

Original Research Article

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First Record of Leucism in Five Striped Palm Squirrel, *Funambulus pennantii* (Rodentia: Sciuridae) from North India

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ABSTRACT

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A case of leucism in five striped palm squirrel *Funambulus pennantii* Wroughton, 1905 has first time recorded from a partial man made forest at Zamania (Ghazipur) Uttar Pradesh of Northern India. It's a second report of leucism of the same species from the country. The data of ecological habitats and economic importance are also presented here.

Introduction

The genus *Funambulus* is one of the most common genera of the family Sciuridae. It has six species namely, *F. layardi* (Layard's palm squirrel), *F. palmarum* (Indian palm squirrel), *F. tristriatus* (Jungle palm squirrel), *F. pennantii* (Northern palm squirrel), *F. obscurus* (Dusky palm squirrel) and *F. sublineatus* (Nilgiri striped squirrel) (Srinivasulu *et al.*, 2003 and Dissanayake, 2012). *Funambulus pennantii* Wroughton is very easily recognize by its slender body with

five white or whitish strips and a long tail like bottle brush. Body color is greyish brown to olive brown with three median pale stripes flanked on each side with a supplementary pale stripe; absence of mid ventral line on tail makes the distinctive characters of the species (Sayyed and Mahabal, 2016).

Out of these, *Funambulus pennantii* Wroughton (1905) is more frequently found in the northern part of India like West Bengal, Uttar Pradesh, Rajasthan, Uttarakhand, Haryana, Punjab, Delhi, Bihar, Andhra

Pradesh, Assam, Sikkim, Chhattisgarh, Madhya Pradesh, Maharashtra Gujarat, Karnataka, Jharkhand, Orissa as well as Andaman and Nicobar Islands. It also distributed in Nepal, Pakistan and Bangladesh (Srinivasulu *et al.*, 2003).

The color abnormalities are very rare in wild mammals (Caro, 2005). These abnormalities may be governed by several factors. It may be inheritable. Inherited color abnormalities, Leucism and albinism are seen in small mammals. The Leucism is the condition where partial loss of pigmentation/colorations in animals but not in eye whereas albinism is the totally white with red eyes (Smidowski, 1987). The Leucistic animal looks white in appearance and this condition is controlled by a single recessive allele (Owen and Shimmings, 1992) whereas the albinism carries with it the trait of tameness (Rajagopalan, 1967) and it is an indication of infertility (Hutt, 1969). Here, discussed known case of Leucism in the five striped palm squirrel, *Funambulus pennantii* from mixed forest of Zamania, near St. Mary's School, Zamania Ghazipur, Uttar Pradesh, India.

Materials and Methods

The study sites are located near St. Mary's School, Zamania, Ghazipur, Uttar Pradesh, India at eastern bank of river Ganges (25.41122⁰ N and 83.55775⁰ E, 25.390701⁰ N and 83.55557⁰ E and 25.407646⁰ N and 83.55523⁰ E). The sites were moderately dense forest of old tress and moderately human interventional area (Toddy drinkers).

Vegetation

The sites were with different forest trees since several years earlier. Most of the forest was dominated with *Eucalyptus* plantation and Toddy palm (palm wine tree). The other vegetation were Bamboo (*Bambusa*), Jamun (*Eugenia*), Banyan tree (*Ficus bengalensis*),

Sisso (*Delbergia*), Neem (*Azadirachta*), *Murraya koenirghii*, sorghum field, Star fruit, Amara, Aonla (*Emblica*), Sagaun, Kadamba, Karonda. There by a pump house, farm house and seasonal toddy selling hut are also.

Observation

When listen about a white squirrel some toddy drinkers. He made a series of regular survey of the whole area and three spots were identified for the taking observation- site I, Site-II and site-III. One month regular observations were made at weekly interval at 6.00 AM to 7.30 AM to each site on different days in the month of July 2018. The entire sites are 500 to 600 meter apart from each others. The photographs were taken of both types of fauna i.e. Leucisitic and non Leucisitic.

Identification

The Leucisitic and non Leucisitic fauna are observed very carefully. The non Leucisitic fauna means five striped palm squirrels were identified by standard literature of Sayyed *et al.*, (2015), Sayyed and Mahabal (2016), Ghose *et al.*, (2004) and Steve (2010) and leucisitic fauna by literatures of Samson (2017), Sayyed and Mahabal (2016) on the basis of morphological characters like, Pinna, head, body color and stripes pattern and tail.

Results and Discussion

Leucism

The result came from a regular observation from 1st July 2018 to 9 August 2018 that a Leucisitic five striped palm squirrel, *Funambulus pennantii* was recorded from the partial man made forest at Zamania, Gahzipur Uttar Pradesh, North India (Table 1) and figure 1. It was totally white in color but eyes were normal in color. The limbs, ears/pinna and snout were somewhat pinkish in color (Fig. 2). It reveals only the leucism not

albinism. Sayyed and Mahabal (2016) has also observed similar characters of leucism in the five striped palm squirrel *Funambulus pennantii* from Satara District of Maharashtra, India and it was the first report of leucism from the central part of India whereas Samson (2017) reported leucism in three striped palm squirrel *Funambulus plamarum* from Tamil Nadu. In spite of Leucism, albinism is also recorded in different species of *Funambulus*. Sayyed et al (2015) observed albinism in Jungle palm squirrel *Funambulus tristriates* from Goa and also partial leucism in the same fauna.

Literatures are very silent regarding Leucism in five striped palm squirrel from North India

region. In spite of few report of albinism by Sharma (2004) and Mehra *et al.*, (2007) from different parts of Rajasthan and Chaturvedi and Ghose (1984) from Chandigarh are known from this region. Hence this is the first report of leucism in five striped palm squirrel *F. pennantii* from North India.

Table 1 revealed that the area specificity in recorded leucisitic five striped palm squirrel *Funambulus pennantii* are found which was never seen in other study site except site II and also from last week of July 2018 till writing the research paper. It's why? Its real cause is not known, but it may be either due to their safety or availability of food.

Table.1 Leucisitic five striped palm squirrel *Funambulus pennantii* at Zamania Uttar Pradesh north India

Observations	Site I (River bank)		Site II (Farm house)		Site III (Toddy)	
	Leucisitic	Non Leucisitic	Leucisitic	Non Leucisitic	Leucisitic	Non Leucisitic
I	-	-	1	1	-	1
II	-	2	1	1	-	2
III	-	2	-	-	-	2
IV	-	2	1	1	-	-
V	-	2	1	1	-	-
VI	-	2	-	-	-	2
VII	-	-	-	-	-	2
VIII	-	2	-	-	-	1

Table.2 *Funambulus pennantii* as pest of different Agricultural and Horticultural produce in India

SN	Damage to particulars	References
1	Pineapple, mango, pomegranate, apple, guava, blackberries, grapes	Bernett and Prakash (1975), Prakash and Ghosh (1992), Chakravarthy (2004)
2	Sugarcane and groundnut	Prakash and Ghosh (1992)
3	Cocoa pods and plants twig	Nowak (1999)
4	Wheat, millet and Sorghum as poison bait	Bernett and Prakash (1975)

Figure.1 Habitat of surveyed areas



Figure.2 Non leucistic and leucistic five striped palm squirrel, *Funambulus pennantii*



Owen and Shimmings (1992) reported that leucisitic individuals have lower survival rate than normal ones, because they are more easily detected by predators (Samson, 2017). Due to this safety issue it might be fewer moves in their adjoining areas.

Economic importance

Bernett and Prakash (1975), Prakash and Ghosh (1992), Prakash (1999) and Idris (2009) reported that *Funambulus pennantii* causes damage to orchard and nursery plants in the country. Table 2 shows that *Funambulus pennantii* is considered as pest of several agricultural and horticultural crops like wheat millets and sorghum and apple guava, blackberries, pomegranate, pineapple etc. Here, *Funambulus pennantii* was more concern with sorghum and pearl millet fields, custard apple, guava as well as Banyan tree for its fruits.

Ecology and Habitat

Funambulus pennantii is adapted to subtropical climate. Nameer and Molur (2016) reported that their habitats are typically below to 4000 M of grassland, plantations and tropical and subtropical dry deciduous forest. Long (2003) observed that it found in open palm growths forest, garden, parks and schools. The observation area is much more similar with Long (2003) and Nameer and Molur (2016).

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