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Sighting of Leith's sand snake, *Psammophis leithii* (Gunther, 1896) with first photographic evidence at Jawai Bandh, District Pali, Rajasthan, India

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Abstract

A snake rescue project, named Sarpa Sathi, has been running around Jawai dam area, Rajasthan, India since 2019, where during a rescue operation of the snake, we sighted and recorded the rare Leith's Sand Snake (*Psammophis leithii*). Previous documentation of this particular species has been reported from other parts of Rajasthan, but proper photographic evidence with identification of the same has been possible for the first time.

Keywords: Leith's sand snake (*Psammophis leithii* Günther, 1896), diversity, Rajasthan

Introduction

Leith's Sand Snake, *Psammophis leithii* (Günther, 1896), belonging to the family of Lamprophiidae, is a species of mildly venomous, rear-fanged snake and being a native to South Asia. In India, so far about 4 species of *Psammophis* have been identified, namely *Psammophis schokari* (Forskål, 1775), *Psammophis condanarus* (Merrem, 1820), *Psammophis longifrons* (Boulenger, 1896) [1] and *Psammophis leithii* (Gunther, 1869; Whitaker & Captain, 2004) [14].

Being an endemic species to the Indian Subcontinent (Khan, 2002; Kral 1969; Smith, 1943) [4, 5, 7], the recent records point that Leith's Sand Snakes have been found from parts of Western India including Gujarat (Vyas, 2002a, 2002b, 2003a, 2003b, Vyas and Patel 2009) [9-12, 12], Jammu, Kashmir, Punjab, Rajasthan, Uttar Pradesh, Maharashtra (Whitaker & Captain, 2004) [14], Himachal Pradesh (Saikia *et al.*, 2007) [6], Andhra Pradesh (Srinivasulu *et al.*, 2011) [8] and Madhya Pradesh (Ingle and Sarsavan, 2013) [3]. Previously, although this particular species of sand snake have been sighted from Rajasthan a few times, but currently while conducting the Sarpa Sathi program, we have successfully been able to get a proper photographic evidence.

Study area

The snake species were sighted and photographed from the village of Bisalpur (25.096923N, 73.184675E). Bisalpur is a village having a geographical area of about 4801 hectares that lies close to Jawai Hill of Pali district of Rajasthan.

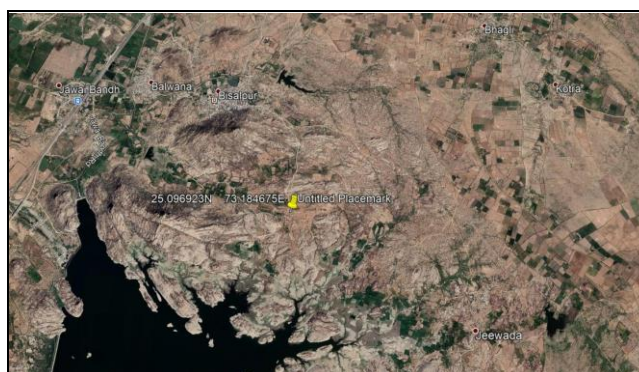


Fig 1: Study area where Leith's Sand Snake (*Psammophis leithii*) was observed

This district is bounded by the Aravalli Range in the east and in the south by the Bamnera village of Sumerpur Tehsil, towards the west, a foothill region is found through which many tributaries of the river Luni run. A majority portion of the district has an elevation of 200 to 300 m above the mean sea level, only toward the east, where the Aravalli lies the average elevation increases from 600 m to even 1000 m.

Jawai Hill area of Rajasthan has a general topography of dry and dusty, deserted highland with interspersed bushes and shrubs, gravel-mixed sandy type of soil and presence of caves and crevices, a typical ground for the successful sustenance of sand snakes.

Materials and Methods

The Sarpa Sathi Project is implemented in the study area since 2019, in order to mitigate the human-snake conflict by spreading awareness of the snake bite initiative and the ecological role of snake in the local area and rescue snakes whenever any situation of conflict is reported in the human habitation. We had all the necessary equipment like snake hooks, gloves, boots, net cutters etc. While we sighted and photographed the samples. The sample was identified through direct sighting method and the presence of authentic photograph.

Morphological characters

The Leith's Sand Snake has a thin, slender, long body covered with sub equal smooth scales. It has pale yellowish-brown back with four dark brown stripes that run transversely along the dorsal side of the body. The top two stripes leave a light coloured stripe of yellowish-brown while the side stripes near to belly are quite lighter than on the top. Ventral body side has yellowish-white coloured belly scales with rounded edge, the yellow colour often being confined onto the middle

making a throughout stripe while side belly remaining white. The head is elongated, covered with smooth scales and comparatively broader than the neck. The snout is depressed, tapered over the lower jaw and usually have no patterns on top with ground colour being yellowish-brown. Distinct ridge is found between the top and side of the head. Two dark stripes found on the dorsal side, begins from the top of the head, forked, and leaves a short median streak. Usually the upper white lip is lined by dark brown / black streak on both sides of the eyes. The eyes are large with rounded pupil. The tail is long, slender and very thin with the absence of dorsal stripes. On an average the size of the species varies from 70cm to 90cm.

Distribution

Leith's Sand Snakes are distributed mainly in the deserts and semi-deserts like the ones found in North-Western India. They are also abundant in grasslands, coastal lands covered with low shrubs, degrading dry & open scrub-lands and alike. They usually have a preference towards dense thorny bushes of low height and rock gaps for roosting and egg laying sites (Whitaker and Captain, 2004) [14]. Usually the species are diurnal and terrestrial. Being arboreal it has ability to climb the thorny shrubs which are excellent basking and foraging sites.

Our observation

During our study, we observed the species twice, both during day time and evenings (Figure 2). The snake bears resemblance to Condanarus Sand Snake (*Psammophis condanarus*), Afro-Asian Sand Snake (*Psammophis schokari*) found in deserts, Common Bronzeback (*Dendrelaphis tristis*) and Striped Keelback (*Amphiesma stolata*).

Table 1: Sequence of events and details of observation of Leith's Sand Snakes

Sl. No.	Date	GPS Location	Area of Sighting	Time	Temperature	Micro-Habitat	Note
1.	20th March, 2021	25°096857 N, 73°184614 E	Bisalpur	11:11 AM	Max: 37° Min: 21°	Rocky, Dry, Human dominant, Near wetland	<ul style="list-style-type: none"> ▪ The snake was spotted at a Government school ground, Meeno Ki Dhani, Village- Bisalpur. ▪ The observed site was rocky, dry and near a water body (Jawai dam). ▪ After an initial search on and nearby the sighting ground, a yellowish-brown tail with four dark brown stripes was spotted under a rock which confirmed the snake's presence. ▪ The snake was finally rescued after some extensive efforts. ▪ After the necessary documentation, the rescued snake was safely released into the forest.
2.	6th May, 2021	25°092329N, 73°140376E	Jawai Dam	08:04 AM	Max: 42° Min: 27°	Cropland, Near Wetland	<ul style="list-style-type: none"> ▪ The snake was spotted from a farm house opposite to the Jawai Dam. ▪ On receiving the rescue call, we conducted a thorough search on and nearby the sighting site. ▪ The snake was spotted at a dry pool nearby the sighting site and was rescued safely. ▪ After necessary documentation the rescued snake was released into the forest.



Fig 2: The Leith's Sand Snake, *Psammophis leithii* specimens observed during the study period

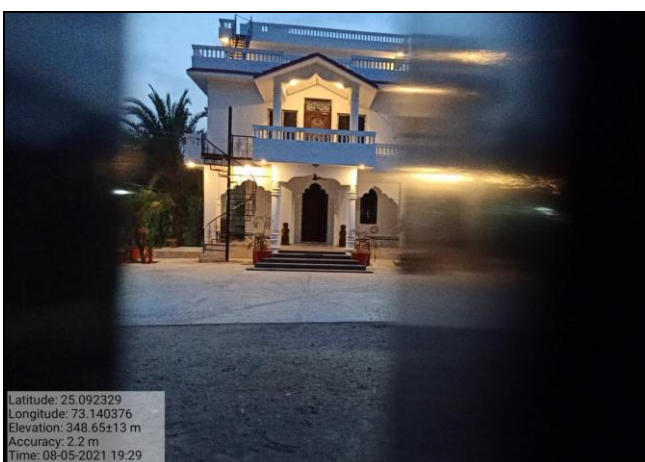


Fig 3: Site of collection of the Leith's Sand Snake, *Psammophis leithii* specimens

Discussion

While conducting the Sarpa Sathi Project in the Jawai Hill area of Rajasthan, we sighted two individuals of Leith's Sand Snake from the study sites (Figure 3). Previously, this species of sand snake have been sighted from various other places

within Rajasthan. So it can be concluded that this region has sustenance for this particular species and further study needs to be carried out in order to successfully document the abundance of such, in the future. Since this snake is well adapted to sustain in the arid desert condition, habitat loss has not affected its abundance in wild, but human-animal conflict, especially killing of the species has definitely posed a threat to their existence. Snakes are important members of the ecological food web. Monitoring the herpetofaunal diversity and ensuring their safety through rehabilitation programs under global environmental changes are necessary for maintaining a diverse and a healthy ecosystem. Hence such observations are worthy of being documented.

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