



First report of hypomelanism in Northern Palm Squirrel from Gujarat, India



Hypomelanistic squirrel exploring the ground. © Kirnalee Patel.

The visual appearance in mammals serves varied functions, chief among which is self-defence (Cott 1940; Nordlund et al. 1998). In mammals, melanin present in melanophores of the epidermis is responsible for imparting colour to their hairs and eyes (Nordlund et al. 1998). The changes in these epidermal melanophores are known to change morphologic colour, which includes either an increase or a decrease in the pigments. Eumelanin and Pheomelanin, the two types of melanin responsible for producing diverse coat colour range from black-brown to sandy red or yellow, respectively (Solano 2014). However, some mutations give rise to

conditions wherein these pigments are affected and result in abnormal colouration (Nordlund et al. 1998).

These occurrences of colour aberrations, reported in 55 Indian mammalian species, have been accordingly termed as albinism, leucism, piebaldism, hypomelanism, melanism, and blue-eyed white morphs (Mahabal et al. 2019).

Colour aberrations such as albinism and leucism, which are responsible for the abnormal appearance of an individual, have been reported in Northern Palm



Squirrel *Funambulus pennantii* from India (Agrawal & Chakraborty 1979; Chaturvedi & Ghose 1984; Sharma 2004; Mahabal et al. 2005; Mehra et al. 2007; Sayyed & Mahabal 2016; Kamalakannan et al. 2019). However, another such genetic mutation in mammals known as hypomelanism, referred alternatively as flavism, erythrism, tawny, silvering, and rufism; is also known to occur (Lucati & López-Baucells 2016).

It is a type of hypopigmentation resulting due to reduced pigment granules as a consequence of mutation in a gene responsible for synthesis of melanin. Though this mutation leads to a paler phenotypic appearance such as a creamy, brown, golden, yellow, or reddish coat of an individual, the eye colour of the affected individual remains unchanged (Lucati & López-Baucells 2016; Mahabal et al. 2019). For paler appearing forms, the term 'dilution' has been described by van Grouw (2006, 2013), which is also associated with a lower number of pigment granules in birds. Here, we report a case of hypomelanism in Northern Palm Squirrel from Vadodara City, Gujarat, India.

The Five-striped or Northern Palm Squirrel, a small rodent of the family Sciuridae, is commonly found in northern India in various habitats. Being a diurnal, semi-arboreal, bold, and inquisitive species, it is incredibly adaptable and a commensal with man (Molur et al. 2005; Johnsingh & Manjrekar 2015).

On 15 August 2018 at 0720 h, a different looking Northern Palm Squirrel was noted

at Sayaji Garden, a public park in Vadodara City (22.315°N, 73.188°E). It appeared golden, and had pinkish snout, ears and feet, although its eyes were normal black. Its five pale white stripes were set against the golden-orange fur. As seen in other *F. pennantii*, in this individual also out of the three median stripes, the mid-dorsal central stripe was longer than the two lateral stripes and extended up to the tail.

However, the other two supplementary stripes were not marked from the ventral surface. The upper head region up to the snout and the dorsal region of the forelimb appeared creamy orange in colour. Though the tail appeared lighter, it was almost white towards the tip and ventral side while it appeared creamy orange in the mid-region.

The individual was identified as a female as evident from the absence of scrotal sacs and distinctively visible mammary glands observed during the breeding phase. As the individual appeared golden-orange with normal eye colour, the colour aberration was inferred to be hypomelanistic.

Mahabal et al. (2019) has given a comprehensive compilation of all types of colour aberrations in various Indian mammalian species. This interpretation reveals cases of hypomelanism in 44 mammalian species, but has not yet been reported in palm squirrels. Hence, the present report is the first photographic record of hypomelanism in Northern Palm Squirrel from India.



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