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Diversity and morphology of ants (Formicidae) inhabiting on mango trees from district Mirpur Khas Sindh, Pakistan

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Abstract
This research was based on Biodiversity and Morphological studies of ants (Formicidae), started from the year April 2018 to December, 2019. Total 2057 specimens were collected and sorted out into 09 species, Camponotus compresus (Fabricius 1787), Camponotus Japonicus (Mayr, 1866, Monomorium Longi (Forel,1902), Lasius Alienus (Foerster 1850), Monomorium Schurri (Forel, 1902) Meranoplus bicolor (Guerin Meneville,1844), Polirachishogsoni,, *Lioponera longitarsus Solenopsis germinates* and seven genera, Camponotus, Meranoplus, Lioponera, Monomorium, Lasius, *Solenopsis and Poli rhachis* Pictures were captured with the help of Stereoscopic dissecting microscope having LED and digital camera. Identification was done keys given by Bolton, 1994 and Sheela, 2008. This is the first reported research work from Mirpurkhas Sindh, Pakistan.

Keywords: Biodiversity, Morphological, Formicidae, morphology

Introduction
Associations of few animals are very important for agriculture. Such as earth worm is famous for the soil fertility, bees with pollinations, mantids and spiders with pest control, house fly cleanses of debris etc in the same way the ants perform all roles (Predators, Scavengers, Pollinators, Soil turners mean soil fertility and sometimes pests also) in the ecosystem. They are social insects having a variety of colors. This study is support on the biodiversity of ants related with mango trees developed in MirpurKhas Districts. Collection was prepared from mango tress by means of attraction like chicken visceral, sweets and insects while placed this bait on white paper sheets.

Ants are called social insects that fit in to family Formicidae and order Hymenoptera. They are recognized to appear about 120 million years ago. Depending upon specific variant they can have green, black, red or metallic body. They are hemi metallic insects having resourceful significance. They are soil turners, sign for the situation of ecosystem, predators, pollinators and scavengers to important component of food chain. Each species of ant has high impact on Biodiversty which produce influence diverclty or indirectly for development and destruction of environment. Ants are poorly studied in Pakistan my research will open gate for new researcher for future studies on different aspect especially in the biological control and the pest managements.

Materials and Method
Sindh is the prominent province of Pakistan, it is located at 25° 33′ 2″ N, 69° 0′ 11″ E area wise it is 3rd largest province of Pakistan. I carried out my research from Mirpurkhas Dictrict and their different sites of Mango tree, Extensive survey was carried out during the year of 2018 and 2019. On the basis of activeness of ants they were collected at morning, evening and night time. for the collection of ants species hand picking method and using bait (sweets and chicken visceral), and Fifteen colonies were deliberate and total 2507 specimens were captured and 75% ethanol with few drops of glycerin were used for preservation, dry method and wet method were also used. Ants were mostly found upon scrub, grass trees barks, more hardly ever on grounds. Specimens were exterminating by means of potassium cyanide in standard entomological bottles. Speciemen were does not allow in potassium that can change color Pining done contained by little hours as the specimens were elastic there was a little threat of losing some part, through essential manipulation. Specimens stored in standard entomological boxes with labels showing locality, date of collection collector's name and. Naphthalene balls were sited in boxes to prevent the attack of ants and other insects. Identification of specimens was by keys and descriptions by Soomro *et al*. (2002), a key online published by Oliveira (1996) and by Ehrman's (2002) compiled catalogue of the mantids of the world. 2 to 4 hours species were watched their feeding mode were observed and picture were taken by digital camera I worked on species richness and biodiversity index via the following equations. Species Richness, $R = s/\sqrt{N}$, here R = species richness, S = number of species recorded and N = total number of individuals collected of all species. Diversity Index, D = (n/N) 2, here, D = diversity index, N = the total number of specimens of a particular species and N = the total number of organisms of all species and Simpson index of diversity, D=1-D, D= diversity index.

Fig 1: Showing Study site during collection of specimens

Results AND Disscussion

Results

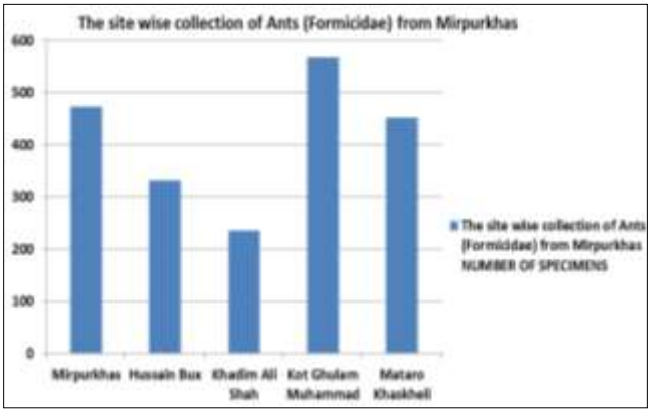
We have collected total number of samples 250, and studied 15 different colonies of ants from dissimilar locations The most important a biotic ecological factor like temperature and humidity also measured as shown in (Table. 4.1) the captured specimen were sorted out into 09 species under 07 genera and 05 sub-family of Family Formicidae (Table. 4. 3). The site wise collection of Ants (Formicidae) from Mirpurkhas (Table. 4.2). Table 4.4: showing number of specimen sorted out from Mirpurkhas Ditrict

Table 1: Six months recorded Temperature & Humidity data

Months	Temperature°c Average		Relative Humidity (%) Average
	Maximum	Minimum	
May	35.8 - 38.7	24.7 – 27.8	60 -65
June	36.6 - 39.8	25.8-38.7	64- 67
July	38.00- 40.8	36.6-38.9	70 – 79
August	37.9 – 40.8	31.9-35.7	79-81
September	38.9 -39.4	32.7-34.8	66- 73

Table 2: The site wise collection of Ants (Formicidae) from Mirpurkhas

S#	Site Name	Number of Specimens
01	Mirpurkhas	473
02	Hussain Bux	331
03	Khadim Ali Shah	235
04	KotGhulam Muhammad	567
05	Mataro Khaskheli	451
	Total Specimens	2057



Graph 1: The site wise collection of Ants (Formicidae) from Mirpurkhas

Table 3: Ants (Formicidae) recorded from District Mirpurkhas

Name sites	Name of Genera	Name of species
Mirpurkhas	01	02
Hussain bux Taluka	02	02
Khadim Ali Shah	01	02
Kot Ghulam Mohammad	02	02
Mataro Khaskheli	01	01

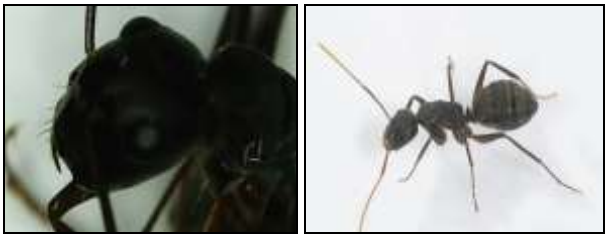


Fig 3: A) Ventral view of head of Camponotus campresus B) Dorsal view of *Camponotus Japonicus*

Fig 4: A) The external morphology of *Meranoplus bicolor* B) *Lioponera longitars*

Fig 5: The external morphology of *Solenopsis germinates*

Fig 6: Morphology of Monomorium Longi b) dorsal view of *Monomorium schurri*

Fig 7: A) External Morphology of *Lasius Alienus* B) External morphology of Polirhachis hogsoni

Conclusion

It was the first time research work reported from district Mirpurkhas of Sindh, Pakistan, author collected 2057 specimens of Ants. These collection were sorted out into five families, nine genera and fifteen species In Sindh Pakistan these all species are reported for first time. It is observed that Sindh is virgin and need to explore for new records and new species of ant Fauna.

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References

1. Watanasit. 87-194., S. and Bickel, T.O., 200. “Diversity of Ants from Ton Nga chang Sancturay, Songkhla, Thailand”. Pp: 1
2. Andrade T, Marques GDV, Del-Claro K. Diversity of ground dwelling ants in cerrado: an analysis of temporal variations and distinctive physiognomies of vegetation (Hymenoptera: Formicidae). Sociobiology. 2007; 50(1):121-134.
3. Delabie JH, Agosti D, Nascimento ID. Litter ant communities of the Brazilian Atlantic rain forest region. Sampling Ground-dwelling Ants: case studies from the world’s rain forests.Curtin University of Technology School of Environmental Biology Bulletin, 2000, 18.
4. Varghese T. “A Review of Extant Subfamilies, Tribes and ant Green India”, 2009, Pp 81-89.
5. Ward PS. Phylogeny, classification, and species-level taxonomy of ants (Hymenoptera: Formicidae). Zootaxa. 2007; 1668(1):549-563.
6. Hölldobler B, Wilson EO. The ants. Harvard University Press, 1990.
7. Kothari SP, Sloan RG. Information in Prices about Future Earnings. Journal of Accounting and Economics. 1992; 15(2-3):143-71.
8. Lomolino MV, Riddle BR, Brown JH. Biography, 2006.
9. Naumann I. CSIRO Handbook of Australian Insect Names, 1993.
10. Sheela S, Ghosh SN. A new species of Lophomyrmex Emery (Hymenoptera: Formicidae) from India with a key to India species. Biosystematica, 2008; 2:17-20.
11. Vandmeer J, Lawrencee D. A Symstad, and S. Hobbbie. Effect of biodiversity on ecosystem functioning in managed ecosystems, 2002, 209-220.