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104–107. Sequential courtship/territorial display pictures of the WCR pair (Dance 1). Four pictures (0316, 0326, 0334, 0336) selected from 28 frames.

According to Whistler (1931), "virtually nothing has been recorded" about courtship dancing in Indian birds. While this comment was made 90 years, ago and some advances on courtship behaviour of birds in India have happened, still the field remains fascinatingly open. Our report is from a fortuitous encounter. An interesting observation is provided by Hackney (1951), in which he describes a group of six or seven White-capped Redstarts in a 'group dance' in a small turbulent pool in a bend of a river near Shimla, in May 1944. Two or three would flutter together in the centre of the pool, sometimes colliding breast to breast, while the others watched from the side; one of the onlookers would sometimes take the place of a bird in the pool. He concluded that this display was a "jousting match" of males to attract a female partner. If this conclusion is right, it would seem similar to the lek of birds of paradise as described by Attenborough (1998: 182–217). Hackney's is the only documented courtship behaviour reported for this species (Ali & Ripley 2001: 58–61; Collar 2020).

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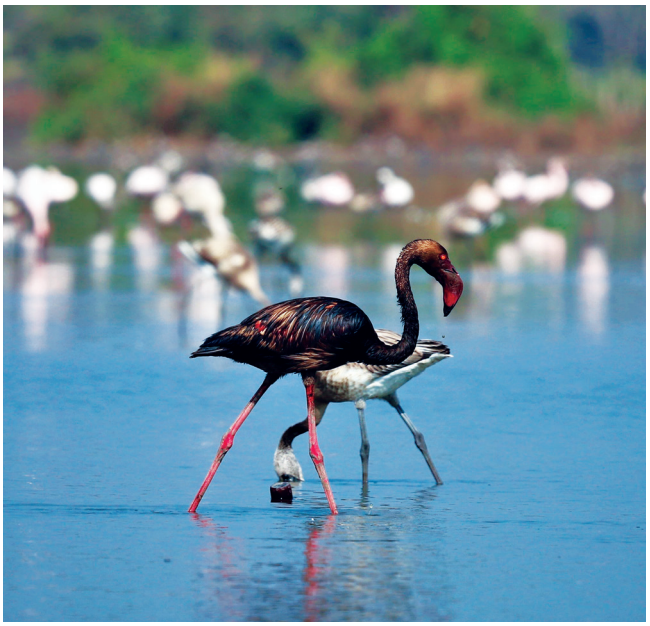
An unusual plumaged Lesser Flamingo *Phoeniconaias minor* in Navi Mumbai

We came across an adult black coloured Lesser Flamingo *Phoeniconaias minor* in the wetland behind the non-resident Indian (hereinafter, NRI) complex, Navi Mumbai, in mid-January 2020 **[108]**. The bird had a black mantle, breast, and tail, and light to dark brown head, neck, scapulars, rump, abdomen, and flanks. In contrast, feathers of upper- and underwings were light-brown with a tinge of pink and black tipped. The primaries, outer secondaries, and bare parts such as eyes, bill, legs, and feet of the black individual were normally coloured, as an adult Lesser Flamingo.

It was seen frequently at NRI wetland (19.01°N, 73.01°E) after its first appearance in January, where all our observations were carried out **[109]**. We monitored the bird through opportunistic photographs and behavioural observations recorded between January and March 2020. This is a coastal and tidal wetland spread over ~19 ha, with its western and southern sides surrounded by mangroves, while the north-eastern and south-eastern sides are enclosed by a wall with a thin stretch of vegetation. It is a key high tide roosting site for the migratory shorebirds visiting Mumbai, particularly large congregations of Greater Flamingo *Phoenicopterus roseus* and Lesser Flamingo (Narwade et al. 2015; Bajaru et al. 2019).



Shalini Jain

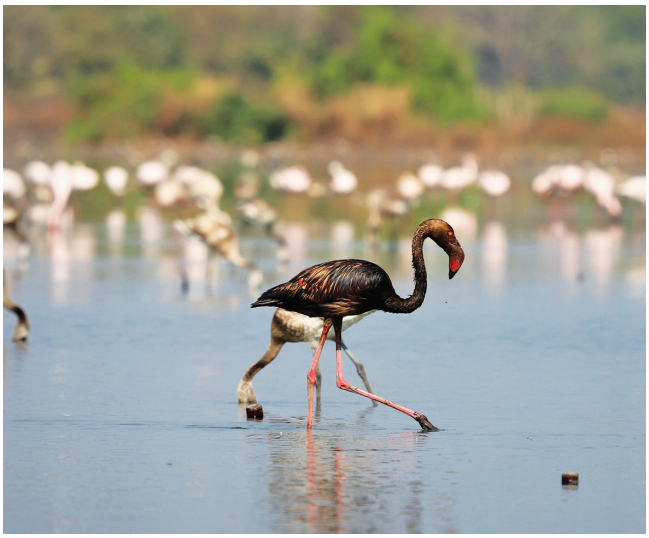
108. Dark-coloured Lesser Flamingo at NRI wetland.

Ronit Dutta

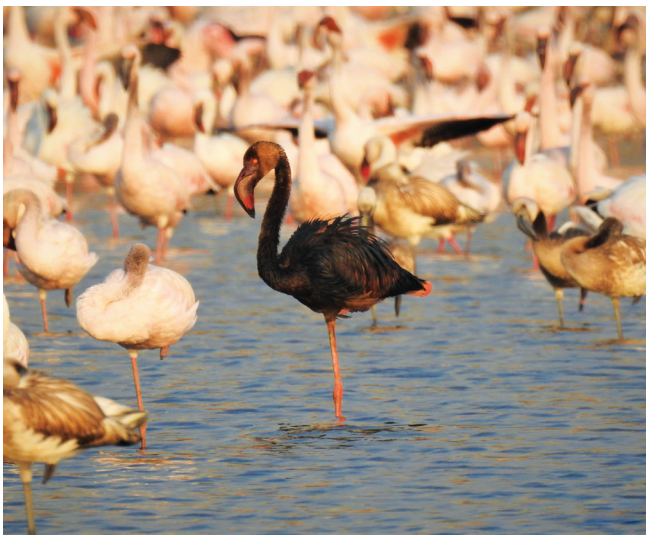
109. Wetland behind non-resident Indian complex.

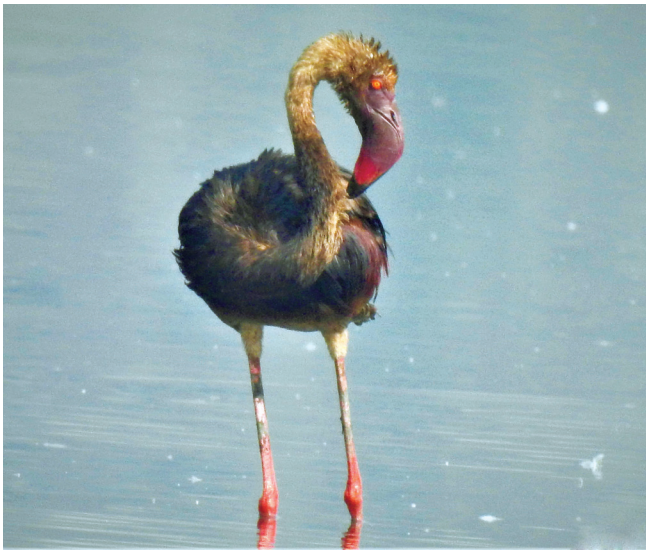
We noticed that the dark colouration faded gradually from January onwards, until the first week of March 2020. This change was conspicuous on its head, neck, belly, and flanks **[110a–d]**.

Besides, this individual's plumage did not look pristine like a normal Lesser Flamingo's; its neck, back, rump, scapulars, abdomen, flanks, and tail feathers appeared to be matted **[111]**.



Shalini Jain

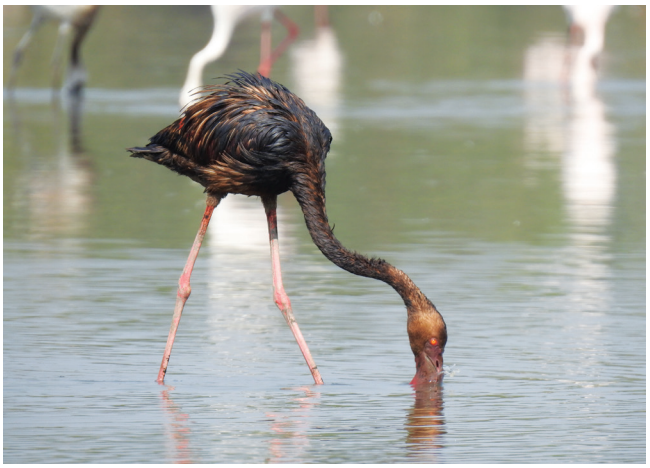




Both: Mayank Shukla

Mayank Shukla

110 (a, b, c, d). Change in plumage colour from January to March 2020.



Nandana Chaudhuri

111. Dark-coloured Lesser Flamingo with matted plumage.

Colour aberrations are common among organisms. These aberrations can be heritable (due to genetic mutation) or non-heritable (due to disease, nutritional deficiency, trauma, and environmental pollution) (van Grouw 2013). Melanism is a condition where an organism exhibits either overall, or in parts (partial melanism), a darker morphology as a result of increased melanin or its disproportionate distribution (van Grouw 2013). Besides natural colour aberrations, birds often encounter environmental contaminants such as dirt, soot, and oil sheen or slick that can discolour their plumage (Maung-Douglass et al. 2019). Other studies have also reported that feathers get disrupted and become matted due to chemical toxins, particularly oil sheen or slick (O'Hara & Morandin 2010; Perez et al. 2017). Hence, we suspect that the black colouration on this Lesser Flamingo was an outcome of chemical toxins/environmental contaminants.

We tested the hypothesis that this colour aberration would affect its daily activities, when compared to the other flamingos. We recorded the behaviour of the Lesser Flamingos, including the black individual, using focal animal sampling (Altmann 1974). We classified the behaviours into five categories: feeding, movement, maintenance, vigilance, and standing/resting (Kumssa & Bekele 2014; Bensaci et al. 2015) and assessed the time spent by individuals for each activity. Focal individuals were selected arbitrarily in the case of normal individuals, and videotaped for one minute using a Nikon P900 camera. There was an interval of at least five minutes between two subsequent observations in the

case of the black flamingo. A total of 87 observations of the black individual, and 77 of the normal birds were recorded on six days from January to March 2020 (Table 1; please contact authors for videos). The actual observation period was 435 min., during which 87 one-minute focal observations were carried out for the black individual, and 77 min. for the normal individuals. The videos were transcribed using BORIS v.7.5.3. We used Chi-Square test to see the difference between three major activities—feeding, maintenance and standing/resting—of the black individual and the normal ones. The statistical tests were performed in R version 3.5.1.

Table 1. Number of videos recorded for black and normal individuals throughout the study period

	Number of videos	
Date	Black	Normal
28 January 2020	4	4
01 February 2020	5	1
18 February 2020	28	25
26 February 2020	20	19
07 March 2020	10	9
09 March 2020	20	19

We found a significant relation between the plumage colouration and time spent in activities, X^2 (2, N = 164) = 8.57, $p < 0.05$. The black individual spent significantly higher time in maintenance than the normal individuals. Time spent in other activities was not considerably different between the black and normal individuals (Fig. 1).

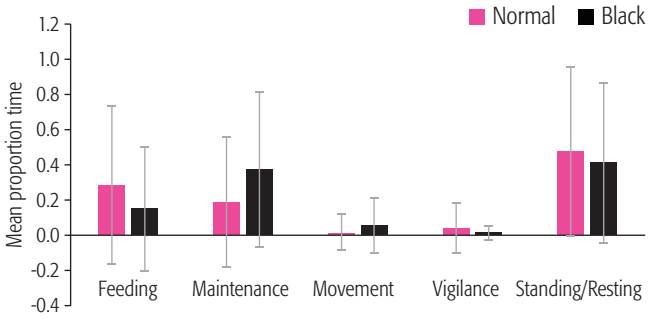


Fig. 1. Mean proportion time spent by black and normal individuals in different activities.

Burger (1997) stated that seabirds and shorebirds are more susceptible to pollutants like oil and soot as they spend most of their time in the aquatic environment. Exposure to such contaminants may result in greater demands on energy, for excessive grooming to keep the plumage pristine and aligned (Costa & Kooyman 1982), which is confirmed by this study as the black individual spent more time in maintenance and preening feathers. Consequently, this prevents the bird from spending time on other activities like feeding, movement, or resting (Maung-Douglass et al. 2019). The environmentally caused colour aberration (due to chemical toxins) reduces the fitness of individuals by excessive ingestion of pollutants (Harvey et al. 1981; Leighton 1993), disrupts waterproofing and thermal balance (Fritt-Rasmussen et al. 2016), hampers flight (Maggini et al. 2017), and interferes with courtship and mating behaviour (Amat & Rendon 2017).

Cases of colour aberrations in shorebirds, such as this, are worth investigating to determine the sources of these environmental contaminants, and to understand their impact on the birds so that appropriate action could be taken to reduce or avoid the adverse effects.

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