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Leucism in the three-striped palm squirrel (*Funambulus palmarum*) at Gudalur Forest Division, Tamil Nadu, Southern India

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Leucism is a condition characterized by the reduction of all skin pigmentation, generally observed in animals. In this note we describe the first known cases of the leucism in the three-striped palm squirrel in the fragmented forest habitat of Gudalur forest division, Tamil Nadu, Southern India.

El leucismo es una afección caracterizada por la reducción de toda la pigmentación de la piel, generalmente observada en animales. En esta nota describimos los primeros casos conocidos de leucismo en la ardilla de palmera de tres rayas en el hábitat forestal fragmentado de la división de bosques de Gudalur, Tamil Nadu, sur de la India.

Key Words: Gudalur; Leucism; Southern India; Tamil Nadu; Three-striped palm squirrel.

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The observation of color abnormalities in wild mammals is an isolated event because these abnormalities are rare (Robinson 1973; Caro 2005). Inherited color defects, such as albinism and leucism, are well known in several animal species. Leucism is a condition in which there is partial loss of pigmentation in an animal resulting in white, pale, or patchy coloration of the skin, hair, feathers, scales or cuticle, but not the eyes. Unlike albinism, it is caused by a reduction in multiple types of pigments, not just melanin (Rook *et al.* 1998). Leucistic animals appear white in colour; this condition is controlled by a single recessive allele (Owen and Shimmings 1992). In this note we describe the first known cases of leucism in the threestriped palm squirrel inhabiting the fragmented forest habitat of Gudalur forest division, Tamil Nadu, Southern India.

The three-striped palm squirrel (*Funambulus palmarum*) is a small rodent species that belongs to the family Sciuridae. There are four subspecies of Indian palm squirrels that are native to India and Sri Lanka; the species studied is endemic to southern India and Sri Lanka (Nameer and Molur 2008; Thorington and Hoffmann 2005). It is widely distributed, from sea level up to 2,000 m asl (Nameer and Molur 2008). The three-striped palm squirrel can reach 6 to 7.8 inches in total length and weigh 100 to 120 g (3.5 to 4.2 ounces) (Menon 2003). It is covered with short fur that is yellowish brown or brown colored on the back and creamy white on the belly (Menon 2003). It has three white stripes on the back that stretch from head to tail. It has dark rounded eyes, small triangular ears, long front teeth and bushy tail (Figure-1a; Prater 1971 & 1980; Menon 2003; Pradhan and Talmale 2012). It is an omnivore and its diet is mostly based on fruits and nuts, but it also consumes eggs,

small birds, larvae and insects (Prasad *et al.* 1966; Malhi and Kaur 1994; Malhi and Khushrupinder 1995).

On 22 September 2016, at 13:39 hours we observed one leucistic *F. palmarum* specimen in the fragmented forest habitat of Gudalur forest division, Tamil Nadu, Southern India (N 11.493667°, E 76.336977°); it was totally white, with pinkish snout, ears and limbs, but its eyes were normal colored (Figure-1b); it appears to be a case of leucism and not albinism, where the whole body is totally white with reddish eyes (Smielowski 1987). Sayyed *et al.* (2015) reported albinism in jungle palm squirrels (*Funambulus tristriatus*) from Goa, India; in addition, Sayyed and Mahabal (2016) recorded the first known record of leucism in another species of the same genus, the five-striped palm squirrel (*Funambulus pennantii*) from Maharashtra, India. A total of three squirrel species are found in India, namely three-striped palm squirrel, five-striped palm squirrel and jungle palm squirrel; the five-striped palm squirrel is found in northern India, while the jungle and the three-striped palm squirrels are located in southern India, especially in the Western Ghats mountain region (Prater 2005; Menon 2003). The occurrence of leucism is associated with many factors such as pollution, environmental alterations (Moller and Mousseau 2001), low-quality diet (Owen and Shimmings 1992; Peles *et al.* 1995), or follicular damage (Phillips 1954; Hafner and Hafner 1987). Leucism is more frequent in small and isolated populations due to inbreeding, which causes recessive alleles to be expressed (Holyoak 1978; Bensch *et al.* 2000). Leucism reports are relatively rare in small mammals (Robinson 1973; Caro 2005; Steen and Sonnerud 2012). Leucistic individuals have lower survival rates than normally colored individuals, because they are more



Figure 1. a) Normal Three striped Palm Squirrel. b) Leucism affected Three Striped Palm Squirrel.

easily detected by predators (Owen and Shimmings 1992). It is worth mentioning that there are probably many animal species from different orders with anomalous coloration; unfortunately, many of these records have not been officially reported, probably due to lack of knowledge. Therefore, we highlight the relevance of photographs as valuable tools for the documentation of natural history as a whole. In conclusion, researchers should be encouraged to report records of leucism in wildlife in order to better understand this phenomenon and the insights into the ecological and physiological implications of this condition, which has a significant effect on animal survival (Fertl et al. 2004).

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