

REPORT OF MELANISM ON THE NORWAY RAT,
RATTUS NORVEGICUS (BERKENHOUT)
[RODENTIA : MURIDAE] IN INDIA

By

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While progressing with the identification and cataloging of the fluid-preserved specimens of rodents present in the National Zoological Collections of the Zoological Survey of India, Calcutta, the author came across with four examples of complete melanistic form of rat and after careful identification they turned out to be the examples of the Norway Rat, *Rattus norvegicus* (Berkenhout). The specimens mentioned above were collected by W. C. Hossack from Calcutta in the year 1906.

Colour variation of rodents, specially in rats, is a well-known fact. But extreme colour variations, commonly known as albinism and melanism are rare in rats in India. The later has been reported on the House Rat, *Rattus rattus* (Linnaeus) in India by Bhattacharyya (1973). There is no report of melanism on *Rattus norvegicus* in India. Hence, the present material reported here constitutes the first authentic record of melanism on the *Rattus norvegicus* within Indian limits. However, melanism on this species is already known from some western countries.

Here, in these four specimens, the colour of the body and tail is completely jet black, with no line of demarcation between the dorsal and ventral aspects.

All measurements are taken after Ellerman (1963) and are in millimetre.

Material : 1 ♂, 2 ♀, adult ; 1 ♂ subadult ; Zoological Survey of India Registration Number 8367, 8371, 8372,

8373 ; in alcohol ; collected in the year 1906 ; Calcutta ; W. C. Hossack collector.

Measurement : External : 1 ♂, 2 ♀, adult : Head and body 280.0, 247.0, 223.0 ; tail 228.0, 192.0, 170.0 ; hindfoot 43.0, 40.5, 39.3 ; ear 20.0, 19.5, 18.0.

Cranial : 1 ♂, 2 ♀, adult : Occipitonasal 52.2, 48.7, 45.5 ; condylobasal 51.8, 47.8, 45.0 ; nasal 21.2, 18.8, 17.8 ; palate 29.7, 27.0, 26.0 ; molar tooth row 7.3, 7.1, 7.2 ; bulla 7.9, 7.5, 7.3 ; anterior palatal foramina 9.2, 8.3, 7.9 ; diastema 16.6, 14.5, 13.5.

Different views have been put forward as to the causes and occurrence of melanism in rats. Watson (1944) noted that 21 of 1,266 *Rattus norvegicus* trapped from several localities in the British Isles were melanistic and surmised that an incidence as high as 1.66% could not be accounted for the mutation and recombination factors alone but to the extent that it had been established in the rat population of those areas. After getting 19.1% melanistic form in a population of *Rattus norvegicus* in southwestern Georgia, Smith (1958) remarked that such a high prevalence of melanism appears to substantiate the findings of Keeler and King (1941) who noted that this black coat colour is a simple Mendelian recessive character. Rohe (1961) found a melanistic population of this rat confined to underground sewers. The fact that the population was completely isolated and that the litters were all melanistic led him to believe that it was a true breeding melanistic colony. Lloyd (1909) obtained thirteen examples of melanistic *Bandicota bengalensis* from two localities at Rangoon in Burma and remarked that they had arisen quite independently of one another and it seems much more likely that they had been bred there. Bhattacharyya (1973) reported melanism in five examples of the House Rat, *Rattus rattus* (Linnaeus) collected from Calcutta by W. C. Hossack in the year 1906 but he declined to give any remark depending on dead specimens. But here the four examples of *Rattus norvegicus* collected in the year 1906 from Calcutta and subsequently not finding any melanin

form of this rat in and around Calcutta led the author to believe that this melanin coat character is not established in *Rattus norvegicus* population of Calcutta or its surroundings.

Pattern of coat colour inheritance and mutation have been studied on *Mus musculus*, *Rattus rattus* and *Rattus norvegicus* (Deol, 1963 ; Searle, 1967). Based on the above studies, it is sufficient to say that these melanistic forms may be due to a mutation from agouti to non-agouti (*Rattus norvegicus*), but are not necessarily so, as mutation at the extension locus, for instance, can produce the same sort of change (*Mus musculus*, *Rattus rattus*). There are several other possibilities too.

SUMMARY

The author has described melanism in the Norway Rat, *Rattus norvegicus* (Berkenhout) from Calcutta which is the first record of its occurrence in India. He has also discussed the causes and occurrence of melanism in rats.

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