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A report on *Psammophilus dorsalis* and *Hemidactylus mabouia* from Tamil Nadu, India

Selvaraj Selvamurugan

Translational Health Science and Technology Institute Building (THSTI), Faridabad-121001, India
*Email: selva199420@yahoo.in

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Abstract

Report on a *Psammophilus dorsalis* male and *Hemidactylus mabouia* observed at Tamilnadu, India. *Psammophilus dorsalis* was recorded for the first time outside of its type locality extending its range. In this paper, I present a short note on the presence and status of the *P. dorsalis*from Sivanhill (Siththarmalai), Kangeyam, Thirupurdistrict, Tamilnadu state, India.

Keywords*:* African house geckos, new record, south Indian rock agama

Introduction

The body temperature of reptiles greatly influences their ability to perform various activities such as digestion, growth, movement, oxygen consumption, reproduction, foraging, escape from a predator, and social interaction (Kearney, 2001). It is widely known that reptiles derive their body heat from external sources and pregnant females actively select the required body temperature rather than passively accepting the available temperature (Mathies & Andrews, 1997). The behavioral mechanisms generally involve shuttling between sun and shade, retreating into deep shade or crevices, basking for variable durations, modifying postures to alter surface areas to be exposed to heat, and altering their activity with respect to environmental temperature (Castilla &Bouwens, 1991; Díaz, 1994; Labra et al., 2001; Radderet al., 2005).

The Peninsular Rock Agama (*Psammophilus dorsalis*) is a common rock-dwelling lizard with a widespread distribution throughout the Indian peninsula at elevations up to 1829 m(Daniel, 2002).

This species is characterized by a large head that is laterally elongated and dorsoventrally depressed. The cheeks are swollen only in adult males and their snout is longer than their orbit. This species shows distinct sexual dimorphism, with males being larger than females. Males are brightly colored only during the breeding season while females show cryptic coloration and often resemble the color of the rocks on which they are found (Smith, 1935).

The Peninsular rock agama *P. dorsalis* (Gray, 1831) occurs in most of Peninsular India, Madhya Pradesh, and along the hills of the Eastern Ghats (Smith, 1935; Daniel, 2002; Chandra & Gajbe, 2005). Its food was considered to consist almost entirely of insects (Daniel, 2002; Radder *et al.*, 2005). There have been no records of *P. dorsals* in this region. The genus *Hemidactylus* is represented by 49 species in India, accounting for about 27% of the global diversity within the genus (Das *et al*., 2022; Uetzet al., 2021). Several new species have been described as an outcome of the dedicated explorations and reassessment of species complexes through an integrated approach (Agarwal et al., 2019; Mirza et al., 2018).

Among the most species-rich clade of *Hemidactylus* in India are members of the Prashad group, with 21 described species that mostly comprise large-bodied geckos (Agarwal et al., 2019; Das et al. 2022; Lajmietal. 2019). Many species that belong to this group were considered conspecific with *Hemidactylus maculates* Duméril & Bibron (1836). However, with the aid of molecular data in conjugation with morphological data, several new species have been described in the recent past (Agarwal et al. 2019; Chaitanya et al. 2018; Das et al. 2022; Giriet al. 2017; Khandekar et al. 2021; Mirza et al. 2017; Mirza and Sanap 2014; Srikanthan et al., 2018). Here, the survey was recorded in *Hemidactylus mabouia* (Moreau de Jonnès, 1818), species in Uthankudi Madurai, and *Psammophilus dorsalis* Sivan hills *(*siththar malai) in Kangeyam, Thirupur district, Tamilnadu, India.

Results and discussion

Site 1

Figure 1. Shows that the Peninsular rock agama (*Psammophilus dorsalis)* malein this reptile species recorded from near Sivan hills (Siththarmalai), Kangeyamtaluk, Tirupur district, Tamilnadu state, India. *P. dorsalis* is a common agamid across peninsular India and there are numerous studies largely on the behavioral ecology of this Head large, elongated and depressed, cheeks swollen in adult males, body depressed, regularly arranged, 115 to 150 scales around midbody, no proper dorsal crest, only a denticulate ridge, a deep fold on either side of the neck in

front of the shoulder connected across the throat by a transverse fold; no gular sac, tail long and slender, tympanum distinct. No prenatal or femoral pores.

Site 2

Figure 2. *Hemidactylus mabouia* (Moreau de Jonnès, 1818), species recorded in Uthankudi in Madurai district, Tamilnadu state, India. This sub-tropical species originated from Africa and Madagascar and is found on islands of the Mozambique Channel (Murphy, 1997). It is commonly found in environments such as on the bark of trees, and in human habitations like wooden picnic tables, household walls, fences, or near insect-attracting lights (Censky et al., 2003).

Figure 1. Shows species of Indian rock agama found in Siththar hills of Tirupur district Tamilnadu. India

P. dorsalis is well suited to arid conditions. It was found that these Lizards remain active throughout the day except for the hottest hours. They feed on insects. Fruits etc., the Lizards Siththar hills areas, where enough food supports population. Here the total yearly rainfall is moderate.

2.*Hemidactylus mabouia*(Moreau de Jonnès, 1818)

Figure 2. The study area of *Hemidactylus mabouia* in Uthankudi, Madurai, district Tamilnadu state, India

Characteristics: A small species with a depressed body, developed limbs, and a sturdy tail. Its length ranges from 2cm to 14cm. Its back is grayish or brown, and it may have darker transverse stripes. They have large lidless eyes and dilated fingers, which allow them to climb on smooth walls. They also have a protractile tongue and can easily change their color depending on the color of the substrate.

Distribution: The species occurs in South America, Africa, Madagascar, the Caribbean, and Mexico. In Brazil, it occurs in all regions.

Habitat: Open to forest formations. Always associated with Human environments and commonly found in cracks in houses, under trees bark, fallen logs, and building materials.

Habits: Crepuscular and nocturnal, easily observed near light sources. These animals spend much of their time sitting still, lying waiting for their prey, and may approach them slowly, capturing them with a quick bite.

Diet: Insects and small arthropods.

Breeding: Oviparous, and reproduces year-round. Hatchlings are born measuring about 2cm in length and reach sexual maturity when nearing 5.5cm.

UFRA: The species was spotted in the wild only in Exotic Woods and Wetlands with Herbaceous Plants.

The Indian rock agama is an agamid Lizard associated with rocky terrain in hilly areas of south India (Das 2002, Daniel 2002). It is a sexually dimorphic species, where males are large with black breeding color on the head and lateral sides of the body, and females are smaller than males. Perch height also differs between the sexes. Males prefer to perch t at a greater height than females.

In certain agamid Lizards that live in arid regions, the water uptake is by means of transporting water across the skin (Sherbrooke, 1993, Withers, 1993). Further studies are therefore needed to determine if the behavior of *P. dorsalis* involves water uptake rather than thermoregulation as indicated (Veeranagouda et al., 2010). There have been no records of *P. dorsalis* feeding on other smaller Lizards in the past. Agama is insectivorous and also consumes vegetation such as flowers, grasses, and fruits. Their diet consists of mainly ants, grasshoppers, beetles, and termites. *P. dorsalis* is a common agamid across peninsular India and there are numerous studies largely on the behavioral ecology of this species.

Recorded one specimen of reptile species surveyed in this region is identified as *Psammophilus dorsalis*, which is known as Peninsular rock agama female gecko. October 2019, at the Mahalingam Hills from Thirunelveli, Tami Nadu (Selvamurugan et al., 2019). In this record of gecko's south Indian rock agama male*Psammophilus dorsalis* at siththar hills, Thirupur district, Tamilnadu state, India (Torres *et al*. 2018). The new report is the first record for the invasive species *H. mabouia* in the dry Chaco, a biogeography region included in the Gran Chaco Sudamericano (Naumann, 2006). The presence of *H.mabouia* in this region, which is characterized by the presence of multiple endemism (Szumik et al., 2012), represents a potential problem for the conservation of fauna. As was previously mentioned, some Hemidactylus species share the ability to displace native fauna (Hanley et al., 1998, Dame & Petren, 2006, Rivas Fuenmayor et al., 2005), which suggests the need to carry out a greater survey of the fauna present in the dry Chaco and the potential threats to the conservation of the native fauna. This record extends the distribution range of *H. mabouia* by nearly 300 kilometers (in a straight line) from Formosa city, the nearest point previously reported (Alvarez et al.,2009). Here, spotted in African house gecko (*Hemidactylus mabouia*, Moreau de Jonnès, 1818), species in uthankudi Madurai. Tamilnadu state,india. *Hemidactylus mabouia* is known to have a generalist feeding habit (Vitt, 1995; Zamprogno & Teixeira, 1998), which is also the conclusion of this diet analysis. The animals mainly feed on arthropods, mostly insects.

There have been no records of *P. dorsalis* feeding on other smaller lizards in the past. However, this might be likely as skinks were found in the diet of its sister species *Psammophilus blanfordanus* (Aruna et al., 1993) which is smaller in length when compared. There could be an inter-sexual dietary divergence in this species of agamid due to clear sexual size dimorphisms (Smith, 1935; Radder et al., 2006). Further detailed studies are needed to prove this supposition.

It is possible that in nature, lizards use diverse strategies to overcome extreme changes in the ambient temperature that might not be often noticed by an observer. Extensive field studies are needed to reveal mechanisms of thermoregulation, especially in gravid female rock lizards that are exposed to very high temperatures, ordinarily not congenial for the survival of oviductal embryos. There are important implications for the management of invasive species an accurate assessment of diversity within taxa is of critical importance. *Hemidactylus* is a useful model system to understand the evolutionary origins of invasiveness, including many invasive to non-invasive species with restricted distributions. However, basic natural history or descriptive ecological studies on the habitat quality/suitability, diet composition, effects of anthropogenic disturbance, and habitat modification on this species have not been undertaken.

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