



## DIVERSITY OF ANTS (FORMICIDAE) FROM NAUSHAHRO FEROZE, SINDH, PAKISTAN

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### ARTICLE INFORMATION

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#### Author's contribution

IAC collected the material, HAK & TJU designed the study, SM complied the data, and ARS edit the data.

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### ABSTRACT

The study was carried out from District Naushahro Feroze (located 26° 50'24" N 68° 07' 12" E) with altitude 38 meters. Diversity of ant's fauna occurring in an ecosystem has diverse and versatile importance. Because of their huge number and functions like soil fertility, predacious, scavenger, pollinators and pest exterminators. They are social insects living in colonies having different cast i.e workers, drone, queen and soldiers. Five colonies were studied and total 50 specimens of each colony were collected and preserved into 75% ethanol with few drops of glycerin. Collections were made by hand picking and using bait (sweets and chicken visceral) and arranged into fifteen species and five genera. Identification was prepared using keys given by Bolton, 1994; Sheela, 2008; Naumann, 1993 and McArthur, 2001. Pictures were captured by Stereoscopic microscope with LED and digital Camera.

## 1. INTRODUCTION

Ants are very abundant and important living organisms on the earth, or of ecosystem, due to worldwide circulation, hence found larger share of biomass. Ants are also share a noticeable element of land organism's circulation and are the greatest different collection amongst entirely common insects. Ants play a vital role as ecosystem engineers. The ants performance is very important in the ecology by refining the earth and supporting in the decay process [1-8]. These ants are well-thought-out as virtuous organic pointers in line for to mutualistic actions with both animals and plants. These social insects principal great level cooperative lives support each other to survive and are greatly grew hymenopteran showing polymorphism. Ants have its place to the family Formicidae, comprised in superfamily Vesioidea of order Hymenoptera located below Insectary class of phylum Arthropoda. Ants are universal in spreading and inhabit nearly all possible ecosystems.

Here are around 15000 kinds of ants [9-12], out of these species only 11,769 species have been well defined [13]. The family Formicidae comprises 21 subfamilies, 283 genera and near 15000 living ant species from these species 633 ant species fit in to 82 genera, 13 subfamilies stand stated from the India, and near 226 species of ants fit in to 63 genera and 11 subfamilies are expected from Karnataka state [14]. Ants are true social insects which are have its place to family Formicidae and order Hymenoptera. They are recognized to seem nearby [one hundred twenty] 120 million years before [15]. Contingent upon exact change, they are found in different colours on the earth they may be have green colours, blackcolour, redcolour or they have a metallic body [16]. They are hemmi-metalic insects which having a great and multipurpose importance. Some ants are playing a key role as soil turners, and some are pointers for the conditions of ecosystem, and ants are also many other functions in the environment as hunters, pollinators and vultures, vultures are remarkable important constituent of nutrition chain [17]. In South Africa. Ants are also used for collecting seeds of herbal tea [18].

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## 2. MATERIALS AND METHODS

Naushahro Feroze is located 26°50'0N 68°7'0E, (Fig.1) Naushahro Feroze is an Agricultural District of Sindh Province and it is distributed into 5 Talukas 1-Moro, 2-N-feroze, 3-Bhiria city, 4-Kandiario, 5-Mehrabpur, from these five Talukas specimens of ants were selected for the collection (Fig.2). Wide-ranging survey was conducted out throughout the year of 2018 and 2019. Ant's species were collected during the morning, evening and night time, due to activeness of ants. Because some ants are diurnal and some of these are nocturnal, collections were completed by hand picking and using bait (sweets and chicken visceral) (Fig.2 and 3). Five colonies were studied and total 2570 specimens were collected and all Specimens were executed by means of potassium cyanide in usual entomological insect boxes. Samples were not gone besides extended (½ time) in cyanide as the color different generally that of lime specimens. Obsession done inside some hours as the samples were springy here was a slight hazard of behind some share, over essential handling, in this affection we have practical two methods for the preservation of ants one is dry method which was done according to standard entomological methods in insects boxes with naphthalene's bolls and other is wet method which has above mentioned which is 75% ethanol along with few drops of glycerin. Specimens kept in typical entomological bottles, with tags display sections, time of collection and accumulator's name. The mostly following habitats are ants were found chosen that are grounds, homes, mangoes trees, banana trees, guava trees, cotton crops and maze fields, grasses, bark of trees.

Documentation of cases done by the assistance of solutions and accounts assumed through a key Explanations on the nourishing behaviors were indomitable on live ants in exposed playing field quick in the sunrise. Afterward finding the species and silently viewing their nourishing for around 2 to 4 times. Images taken by modern camera. The figures together were also rummage-sale to analyze, the specimens information, were analyzed by some formulas given by Simpsons and this formula is also known as Simpsons index of Diversity. Species fertility,  $R = s/\sqrt{N}$ , now  $R =$  species fertility,  $S =$  sum of sorts confirmed and  $N =$  total number of specifics composed of all species. Diversity Index,  $D = (n/N)^2$ , here,  $D =$  diversity index,  $N =$  the entire amount of specimens of a specific species and  $N =$  the total number of creatures of altogether species and Simpson index of diversity,  $D=1-D$ ,  $D=$  diversity index. Species identification was processes under stereoscopic binocular microscope.

## 3. RESULTS AND DISCUSSION

Wide-reaching, 22000 species of ants have been acknowledged within 305 genera of single family formicidae are reported as shown in (Table.1) and only 27 species in 17 genera of the same family are well-known in Pakistan. We have collected total number of samples 2570, and studied 20 different colonies of ants from different locations, the material was arranged out into 5 species under 03 genera and 2 sub-families of Family Formicidae (Table.2 and 3). The identified species are listed as in (Table.4). The most important a biotic ecological factor like temperature and humidity also measured as shown in (Table. 4.5 and Fig. 4.1). The according to the diversity equations data measured as shown in the (Table .4.6). It was observed that significantly large numbers were observed in the field which were indication of availability of huge material in this area present study recommends that if more extensive survey would be carried out I this locality more material is expected from this regions. They are social insects living in colonies having different cast i.e workers, drone, queen and soldiers. This behavioral study could help to further research would be carried out on the control planning of this pest.

## CONFLICT OF INTEREST

All authors have declared that there is no conflict of interest regarding publication of this article.

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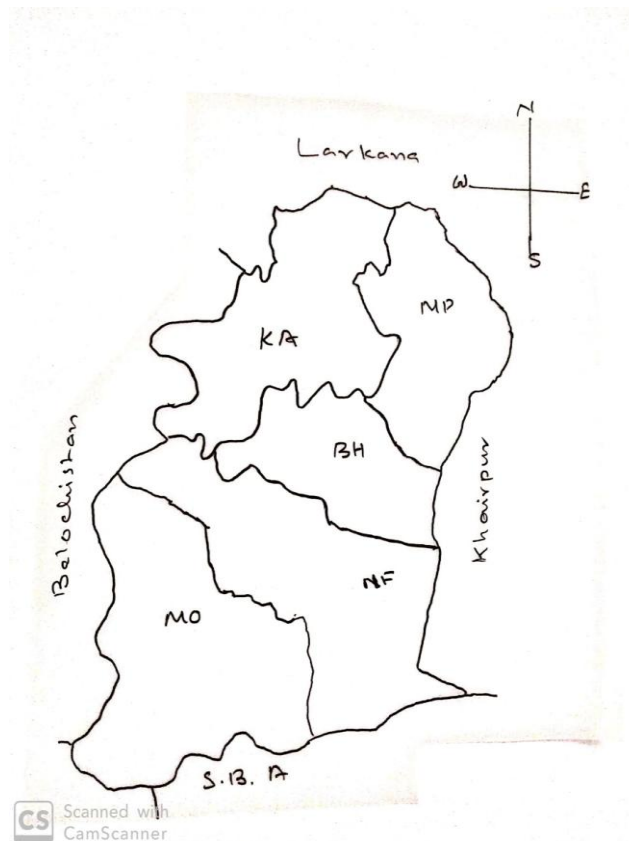


Figure.1 Map of district Naushahro Feroze Sindh, showing different surveyed sites.



Figure. 2 Bait (chicken visceral) used for collecting ants



Figure.3 Collected ant specimens from ground of mango garden near Bhiria road