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THE FIRST INVESTIGATION OF THE DIVERSITY OF ANTLIONS IN THREE SPECIFIC LOCATIONS IN THE GHODEGAON REGION OF MAHARASHTRA, INDIA.

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***Abstract*:** The present investigation was carried out in three selected sites in the Ghodegaon region of Maharashtra, India, from December 2022 to May 2023. A total of 316 individuals were recorded during the study period. Antlion larvae prefer dry places for building their pit fall traps. During the six-month study period, we found four antlion species in three selected sites, namely *Myrmeleon formicarius*, *Macronemurus appendiculatus*, *Hagenomyia tristis*, and *Palpares pardus*. During the investigation, we found that in May, all species show more abundance, followed by April and March. This variation is due to a difference in abiotic factors like temperature, humidity, etc. The present survey shows *Macronemurus appendiculatus* is the dominant species present in all three selected sites, and the *Palpares pardus* species found only one selected site. Many insects work as bioindicator species, and antlion species also work as bioindicator species; hence, their presence is valuable for us.

Index Terms- Abiotic factor, Antlion, Ghodegaon, Bioindicator.

I.INTRODUCTION

Western Ghat is home to many living organisms, and the Ghodegaon region is a part of western Ghat; hence, it is a diverse area for flora and fauna. These surveys mostly focus on the diversity of ant lions in the Ghodegaon region. The fully mature antlion consists of a long, elongated cylindrical abdomen with a flat head and filiform type of antennae. Adult antlion found in aerial habitat and larvae on ground [1]. Ant lions consist of the order Neuroptera, and it includes 1657 species [2, 3]. The larvae are carnivorous and make funnel-shaped traps in soil for trapping small insects [4]. Many species of Myrmeleontidae are found in semi-arid regions of the world; antlions inhabit a particularly diversified fauna in the southern portion of Africa; antlions play a significant role in the local insect fauna in this region, home to several endemic taxa [5].

Insects are essential to the ecological balance and to human endeavors, including scientific study and agriculture. However, environmental changes and human activity pose a threat to their populations. Hence, ant lion diversity conservation is essential because they serve as both aerators and predators; ant lions are vital to their respective habitats. However, pesticide use, habitat destruction, and climate change pose hazards to them. Preservation of ant lions and their continuous contribution to ecological balance depend on conservation initiatives, sustainable practices, and public awareness.

II. MATERIALS AND METHODS

2.1 Study area

Site A: Thakarwadi (Kolwadi/Kotamdara) – 19.00338541,73.84238919

Site B: Dhakale – 18.99122877,73.84289572

Site C: Sal– 19.02874567,73.793921319

Google earth map of three selected area.

The present investigation was carried out in three selected sites, namely, Thakarwadi (Kolwadi/Kotamdara), Dhakale and Sal, for the duration of six months. This site is 120 kilometers from the state capital, Mumbai, and 67 kilometers north of the district headquarters in Pune. The study area's climate is typified by scorching summers, with highs of 42°C in May and June and averages of 15°C in January. Rainfall in the region ranges from 622 to 950 mm annually on average. The coordinates of the Ghodegaon region are latitude 19.34 and longitude 74.88.

2.2 Sampling

Field surveys of ant lions were conducted three times a week for six months, from December 2022 to May 2023, in the study region. Walking around the three sites that have been chosen, traps of ant lions will be randomly observed in the study area between 8 and 9 a.m. and 5 and 6 p.m. During this random survey, we found some adult ant lion species. The photographs were taken and used for identification purposes.

III. RESULTS AND DISCUSSION

During the present study, four species were assessed in three selected sites over six months. Total 316 individuals were recorded in the selected area. Table 1 shows the list of ant lion species found in the study area. The present survey shows *Macronemurus appendiculatus* is the dominant species present in all three selected sites. In table 2, we clearly see that the number of ant lions varies from month to month. It may be due to abiotic factors like temperature, humidity, etc. The maximum number of individuals is found in May, while the minimum number of individuals is observed in March.

The presence of ant lion diversity varies from month to month. The adult antlion individual observed and captured the photos. The photographs were used for identification purposes. A total of four different species was observed in the entire work. A similar study was carried out by Hakan Bozdoğan and Ali Satar (2017); they recorded two species of antlion, and the result shows that for both species, there is no correlation between habitat preference and

pit size [6]. The observed ant lion's percentage composition is displayed in Fig. 2. In which site A shows a higher percentage, i.e., 35, followed by 34 and 31 for site B and site C, respectively. All three sites show good diversity of Ant lion larvae, but the adult Ant lion is very less observed.

Table1: Ant lions species found in study area

Sr. No.	Species Name	Site A	Site B	Site C
1	*Myrmeleon formicarius*	Present	Absent	Present
2	*Macronemurus appendiculatus*	Present	Present	Present
3	*Hagenomyia tristis*	Present	Present	Absent
4	*Palpares pardus*	Absent	Present	Absent

Table2: Total number of traps observed per month

Sr. No.	Selected sites	Dec	Jan	Feb	March	April	May	Total
1	**Site A**	16	21	19	12	16	26	**112**
2	**Site B**	18	12	15	18	20	24	**107**
3	**Site C**	12	18	17	13	15	22	**97**
Total		**46**	**51**	**51**	**43**	**51**	**72**	**316**

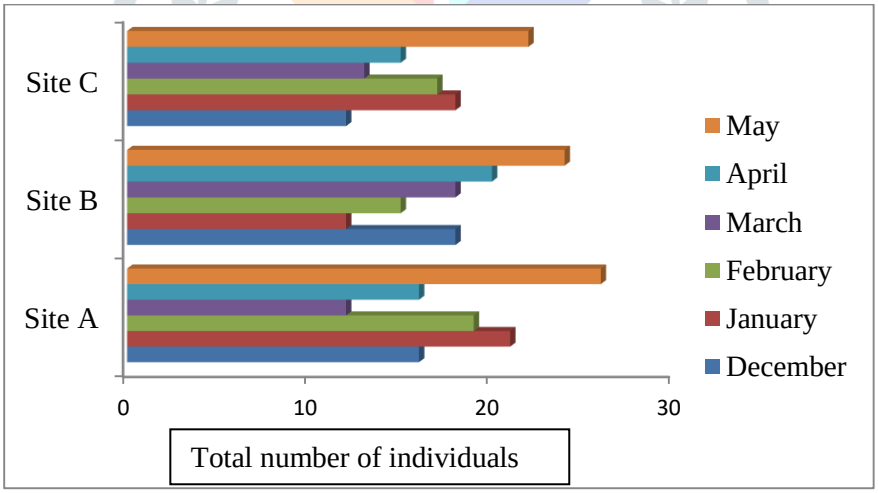

Fig.1 Total number of individual populations of Ant lion in three selected sites

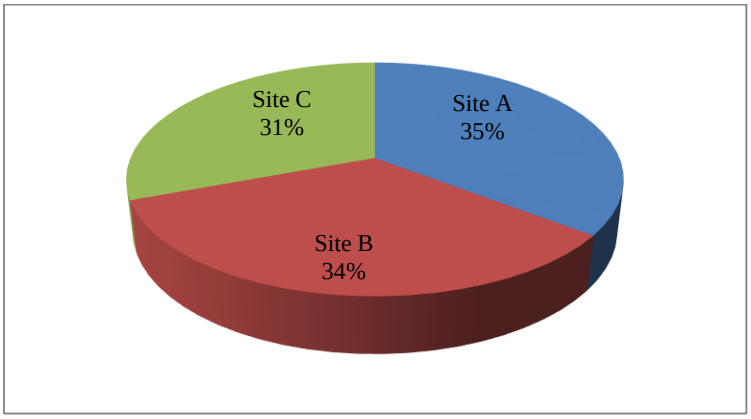

Fig.2 Site wise percentage composition of Ant lion

a

b

C

d

Photoplate 1. Obsrved adult Ant lions. (a) *Palpares pardus,* (b) *Myrmeleon formicarius* and , (c,d) Ant lion traps

IV. CONCLUSION

The overall conclusion of these studies is that Site A shows a higher number of individuals, i.e., 112, followed by Site B and Site C, 107 and 97, respectively. During the six-month survey, a total of 316 individuals from four different species of Ant lion were recorded. Selected area is rich in insects like ants and other arthropods. Since it may be due to the availability of food, the selected area shows high diversity of Ant lion.

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