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

Jugal H. Patel: At - Untiyadra, Ta - Ankleshwar, District - Bharuch, Pin – 394125. jugalkishorhpatel@gmail.com

Moksh Patel: At - Untiyadra, Ta - Ankleshwar, District - Bharuch, Pin – 394125. Patelmoksh.h@gmail.com

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.

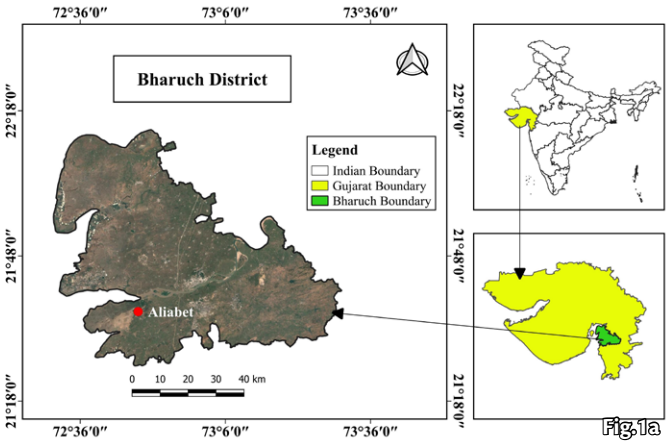

Fig.1a

Fig.1b


Fig.2


Fig.3


Fig.4


Fig.5


Fig.6

ISSN: 2583 - 2050

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

ISSN: 2583 - 2050

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*)


Fig.14


Fig.14a


Fig.15a


Fig.16


Fig.13


Fig.15


Fig.17

ISSN: 2583 - 2050

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

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.

Acknowledgements

We thank Prasad Ganpule for inspiring us to write up our observations and for a review and improvement of the draft manuscript. We thank Jigar Patel for his help in preparing the map.

References

Barve, S., Shankar Raman, T.R., Datta, A. & Jathar, G. 2020. Guidelines for researching the nesting biology of Indian birds. *Indian BIRDS* 16 (1): 10–11.

Ganpule, P., Varu, M., Trivedi, B., & Raina, A. D., 2022. *A field guide to the birds of Gujarat*. Birds Conservation Society, Gujarat, Ahmedabad.

Grimmett, R., Inskipp, C., & Inskipp T., 2011. *Birds of the Indian Subcontinent*. 2nd ed. Christopher Helm & Oxford University Press, London.

Khirani, C., 2014. Website URL: https://ebird.org/checklist/S68850422 [Accessed on 22 June 2016]

Maclean, G. L., & Kirwan, G. M., 2020a. Oriental Pratincole (*Glareola maldivarum*), version 1.0. In Birds of the World. Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.oripra.01. [Accessed 23 June 2025].

Maclean, G. L., & Kirwan, G. M., 2020b. Collared Pratincole (*Glareola pratincola*), version 1.0. In Birds of the World. Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.colpra.01 [Accessed 23 June 2025].

Mehta, S. 2014. Website URL: https://www.inaturalist.org/observations/622190 [Accessed on 22 June 2025].

Rasmussen, P. C., & Anderton, J. C., 2012. *Birds of South Asia – The Ripley Guide*. 2nd ed.

Smithsonian Institution and Lynx Editions, Washington D. C. and Barcelona.

Sangha, H. S., 2021. *Waders of the Indian Subcontinent*. Jaipur Pp XVI + 520.

Sinh, S., 2023. Website URL: https://www.inaturalist.org/observations/169239879 [Accessed on 22 June 2025].

Tiwari, J., 2014. Website URL: https://ebird.org/checklist/S65125198 [Accessed on 22 June 2025].

Tiwari, J., 2016. Website URL: https://macaulaylibrary.org/asset/706923 [Accessed on 22 June 2025]. □