large, shapely, and highly aerial seabirds that roam the tropical oceans of the world. Of the five species around the world, three occur in the Indian Ocean and South Asia (James 2004; Rasmussen & Anderton 2012; Praveen et al. 2016). These three species are Christmas Island Frigatebird *Fregata andrewsi* (hereinafter, CIFR), Great Frigatebird *F. minor* (hereinafter, GRFR) and Lesser Frigatebird *F. ariel* (hereinafter, LEFR). Throughout most of South Asia (as defined by Rasmussen & Anderton 2012; see Methods), frigatebird species as a whole occur infrequently at best, and mostly not at all (Rasmussen & Anderton 2012; Praveen et al. 2013; Praveen 2025). However, both LEFR and GRFR occur regularly in the remote south-western archipelagos of South Asia, and both species breed in the Chagos (Rasmussen & Anderton 2012; Carr 2015; Carr 2025).

CIFR is a rare and threatened species that breeds only on the Christmas Island (10.447°S, 105.690°E) in the tropical eastern Indian Ocean (James & McAllan 2014). With a global population of around 2,500 to 5,000 mature individuals (Morris-Pocock et al. 2012; James & McAllan 2014) and declining, it is listed as a Vulnerable species both internationally (BirdLife International 2022) and in its only natal range state, Australia (Macgregor et al. 2021). As the most endangered species in its small and distinctive family, it is also a priority-ranked EDGE (Evolutionarily Distinct and Globally Endangered) species (McClure et al. 2023). It is known to migrate to Southeast Asia (BirdLife International 2001; James & McAllan 2014; Hennicke et al 2015), but has also been recorded as a vagrant much farther afield, for example in Hong Kong (Chalmers 2002), northern Australia (McMaster et al. 2015), South Africa (BirdLife South Africa 2024), Kenya (Mann 1989; Fisher & Hunter 2016), and Socotra (Marks et al. 2025). In South Asia, CIFR is poorly known and extremely rare, with very few records currently accepted in the entire region (Praveen et al. 2013; Karuthedathu et al. 2015; Manna et al. 2024).

Since the publication of the article on the "Identification of Christmas Island, Great and Lesser Frigatebirds" (James 2004), we have been collating records of frigatebird species from India, Sri Lanka and elsewhere, while helping others to identify frigatebird sightings. This has involved observing frigatebirds ourselves, monitoring the literature and other sources of records, and corresponding widely for 20 years. This process led to the publication of "A compilation of frigatebird sightings [in India] from 2014, including Christmas Island Frigatebird *Fregata andrewsi*" (Karuthedathu et al. 2015), but we have compiled more records since then from a wider area. In 2024, a number of frigatebirds were reported by birdwatchers (including PP, MK, LW, and GdSW) from India and Sri Lanka. This string of records includes a good number of CIFR, which has prompted us to review the status and identification of this species in South Asia.

Our objectives here are to: 1) Assess the validity of published records of CIFR from South Asia. 2) Collate and summarize all unpublished records of CIFR from South Asia. 3) Document the characters we have used to distinguish each CIFR record from the other frigatebird species by using photographs. 4) Map the distribution of records. and 5) Assess the status of CIFR in South Asia.

Methods

Geographical Scope: We followed the definitions of South Asia provided by Rasmussen & Anderton (2012) as used in *Indian BIRDS*. This includes the following countries and territory, in alphabetical order: Afghanistan, Bangladesh, Bhutan, the Chagos Archipelago (formerly British Indian Ocean Territory), India, Nepal, Pakistan, the Republic of Maldives, and Sri Lanka.

Record Collation: Since the mid-2000s, we have collected frigatebird records in South Asia from the scientific literature, grey literature, online sources and through our contact

networks. Triggered by the surge of frigatebird records in 2024, we adopted a more systematic approach to collect data. i) We searched the online 'Bibliography of South Asian Ornithology' (Pittie 2024) using the keyword '*Fregata andrewsi*'. This identified 66 references that we subsequently checked for details. ii) We accessed all frigatebird sightings from South Asia recorded in eBird checklists to find any that might be referred to as a CIFR, irrespective of the species identification attached to the checklist. iii) Initially, we collected records from 'Facebook' when we encountered them. Later, we actively searched for records in various 'Facebook' forums using combinations of the keywords 'Christmas Island Frigate' or 'Christmas-Island Frigate' or 'Fregata' followed by the names of appropriate places (with a plus in between). The places included India, Sri Lanka, and all of their coastal states or provinces. Variations of the same name (e.g. 'Christmas Island Frigate' or 'Christmas-Island Frigate') did not change the results in Facebook. The search covered 'Facebook' in general, and three large 'Facebook' groups: '*Indian Birds*', '*Ask IDS of Indian Birds*', and '*Birding Frnds*'). We reviewed our own archived records. We endeavoured to correspond with at least one author, photographer, or observer for each record, and in many cases, we contacted multiple stakeholders. The cut-off date for inclusion of records in this review was 31 December 2024.

Frigatebirds were identified to the species level where possible from photographs, following the principles and characters set out in James (2004). All identifications were either made or confirmed by DJJ. Since 2004, new information came to light and some field characters have been refined, changed or reworded, and consequently, James (2004) became somewhat out of date. However, a complete revision of frigatebird identification in the Indo-Pacific was beyond the scope of this work. As a compromise, brief notes are provided here to aid the interpretation of the annotated photographs.

The specific identification of adult frigatebirds is comparatively simple, but younger birds can be extremely difficult to identify. Age classification of young frigatebirds is discussed in detail below, but we use 'first cycle' as a term that covers all plumage stages up to the first full moult, such as juvenile and 'first immature'. Based on James (2004) and with subsequent learnings, the characters that we used to identify first cycle birds are in the box. See **[130, 131]** for illustrations of these features.

Primary and secondary characters used to identify Christmas Island Frigatebird.

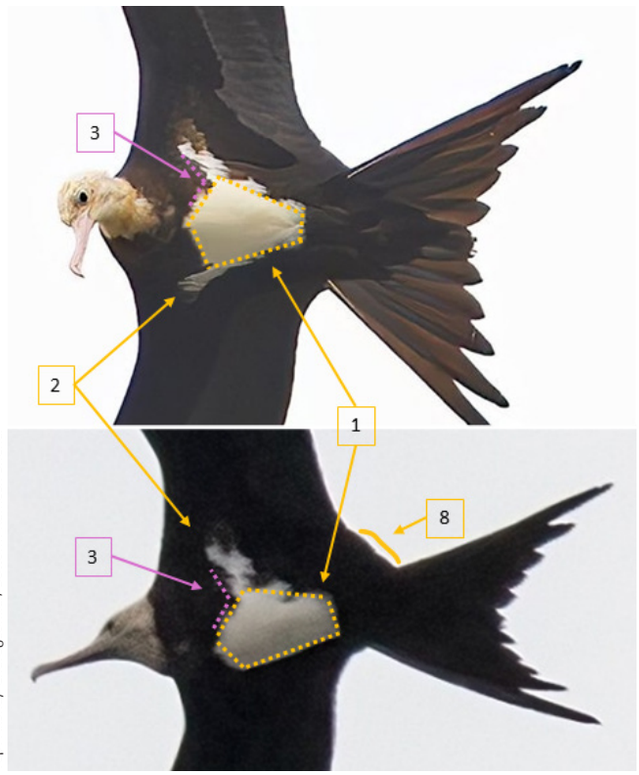
Primary characters:

1. The shape of the white belly patch is generally pentagonal (though not equilateral) in CIFR vs triangular in LEFR and oval in GRFR. This character becomes less reliable when the dark breast band starts moulting in the centre and begins to disappear.
2. The presence of axillary spurs angling forward, extending from the body onto the underwing, and usually parallel-sided (usually shorter and more pointed in LEFR, absent or pointing straight outwards and not reaching onto the underwing in GRFR).
3. A diagonal angle (about 120–140°) between the leading edge of the axillary spur and the leading edge of the belly patch. This angle is almost straight (about 150–170°) in LEFR, and almost perpendicular (about 95–110°) in GRFR.
4. The dark breast band is much shorter than the white belly patch in CIFR. The breast band is almost as long as the belly patch in LEFR. In GRFR the breast band is always strongly concave where it abuts the belly patch, which makes this character inapplicable.
5. The white belly patch extends behind the base of the legs in CIFR. It usually reaches no farther back than the base of the legs in the others.
6. A small number of CIFR have very bold pale scaling on the mantle. This is never present in GRFR, but can be faint in LEFR, so it is diagnostic of CIFR when bold.

Secondary characters:

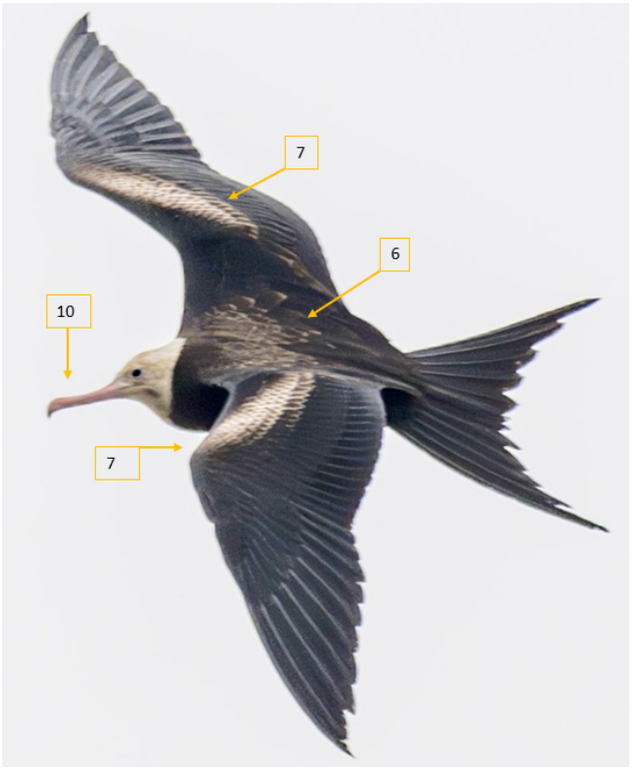
7. Bold pale scaling on the alar bars is usually wider and bolder in CIFR than the others, but this also varies with age and sex, and it always diminishes with feather wear.
8. CIFR usually shows a larger (longer and broader), bulging humeral arc (defined below) than the others.
9. CIFR has relatively larger wings, which often appear broader than the others. However, this character is subjective, and is often affected by foreshortening of the wing length and/or breadth. Although we have marked the breadth of the wing across the carpal on several photographs, we do not rely on it or consider it to be reliable.
10. CIFR has a longer bill than the others, which is often obvious.
11. CIFR is larger overall than the others, particularly LEFR. However, size is often difficult to judge accurately in both life and photographs, especially without experience, not unless photographed with a known species next to it

The presence of a distinct white spot on the scapulars on either side of the dorsum was previously considered diagnostic of CIFR. However, a bird showing this character alongside characters otherwise consistent with LEFR was found during this work. This has raised concerns about the reliability of this character.



Top: Akshay Charegaonkar, Bottom: Ramesh Shenai

130. Christmas Island Frigatebird, first cycle from Mumbai City, Maharashtra, India (Table 2, #17), ventral view. This bird was seen and photographed by many during its extended stay in the Colaba area of Mumbai City during late July and early August 2024. Identification notes: (1) belly patch generally pentagonal with broad rear, but its apparent shape varies with the angle of view due to foreshortening and the curved surface of the body; (2) spurs strap-like and angled forward, also varies with the angle of view; (3) angle between spur and belly patch ~135°; and (8) large humeral arc.



Ketan Ankleśaria

131. Christmas Island Frigatebird first cycle from Mumbai City, Maharashtra, India (Table 2, #17), dorsal view (same bird as **[130]**). Identification notes: 6) bold white scaling on the dorsum (mantle and scapulars) is diagnostic of CIFR if present, but uncommon; (7) pale scaly alar bars are present on all frigatebirds, but are bolder on CIFR than other species; and (10) long bill; also note the pointed tips to tail feathers and outer primaries, which indicate that these are retained juvenile feathers.

All of these characters vary between individuals, and most involve some level of qualitative assessment, particularly the secondary characters. The plumage aspect on frigatebirds is not static, but changes gradually with moult and wear; characters most affected by these processes are 4, 5, 7, and 8. Assessing the ventral features often depends upon the angle of the view, because the body (housing the all-important breast band, belly patch, and much of the axillary spurs) is curved, while the underbody and underwing are not in the same plane. Some photographic records of frigatebirds contain only angles not conducive for identification, or are low resolution (they are often seen very distantly), poorly lit, or showing apparently conflicting characters, all of which can hamper a confident diagnosis. Recognizing these limitations, we have tried to err on the side of caution, and have always relied on multiple characters to verify an identification.

The 'humeral arc' is a novel field character relevant only to frigatebirds. Humeral feathers (or humerals) are flight feathers that grow out of the humerus, between the body and the secondaries, and only a few families of larger birds seem to have them (Marchant & Higgins 1990). Frigatebirds have three or four particularly large humerals that extend behind the trailing edge of the secondaries and form a bulge at the rear base of the wing. This bulge or 'arc' is often much larger (longer and broader) in CIFR than the other species. However, they can be spread, folded, and moulted, showing substantial variation, and the full efficacy of this character requires further evaluation.

Ageing: A plumage cycle (or simply a cycle) is the period from a given plumage stage to the next occurrence of that same (or analogous) plumage. A cycle may include one, two, or more distinct moults depending on the species involved (Marchant & Higgins 1990; Howell 2010). In most bird species, cycles typically take one year, but in rare cases they can be shorter or longer. Howell (2010) argued that frigatebirds take about two years to complete a plumage cycle, due to the energy demands involved in replacing their very large feathers, and reach maturity at about ten years of age. Thus, ageing frigatebirds as 'first year', 'second year', and so forth (sensu James 2004) is not accurate. We aged birds using the term 'cycle' instead of 'year', so 'first cycle', 'second cycle', and so forth. Many of the frigatebirds reported in this study were first cycle birds (between about 9 and 18 months old) or second cycle birds (about 2–3 years old).

Young frigatebirds usually start replacing their orange or buff juvenile (first generation) head feathers before they leave their natal islands. The new (second generation) feathers are also buff, but are 'formative' (not 'juvenile') plumage (as in Howell 2010). Strictly speaking, they are no longer in 'juvenile plumage', but are entering 'formative plumage', even though most of their feathers are still 'juvenile' ones. We avoided using either of these terms and classified both as 'first cycle' birds. However, we have used the term 'juvenile' for referring to the first generation of flight feathers, some of which may be retained for two years or more before they are moulted. For convenience, we considered a bird to pass from first cycle to second cycle when there was evidence

of flight feather moult in the wings. Where possible, we have estimated the actual age of younger CIFRs in months (e.g., ~14 mo old), based on an average hatching date of mid-May (James 2003).

Seasonality in the observations of frigatebirds in South Asia was examined by tabulating the observations. Frigatebird sightings were classified as CIFR, LEFR, GRFR, and 'ALL' (all frigatebirds combined including ones not identified to species). Observations were pooled into three periods of four-months: i) pre-monsoon, with mostly dry and hot weather (February to May); ii) monsoon, with high but varying rainfall (June to September); and iii) post-monsoon, with mostly dry and slightly cooler conditions (October to January). Multiple observations of the same species and age class on the same or subsequent days at the same or close localities were treated as a single data point.

We have listed all the relevant details of these records and prepared a map using QGIS 3.28.9-Firenze. Supplementary material from this research is archived at Zenodo (https://doi.org/10.5281/zenodo.16908738). It includes two files: i) Detailed information regarding the verified records of CIFR from South Asia (Supplementary Table 1). ii) Brief information about records of non-CIFR frigatebirds and potential CIFRs from South Asia (Supplementary Table 2).

Results

In total, we found 22 records of CIFR from South Asia, 13 of which were not published before.

Published records: We found nine published records of CIFR from South Asia that qualify as valid. Eight of them are from India, and one is from Sri Lanka. They are summarized in Table 1 and mapped in Fig. 1. Published records and claims of CIFR from India and Sri Lanka, including ones that we do not consider to be certain, are discussed further below. CIFR was tentatively listed for the Chagos Archipelago by Carr (2015). Circulated photographs of three birds viewed by DJJ (dated 13 July 2009, 7 October 2009, 4 March 2013) might be CIFR, but are likely LEFR. Carr (2025) did not list CIFR for the Chagos Archipelago and we do not accept any records for there. We located no published reports of CIFR from the three countries in South Asia that are landlocked (Afghanistan, Bhutan, and Nepal), nor any from three others with coastlines (Bangladesh, Pakistan, and the Republic of Maldives).

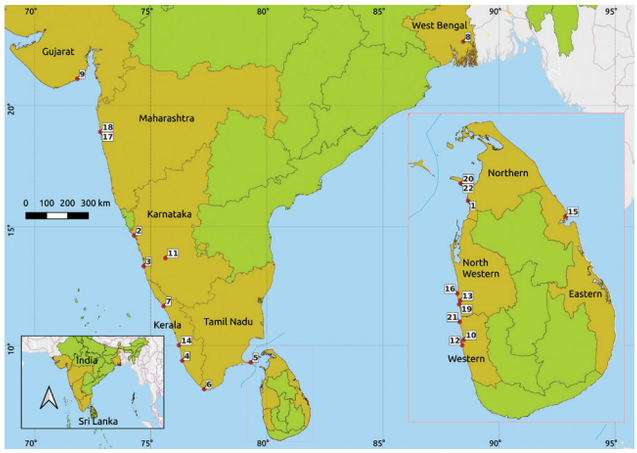
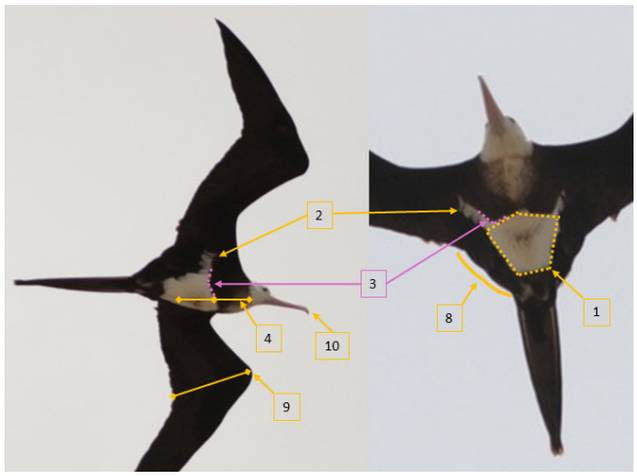


Fig. 1. Map showing locations of all verified records of Christmas Island Frigatebird in South Asia up to 31 December 2024. The white labels show the tag numbers corresponding to Table 1 and Table 2.



Kithsiri Gunawardena

132. Christmas Island Frigatebird *F. andrewsi*, first cycle from Northern Province, Sri Lanka (Table 1, #01); see Gunawardena (2010). Identification notes: (1) belly patch generally pentagonal with broad rear; (2) spurs strap-like and angled forward; (3) angle between spur and belly patch ~135°, depending on viewing angle; (4) belly patch longer than breast band; (8) large humeral arc; (9) wing broad across carpal; and (10) long bill.

Table 1. Verified published records of Christmas Island Frigatebird from South Asia

No	Date	Location	Age	Plate	References
01	27 May 2010	Arippu, Mannar, Northern Province, Sri Lanka	1st cycle ~12 mo old	**[132]**	Gunawardena (2010); sr01
02	27 July 2014	Belambar, Ankola, Karnataka, India	1st cycle ~14 mo old	-	Karuthedathu et al. (2015)
03	06 August 2014	Malpe Port, Udupi, Karnataka, India	1st cycle ~15 mo old	-	Karuthedathu et al. (2015)
04	17 August 2014	Purakkad, Alappuzha, Kerala, India	Adult female >8 yr old	-	Karuthedathu et al. (2015)
05	27 August 2014	Rameswaram, Ramanathapuram, Tamil Nadu, India	1st cycle ~15 mo old	-	Karuthedathu et al. (2015)
06	04 September 2014	Manavalakurichi, Kanyakumari, Tamil Nadu, India	Adult male >8 yr old	-	Karuthedathu et al. (2015)
07	29 June 2019	Chombala Harbour, Kozhikode, Kerala, India	1st cycle ~13 mo old	**[133]**	Vishnudattan & Meppayur 2019; Paleri et al. (2022)
08	21 May 2020	Thakdari, North 24 Parganas, West Bengal, India	1st cycle ~12 mo old	**[134]**	Manna et al. (2024)
09	20 May 2021	Mahuva, Bhavnagar, Gujarat, India	2nd cycle ~2 yr old	**[135]**	Bhil & Bhil (2021)

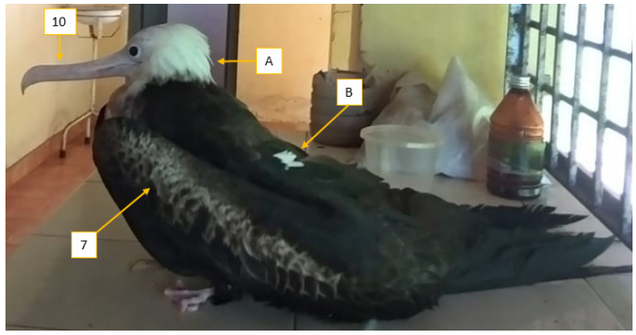
* sr = supplementary references

Table 2. Previously unpublished records of Christmas Island Frigatebird from South Asia.

No	Date & time	Location	Age & sex	Observer(s)	Plate	Sources*
10	31 May 2008 ~1100 h	Mutuwal, Colombo, Western Province, Sri Lanka	1st cycle ~12 mo old female?	GdSW	[136]	GdSW
11	17 August 2018 ~1515 h?	River Tern Lodge, Bhadra, Chikkamagaluru, Karnataka, India	1st cycle ~15 mo old female?	RB et al.	[137]	sr02
12	3 October 2020 1419 h	Bambalapitiya, Colombo, Western Province, Sri Lanka	1st cycle ~17 mo old female?	MK	[138]	sr03
13	21 January 2021 1809 h	Madampe, Puttalam, North Western Province, Sri Lanka	1st cycle ~20 mo old	KGo, KK, RJ	[139]	sr04
14	30 June 2024 1754 h	Puthuvype Beach, Ernakulam, Kerala, India	1st cycle ~13 mo old	PP	[140]	sr05
15	17 July 2024	Koneswaram Temple of Trincomalee, Trincomalee, Eastern Province, Sri Lanka	1st cycle ~14 mo old	JF	[141]	sr06
16	21 July 2024 0704 h	Chilaw Beach, Puttalam, North Western Province, Sri Lanka	1st cycle ~14 mo old	SD	[142]	sr07
17	26 July to 8 August 2024	Colaba, Mumbai City, Maharashtra, India	1st cycle ~14 mo old female?	KK, ShJ, SC, KA, SG, PdP, SA, PG, PM, TA, AC, RS, CR, NA, AR, BM, JR, PK, Vi, SK, ZS, MP, SuJ, AyW, AbW, AM, GG et al.	[130, 131]	sr08 to sr17
18	30 July 2024	Colaba, Mumbai City, Maharashtra, India	1st cycle ~14 mo old	NF	[143]	sr18
19	31 August 2024 ~1620 h	Hotel Club Palm Bay, Marawila, Puttalam, North Western Province, Sri Lanka	1st cycle ~15 mo old	HP	[144]	sr19
20	02 September 2024 0800 h	Olaiththoduvai Point, Mannar, Northern Province, Sri Lanka	1st cycle ~16 mo old	LW	[145]	sr20
21	03 September 2024 ~1015 h	Pitipana, Gampaha, Western Province, Sri Lanka	1st cycle ~16 mo old male?	ShB	[146]	sr21
22	02 December 2024 0646 h	Olaiththoduvai Point, Mannar, Northern Province, Sri Lanka	1st cycle ~19 mo old female?	LW	[147]	sr22

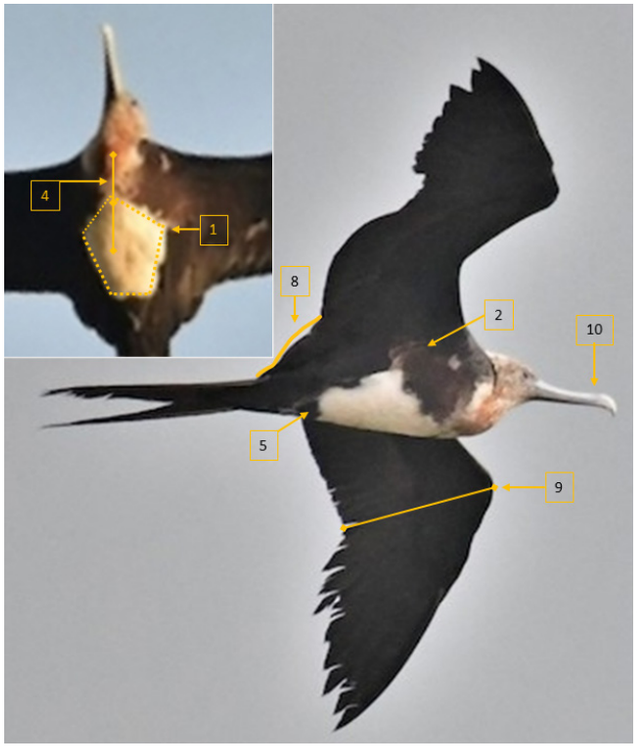
Where the details differ from those in the sources cited, we have communicated with the observers to obtain accurate data.

* sr = supplementary references.



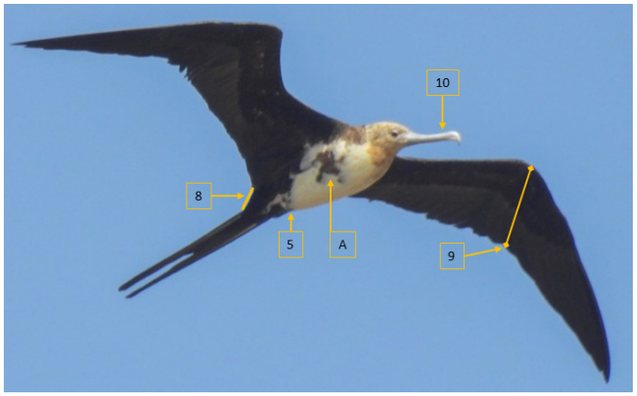
Abdulla Paleri

133. Christmas Island Frigatebird first cycle from Kozhikode, Kerala, India (Table 1, #07); see Vishnudattan & Meppayur (2019) and Paleri et al. (2022). Identification notes: (7) alar bar worn but still very broad and prominent; (10) long bill; (11) very large size; (A) nape feathers slightly elongated forming short shaggy crest (diagnostic); (B) displaced white feathers, possibly axillaries; other photos show a prominent axillary spur too large for GRFR.



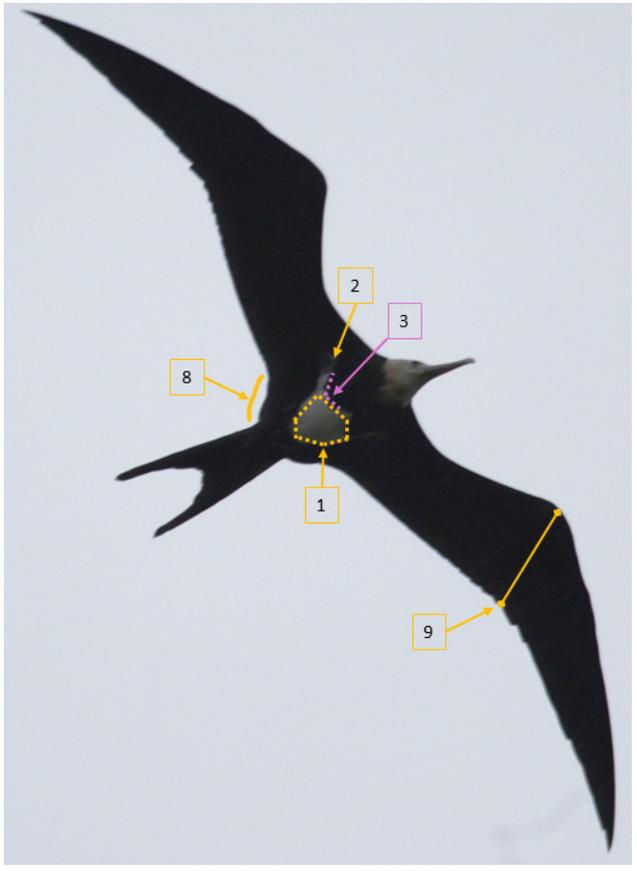
Anirban and Arka Bhaduri

134. Christmas Island Frigatebird first cycle from North 24 Parganas, West Bengal, India (Table 1, #08); see Manna et al. (2024). Identification notes: (1) belly patch generally pentagonal with broad rear; (2) lack of spurs (actually very faint); which sometimes occurs in 1st cycle CIFR, usually in GRFR, but never in LEFR; (4) belly patch longer than (former) breast band; (5) white belly extends behind base of legs; (8) large humeral arc; and (9) wing broad across carpal.



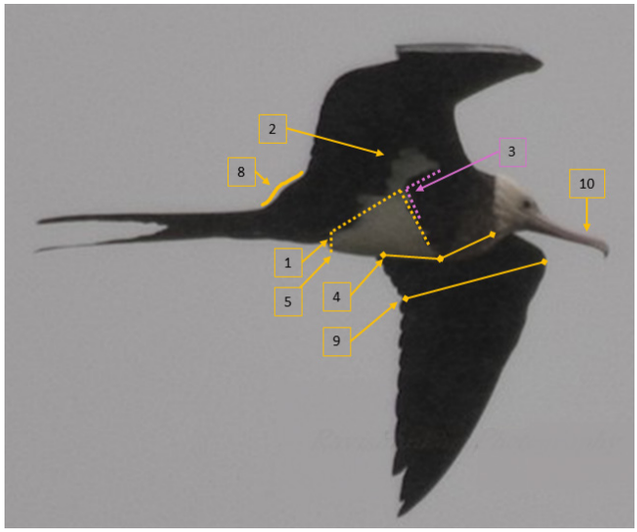
Batuk Bihl

135. Christmas Island Frigatebird second cycle, probably female from Bhavnagar, Gujarat, India (Table 1, #09); see Bihl & Bihl (2021). Identification notes: belly patch shape and spur angle no longer helpful in 2nd cycle birds; but (5) white belly extends behind base of legs, particularly important in 2nd cycle when GRFR and LEFR develop black belly; (8) humeral arc small and unhelpful; (9) wing broad across carpal; (10) bill extremely long; and (A) prominent black breast tab developing; the long bill and white belly indicate a female.



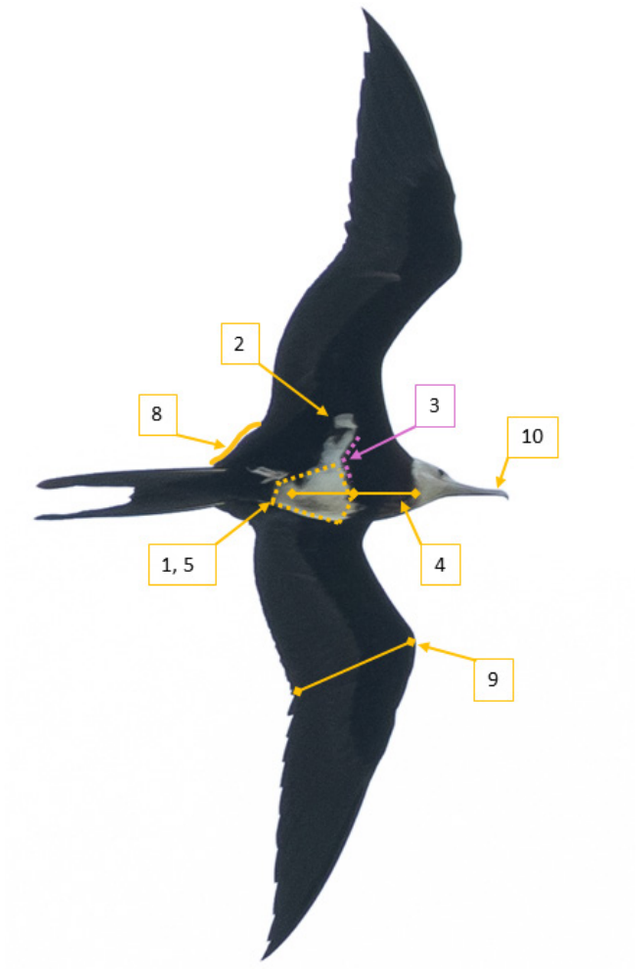
Gehan de Silva Wijeyeratne

136. Christmas Island Frigatebird first cycle from Western Province, Sri Lanka (Table 2, #10). (1) moult is changing the shape of the belly patch making it less reliable for identification; but (2) spurs strap-like and angled forward; (3) angle between spur and belly patch ~135°; (8) long, large humeral arc; and (9) wing broad across carpal.



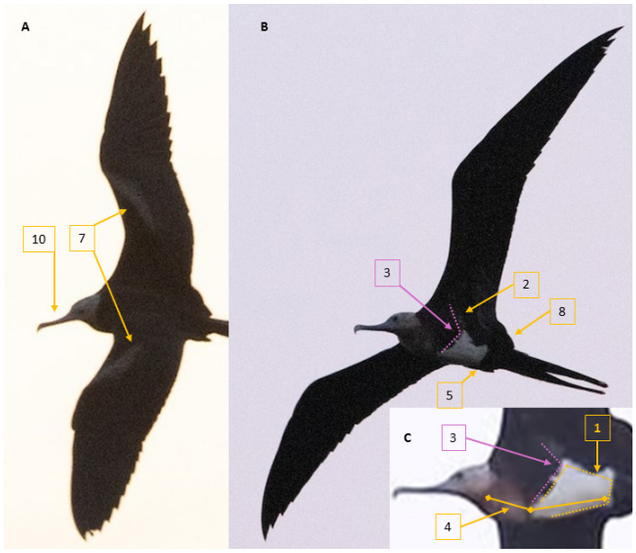
Ravishankar Bangalore

137. Christmas Island Frigatebird first cycle from Chikkamagaluru, Karnataka, India (Table 2, #11). Identification notes: (1) although belly patch is not fully visible, the visible part is half a pentagon with a broad rear; (2) unusual bulging blunt-ended spurs (not seen in LEFR and GRFR); (3) angle between spur and belly patch ~135°; (4) belly patch longer than breast band; (5) white belly extends behind base of legs; (8) long humeral arc; and (9) wing broad across carpal.



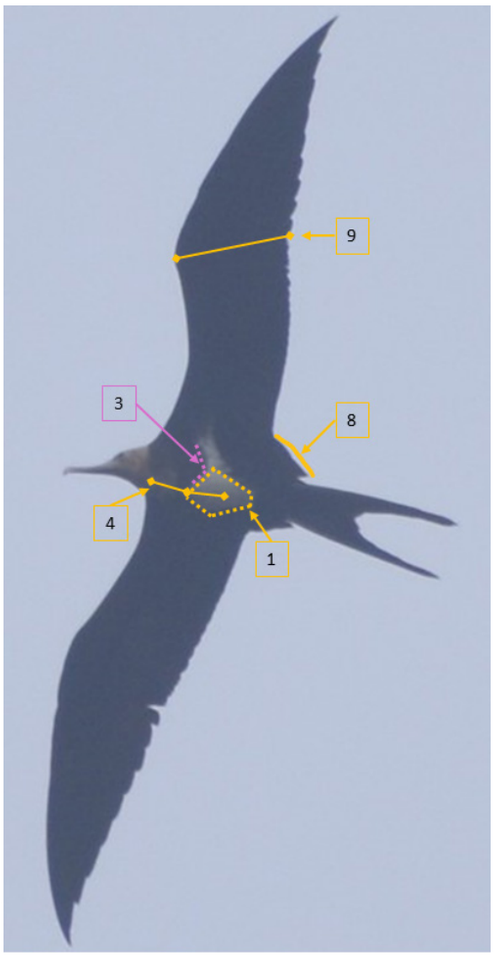
Moditha Kodikara Arachchi

138. Christmas Island Frigatebird first cycle from Western Province, Sri Lanka (Table 2, #12). Identification notes: (1) belly patch generally pentagonal with broad rear; (2) spurs strap-like and angled forward; (3) angle between spur and belly patch ~135°; (4) belly patch longer than breast band; (5) white belly extends behind base of legs; (8) large humeral arc; (9) wing broad across carpal; and (10) long bill.



Kasun Gonagala (A and B) and Ravisara Jayamanna (C)

139. Christmas Island Frigatebird first cycle from North Western Province, Sri Lanka (Table 2, #13). Identification notes: (1) belly patch generally pentagonal (unusually irregular but not oval or triangular) with broad rear; (2) spurs very obscure, but still angled forward; (3) angle between spur and belly patch ~135°; (4) belly patch longer than breast band; (5) white belly extends behind base of legs; (7) unusually dull alar bars, possibly due to individual variation, extreme plumage wear, and/or low light conditions; (8) long and broad humeral arc; and (10) long bill.

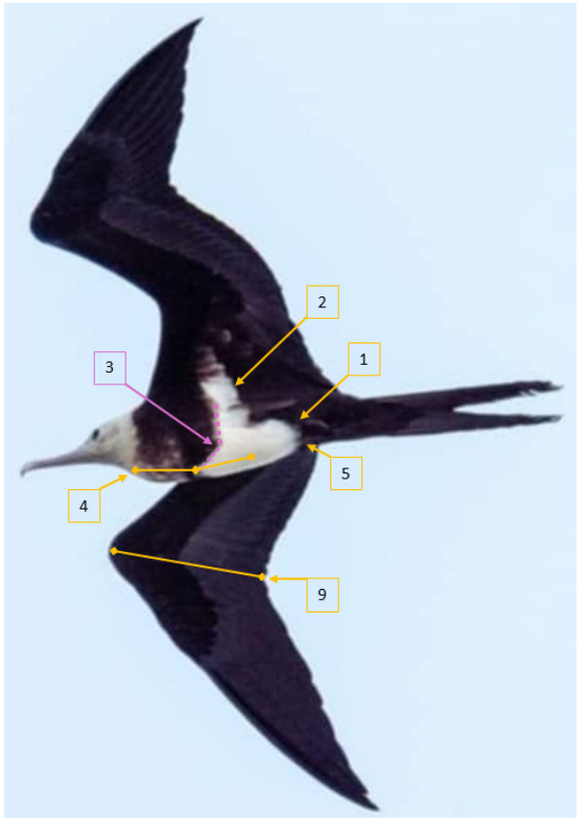


Paul Pop

140. Christmas Island Frigatebird first cycle from Ernakulam, Kerala, India (Table 2, #14). Identification notes: (1) belly patch generally pentagonal, although rear not very broad; (3) angle between spur and belly patch ~135°; (4) belly patch longer than breast band; (8) long humeral arc; and (9) wing broad across carpal.

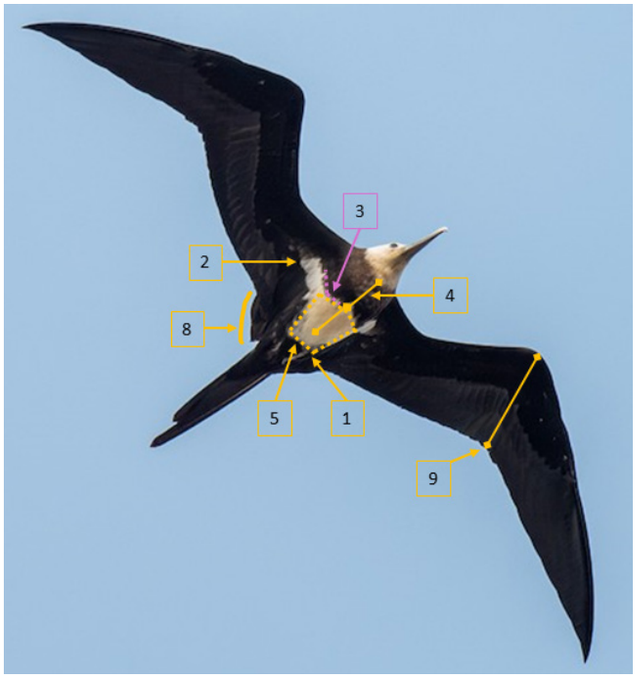
Johan Feenstra

141. Christmas Island Frigatebird first cycle from Eastern Province, Sri Lanka (Table 2, #15). Identification notes: (1) the belly patch is not fully visible in the single photo available, but it fits the generally pentagonal shape of CIFR; (2) spurs strap-like and angled forward; (3) angle between spur and belly patch ~135°; (4) belly patch longer than breast band; (8) large humeral arc; (9) wing broad across carpal; and (10) long bill.



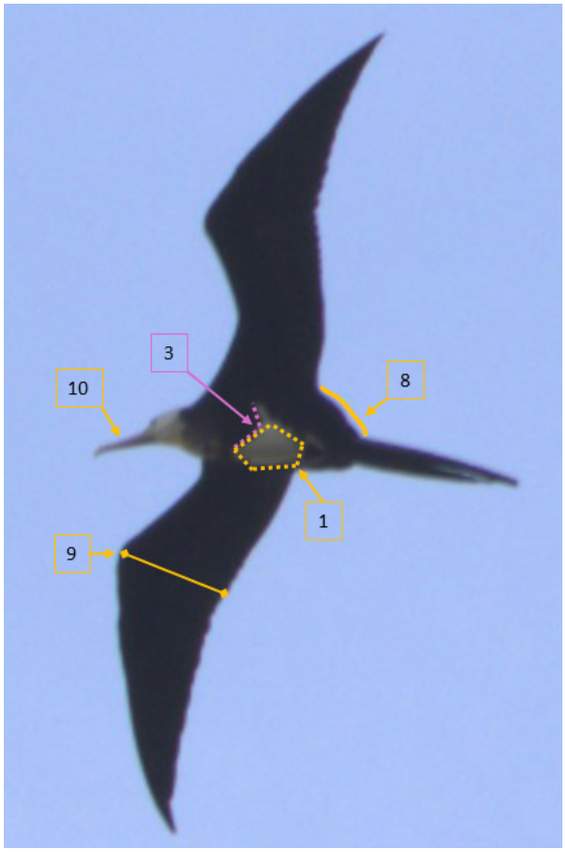
Shehan Dondeenu

142. Christmas Island Frigatebird from North Western Province, Sri Lanka (Table 2, #16). Identification notes: (1) moult is changing the shape of the belly patch making it less reliable for identification; but (2) spurs strap-like and angled forward; (3) angle between spur and belly patch ~135°; (4) belly patch longer than breast band; (5) white belly extends behind base of legs; and (9) wing broad across carpal.



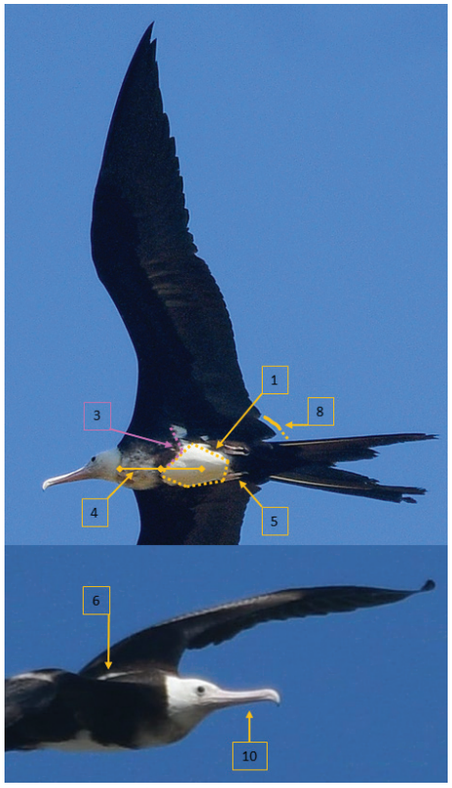
Najmuddin Fakhruddin

143. Christmas Island Frigatebird first cycle from Mumbai City, Maharashtra, India (Table 2, #18). Remarkably, this is a different individual to the bird seen by many observers in the same area of Mumbai City during the same time period, and shown in **[130, 131]**. Identification notes: (1) belly patch generally pentagonal with broad rear; (2) spurs strap-like and angled forward; (3) angle between spur and belly patch ~135°; (4) belly patch longer than breast band; (5) white belly extends behind base of legs; (8) large humeral arc; and (9) wing broad across carpal.



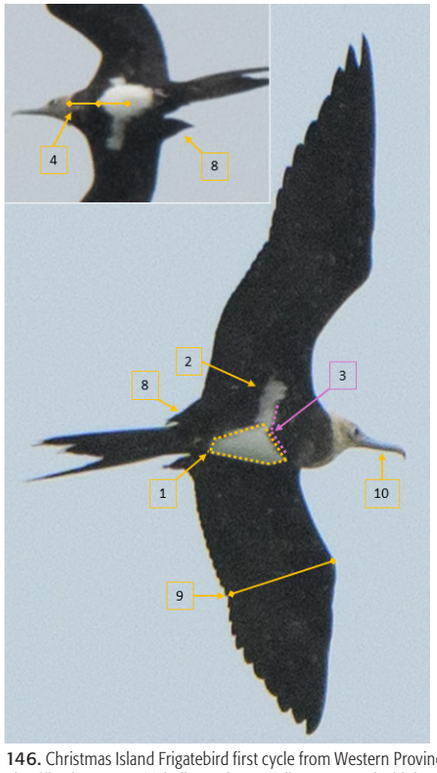
Hasitha Perera

144. Christmas Island Frigatebird first cycle from North Western Province, Sri Lanka (Table 2, #19). Identification notes: (1) belly patch generally pentagonal with broad rear; (3) angle between spur and belly patch ~135°; (8) large humeral arc; (9) wing broad across carpal; and (10) long bill.



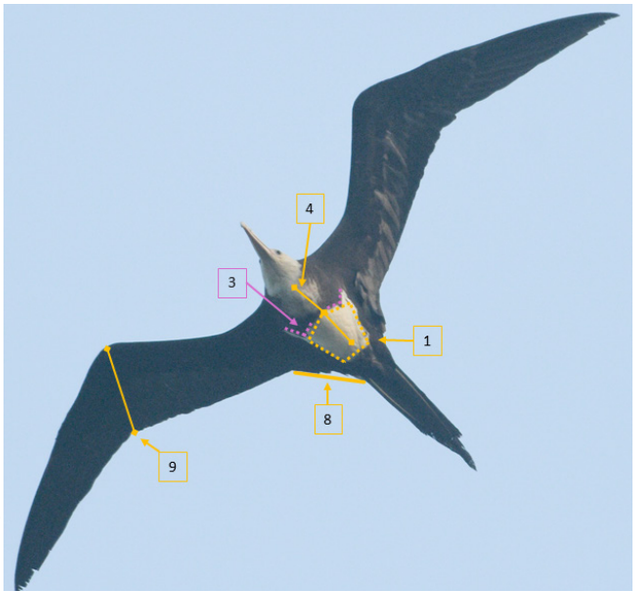
Lahiru Walpita

145. Christmas Island Frigatebird first cycle from Northern Province, Sri Lanka (Table 2, #20). Identification notes: (1) belly patch generally pentagonal with broad rear; (3) angle between spur and belly patch ~135°; (4) belly patch longer than breast band; (5) white belly extends behind base of legs; (6) bold white scaling on dorsum just apparent; (8) humerals in moult but still large; and (10) long bill.



Shashika Bandara

146. Christmas Island Frigatebird first cycle from Western Province, Sri Lanka (Table 2, #21). Identification notes: (1) belly patch generally pentagonal with broad rear; (2) spurs strap-like and angled forward; (3) angle between spur and belly patch ~ 135°; (8) humerals in moult but still long; (9) wing broad across carpal; and (10) long bill.



Lahiru Walpita

147. Christmas Island Frigatebird first cycle from Northern Province, Sri Lanka (Table 2, #22). Identification notes: (1) belly patch generally pentagonal with broad rear; (3) angle between spur and belly patch ~135°; (4) belly patch longer than breast band; (8) humerals folded so not bulging, but very long; and (9) wing broad across carpal.

CIFR has had a vexed history on Sri Lanka's bird list. Despite earlier claims, Phillips (1978) and Ali & Ripley (1983) considered all records to be dubious. CIFR was then included for Sri Lanka by De Silva (1990):30 for "A few (mostly dubious) records", and by De Silva et al. (2006) and Kotagama & De Silva (2006) without details or references. Later however, De Silva (2011a; 2011b) expressed doubts about the validity of all CIFR records from Sri Lanka. Subsequently, Rasmussen & Anderton (2012):54 listed CIFR for Sri Lanka, based on a sight record of a "juvenile… supported by [a] sketch and in direct comparison with" GRFR. Apparently, they were referring to Warakagoda (1992a), but this and related claims of CIFR by Warakagoda (1992a, 1992b) and Hoffmann (1991) contain insufficient details to be confirmed by us. The only published record for Sri Lanka that we could verify was the sighting of a first cycle CIFR at Arripu on 27 May 2010 (Gunawardena 2010). Although the published account contained scant evidence, we verified this record from photographs (**[132]**, sr01).

CIFR has also had a 'revolving door' history on the Indian list, with several purported records added and subsequently removed over many years (see Praveen et al. 2013). CIFR has been listed for the Andaman Islands by several references (e.g. BirdLife International 2001; Nelson 2005; Rasmussen & Anderton 2012), and mapped without comment in several more. Most if not all of these inclusions were based on a sight record at Rangat Bay, Middle Andaman, in November 1989 by Saxena (1994). Saxena identified the bird with the aid of Harrison (1983), using the "white belly and broader breast band" to rule-out LEFR, and "white on [its] axillaries" to rule-out GRFR. Given the complexity of identifying first cycle frigatebirds in the field as evident now, we consider this description inadequate and concur with Praveen et al. (2013) that this record is unsubstantiated. Subsequent reports of CIFR at Ograbraj, South Andaman, in 2014 and/or 2015 (Sivaperuman et al. 2018, 2020) included very few details. Unfortunately, we were unable to verify these reports through our correspondence. Thus, we concur with Praveen et al. (2013) that there are no valid published reports of CIFR from the Andaman and Nicobar Islands.

A first cycle frigatebird found dead at Bashirat, North 24 Parganas District, West Bengal, on 31 May 2006 was the only Indian record accepted by Praveen et al. (2013), and the sole basis for its inclusion on the Indian list at that time. However, Maheswaran & Alam (2014) examined the specimen and concluded that morphometric data and plumage details favour the identification as GRFR over CIFR. We agree with Manna et al. (2024) that this specimen is not a confirmed CIFR.

An unprecedented spate of frigatebird sightings during a six-week period in mid-2014 resulted in five records of CIFR from India (Karuthedathu et al. 2015). They have already been documented with photographs and identification analyses, and we accept these records as valid.

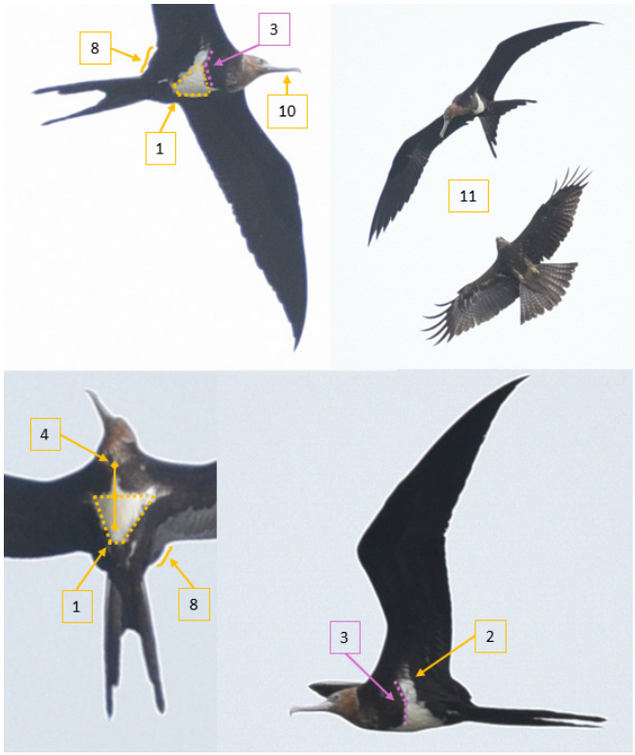
Since 2014, there have been three published records of CIFR from India that we consider to be valid: 1) Outside Chombala Harbour, Kozhikode, in Kerala, a first cycle CIFR was injured when it crashed into a fishing boat on 29 June 2019. The bird was brought ashore for care, where it was photographed and measured, but it did not survive. DJJ provided identification advice from photographs, as outlined in Vishnudattan & Meppayur (2019) and Paleri et al. (2022). The correct date is 29 June, not 30 June 2019 (Paleri et al. 2022; DK; DJJ; contra Vishnudattan & Meppayur 2019); see **[133]** for further details. 2) A first cycle CIFR was photographed at Thakdari, in West Bengal on 21 May 2020, and sighted again the next day. This bird was accepted by Manna et al. (2024—see their supplementary material) as the first valid record for West Bengal. We agree with this identification **[134]**. 3) A second cycle CIFR was photographed near Mahuva, Bhavnagar, in Gujarat on 20 May 2021. DK identified it from photographs, and his reasons were outlined in Bhil & Bhil (2021); see **[135]** for our identification analysis.

Another published record identified as CIFR was based on photographs taken at Kalpakkam Bridge in Tamil Nadu on 2 July 2016 (Balasubramanian 2016). In 2016, DJJ provided an opinion to DK that this was a CIFR. However, our new understanding of plumage characteristics suggests that this bird was actually a LEFR, and can no longer be accepted as a CIFR **[148]**.

Previously unpublished records: A total of 13 previously unpublished records of CIFR from South Asia are summarized in Table 2 and mapped in Fig. 1. Nine of these are from Sri Lanka and four are from India. Nine records are from 2024, with one each from 2008, 2010, 2018, 2020 and 2021.

The earliest verified record from South Asia was at Mutuwal, Colombo, Western Province, Sri Lanka on 31 May 2008 (Table 2, tag 10, **[136]**), whilst the earliest records from India were in 2014 (Karuthedathu et al. 2015; Table 1). In terms of administrative boundaries, the Indian records were from six states and eleven districts, while the Sri Lankan records were from four provinces and five districts (Tables 1 and 2). Illustrative images marked to show identification criteria for the 13 unpublished records and four of the published records of CIFR are shown in photographs **[130–147]**. The locations of all the verified records of CIFR from South Asia are mapped in Fig. 1.

Confirmed records of CIFR occurred in five separate years in Sri Lanka, six years in India, and eight years in total across South Asia. However, almost two-thirds of the records came in just two years (~41% in 2024 and ~23% in 2014). Similar trends were apparent in other frigatebird species in 2024 but not in 2014 (see Supplementary Table 2). All three species of



Udaya Kumar Balasubramanian

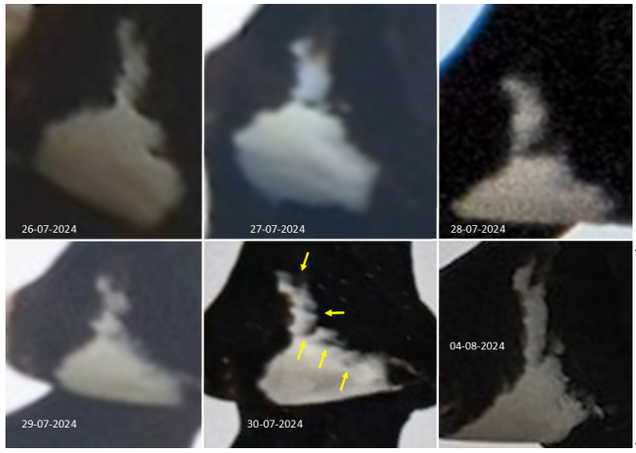
148. Lesser Frigatebird, first cycle from Kalpakkam Bridge, Chengalpattu, Tamil Nadu, India, 02 July 2016. Previously published as a Christmas Island Frigatebird, based on advice from DJJ (Balasubramanian 2016) but no longer considered that species. Identification notes: (1) belly patch generally triangular (allowing for moult in the centre of the breast band) with a narrow rear; (2) spurs are somewhat straplike and angled forward, which contributed to the earlier misidentification; (3) angle between spur and belly patch almost straight (>170°); (4) breast band almost as long as belly patch; (8) humeral arc fairly broad but not very long; (10) short bill; and (11) small size compared to Black Kite.

frigatebirds occurred in most months in South Asia, but showed a clear trend of higher occurrence in the monsoon season (June to September) compared with the pre-monsoon and post-monsoon seasons (Table 3). However, it should be noted that the data were heavily influenced by the 2024 and 2014 influxes.

Table 3. Seasonal trends in the occurrence of frigatebirds in South Asia Records included up to 31 December 2024

	CIFR	LEFR	GRFR	All frigatebirds combined
Observations in pre-monsoon (February-May)	4	5	1	14
Observations in monsoon (June-September)	15	22	11	57
Observations in post monsoon (October-January)	3	7	2	14
Total observations	22	34	14	85

All CIFR records in South Asia have involved single birds so far, although some were with (or loosely associated with) LEFR. At least two different CIFR were recorded around the Colaba Peninsula in Mumbai, Maharashtra, India, between 20 July and 4 August 2024. However, they were never reported together. One of them, a first cycle bird with distinctive identifying marks in its axillary spurs **[149]**, was recorded on seven different days in this period by dozens of observers, but it was never recorded with another CIFR in the area during that period (Table 2, tag 17).



Photos (left to right & top to bottom): Zarine Singh, Neenad Abhang, Yash Kothiala, Krishnan Sivasubramanian, Manjula Desai, and Madhav Murthy

149. This first cycle Christmas Island Frigatebird from Mumbai City, Maharashtra, India (Table 2, #17; the same individual as **[130, 131]**) was seen on multiple dates; multiple black marks encroaching on the spur and belly patch (indicated by arrows) are individually unique to this bird.

Discussion

All of the verified records of CIFR in South Asia have been from the mainland of India and Sri Lanka. They were all from coastal areas, with two exceptions. One exception was *c.* 100 km inland at the large Bhadra Reservoir in the Chikkamagaluru district of Karnataka, India, in 2018 (Table 2, tag 11). The other was from the North 24 Parganas district of West Bengal, India, which is *c.* 100 km inland from the Bay of Bengal, but connected to the coast by the Hooghly River and its large estuary (Table 1, tag 07). All sightings in Sri Lanka and most in India were of birds in their first cycle. In India, however, there was one second cycle bird, one adult male and one adult female. Barring two cases where the birds were observed to be injured or exhausted, all other records involved apparently healthy individuals. At least 12 unique observers sighted CIFR in Sri Lanka, whereas this number was over 60 in India. While CIFRs have been sighted on both the western and eastern coasts of India and Sri Lanka, there are only two records from the east coast of India and one from eastern Sri Lanka (~14%; Fig. 1). This may reflect different observation efforts in different regions (especially in Sri Lanka). Alternatively, it might be a pattern in the movements of CIFR, for example, the southwest Indian monsoon during the summer might push soaring birds closer to western coastlines more so than eastern coastlines.

Several sightings of CIFR in this study included observations of harassment behaviour by other birds. These were by Brahminy Kite *Haliastur indus* (one or two incidents), Black Kite *Milvus migrans* (two incidents), Red-wattled Lapwing *Vanellus indicus* (one incident) and crows *Corvus* sp. (three incidents). A CIFR was also observed to attack a Brahminy Kite, apparently as a response to harassment. Harassment by kites and corvids was also noted in multiple observations of LEFR investigated in this study. Harassment of frigatebirds has not been widely discussed in the literature, as far as we are aware, but Nankeen Kestrel *Falco cenchroides* harasses frigatebirds frequently on Christmas Island (DJJ pers. obs.). This might be a general response to large, soaring, and/or unfamiliar birds, or a specific response to a particular threat, such as the kleptoparasitic behaviour of frigatebirds.

Status in South Asia: There are no historical records of CIFR from India or South Asia (i.e., prior to 01 January 2000, sensu Praveen & Jayapal 2024). Praveen & Jayapal (2024):165 defined

a vagrant as a "species that has been reliably reported in fewer than ten years since 01 January 2000." CIFR has been reported in just eight years in total across South Asia, so it meets this definition of a vagrant. The total of 22 confirmed records in South Asia is low and clustered mainly in two years (~64% in 2024 and 2014 combined). Almost all records (~86%) involved young birds in their first or second cycle, and always involved single birds. By contrast, hundreds of regular reports of CIFR exist from the seas and coastlines of the Sunda Shelf and the Sulu Sea in Southeast Asia consistently across many years (BirdLife International 2001; Jensen & Tan 2010; James & McAllan 2014). These typically involve a mix of all age classes, often in flocks (Jensen & Tan 2010; Tirtaningtyas & Hennicke 2015; DJJ unpubl. data). Records become sparser with increasing distance from the Sunda Shelf in all directions, other than at Christmas Island itself (James & McAllan 2014).

When not attending their sole breeding island, most CIFRs 'camp' at non-breeding roost islands for extended periods, where they forage by day and return to roost at night (James & McAllan 2014; Hennicke et al. 2015). This is seemingly a specialized form of central place foraging (sensu Orians & Pearson 1979). Thirteen such islands were listed by James & McAllan (2014), all of which are in Southeast Asia. The nearest known roost island to South Asia is in the Phi Phi Islands (7.655°N, 98.765°E) on the west coast of Thailand, only 550 km east of the Nicobar Islands. By contrast, there are no verified records of CIFR from the Andaman and Nicobar Islands. No roost islands have been located anywhere in South Asia, even though there are four large archipelagos (Andaman and Nicobar, Chagos, Lakshadweep, and Maldives), and other areas (e.g., along the Bengal coast) with potentially suitable 'camp' sites. These regions are remote and inaccessible, and receive very little bird survey attention. Nevertheless, the available evidence suggests that South Asia is not within the core range of CIFR.

The influxes of CIFR to South Asia in 2014 and 2024 appear to be exceptional events. LEFR and perhaps GRFR showed similar influxes in 2024 but not in 2014. Whilst local conditions might influence such influxes, conditions in more usual parts of the range are likely to have stronger influences, so we have not investigated this issue. The range of dates reported for CIFR sightings in South Asia spanned just six weeks in 2014 (Karuthedathu et al. 2015) and nine weeks in 2024 (Table 2, excepting tag 22), rather than extended seasons. Since frigatebirds never settle on the water voluntarily, they either roost in trees on small, uninhabited islands at night, or stay on the wing for long periods (James & McAllan 2014; Hennicke et al. 2015). CIFRs are not known to use roost islands on an occasional or ad hoc basis, so it seems unlikely that they had local roost sites, although this cannot be ruled out. They will stay on the wing for weeks at a time (Hennicke et al. 2015), but then they travel with the weather systems and are typically transient (Weimerskirch et al. 2003). Although the reasons why CIFR appeared in exceptional numbers in 2014 and 2024 are unexplained, they were more likely being transient than temporarily resident.

These multiple lines of evidence provide a strong indication that the marine waters in South Asia are outside the core range of CIFR, even if they might provide suitable foraging habitat for the species. CIFR is no more than an accidental and transient visitor to South Asia, and is neither a regular nor seasonal migrant here.

Although there are no verified records of CIFR from South Asia prior to 2008, we anticipate that sightings will increase in the future. This will not likely be due to an increased population of CIFR (the population is stable or declining gradually: Macgregor et al. 2021; DJJ unpubl. data). Nor will it require any changes in the species' behaviour or movements, including any responses to climate change. Largely, it will be due to increased interest in seabirds in South Asia, additional funding for coastal bird monitoring, and improvements in tools, including identification resources, and imaging, communication and transport technologies.

An emerging trend for ranking the conservation priority of species is to combine their evolutionary distinctiveness and globally endangered status to provide an EDGE score. EDGE species typically have few close relatives, are unusual in their genetic make-up, appearance and behaviour, and are at high risk of extinction. The extinction of an EDGE species represents a high loss of significant and unique biodiversity. Of the 690 EDGE species of birds in the world, CIFR is one of the priority species (McClure et al. 2023). Considering this, we hope that this study will foster increased interest and provide improved resources for documenting frigatebirds around South Asia in the future.

Acknowledgments

We are indebted and extremely grateful to the following people who, during the last two decades, observed and documented frigatebirds in South Asia and further afield, and/or helped us with our enquiries, with literature, and/or in other ways: A. Rajaram, Abdula Hamza, Abdulaziz Hudda, Abdulla Paleri, Abeer Watve (AbW), Abhijeet Rasal (AR), Aju K.R., Akhil Ashok, Akshay Charegaonkar (AC), Ameya Mundle (AM), Ami Murthy, Ampady Sugathan, Aneesh Sasidevan, Anirban Bhaduri, Arka Bhaduri, Aseem Kothiala, Athul Sekhar, Ayan Watve (AyW), Babu Rao, Batuk Bihl, Bimal Modi (BM), Chinmay Rahane (CR), Christopher John Issac, Deepal Warakagoda (DW), Dinidu Jayathilake, Faisal Fasaludeen, Ganaskandan K., Ganesh Gore (GG), Gokulakrishnan G., Hareesh R. Iyer, Harish Babu M., Hasitha Perera (HP), Ian A.W. McAllan, Iroshan Rupasinghe, Jason Rodney (JR), Johan Feenstra (JF), Jonathan Martinez, Juee Khopkar, Kalyani Kapdi (KK), Kasun Gonagala (KGo), Kessy George, Ketan Anklesaria (KA), Kiran Sharma, Krishan Kariyawasam (KK), Krishnan Sivasubramanian, Kithsiri Gunawardena (KGu), Lester Perera (LP), Madhav Murthy, Mahendra Bihl, Malika Jayathilake, Mangesh Prabhulkar, Manjula Desai, Mantha, Marco Wanke, Mayuresh Parab (MP), Milind Ganatra, Mita Gala, Mohina Macker, Mohit Aggarwal, Mymoon Moghul, Najmuddin Fakhruddin (NF), Neenad Abhang (NA), Nikol Bandhara, Nishad Eshaal, Noni F. Tirtaningtyas, Noyel Peiris, Paul Thompson, Peter Carr, Pradnyavant Mane (PM), Prakash Goray (PG), Pranad Patil (PdP), Prasanna Parab, Prateik Kulkarni (PK), Prathamesh Desai, Praveen J., Premila Senevirathne, Priyanath P.R. Kotalawela, Rahul Narlanka, Rajaneesh Ghadi, Rakesh Dhareshwar, Ramesh Karmakar, Ramesh Shenai (RS), Ravisara Jayamanna (RJ), Ravishankar Bangalore (RB), Sagar Patankar, Sakthi Manickam, Dr. Salil Choksi (SC), Sandeep Biswas, Saranga Deva De Alwis, Sarath Senevirathne, Sarvesh Abhyankar (SA), Sathyan Meppayur, Savio Fonesca, Shainaz Jussa (ShJ), Shashika Bandara (ShB), Shehan Dondeenu (SD), Shekar Vishvanath, Shiyas, Shubham Hadkar, Shriyog Karekar (SK), Simon Buckell, Sivaperuman C., Sreekanth C., Steve S. Davidson, Steve Mulkeen, Subaraj Rajathurai, Subhadeep Ghosh (SG), Sumesh B., Sushant Jadhav (SuJ), Tarun Menon, Tejas K. Rao, Trevor Hardaker, Tushar Abhyankar (TA), Udaya Kumar Balasubramanian, Umesh Mani, Vijayalakshmi Rao, Vineith Mahadev, Virendra Gharat, Vishaka (Vi), V.K. Yadav, Vaibhav Haldipur, Yash Kothiala, Yash Shetty, and Zarine Singh (ZS). We are very grateful for improvements to the manuscript suggested by an anonymous referee and Praveen J at *Indian BIRDS*.

Author contributions

Conceptualization: PP, DJJ; Methodology: DJJ, PP; Investigation: DJJ, PP, DK, MK, LW, GdSW; Identification: DJJ; Data curation: DJJ, PP, DK, MK; Writing – Original draft: DJJ, PP; Writing – Review & editing: DJJ, PP, DK, MK, LW, GdSW; Mapping: PP; Photograph annotation: DJJ

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Between skies and shrinking spaces: Understanding distribution and threats to raptors in Ladakh

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Hussain, A., Sarakar, M. S., Bhasin, A., Singh, T., Hussain, A., & Raina, P., 2025. Between skies and shrinking spaces: Understanding distribution and threats to raptors in Ladakh *Indian BIRDS* 21 (4): 109–114.

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Abstract: Bird species that scavenge and hunt prey play a vital role in the ecosystem. However, there is limited information on raptors and their distribution in the Trans-Himalayan regions of India. The current study was conducted in Ladakh between March 2018 and November 2023 to document the diversity, distribution, nesting sites, and threats of various raptors belonging Accipitridae, Falconidae, and Strigidae families in Ladakh. In total, 196 villages were surveyed in Kargil and Leh district during field surveys. A total of 50 trails and road routes were surveyed, covering a combined distance of 2,116 km across various habitats. A total of 886 individuals of 27 raptor species were recorded during the study including three species recognized as Endangered, and four as Near Threatened. Encounter rates of 15 regularly occurring raptors were derived. Bearded Vulture *Gypaetus barbatus* and Himalayan Vulture *Gyps himalayensis* were the most abundant and widely distributed scavenging raptors. Black Kite *Milvus migrans* and Golden Eagle *Aquila chrysaetos* were the most abundant predatory raptors in the landscape. A total of 52 nesting sites were recorded in the study site of which 13 were of Bearded Vulture. Three major threats that were identified by the community were free-ranging dogs, habitat degradation, and unregulated mass tourism. Long-term monitoring of raptors in the Ladakh landscape must continue with focus on population status, threats, and conservation challenges.

Introduction

Raptors are recognized as ecological indicator species as they occupy a high tropic level in the food web (McClure et al. 2019). These also include scavenging species that are instrumental in maintaining environmental health, help limit the spread of pathogens, and provide other key ecosystem services (O'Bryan et al. 2018). Raptors often serve as iconic flagship species for biodiversity conservation programmes and cultural symbols around the world (Sergio et al. 2008; Donázar et al. 2016). Although raptors are generally easy to detect, their relatively low population densities, except in migration bottlenecks, may contribute to the limited monitoring focus on them (Farmer et al. 2007). The use of diclofenac, an anti-inflammatory drug administered to livestock, has led to a catastrophic decline in vulture populations, particularly in South Asia (Prakash et al. 2003). The vulture population in the Indian subcontinent declined by around 90% due to the concentration of diclofenac administered to cattle and consumed by these birds (Green et al. 2004). However, detection of such a precipitous decline took a decade of monitoring and research to establish; indicating several other moderate raptor declines may have gone unnoticed. Globally, raptors are threatened by pollution, both indiscriminate and targeted, as well as habitat destruction and degradation (McClure 2025); all of them are broadly applicable to India as well (SoIB 2023).

Globally, there are 561 recognized raptor species (McClure 2025) of which 112 have been reported from India (Praveen 2025); *c.*20% of the world's raptor species. Despite its rich species diversity, studies of raptors in India have been quite patchy with very few long-term studies barring the vultures (Mahananda et al. 2022; Subedi et al. 2025). Despite the Himalayan landscape being a crucial habitat for both migratory and resident raptor species (Subedi et al. 2025), there are very few studies on raptors from the Indian Himalaya (Arya et al. 2021; Kumar et al. 2022). This includes Ladakh, which lies within the trans-Himalayan biogeographic zone, and comprises approximately 80% of India's trans-Himalayan zone (Rodgers & Panwar 1988). Ladakh serves as an essential staging ground for migratory birds along the Central Asian Flyway. However, due to its geographical position and habitats, the region hosts only about 25% of India's diverse avifauna, a sizeable number of them being passage migrants (eBird 2025; Praveen 2025). It also provides a breeding habitat for some raptors and various prey species for raptors, including the Bar-headed Goose *Anser indicus*, Ruddy Shelduck *Tadorna ferruginea*, and Great Crested Grebe *Podiceps cristatus*.

Avifaunal studies in Ladakh began in the 19th century (Adams 1859; Hume 1873; Richmond 1896) and continued extensively through the early and mid-20th century with significant contributions from ornithologists (Osmaston 1925, 1926; Koelz 1940). These studies laid a foundational understanding of Ladakh's birdlife, followed by later surveys, and distributional updates (Holmes 1986; Pfister 1997, 2004; Sangha & Naoroji 2006; Tak et al. 2008; Delany et al. 2014; Ahmed et al. 2019; Bhardwaj & Sen 2021). A few specific raptors in Ladakh have also undergone more detailed studies beyond a mere report, such as the Golden Eagle *Aquila chrysaetos* (Naoroji & Sangha 2004; Naoroji 2006), Saker Falcon *Falco cherrug* (Sangha et al. 2014), Upland Buzzard *Buteo hemilasius* (Naoroji & Forsman 2001), and the Long-eared Owl *Asio otus* (Stanba 2022). A recent study

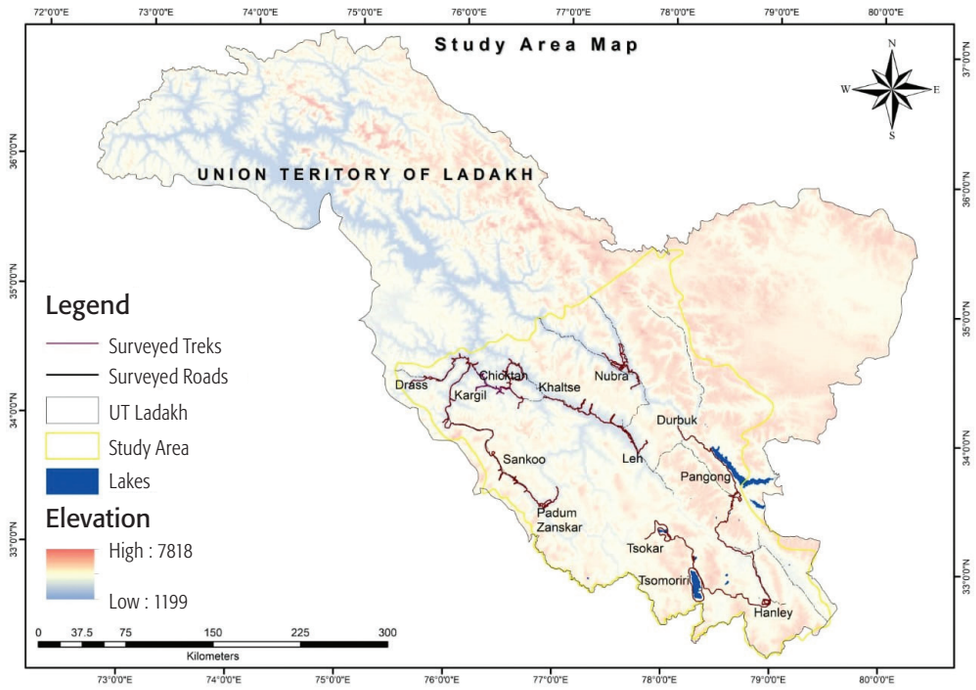

Fig. 1. The map of study area with distribution of bird survey treks and routes.

on raptors encounter rate and active nesting sites was carried out in the eastern parts of Ladakh (Srinivasan et al. 2024). Although research on the avifauna of Ladakh has documented various bird sightings and behaviours over the years, there remains a substantial gap in understanding the distribution, threats, and conservation needs of raptors in the Indian Himalaya, especially in Ladakh (Srinivasan et al. 2024).

This study aims to address these critical gaps by mapping raptor distribution, identifying crucial habitats, and nesting sites in Ladakh. Additionally, it seeks to evaluate the primary threats these species are facing, providing essential information for conservation efforts. The findings of this research are expected to be valuable inputs for conservation planning, ensuring the preservation of raptor populations in this ecologically sensitive region.

Methods

Study area

Ladakh (32°–36° N and 75°–80° E) is an arid, high-altitude landscape with diverse mountain ranges dotted with lakes, wetlands, and vegetation patches along rivers and mountain steppe. Our study area lies in the Indian-administered part of the Ladakh union territory (Fig. 1). Here, human settlements are concentrated along the Indus River System and its tributaries that drain this landscape; including the Suru, Zangskar, Nubra, and Shayok, which are fed by streams such as Kanji, Wakha, Drass, etc. (Fig. 1). These valleys include small agricultural fields, plantations, fruit orchards, wetlands, and, pasturelands. The eastern part of Ladakh includes many lakes, arid grasslands, and wetlands, which serve as critical habitat for many wildlife species. The altitudinal range of the study area lies between 2,600 and 7,200m asl, and the temperature ranges from -30°C in the winter to +35°C in the summer. Currently, there are three protected areas, namely Hemis National Park, Changthang Cold Desert Wildlife Sanctuary, and Karakoram Wildlife Sanctuary and two Ramsar sites, Tsomoriri (Ramsar site no. 1213/120 km^2) and Tso Kar (Ramsar site no. 2443/96 km^2). These protected area networks and important wetlands in Changthang, Suru, Drass, and Rangdum areas attract a diversity of breeding birds. These areas also serve as important staging grounds for species that migrate between Central Asia and the Indian subcontinent and beyond.

Distribution surveys

The study was carried out between March 2018 and November 2023 through road transect and trail walks (Bibby et al. 2000). A total of 196 villages from the landscape of Ladakh were surveyed by vehicle survey and trail walks covering all the seasons (Fig. 1). During the field survey, we walked 33 trails, totalling 462 km (each between 3 to 9 km), passing through riverine valleys, wetlands, lakes, human habitation, mountain passes, pasture lands, small forest patches and agricultural fields of various localities between the elevation of 2,750 – 5,950 m asl. A total of 1,654 km was surveyed by road transect with four-wheelers (open hood gypsy) at a constant speed of 20 –30 km/hr, mainly in summer. (Fig. 1).

Observations were conducted to prevent double counting by documenting the species identified, flock size, flight direction, and the date and time of each sighting (Arya et al. 2021). The raptor survey was conducted once a week, on average, between 0700 and 1130 hours and between 1300 and 1800 hours. The full details of survey months in different trails and roads are provided in Supplementary Table 1.

Using a pair of Nikon 8×40 field binoculars, we observed and identified raptors, recording their presence and numbers. Further, during analysis, we categorized them based on habitat, migration status, conservation status, and threat category using field guides and reference books (Ali & Ripley 1983; Pfister 2004; Grimmett et al. 2011; Rasmussen & Anderton 2012; SoIB 2023; Praveen 2025). Many birds observed during the survey were photographed using a Nikon 7000 camera for record and identification. However, unidentified birds (3.27% of total observation) were not included for further data analysis. Encounter rate was calculated by dividing the number of observations of each species by the total distance covered for that transect. As there was no specific standard for classifying raptors as predatory and scavenging, we used a number of references (Ali & Ripley 1983; Naoroji 2006) for each species to deduce the right classification for the same; most of them were in fact obvious (e.g., vultures are scavengers). We do not report encounter rates or flock size when the sample size is low.

To examine whether encounter rates differed among bird groups with different migratory statuses, a one-way Analysis of Variance (ANOVA) was conducted using Migratory Status (i.e., Summer Visitor, Winter Visitor, Passage Migrant, and Resident) as the categorical independent variable. Following the ANOVA,

Tukey's Honest Significant Difference (HSD) test was performed for post-hoc pairwise comparisons between groups. Statistical significance was assessed at the 0.05 level.

Nest Surveys and Monitoring

Nest monitoring was carried out opportunistically during field surveys, with local villagers providing information on nest locations near their villages. Field visits were conducted to verify and record nest locations for mapping. In some cases, identified nests were monitored during subsequent visits, but most appeared to be used only for resting, as no clutch was observed. Additionally, villagers provided insights into year-round nesting activity, helping to determine raptor presence across different seasons. The distribution and nesting sites of raptors were mapped using 1,512 GPS locations collected during field surveys and analysed in ArcGIS 10.8.1. All statistical analyses were conducted using R version 4.4.1 (R Core Team 2021).

Threat Information Gathering

Community interactions and focal group discussions were conducted to gather information on threats to raptors, their cultural significance, and their sighting frequency in surveyed villages. Villagers provided insights into habitat changes, disturbances, and other potential threats affecting raptor populations. This information was crucial for understanding human-raptor interactions and assessing conservation challenges in the study area.

Results

Raptor diversity and conservation status

During the field survey between 2018 and 2023, 886 individuals of 27 raptor species (Table 1) belonging to Accipitridae, Strigidae, and Falconidae were reported from seven survey routes in Ladakh. This included 76 individuals from four species of scavenging raptors and 810 individuals from 23 species of predatory raptors. Amongst these, three species (Egyptian Vulture *Neophron percnopterus*, Steppe Eagle *Aquila nipalensis* and Saker Falcon) are listed as Endangered by the IUCN and four (Bearded Vulture *Gypaetus barbatus*, Cinereous Vulture *Aegypius monachus*, Himalayan Vulture *Gyps himalayensis*, and Mountain Hawk-Eagle *Nisaetus nipalensis*) as Near Threatened (Table 1). Among the 27 raptor species, 21 raptor species are under Schedule I and six raptors under Schedule II of the WildLife

Table 1. Status and details of the raptors recorded during the survey in Ladakh.

Migration Status: SV: Summer Visitor, WV: Winter Visitor, PM: Passage Migrant, R: Resident, U: Uncertain

IUCN Red List: CR: Critically Endangered, EN: Endangered, NT: Near Threatened VU: Vulnerable, LC: Least Concern.

SoIB Status: H: High, M: Moderate, L: Low.

Encounter rate and flock size calculated only when sufficient encounters were recorded.

Species	Encounter rate	Flock size (Mean ± SD)	Migratory Status	WLPA Schedule	IUCN Red List	SoIB
Family: Accipitridae						
Bearded Vulture *Gypaetus barbatus*	2.42	1.5±0.9	R	I	NT	H
Egyptian Vulture *Neophron percnopterus*	-	-	U	I	EN	H
Oriental Honey-buzzard *Pernis ptilorhynchus*	2.13	1.0±0.0	PM	II	LC	L
Cinereous Vulture *Aegypius monachus*	-	-	PM	I	NT	M
Himalayan Vulture *Gyps himalayensis*	1.29	1.8±2.1	R	I	NT	M
Mountain Hawk-Eagle *Nisaetus nipalensis*	-	-	PM	I	NT	L
Booted Eagle *Hieraaetus pennatus*	1.07	1.2±0.7	PM/SV	I	LC	L
Steppe Eagle *Aquila nipalensis*	-	-	PM	I	EN	L
Golden Eagle *Aquila chrysaetos*	2.64	1.4±0.7	R	I	LC	L
Eurasian Sparrowhawk *Accipiter nisus*	4.10	1.1±0.5	SV/PM	I	LC	L
Northern Goshawk *Astur gentilis*	-	-	PM	I	LC	L
Western Marsh Harrier *Circus aeruginosus*	-	-	PM	I	LC	H
Hen Harrier *Circus cyaneus*	-	-	PM/WV	I	LC	M
Black Kite *Milvus migrans*	19.21	7.5±18.6	SV/PM	II	LC	L
Common Buzzard *Buteo buteo*	1.63	1.1±0.3	WV/PM	I	LC	L
Long-legged Buzzard *Buteo rufinus*	1.4	1.2±0.8	SV	I	LC	L
Upland Buzzard *Buteo hemilasius*	1.74	1.6±1.0	R	I	LC	
Himalayan Buzzard *Buteo refectus*	2.36	1.1±0.4	WV/PM	I	LC	
Family: Strigidae						
Eurasian Eagle-Owl *Bubo bubo*	0.22	1.4±0.5	R	I	LC	
Little Owl *Athene noctua*	0.9	1.4±0.7	R	II	LC	
Long-eared Owl *Asio otus*	-	-	PM	I	LC	
Short-eared Owl *Asio flammeus*	-	-	PM	I	LC	L
Family: Falconidae						
Lesser Kestrel *Falco naumanni* (?)	-	-	U	II	LC	
Common Kestrel *Falco tinnunculus*	3.88	1.4±0.9	R	II	LC	H
Eurasian Hobby *Falco subbuteo*	-	-	SV	II	LC	L
Saker Falcon *Falco cherrug*	0.22	1.0±0.0	R/PM	I	EN	H
Peregrine Falcon *Falco peregrinus*	-	-	PM	I	LC	L

(Protection) Amendment Act, 2022 (Table 1). In India, five of them (Bearded Vulture, Egyptian Vulture, Western Marsh Harrier *Circus aeruginosus*, Common Kestrel *Falco tinnunculus*, and Saker Falcon) are classified as High Conservation Priority as per SoIB (2023) and three as Moderate (Table 1).

The analysis of the data revealed that a major proportion of the raptors recorded during the surveys were summer visitors (49%), followed by passage migrant species (37%), and residents (14%) (Table 1). ANOVA followed by Tukey's multiple comparisons revealed no significant effect of Migratory Status on the encounter rate ($p = 0.431$) of different groups of Migratory Status. Pairwise comparisons between groups also indicated no significant differences.

The present study recorded nearly 95% of the regular occurring raptors in our study area (eBird 2025). We were able to calculate encounter rates and flock size for 15 regularly occurring raptors of Ladakh. Among the scavenging raptors, Bearded Vulture was the most recorded species and widely distributed, followed by the Himalayan Vulture. The overall encounter rate for scavenging raptors was 0.07 birds/km, with the Bearded Vulture exhibiting the highest encounter rate (2.42 birds/km), followed by the Himalayan Vulture (1.29 birds/km) (Table 1). In contrast, the encounter rate for predatory raptors was significantly higher at 1.87 birds/km, with the Black Kite *Milvus migrans* having the highest encounter rate (19.21 birds/km), followed by the Eurasian Sparrowhawk *Accipiter nisus* (4.1 birds/km), and the Common Kestrel (3.88 birds/km) (Table 1).

Raptor distribution

During the survey, Bearded Vultures and Himalayan Vultures were mostly recorded near summer cattle camps in summer. In contrast, we recorded only Bearded Vulture near villages in winter (seasonal encounter rates of raptor species provided in Table 2 of supplementary file). We found that most scavenging raptors tend to soar over summer livestock camps and prefer to roost on steep mountains and rocky cliffs. Based on the field survey, we found that the distribution of scavenging raptors in Ladakh is clustered around summer and winter cattle camps used by local herders (Fig. 2). During the field survey, we recorded Bearded Vulture in all the seven study sites, while Himalayan Vulture was recorded only near the summer and winter cattle camps in all the study sites. The Bearded Vulture seems to be Ladakh's main resident scavenging raptor.

Black Kite, Eurasian Sparrowhawk, Common Kestrel, and Himalayan Buzzard, were seen near human habitations, small forest patches, or agricultural areas. On the other hand, Oriental Honey-Buzzard *Pernis ptilorhynchus*, Upland Buzzard *Buteo hemilasius*, Mountain Hawk-Eagle *Nisaetus nipalensis*, Hen Harrier *Circus cyaneus*, Long-Legged Buzzard *B. rufinus*, Northern Goshawk *Astur gentilis*, and Western Marsh Harrier were recorded in wetlands and marshlands in the region. Saker Falcon, Booted Eagle *Hieraaetus pennatus*, Little Owl *Athene noctua*, and Eurasian Eagle-Owl *Bubo bubo* were recorded in wetlands, marshlands, or pasturelands.

Among the raptors documented, the least frequently observed species, with fewer than three sightings, included the Egyptian Vulture, which was spotted near the Khumbuthang Army Cantonment Area and Sankoo Town during the summer field survey of June and July 2021. A putative Lesser Kestrel was observed near Upshi Bridge, close to agricultural fields on 27 October 2022. The Cinereous Vulture was recorded in the Chicktan Valley, at two distinct locations: Chulichan and Yokmakharboo. The Short-eared Owl *Asio flammeus* was documented in the Shey marshes inside densely planted areas. The Long-eared Owl *Asio otus* was observed at Loma bridge in the Changthang Wildlife Sanctuary, located at an elevation of approximately 4,100 m above sea level, on 09 October 2021. In addition, there was a single sighting of the Eurasian Hobby during the survey in Shayok Valley in Karakoram Wildlife Sanctuary on 10 September 2022. However, Eurasian Hobby is regular in the landscape of Ladakh, particularly in the Shey marshes, along the valleys of Indus and Suru Valley, during summer. Details of sighting location coordinates of these least frequent species are available in Table TS3 in supplementary files.

Raptors nesting and roosting sites

During the field survey, 52 nesting sites of both scavenging and

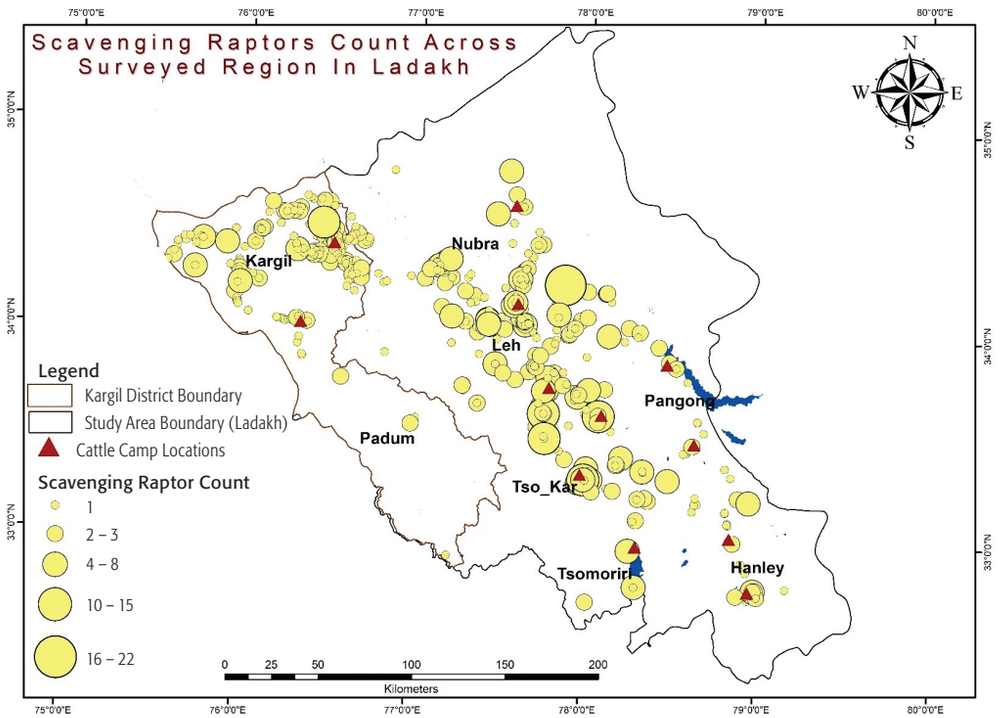

Fig. 2. The distribution map of scavenging raptors across the surveyed region in Ladakh, represented through a bubble plot, illustrates their spatial presence in relation to cattle camps. The yellow bubbles indicate the frequency of scavenging raptor sightings, with larger bubbles representing areas of higher sightings, while smaller bubbles indicate relatively lower occurrences. The overlay of cattle camps provides insight into potential influences on raptor distribution, suggesting a possible correlation between the availability of livestock carcasses and raptor congregation.

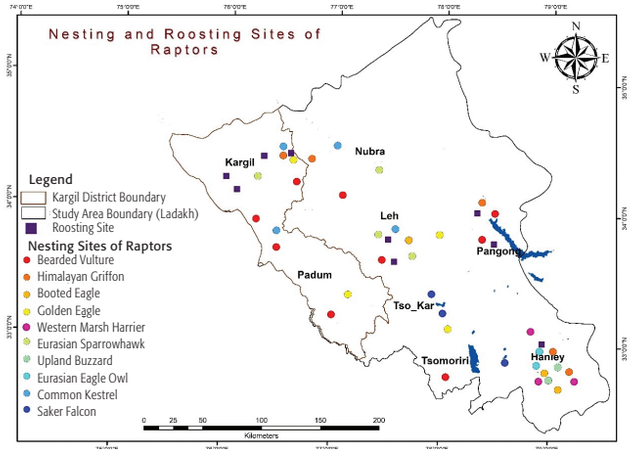

Fig. 3. Map showing locations of nesting and roosting sites of raptors across surveyed region in Ladakh.

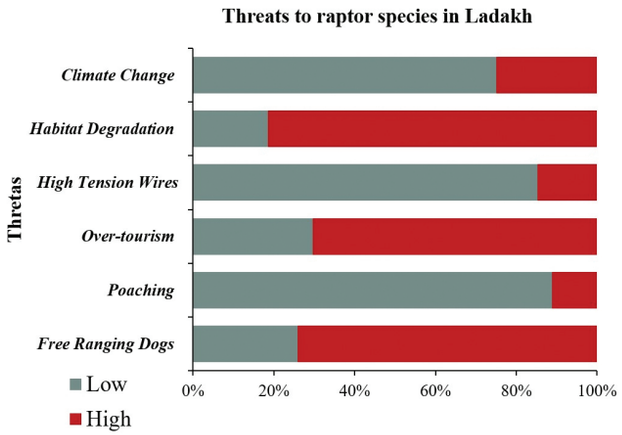

Fig. 4. Graph showing the percentage of community responses to various threats to raptors, based on issues identified during community interactions.

predatory raptors were recorded, all situated on rocky cliffs (Fig. 3). We identified 13 occupied nest locations of Bearded Vultures in Lukung Pangong, Chiktan Valley, Warila Pass, Tanglangla Pass, Giya Meru, and Kukshow. Notably, only three Bearded Vulture nests remained active throughout the study period, and all the nests were on rocky cliffs. Additionally, two Himalayan Vulture nests were recorded, one in Chiktan Valley and the other in Digar. During the field survey, we identified nine roosting sites across the region. Specifically, we found three roosting sites in the Kargil district area, all of which were used by the Black Kite. In Leh, we identified two roosting sites used by the Black Kite, while in Pangong, we found two roosting sites used by the Himalayan Vulture. Additionally, we located one roosting site near Hanle and one in Wari-la, which the Himalayan Vulture also used. The nesting and roosting patterns highlight habitat preferences tied to specific land-use types, particularly the clustering of scavenging raptors near summer and winter cattle camps used by local herders (Fig. 2).

Threats

A total of 44 community interactions and focus group discussions were conducted across the Ladakh region to assess the threats faced by raptors (Fig 4). Among the participants, 74.1% identified free-ranging dogs as a major threat to raptors, while the remaining considered them a minor concern, particularly in Muslim-majority areas, where such dogs are less common. Poaching was largely seen as a low-level threat, with 88.9% of respondents downplaying its severity. In tourist-dense areas, 70.4% of respondents flagged over-tourism as a concern, especially due to off-roading by heavy vehicles and motorcycles and camping in ecologically sensitive zones that support raptor prey species. Habitat degradation emerged as a worry, with 66.7% rating it as a high threat and the rest viewing it as less serious, highlighting growing anxiety over habitat loss from human activities. Climate change and high-tension power lines were considered low threats by 70.4% of respondents. This perception may reflect a general lack of awareness, as only few raised these issues during discussions.

Discussion

During the study, we recorded three out of the four raptor families known to occur in Ladakh including 87% species known from this region. The only family not observed during fieldwork was Pandionidae. Additionally, Tytonidae, a family of nocturnal raptors found elsewhere in India, is not present in Ladakh. We found that raptor species like Bearded Vulture, Himalayan Vulture, Golden Eagle, Black Kite, Common Kestrel, and Eurasian Sparrowhawk are the most abundant and widely distributed raptors in our study area, the first two occurring near cattle camps, particularly in the summer. This is probably because livestock density is higher in summer than winter cattle camps, which provides ready access to livestock carcasses. Our result is similar to that of Srinivasan et al. (2024) who found the maximum encounter rates for these two vultures. In contrast, the Eurasian Eagle-Owl and Little Owl were primarily observed in wetlands and pasturelands. This is probably due to rodents and small birds in such habitats, which constitute the primary prey species for owls. Our results also indicated that agricultural areas, human habitations, and riverine habitats have a higher concentration of small predatory raptors as these areas serve as habitats and nesting sites for small bird species.

The identification of active raptor nests is important from a long-term point of view for annual monitoring. For landscapes like Ladakh where the cost of maintaining long-term surveys is high, monitoring the active nests like ours and Srinivasan et al. (2024) provides a decent surrogate of population status and hence may provide early indications of declines. Most of these nests are exclusively found on slopes, inaccessible cliff faces, which naturally safeguard them from most direct human disturbances, and hence, any decline in nest-occupancy or nesting success is likely to relate to more landscape level changes than anything at the immediate proximity.

To date, no focused study has been conducted on threats to raptors in the Indian Trans-Himalaya. However, a few recent studies have addressed broader threats to wildlife in the region, particularly the impacts of free-ranging dogs on wildlife and anthropogenic pressures on birds (Naoroji & Sangha 2011; Mahar et al. 2024). In the present study, we realize that the community already realizes the threat posed by free-ranging dogs to the raptors in Ladakh along with habitat degradation. Though raptors spend considerable time in the air, away from the purview of free-ranging dogs, many raptors frequent wetlands and marshlands, where they hunt small mammals on the ground, such as voles *Microtus* spp., pikas *Ochotona* spp., and birds. During our field surveys, we observed multiple instances of free-ranging dogs actively chasing raptors in wetlands, marshlands, and pasturelands. In one notable incident, a pack of dogs was seen chasing a wake of Himalayan Vultures feeding on a Himalayan Marmot *Marmota himalayana*, eventually snatching the carcass

from them. This interaction highlights how free-ranging dogs not only pose direct threat to raptors but also disrupt their access to their prey.

Conclusion

The diverse landscape of Ladakh supports foraging, roosting, and breeding habitats for 15 raptor species that were regularly encountered during our study. This includes four species classified as of High Conservation Priority (SoIB 2023). The identification of multiple nesting and roosting sites provides an opportunity for a long-term monitoring to study the population of raptors that are resident or summer visitors. Increasing population of free-ranging dogs and ongoing habitat degradation emerge as the most immediate concerns for raptor populations. Hence, this study provides critical baseline information on the status, distribution, and threats facing raptors in the trans-Himalayan region of Ladakh.

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The Changeable Hawk-Eagle *Nisaetus cirrhatus*, from Chohal Dam, Punjab, India

The Changeable Hawk-Eagle *Nisaetus cirrhatus* is a resident across India, except for its western and northwestern parts. It is found in forests and well-wooded open areas from sea level to 2,200 m asl, but primarily below 1,500 m asl (Grimmett et al. 2011; Rasmussen & Anderton 2012; Clark et al. 2020). Here, we report a sighting from a site near the Chohal Dam in Shivalik Hills, Hoshiarpur District, Punjab, India, and provide a survey of previous reports from Punjab.

On 26 December 2024, PSA was birdwatching in a forested area near Chohal Dam (31.603°N, 75.974°E; *c.*441 m asl), Hoshiarpur District, Punjab, which is in the Shivalik Hills. At about 1035 h, PSA noticed a large raptor in the thick foliage of a tree. To avoid disturbing the bird, a few photos were taken from a distance. Though not seen fully, the individual was identified as a Changeable Hawk-Eagle **[150]** from the combination of brown upperparts with pale edges, light streaks on the head, yellow eyes, and streaked breast (Ferguson-Lees & Christie 2001; Rasmussen & Anderton 2012).

Paramnoor Singh Antaal

150. Changeable Hawk-Eagle near Chohal Dam, Punjab.

Rajasekhar & Jairath (2008) included the Changeable Hawk-Eagle in a checklist of birds of Keshopur *Chhambh,* Gurdaspur District. However, no further details were provided. Surprisingly, both subspecies, the Changeable Hawk-Eagle sensu stricto (as *Spizaetus cirrhatus limnaeetus*) and Crested Hawk-Eagle (as *S. c. cirrhatus*), were included separately in the list. This itself makes the listing unreliable as *S. c. cirrhatus* (now *N. c. cirrhatus*) is found only from eastern Rajasthan through the south Gangetic plain to southern West Bengal and peninsular India, but not anywhere near Punjab. Bal & Dua (2010) mentioned the species from a study of four natural wetlands around Gurdaspur. However, they did not provide a date, the name of the wetland, a photograph, or a detailed plumage description; hence, we consider it unreliable. Kler & Kumar (2015) indicated the species for Rupnagar District, but no photograph or additional information was provided. Their list also has several erroneous and doubtful entries and is, hence, considered unreliable. It is quite possible that a female Oriental Honey-buzzard *Pernis ptilorhynchus* was mistakenly identified as a Changeable Hawk-Eagle. Oriental Honey-Buzzard in some ages and morphs is a common confusion species for the Changeable Hawk-Eagle (Ferguson-Lees & Christie 2001).

There are, however, some confirmed records of Changeable Hawk-Eagle from Chandigarh, the state capital (Singh 2018; Chaudhary 2019; Waraich 2021; Bhalla & Bansal 2023). In the states adjoining Punjab, the Changeable Hawk-Eagle has been reported from the Sirmaur region of Himachal Pradesh and the Kalesar area of Haryana, both of which are closer to Uttarakhand. Additionally, a few sightings have been recorded from the Morni Hills in Haryana (eBird 2024). Another sighting from Himachal Pradesh is from Majathal Wildlife Sanctuary, located in Shimla and Solan districts (Mishra 1996). However, the closest sighting from Himachal Pradesh to the present sighting is from Kangra District – a specimen (UMMZ#78297) collected by Walter Norman Koelz on 12 April 1933 and presently housed in the University of Michigan Museum of Zoology, USA (UMMZ 2025). The present sighting, therefore, assumes significance for being the only photographic record from Punjab and bridging the gap between the region from the Shivalik foothills around Chandigarh and the westernmost sighting of Changeable Hawk-Eagle in Himachal Pradesh.

We thank Abhinav Chaudhary for his inputs on the status of the Changeable Hawk-Eagle in Himachal Pradesh and Tim Inskipp for the status in both Punjab and Himachal Pradesh.

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A colour-aberrant Black winged Stilt *Himantopus himantopus* from Bilaspur, Chhattisgarh

Birds use plumage coloration for concealment, mate selection, and social communication, with colour aberrations like leucism resulting from genetic mutations affecting melanin distribution. Avian color aberrations are often misidentified, with 'albino' incorrectly applied to various conditions. A standardized classification now recognizes six heritable pigment mutations: albinism, leucism, brown, dilution, ino, and melanism (van Grouw 2021). Here, we report a Black-winged Stilt *Himantopus himantopus* with 'brown' mutation, contributing to the growing documentation of avian color aberrations.

On 30 March 30 2025, at around 0900 h, during routine birdwatching at NTPC Seepat Dam (22.094°N, 82.289°E), Bilaspur, Chhattisgarh, India, we observed a flock of *c.*200 Black-winged Stilts. The stilts are well-known to demonstrate a variety of plumages (Parasharya et al. 2010; Rasmussen & Anderton 2012), particularly on its head, and we started documented these plumages in this particular flock. During this documentation, an individual exhibiting a highly unusual plumage was photographed **[151, 152]**. It appeared very pale cream with hardly any black on wings. However, despite its plumage, the bird showed typical morphological features of a Black-winged Stilt, including a slender body, long reddish legs, and a straight long dark-brown bill confirming the bird to belong to the same species. It also associated freely with the rest of the flock.

Rahul Gupta

151. A colour-aberrant Black-winged Stilt along with normal plumaged ones.

Himanshu Gupta

152. Cream-coloured Black-winged Stilt showing normal-coloured bill, legs and iris indicating 'brown' mutation.

The possibility of this colour aberration being of albinism was dismissed, as the bird's plumage was not entirely white. The bird cannot be classified as leucistic, as the pupil color was dark red, which is the expected eye-colour for this species. Progressive greying and dilution were also ruled out as the colour is not pure white and also some melanin is present in the feathers (van Grouw 2021). The most appropriate explanation for this plumage variation is the 'brown' mutation, as the typically black areas of the plumage appear cream-coloured or light brown. The bird also exhibited normal-coloured iris, legs, and bill. Additionally, the faded appearance of its feathers suggest that they may have been bleached by prolonged exposure to sunlight. The pattern and distribution of the plumage—particularly across the wings, neck, and nape—are consistent with a male Black-winged Stilt in non-breeding plumage exhibiting 'brown' mutation.

Mahabal et al. (2016) reviewed 180 instances of colour aberrations in Indian birds, but did not include any colour aberration for Black-winged Stilts. Since then, several reports of colour-aberrant birds have been published from India and other parts of South Asia, but we are not aware of any instance of colour aberrations occurring in Black-winged Stilts. In fact, we could not find any colour aberrations, from India, being reported for the family Recurvirostridae, which encompasses avocets and stilts.

We thank Dr. Asad R. Rahmani and an anonymous referee for identifying the correct color aberration, Dr. Anurag Vishwakarma for his support, and the Chhattisgarh Forest Department and Chhattisgarh State Biodiversity Board for their encouragement.

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A Long-billed Plover *Thinornis placidus* from Buhchangphai, Mizoram

On 11 January 2025, while on a birding visit to Buhchangphai (24.330°N, 92.654°E; 61 m asl), *c.*22 km north of Kolasib town, in northern Mizoram, northeast India, one of the team members, TH, noticed a small bird standing in the drying mud of a drained fishpond. At first glance, we presumed it to be a lone Little Ringed Plover *Thinornis dubius*, which we have observed visiting during the winter months from February 2022 till January 2025 (pers. obsv.). We continued our observations of this lone bird till 15 January 2025 and took several photographs to document it. On subsequent visits, we found up to four Little Ringed Plovers in the same area and were thus afforded the opportunity to compare the two birds in post-harvest paddy stubble and drying fishponds.

153. Long-billed Plover from Buhchangphai, Kolasib District, Mizoram

Both: Christopher Lawlor

154. Long-billed Plover from Buhchangphai, Kolasib District, Mizoram

We identified the bird as a Long-billed Plover *T. placidus* based on a combination of features noted during field observation and described in established literature (Kumar et al. 2005; Grimmett et al. 2011; Grewal et al. 2016; Wiersma et al. 2024). Unlike the Little Ringed Plover, which shows a striking black facial mask, a thin black forehead band, a bright yellow eye-ring, and a broad sharply defined breast band, the Long-billed Plover presents a softer facial pattern, with a thin eye-ring, a white supercilium that extends well past the eye, and a narrow breast band. The differences in structure are significant too: the Long-billed Plover has a noticeably longer and thicker bill, as well as a slightly larger, more elongated body with longer legs. In contrast, the Little Ringed Plover is smaller, more compact, and has a short, stubby bill. These combined characteristics left little doubt about the bird's identity.

Grimmett et al. (2011) mention that Long-billed Plovers breed in northern Asia and are rare but regular winter migrants to north and northeast India. They are recorded to be resident in north-eastern India as well, breeding in flowing rivers with shingle islands and banks (Grimmet et al. 2011; Majumdar et al. 2022). Eaton & Rheindt (2009) present the first breeding record in the Indian subcontinent, from Sangti Valley of western Arunachal Pradesh. Greeshma (2011) informs about their distribution, behaviour, and breeding in Rupa, Arunachal Pradesh, suggesting that they might be breeding in the area, while Grimmett et al. (2011) report that they breed in western Arunachal Pradesh.

A search into the existing bibliography of birds in Mizoram for Long-billed Plovers proved futile, except for a presumption by Choudhury (2008) as a species that could be found in Mizoram, based on reports of its presence in neighbouring states. It has not been mentioned in Zonunmawia & Pradhan (2004), Lalthanzara & Kasambe (2015), Lawlor & Lalthanzara (2021), or Sawmliana (2024). Enquiries among the local birders and exhaustive searches in social media sites such as *Facebook* and *Instagram* did not yield any reports from Mizoram. We therefore conclude that this is the first record of Long-billed Plover from the state of Mizoram.

Since there is no existing vernacular name in the Mizo language, we propose the name "Lente-hmuisei", where "lente" is the diminutive form of *Lailen*, the Mizo name for wintering wagtails and "hmui" means "bill" or "beak," and the descriptive suffix "-sei" signifies "long.".

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A presumed Whinchat *Saxicola rubetra* x Siberian Stonechat *Saxicola maurus* hybrid from Goa, India

Hybridization refers to the breeding and generation of offsprings between individuals from genetically different populations (Harrison 1993). Among the majority of animals, hybridization in birds is more thoroughly documented due to their relatively unique plumage and relative visibility making them a good model system for this subject (Randler 2004). The genus *Saxicola* (bushchats or chats) comprises of 14 species, many of which

have overlapping ranges, such as, the Whinchat *Saxicola rubetra* and the European Stonechat *S. rubicola* (Kosicki 2022). However, information on hybrid individuals within this genus is very limited in existing literature. In this note, we document a record of a hybrid individual of the Whinchat and the Siberian Stonechat *S. maurus* from Ozarim, Goa, India (15.709°N, 73.867°E; 50 m asl).

Initially, this individual was observed on 28 November 2023 and identified as a Whinchat based on features, such as, a conspicuous supercilium, long projection of the primaries, and a pale sandy rump with faint traces of streaking and heavily streaked upperparts **[155, 156, 157]**. Further examination from photographs, however, revealed characteristics inconsistent with that of a Whinchat. Notably, the bird lacked the typical streaking on the rump and the tail appeared longer than usual. A subsequent visit on 31 December 2023 provided more photographic and videography evidence supporting the initial observations. Additionally, comments from several members on social media bird identification groups were strongly inclined towards Whinchat, primarily due to two features: the conspicuous supercilium and the faint traces of streaking on the pale sandy rump. However, Peter Clement and reviewers of a previous draft of this manuscript pointed out some of the initial inconsistencies in features supporting Whinchat. These were also observed by the authors in the field and are summarised below.

1. **Supercilium:** The bird had a bright and conspicuous supercilium, a trait rarely exhibited by Siberian Stonechats but typical of Whinchats **[155]**.
2. **Primary projection:** Initially thought to be long, however, a closer inspection revealed it to be relatively shorter and more compact, a characteristic aligning more with Siberian Stonechat **[156, 157]**.
3. **Upperparts:** The upperparts were heavily streaked, with dark centres and fine pale fringes, creating a broken effect more typical of Whinchat **[156, 157]**.
4. **Rump and uppertail-coverts:** The rump and uppertail-coverts were pale sandy or light orange, unlike the tawny-brown with darker tips shown in Whinchat, and more typical of Siberian Stonechat **[156, 157]**.
5. **Tail:** The tail was relatively long and did not display the broad white basal panels typical of Whinchat, further suggesting a Siberian Stonechat feature **[156, 157]**.
6. **Face pattern:** The face pattern, especially the supercilium, was broad and pale, more in line with Whinchat than Siberian Stonechat **[155]**.
7. **Bill:** The bill appeared quite heavy and deep at the base, unlike the slender bills of both Whinchat and Siberian Stonechat **[155]**.

155. The bird showing conspicuous supercilium and dark ear coverts.

156. The bird showing faint streaking on the rump.

157. The bird showing heavily streaked upperparts.

All: Jalmesh Karapurkar

Given these observations, the individual, observed at Ozarim, Goa does not fit neatly into the identification criteria of either Whinchat or Siberian Stonechat. This combination of a broad supercilium and streaked upperparts with a pale sandy rump and long tail suggests the possibility of hybridization between the two species. It is, however, also important to account for all known hybrids between Whinchat and other species. The first example type is hybrid of Common Redstart *Phoenicurus phoenicurus* x Whinchat, from a bird trapped at Lista Bird Observatory, Norway, in September 2013, first proven case of intergeneric hybridization within the Muscicapidae by molecular evidence (Hogner et al. 2015). A similar case was suspected and presumed to be of this type from a bird photographed at Shetland, Scotland in September 2021 (Harvey & Riddington 2022). Upon comparison of the individual from Goa, with that from Shetland, we noted that the latter individual was different with respect to primary projection, which was longer, had a broader bill and dull supercilium, hence clearly eliminating this possibility. The next is hybrid of Siberian Stonechat x Grey Bushchat *S. ferreus*. However, we did not find any convincing records of such a hybrid during our literature review. The possibility of it being a Whinchat × Amur Stonechat *S. stejnegeri* was eliminated based on the breeding range of both the species which apparently have no overlap (Opaev et al. 2018). Although, there are five previous records of the Whinchat from the South Asia between 2017 and 2024 (Steiof et al. 2017; Magesh et al. 2022; Ashraf 2023; Stanba 2023; Chethan &

Prakash 2024; Magdum 2024) making this species an expected vagrant, the individual from Goa is the first presumed case of a hybrid between a Whinchat and Siberian Stonechat from India.

Hybridization between Whinchat and Siberian Stonechat is globally not well-documented, with the only known record from Finland, which was reported as an apparent hybrid between female Siberian Stonechat and male Whinchat in Siilinjarvi, Central Finland, in 1997 that had produced four young (Carter et al. 1999). However, no further information about this case, either with respect to the identification features of the young upon fledging or their survival, is available in literature. Hence, our record appears to be the first record which documents the some of the identification features shown in the Whinchat and Siberian Stonechat hybrid.

The breeding range of Whinchat stretches from Europe to the Middle East (Clement & Rose 2015; Collar & Garcia 2020), on the other hand, the Siberian Stonechat breeds throughout the Himalayas, Central Asia, eastern Europe, and parts of China (Opaev et al. 2018; Clements et al. 2024). The breeding ranges and seasons of these two species are known to overlap from northern to Eastern Europe, north of Asia and the Middle East (Fig. 1). Given that these areas are where both species co-occur during breeding seasons, it is possible that the hybrid individual found in Goa may have originated from these areas.

Recent studies have clarified that two subspecies of the Siberian Stonechat regularly winter in the Indian Peninsula: *S. m. maurus*, which breeds across eastern Russia and Central Asia, migrates south to winter in northern India, Iran, and Iraq; and, *S. m. indicus*, a resident breeder in the Himalayas, also winters widely across the Indian Subcontinent. Additionally, populations breeding in central Mongolia and the Himalayas have been confirmed to contribute significantly to wintering individuals in South Asia (Clements et al. 2024). While the precise origin of the presumed Whinchat × Siberian Stonechat hybrid individual observed in Goa cannot be confirmed without genetic data, its occurrence highlights the need for further research on migratory connectivity and population structure in Siberian Stonechats. Hypotheses on the origin of an individual and its species lineage can only be authoritatively established through genetic and molecular analysis, especially in cases of suspected hybridization, and by comparing their genetic data with samples from breeding ranges.

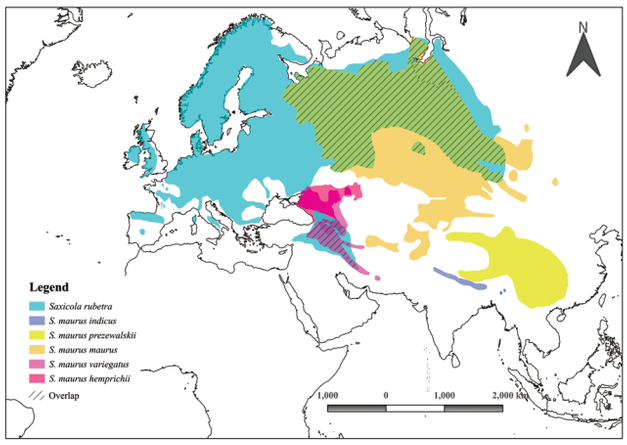

Fig. 1. Breeding distribution of *S. rubetra* (Clement & Rose 2015) and *S. maurus* (Opaev et al. 2018; Clements et al. 2024) showing zones of overlap, which are potential zones from which the observed hybrid of Whinchat × Siberian Stonechat in Goa could have possibly originated. Note: *S. m. armenicus* is treated as a junior synonym of *S. m. variegatus* (Svensson et al. 2012; Clements et al. 2024).

We thank Peter Clement and other anonymous reviewers, for their insightful comments and suggestions which greatly improved this manuscript; Dr. Pronoy Baidya for his constructive comments on the structure of this manuscript; online birding and eBird community of India for their active participation in discussions that helped in establishing the identity of this hybrid. We acknowledge the efforts of field observers, eBirders, and photographers who contributed to this work.

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Status of Indian Nuthatch *Sitta castanea,* Chestnut-bellied Nuthatch *S. cinnamoventris,* and Velvet-fronted Nuthatch *S. frontalis* in Himachal Pradesh, India

Himachal Pradesh is a northern Indian state, located in the western Himalayan region. Four nuthatches are found in the state, White-tailed Nuthatch *Sitta himalayensis,* White-cheeked Nuthatch *S. leucopsis,* Chestnut-bellied Nuthatch *S. cinnamoventris,* and Velvet-fronted Nuthatch *S. frontalis* (Grimmett et al. 2011; Dhadwal 2019). First two are found at relatively higher altitude near treeline, reaching up to 3,300 m during summer, while the latter are usually found from plains to 1,800 m (the last one may reach up to 2,200 m locally) (Kazmierczak 2000). Historically, Indian Nuthatch *S. castanea* was treated as conspecific with Chestnut-bellied Nuthatch and Burmese Nuthatch *S. neglecta* (Grimmett

et al. 1998; Praveen et al. 2016); but now it is considered a separate species as it differs morphologically from both (Harrap 2020a; Clements et al. 2023; Praveen & Jayapal 2024). Indian Nuthatch can be differentiated from similar looking Chestnut-bellied Nuthatch, as it is smaller in size with shorter slender bill, the scalloping on undertail coverts is grey vs white, the crown and nape are paler than the mantle and the underparts of the male are fractionally darker (Grimmett et al. 2011; Harrap 2020a). Both species are supposed to have parapatric distribution; Chestnut-bellied Nuthatch is found in the Himalayan foothills while Indian Nuthatch is found in lowland habitats (Harrap 2020b). In this note, we report two records of Indian Nuthatch, which are first for the state and we discuss the range of Chestnut-bellied Nuthatch and Velvet-fronted Nuthatch in Himachal Pradesh.

Indian Nuthatch *Sitta castanea*

On 17 April 2016 evening, AV was birding in Villa Round, Nahan (30.558°N, 77.305°E; *c.*900 m asl), located in the Sirmaur District in the southern Himachal Pradesh. A single nuthatch, which called with rapid single notes caught AV's attention. The calls were unlike those of the Chestnut-bellied Nuthatch which is abundant and regular in the area. It was a female nuthatch with dark scalloping on the vent and a visibly lighter nape compared to the mantle. It was photographed and identified as Indian Nuthatch based on these features and call (Vikrant 2016).

On 08 January 2018, while returning to Kangra from a birding trip to Sirmaur, CA stopped at a place near Jawar, Una District, close to the border of Kangra District (31.738°N, 76.183°E; *c.*690 m asl). The road was surrounded by a patch of forest dominated by Sal *Shorea robusta* and Pine *Pinus* sp. trees, bordered by villages and cultivation. CA saw an active male nuthatch feeding high up in the trees **[158]**. No prominent white was seen in the undertail coverts. CA took few photographs, keeping the possibility of Indian Nuthatch. The difference in size of bill and white patch on the cheeks, between Indian and Chestnut-bellied Nuthatch, was not appreciated in the field. Another male was seen on a nearby tree. Later, the photos were analyzed and it was noted that the crown and head are slightly lighter than mantle. The undertail coverts were grey, concolorous with the upperparts. As the difference in the plumage between these two species is slight, these photographs were sent to Harkirat Singh Sangha, Manoj Sharma, and Prasad Ganpule, all confirmed it as Indian Nuthatch (in litt. email dated 05 October 2018, 27 May 2020, and 29 May 2020, respectively).

C. Abhinav

158. Indian Nuthatch photographed near Jawar, Una, Himachal Pradesh on 08 January 2018.

In India the species is a resident in Gangetic Plains and terai belt from south-central Punjab and eastern Rajasthan, east to Bihar and West Bengal, and from northern Maharashtra and southern Madhya Pradesh, east to Odisha and south to northern Andhra Pradesh, also in foothills of southern Western Ghats (Rasmussen & Anderton 2012; Harrap 2020a). Its breeding was confirmed in the neighbouring state of Uttarakhand relatively recently (Sharma 2020). It is seen in deciduous forest, village groves, roadside trees and gardens, in plains and hills up to 1,000 m (Rasmussen & Anderton 2012; Harrap 2020a). Further north from Himachal Pradesh, there are no records from Jammu & Kashmir and Ladakh (Pfister 2004; Grimmett et al. 2011; Kichloo et al. 2024). Dhadwal (2019) mentioned that the species is a common and widespread winter visitor in Himachal Pradesh and was photographed near Nahan, Sirmaur District in the spring of 2018. Perhaps some confusion regarding identification was involved, as in Himachal Pradesh, most of the region comes under Shivaliks and Himalaya, which is not the preferred habitat of the species. Moreover, the similar looking Chestnut-bellied Nuthatch, a more common species, has been recorded only once in the state by the author. Thus, the two records of Indian Nuthatch by us are the first confirmed records for Himachal Pradesh.

Chestnut-bellied Nuthatch *Sitta cinnamoventris*

Chestnut-bellied Nuthatch is thought to consist of four subspecies and the north Indian birds belong to *almorae* subspecies (Harrap 2020b). This subspecies is considered to be a resident in the foothills of western and central Himalaya, in Murree Hills, Pakistan and from Uttarakhand to eastern part of central Nepal (Rasmussen & Anderton 2012; Harrap 2020b). A large gap in its distribution range is shown over Himachal Pradesh in the distribution map given by all the major works (Grimmett et al. 2011; Rasmussen & Anderton 2012; Harrap 2020b). This gap is incorrect as the species has been recorded from several districts of Himachal Pradesh.

We have recorded the species in Sirmaur, Mandi, Solan, and Kangra Districts on multiple occasions. We found it to be common in Sirmaur District where it was mostly recorded at Nahan, Jamta, and Col. Sher Jung National Park, throughout the year by us. In Solan District, we found it to be common at Chakki Mod and along the road leading to Bhojnagar from Chakki Mod. In Kangra District, CA mainly recorded it in the tea gardens around Dharamsala, where a pair was also observed building a nest in a tree hole using mud on 11 March 2012 (32.195°N, 76.308°E) **[159]**, providing evidence of its breeding in the area**.** During early April, they were seen feeding the young birds. den Besten (2004) has mentioned it as a resident and found four birds around Dharamsala and eight birds around Pong Lake, at 400–1,400 m asl, during his avian surveys between 1997 and 2003. However, the possibility of India Nuthatch for the birds seen at lower altitudes, could not be ruled out, as these records occurred before the species were split. In the same district, CA also recorded it at Garli (31.809°N, 76.244°E) on multiple occasions, between November to March. In Mandi District, CA recorded it twice in the hills near the Mandi Town (31.665°N, 76.946°E) in January. Perreau (1911) found it to be fairly common between 1,676 and 2,438 m around Bakloh, Chamba District. However, some confusion might be involved as it is usually seen below 1,500 m and to a maximum altitude of 2,000 m; and the given range matches with White-tailed Nuthatch.

Both: C. Abhinav

159. Chestnut-bellied Nuthatch making nest in Dharamsala outskirts, Himachal Pradesh on 11 March 2012.

eBird (2024a) shows multiple observations of Chestnut-bellied Nuthatch from the aforementioned districts and Chamba and Shimla, with many of these records substantiated by photographs. Most of the records are from Solan and Sirmaur Districts. In Fig. 1, we use eBird (2024b) data from Himachal Pradesh to plot the percentage reporting frequency of Chestnut-bellied Nuthatch across different months. We excluded the data from Shimla, Kullu, Kinnaur, and Lahaul & Spiti Districts owing to possible misidentification of the species with White-tailed Nuthatch which is also more likely to be found at higher elevations.

The eBird (2024a) also reveals that there are many records of Chestnut-bellied Nuthatch from Jammu & Kashmir too and its distribution range is continuous till Murre hills and surrounding regions in Pakistan. Assessing the above-mentioned records, we can say that the species is common in southern Himachal Pradesh, mainly in Solan and Sirmaur Districts while it is uncommon to rare or absent in other districts of Himachal Pradesh. We suggest a correction in the range statement of Chestnut-bellied Nuthatch in northern India.

Velvet-fronted Nuthatch *Sitta frontalis*

In the Indian subcontinent, Velvet-fronted Nuthatch *Sitta frontalis* is a resident of Himalayan foothills from Uttarakhand to Arunachal

160. Velvet-fronted Nuthatch photographed in Col. Sher Jung National Park, Himachal Pradesh on 16 February 2019.

Pradesh, hills south and east of Brahmaputra, Bangladesh, and patchily throughout hill tracts of peninsular India to Sri Lanka (Rasmussen & Anderton 2012).

AV has observed Velvet-fronted Nuthatch on several occasions at Villa Round, Nahan, Sirmaur District (30.558°N, 77.303°E), which was visited frequently between 2013 and 2017. CA and Piyush Dogra recorded it almost on every visit to Col. Sher Jung National Park (30.432°N, 77.483°E), in Sirmaur District. The National Park was visited about 1–5 times per year since 2016 and up to six birds were seen during each visit **[160]**. CA and Piyush Dogra once observed it near Dadahu (30.600°N, 77.446°E), and on one occasion at different locations along the route from Paonta Sahib to Dadahu (30.544°N, 77.480°E). The species is missing from the list of Birds of Col. Sher Jung National

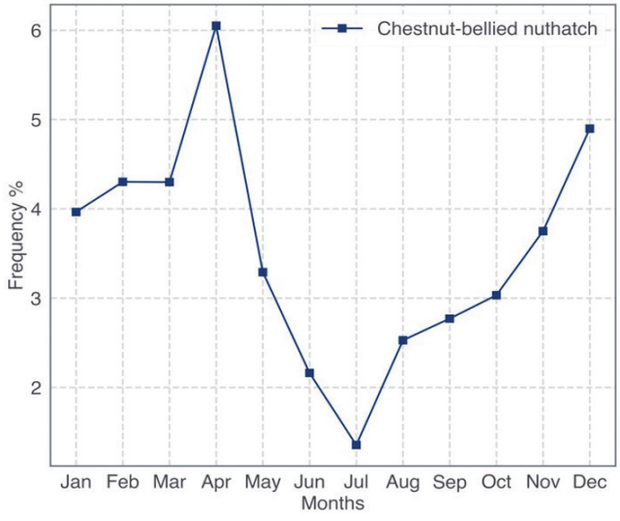

Fig. 1: The plot shows the frequency percentage of monthly total eBird checklists (1900-2024) from Himachal Pradesh (excluding Shimla, Kullu, Kinnaur, and Lahaul & Spiti Districts) that report the Chestnut-bellied Nuthatch.

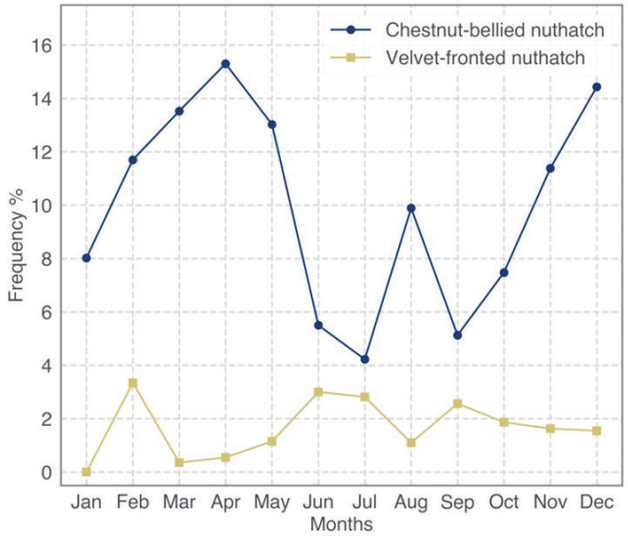

Fig. 2: Plot comparing the percentage of monthly total eBird checklists (1900-2024) that report the Chestnut-bellied Nuthatch and Velvet-fronted Nuthatch from Sirmaur District.

Park by Bhargav et al. (2007), but listed in Ghosh et al. (2007). Dhadwal (2019) has recorded it once near Paonta Sahib in the same district. Our sightings along with records by other observers (eBird 2024c), indicate that it is a common resident in Sirmaur District. Thus, the distribution range of Velvet-fronted Nuthatch extends up to the southern parts of Sirmaur District in southern Himachal Pradesh.

In Fig. 2, we compare the monthly reporting frequency percentage of Velvet-fronted Nuthatch and Chestnut-bellied Nuthatch from Sirmaur District based on eBird (2024d) data. While the Chestnut-bellied Nuthatch has a much higher reporting frequency, the Velvet-fronted Nuthatch has also been recorded almost throughout the year.

To conclude, we have provided two records of Indian Nuthatch from Himachal Pradesh, which are probably the first records of the species from the state and we urge correction in the range statement of Chestnut-bellied Nuthatch and Velvet-fronted Nuthatch in Himachal Pradesh.

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A Blue Whistling-Thrush *Myophonus caeruleus* from New Delhi, India

On the morning of 02 November 2023, we were birding from our balcony (28.552° N, 77.198° E; 227 m asl) in Hauz Khas, New Delhi, India. We spotted a bird that was unlike those seen on regular days. It was a Blue Whistling-Thrush *Myophonus caeruleus*. Key diagnostic features included a bright yellow bill, a dark blue-black head with tiny silvery spots, and bright blue tail feathers **[161]**. A notable behavioural characteristic was its distinctive hopping movement and frequent tail-fanning. The identification was confirmed using a field guide (Kazmierczak 2008) and the Merlin Bird ID app. The species is found in hilly regions of India and is a resident of the Himalaya and north-eastern India (Grimmett et al. 2011; Rasmussen & Anderton 2012). During winters, it descends to the foothills and has been rarely recorded as a vagrant further south in the northern Indian plains, with only a few records from locations such as Alwar, Bharatpur, and Lucknow (eBird 2024).

Bhamini Pande

161. Blue Whistling-Thrush photographed from Hauz Khas, New Delhi.

The species is frequently observed along streams in forested hills and mountainous regions (eBird 2024). Here, it remained next to the drain flowing through Rose Garden, which likely resembled its natural habitat. Calls were heard during dawn and dusk, with whistling calls being more prominent during the early morning hours, especially in the later winter months of February and March. Calls were recorded, and the following spectrograms were produced (Figs. 2, 3). The individual remained in the area until 24 March 2024.

According to eBird records, there has been only one prior record from the National Capital Territory (NCT) of Delhi. The

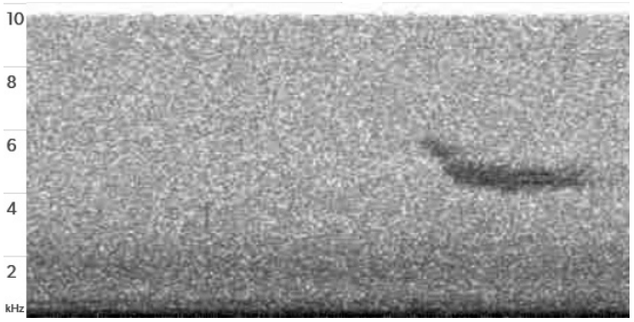

Fig. 2. Spectrogram of the call recording of Blue Whistling-Thrush observed on 15 December 2023. (Pande 2023)

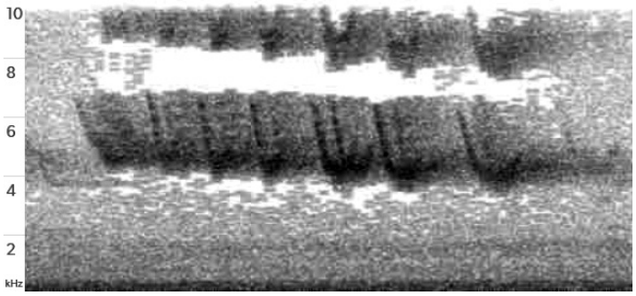

Fig. 3. Spectrogram of the call recording of Blue Whistling-Thrush observed on 24 March 2024. (Pande 2024a)

species was reported from Polo Club, Delhi Cantonment, on 28 March 2010 (Gupta 2010). An additional record exists from the broader neighbourhood of the Capital, from Rithal, Gohana near Sonipat, in January 2018 (Vyas 2023). On 05 October 2024, the species was sighted again at the same location for a second consecutive year, remaining there till the end of December 2024 (Pande 2024b). Considering the limited number of wintering records of the Blue Whistling-Thrush in the northern Indian plains, the repeated appearance of an individual at the same location in New Delhi for two consecutive winters is particularly noteworthy.

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An Indian Skimmer *Rynchops albicollis* at the Harike Bird Sanctuary, Punjab, India

The Harike Bird Sanctuary (31.151°N, 74.994°E), a large, shallow, man-made reservoir situated on the Sutlej River just downstream of its confluence with the Beas River, has historically been a known site for the Indian Skimmer *Rynchops albicollis* (Kazmierczak et al. 1998). However, global population declines have resulted in increasingly rare sightings at the site (BirdLife International 2001).

On 09 March 2025, a solitary Indian Skimmer was observed between 0945 and 1030 h, resting and sleeping on sandbars *c.* 100 m downstream of Harike Barrage (31.144°N, 74.946°E). Although surrounded by a group of River Terns *Sterna aurantia*, the individual remained largely inactive. Unlike the terns, which intermittently flew and scanned the surroundings, the skimmer mostly stayed grounded, occasionally taking brief flights before returning to the same resting spot. Its identification was unmistakable, having black upperparts contrasting with white underparts and a characteristic bright orange beak with the lower mandible distinctly longer than the upper (Grimmett et al. 2011) **[162]**.


Ritvik Singh

162. Indian Skimmer photographed from Harike Bird Sanctuary, Punjab.

The Indian Skimmer is currently listed as Endangered on the IUCN Red List, with a global population size of 2,450–2,900 mature individuals (BirdLife International 2020). eBird designates it as a *Sensitive Species*, restricting public access to the online records during its breeding season (eBird 2025). The species is highly sensitive to habitat disturbance, altered flow regimes due to dams and barrages, sand mining, and increasing human activity along river corridors (Rajguru 2017; Shaikh et al. 2018).

The present observation from Harike Bird Sanctuary, alongside the recent sighting by Majumdar (2022), reinforces the ecological importance of this wetland, given its location near the historic range of the species and its complex riverine habitat.

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A Brown Boobook *Ninox scutulata* from Nangal, Punjab, India

We report the sighting of a Brown Boobook *Ninox scutulata* from Nangal Wildlife Sanctuary (31.397°N, 76.361°E), Naya Nangal, Rupnagar District, Punjab, India, that occurred on 26 November 2024 at 0845 h. It was perched on a branch of a tree with a thick canopy, in an area with dense undergrowth of *Lantana camara*. Finding an approach for taking good photographs was impossible. However, the best shot that could be managed **[163]** proved sufficient to identify the species. The tail had broad dark bands and was tipped white. There was a small white patch between the eyes, the upper parts were uniform brown, and the scapulars were white tipped. These identifying features are confirmed in König & Weick (2008) and Taylor (2016).

Paramnoor Singh Antaal

163. Brown Boobook at Nangal Wildlife Sanctuary, Punjab showing broad dark bands on its tail.

In India, the Brown Boobook is distributed widely, throughout the Himalayan foothills, all eastern India, central India, and most of southern India (Rasmussen & Anderton 2012). Until recently, the western extent of its distribution was believed to be the Himalayan foothills of Uttarakhand. However, now the presence of this species has been documented further to the west of Uttarakhand (Abhinav et al. 2023) – from north Haryana, Chandigarh, Himachal Pradesh, and Jammu. Abhinav et al. (2023) also show one old record from Jalalpur, Hoshiarpur District, Punjab, based on a skin in the collection of Frank S. Wright. The date is given as 16 January 1892, and this skin is presently in the collection of Cornell University Museum of Vertebrates (CUMV). We checked the specimen details in GBIF (2025), but the name of the district is not mentioned. We checked with C. Abhinav, who informed us (in litt., email dated 11 December 2024) that he had chosen the most probable location to depict on the map. We also checked with Vanya Gregor Rohwer, the curator of birds and mammals of CUMV, who informed us (in litt., email dated 08 January 2025) that the specimen is of a female and no district name is indicated in their records. Upon searching for Jalalpur in Punjab on Google Maps, the broader location was suggested as Hoshiarpur district. We also know that there are multiple places by the name Jalalpur in Punjab. We could not find any record of Brown Boobook from other sources, such as journals, social media, and citizen science platforms. Hence, this 1892 record from 'Jalalpur' is the only known record from Punjab until the record presented here. The three closest locations where this species has been recorded are Amb Doli, Pathiar, Kangra district, Himachal Pradesh (Thakur 2023) at a straight-line distance of *c.*53 km in the northwest direction, Mandi in Himachal Pradesh (Abhinav et al. 2023) at a straight-line distance of *c.*65 km in the northeast direction, and Chandigarh (Singh 2021; eBird 2025) at a straight-line distance of *c.*80 km in the southeast direction. Therefore, this new record, coming 132 years after the previous one from Punjab, is significant as it complements other records from neighbouring states that extend the commonly accepted western limit of the species' distribution. It is also likely the first photographic evidence for the state.

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Two new breeding colonies of the White-rumped Vulture *Gyps bengalensis* in Bangladesh

The Critically Endangered White-rumped Vulture *Gyps bengalensis* was once an abundant and widely distributed raptor in South and South-East Asia (Prakash 1999; Gilbert et al. 2006; Chaudhary et al. 2012; Ghimire et al. 2019), including Bangladesh (Harvey 1990; Thompson & Johnson 1996). These vultures breed colonially or singly on tall trees even occasionally on cliffs, and has a global population estimate of 4,000–6,000 mature individuals (BirdLife International 2025). The species has been declining, especially since the 1990s mainly due to a widely-used painkiller and anti-inflammatory drug diclofenac used for treating livestock (Anonymous 2004; Baral et al. 2005; Cuthbert et al. 2016; BirdLife International 2025). It is the only vulture known to breed regularly in Bangladesh (Khan 2013).

White-rumped Vulture population declined by *c.*60% in Bangladesh during 2008–2012 (Khan 2013). The last countrywide

survey estimated 260 individuals with two major breeding hotspots in Moynabeel of Rema-Kalenga Wildlife Sanctuary, Sylhet division and in the Sundarbans of Khulna division (Fig. 1). Both the areas are within the 'Vulture Safe Zones' declared by the Bangladesh Government in 2014 (Alam et al. 2016; MoEF 2016). Here we report two previously unreported breeding colonies from Pabna district, under Rajshahi division and Habiganj district under Sylhet Divisions of Bangladesh. After locating the nests, we monitored them from a safe distance (at least 15 m away) to minimize disturbances. Nests were subsequently visited at irregular intervals. Data on nesting parameters were collected following the guidelines provided by Barve et al. (2020).

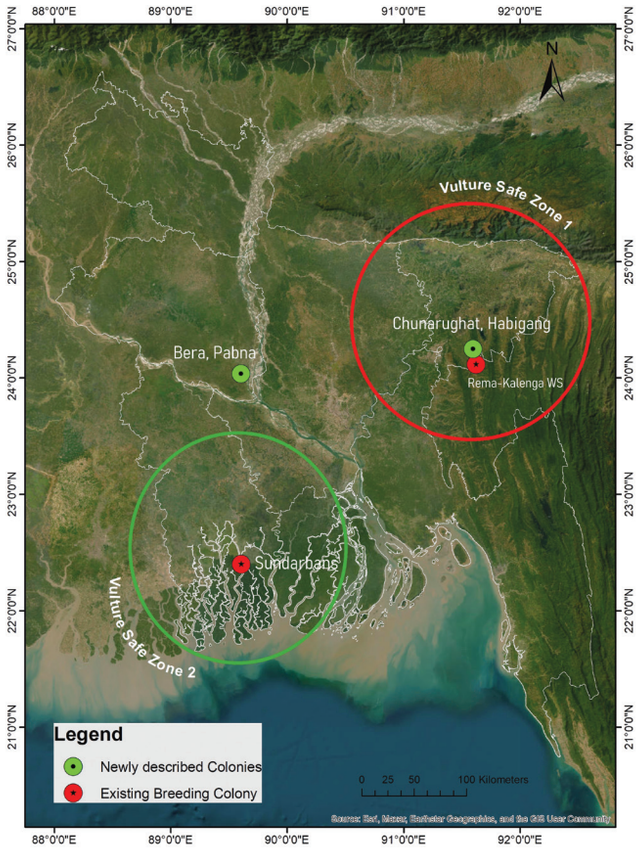

Fig. 1. Vulture safe zones, existing breeding colonies and newly described colonies in Bangladesh

Site 1: Mollah Para, Chakla Gram, Pabna district

On 14 February 2023, ASS, SS, and MJK observed seven White-rumped Vultures with four nests, of which one was active **[164]**, two abandoned **[165]**, and one under construction in Mollah Para (24.037°N 89.603°E), Chakla Gram. The site was an abandoned private land inside the human settlement under Bera Upazila [=subdistrict] of Pabna district in northwestern Bangladesh, 32 km upstream of the confluence of Jamuna and Padma Rivers. During our visit we observed one White-rumped Vulture incubating the active nest **[164]** and six were roosting on different trees in the nesting area. Three nests were built on False Ashoka [=Debdaru] *Polyalthia longifolia* and one on a Coconut Palm *Cocos nucifera*. Mean height of the nesting trees was 17.4m (n=4) and mean diameter at breast height (DBH) was 1.2m (n=4).

On 22 February 2023, ASS and MJK noted at least one vulture incubating in the active nest. On 03 March 2023, ASS and MJK found no trace of vultures; the locals informed that the nestling died due to an attack from Large-billed Crow *Corvus macrorhynchos* **[166–167]**.

164. White-rumped Vultures on an active nest on a Coconut tree.

165. An abandoned nest on a False Ashoka tree.

Both: Allama Shilbi Sadik

We identified 27 resting/roosting trees previously used by vultures within 180 m of the nesting trees, based on fecal droppings under the trees and interviews with local people. Of all species used (n=5), False Ashoka was the most frequent (81%). The rest were Tamarind *Tamarindus indica* (7%), Mango *Mangifera indica* (4%), Malabar Plum *Syzygium cumini* (4%), and Coconut (4%). The landowner reported that the vulture nesting colony is over 40 years old and there were more vulture nests in the recent past. During the 2024 breeding season, we monitored the nesting site and a single nest was built but no fledglings were observed.

Bangladesh's largest dairy cooperative named Milk Vita is located in Pabna district and the bulk supply of milk reaches from the adjacent districts, mostly from Sirajganj and Pabna (Amin & Afroz 2021). For better milk production, people living in Pabna and Sirajganj district extends *bathans* (cattle farms), which supply a large quantity of milk to the dairy farms. During the field visit in Bera upazila of Pabna district, SS found cattle carcasses in the river side by the *bathans*. As per regulations, they should have been buried. Such areas of *bathans* in remote areas may serve as the foraging grounds for White-rumped Vultures. A juvenile vulture was spotted near the Jamuna River by a resident birder in October 2018 (Samir Saha pers. comm. February 2023). Aside, a flock of 8–10 White-rumped Vultures was seen soaring over the Padma River by another birder in Pabna district in April 2019 (Md. Arifur Rahman pers. comm.

166. Vultures disturbed by Large-billed Crow.

All: Allama Shibli Sadik

167. White-rumped Vulture nestling reportedly killed by the Large-billed Crow.

February 2023). Our field observations and perceptions of local people suggest that there may be more undiscovered breeding colonies of White-rumped Vulture in Pabna and Sirajganj district. Surveying the whole districts together with awareness campaigns and regular monitoring of this reported colony to understand the breeding potential of the species is recommended.

Site 2: Jungle Bari, Habiganj district

On 27 December 2022, ASS found three vulture nests on a Shimul Tree *Bombyx ceiba* in Jungle bari area (24.249°N, 91.583°E) under Chunarughat Upazila of Habiganj District **[168]**. Two nestlings successfully fledged from two nests and one nest was unsuccessful. We followed up monitoring the nesting sites in successive breeding seasons, where one nestling from a single nest fledged in 2023–2024 season. In 2024–2025 breeding season, again three nests were built and occupied by vultures from which two nestling were successfully fledged. This nesting site is located near a tea estate and human habitation.

To halt the vulture crisis, the government of Bangladesh has taken a number of actions, such as banning the cattle painkillers diclofenac and ketoprofen, formulating a 10-year national vulture conservation action plan, establishing two vulture safe zones that span nearly 47,380 sq. km, establishing vulture rehabilitation centers, and involving local community members in conservation efforts by forming vulture conservation teams (Alam et al. 2016; MoEF 2016). Nonetheless, there are certain incidents that suggest the need for more conservation efforts. In 2023, national and international media reported that *c.* 14–26 vultures were killed at Moulvibazar, in one of the vulture safe zones, as a result of poison bait that locals had placed to kill stray dogs or jackals (Siddique 2023; Deshwara 2024). Hence nationwide population survey of vultures and their nesting colonies should be conducted, along with extensive awareness campaigns.

168. White-rumped vulture nest in a Shimul Tree at Chunarughat, Habiganj.

The study was conducted under the SUFAL-Innovative Grant of the Bangladesh Forest Department, funded by the World Bank, we are thankful to them. We would like to express our sincere gratitude to Mr. Md. Arifur Rahman and Mr. Robi Kasta, conservation activists for their continuous support to monitoring the nests during this study. We are grateful to Paul Thompson for his guidance in carrying out systematic survey. We thank IUCN Bangladesh for collaborating with Bangladesh Forest Department in organizing awareness program and for providing technical support.

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A Dollarbird *Eurystomus orientalis* in Col. Sher Jung National Park, Sirmaur, Himachal Pradesh, India

Col. Sher Jung National Park, previously known as Simbalbara National Park, is located in the Sirmaur District of Himachal Pradesh. It lies in the Shivalik region and mainly comprises of Sal *Shorea robusta* forests. On 26 May 2022, I stayed in the Forest Rest House, located within the national park. On the following morning, I started birding before the sunrise. At 0545 h, while birding around a stream, running inside the forest (30.429°N, 77.485°E), I saw an unfamiliar stocky built bird, sitting at the top of a large tree. Initially, the bird appeared very dark, due to low light conditions; however, after adjusting the camera exposure settings, key features became visible. The bird was dark greenish blue, with a darker head and a pale patch on the wings. Most distinctive features were the dark red bill with a hook and almost similar coloured legs. Based on these features, it was identified as Dollarbird *Eurystomus orientalis* **[169]**. The bird was still present when revisited an hour later, this time perched on an adjacent tree. Subsequent targeted searches at the same location by another birder, after a couple of days were unsuccessful in relocating the individual.

Of the ten currently recognised subspecies of Dollarbird, *E. o. cyanocollis* is found in the northern India and further east in eastern China, south-eastern Russia, Korea, Japan, and Greater Sundas (Fry & Boesman 2020). Ali & Ripley (1987) mentioned it as a resident, from Garhwal (westernmost record Ambala District), eastward through Nepal, Sikkim, and Bhutan to north-eastern India and Bangladesh. A specimen of Dollarbird was collected from Kalesar National Park, Haryana, which is adjacent to Col. Sher Jung National Park, on 29 May 1935 (Waite 1937) and subsequently cited by Ali & Ripley (1987). Grimmett et al. (1998) also state that its range starts from northern Haryana, with no mention of Himachal Pradesh. Grimmett et al. (2011) also exclude Himachal Pradesh from the distribution range of the species, despite the range is shown close to the border of Himachal Pradesh. However, Rasmussen & Anderton (2012) have stated that the range of Dollarbird starts from eastern Himachal Pradesh. It is possible that the Kalesar record was erroneously treated to be from eastern Himachal Pradesh, as the authors make no reference to Kalesar or Haryana. A review of available specimen databases, including those of the Natural History Museum, London (NHM 2024), VertNet (2024), and GBIF (www.gbif.org) did not yield any specimen records of the species from Himachal Pradesh. Mark Adams further confirmed that there is no specimen of Dollarbird from Himachal Pradesh in NHM, London, but they do possess the specimen from Kalesar (in litt. email dated 01 May 2024). Furthermore, no published records (Pittie 2024; Dhadwal & Kanwar 2018) or any observational record in the eBird and other public forums could be traced from Himachal Pradesh. The present record is thus the first record for Himachal Pradesh. However, the species is not unexpected as the place is only 10 km away from the Uttarakhand border, and adjacent to the Kalesar National Park where the species has previously been recorded.

C. Abhinav

169. Dollarbird *Eurystomus orientalis* at Col. Sher Jung National Park, Himachal Pradesh.

I thank Mark Adams for his help.

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In Memoriam

SUNJOY MONGA

(7 March 1962–28 May 2025)

• Naturalist • Conservationist • Author • Wildlife Photographer • Mentor

With deep sorrow and immense respect, we bid farewell to Sunjoy Monga, one of India's most influential naturalists and conservation storytellers. A man of vision, passion, and enduring curiosity, Sunjoy leaves behind a legacy that has not only enriched our understanding of nature but also inspired generations to protect it.

A Life Rooted in Wonder

Sunjoy's love for the natural world began early. He started birdwatching at the age of six, drawn to the rhythms of birdsong and the quiet mysteries of the wilderness. What began as a childhood passion blossomed into a lifetime of work that brought the beauty, urgency, and complexity of nature into the sphere of national conversation.

A Prolific Voice for Indian Wildlife

Across more than three decades, Sunjoy authored 20 works that continue to serve as vital resources for enthusiasts, students, and professionals alike. His books —*Wildlife Reserves of India* (2002), *Jungle*! *The Forests of India* (2017), *Birds of Mumbai Region* (2016), and *Flow*: *India Through Water* (2018) — beautifully married science and storytelling, ecology and emotion. His coffee table book *City Forest* took the reader on a journey through Sanjay Gandhi National Park, Mumbai – a forest very dear to his heart. He also contributed to *Lonely Planet*: *India* (13th ed.) with a column on birding in Mumbai. In fact, Sunjoy's name was synonymous with Mumbai's birdlife. No journalist would write a bird article without consulting him first.

A Communicator Across Mediums

A gifted wildlife photographer, Sunjoy won the second prize in the 1991 *BBC-British Gas International Photographer of the Year* competition. His photographs were widely used by institutions and agencies across India. He served as consultant and cameraman for Channel 4's documentary series *Wild India* and as the Indian consultant for Sir David Attenborough's BBC production, *The Trials of Life*. His ability to convey nature's drama through both visual and literary mediums made him a powerful conservation communicator.

Conservation Leadership & Public Service

At various stages in his life, Sunjoy was an Honorary Warden of Sanjay Gandhi National Park, a member of the Executive Committee of the Bombay Natural History Society (BNHS), and co-editor of its iconic magazine *Hornbill*. He was also the Associate Editor of *Sanctuary Asia* and *Cub* magazines, and a regular contributor to *Hindustan Times*, *Times of India*, *Mid-Day*, as well as Hindi and Marathi newspapers.

He was part of the Mumbai Metropolitan Region Environment Improvement Society and the Maharashtra Nature Park Society. He collaborated with WWF-India, CRY, and large corporate houses

and public sector organizations such as Godrej, Piramal, ONGC, USV, HSBC, Deutsche Bank, Nihilent, and Tata Chemicals. He was on the Tumbhi Advisory Panel, and when Prince Charles visited Mumbai, it was Sunjoy who guided him through the Vikhroli mangroves on behalf of Godrej.

Wings That Took Flight

In the early 1980's Sunjoy accompanied Rishad Naoroji to study the Crested Serpent-Eagle *Spilornis cheela* in the Rajpipla forest in Gujarat, one of early raptor studies in India, which resulted in a paper in the *Journal of the Bombay Natural History Society*. In 2005, Sunjoy founded the *India Bird Races*, now known as *Wings – The Nature Awareness Programme*, supported by HSBC since its inception. What began as a city-based birding event has now expanded to become one of India's largest citizen-led biodiversity movements, held in over 14 cities and several pan-state formats.

In 2007, he launched the *Young Rangers* programme, fostering environmental awareness among students from over 50 schools across Mumbai.

A Mentor, Guide, and Friend

Sunjoy was a mentor to hundreds of students across India — guiding them in natural sciences, writing, photography, and environmental leadership. He worked closely with former RBI Governor Dr Raghuram Rajan and served on advisory panels for Piramal, USV, and Godrej for many years.

His humility, clarity of thought, and boundless energy made him not just a mentor, but a lifelong inspiration to many.

A Man of Depth and Curiosity

Sunjoy's love for nature extended into his personal life. His collection of over 500 owl figurines from across the world reflected both his fascination with symbolism and his sense of whimsy. Each owl told a story, and collectively, they told his — of wisdom, mystery, and a love for the unusual and the beautiful.

Family, Courage & Legacy

In December 1990, Sunjoy married his companion for life, Jyoti and in September 2001, he became a proud father to Yuhina, whom he adored deeply.

In 2016, he was diagnosed with blood cancer, a battle he faced with quiet resilience. Even while undergoing treatment, he continued to teach, write, photograph, and inspire. His strength, love for his family, and commitment to his work never faltered. He remained, always, a student of nature — and a teacher to us all.

Farewell to a Force of Nature

Sunjoy Monga was more than a naturalist — he was a force of nature. A gentle disrupter. A lover of silence and song. A steward of the earth who made us stop, look, and truly see. Friends will remember his boundless enthusiasm and energy to spot and identify every bird, even pick out faint bird calls. Lately, his debilitating illness did not permit him to walk 100 m without stopping to rest but that never deterred him.

He leaves behind not only a body of work, but a movement — a million small awakenings in the hearts of those he touched. His presence will be felt in every rustling leaf, every dawn chorus, every child who picks up binoculars with wide-eyed wonder. He will be deeply missed. And eternally remembered.

– Yuhina Monga

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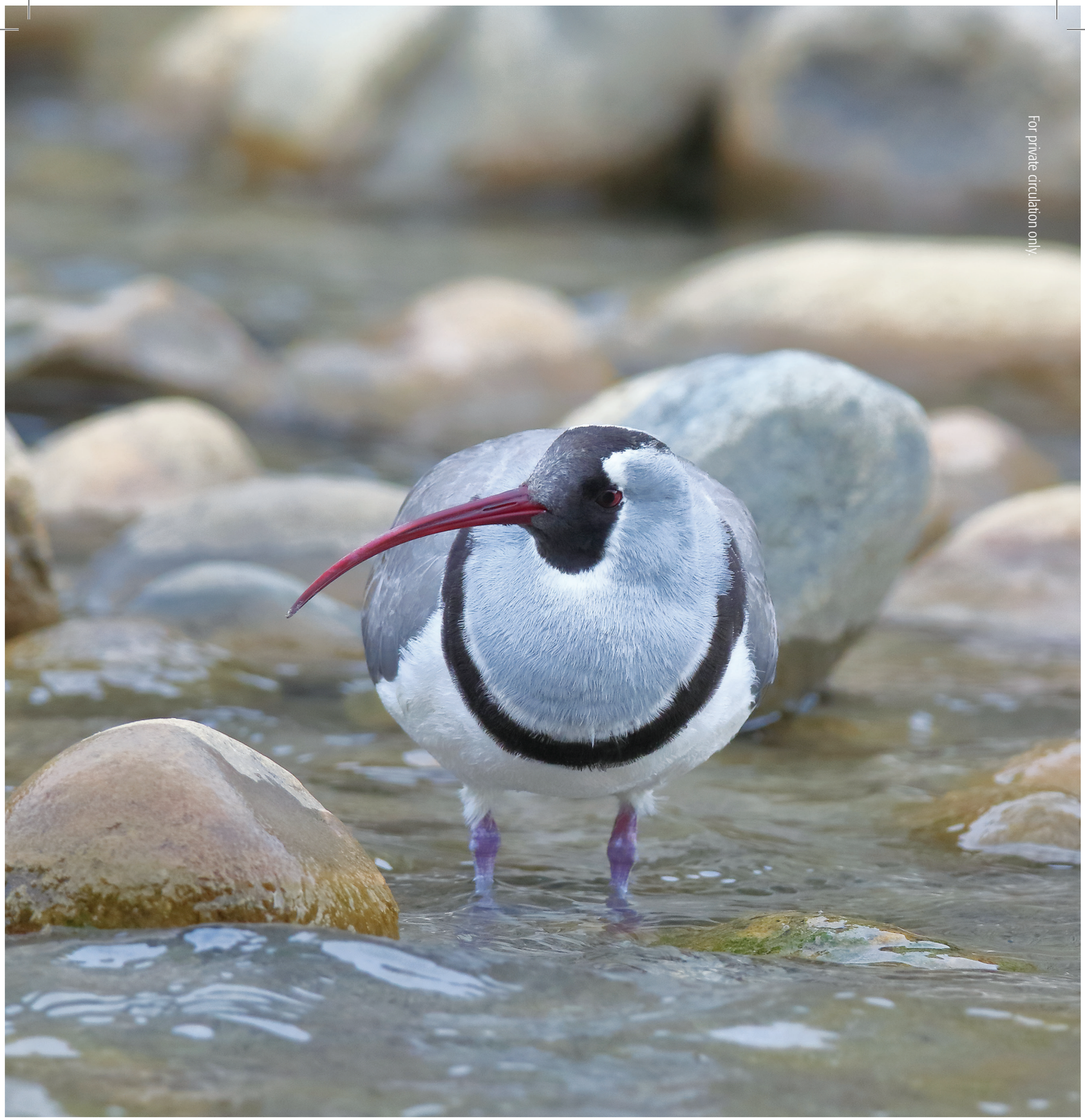
– Aasheesh Pittie



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