Burrowing Pattern Of *Heterometrus Xanthopus* (Pocock) (Scorpionidae) In Kharadi, Dist: Pune, M/S, India.

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Abstract : Many morphological characteristics of scorpions can be described by their nesting behaviours. There is less information available about the burrowing pattern of *H. xanthopus*. The present study was performed to describe the burrowing pattern of *H. xanthopus*. The specimens of *H. xanthopus* scorpions make elliptical entrance with oval arch at the top. They make zigzag burrow with convoluted borders. The depth of burrow varies from 15cms to 75cms.

Key words: *Heterometrus xanthopus* (Pocock), burrowing pattern, Kharadi.

I. INTRODUCTION:

Scorpion studies have received less attention due to venomous sting, nocturnal habits as well as difficulties in collections. The scorpion fauna of India constitutes more than 120 species under five families and 19 genera (Tikader and Bastawade; 1983).

The species chosen for present study was *Heterometrus xanthopus* (Pocock). This species is inhabitant of drier areas of India and prefers to stay in self-made burrows in open velds and soft substratum of loam. In India, this species is abundant in drier areas of District Pune (Maharashtra, India) (Giramkar; 2017). The members of this species make burrow in soft substratum. The burrows have an open entrance (Fig: 3). The entrance is oblique with about 2-3cm. in length and 2cms in breadth. The depth of burrow varies from 15cms to 75cms. Generally, the members of this species are found at the base of burrow (Giramkar; 2013, 2016), but it was also observed that some burrows were empty without specimens.

The taxonomic characters of *H. xanthopus* was described by Tikader and Bastawade; 1983. Generally adult *H. xanthopus* are large-sized (80–120 mm total length). Male specimens are smaller than female. Body colour is brownish with blackish tinge, targites are I-IV with distinct >> - << yellowish marks on lateral sides. Sternite is yellow in colour. Chelicera are yellow but have brownish fingers. Pedipalps are yellowish brown and dark brown on fingers. Legs are dark yellow with brown tinge. Metasoma is light brown in colour but dark on carinae. Telson is yellow but aculeus is brown (Fig.1).

II. MATERIAL AND METHODS:

The present study area was Kharadi in Haveli Tehsil of Maharashtra state (The latitude and longitude of research area is 18°33'22.1"N 73°57'48.6"E respectively). The random sampling was performed in drier portion of Kharadi without disturbing natural habitats (Fig. 2). The burrows of *H. xanthopus* were identified and photographed for further studies (Fig. 3). The active burrows and inactive burrows were studied. Active burrows of *H. xanthopus* were clean while inactive burrows were covered with debris, fallen leaves and without specimens of scorpions. Ten to twelve inactive and empty burrows were indentified after many trials (Giramkar 2016) and used for further studies.

NESTS PATTERN IDENTIFICATION:

In order to draw the diagram of burrows of *H. xanthopus* and to measure the shape and size of burrows, a molage method with brickwork plaster was used (B. Vazirianzadehet et. al. 2017). The liquid plaster was poured into the burrows until it was filled. Plaster filled burrows were kept overnight for solidification. After 24 hrs these burrows were carefully excavated vertically along the line of plaster, obtained solid bar pattern were sketched and dimensions were measured by vernier calliper.

III. RESULT AND DISCUSSION:

It was observed that *H. xanthopus* make their burrows in arid and undisturbed land. The entrance of burrow is elliptical with small arched at dorsal edge (Fig: 3). The width of the entrance may be proportional to the size of the specimen living in burrow. It was observed that the soil was placed before opening of burrow. The pattern of burrow was typically zigzag with convoluted borders. The burrows have only one entrance and closed in other end. Only one path of burrow was observed, no secondary branch or entrance was observed in burrow. The depth of burrow varies from 15cms to 75cms as per texture of soil (Fig: 3). The burrow ends on hard substratum such as stone or rock. The end of burrows was cushioned with dried broken grass straws. The cases of insect body were also observed at the end of burrows.

Scorpion *H. xanthopus* is digger, inhabitant of drier areas of India and prefers to stay in self-made burrows in open velds and soft substratum of loam. Polis (1990) reported that scorpions extract the soil during digging of burrow and place it before the opening of entrance, which prevents rainwater from flowing inside. Similar results were observed in present study. The convoluted design of scorpion burrows makes the interior of burrow darker in cold and windy weather (Mehmet et.al 2013). Scorpions may construct burrows by using a combination of chelicerae, chelae, pedipalpals, all the four pairs of legs and also telson to remove the soil and to make a compact wall of burrow (Navidpour et. al 2015). Therefore this study was conducted to give more exposure to burrowing pattern of *H. xanthopus* scorpions found in India.

fig: 1

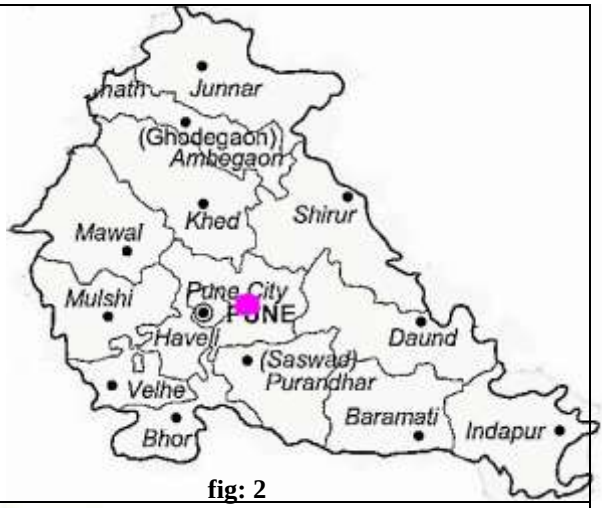

fig: 2

fig: 3

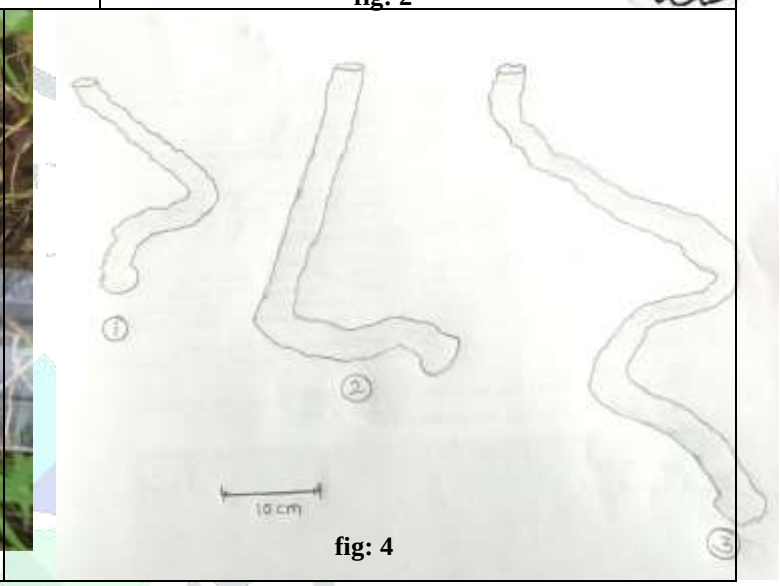

fig: 4

IV. CONCLUSION:

The burrowing pattern of *H. xanthopus* including size of entrance, depth and diameter were observed. The depth and diameter of burrow depend on location, soil texture and soil moisture. More was the softness in soil longer was the depth of burrow and vice versa. Burrowing pattern of *H. xanthopus* scorpions was similar to the *Scorpio maurus* and *Odonthubutus bidentatus.* So, present study concludes that *H. xanthopus* is a digger scorpion and construct burrows by using a combination of chelicerae, chelae, pedipalpals, all the four pairs of legs and also telson to remove the soil during excavating their tunnels.

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