

# Notes on distribution and plumages of Laggar Falcon in Gujarat

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Fig-1: Laggar of plumage type – 1



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Fig-2: Laggar of plumage type – 2

## Introduction

The Laggar Falcon (*Falco jugger*) is resident in the Indian Subcontinent (Grimmett *et al.* 2011). It is one of the four hierofalcons (subgenus: *Hierofalco*) of the world, and is one of the large falcons in this complex (Wink *et al.* 2004). The Laggar Falcon is widely distributed throughout the Indian Subcontinent but is scarce (Rasmussen & Anderton 2012).

It is now treated as a 'Near Threatened' species, and is suspected to be undergoing a moderately rapid population reduction (BirdLife International 2016). It is stated to be 'commonest' in the desert and semi-arid zone of the country (at home in the hottest part of the country) and rarer in southern India (Naoroji 2006).



The distribution, breeding ecology and local migration of the Laggar Falcon have not been studied in detail. Here, we present the distribution of Laggar Falcon in Gujarat based on verified photographic records, and also report on the different types of plumages seen in the species here.



Nirav Bhatt

Fig-3: Laggar of plumage type – 3

## Identification

The Laggar Falcon is a medium sized, slender falcon. The adult has whitish to buff-whitish underparts, plain on throat and upper breast (some adults may have streaking on chest), lightly streaked on chest-sides and central belly. The upperparts are dark brown to grey-brown; forehead is usually plain; reddish crown; faint supercilium contrasting with dark eye-stripe. The central tail feathers are plain when seen from above and are not barred like in a Saker Falcon (*Falco cherrug*). The plain underparts and prominent moustachial stripe in adults help in differentiating it from adult Saker Falcon, which usually has round spots/markings on underparts and a diffuse moustachial stripe. Juvenile Laggar Falcons are darker brown above, with chocolaty- brown underparts, especially thighs, flanks and underbelly. The crown and nape are duller brown. Bare parts are tinged greenish-grey unlike yellow in adults.

The juvenile Laggar Falcon can be confused with Saker Falcon and Peregrine Falcon (*Falco peregrinus calidus*). The

## Laggar Falcon....

identification and separation of juvenile Laggar Falcon from the juveniles of Saker Falcon and Peregrine Falcon is complicated and beyond the scope of this work.

### Previous records from Gujarat

Ali (1954) collected 8 specimens from various areas of Gujarat and noted that the Laggar Falcon was resident and 'fairly common'. Dharmakumarsinhji (1955) also gave it as 'resident and common'. Khachar (1996) stated that it was 'declining'. Naoroji (2006) gives it as a resident in Gujarat, stating that it prefers arid to semi-arid open habitats. Ganpule (2016) gives it as a 'rare resident and winter visitor' and as 'widespread but rare or uncommon'.



Fig-4: Laggar of plumage type – 4

### Present distribution in Gujarat

Based on the data collected by us, and given here in the table, the Laggar Falcon is widely distributed in Gujarat, from the western areas to the eastern border. It has been recorded from Naliya Grasslands, Kachchh, and Charakala, near Dwarka, being the sightings from the extreme western part of Gujarat. For the eastern-most part, it has been reported from Dahod. Sightings from southern areas are from the Velavadar National Park, Bhavnagar Dist. and Pariej Lake, Kheda District. Most of sightings are from Kachchh District. The maximum numbers of sightings are from the arid regions of Greater Rann of Kachchh (GRK) and Little Rann of Kachchh (LRK), with few records from nearby places like Surendranagar, Lakhtar and Sachana. In recent times, one breeding pair has been observed from Dahod in 2012 and another from Amreli in 2013.

### Types of plumages

We have categorized plumages of Laggar Falcons in to 5 different types based on markings on underparts. We have taken all the data/photographs from available social media sources, personal communication with bird watchers, popular

birding websites like OBI (oriental bird images), INW (india nature watch), IBC (internet bird collection), BOG (birds of gujarat) etc, and where, for a few images, the front (showing underparts) was not visible, to categorize the plumage of such individuals, we have labeled them as 'UI' - unidentified. The plumage types are as follows:

Type 1 – Dark chocolaty plumage: underparts are completely or solid dark chocolaty colored, lacking any kind of streaking, barring etc., - juvenile plumage



Fig-5: Laggar of plumage type – 5

Type 2 – Heavily blotchy: dark brownish underparts but with some white seen, most likely juvenile or in transitional plumage from juvenile to adult

Type 3 – Less heavily blotchy: blotchy part is less and sparsely spaced with the white base of underparts being more visible than type – 2, most likely juvenile or in transitional plumage from juvenile to adult

Type 4 – Streaked adults: less streaked underparts on whitish/creamish base, unlike classic plain white underparts

Type 5 – Adults: classic adult plumage, with very less or no streaking on throat, chest and upper belly, markings on lower belly and thighs may vary in different individuals



Fig-6: Underwings pattern of an adult Laggar

**Sightings of Laggar Falcon in Gujarat from 2005 till 2018 – photographic records**

Sr. No.	Date	Location	Observer	Reference	Plumage-type
1	15 September 2005	GRK	Kevin Wang & Wojceich Dabrowka	OBI	2
2	3 February 2007	GRK	Sumit Sen	OBI	3
3	3 April 2007	Surendranagar	Nirav Bhatt	Author's sighting	5
4	8 October 2007	GRK	Jugal Tiwari	INW	4
5	1 February 2008	LRK	Girish Vaze	INW	2
6	2 November 2008	GRK	Jugal Tiwari	OBI	3
7	11 November 2008	LRK	Nirav Bhatt	Author's sighting	1
8	12 December 2008	GRK	Jugal Tiwari	OBI	1
9	9 January 2009	GRK	Erwin Collarets	OBI	3
10	18 November 2009	LRK	Arpit Deomurari	IBC	UI
11	28 November 2009	LRK	Nirav Bhatt	Author's sighting	1
12	20 December 2009	LRK	Prasad Ganpule	<i>pers. comm.</i>	1
13	29 June 2010	Thol Bird Sanc.	Falgun Shah	<i>pers. comm.</i>	1
14	24 November 2010	Bagodara	Kandarp Kathju	<i>pers. comm.</i>	2
15	21 March 2011	GRK	Ashok Chaudhary	Facebook	UI
16	1 January 2012	LRK	Vikram Potdar	INW	1
17	2 April 2012	Dahod	Zuzar Boriwala	<i>pers. comm.</i> / 4 chicks with adult observed	1
18	25 December 2012	Nal Sarovar	Vimal Dubbal	<i>pers. comm.</i>	UI
19	18 November 2013	Velavadar	Devvratsinh Mori	Author's sighting	1
20	1 January 2014	Near Sanand	Malhar Raj Jingar	<i>pers. comm.</i>	UI
21	8 February 2014	LRK	Devvratsinh Mori	Author's sighting	UI
22	1 November 2014	LRK	Gaurang Bagda	Facebook	5
23	13 November 2014	Dahod	Akil Kharodwala	<i>pers. comm.</i>	5
24	1 December 2014	GRK	Amish Parekh	Facebook	5
25	14 December 2014	LRK	Prasad Ganpule	<i>pers. comm.</i>	5
26	21 December 2014	LRK	Nirav Bhatt, Prasad Ganpule	Author's sighting	5
27	28, December 2014	LRK	Dhairya Dixit, Vivek Mansata, Hardik Bhatt	Author's sighting	UI
28	1 January 2015	Sachana	Vipul Trivedi	Facebook	1
29	1 January 2015	GRK	Dilipsinh Chudasama	Facebook	UI
30	2 February 2015	LRK	Devvratsinh Mori	Author's sighting	5
31	2 February 2015	LRK	Aditya Roy	Facebook	UI
32	8 February 2015	LRK	Satish Thayapurath	Facebook	UI
33	15 February 2015	LRK	Marco Velentini	IBC	UI
34	17 February 2015	LRK	R Messemeker	IBC	1
35	1 November 2015	Dwarka	Prasad Ganpule	<i>pers. comm.</i>	UI
36	25 December 2015	LRK	Devvratsinh Mori	Author's sighting	3
37	31 December 2015	Kheda	Devvratsinh Mori	Author's sighting	UI
38	27 January 2016	Kheda	Divyesh Kelawala	Facebook	UI
39	1 February 2016	Dahod	Vivek Mansata	<i>pers. comm.</i>	UI



Sr. No.	Date	Location	Observer	Reference	Plumage-type
40	7 February 2016	LRK	Anand Patel & Viren Desai	OBI	UI
41	1 May 2016	Dahod	Chacko Abraham	Facebook	4
42	1 September 2016	LRK	Dhairya Dixit, Jay Shah, Hardik Bhatt	Author's sighting	4
43	16 October 2016	Velavadar	Dhairya Dixit, Aseem Khadakkar, Falguna Shah	Author's sighting	1
44	14 November 2016	LRK	Falguna Shah	<i>pers. comm.</i>	1
45	1 January 2017	LRK	Kusahnkur Bhattacharyya	INW	3
46	9 January 2017	LRK	Bhavesh Shah	<i>pers. comm.</i>	UI
47	2 December 2017	Dahod	Pragnesh Patel	Facebook	5
48	3 December 2017	Dahod	Saswat Mishra	BOG	5
49	16 December 2017	Kheda	Bhavesh Mengar	<i>pers. comm.</i>	2
50	24 December 2017	GRK	Mohit Aggarwal	eBird	2
51	26 December 2017	Velavadar	Kandarp Andharia	BOG	3
52	1 January 2018	Bagodara	Nirav Bhatt	Author's sighting/ mating observed	UI
53	1 January 2018	Velavadar	Shantilal Varu	Facebook	3
54	21 January 2018	Velavadar	Ankit Shukla	<i>pers. comm.</i>	UI
55	21 January 2018	LRK	Vimal Dubbal, Krutarth Chauhan, Chintu Panchal	<i>pers. comm.</i>	4
56	10 February 2018	Lakhtar	Nirav Bhatt	<i>Author's sighting</i>	3
57	01 March 2018	Dahod	Rushiraj Puwar	<i>pers. comm.</i>	2



Fig-7: Upperwings pattern of an adult Laggar

### Observations

Out of 57 sightings reported in table, we have noted that the number of sightings have increased from 2014 onwards. The increase in number of sightings may or may not have any relation to the population of the Laggar Falcon in Gujarat. It is also possible that the same individual(s) may have been noted/photographed multiple times. We have not attempted to identify and separate each individual by plumage. We have also observed that the number of observers (bird watchers/photographers) have increased in last 4-5 years, which could be directly related to the more number of sightings reported.

However, we can conclude that sightings from some areas have been recorded almost annually, which suggests that it is still fairly regularly seen in areas like Dahod, Kheda, GRK and LRK.

Though sightings have been regular in certain areas as mentioned above, only 2 breeding pairs have been recorded in the past six years; in Dahod by Zuzar Boriwala and in Amreli by Viral Joshi (*pers. comm.*). We have not included Viral Joshi's sightings in the above table as unfortunately, they were not supported by photographic evidence. But, with the detailed description of the breeding pair given by him, we believe that the identification is correct. A breeding record from Mandav Vidi, Thangadh, Surendranagar District, has also been reported wherein a pair in courtship display with a nest was observed (Thoria 2008). One juvenile was being fed by an adult female in Dahod and one pair was observed mating by the first author (NB); both these observation support possibility of nesting very strongly. But, the notable point here is that Gujarat, despite being so close to Rajasthan in terms of distance as well as habitat, has very less number of breeding records from recent years. It is possible that breeding is overlooked since there has been no active search for nesting pairs here.



Month-wise sighting trend: It is evident that the maximum sightings are from the winter months – November to February. It has been observed that the maximum sightings are of juvenile birds. Adult Laggar Falcons have also been observed during November to February but the sightings are very few as compared to juvenile birds. In LRK and GRK (which has maximum number of sightings), only 2 sightings are from the period of March – October. So, mostly all sightings in regions where there are maximum sightings, are from the winter months. It is noteworthy that not a single breeding/ nesting pair has been recorded from LRK and GRK. Such a trend is more or less regular since past 10-15 years. This raises a few questions. Are winter sightings due to local migration? Or, is it that since the area is inaccessible in the monsoon, the breeding observations are missed (But this seems unlikely as the breeding period is from January – April, as given by Naoroji 2006)? Are the birds breeding in the vicinity of these areas and not actually in LRK and GRK and are thus overlooked?

Plumage-wise monthly sighting trend: We have noted that the juvenile – dark chocolaty, plumage type 1 – Laggar Falcon is sighted almost throughout the year, raising questions about the breeding period and/or moulting pattern of the species. Juveniles with heavy marking on underparts are observed from September to March, whereas juveniles with sparsely marked underparts are observed only during the wintering months from November to February. Our observations are not sufficient enough to study any details of moult in juvenile Laggar Falcons. Also, there could be some differences in the way in which we have classified the individual birds. The amount of streaking on underparts is subjective, especially for plumage type 2 and 3, and other observers can classify these individuals as immature or sub-adults. Adult Laggar Falcons have been observed throughout year except in the main monsoon months (July-August).

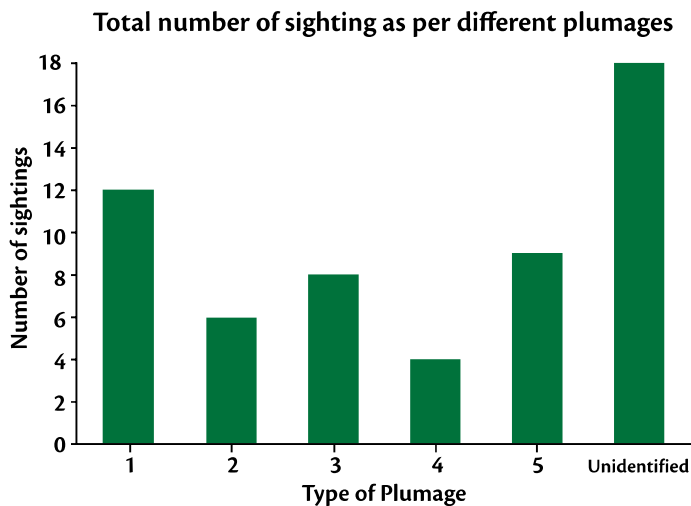
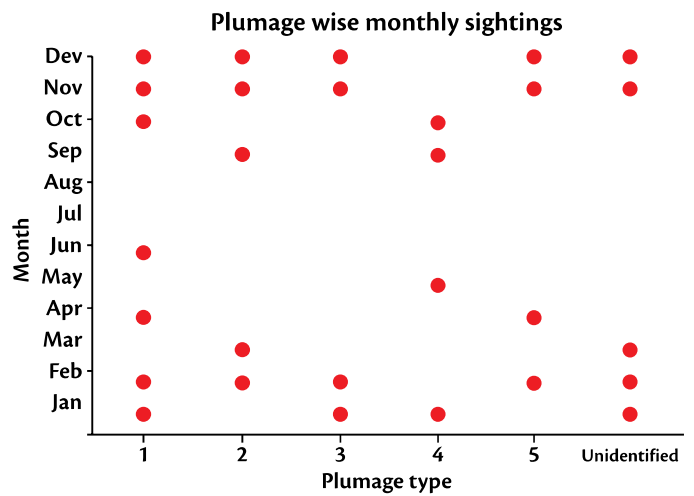
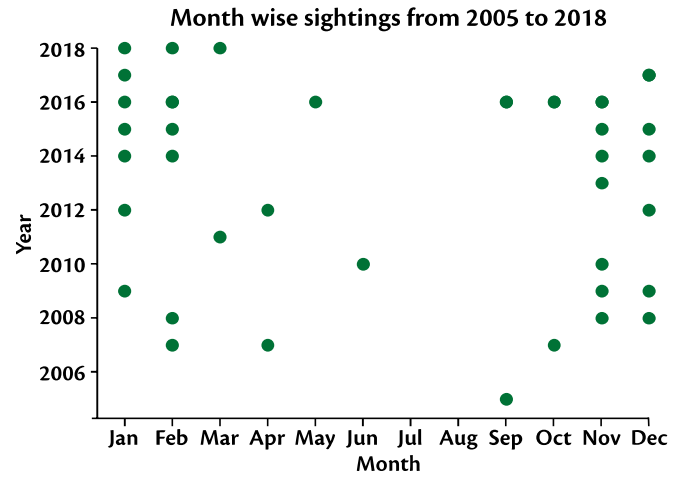


Fig-8: Laggar with a kill

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**Discussion**

From the available data, we have tried to study the present distribution and population trend of Laggar Falcons and also the types of plumages seen in this species. It is very interesting

## Laggar Falcon....

that only three breeding pairs have been recorded in the last 14 years, which is an alarming observation for this species in Gujarat. Here, it should be noted that juveniles are sighted regularly in various parts of the state, which is a good sign and the population could be more or less stable. A detailed study of breeding of Laggar Falcon must be carried out to further monitor the actual population trend and other factors affecting breeding success and/or failures.



Dhairya Dixit

Fig-9: Laggar with a Common Quail kill



Devratsinh Mori

Fig-10: Laggar with a unidentified lark kill

Another interesting observation was that, the typical chocolaty plumaged birds (usually fresh juveniles) were observed almost throughout the year and we can see that the numbers of juvenile sightings are more than adults. This might be due to variation in duration of breeding, but such a large scale variation seems unlikely and hence, a detailed study of the moult of Laggar Falcon should be carried out.

The breeding period of the Laggar Falcon is from January to April, and the young fledge by April or early May (Naoroji 2006). In a recent study on the breeding of the Laggar Falcon in Karnataka, the young fledged in April (Rao & Adaki 2018). Thus, the sighting of juveniles with all dark underparts in December-February is most surprising and suggests that the breeding period may be extending into the monsoon season and/or starting from early winter or that some birds initiate to moult into adult-type plumage very late. But, this needs further study. It should be noted that birds of plumage-type 3 (with less blotchy underparts), juveniles or transitional plumaged birds, have been seen only in the winter months (November – February) till now in Gujarat. Naoroji (2006) states that ‘the blotchy streaking on chocolate-brown underparts appears to be a variable trait of juvenile plumage’ and also notes that ‘uniform chocolate-brown underparts gradually disintegrate into patches and progressively narrower streaks over successive moults till the adult plumage is attained at three years’. However, in most large falcons, juveniles directly moult into adult-type plumage unlike in eagles (*Aquila* sp.) wherein there are distinct moults from juvenile into immature or sub-adult types. Thus, in Laggar Falcon, the juveniles would moult into adult-type plumage over a single moult. However, it is possible that young adults would show some streaks on underparts while older adults show all white underparts. But, again, this requires further study. A study of moult will also help to understand the food resources required for commencing such an energy consuming process like moulting and the moult could also be attributed to prey availability to different individual birds.

We have observed the Laggar Falcon hunting and feeding on a few occasions. We have observed two pairs of adult Laggar Falcons preying on dragonflies in September (by the second author) and an adult preying on an unidentified insect in December (by the first author). Three Laggar Falcons were observed consuming spiny-tailed lizards (*Saara hardwickii*). We had also witnessed a pair hunting a Common Quail (*Coturnix coturnix*) – these observations are by the second author (DD). One bird was observed consuming a lark by the third author (DM). Collection of data on the prey base of the species during various months is required to understand the ecological significance and habitat preferences, which will help to protect the species, as it is resident in a limited geographic area, and restricted mainly to the Indian Subcontinent.

The data presented here can help in estimating the basic facts regarding the sightings and is useful in understanding the present distribution of the Laggar Falcon in Gujarat and gives



details regarding the plumages seen here in this species. It can be seen that the earlier status of 'fairly common' for the Laggar Falcon is no longer true and the species is now uncommon or rare in Gujarat. Whether there is a marked population decline or not needs further study. We recommend carrying out detailed and methodical studies to further understand the distribution, population trends and various plumages (especially moult), of this less studied and globally important falcon.

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Fig 11: Adult pair of Laggar - exhibiting sexual dimorphism, note dark head of male as compared to pale head of female

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