

### 3. A NOTE ON DISTINGUISHING *GERBILLUS GLEADOWI* AND *GERBILLUS NANUS* BASED ON THEIR FOOTPRINTS IN THE THAR DESERT, INDIA

Tracking is one of the most effective methods for determining the preference, movement, home range and habitat use by small mammals (Sheppe 1965; Maybee 1998). It has been used successfully in wildlife and pest control (Sheppe 1965; Spaulding and Jackson 1984; Ratz 1997). Compared to live capture traps, tracking does not restrict the animal's movement, allows one to cover a larger area and is also less time and labour intensive (Sheppe 1965; van Apeldoorn *et al.* 1993; Maybee 1998). It does not involve handling of rodents, thereby reducing exposure to transmissible diseases (Drennan *et al.* 1998). Various methods like aluminium tracking plots, weather resistant tracking stations, sand, dirt and lime track

beds have been used for studying small mammals (Sheppe 1965; Spaulding and Jackson 1984; van Apeldoorn *et al.* 1993).

There is no information on species level identification from tracks and signs for any of the small mammals in the Indian subcontinent. Here we describe the distinguishing characteristics of footprints of two gerbil species, *Gerbillus gleadowi* and *G. nanus* for field identification. The characters were recorded from track plots. Compared to track stations, track plots allow easy movement of animals, are less expensive and easy to lay. Footprint identification was standardised to help in the study of habitat use by gerbils in the Thar desert, India.

# MISCELLANEOUS NOTES

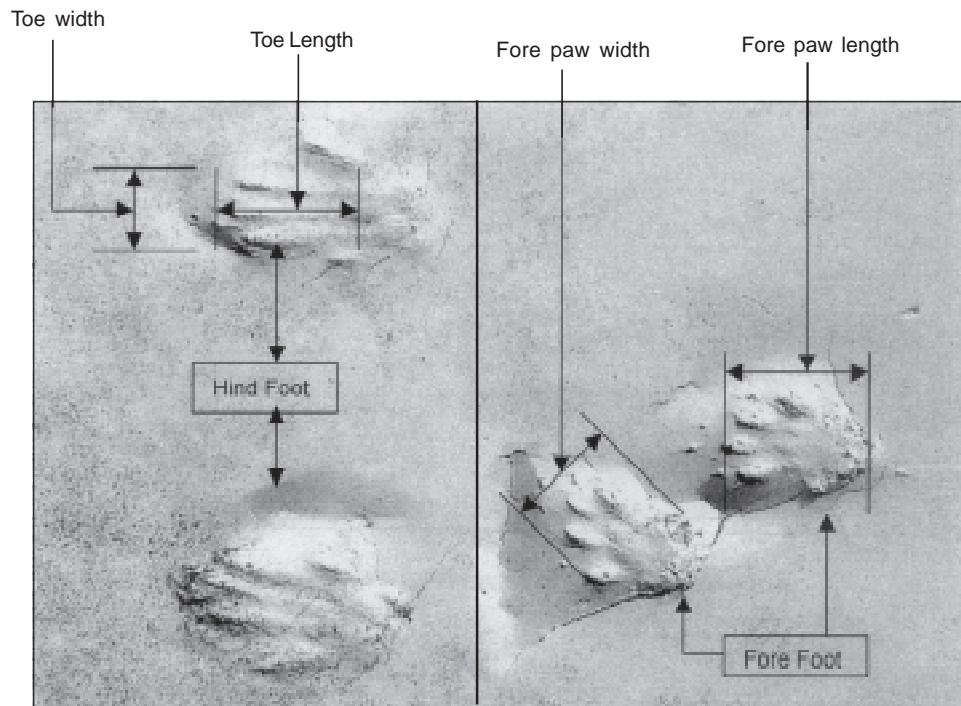


Fig. 1: Measurements of various foot print characteristics

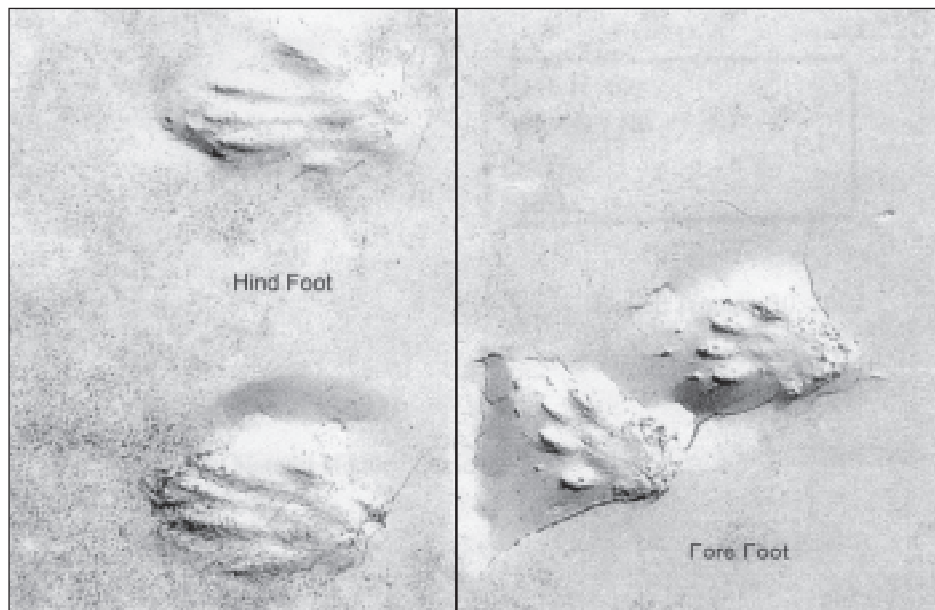


Fig. 2: Hind foot (left) and fore foot (right) tracks of *Gerbillus gleadowi*

Sand tracking is one of the most widely used techniques for studying desert rodents in the field. In this method, sand is smoothened in a small patch. The rodents leave footprints on these stations while foraging. These tracks form the basis for studying their movements.

Three species of gerbils, *Gerbillus gleadowi*, *G. nanus* and *Meriones hurrianae* have been reported from the sandy habitats of Rajasthan desert (Prakash 1996). Of these,

*Gerbillus gleadowi* and *G. nanus* are nocturnal, while *Meriones hurrianae* is diurnal during winter and crepuscular during summer.

*Meriones hurrianae* could be studied by direct observation, but for habitat use by nocturnal species we had to study their footprints. Initially we tried to establish differences in the footprints of the two species with captive live specimens at the Central Arid Zone Research Institute,

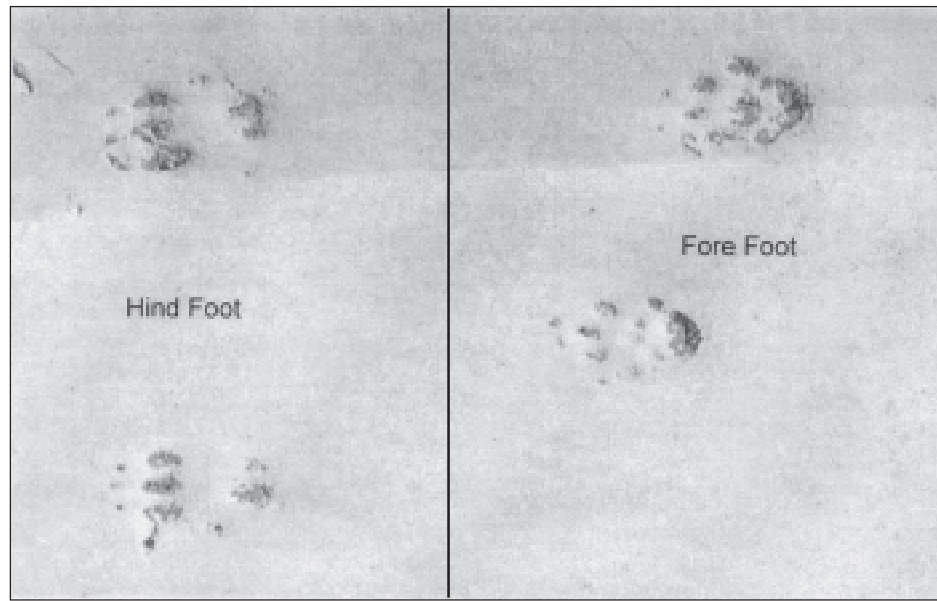


Fig. 3: Hind foot (left) and fore foot (right) tracks of *Gerbillus nanus*

Jodhpur. With sand as the substrate they did not leave good quality tracks. Hence it was not possible to distinguish between the two species. Thereafter, we experimented with lime, which gave a better resolution, allowing us to distinguish the two species from their footprints. Lime being hygroscopic absorbs moisture from the air at night. This makes the track plots less prone to damage by wind activity (in field) and also helps in obtaining a better quality print. For making track plots, lime was first sieved on to the soil and then a metal plate (used by masons) was used to smoothen it. This made the plot more compact, which in turn left a better quality track. We measured the length and width (in mm) of the forepaw and hind foot (toe – 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup>) (Fig. 1). The track plots were laid in the evening (an hour before sunset) and checked early morning when the shadows were very vivid and tracks easiest to read.

The measurements of the fore and hind foot indicate a distinct difference in the footprints of the two species (Table 1). The most prominent is the difference in toe length (TL) (Table 1, Fig. 2). The mean TL of *Gerbillus gleadowi* was

**Table 1:** Footprint measurements [Mean (mm)  $\pm$  S.D. (Range)] of *Gerbillus gleadowi* and *G. nanus* on lime track plots (n=6)

Measurement	<i>Gerbillus gleadowi</i>	<i>Gerbillus nanus</i>
Front paw length	10.39 $\pm$ 0.52 (9.84-11.28)	6.94 $\pm$ 0.55 (5.84-7.38)
Front paw width	6.24 $\pm$ 0.46 (5.86-7.14)	4.29 $\pm$ 0.54 (3.26-4.98)
Toe length	6.32 $\pm$ 0.54 (5.54-7.14)	1.7 $\pm$ 0.13 (1.52-1.84)
Toe width	4.34 $\pm$ 0.40 (3.68-4.7)	3.43 $\pm$ 0.39 (2.88-3.8)

6.32 mm, while that of *G. nanus* was 1.7 mm. The other important difference was in forepaw length (FPL). *Gerbillus gleadowi*'s FPL ranged from 9.84-11.28 mm, while that of *G. nanus* ranged from 5.84-7.38 mm. These two differences formed the basis on which the tracks of the two species could be distinguished in the field (Fig. 2). The other differences were seen in forepaw width and toe width (Table 1).

Standardisation of tracks of the two gerbil species in the Rajasthan desert helped us study their movement and habitat use. Similar studies are required to catalogue the track differences among various species of rodents, which could be used to study prey abundance of small carnivores. Compared to Sherman traps, track plots would give better estimates of the relative abundance of small mammals, as it does not restrict the animal's movement and or involve biases, such as trap shyness or trap happiness.

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## MISCELLANEOUS NOTES

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