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Field observations on the incidence of Ants fauna (Hymenoptera) of Karak Khyber Pakhtunkhwa, Pakistan

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Abstract

Present investigations was undertaken to know the species incidence of the ant fauna in the District Karak Khyber Pakhtunkhwa Pakistan. A total of 850 specimens of ant (Insecta: Hymenoptera) belonging to 2 subfamilies Myrmicinae and Camponotinae, 12 genera and 17 species were recorded during the study period. On the basis of maximum species Myrmicinae was the dominant family with 12 species *Aphaenogaster longipes*, *Atopomyrmex ceylonicus*, *Crematogaster rothneyi*, *C. subnuda*, *Monomorium fossulatum*, *M. longi*, *Strumigenys feae*, *Holcomyrmex glaber*, *H. scabriceps*, *Phidole nietneri*, *P. mus* and *P. narojii*. While Subfamily Camponotinae comprising only 5 species *Acantho lepis*, *Formica sanguinea*, *Lasius alienus*, *Polyrachis hodgsoni* and *Camponotus compressus* respectively. Subfamily Myrmicinae constituting 71% of the total number of individuals of ants followed by subfamily Camponotinae constituting 29% of the total number of individuals of ants.

Keywords: Karak, ants, fauna, Family, identification

1. Introduction

The ants belong to Superfamily Vespoidea family Formicidae of Order Hymenoptera [1, 2]. They are eusocial, and are specialized according to their functions such as foraging, tending larvae and defense [3] and also performed the phenomena of necrophoresis, the removal of dead ants from the colony [4]. They can be found in any type of habitat from the Arctic Circle to Equator [5]. Except Iceland, Greenland and Antarctica they are considered to be evolved during cretaceous period and DNA study revealed that they arose about 140 million years ago [6-7]. However, they are abundant in tropical region both in vegetation and ground [8]. Species richness in ants varies from region to region [9-11]. Another report demonstrated that ants from only two districts of Punjab province of Pakistan and reported 21 species in 13 genera and 3 subfamilies. Pakistan occupies an important biogeographic position and taxonomic studies on ants of Pakistan have never been formally initiated in Pakistan [12]. Ants are one of the ideal model organisms for measuring and monitoring biodiversity for many reasons. They are abundant and dominant in ecological systems as predator and symbiotic for plants and other organisms. These are relatively easy to collect in a standardized way, reasonably diverse at the site, identifiable and so on [13-15]. As per the recent classification, all ants are grouped into 21 subfamilies [16]. All the ant species fall into the single family Formicidae. This family is included in the super family Vespidae of the order Hymenoptera, which is placed in the class Insecta. The Myrmicinae is the largest subfamily of the Formicidae, with 138 genera, followed by Formicinae that have 39 genera and Ponerinae which have 25 genera. Ants in India, occupy a variety of habitats such as leaf litter, trees, soil and dead logs, while tramp species prefer human-modified habitats. Myrmicinae forms the bulk of the Indian ant diversity (45%) with genera *Pheidole* and *Crematogaster* having the most species. The subfamily, Formicinae is the second largest ant group (25% of species), with genera *Camponotus* and *Polyrhachis* constituting the majority of the diversity. The subfamily Ponerinae contributes about 14% of species of which genera *Leptogenys* the most diverse [17]. The aim of the current study was to find the field observations on the incidence of Ant fauna (Hymenoptera) of Karak Khyber Pakhtunkhwa, Pakistan

2. Materials and Methods

2.1 Study Area

Karak is the headquarters of Karak District in the Khyber Pakhtunkhwa Province of Pakistan. It is 123 km from

Peshawar on the main Indus Highway between Peshawar and Karachi. It is located at 33°7'12N 71°5'41E. Karak is said to be the single district in Pakistan, which is inhabited by only one tribe of Pashtuns the Khattaks.

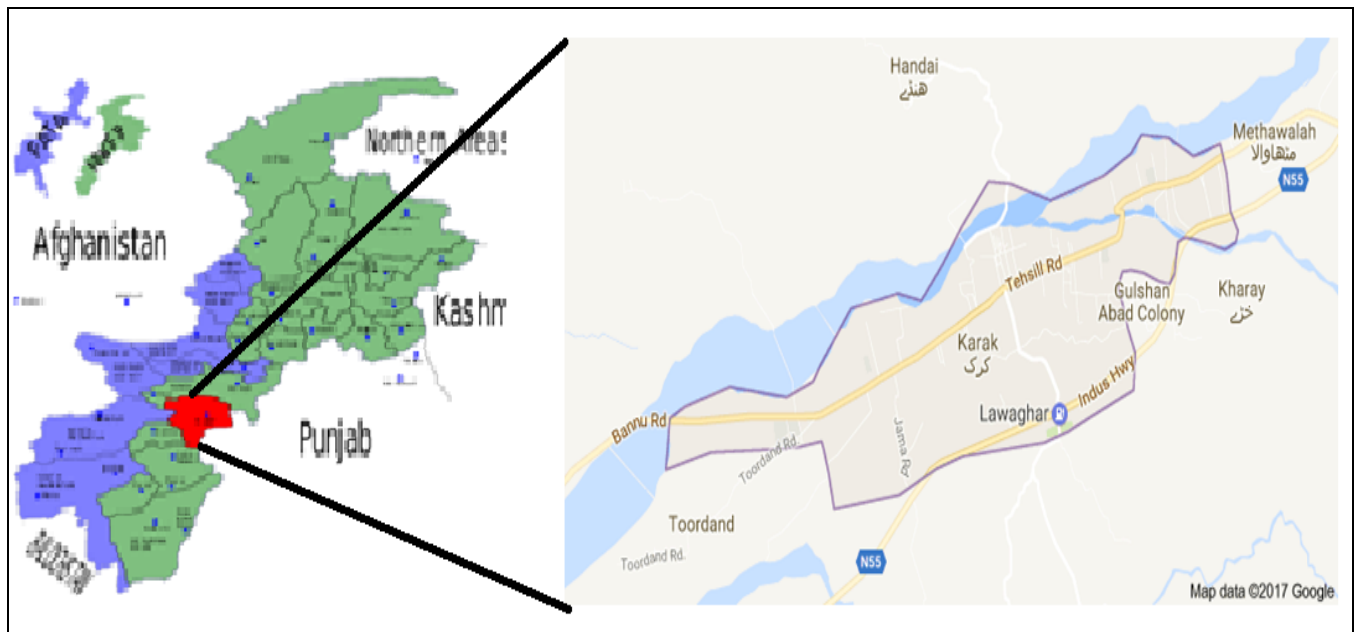


Fig 1: Map of District Karak Khyber Pakhtunkhwa Pakistan

2.2 Collection and Preservation

The ant samples were collected from various localities and around in Karak District of Khyber Pakhtunkhwa, Pakistan. Sampling was carried out randomly from district Karak. For the collection of ants we employed all out search method from February

2013 to January 2014. Ants were hand collected using a brush and forceps during day time from 8 am to 4 pm twice every month and preserved in 70 % alcohol. Identification of ant species made on the basis of taxonomic keys [18-21].

3. Results

We confirmed the presence of ants 17 species at our selected study area during the season 2015. Total 850 of individuals were determined where Subfamily Myrmicinae constituting 71% of the total number of individuals of ants followed by

subfamily Camponotinae constituting 29% of the total number of individuals of ants. From the current results we can say that Subfamily Myrmicinae comprising highest number and hence more suitable for the species of subfamily Myrmicinae. This result is very positive for the reclamation practices used in the study area. However, we noticed the difference in the representation of individual species in these two subfamilies i.e. Myrmicinae and Camponotinae.

From the current survey, it can be concluded that the majority of ants individuals fauna was found in those areas of Karak where wheat crops or store grain found. Ants also feed on grains. Ants are a pest on the economically important crops. Besides these factors they were found in less number because there bird fauna were found these birds feeds on ants which reduce their population.

Table 1. Exploring of Ants fauna of Karak Khyber Pakhtunkhwa, Pakistan

Class	Order	Family	Sub families	Genus	Species
Insecta	Hymenoptera	Formicidae	Myrmicinae	<i>Aphaenogaster</i>	<i>longipes</i>
				<i>Atopomyrmex</i>	<i>ceylonicus</i>
				<i>Crematogaster</i>	<i>rothneyi</i>
				<i>Monomorium</i>	<i>subnuda</i>
					<i>fossulatum</i>
					<i>longi</i>
				<i>Strumigenys</i>	<i>feae</i>
				<i>Holcomyrmex</i>	<i>glaber</i>
					<i>scabriceps</i>
				<i>Phidole</i>	<i>nieteri</i>
				<i>mus</i>	
				<i>narojii</i>	
			Camponotinae	<i>Acantho</i>	<i>lepis</i>
				<i>Formica</i>	<i>sanguinea</i>
				<i>Lasius</i>	<i>alienus</i>
				<i>Polyrachis</i>	<i>hodgsoni</i>
				<i>Camponotus</i>	<i>compressus</i>
Class 01	Order 01	Families 01	Sub families 02	Genus 12	Species 17

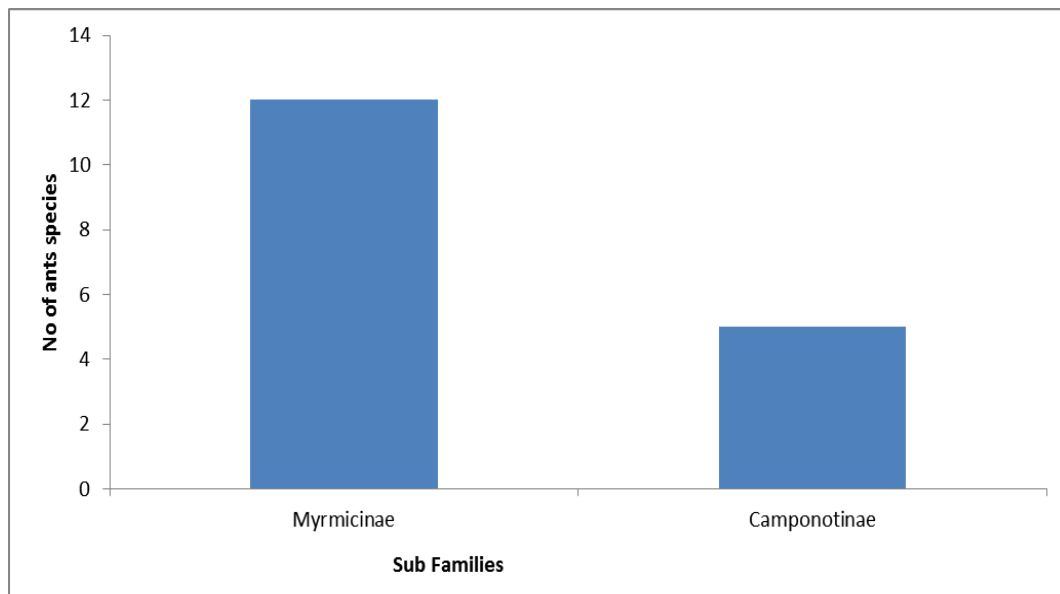


Fig 2: Sub Families wise distribution of ants fauna of Karak KP, Pakistan.

4. Discussion

The current study was conducted to find out existence of ants fauna species the District Karak Khyber Pakhtunkhwa Pakistan. Out of 850 specimens of ant (Insecta: Hymenoptera) comprising to 2 sub families Myrmicinae and Camponotinae, 12 genera and 17 species were collected in the current survey. The dominant sub family was found Myrmicinae with 12 species *Aphaenogaster longipes*, *Atopomyrmex ceylonicus*, *Crematogaster rothneyi*, *C. subnuda*, *Monomorium fossulatum*, *M. longi*, *Strumigenys feae*, *Holcomyrmex glaber*, *H. scabriceps*, *Phidole nietneri*, *P. mus* and *P. narojii*. While the subfamily Camponotinae consisting 5 species *Acantholepis*, *Formica sanguinea*, *Lasius alienus*, *Polyrachis hodgsoni* and *Camponotus compressus* respectively. From Japan 173 species of ants were identified. Out of these 19 species belong to subfamily Ponerinae, 1 from of Cerapachyinae, 78 of Myrmecinae, 5 of Leptanillinae, 7 of Dolichoderinae and 58 of subfamily Formicinae [22]. In the current survey only 17 species of the ants were recorded. About eleven ant species belonging to genus *Lasius* described occur in the Himalayan region [23]. In the current study *Lasius* genus was also recorded which mean that the climatic factors of Himalayan region are somewhat similar to the current area under research. From Saudi Arabia 164 ant species belonging to 30 genera and 6 subfamilies were recorded [23]. In the present study only two subfamilies of the ants have been described. Hence the results of both the study revealed that there is a lot of variation in the number of the families. The variation may be due to change of topography features of both the study areas. From Himalayan region one parasitic species *Myrmica erepatrix* was explored [24]. Weaver ants of genus *Oecophylla* occur abundantly in tree canopies humid tropics of Africa (*O. longinoda*) Latreille, also found in Southeast Asia, Australia and Western Pacific Islands (*O. smaragdina*) Fabricius. *O. smaragdina* is confined to tropical forest or Woodlands northern and north-eastern parts of Australia [25]. About 48 species of the genus *Vollenhovia* Mayr, 1865 belonging to subfamily Myrmicinae have been reported and most of them are found in Oriental and Indo- Australian regions, while a few records are also present in the Palearctic (2 species) and Australasian (1 Species) regions [26]. From Arabian Peninsula 265 species under 32 genera and 8 subfamilies identified. Out of these 56 species were reported as new. *Pachycondyla sennaarensis* (Subfamily Ponerinae) is

found abundantly in tropical and subtropical regions. It is endemic to Southeast Asia, also recorded from Arab Gulf countries, including Kuwait, Qatar, the United Arab Emirates, Oman and Saudi Arabia [27]. In the present investigation only 17 species of the ants were recorded, comprising 2 subfamilies and 12 genera. The differences may be due to various habitats because each species of the ants prefer a specific habitat where they live. The current investigation was the first time survey and till now there was no previous work done in this region on ants species.

5. Conclusion

From the current study it can be concluded that only two subfamilies of the ants were recorded from District Karak Khyber Pakhtunkhwa, Pakistan. Furthermore this data will provide a baseline for the next future entomologist.

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