

## Territories of *Heterometrus Xanthopus* (Pocock) (Scorpionidae) around Hadapsar, Dist: Pune, M/S, India

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### ABSTRACT

The members of scorpion species *Heterometrus xanthopus* (Pocock) (Scorpionidae) are most venomous and ancient arachnids. The members of this species are mostly found in drier areas of India. They prefer to stay in self-made burrows in semi-arid or drier areas. These burrows occur in open velds and soft substratum of loam. They are also abundant around dried portion of Hadapsar of District Pune (M/S, India). The present study focused on study of habit and habitats of *H. xanthopus* (Pocock) (Scorpionidae).

**Key words:** *Heterometrus xanthopus* (Pocock), Scorpions, Habits, Habitat, Hadapsar.

### I. INTRODUCTION

Scorpion studies have received very little attention as compared to other animal groups. It may be due to venomous nature of scorpion and nocturnal habitat, unusual superstitions and difficulties in collections. The scorpion fauna present in India has more than 126 species under five families and 19 genera (Tikader and Bastawade; 1983).

Scorpions present in dry region are mostly burrowing and nocturnal. They possess wax layered cuticle with enlarged pedipalps for digging, low BMR, excretion of guanine and release of dry faecal pallet etc. are adaptations in scorpion to live in dry and desert area (Hadley N.F. 1974). Water loss was more critical to survival (Marples and Shorthouse, 1982).

*Heterometrus fulvipes* (Brunner) are advanced in sub social behaviour as they make burrows as a cause of sub social behaviour because burrows provide them protection against predators, increase availability of food, ideal microclimate. Burrow allows the mother and offspring to live together. The cohabitation of relative offspring transforms the burrow into nest (Shivashankar, 1994). Awati and Tembe (1952) made monogram of *Buthus tamulus* (Fabr.).

Members of *Heterometrus* are generally large-sized scorpions (80–120 mm total length). The taxonomic characters of *H. xanthopus* were described by Tikader and Bastawade; 1983. Males of *H. xanthopus* are smaller than females. Body is brownish with blackish tint, targites are I-IV provided with inconspicuous >> - << yellowish marks on lateral portion. Sternite is yellowish. Chelicerae are yellowish but brown on fingers. Pedipalps are yellowish brown and dark brown on fingers. Legs are dark yellowish with a brownish tint.

Metasoma is light brown but darker on carinae. Telson is yellowish but aculeus brownish on distal portion (Fig.1).

## II. OBJECTIVES OF THE STUDY

The main objective of the present study was to observe animal diversity in the study area and to study microhabitats of scorpion species found in the study area.

## III. HYPOTHESIS

The study area is located in eastern portion of Western Ghats with semi-arid, loamy soil with seasonal grasslands. Rich biodiversity was expected in the study area. No detailed survey record found. So, there is an urgent need to study.

## IV. MATERIAL AND METHODS

The present study was carried out in December 2021 to March 2022. The study area was in the Southern portion of Hadapsar, Pune M/S, India (18°25'55.3"N 73°58'08.1"E). The random sampling was performed in a study area without disturbing natural habitats. The burrows of *H. xanthopus* was identified with the help of literature of More & Khataavkar (1990). Burrows of *H. xanthopus* were confirmed and photographed for further studies (Fig. 4). The seasonal variation in temperature and humidity in the burrow was measured by using (Hadley 1970) method.

## V. RESULT AND DISCUSSION

*Heterometrus xanthopus* (Pocock) (Scorpionidae) species of scorpion was chosen for present study. The species were available locally in southern portion of district Pune (Maharashtra, India). The members of *H. xanthopus* preferred a very dry, warm climate and lived in most dried area. The members were observed in self-made burrows in soft soil substratum. The open entrance burrows were observed (Fig: 2). Shape of the entrance observed was oblique with about 2-5 cm length and 1-5 cms breadth. The depth of burrows depends on type of soil and it ranged from 12 cms to 52 cms. Members of the species were observed at the base of the burrow. Humidity observed at the base of burrows was 70 % and with body remains of Coleopterans, Orthopterans and other insects. *H. xanthopus* might consider soil hardness and texture, the presence of shading etc. while making burrows. Adequate soil moisture, protection against sand and debris was observed in the burrows.

Few measurements such as actual temperatures and humidities of burrows were measured. It is difficult to place thermocouples into the deeper burrow chambers without disrupting the burrow structure due to the spiral nature of burrows (Hadley 1970). To overcome this problem, a thermocouple with a sensor was attached to the leg of *H. xanthopus* and allowed them to carry down into burrows. The relative humidity inside the burrow

was determined by tethering individual scorpions with nylon thread to which thin strips of humidity-indicator paper were tied and after sufficient time for equilibration, quickly removing the scorpion for the reading. The results of this study indicated that due to diurnal fluctuations in temperature, species of scorpion made deep burrows and protected themselves within the burrows. It was observed that scorpions occupying shallow terminal burrows experienced temperatures approaching 33°C, whereas an individual inhabited in 40 cm experienced an almost-constant 24° C. Relative humidifies at depths of 22 to 40 cm ranged from 60 to 67 percent. It was also observed that all females of *H. xanthopus* undergo parturition in the first week of the month May. The early babies of *H. xanthopus* were observed to be very tiny and appeared to stay at the burrow with their mother (Giramkar S. V. 2013). The male and female specimens were observed in separate burrows, possibly due to the catabolistic nature of scorpion species.



## VI. CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

## VII. ACKNOWLEDGMENT

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