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Uncommon Crakes and Rails (Rallidae) from the Irrigated Agricultural Landscape of Anand and Kheda Districts, Central Gujarat, India

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Introduction

Crakes and rails (Family: Rallidae) represent one of the most poorly understood waterbird groups globally due to their cryptic plumage, secretive behavior, and preference for dense wetland vegetation (Ripley, 1977; Taylor & van Perlo, 1998). In the Indian subcontinent, comprehensive studies on their status and ecology remain scarce despite approximately 25 rallid species occurring in the region (Ali & Ripley, 2001; Rasmussen & Anderton, 2012). Agricultural wetlands, particularly rice fields, have emerged as important habitats for waterbirds across Asia (Elphick, 2000), with Sundar & Subramanya (2010) documenting 351 bird species utilizing rice fields in the Indian subcontinent, including 10 rallid species.

Historical ornithological surveys in Gujarat provide limited rallid information. Ali (1954) documented four resident breeding species: White-breasted Waterhen (*Amaurornis phoenicurus*), Common Moorhen (*Gallinula chloropus*), Purple Swamphen (*Porphyrio porphyrio*), and Common Coot (*Fulica atra*). At Ajwa Reservoir, he observed only Eastern Baillon's Crake (*Porzana pusilla*), mentioning historical records of Slaty-breasted Rail (*Gallirallus striatus*), Spotted Crake (*Porzana porzana*), and Brown Crake (*Porzana akool*). Khacher (1996) claimed the first Gujarat record of Ruddy-breasted Crake (*Porzana fusca*) but omitted several species mentioned by Ali, creating uncertainty about historical status.

The implementation of major canal irrigation projects since 1960, particularly the Mahi Right Bank Canal (MRBC) system and subsequently the Narmada Canal network after 2002, has fundamentally transformed central Gujarat's agricultural landscape, creating extensive networks of perennial and seasonal wetlands (Mukherjee et al., 2000). Despite the potential importance of these irrigated landscapes for rallids, no systematic surveys have been conducted. This study documents the occurrence, distribution, abundance, and habitat use of uncommon rallid species in the canal-irrigated agricultural landscape of Anand and Kheda districts,

comparing current findings with historical records to assess changes in status and evaluate conservation significance.

Materials and Methods

Study Area: The study was conducted in portions of four tehsils spanning Anand and Kheda districts in central Gujarat: Vaso (22.66°N, 72.75°E) and Matar (22.77°N, 72.64°E) tehsils in Kheda District, and Tarapur (22.70°N, 72.90°E) and Khambhat (22.31°N, 72.62°E) tehsils in Anand District (Fig. 1). The region experiences tropical semi-arid climate with annual rainfall of 800–900 mm. The landscape has been intensively irrigated since 1960 through the MRBC system, with dominant land use comprising agricultural fields (approximately 85%), interspersed with villages, tanks, and canal networks. The agricultural cycle follows dual-cropping: paddy (*Oryza sativa*) during monsoon (July–October/November) with fields under 5–15 cm standing water, and wheat (*Triticum aestivum*) during winter (November–March/April) on drained fields. During monsoon, the landscape becomes extensively inundated, creating temporary wetland habitat. After harvest, low-lying patches, canal seepage zones, and village tanks retain water through winter, creating a mosaic of perennial and seasonal wetlands.

Key study sites included Deva Canal (22.74°N, 72.77°E), a 20 km MRBC branch with seepage creating marshy conditions in adjoining fields; Vastana Road (22.75°N, 72.81°E), a 7 km stretch with four marshy patches (0.5–2 ha each); Tarakpur Check Dam (22.68°N, 72.88°E), a shallow wetland approximately 8 km long and 0.5–1.5 km wide; and Pariej Wetland Complex (22.71°N, 72.59°E), a nationally important wetland with large storage tanks including Kanewal and Gobarapura (each >400 ha).

Survey Methods: Systematic surveys were conducted December 2015–March 2019, totalling approximately 150 field visits and 450 hours of observation. Survey intensity varied by season: December–March (3–5 visits per month, 120 visits total), June–October (2–3 visits per month, 25 visits), and

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April–May (monthly visits, 5 visits). Each visit lasted 2–4 hours, conducted primarily during early morning (0600–1000h) and late afternoon (1600–1900h) when rallids are most active. Surveys employed standardized protocols including walks along canal banks and wetland margins with observation stops every 50–100 m, photography for identification confirmation, behavioral observations (minimum 15 minutes when birds detected), and habitat characterization including water depth, vegetation type and cover, substrate, and distance to cover. Species identification followed Grimmett et al. (2011) and Rasmussen & Anderton (2012). For each observation, we recorded date, time, location, species, number, age/sex, behavior, habitat characteristics, and weather conditions.

Results

We documented 12 rallid species including six commonly occurring species (White-breasted Waterhen, Eurasian Moorhen, Eurasian Coot, Grey-headed Swampphen, Brown

Crake, Eastern Baillon's Crake) and six uncommon species (Fig.1). Table 1 provides comprehensive summary of all observations for the six focal species, including abundance, distribution, temporal patterns, and habitat characteristics.

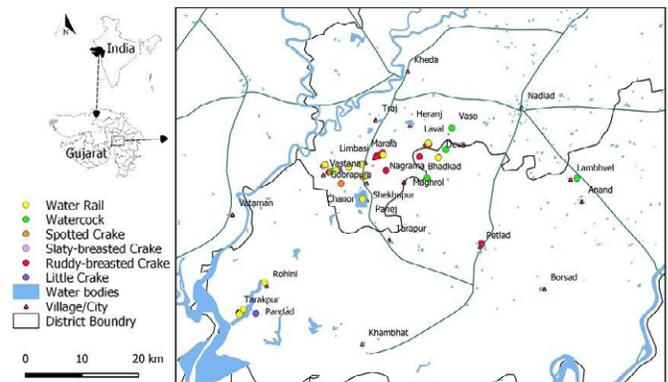


Fig. 1 Distribution records of six species of rallids in the study area.

Table 1: Summary of Uncommon Rallid Species Observations in Anand and Kheda Districts, Gujarat (2015–2019)

Species	Key Locations	Date Range of Sightings	Primary Habitats	Significance/ Key Findings
Little Crake (<i>Zapornia parva</i>)	<ul style="list-style-type: none"> Vastana Road, Matar Tehsil Khambhat Tehsil Gobarapura wetland Tarakpur Tidal Regulator 	October 2018 - March 2019	Shallow wetlands (0.5–1.2 m depth) with sparse <i>Typha</i> (20–40% cover) and floating vegetation	First record for rice-dominated agricultural landscape in Indian subcontinent. Suggests species is overlooked rather than rare in Gujarat. Likely present throughout canal-irrigated areas.
Ruddy-breasted Crake (<i>Porzana fusca</i>)	<ul style="list-style-type: none"> Deva Canal (20 km stretch) Parij wetland (3 locations) Narda tank Chanor Road Limbari-Vastana Road Tarakpur Check Dam 	December 2015 - May 2016	Canal seepage zones with dense vegetation (60–90% cover), shallow water (5–30 cm)	High density observed - at least 12 pairs along 20 km stretch. More widespread and abundant than previously thought in Gujarat.
Spotted Crake (<i>Porzana porzana</i>)	<ul style="list-style-type: none"> Vastana Road (3 locations) Chanor Road Deva village Multiple sites across Gujarat 	December 2017 - February 2018	Moderate to dense emergent/floating vegetation (40–70% cover), shallow water (10–30 cm)	Confirms widespread winter distribution in Gujarat. Multiple records from Anand, Kheda, Ahmedabad, Rajkot, Bhuj, and Surat districts.
Water Rail (<i>Rallus aquaticus</i>)	<ul style="list-style-type: none"> Tarakpur Check Dam (2 locations) Rohini Parij wetland Vastana Road Deva Canal 	December 2017 - April 2018	Dense reed beds (<i>Typha</i> , <i>Phragmites</i>) (70–95% cover), water depth 20–80 cm	Indicates species may be extending wintering range further south to Indian Peninsula. Suggests uniform distribution in suitable marshy habitats during winter.

Slaty-breasted Rail (<i>Gallirallus striatus</i>)	<ul style="list-style-type: none"> • Tarakpur Wetland • South Gujarat (Bharuch, Valsad, Navsari) 	June - October 2018	Dense emergent vegetation (80–90% cover), shallow water (15–40 cm)	Provides evidence of monsoon breeding in central and south Gujarat. Observation of juvenile at same location as adult suggests local breeding.
Watercock (<i>Gallinula cinerea</i>)	<ul style="list-style-type: none"> • Paddy fields • Deva Canal • Vastana Road • Narda Tank • Lambhvel sewage pond (historical) 	June - August 2018	Flooded paddy fields (breeding), wetland margins with dense grass	Monsoon breeder in Gujarat. 10 of 11 sightings during June-August suggests six-month breeding presence. Previously absent in Ali's 1954 survey but now recorded statewide.

Little Crake (*Zapornia parva*)

The Little Crake, a winter visitor occurring from November through March, represents the first record from rice-dominated agricultural landscapes in the Indian subcontinent. We recorded fifteen individuals at 12 locations across three primary sites during November 2018–March 2019 (Fig. 2). Our first detection comprised two individuals photographed at Vastana Road on November 3, 2018, including an adult male displaying diagnostic features such as light bluish-grey lower neck and breast, red eye, prominent red bill base, and long primary projection extending 15–20 mm beyond scapulars, which distinguishes it from the similar Eastern Baillon's Crake. At Vastana Road, five individuals were observed at two locations one kilometer apart, showing strong site fidelity over four months. By mid-February, habitat desiccation forced birds to relocate to Gobarapura Wetland where five individuals were documented at five locations through March 20, 2019. At Tarakpur Tidal Regulator, we confirmed presence at seven locations with three pairs and four single birds, with three individuals showing site fidelity through March 20, 2019.



Fig. 2 Little Crake at Vastana road, clearly showing long projecting primaries, extending much beyond the length of scapulars.

Pic: Vishal Mistry

Little Crakes consistently selected shallow water habitats ranging from 0.5–1.2 m depth (mean: 0.8 m, n=45 observations) characterized by sparse emergent *Typha angustata* (20–40% cover) with floating *Ipomea aquatica* (20–35% cover) and algal scum, soft mud substrate, and proximity to dense cover (2–8 m distance). Feeding activity concentrated during early morning hours (0600–1100h, representing 62% of observations, n=45) and late afternoon (1700–1900h, 31%), with birds retreating to dense *Typha* stands during midday. Birds foraged by walking deliberately on floating vegetation and algal mats, picking aquatic insects, larvae, and small invertebrates from vegetation surfaces.

Multiple records between 2018-2020 confirm the occurrence of the Little Crake in Gujarat. The first photographic record was from Ranjitsagar Dam near Jamnagar (Trivedi 2018), followed by observations of a pair at Paal Wetland near Surat (Patel 2019) and a photographed male at Nalsarovar Bird Sanctuary on 13 March 2019, which remained until late March (Sama 2019). Three individuals were also reported from the Morkarsagar wetland complex, Porbandar, in December 2019 (Vargiya 2020). Together, these records indicate that the Little Crake is likely widespread in canal-irrigated landscapes across southern and central Gujarat, suggesting it has been previously overlooked rather than being a rare or vagrant species.

Ruddy-breasted Crake (*Porzana fusca*): The Ruddy-breasted Crake, functioning as a resident breeder, proved to be the most abundant uncommon species in our study area. We documented a minimum of 24 pairs (48 individuals) at 15 locations during December 2015–May 2016 (Fig. 3). Intensive surveys along Deva Canal revealed 12 distinct locations along the 20 km stretch near villages including Deva, Laval, Bhadkad, Maalawada, and Naghrama, yielding a density estimate of 0.6 pairs per kilometer. Additional observations occurred at three Pariej wetland locations, Narda tank, Chanor Road, Limbasi–Vastana Road, and Tarakpur Check Dam. VM photographed a breeding-condition pair at Deva village showing bright

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plumage and territorial behavior, confirming local breeding activity (Fig.4). This species inhabited areas with water depth ranging from 5–30 cm (mean: 15 cm, n=32 observations) characterized by dense emergent vegetation including *Typha*, *Phragmites*, *Ipomea*, and *Polygonum* with 60–90% cover, showing particular preference for canal seepage zones where dense vegetation meets agricultural fields. Birds were active primarily during dawn and dusk, occasionally visible during overcast midday conditions, feeding on decaying organic material, earthworms, maggots, and aquatic invertebrates. At Chanor Road, one individual regularly visited an artificial feeding site throughout December 2017–January 2018, feeding alongside a Spotted Crake and providing rare opportunity for comparative behavioral observations. Recent observations from southern and central Gujarat (Parasharya et al., 2016) combined with our findings suggest this species is significantly more abundant and widespread than previously recognized throughout canal-irrigated regions where suitable dense wetland vegetation persists.



Fig. 3 Ruddy-Breasted Crakes were commonly found along the canals in the study region. Pic. Vishal Mistry



Fig. 4 Mounting/mating of a Ruddy-breasted crake pair at Deva Village. Pic: Vishal Mistry

Spotted Crake (*Porzana porzana*): The Spotted Crake occurred as a winter visitor from December through February, with five individuals documented at five locations during December 2017–February 2018 (Fig.5). VM and SP recorded individuals at three separate locations on Vastana Road, each featuring similar habitat conditions. At Chanor Road, VM monitored a single individual feeding at an artificial feeding site for two months, where this bird fed alongside a Ruddy-breasted Crake, showing preference for open muddy areas at vegetation edges and feeding on maggots and small invertebrates primarily during 0700–0900h and 1700–1800h. Another individual was recorded at Deva village on December 22, 2017, in a canal seepage zone with dense *Typha* vegetation.



Fig.5 Spotted crake at Vastana.

This species utilized habitats with water depth of 10–30 cm (mean: 18 cm, n=8 observations) characterized by moderate to dense emergent and floating vegetation (40–70% cover), soft mud substrate, and preference for vegetation edges and semi-open areas. The species proved highly secretive, typically remaining within dense vegetation, though when feeding in open areas it maintained close proximity (2–5 m) to escape cover. Birds fed by walking slowly through shallow water and on floating vegetation, picking invertebrates from vegetation and water surface, with escape response involving quick running into cover rather than flight.

Extensive recent records across Gujarat confirm widespread winter distribution. These include observations by Tejus Naik (2012) in Kheda District in February 2012, from Vadodara (Vyas 2021), multiple records from Surat region (Desai, 2017; Bhatt & Patel, 2017; Patel, 2017), observations at Mokarsagar Wetland Complex in Porbandar (Vargiya et al., 2020), Ashok Mashru reporting near Rajkot for two consecutive years in January and February 2018 (Mashru & Trivedi, Balar, 2018), photographs from Bhuj, Kachchh in February 2018 (Balar, 2018). These numerous recent records contrast sharply with

historical assessments, with Kazmierczak (2000) noting only two winter records in Gujarat. Our compilation confirms the species is a regular winter visitor that has been significantly under-recorded historically.

Water Rail (*Rallus aquaticus*): The Water Rail occurred as a winter visitor from December through April, with ten individuals documented at seven locations within a 40 km radius during December 2017–April 2018, possibly indicating southward range extension (Fig. 6). At Tarakpur Check Dam in December 2017, three individuals were sighted at two distinct locations on a single survey day, both sites featuring dense *Typha* and *Phragmites* stands bordering open water with depths of 40–80 cm. At Rohini in March 2018, VM and BMP observed one individual consistently for one week, with the bird showing strong site fidelity and utilizing the same 50 m stretch of canal margin with dense emergent vegetation. VM recorded two Water Rails at separate locations within Pariej wetland complex during January–February 2018, while at Deva Canal in February 2018, two individuals were consistently observed for 10–15 days and may have represented a pair based on their close association. A single Water Rail was photographed feeding in close proximity to a Little Crake on Vastana Road on November 9, 2018, providing rare documentation of both species utilizing the same microhabitat. A bird observed on March 29, 2018 displayed bright, fresh plumage characteristic of pre-breeding condition, with the last sighting occurring on April 2, 2018, indicating departure by early April for northern breeding grounds.



Fig. 6 The Water Rail was recorded at least from seven sites in the study area during 2017–2018.

Water Rails utilized habitats with water depth ranging from 20–80 cm (mean: 45 cm, n=15 observations) characterized by dense emergent vegetation including *Typha* and *Phragmites*

with 70–95% cover, showing strong preference for margins of deeper water bodies with extensive reed beds while avoiding completely open habitats. Birds proved highly secretive, remaining within or at immediate edges of dense vegetation with only brief feeding forays into semi-open areas during early morning (0630–0800h) and late evening (1730–1900h). Sharp "kip" calls were heard occasionally during evening hours.

Standard references indicate Water Rail distribution is limited primarily to western Himalayas and Kashmir (Ali & Ripley, 2001), but numerous western Indian records have accumulated including observations from Andhra Pradesh (Manakadan & Sivakumar, 2004; Kannan et al., 2009), Madhya Pradesh (Chandra et al., 2010), Maharashtra (Punjabi, 1997), and extensive recent Gujarat records (Shah, 2004; Jadeja & Shah, 2007; Bishop, 2010; Joshi & Karia, 2015; Bhatt & Patel, 2017; Andharia, 2018; Mashru, 2018; Patel, 2018). Seven locations documented in Anand and Kheda districts indicate relatively uniform distribution in suitable marshy habitats during winter, suggesting that canal-irrigated regions with appropriate vegetation structure support substantial winter populations and that the species may be extending its wintering range southward into peninsular India.

Slaty-breasted Rail (*Gallirallus striatus*): The Slaty-breasted Rail occurs as a resident breeder with monsoon breeding confirmed through our observations. We documented two individuals at Tarakpur Wetland: a single adult photographed on June 1, 2018 that remained throughout June, and a juvenile observed on October 2, 2018 at the same location (Fig.7, Fig.8). The adult inhabited dense *Typha* and *Phragmites* stands at the wetland margin adjacent to irrigated agricultural fields, in areas with water depth ranging from 15–40 cm and 80–90% vegetation cover. The juvenile showed characteristic plumage including brownish-grey overall coloration with less distinct barring than adults, and behavior typical of recently fledged birds. The observation of a juvenile at the same location where an adult was present during the breeding season provides strong circumstantial evidence of local breeding, confirming suspicions by Parasharya et al. (2004) regarding monsoon breeding in central Gujarat.

Recent Gujarat records indicate wider distribution than previously recognized (Ganpule et al., 2022) including observations from Barda in Porbandar (Das, 2010), Mokarsagar Reservoir in Amreli (Vagadiya, 2019), multiple records from Vadodara (Ameta et al., 2020; Solomon, 2020), Bharuch District observations in June 2012 and April 2013 (Patel, 2016), records from Baradasagar Dam and Nalsarovar (Ganpule, 2016), and particularly from south Gujarat in Valsad and Navsari

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districts with documented nesting reports (Kapdi et al., 2020). The accumulation of records, particularly breeding season observations and nest records from south Gujarat, confirms that this species functions as a resident breeder in suitable wetland habitats across central and southern Gujarat, with the species' association with monsoon-flooded agricultural landscapes and canal-irrigated wetlands suggesting that irrigation development may have facilitated range expansion or population increase.



Fig. 7 Slaty-breasted Rail was seen throughout the month of June in 2021 at Tarakpur wetland.



Fig. 8 A juvenile Slaty-breasted Rail seen on 02 October 2018 at Tarakpur wetland.

Watercock (*Gallicrex cinerea*): The Watercock occurs as a monsoon breeding visitor from June through November, with seventeen individuals documented across 11 sightings during June–December 2018. Notably, ten sightings comprising 16 individuals (91% of total) occurred during June–August, confirming status as a monsoon breeder. On July 31, 2018, four males and one female were observed in paddy fields during peak breeding season, with males displaying characteristic breeding plumage including black overall coloration with red frontal shield, red legs, and yellow bill (Fig. 9). Males engaged in dramatic courtship displays by holding wings loosely away

from body, standing erect with neck extended, lowering head toward ground, and producing loud, resonant calls audible at considerable distance (estimated 500+ meters). These displays occurred in flooded paddy fields with water depth of 10–15 cm and rice plants approximately 40–50 cm tall providing partial cover. Additional sightings of pairs or single males occurred at Deva Canal, Vastana Road, and Narda Tank. One female recorded in December 2018 represented post-breeding lingering, with this late record suggesting that some individuals may remain longer than the typical breeding period (Fig.10). Birds utilized flooded paddy fields during early to mid-growth stages (rice 30–60 cm tall) with water depth of 5–15 cm for breeding habitat, while post-breeding individuals frequented wetland margins, canal edges, and tall grass areas near water with moderate to dense herbaceous vegetation providing cover while allowing movement. Males proved highly vocal and conspicuous during peak breeding in July–August, with territorial behavior evident as males defended specific paddy field areas.



Fig. 9 Display by a Watercock male. Pic: Vishal Mistry.



Fig.10 Female Watercock sighting during the month of December. Pic: Vishal Mistry.

The Watercock's current status represents a significant change from historical records, as Ali (1954) did not record this species

during his comprehensive Gujarat survey, suggesting either genuine absence or extreme rarity in the 1950s, or that the species was present but overlooked due to its cryptic behavior and monsoon occurrence when most surveys were conducted during winter. Since Ali's survey, the species has been recorded throughout Gujarat during southwestern monsoon (Mashru, 2017; Patel, 2015; Patel et al., 2019). The species' current widespread occurrence suggests either genuine range expansion or population increase, possibly facilitated by extensive paddy cultivation in irrigated areas created through canal development since 1960, or improved detection due to greater observer coverage during monsoon months.

Discussion

Principal Findings: This study reveals unexpectedly high diversity and abundance of rallids within canal-irrigated agricultural landscapes of Anand and Kheda districts, challenging the prevailing view that intensive agriculture offers limited conservation value. Twelve rallid species were recorded, including six previously regarded as uncommon or poorly known in Gujarat. Notably, the study documents the first agricultural landscape records of Little Crake and Spotted Crake from the Indian subcontinent, confirms breeding by Slaty-breasted Rail and Watercock, and reports high local abundance of Ruddy-breasted Crake, with a minimum of 24 pairs along a 40 km canal stretch (0.6 pairs/km). The widespread occurrence of several "rare" species suggests that historical perceptions of rarity may largely reflect detection bias rather than true scarcity.

Ecological Mechanisms Supporting Rallid Diversity: Irrigation development has fundamentally reshaped wetland availability in central Gujarat. The Mahi Right Bank Canal (operational since the 1960s) and the Narmada canal network (post-2002) have created a dense matrix of perennial and semi-perennial wetlands embedded within agricultural land. Canal seepage and water retention in village tanks and storage reservoirs sustain shallow wetlands year-round, characterized by dense emergent vegetation and high invertebrate productivity-conditions highly suitable for rallids. Linear seepage habitats along canals function as high-quality micro-wetlands, as illustrated by the high density of Ruddy-breasted Crake along the Deva Canal. Habitat heterogeneity generated by irrigation infrastructure allows coexistence of rallid species with contrasting ecological requirements. Deep, vegetated water bodies support Water Rail, shallow sparsely vegetated wetlands favor Little Crake, flooded paddy fields provide breeding habitat for Watercock, and dense marshy vegetation along canals and tanks supports Ruddy-breasted Crake and

Slaty-breasted Rail. This fine-scale mosaic of water depth, permanence, and vegetation structure is critical for sustaining multi-species assemblages. Rice cultivation further enhances habitat availability. Flooded paddy fields during the monsoon (July–October) provide extensive breeding and foraging habitat, particularly for Watercock. Post-harvest fields retain moisture and abundant invertebrate biomass, supporting winter-visiting rallids before they shift to perennial wetlands as fields dry. The predictability of these seasonal resources likely facilitates efficient habitat use by migratory species. Beyond rice fields, village tanks, reservoirs, vegetated field bunds, drainage channels, and small groves collectively add structural complexity, increasing food availability and shelter within the agricultural matrix.

Earlier surveys focused largely on winter months and on large wetlands, overlooking monsoon breeders and small, scattered agricultural marshes. Targeted surveys using habitat-specific searches, seasonal coverage, and increased observer expertise revealed substantially higher diversity and abundance. Improved access to identification resources and bioacoustic tools has further enhanced detection. These findings suggest that current distribution maps and abundance estimates for many rallids in India likely underestimate their true occurrence, especially in agricultural landscapes.

Conservation Implications: Intensively irrigated agricultural landscapes should be recognized as integral components of regional wetland conservation networks. While they do not replace natural wetlands, they provide complementary habitats that support significant populations of secretive and uncommon species. In regions where natural wetlands have been extensively lost, agricultural wetlands may represent primary habitats for many rallids. Water and agricultural management practices can substantially influence habitat quality. Maintaining year-round water flow in canals and storage tanks, retaining shallow water zones (5–50 cm), conserving vegetated canal margins, and avoiding excessive clearing of emergent vegetation enhance rallid habitat suitability. Despite current abundance, several threats warrant attention: increasing agricultural intensification and mechanization, canal lining that eliminates seepage wetlands, water scarcity from competing demands, wetland drainage, and land conversion for industrial or residential use. Without deliberate management, these pressures could rapidly erode the habitat mosaic that currently supports rallid diversity.

Comparative Context and Limitations: Species richness recorded in this study equals or exceeds that of several natural wetlands in Gujarat, indicating that agricultural wetlands can

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support comparable rallid assemblages. Evidence of breeding and high local densities confirms that these landscapes function as complete habitats rather than transient foraging areas. However, limitations include non-systematic spatial coverage, greater survey effort in winter than monsoon, short study duration, lack of detection-probability estimates, and limited nest confirmation. Counts should therefore be interpreted as indices of relative abundance. Nonetheless, the extensive survey effort provides the most comprehensive assessment of rallids in intensively cultivated Indian landscapes to date.

Conclusion

This study demonstrates that canal-irrigated agricultural landscapes of central Gujarat support unexpectedly high diversity and abundance of rallids, including species previously considered rare or poorly known. The documentation of breeding by multiple species and high densities of Ruddy-breasted Crake confirms that these working landscapes sustain complete life cycles. Irrigation infrastructure and rice cultivation have created novel wetland habitats that partially compensate for natural wetland loss, highlighting their unrecognized conservation value. The apparent rarity of several rallid species likely reflects historical under-recording rather than true scarcity, underscoring the importance of systematic, habitat-focused surveys. Given the vast spatial extent of agricultural landscapes relative to protected wetlands, integrating agricultural wetlands into mainstream conservation planning is essential. Recognizing and managing these landscapes as multifunctional systems—supporting both food production and biodiversity—will be critical for the long-term conservation of rallids and other wetland-dependent species across South Asia.

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Notes on breeding of Oriental Pratincole *Glareola maldivarum* in South Gujarat

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Introduction

Oriental Pratincole (*Glareola maldivarum*) is a monotypic species, which was earlier treated as a subspecies of Collared Pratincole (*G. pratincola*) (Maclean & Kirwan 2020a). However, it is now considered to be a separate species. It is listed as a 'Least Concern' species in the IUCN Red List and is included in Schedule II under the Wildlife Protection Act, 1972 (as per the amendment done to the WPA in 2022). In India, it is said to breed in W Gujarat, Punjab, Haryana, Delhi, NE Maharashtra, NW Andhra Pradesh, S and W Bengal, and Kerala; however, its distribution and movements are poorly understood and it is said to be erratic and local (Rasmussen & Anderton 2012). It prefers a habitat of dried-out bare mud flats by larger rivers, dams and marshes and also, low-lying pastures and fields, often near water (Grimmett et al. 2011).

We report breeding and the first regular nesting site where a large colony has been observed in Gujarat (and western India).

Distribution and breeding records in Gujarat

Grimmett et al. (2011) mentioned that the Oriental Pratincole was a widespread resident in the state, and it is shown in the distribution map as being resident in Saurashtra & Kachchh. Rasmussen & Anderton (2012) mentioned breeding in 'W Gujarat' (probably meaning Kachchh and some parts of Saurashtra). Sangha (2021) gave it as a resident in Gujarat, with the distribution map showing its occurrence in Kachchh, Saurashtra and some parts of north and central Gujarat. It is considered as an 'uncommon resident with isolated records from the state' by Ganpule et al. (2022), with the distribution map showing its occurrence in some parts of Kachchh and central Gujarat, entire Saurashtra, and coastal parts of central and southern Gujarat. However, there are very few records / observations of nesting in Gujarat, with breeding reported only from some parts of Gujarat.

Though the field guides (Grimmett et al. 2011, Rasmussen & Anderton 2012) and reference books (Sangha 2021) state that this species breeds in Gujarat, there are very few actual breeding records from our state. There are two breeding records reported by Jugal Tiwari (Tiwari 2014, 2016) at Banni Grassland in Kachchh on 19 April 2014 and 21 June 2016, each time with one nest. Another photo of eggs by Khirani (2014), dated 26 April 2014, from Kachchh on 'eBird' seems to be the same nest reported by Tiwari (2014). Apart from these, two indirect evidences of breeding at Nalsarovar Birds

Sanctuary are available on the social media / online; around one month old juvenile photographed on 25 Jun 2023 by Sinh (Sinh 2023) and one photograph of an adult bird, with a note of distraction display, on 3 April 2014 by Mehta (Mehta 2014) is posted on the iNaturalist website. Juveniles, probably two months old, have been reported from Velavadar National Park too and the photos can be seen on 'eBird'. A juvenile with an adult was seen at Machchhu Dam area near Morbi by Prasad Ganpule in June 2025 (*pers. comm*). Thus, breeding has been reported from Gujarat and it seems that Banni in Kachchh, Nalsarovar Bird Sanctuary, Machchhu Dam, Morbi and probably Velavadar National Park are the only locations where breeding of Oriental Pratincole is known from our state.

Study area

Alia bet, alias Aliya bet (Fig 1a, 1b) is a large bet located between the mouths of the Narmada and Kim Rivers, which is adjacent to Hansot village in Bharuch District. Bet is a Gujarati word meaning island, and Aliya bet is an island near Hansot. Earlier, the bet was an island in the Narmada River, but now its northern part is adjoined with Hansot due to a change in the flow of the Narmada River in the last half decade. The length of the bet is about 28 km and its total area is more than 16000 hectares. Around 2/3rd area of the bet is administered under Vagra Tehsil while the remaining area is under Hansot Taluka of Bharuch District.

The entire bet is submerged by rainwater in the monsoon, making it an ideal habitat for waders up to October. Thereafter, the bet dries up completely and turns into a Rann-like area. However, some parts of the bet are flooded at high tide from the Gulf of Khambhat. The bet is treeless and has saline soil with short grasses. However, it now faces challenges of invasive *Neltuma juliflora* and a part of the river bank has turned into a dense forest of this invasive species. The bet is completely uninhabited, except for around a hundred families of the *Maldhary* (Pastoral) community.

Methods and observations

Being close to our home, we visit this area regularly from September to November for bird watching, but we never visited it in the summer season. However, on 20 June 2023 in the evening, we visited the bet for the first time in summer for birdwatching. During the visit, eight pratincoles were seen in the late evening. After taking a few photographs of the birds in flight and perched, the identification as Oriental Pratincole was

confirmed based on the lack of white trailing edge in flight, short tail-fork and short tail, with tail tip falling well short of wing-tip.

Usually, pratincoles run away from humans but, on that day, its behaviour seemed different and agitated. The birds flew overhead slowly, circled at low height, and continued calling and flying in a zig zag pattern. During the flight, they came quite near to us. We had seen this type of behaviour in Red-wattled Lapwing (*Vanellus indicus*) during its breeding season to protect its eggs or chicks. Hence, we immediately realised that there may be nests or chicks nearby. At that time, we were not aware of its breeding habitat; hence, we searched for its nest in dried grass for a few minutes but could not find it. We could not explore further because it was getting dark. The monsoon rain started the next day, so we could not visit that place again in that season but we decided to search again the next summer.

The breeding area is around 2 sq. km. As the species breeds on the ground, car use was avoided as a precautionary measure, and all five visits in 2024 were made on a bike. In the next season, in 2025, further care was taken and all visits were done by walking, except the first visit which was done by a bike when breeding activity had not yet started. The first author had done all visits while the second author had given company in a few visits. We avoided disclosing the breeding site on any online platforms or on social media so that the birds are not disturbed.

This breeding ground (Fig 2) is besides a natural seasonal reservoir which is called *khadi* in local language. It is interesting that in 2023, when we first saw a distraction display, which

was a sign of breeding, the *bet*, including the *khadi*, was totally dry. In 2024 summer of 2024, it was dry in April but some water was present in May, probably due to a canal from the nearby villages, which may have overflowed and the water had accumulated there. In 2025, the *khadi* was empty in April, but had much water due to the unseasonal rain in May.

All observations and photographs were by use of a telephoto zoom lens (400 mm) and from a safe distance, following guidelines on breeding studies given by Barve et al. (2020). Active nests or eggs were not disturbed or handled. Measurements of eggshells were taken after successful hatching of the eggs at the end of the season. A maximum of two minutes was taken for observations and photographs of the nest, with precautions that no prey birds were in the vicinity. In fact, we have not found any prey birds at all during all these visits, except for seeing a House Crow (*Corvus splendens*) in two visits.

In 2024, we visited that area on 11 April to search for any breeding activity of the species. We saw 10 individuals in the late evening, but we could not find any signs of breeding activity or behaviour. After a few days, we visited again and found a nest with eggs, feeding to young by parents (Fig 3) and saw agitated behaviour by the birds. During that season, we visited five more times and found a maximum of 70 adult birds, 5 nests, and 10 chicks which were not yet able to fly; photographs of some birds we saw and aged approximately as 1-2 days (Fig 4), 7 to 15 days (Fig 5, 5a), 15 to 20 days (Fig 6), and one fledged bird (Fig 7) are given here. The summary of sightings in 2024 is given in Table A.

Table A: Sighting details of Oriental Pratincoles in 2024

Date	No. of birds	New nests	Previously seen nests	Chicks / juveniles	Subadults
11/04/2024	10	0	0	0	0
05/05/2024	70	0	0	1	0
06/05/2024	35	1	0	0	0
12/05/2024	40	0	1	2+2	0
19/05/2024	60	3	0	0	0
02/06/2024	70	1	0	2+2+1	1
TOTAL		5		10 (probably from 5 nests)	1

In the summer of 2025, the first visit was on 5 April and on that day, we saw around 40 birds but did not find any agitated or distraction display. Thereafter, we could not visit for more than a month, and during that time, there was unseasonal rain from 6 May to 10 May, and hence, some part of the breeding ground was flooded. After the rains, we visited on 11 May and 13 May and found approximately 50 and 70 birds respectively,

with some birds doing broken wing display, but we did not find any nest or young. However, we could locate nests and young on 17 and 21 May. In 2025 summer of 2025, we visited more than 10 times and found 24 nests with eggs, 3 chicks, 3 fledged birds and a maximum estimate of 100 birds. The summary of sightings of 2025 is given in Table B.

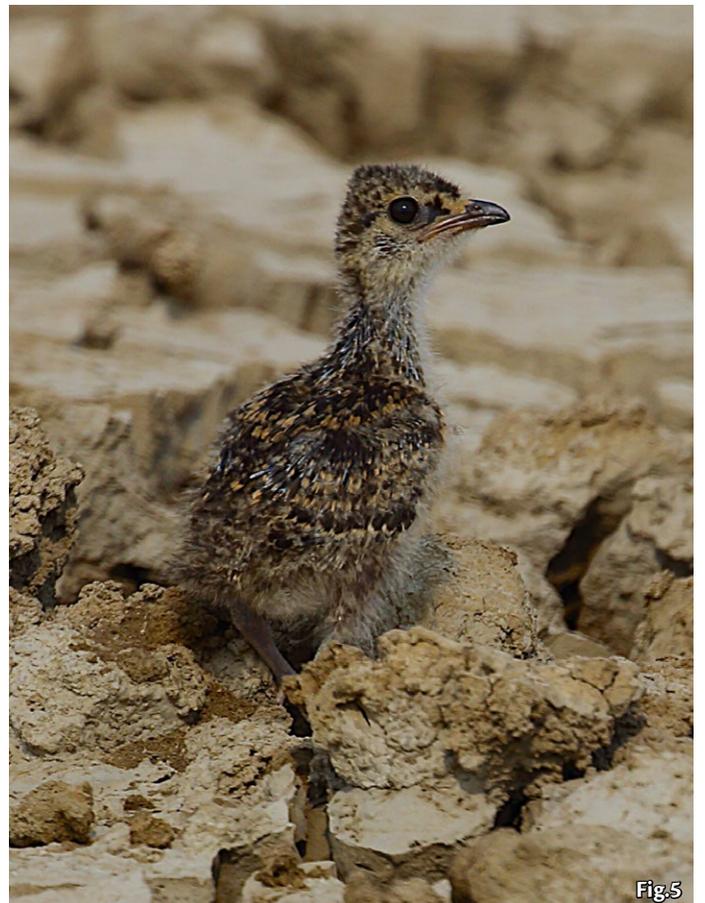
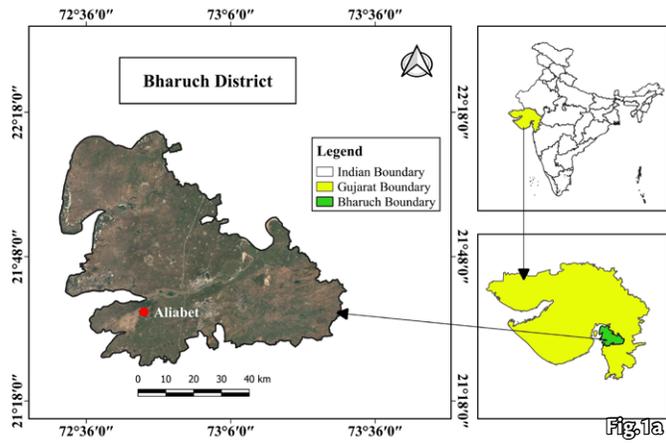


Table B: Sighting details of Oriental Pratincoles in 2025

Date	No. of birds	New nests	Previously seen nests	Chicks / juveniles	Subadults
05/04/2025	40	0	0	0	0
11/05/2025	50	0	0	0	0
13/05/2025	70	0	0	0	0
17/05/2025	90	7	0	2	0
19/05/2025	100	3	1	0	0
25/05/2025	70	3	2	0	0
08/06/2025	70	10	0	1	2
11/06/2025	40	0	1	0	0
12/06/2025	75	0	1	0	1
15/06/2025	-	1	1	0	0
TOTAL		24	-	3	3

Between these visits, unseasonal rain, of about an inch, was recorded on 21 May night, 27 May and 5 June. On 25 May, three eggs, in one nest, which was in a relatively low-lying area, were found to be covered with some mud (Fig 8). As we did not follow up this particular nest regularly, we do not know whether these eggs hatched or not.

On our next visit on 8 June, we found that three nests, which were seen during previous visit on 25 May, had been submerged due to rain on 27 May and hence, some eggs would have been surely washed away because these eggs probably would not have hatched within one or two days. On our last visit on 15 June morning, two active nests were seen and on the same day in the evening, the monsoon started with heavy rain and most of the area of the *bet*, including the breeding ground, was submerged (Fig 9), and hence, these two and other unseen nests may have also been washed away. We do not know how the young, which were not fledged, could

have survived in this situation. Thus, here, the breeding colony was frequently affected due to the rains in 2025.

Nest details

In 2024, all five nests we found were on dried, bare flat surface or in the open in a shallow depression while in 2025, interestingly, 12 out of 24, thus 50% nests, were found in depression in dry dung (Fig 10) of cow or buffalo and one nest was found, surprisingly, under *Neltuma juliflora* shrub (Fig 11) which was unusual for the species because they usually nest in the open, on bare ground. The height of the *Netluma juliflora* shrub where the nest was found was around 1.5 ft and had four-five stalks. Two nests were in a shallow depression surrounded by short dry grasses and one nest was in a dried hoofprint of a cow/buffalo. All other nests were on bare flat surfaces or shallow depressions. The details of the nests are given in Table C.

Table C: Details of nests of Oriental Pratincoles

Year	Total nests observed	Nests in shallow holes	Nests in dung	Nests under shrub	Nests in shallow holes in grass
2024	5	5	0	0	0
2025	24	8	12	1	3
Total	29	13	12	1	3

Clutch size

Here, the clutch size varied from 1 to 4 eggs. Out of 29 nests in two years, 8 nests had one egg, 7 had two, 13 had three while

one nest had four eggs (Fig 12). Year wise details of clutch size are given in Table D.

Table D: Clutch size of Oriental Pratincoles

Year	Total nests observed	Clutch size			
		One	Two	Three	Four
2024	5	2	2	1 (including two chicks)	0
2025	24	6	5	12	1
Total	29	8 (27.59%)	7 (24.14%)	13 (44.83%)	1 (3.45%)



Fig.5a



Fig.7



Fig.8



Fig.9



Fig.10



Fig.11



Fig.12

Egg size and colour

During our visits in June, around 15 empty eggshells of various sizes and shapes were found. These eggshells were scattered and far from the nests, and may have been removed from the nest by the birds after hatching of chicks. Many species discard the eggshells and this species must also have adopted the practice. We also found one egg with dried yolk, which had broken from the top. This broken egg was far from the nest and was probably damaged by a predator or cattle. Among these empty eggshells, three had almost unbroken top shells, and only the bottom shell was broken while one eggshell was unbroken in the middle part. The first author collected it and

measured it with a digital Vernier Calliper. The measurement is in Table E. Of course, these are not measurements of a whole and active egg, and so there may be slight variations in measurement. But this should give a close approximation of the egg size. As there is little information on its breeding, including egg size and incubation period, this measurement is important. The eggs look slightly smaller compared to Collared Pratincole eggs and the mean size of Collared Pratincole eggs is 32.3 mm x 24.1 mm (Maclean & Kirwan 2020b) whereas here, the mean size of Oriental Pratincole eggs was 28.97 mm x 22.36 mm.

Table E: Egg size of Oriental Pratincole

Sr. No.	Length (mm)	Width (mm)
1	28.52	22.68
2	29.85	22.56
3	28.56	22.11
4	-	22.11
Average	28.97	22.36

The eggs were oval and varied in ground colour; a collage of a few clutches is shown here (Fig 13). Most eggs were pale creamish to pale brownish, heavily blotched black or dark brownish. Some eggs had a very pale, off-white ground colour and were sparsely blotched blackish as can be seen in the clutch shown at the bottom.

Breeding period

We have not seen a nest in April in both the years. However, the first chick was sighted on 5 May 2024, which means some birds must have laid eggs at least in the third week of April. Similarly, the last nest with eggs was seen on 15 June 2025. Thus, the breeding period of the species at this place is from April to June, which matches with the description given in Maclean & Kirwan (2020a). Incubation (Fig 14, 14a) periods were not monitored. The fledging period was not studied. We saw two chicks and one egg in one nest on 19 May 2024, and hence, assumed that the chicks remain in the nest for at least two days, as usually one egg hatches per day.

Breeding behaviour

Agonistic and distraction or broken wing behaviour was observed during field visits. In agonistic behaviour, alert posture was observed in adults while crouching behaviour was observed in the young. In distraction, broken wing display and false incubation behaviour was observed.

Even when we were 200 meters away, the birds rushed towards us and would start flying over our heads in a long circle, coming near and going away at a low height, with

agitated calls for some time and thereafter, they landed in a group or singly at a safe distance in alert posture with the neck extended vertically (with or without calling). Once, I counted a group of 40 adult birds in alert posture. Sometimes there were a number of cattle in this area; however, we did not see this behaviour displayed in front of cattle. But we have seen the pratincoles chasing and attacking House Crows (*Corvus splendens*) and Egrets (*Ardea* sp.).

When we ignored this demonstration of agitated behaviour and moved ahead, one or two birds amongst them would start a broken wing display (Fig 15, 15a) by keeping their face towards us at a safe distance. Some birds used to perform this display from long distances. The bird spread its tail and wings and beat its wings on the ground, and would sometime slowly move forward while doing the display. We also observed false incubation display (Fig 16) by many birds which is done to confuse predators or intruders. The behaviour of the chicks was also very interesting; on hearing the alarm call from the parents, the chicks would run and hide in a crouching position (Fig 17) near a camouflaged background, like a dry lump of mud or in a hoofprint without any movement, until the threat was gone.

Threats

As is usually the case in ground nesting birds, cattle is the main threat to the nests of this species. In the photograph given here, we can see that a cow is resting just 15 meters away from a nest under the *juliflora*. Golden Jackal (*Canis aureus*)



is a natural predator of the eggs and nestlings at this place, as there are a number of jackals in the area.

But the major threat is the development program of the *bet* by the government. In the first decade of the current century, the entire Aliya *bet* was allocated for the dam alignment of the proposed Kalpasar project, which would have been the largest freshwater reservoir in the Gulf of Khambhat (<https://kalpasar.gujarat.gov.in/sites/default/files/volumevi.pdf>). Thereafter, around 16000 hectares of land of the *Bet* was allotted to a Japanese company under the 'Aliya *bet* Entertainment and Ecodevelopment Special Investment Region' (<https://timesofindia.indiatimes.com/city/ahmedabad/eviction-of-101-aliya-bet-families-stayed-by-court/articleshow/39839453.cms>). After that, another project, Aliya *bet* Special Investment Region (ASIR) has been proposed for chemical and petrochemical Investment (https://www.gidb.org/Document/2015-3-3_191.pdf). Both the above projects have not yet been implemented due to technical reasons.

Meanwhile, thousands of fish and prawn farms are established legally and illegally on the *bet* and now, the state government is going to allocate land for salt farms. One large fish farm lake has been built adjacent to this field (which is the breeding area) this year. All these developmental activities are naturally harmful to the breeding habitat of the species.

Untimely or unseasonal rains caused damage to the nesting ground and this is also a threat to the nesting colony here. It is obvious that sudden flooding of the breeding area would result in chick mortality and the late nesting pairs would probably have lesser chances of breeding success. The normal timing of the monsoon for this region is about the second week of June. Thus, pairs which lay eggs in late May or early June would have less chances of breeding success. Unseasonal rains are also a threat but such rains are usually not very heavy and would not be as much of a threat as the proper monsoon rains since complete flooding of the breeding area does not occur. The movement of Oriental Pratincole is said to be influenced by patterns of rainfall and drought (Sangha 2021). Breeding success or failure is also somewhat dependent on the rains here.

Discussion

This is the first of its kind study on the breeding of the Oriental Pratincole in Gujarat. Many of the observations given here are in line with published information regarding its breeding elsewhere in its range (Maclean & Kirwan 2020a, Sangha 2021). The breeding season here is as mentioned in published literature, from April to June. Nests in hoofprints,

in short grass and on bare ground have been reported earlier (Sangha 2021). Here, while nesting in hoofprints and bare ground was seen, the nests in cattle dung and under a *juliflora* shrub was something new and has not been reported for the Oriental Pratincole in India.

This study confirms the breeding of the Oriental Pratincole in South Gujarat and also shows that it nests in good numbers here. Nesting of Oriental Pratincoles in colonies is known (Sangha 2021), with six to 20 pairs reported (but said to rarely exceed 20 pairs in Delhi area). However, the 24 nests observed here in the summer of 2025 makes this one of the larger breeding colonies reported from western India [though c. 2000 pairs were reported nesting in Corbett Tiger Reserve by Sangha (2021) and it is known to nest in large numbers if conditions are favourable].

We saw more than 100 adults in breeding plumage and so it is likely that there may be more nests which escaped our attention. Hence, we can assume that approximately 35 and 50 nests could be present at this particular location in Aliya *bet* but it was neither possible, necessary or ethical to search for all the nests. An interesting aspect is that this is not the only colony on the *bet*. The *bet* is very large and we have seen birds at other two places from a distance in the breeding season of 2025, but we could not visit the sites due to lack of time. Other birders have also reported this species on the *bet*, at locations other than this breeding site, in the same breeding season. Hence, there are other breeding colonies possible on the *bet* and it requires further study. This species is said to wander widely in search of ideal breeding conditions and often uses a breeding site for only a year and moves on to another site (Sangha 2021). The breeding for two years continuously from this site shows that this could be a regular breeding site and the conditions here are probably suitable for it to breed every year. Further monitoring of this site will help in confirming this.

Analysing Table A and B, it can be seen that fewer chicks and more nests were seen in 2025 compared to 2024. This was due to changes made in our observation methods. All visits were by bike in 2024; hence, this would naturally reduce the chances of finding a nest as the nests are well camouflaged. In 2025, most of the visits were by walking, which increased the chances of finding the nests. In the case of chicks, this is vice versa, as on hearing the alarm call of parents, the chicks crouch or hide, making it difficult to spot them.

As per Maclean & Kirwan (2020a) and Sangha (2021), the clutch size of the species is 2 to 3 eggs. This is similar to what was observed here, though a nest with four eggs was also

Pratincole....

observed. It would be better to analyse the clutch size data of 2025 only, as more visits are undertaken in the season, compared to 2024. On 17 May 2025, when we first saw the nests in 2025, in five out of seven nests, the clutch size was three. On 21 May 2025, out of three nests, two had three eggs and one nest had four. While on 8 June, out of ten nests, only three had a clutch size of three eggs, while others had less than three eggs. Thus, it is possible that in early days of the breeding season, the average clutch size is larger, while average clutch size is smaller in latter parts of the breeding season. We have not regularly visited the breeding area and hence, we cannot say the exact reason for this. But we think there may be two possibilities; the chicks could have already hatched from a few eggs before we saw the nests or they naturally keep their clutch size smaller as monsoon approaches. However, the second hypothesis seems unlikely, as we saw that the birds had laid 3 to 4 eggs in May, after unseasonal rain in the second and third week of May 2025. This requires more study as our observations are only during a single breeding season and observation bias is likely. More data, collected over several years, will help in knowing the breeding ecology of this species in Gujarat, especially breeding success or reasons for failure and the conservation efforts required for their continued nesting at this site. It should also be investigated if this species breeds at any other locations in South Gujarat. Breeding in other locations is possible as there are suitable habitats in many parts of this region.

The very pale ground colour seen for some egg clutches is unusual. Sangha (2021) gave the egg colour as pale greyish-yellow, blotched black, brown, and grey. Maclean & Kirwan (2020a) stated that the eggs are greyish to olive-white with blackish-brown, dark grey and lavender markings. Here, few eggs were off-white and quite sparsely blotched blackish. Some of the eggs seen here were quite more whitish and sparsely marked; it is likely that there might be more variation in egg colour and pattern than what has been reported in literature.

Recent telemetry studies have confirmed that some Oriental Pratincoles migrate from Australia to India for breeding (see <https://wingthreads.com/in-search-of-sep/>). While some birds do tend to remain in India during the winter, the majority of the birds are thought to migrate to Australia. It would be interesting to tag some of the breeding birds here to understand their movements and to know whether these birds migrate to Australia in the winter or remain here in India.

Conclusion

This study provides not only the first confirmed breeding record for South Gujarat, but also shows that Oriental

Pratincole breeds in colonies, and that too regularly, in our state. Thus, this observation confirms that the breeding range of the species extends to South Gujarat and this will help to understand the breeding range and movements of the species in India.

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Note on the breeding of Shikra *Tachyspiza badius* at Polo Forest, Gujarat, India.

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Abstract

Here, we present a detailed account of a pair of Shikra *Tachyspiza badius* in the reserved Polo Forest of Gujarat. The nest was monitored by a security surveillance camera for three months during the breeding season from April to June 2025. The nest was found at 21.5 m in the upper middle canopy of a 24.5 m high Mahua tree (*Madhuca longifolia*). The eggs hatched after 26 days of nest discovery, with 100% breeding success, and nestling periods were recorded for 6 weeks. During the nestling period, parents brought 14 prey types in 269 flights over six weeks for the chicks. The nestling diet consisted of amphibians (1.11%), birds (1.85%), mammals (9.66%), reptiles (83.25%), and 4.8% unidentified prey. The most common prey, at 83.27%, was common garden lizards, which were the target prey in nestling diets.

Introduction

The Shikra (*Tachyspiza badius*) is a widespread member of the family Accipitridae, with a predominantly Asian and African distribution. It occurs in various habitats, from dense woodlands to savannas, and in arid, agricultural, and plantation areas, as well as in rural-to-urban and suburban residential gardens (Kemp & Kirwan 2024). This widespread species is further recognized by several races (Kemp & Kirwan 2024). Four subspecies are recognized from India (Naoroji 2006), *Tachyspiza badius dussumieri* is the most common subspecies in Gujarat (Dharmkumarsinji 1955). The Shikra nests across much of its distribution range, except for small regions in sub-Saharan Africa and parts of the Arabian Peninsula, where it occurs only in the non-breeding season (Kemp & Kirwan 2024). Earlier detailed descriptions of the nesting of this species are available from Sri Lanka (Phillips 1933) and India (Biddulph 1937; Lamba 1964). Published records on observations of nesting Shikra are available from various parts of its distribution range, including Azerbaijan (Heiss & Kai Gauger 2009), Armenia (Ananian et al. 2010), Indonesia (Nurza et al. 2009), Sri Lanka (Phillips 1933), and the United Arab Emirates (Campbell 2018). Despite being one of the most common raptors in India, detailed observations of Shikra nesting are relatively scantily published (Naoroji 1983; Suryawanshi 2021; Khan et al. 2024; Parekh 2025). The breeding biology of the Shikra is well summarized by Naoroji (2006) and Kemp & Kirwan (2024). Shikras usually breed during the dry season,

but this varies geographically, depending on environmental conditions and food availability. Here, we provide new information on the breeding of a Shikra pair, based on close monitoring of a nest for over two months, vigilance through an automated camera, and direct observations from April 10, 2025, to June 12, 2025, within a breeding season in the Polo Reserved Forest, North Gujarat.

Study Area

The bird's nesting site is located within the reserved Polo Forest in Vijaynagar Taluka, Sabarkantha district, north Gujarat, India. This forest is classified as a southern tropical dry deciduous forest, with a subtype of dry teak forests (5A/C-1b) according to the Champion & Seth (1967) forest classification system. The pristine forest covers 400 square kilometers and lies at the southern end of the Aravalli mountain range. This forest is the catchment area of the perennial Harnav River, a small tributary of the Sabarmati River. The forest patch is home to a diverse array of plants and animals, particularly numerous bird species; the avifaunal surveys remain unexplored, except for Mori et al. (2026).

Methodology

In the first week of April 2025, we found a Shikra nest on the edge of the road near Village, Polo Forest, Gujarat. The nest was monitored through direct observations and through an automated camera. Direct observations were conducted once a week for the entire day, from sunrise to sunset, by using DSLR cameras (Nikon 10x50 Aculon A211, Nikon Monarch 8x42, including a Nikkor 600mm f/4E FL ED VR telephoto lens), and binoculars (Nature-Trek 12x50), along with a Vortex Viper HD 20–60x85 spotting scope.

Automated Camera: To reduce disturbance and ensure a non-invasive approach, we used a fully automated camera to monitor the nesting activities by installing a Godrej ACE Pro 4G Dome Camera system equipped with a 7W solar panel and an integrated 18,000 mAh lithium-ion battery that provides up to 36 hours of autonomous backup under non-solar conditions.

The camera was mounted on April 9, 2025, on the front of the nest, about 3 meters away on a branch of the nesting tree. It was positioned at a slight upward angle to maintain an unobstructed view of the nest platform and nearby perch sites

while minimizing disturbance to the birds. We avoided direct contact with the eggs and chicks, so we do not have their weights or sizes. We ensured that our actions complied with the law and adhered to the principles of bird nesting research (Barve et al., 2020).

Observation and Results

The mature Shikra shows sexual dimorphism. In this study, we observed plumage features consistent with sexual dimorphism. The female is larger than the male, has yellow eyes, a dark chin line, yellowish nostrils, and a prominent band on the central tail feather. The male, on the other hand, has orange eyes, a lack of a chin line, more whitish nostrils, and a lack of a band on the middle tail feather. The female has a rufous-gray body with a few large white spots on the shoulders, while the male has a gray body without white shoulder spots (**Image 1**).



Image 1: Sexual dimorphism observed in a specific breeding pair: - large female, body colour grey-rufous with white shoulder patches, tail bars, yellow eyes, and light-yellow nostrils (A); male body colour grey with orange eyes and white nostrils (B), both on the nest with four eggs (C). (Photo Credit: Devratsinh Mori).

Nest Tree and Nest: The pair of Shikra nests was located in the upper middle canopy of a Mahua tree, *Madhuca longifolia* (**Image 2**). This nesting site is in an agricultural landscape, adjacent to a dry deciduous reserve forest, with scattered mature trees and proximity to village-edge human activity. Nest dimensions and other details, such as nest height from the ground, tree trunk girth, and overall tree height, are provided in **Table 1**. At the end of the study, after the nestlings had fledged, we collected measurements and examined the nesting materials used to build the nests (**Table 2**). This breeding pair of Shikra used six plant species in their nesting material, all of which were available in the surrounding area.

Eggs and Incubation: When we found the Shikra nest, it contained four white, unmarked eggs. Although we did not measure the eggs, they appear similar in size to a pigeon's

egg. On the morning of May 1, 2025, we observed that a chick hatched at 0602 hours, as indicated by the female removing the eggshell from the nest. The remaining three eggs continued to be incubated for over one or two days, and on May 5, 2025, the fourth chick hatched from the last egg. Thus, all the eggs were incubated for 21 to 26 days after the nest was discovered. While we cannot confirm the exact incubation period, we recorded the pair's activities and behaviors during those three weeks. Most of the time, the female sat on the eggs for incubation, with the male taking over when she left. However, the female incubated the eggs at night, while the male roosted on a higher branch of the tree. The eggs were often left unattended for a few minutes during the morning and evening. Both parents share incubation duties, but not equally; the male spends significantly less time than the female. Additionally, they communicate effectively via specialized calls when switching duties and frequently bring nesting materials and repair the nest.

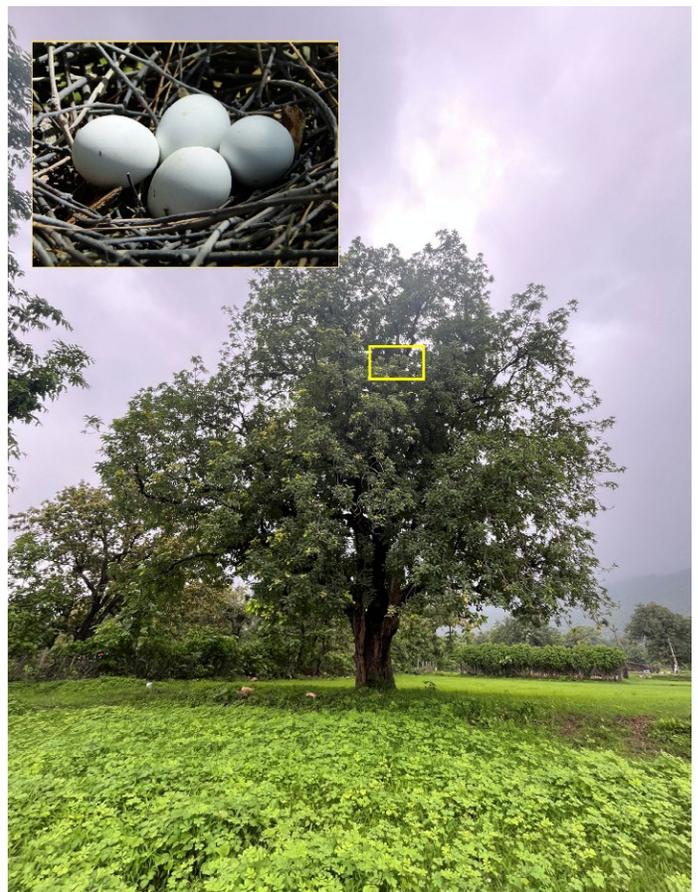


Image 2: The nest tree, Mahua, and the yellow square showing the height of the nest.

Prey, Diets & Nestling: This pair of Shikra delivered a total of 269 kills/prey to the nest over a six-week period, feeding the chicks. These kills were identified and categorized into four vertebrate classes: 3 amphibians, 224 reptiles, 5 birds, 26

mammals, and 11 unidentified prey items (**Table 3; Image 3**). The most abundant prey, 201 (74.72%), are common garden lizards, *Calotes versicolor*, and the second-highest, 11 (4.08%), are northern palm squirrels, *Funambulus pennanti* (**Image 3A**). For the entire six weeks, the female fed all the prey; on two occasions, the male attempted to feed the chicks (**Image 4B**), but the female landed on the nest immediately, and the male flew away. However, we are uncertain whether females hunt all prey; often, males hunt prey and bring it to the nesting tree on an upper or lower branch, from which females collect it. This information was gathered from recorded video clips, images from an auto-camera, and direct observations.



Image 3: Female parent feeding different types of prey to chicks; with Indian myna (A), with prey of a frog (B), the chick holding prey as a gecko (C), and the parent bringing a northern squirrel to feed the chicks (D).

Feeding frequency: We continued to monitor the pair and the chick's prey-delivery activities using automated cameras and direct observations. After six weeks, both parents continued to bring prey to feed the chick; data collection was challenging because they were constantly hunting. Since all nestlings are active and can move to higher or lower branches of the tree, most activity occurs outside the cameras' view. Therefore, we only analyzed data from these six weeks. The parents made 269 prey flights, averaging about 6.4 flights per day by the end of the period. Prey was delivered to the chicks each week, as shown in **Fig. 1**. Prey delivery across different time zones is shown in **Fig. 2**. Overall, peak feeding occurred in the morning at 43% (115 flights) and was lowest in the evening at 23% (62 flights). The first recorded feeding flight was at 05:49 h on May 13, 2025, and the last at 18:51 h on May 9, 2025. These times indicate the Shikra's prey and foraging activities within the study area. The highest number of prey deliveries was observed on May 10, 2025. Both parents were active in feeding

and caring for the hatchling, though the female was more dedicated to feeding, caring, and sanitizing the chick.



Image 4: The various stages of both parents: Female incubates, and male brings nesting material (A); male brings prey and attempts to feed the chick in female presence (B), in the absence of female, eggs are guarded by male (C), and incubation duty changes by female and male (D).

Fledglings' Growth and Behaviours: The changes in plumage color and chick growth from hatching through the end of the sixth week were observed (**Images 5 & 6**). By the end of this six-week period, the chick was fully developed and roughly the size of an adult, except for its colour plumage.



Image 5: The chick's growth: On May 1, 2025, a chick hatched, and the eggshell was removed by the female (A), on May 7, a one-week-old chick and a female with a prey garden lizard were observed (B), two-week-old chicks engulfed a small lizard (C), and three-week-old chicks (D) were observed.

We documented ontogeny, neonatal development, and other growth stages in the chick. Behaviors such as head-raising, wobbling, food begging, wing-flapping, jumping, hopping, and prey-tearing were recorded during the study. The gradual development of the chick from the first to the sixth week was also tracked. Overall, the nestling period was 37-42 days observed in this study. After six weeks, none of the nestlings

had come to the nest at night. However, they sometimes visited the nest during the day to eat prey; in those cases, the prey was either obtained from the parents or hunted independently.



Image 6: Chick growth. On May 18, 2025, a four-week-old chick (A) appears almost the size of its parents (B); six-week-old chicks are capable of tearing and feeding on prey individually (C); and an eight-week-old chick with a prey garden lizard (D).

Parental care: Both parents are involved in raising the young, but their duties are shared unequally. The male often hunts and brings prey to the nesting tree, rarely directly to the nest, whereas the female assumes the primary role by tearing off small pieces and feeding the chick. In some cases, female also hunt and bring prey to the nest to feed the chicks.



Image 7: Parental care: female with spread wings for protection against sunlight (A), uneaten food thrown from the nest as a form of sanitation by the female (B), aggression against intruders at night (C), and the female protecting chicks during rain (D).

Both parents communicate using distinct, typical calls. At night, the female stays in the nest with the chick, whereas the male roosts on an upper branch of the nest. After four weeks, the chick remains alone in the nest, while both parents roost in the top branch of the tree. We observed that only the

female cleaned by removing prey remains, covering the chicks from direct sunlight, protecting them from rain, and disposing of carcasses (**Image 7**). Additionally, both parents continued to repair the nest during incubation and nestling rearing.

Discussion

The breeding season for the Shikra was recorded from April to June in the study. This pair of Shikra built a nest on a large Mahuva (=Mahuvdao) tree at a height of 25 meters. The nesting season, height, and nest construction are comparable to those noted in the earlier studies (Dharmakumarsinhji 1955; Suryawanshi 2021; Upadhyay et al. 2023). The nestling period was observed for six weeks in the study, as noted by Suryawanshi (2021). However, the 100% success (four chicks) in breeding and their care, from incubation to feeding, was primarily the female's responsibility, with less involvement by the male Shikra; similar results were reported by Suryawansi (2021).



Image 8A & 8B: Shikra female with a prey garden lizard (Photo Credit: Devvratsinh Mori)

The study's key finding is the diet composition of a specific pair of Shikras. The parents hunted and brought 14 different prey items in 269 flights over a six-week period. This shows prey selection and abundance within the study area and aligns with the hunting abilities of the Shikras. The abundance of Saurian prey (83.27%) in nestling diets (**Fig. 3**), with Calotes as the dominant prey (**Image 8**), indicates that the lizard Agamidae is widely available in the landscape during the study period. The second-highest prey group is mammals (9.66%), with the target being the Northern palm squirrel (*Funambulus pennanti*), another common prey in the area. However, both

target species are arboreal and require skilled hunting tactics, as evidenced by this hawk.

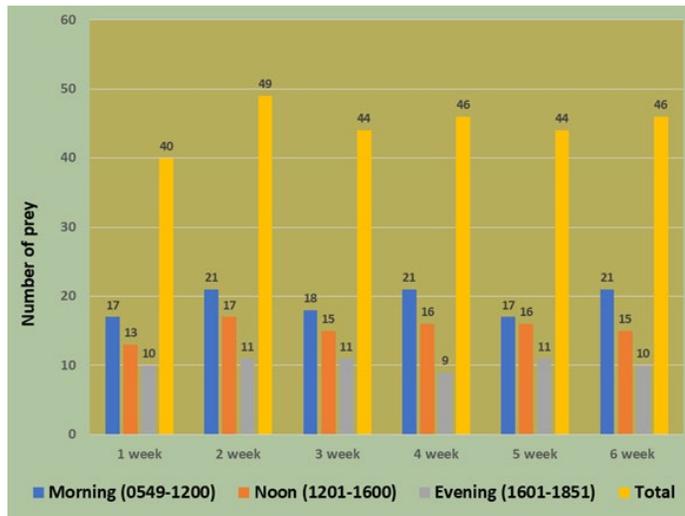


Fig. 1: The weekly fight frequency of prey delivery to chicks by the parents.

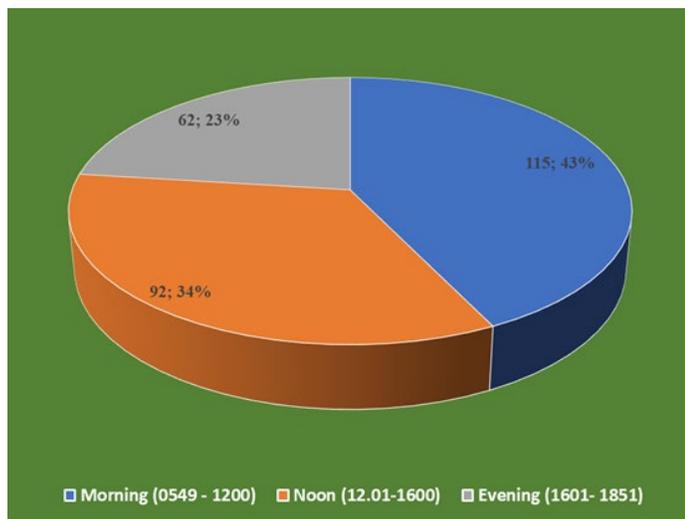


Fig. 2: Fight frequency of prey delivery in different time zones

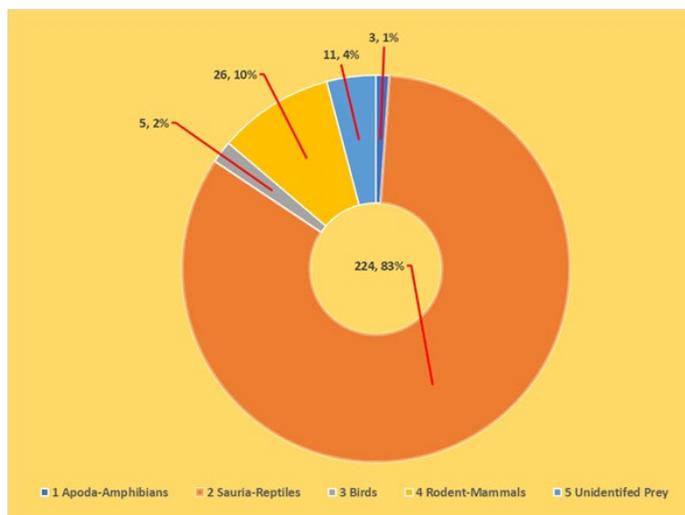


Fig. 3: Composition of foods offered to Shikra's chicks by the parent.

In an earlier study, Suryawanis (2021) reported that 90% of saurian reptiles are in the Shikra diet. Also, similar findings were observed, such as high percentages of saurian diets, among other raptors, including Short-toed Snake Eagle (*Circaetus gallicus*), with 45.83% lizards in its diet (Mori et al. 2017), and Laggar Falcon (*Falco jugger*), with 82% lizards in its diet (Mori et al. 2023). However, all three raptor studies from dry habitat states, Gujarat and Rajasthan in western India, indicate that saurian diversity and abundance play significant roles in the diet composition of these raptors, particularly during breeding seasons. Thus, the prey-predator relationship is a crucial factor in both breeding success and predator survival.

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Table 1. Morphometrics of Shikra on a nest on a Mahua tree

Parameter	Details
Tree height	24.5 m
Girth of the tree trunk	436 cm
Height of the nest above the ground	21.5 m
Diameter of the branch supporting the nest	17 –21 cm
Diameter of the nest outer circumference	45–48 cm (circumference)
Height of nest	35–40 cm
Depth of the nest cup	6–9 cm
Nest orientation in relation to the nest-tree-trunk	North-East

Table 2. List of nesting materials used by Shikra

Nesting Material	Leaves and stick - Neem <i>Azadirachta indica</i>
	Leaves, stick, seeds: Mahua <i>Madhuca longifolia</i>
	Sticks - Teak <i>Tectona grandis</i>
	Sticks - Khejri <i>Prosopis cineraria</i>
	Unidentified plants stick
	Unidentified tree barks

Table 3: List of prey species and quantities delivered by Shikra parents to nestlings over six weeks

No	Species	Total No. of Prey	%
	AMPHIBIA	= 3	1.11
1	Unidentified Frog (<i>Dicroglossidae</i>)	3	1.11
	REPTILES		
	Family Agamidae	= 224	83.27
2	Co. garden lizard <i>Calotes vultuosus</i>	201	74.72
3	Fan-throated lizard <i>Sitana spinaecephalus</i>	8	2.97
	Family Gekkonidae		
4	Northern house gecko <i>Hemidactylus flaviviridis</i>	5	1.85
	Family Lacertidae		
5	Snake-eye lacerta <i>Ophisops sp.</i>	2	0.74
	Family Scincidae		
6	Skink <i>Eutropis sp.</i>	7	2.60
7	Snake-skink <i>Riopa sp.</i>	1	0.37
	BIRDS	= 5	1.85
8	Indian myna <i>Acridotheres tristis</i>	2	0.74
9	Common Babbler <i>Argya striata</i>	1	0.37
10	Unidentified bird	2	0.74
	MAMMALS	= 26	9.66
	Family Sciuridae		
11	Northern palm squirrel <i>Funambulus pennanti</i>	11	4.08
	Family Muridae		
12	Common house rat <i>Rattus rattus</i>	9	3.34
13	Unidentified mammals	6	2.23
14	Unidentified Prey/Kills	= 11	4.08
	Total Prey =	269	

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Jamnagar Wetlands: Important coastal sites for Indian Skimmer *Rynchops albicollis*

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Introduction

Jamnagar is a coastal district in Gujarat, where 58 wader species (i.e., 25% of the world's wader species) either winter or breed. It is located near the Gulf of Kutch, where India's first Marine National Park was declared in 1982, along with a Marine Sanctuary, to protect and conserve the marine flora and fauna of the area (Patel, 2019). Wetlands, comprising Intertidal mudflats, salt marsh, coral reefs, mangroves, and reservoirs, cover 198657 ha of the district, of which Inland wetlands contribute 20 % and coastal wetlands contribute 80% of the total wetland area (Anon 2010).

The Indian Skimmer *Rynchops albicollis* is a pointed-winged, tern-like bird, chiefly blackish-brown above and glistening white below, with a pied plumage. A unique feature is that the lower mandible is quite longer than the upper. Immature birds are lighter brown above, scalloped with fulvous white, have a forehead streaked with brown, and their tail feathers are brown-tipped. Depending on the water level, the species is a local migratory bird with different breeding and wintering grounds (Ali and Ripley 1974).

Indian Skimmer is data-deficient in current as well as long-term trends, Vulnerable as per IUCN Redlist category, and Schedule-IV as per the Wildlife Protection Act, 1972. The distribution range is approximately 34,796 sq. km (SolB 2020). The 1% biogeographic population was 80 birds in 2006, which was reduced to 75 in 2012 and further reduced to 40 birds in 2021. The species is restricted to South Asia. It was recorded at 111 sites in South Asia and Myanmar, with 19 sites meeting the 1% criterion from 1997 to 2007. Jahajmara, located on the coast of Bangladesh, had a population of more than 50% in 2001. It was reported from 26 sites from 1997 to 2007 from Gujarat, India, and none met 1% criterion (Li et al. 2009).

Increased fluctuations in water levels along the rivers where this bird breeds—caused by dams, irrigation, and sand mining—result in both flooding of colonies and low water levels that expose breeding islands to terrestrial predators and humans. These conditions result in high mortality rates for eggs and chicks, and the reproductive rate appears inadequate to sustain the population. This once-common and distinctive bird has experienced declines for many decades. It has been lost as a breeding species throughout Southeast Asia, Myanmar, and likely now also in Pakistan. Consequently, the

current and projected rate of population decline is estimated to be between 34% and 46% over three generations (BirdLife International, 2024).

The rationale of the study: The occurrence of Skimmers in coastal wetlands is yet to be fully studied. Despite their huge importance, the Jamnagar wetlands are not yet highlighted for the Indian Skimmer. We speculate that the wintering population of 400 birds around the Jamnagar wetlands constitutes approximately 10% of the biogeographic population.

Methodology

The wintering population of Indian Skimmer was monitored by direct total counts. All potential wetlands in Jamnagar were visited, and the Dhichada wetland was selected for study based on the continuous presence of species and higher counts. Special efforts were made to separate adults from immature birds in July and August 2020. The wetland was visited every alternate day from September 2020 to November 2020. Observations were made at all stages using 8x or 10x binoculars, as well as telescopes. Photographs were taken with DSLRs equipped with 400 to 600 mm lenses.

Table-1 Counts of Indian Skimmer at Jamnagar in July and August 2020 at Dhichada

Date	Adult	Juvenile	Total Count
26/07/2020	-	-	53
02/08/2020	18	9	27
08/08/2020	18	9	27
11/08/2020	18	9	27
12/08/2020	18	9	27
15/08/2020	21	2	23
16/08/2020	18	9	27
22/08/2020	14	9	23
23/08/2020	14	9	23

Results

Out of 45 surveys (15 in each month) conducted from September to November 2020, the mean population was highest in November, i.e. 190.33 ± 20.35 , followed by October (179.18 ± 28.42) and then September (120.6 ± 33.54). The highest population of November was on the 8th i.e. 245 individuals. Likewise, 234 individuals on October 29th and 179 individuals on September 27th, 2020. Eight sites were



H04, an adult Indian Skimmer ringed in Chambal by the BNHS team in July 2018, was photographed in Jamnagar in July 2020 by Ankur Gohil.
(Photo: Ankur Gohil)

visited during the International Skimmer count in December 2020 and January 2021, out of which skimmers were seen at two sites, i.e. Dhinchada and Rosy Port. A total of 237 individuals were recorded in December skimmer counts and 123 in the January count. At least five individuals with BNHS rings were observed regularly during the study period.

Discussion

Despite their huge importance, the Jamnagar wetlands are not yet highlighted for the Indian Skimmer. Counts in the early months of July and August are less compared to the September-November phase at Jamnagar. Along with the Dhinchada wetland, Rosy Port is another important site for skimmers. The colony of the Rosy port mudflat has been reported for the first time. A total of 134 birds were reported in December 2020, and again 52 in January 2021, from the Rosy Port area. Dhinchada and Rozi Port support a 9% biogeographic population of Indian Skimmers, thus making it a very important wintering ground that must be conserved from solid waste pollution and other threats. Mangrove afforestation activities may also serve as a threat to the Indina Skimmer and other mudflat-dependent species.

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Short Birding Notes



Sirkeer Malkoha *Taccocua leschenaultii* nesting in Velavadar

For the past five years, a Sirkeer Malkoha has visited the Blackbuck Safari Lodge in Velavadar each monsoon. Usually a single bird was seen, but in May this year a pair arrived for the first time and remained for nearly two months. The habitat around the lodge appeared suitable, with abundant food such as grasshoppers, caterpillars, lizards, and butterflies. Soon after arrival, the pair began collecting nesting material. I located the nest in an almond tree, where three eggs were laid on 30 June. I monitored the nest daily. On 1 July the incubating bird briefly left to feed, while on 2–3 July a single bird remained in the nest continuously. On 4 July the bird returned with a fresh neem spring after a short absence. On 5–6 July, the male and female alternated incubation and feeding. On 7 July the nest appeared empty, but in the evening both birds returned and uncovered the eggs, which had been concealed beneath leaves. The pair remained attentive on 8–9 July. However, on 10 July the nest was abandoned, and the following day I found that all three eggs had exploded. Nesting attempts have occurred in previous years as well. In June 2024, a clutch of three eggs failed before hatching. In June 2025, the pair nested again in a Madras thorn tree about six metres above ground and laid three eggs. The chicks hatched on 1 July 2025, both parents sharing feeding duties, and all three chicks successfully fledged on 12 July.

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Sighting of a European Roller *Coracias garrulus* in January

The European Roller (*Coracias garrulus*) is a passage migrant to northwestern and western India, occurring mainly between August and November before moving to wintering grounds in sub-Saharan Africa. During spring return migration, the species travels via the Mediterranean region, and winter records from India are therefore rare. On a January morning, while surveying vultures around Viraamgam, we (Jay Raval, Purvesh Mehta, and Nisarg Mehta) heard a roller call and initially assumed it to be an Indian Roller (*Coracias benghalensis*). We then observed a European Roller being chased by two Indian Rollers. The bird briefly perched on a neem tree (*Azadirachta indica*) before being repeatedly mobbed and forced to leave the area. This represents an unusual winter record for Gujarat. Possible explanations include delayed migration, navigational error, or physical limitations that prevented onward travel. Regardless of the cause, the sighting is noteworthy and adds to regional migration records.

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Unusual feeding behaviour of Indian Golden oriole *Oriolus kundoo*

I was on my weekend birding trip to Kotna village on 12-04-2024. There is small pond in village. Spot-billed Duck, Indian pond heron, Red wattled lapwing, Common Sandpiper, Little Cormorant, Pied Kingfisher, Indian golden Oriole were sighted. Pied Kingfisher were hovering & diving into water to catch fish. I was taken by surprise, when I witnessed Indian Golden Oriole also diving into water to catch some food. I witnessed for half an hour, clicking pictures from long distance, trying to understand what was it catching because fish is not regular diet of Indian Golden Oriole. Later, I shared my sighting & pictures with Ornithologist Mr. Devvratsinh Mori. He told, catch might some insects in the pond. It's quite possible that there might be a nest nearby and it's collecting insects for fledgelings. Diving in pond and catching diet is unusual behavior for Indian Golden Oriole that was witnessed.

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Very Large Flock of River Terns *Sterna aurantia* at the Great Rann of Kutch

The River Tern (*Sterna aurantia*) is a resident and very common waterbird in Kutch, Gujarat, and is usually seen in small groups at lakes and dhandhs across the region. Servo Dhandh, near Hodko in Kutch, is a large shallow rainwater wetland with extensive open water interspersed with patches of long grass. Typically, 20–30 River Terns can be seen here during October and November, along with other species such as the very common Whiskered Tern and the comparatively rare White-winged Tern. However, on 22 October 2024, while visiting the site with my son Nirav Parekh, I observed an exceptionally large aggregation of approximately 550–600 River Terns along the eastern edge of the dhandh. A few Whiskered Terns, Gull-billed Terns, and White-winged Terns were also present among them. At around 10:15 am, despite moderate temperatures, most of the birds were active and showing panting behaviour, holding their heads upward and rapidly moving their tongues. Some individuals appeared to be subadults. At intervals, small groups took short circular flights before landing again at the same location. Normally, only 10–15 River Terns gather at a single spot, so such a concentration of over 500 birds is highly unusual. This large aggregation raises the possibility of local nesting activity, as the area contains scattered patches of long grasses suitable for breeding. However, the dense vegetation made it difficult to confirm nesting even with high-powered binoculars. Further study is needed to understand the reason for such an unusually large flock in this area.

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Sighting of Grey-necked Bunting *Emberiza buchanani* in Dang

On 1 January 2025, during an early morning survey in the Don Hills of the Dang region, we observed a flock of 4–5 sparrow-sized birds flying together. On closer observation, we noted distinctive features including a grey neck and a yellow moustachial stripe, confirming the identification as Grey-necked Bunting (*Emberiza buchanani*). To understand the population status and historical occurrence of this species in the region, we consulted *Birds of Surat–Dang: A Consolidated Checklist of 75 Years (1944–2020)* by Nikunj Jambu and Kaushal Patel, along with available eBird records. A review of these sources suggests that this represents the first documented record of Grey-necked Bunting from the Dang region.

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Sighting of Grey-headed Lapwing *Vanellus cinereus* at Pariej Wetland

On the afternoon of 8 March 2025, I visited Pariej Wetland, Gujarat. During observations of mixed wader flocks in shallow marsh habitat, I noticed an unfamiliar bird foraging among Black-winged Stilts (*Himantopus himantopus*) and egrets. The bird was solitary and feeding calmly in wet grassy substrate. Photographs taken in the field showed diagnostic features confirming identification as Grey-headed Lapwing (*Vanellus cinereus*): a grey head, neck and upper breast, a distinct black breast band, white underparts, and a yellow bill with a dark tip. The species breeds in northeast and eastern China and typically winters in eastern and northeastern India, with occasional records from southern India. Vagrancy in Gujarat is poorly documented and rare. A review of available regional records suggests that sightings from Pariej Wetland are exceptional. This observation is an important addition to the site's avifaunal records and highlights the value of continued monitoring of Gujarat's wetlands.

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Sighting of Indian Blackbird *Turdus simillimus* in Ahmedabad

On 13 April 2025, during a morning walk near Asarwa Lake, Ahmedabad, I observed a thrush-like bird briefly perched on a tree. Its posture and plumage appeared unusual, prompting closer attention. I managed to take two photographs before the bird flew away. Subsequent review of the images and consultation with experienced birder Dhyey Shah confirmed the individual as a female Indian Blackbird (*Turdus simillimus*). According to A Field Guide to the Birds of Gujarat (Ganpule et al. 2022), the species is an uncommon resident in the forests of South Gujarat and a winter/monsoon migrant in other parts of the state, with isolated records from North and Central Gujarat. A review of available eBird data did not reveal prior records from the Ahmedabad area, making this observation locally noteworthy.

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Sighting of Oriental Pratincole *Glareola maldivarum* near Morbi

On 23 May 2025, I visited dried parts of the Machchhu - 2 dam near Morbi. I saw some movement in the dried muddy areas. I observed closely and noted 12 - 15 Oriental Pratincoles (*Glareola maldivarum*), which were perfectly camouflaged with the habitat. The identification was confirmed by the short tail (wing-tips extending far beyond tail tip), short tail fork and lack of white trailing edge to secondaries in flight. I informed Prasad Ganpule regarding this sighting and he also visited the same area on 2 June 2025 and saw 5-6 Oriental Pratincoles, including one juvenile. This indicates that this species breeds here in the dried parts of the dam in summer. Though widespread, the Oriental Pratincole is not common in Gujarat and there are very few breeding records of this species from the state. This sighting from Morbi thus adds to the locations where the Oriental Pratincole breeds in the state.

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BOOK REVIEW

Prasad Ganpule: C/o Parshuram Pottery Works, Opp. Nazarbaug, Morbi 363642. prasadganpule@gmail.com

Title: Birds of the Indian Subcontinent – Second Edition (1-576 pp)

Authors: Richard Grimmett, Carol Inskipp & Tim Inskipp

Publisher: Bloomsbury Publishing Plc, 2026

Format: Paperback, Ebook (pdf) & Ebook (Epub & Mobi)



HELM FIELD GUIDES

Birds of the Indian Subcontinent

SECOND EDITION



Richard Grimmett, Carol Inskipp & Tim Inskipp

Almost every birdwatcher in India is familiar with the first edition (published in 2011) of this field guide as it remains one of the most popular field guides in India. The authors need no introduction having published many books on the birds of the Indian Subcontinent. This is the new and updated second edition of the earlier field guide, which is published by Bloomsbury Publishing Plc, under 'Helm Field Guides'.

The authors state in the introduction that this book is a fully revised edition of the earlier field guide published in 2011, with 246 colour plates, which are 20 more than in the first edition. The scope of the book is the entire Indian Subcontinent, comprising India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan and the Maldives. This edition covers 1429 species for the subcontinent, until the end of 2023. The taxonomy,

nomenclature and English names are followed as per 'eBird' Taxonomy v2023, except for three species which is explained in the 'Taxonomy and nomenclature' section in 'How to use this book'.

The format of the book is as per the earlier edition, with Contents, Acknowledgements, Introduction, 'How to use this book', followed by a write-up on the Indian Subcontinent covering aspects like climate, habitat, threats and conservation. The family summaries follow, after which is the main body of the book. At the end is the appendix of vagrant species, references, illustration credits and index. I must mention here that the artwork of the cover page, depicting a Pied Thrush, is outstanding.

The main attractions of the earlier field guide were the illustrations and the text coupled with maps, which was user friendly and compact to carry in the field. This second edition also has the same quality of illustrations and the text has been improved. The maps too have been updated. The authors state in the introduction that preparing maps was a huge undertaking, and that they have relied on eBird datasets for preparing maps for many species. Small taxonomic notes are given for species in which there is taxonomic uncertainty or where further research is required.

The illustrations are what made this book so well liked earlier and now, in its new version, the illustrations are revised and much better for many species. For example, the illustrations for Red-backed Shrike, Red-tailed Shrike, Isabelline Shrike and Brown Shrike are entirely new, and just stunning! Similarly, the plates for Larus gulls and Locustella warblers have been changed. The text has been re-written to reflect current knowledge; the text for Himalayan Buzzard explains the features to look for its identification and separation from Long-legged Buzzard and Common Buzzard. Species maps show the latest distribution as they are prepared from eBird data.

Making such a book is a huge task and getting the distribution correct for the entire subcontinent is very difficult; there remain some errors in the distribution maps. For example, Gujarat is not shown in the distribution range for Grey-headed Fish Eagle, White-winged Tern or Rusty-tailed Flycatcher, though there are many records of these species from our state. Similarly, single records of vagrant species, like Siberian Rubythroat, Buff-bellied Pipit remain unmapped for Gujarat. Saunder's Tern is shown as a winter visitor to Gujarat though it is a summer breeding migrant. The illustrations for a few

species could have been changed; illustrations of Oriental Honey Buzzard fail to represent its various plumages, and look odd. Similarly, having a single illustration for vagrant species is many times inadequate for on-field identification. With eBird and India checklist moving towards or adopting Avilist taxonomy, there will be a few species for which the treatment adopted in this book will be different from these sources.

Apart from these small issues, this book will be essential to bird watchers in our country as well as for any foreign birder coming to the Indian Subcontinent for birdwatching. The

quality of the illustrations, simple and lucid text and updated maps make this second edition a 'must have' for beginners and experienced bird watchers / ornithologists. The book is available in paperback for Rs. 1599/- and Ebook (pdf, mobi and Epub) is available for Rs. 1439/- from the Bloomsbury India website (<https://www.bloomsbury.com/in/field-guide-to-birds-of-the-indian-subcontinent-9781472984784/>) and will probably soon be available online from different websites. I highly recommend this book and it will be useful even for those who have the first edition of this wonderful field guide.