Plumage variability in the Lesser Kestrel *Falco naumanni* in India

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Introduction

The Lesser Kestrel *Falco naumanni* is a widely distributed small falcon, breeding from western Europe, through northern Africa, south-eastern Europe, Asia Minor, Levant, Iran to southern Siberia, Mongolia and northern China and wintering mainly in southern Africa and locally in South Asia (Orta & Kirwan 2020). It was stated to be 'uncommon, irregular passage migrant and rare winter migrant to the subcontinent, with some stragglers overwintering in India' by Naoroji (2006) and as 'rare and local' in India by Rasmussen & Anderton (2012).

In the last ten years, sporadic sightings of Lesser Kestrel have been reported from almost all-over peninsular India and north-eastern India, with regular sightings from Maharashtra and some parts of southern India (eBird 2025). Flocks of Lesser Kestrels are reported as passage migrants during October to December from places like Tal Chhapar in Rajasthan, Velavadar in Gujarat (eBird 2025) and Champaran region in Bihar; in the latter site they are seen in mixed flock with Amur Falcons *F. amurensis* during migration (Sharma 2025). Some birds have been observed throughout winter from December to March in places like the Little Rann of Kutch in Gujarat, Lonawala in Maharashtra, Hyderabad outskirts in Telangana, and Tirunelveli in Tamil Nadu (eBird 2025; pers. obsv. NB).

Details regarding the plumage variability and plumage types are lacking in Lesser Kestrels observed in India. We present here preliminary results of plumage variations of adult male Lesser Kestrels observed in this country.

Taxonomy

The Lesser Kestrel is treated as a monotypic species by all major taxonomies (Orta & Kirwan 2020), including the recent Avilist checklist (AviList Core Team 2025). Regional works (Naoroji 2006; Rasmussen & Anderton 2012) do not discuss the plumage variations seen in Lesser Kestrels in India. However, recent investigations into the plumage variation in Lesser Kestrel across its global range show that the eastern-most populations breeding in China, *F. n. pekinensis*, should be treated as a separate subspecies – see Corso (2013), Corso et al. (2015), and Corso et al. (2016) for more details regarding taxonomic history of Lesser Kestrel and the recommendations for treating *pekinensis* as a separate subspecies. Corso et al. (2016) also suggested that the wintering areas of all populations of Lesser Kestrels needed to be determined. Matching the findings in Corso's works, a genetic study (Ferrer Obiol et al. 2025) confirmed the existence of two main phylogenetic groups: in fact, genetic differentiation analyses coherently indicated the existence of two distinct lineages—a western lineage including all the European and Middle Eastern populations and an eastern lineage including all populations from Central and eastern Asia, chiefly those from China.

During the preparation of the Gujarat field guide (Ganpule et al. 2022), PG noted that a few adult males photographed by NB in the Little Rann of Kachchh and seen in the Velavadar National Park did not match with the typical *F. n. pekinensis* shown in Corso et al. (2016). Hence, to depict the plumage variation in Lesser Kestrels in Gujarat, photographs of two adult males were selected, which showed maximum differences in amount of grey in the upperwing coverts; these are given in photographs 99a & 99b in Ganpule et al. (2022),.which also highlighted this variation thus "Birds seen in Gujarat are mainly of *pekinensis*-type but intermediate as well as nominate-type birds were noted. Further study is required".

Methods

We have been monitoring the Lesser Kestrel in Gujarat and its status and distribution in the state has been discussed earlier (Bhatt & Ganpule 2013). In this study, we discuss and document the plumage variations in adult male Lesser Kestrels in India with Corso et al. (2016) as basis. For this, we have documented Lesser Kestrels in Gujarat while NB also visited Maharashtra and photographed adult male Lesser Kestrels there. In addition to this, we collected photographs of adult males from all over India, posted on citizen science platforms of 'eBird' and 'iNaturalist', and also on the social media like Facebook and even those circulated on WhatsApp groups. Photographs were also collected from birdwatchers individually. Only adult males were considered for this study; immatures and juveniles/females were not analyzed. In sub-adult plumages, the amount of grey in the wings is not discernable. Even when the mantle is adult-type, the wing coverts may be juvenile while in moulting individuals **[220]** it is difficult to judge the amount of grey in the wings since the juvenile-type wing coverts are barred rather than grey **[221]**. We did not study museum specimens; there are limited museum specimens of Lesser Kestrels from India, only 16 specimens from India are listed on GBIF (https://www.gbif.org/) of which 14 are housed in NHMUK and all of them were part of the study by Corso et al. (2015) and Corso et al. (2016).

From all the photographs collected, we checked the plumage of each individual. We then separated the individuals according to the following plumage features suggested by Corso et al. (2015) and Corso et al. (2016):

1. Amount of grey in upperwing coverts
2. The colour of head (dark or light grey tones)
3. The mantle colour
4. Underpart colour and the markings on the breast and belly

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220. Transitional second-calendar year (2nd calendar year) male Lesser Kestrel in moult. The mantle is fully moulted into adult-type, though the colour looks less saturated than in typical *pekinensis* and the head looks paler. Note that the wing coverts are juvenile-type making subspecies identification difficult as the amount of grey in the wings is not seen. March 2017, Tirunelveli, Tamil Nadu.

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221. Transitional second-calendar year (2nd calendar year) male Lesser Kestrel in flight. There is some rufous visible on greater secondary coverts, which are turning grey (actively moulting). Rufous median and lesser coverts, pale head and less saturated red mantle. Note the adult type central rectrices (central T1 pair), rump and uppertail-coverts. Such birds cannot be safely identified to subspecies. January 2020, Little Rann of Kachchh, Gujarat.

Based on these criteria, we selected the individuals showing the maximum plumage differences so that the entire range of plumages seen in Lesser Kestrels in India could be summarized. We followed the classification given in Corso et al. (2015) and Corso et al. (2016) in assigning individuals to a specific plumage type; we divided the birds in four groups as done by the authors – Group A (typical *pekinensis*-type), Group B & C (intermediate between *pekinensis* and nominate *naumanni*-type), and Group D (*naumanni*-type). The Groups B & C are combined here for convenience. It should be noted that camera settings are important in ascertaining the plumage colours and many times, the contrast and/or colour settings can distort the plumage. Hence, we checked all photographs for correct plumage colours. We also checked photographs of adult male Lesser Kestrels from the core breeding ranges of nominate and *pekinensis* subspecies. For example, we compared a typical nominate *naumanni* from Spain (Cabrera 2025) with entire rufous wing coverts with a typical *pekinensis* from Mongolia (Colenutt 2017) with entire slaty-grey wing coverts to understand the extreme variations in plumages shown by Lesser Kestrels across their range. This helped us in understanding the plumage types seen across different regions. All photographs of different individuals presented here are given with detailed captions.

Results

The plumage variations seen in Lesser Kestrels in India are as follows:

1. Typical *pekinensis*-type (Group A): Such individuals have entire upperwing coverts of lead grey colour, or may have rufous fringes to marginal coverts (along the leading edge of upperwing) with other coverts lead grey. The grey tones are much darker and the plumage colours are more saturated when compared with birds in Group D. The mantle is more chestnut (usually orange-red in nominate *naumanni*) and the underparts are richer in colour **[222–224]**.

2. Intermediate type (Group B & C): Such individuals generally have approximately half upperwing coverts greyish and half of the same colour as mantle. The amount of grey in the upperwing coverts is variable; many birds have marginal and median coverts rufous with rest of the upperwing coverts greyish. The mantle and underparts are less rich in colour than in typical *pekinensis* though this is variable. Birds falling in this type are presented here **[225–227]**.

3. Typical *naumanni*-type (Group D): Such individuals show very less grey in the upperwing coverts. The overall plumage is paler and the grey on the head is less intense. The mantle is more orange-red than chestnut. Such individuals are very rare in India and one bird is presented here in **[228]**. The one depicted in **[228]**, from Gujarat, is the only instance we could find from India.

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222. Group A – *pekinensis*-type. Typical *pekinensis* with completely lead-grey wing coverts with very little rufous on the lesser upper coverts. Note the dark grey head and much saturated red on the mantle. The underparts show sparse spotting, with entire underparts deeply rufous. December 2022, Lonavla, Maharashtra.

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223. Group A – *pekinensis*-type. Same bird as [3]. Typical *pekinensis* with completely lead-grey wing coverts with very little rufous on the lesser upper coverts. In flight, the amount on grey in the upperwings can be seen in detail. December 2022, Lonavla, Maharashtra.

Saurabh Desai

224. Group A – *pekinensis*-type. Typical *pekinensis* with completely lead-grey wing coverts with very little rufous on the lesser upper coverts. Note the much darker mantle colour. The head is dark grey and the underparts lack spotting, with upper breast looking more saturated rufous. Note that the natural lighting here makes the bird look more yellowish. December 2014, Little Rann of Kachchh, Gujarat.

Arpit Bansal

225. Group B/C – Intermediate-type. Most of lesser upper coverts are rufous while other coverts are grey. Compared with birds in Group A, the mantle and underparts look paler while the head is pale grey. An intermediate-type individual. October 2021, Tal Chappar, Rajasthan.

Manoj Sharma

226. Group B/C – Intermediate-type. This individual is similar to the one shown in **[225]**, with wings showing less grey compared to Group A type individuals but mantle looks darker. Underparts pale rufous with spotting. October 2011, Tal Chappar, Rajasthan.

Sudhir Paul

227. Group B/C – Intermediate-type. All lesser coverts and some median coverts are rufous while remaining wing is grey. Head dark grey and mantle colour is not as red as usually seen in *pekinensis*-type. Could be from intergrade zone closer to nominate *naumanni* breeding zone, as the amount of grey in the wings is less. March 2017, Tirunelveli, Tamil Nadu.

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228. Group D – nominate *naumanni*-type. Typical *naumanni*-type individual, where besides the secondary coverts, most other coverts are rufous, with rufous extending up to the shoulder. Paler grey head and mantle not as deep reddish as usually seen in *pekinensis*. The amount of grey in the wings is very much restricted when compared with Group A or Group B/C type individuals, hence likely to be nominate *naumanni*. December 2010, Little Rann of Kachchh, Gujarat.

Discussion

As can be seen from the photographs reported in this paper, there is considerable plumage variation in Lesser Kestrels seen in India. Occurrence of typical *pekinensis*-type, intermediate type and *naumanni*-type (just one instance) has been documented and all four groups of birds are seen here; it is likely that Lesser Kestrels from a wide breeding range visit India.

Corso et al. (2015) showed that birds from Group A, and possibly Group B, were winter visitors to India. However, individuals with much lesser grey in the wing coverts, matching to nominate *naumanni*-type, have been noted in India, which has not been reported before. The museum specimens from India, which were checked by Corso et al. (2015), were of *pekinensis*-type. Corso et al. (2016), in photographs nos. 430 and 431 show a male Lesser Kestrel collected from Assam, India, in 1880, which is presumed to be a *pekinensis*, with all upperwing coverts dark grey[1].

Praveen (2025), in his synopsis, states that the Indian wintering / passage migrant population has been previously assigned to *pekinensis*. It is interesting to note that most of the photographs we checked were either typical *pekinensis*-type or of intermediate type. Birds with very less grey in the wing coverts were found to be quite rare in India. Further, there is no geographical separation regarding various types of birds seen in India; *pekinensis*-type as well as intermediate type individuals are seen widely throughout the country. For example, *pekinensis*-type birds are seen in north-eastern India as well as in Maharashtra and Gujarat and in other parts of the country while intermediate-types have been seen in Rajasthan and Tamil Nadu. However, the nominate *naumanni*-type bird has been noted only in Gujarat. It is interesting to note that in Tamil Nadu, intermediate-type and *pekinensis*-type birds were observed together; the intermediate-type individual shown here in **[8]** from Tamil Nadu was seen in a flock of typical *pekinensis*-type birds. Corso et al. (2016), in the map, show the breeding range of nominate *naumanni* extending eastwards to approximately eastern Europe and western Russia. It is very likely that some individuals breeding in this region could well visit western India in the winter. Another nominate *naumanni*-type individual, with very less grey in the wings, which we checked, was seen and photographed in Jammu & Kashmir (Sharma 2018), but we did not include it in our study since it was not an adult as it showed some faint markings on the lower mantle.

It should be noted that that this is only a rudimentary analysis of adult male birds seen in India. We did not analyze abundance of the different type of individuals seen all over the country and this could be a subject of future work to figure out the pattern of occurrence of 'A' type birds vs 'B' & 'C' type birds. We also did not analyze any females or juveniles. Though adult males are easy to identify, female and juveniles are often confused with Common Kestrel *F. tinnunculus,* making it somewhat difficult to get a correct idea of the status and distribution of Lesser Kestrel in India.

Conclusion

There is considerable plumage variation in adult male Lesser Kestrels in India, which has not been reported in the reference works. While the majority of individuals seen here are *pekinensis*-type or intermediate type, the occurrence of *naumanni*-type birds has also been noted in the country. We recommend that Lesser Kestrels, with morphological variations, be trapped and satellite-tagged in India, so that the global breeding ranges of Lesser Kestrels wintering or passing through India can be determined.

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1 It is pertinent to point out that there is typographical error in Corso et al. (2015); photograph no. 17, labelled as a *F. naumanni pekinensis,* is a nominate *naumanni*, collected from Spain and wrongly labelled.