



Inhabitation of four major species of scorpions in and around Pirangut, Pune, M/S, India

Giramkar Sharad Vitthal¹

¹P.D.E.A's, Baburaoji Gholap College, Sangvi, Pune-27, M/S, India.

Abstract

*This paper deals with survey of four major species of scorpions in and around Pirangut, Mulshi Tehsil, Dist: Pune. Population of four species was monthly recorded in three microhabitats. The scorpions recorded belong to two families; the family Buthidae [*Orthochirus bicolor* (Pocock), *Hottentotta pachyurus* (Pocock), *Mesobuthus tamulus tamulus* (Fabricius)] and the family Scorpionidae [*Heterometrus xanthopus* (Pocock)]. The specimens of *M.t. tumulus* and *H. pachyurus* and *H. xanthopus* were common, while and *O. bicolor* was found least common.*

Key words: Scorpion Population, Pirangut, O. bicolor, M.t. tamulus, H. pachyurus, H. xanthopus

I. INTRODUCTION

Area selected for study was Pirangut of Mulshi Tehsil, Dist: Pune (M/S, India). It is western portion of Pune city (18.5115° N, 73.6801° E). This area is subject to habitat modifications for social forestry, urbanization and industrialization. Limited knowledge is available about the scorpion diversity in western portion of Pune. Diversity of scorpions of Saswad Jejuri has been studied by Pande, S., D. Bastawade, A. Padhye & A. Pawashe (2011). Scorpions are increasingly threatened by habitat destruction. Scorpions are important in natural ecosystems because they control terrestrial invertebrates as they act as prey for terrestrial invertebrates (Brownell et al. 2001). This paper deals with quantitative study of major scorpions inhabiting in developing area of Pirangut. This study will provide the knowledge of occurrence of major scorpions on developing land of Pirangut (Pune).

II. MATERIALS AND METHODS

This study was performed during June-2015 to May 2016 at Pirangut (18.5115° N, 73.6801° E) (Plates-1 & 2). Five different Quadrates (100 m X 100 m) were randomly selected for monthly sampling of major species of scorpions. Three different microhabitats of scorpions were considered for study, these were burrowing habitats, grassy hilltops with stones and under tree barks. The scorpion surveys were carried out during daytime with the help of two experienced farmers. Natural habitats of scorpion species were identified on the spot using published keys (Tikader & Bastawade 1983).

The stones (15-30 cm) encountered in quadrates were turned over to check the presence of scorpions and again these stones were kept in original position to avoid habitat modifications. The bark of trees were peeled, scorpion species were observed and peeled bark were kept back to prevent habitat disturbance. The shape of burrows of burrowing scorpions were studied, confirmed and counted (More, N.K. & R.S. Khatavkar 1990). The burrows were not excavated to avoid habitat destruction. The members of scorpion species were counted and recorded (Sutherland 2000), data was analyzed.

III. RESULTS AND DISCUSSIONS

Four major species of scorpions were observed in study area. These species were belongs to family Buthidae [*Orthochirus bicolor* (Pocock), *Mesobuthus tamulus tamulus* (Fabricius), *Hottentotta pachyurus* (Pocock)] and family Scorpionidae [*Heterometrus xanthopus* (Pocock)]. The

members of species of *O. bicolor* and *M. t. tamulus* were found under stones. The members *O. bicolor* prefer to stay under loose stones with size ranging from 15 cms to 30 cms (Plate-3). While the members of *M. t. tamulus* were observed under the stones of various sizes (12 cm to 15 cm to 30 cm to 40 cm). Both the species of scorpions were inhabitant with insects like Crickets, Beetles; Millipedes, Centipedes or either alone, with pairs or with babies. They may found either single, in pairs, or family with babies.

The population of these two species was observed more prevalent in spring season from the month June to September and less in summer season in the month of March to May (Table-1). As the scorpions are poikilotherms, they live in a limited range of temperature. A typical arid inhabiting species of scorpions are more active in the spring as well as in rainy season and less active or undergo a diapause in winter and summer (Polis, G.A. 1990).

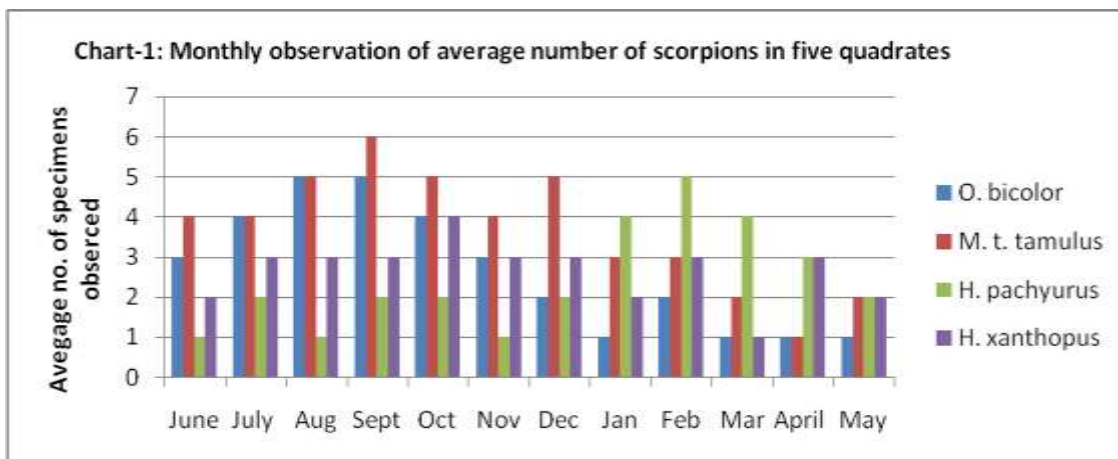
The members of *Hottentotta pachyurus* (Pocock) were found in wood, lofts, tree trunks. The members of this species were inhabitant with insects like black and white ants or either alone or in a family with babies. The members of this species were more abundant during January to April (Table-1). The juveniles of this species were observed in the month of January and February. It may be due to parturition of *H. pachyurus* (Pocock) females in the month of January (Mirza, Z., K. Ullalkar & G. Desouza 2009).

The *Heterometrus xanthopus* (Pocock) is fussional scorpions. The shape of openings of burrow was confirmed (Giramkar 2016) (Plate-4). Generally one member of *H. xanthopus* occupies one burrow, but during parturition time one female of *H. xanthopus* may be present with the babies (Pande, S., D. Bastawade, A. Padhye & A. Pawashe 2011). The number of burrows encountered in quadrates was counted as an estimate of their population. The burrows of *H. xanthopus* were not excavated to avoid habitat destruction. It was observed that the burrows of *H. xanthopus* were generally found adjacent to the base of tufts of course grass. There was no more variation in the number of burrows. It might be due to adoption of species due to burrowing habitat (Hadley, N. F . 1974).

It was observed that members of *M. t. tumulus*, *H. pachyurus* and *H. xanthopus* were common species in the field as compared to members of *O. bicolor*. The members of *O. bicolor* were abundant in the months of June to September (Table-1)

Table-1: Monthly observation of average number of scorpions in five quadrates.

Months	<i>O. bicolor</i>	<i>M. t. tamulus</i>	<i>H. pachyurus</i>	<i>H. xanthopus</i>
June	03 (±1)	04 (±1)	01 (±1)	02 (±1)
July	04 (±1)	04 (±1)	02 (±1)	03 (±1)
August	05 (±1)	05 (±1)	01 (±1)	03 (±1)
September	05 (±1)	06 (±1)	02 (±2)	03 (±1)
October	04 (±1)	05 (±1)	02 (±1)	04 (±1)
November	03 (±1)	04 (±1)	01 (±1)	03 (±1)
December	02 (±1)	05 (±1)	02 (±1)	03 (±1)
January	01 (±1)	03 (±2)	04 (±1)	02 (±1)
February	02 (±1)	03 (±1)	05 (±1)	03 (±1)
March	01 (±1)	02 (±1)	04 (±1)	01 (±1)
April	01 (±1)	01 (±1)	03 (±1)	03 (±1)
May	01 (±1)	02 (±1)	02(±1)	02 (±1)
Average	03 (±1)	04 (±1)	02 (±1)	03 (±1)



IV. CONCLUSION

In the above observations it was concluded that the area selected for present study was arid with small and medium sized stones. The members of *O. bicolor* and *M. t. tamulus* were found under stones. The population of these two species was observed more prevalent in spring season from the month June to September and less in summer season in the month of March to May.

Due to presence of larger trees, the specimens of *H. pachyurus* take shelter in wood, lofts and tree trunks. The members of this species were inhabitant with insects like black and white ants or either alone or in a family with babies. This area is good habitat for reproduction and development of *H. pachyurus*. The members of this species were more abundant during January to April.

The members of *H. xanthopus* species was observed to inhabit in drier area of Pirangut and preferred to stay in self-made burrows in open velds and soft substratum of loam. The area selected for present study was hilly and drier area. The members of *H. xanthopus* species preferred that area and maked burrows in soft substratum. There was no more variation in the number of burrows. It might be due to adoption of species due to burrowing habitat.

Plates:



Plate-1: Study site photograph showing dry grassy hilltop.



Plate-2: Study site photograph showing grassy hilltop with stones.



Plate-3: Size of stone, under which members of *O. bicolor* takes shelter.



Plate-4: Burrow of *H. xanthopus*.

V. ACKNOWLEDGEMENTS

The author wish to thank Dr. D. B. Bastawade, Rt. Scientist (WRS, ZSI, Pune) for critical suggestions during necessary discussions. Thanks to Principal Dr. B. N. Zaware, Anantrao Pawar College, Pirangut, Tal: Mulshi, Dist: Pune for providing necessary laboratory facility and thanks to farmers of Pirangut for their assistance during field work.

BIBLIOGRAPHY

- [1] Brownell, Philip, and Gary Polis, eds. 2001. Scorpion Biology and Research. Oxford: OxfordUniversity Press.
- [2] Giramkar S. V., 2016. Occurrence and microhabitat of *Heterometrus xanthopus* (Pocock) (Scorpionidae) in Mulshi Tehsil, Dist: Pune, M/S, India. Proceeding national conferences on “Faunal Diversity: Assessment and Conservation” (1)Pp 98 – 101.
- [3] Hadley, N. F . 1974. Adaptational biology of desert scorpions. I . Arachnol . 2 :11-23. Mirza, Z., K. Ullalkar & G. Desouza. 2009. Notes on the breeding of *Hottentotta pachyurus* Pocock, 1897 (Scorpiones: Buthidae). Journal of Threatened Taxa 1(3): 186-187.
- [4] More, N.K. & R.S. Khatavkar. 1990. Burrowing habits of *Heterometrus xanthopus*. Journal of Soil Biology and Ecology 2: 79–81.
- [5] Pande, S., D. Bastawade, A. Padhye & A. Pawashe. 2011. Diversity of scorpion fauna of Saswad-Jejuri, Pune District, Maharashtra, western India. Journal of Threatened Taxa 4(2): 2381–2389.
- [6] POLIS G.A. 1990. The Biology of Scorpions., Stanford University Press, Stanford, California, G. A. Polis edtn, Pp 120.
- [7] Sutherland, W. 2000. The Conservation Handbook. Research, Management and Policy. Blackwell Science, Pp 278.
- [8] Tikader, B.K. & D.B. Bastawade. 1983. Fauna of India: Scorpions: Scorpionida: Arachnida (III). Director, Zoological Survey of India, Calcutta (ed.). Published by Director, Zoological Survey of India, Calcutta, Pp 671.