



Macrohymenopteran diversity in Thommana Kole wetland, Thrissur, India

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ABSTRACT: The study conducted on the diversity of macrohymenoptera at the Thommana Kole wetland, Thrissur, Kerala revealed 36 species from 24 genera and 9 families.

KEYWORDS: Abundance, Hymenoptera, wetlands.

Wetlands supports rich biodiversity by providing many unique habitats for organisms and hence known as biological supermarkets (Mitsch and Gosselink, 2000). Wetlands in Kerala are very important ecosystems. In 2002, Kole wetlands were declared as Ramsar sites which increased the importance (Jayson, 2018). Kole wetlands are the water-logged, paddy cultivating areas and cover an area of 13,632 ha and spread over the Thrissur and Malappuram districts of Kerala (Johnkutty and Venugopal, 1993).

A study was conducted from October to December 2019 to analyze the relative abundance of macrohymenopteran insects at the Thommana Kole wetland of Thrissur, Kerala. The term macrohymenoptera is followed in this work, which normally includes larger species and with numerous veins in their forewing (Mason and Huber, 1993). Thommana (10⁰.3463 N 76⁰.2541 E) is a village in Irinjalakuda block in the Thrissur district of Kerala state, India. It is a highly diverse and productive ecosystem. The study site is a part of Muriyad Kole, which is a freshwater wetland (Thomas *et al.*, 2003). Line transect method was used to survey

the study site. The macrohymenopterans were collected by using a sweep net and by handpicking. Periodic collection of macrohymenopterans was done twice a month, taken in the morning from 8:00 am to 11:00 am. Ethyl acetate was used for killing the collected specimens. The killed specimens were dried and preserved for further study. Liquid preservation is used for the temporary storage of ant specimens until the specimens were card mounted for species identification. 70% ethanol is used as preservation fluid. The specimens were kept in small vials filled with alcohol, labelled and checked periodically. The specimen as such and its photographs were taken for identification. Identification was done up to the maximum possible level with the help of hymenopteran experts.

Altogether 36 species belonging to 24 genera and 9 families of macrohymenoptera were recorded during the period of study. Fig. 1 represent number of individuals collected from each genus. Families include Halictidae, Apidae and Megachilidae of bees; Vespidae, Scoliidae, Ichneumonidae, Mutillidae and Sphecidae of wasps and Formicidae of ants. Specimens were identified to

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morphospecies level or RTU (Recognizable Taxonomic Units). Family Apidae showed the highest relative abundance (30.50%) and Megachilidae and Mutillidae recorded the lowest value (0.85%) (Table 1).

A total of 14 plant species belonging to 8 families were identified from which bees, ants, and wasps are collected. Some of these plants belong to the category of weeds and invasive species. Fifteen species of bees from 6 genera and 3 families were collected from the study area (Table 1). Thirteen species are solitary bees and 2 bees belonging to the genus *Apis* Linnaeus are social bees. Halictidae is the species-rich family with *Nomia* Latreille being the most speciose genus. Prakash *et al.* (2020) prepared a checklist of bees of Kerala and listed 86 species of bees under 19 genera. During this study conducted within a period of 3 months, in Thommana, 15 species reported point towards the richness of bees in the Thommana kole wetland ecosystem.

The most speciose genus of bees was *Nomia* Latreille. Weather conditions had a major influence in the collection of bee specimens. Sunny days were ideal for good collection than rainy or wet conditions. *Mimosa pudica* Linnaeus and *Mimosa diplotricha* Sauvalle are common host plants from which *Nomia* Latreille and *Ceratina* Latreille are collected. In the present study, 6 genera of bees belonging to 3 families were collected from 7 plant species (*Sphagneticola trilobata* (L.) Pruski, *Mimosa diplotricha* Sauvalle, *Mimosa pudica* Linnaeus, *Ipomoea carnea* Jacq., *Spermacoce articularis* Linnaeus, *Mikania micrantha* Kunth and *Ziziphus oenoplia* (L.) Miller) belonging to six families, Asteraceae, Fabaceae, Convolvulaceae, Rubiaceae, Rhamnaceae and Lamiaceae.

A total of 13 species of wasps from 13 genera and 5 families were collected from the study area (Table 1). Vespidae is the species-rich family of wasps. Fifty species of hymenopterous insects under 42 genera were reported during the study done by Rajkumari *et al.* (2014) from Assam in which wasps constitute 13 genera which is similar to our work. Family Vespidae has the second largest

Table 1: Macrohymenopteran species collected from the wetland and relative abundance (RA) of families

Species	Family	RA %
<i>Apis dorsata</i> Fabricius <i>Apis cerana</i> Fabricius <i>Ceratina binghami</i> Cockerell <i>Amegilla</i> sp.; <i>Xylocopa</i> sp.	Apidae	30.50
<i>Nomia</i> sp 1. <i>Nomia</i> sp 2. <i>Nomia</i> sp 3. <i>Nomia (Leuconomia)</i> sp 1. <i>Nomia (Leuconomia)</i> sp 2. <i>Nomia (Leuconomia)</i> sp 3. <i>Nomia (Gnathonomia)</i> sp. <i>Nomia (Curvinomia)</i> sp. <i>Nomia (Hoplonomia)</i> sp.	Halictidae	15.25
<i>Megachile</i> sp.	Megachilidae	0.85
<i>Ropalidia brevita</i> Das and Gupta <i>Vespa tropica</i> <i>haematodes</i> Bequaert <i>Apodynerus troglodytes</i> (de Saussure) <i>Antepipona</i> sp. <i>Polistes stigma tumulus</i> (Fabricius)	Vespidae	19.50
<i>Phalerimeris phalerata</i> <i>turneri</i> (Betrem) <i>Micromeriella marginella</i> (Klug)	Scoliidae	5.93
<i>Sceliphron madraspatanum</i> (Fabricius) <i>Chalybion bengalense</i> (Dahlbom) <i>Ammophila</i> sp.	Sphecidae	5.08
<i>Metopius</i> sp.; <i>Goryphus</i> sp.	Ichneumonidae	3.39
<i>Karlissaidia</i> sp.	Mutillidae	0.85
<i>Diacamma scalpratum</i> (Smith) <i>Odontomachus simillimus</i> Smith <i>Polyrhachis proxima</i> Roger <i>Polyrhachis exercita</i> (Walker) <i>Polyrhachis convexa</i> Roger <i>Polyrhachis lacteipennis</i> Smith <i>Myrmecaria brunnea</i> Saunders <i>Monomorium pharaonis</i> (Linnaeus)	Formicidae	18.64

relative abundance (19.50%). Observed list of the preferred plants of wasps include *Acacia mangium* Willd., *Ipomoea carnea* Jacq., *Ziziphus oenoplia* (L.) Miller, *Aniseia martinicensis* (Jacq.) Choisy, *Mikania micrantha* Kunth and *Melochia corchorifolia* Linnaeus. The most dominant species was *Ropalidia brevita* Das and Gupta which was recorded from the *Acacia mangium* Willd. and *Aniseia martinicensis* (Jacq.) Choisy. *Vespa*

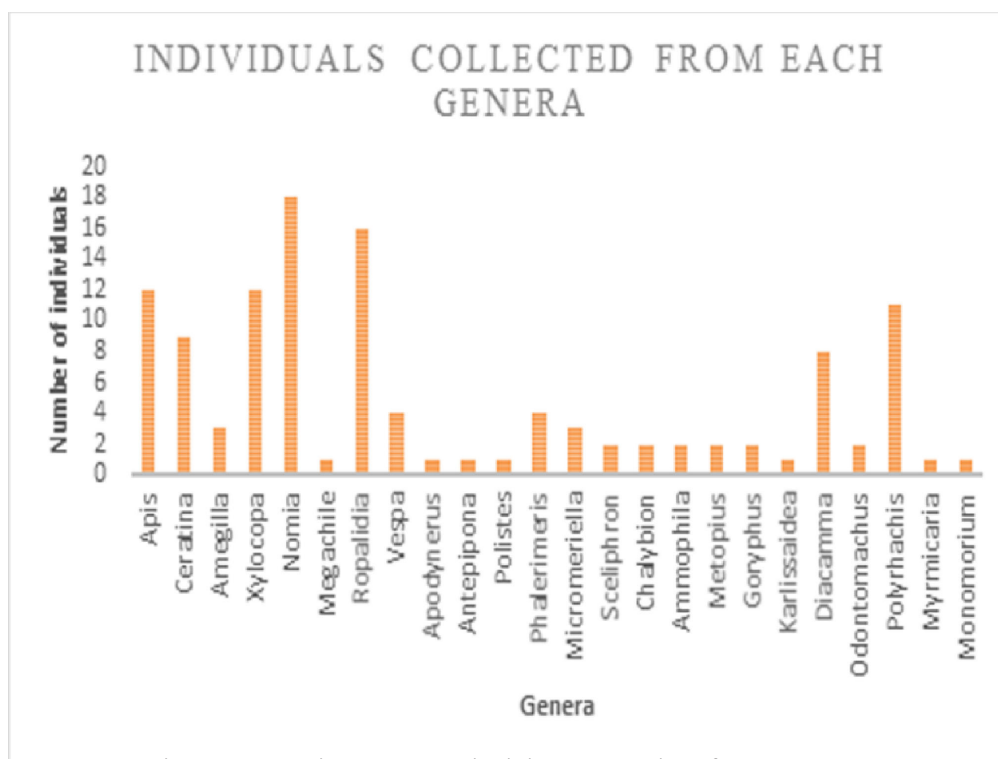


Fig. 1 The bar diagram shows individual collections from each genus

tropica (Linnaeus) was recorded from two plants, *Ipomoea carnea* Jacq. and *Ziziphus oenoplia* (L.) Miller. A common plant, *Mikania micrantha* Kunth supports two species, *Micromeriella marginella* (Klug) and *Metopius* sp.

A total of 8 species of ants from 5 genera (Table 1) were collected from the study area. Formicinae is the species-rich subfamily of ants. The genera *Polyrhachis* Smith dominate the collection with a maximum number of species. Many species of ants were also noted from the plants. Ants were mainly observed from plants *Ziziphus oenoplia* (L.) Miller, *Crotalaria pallida* Aiton and *Mucuna pruriens* (L.) DC. *Polyrhachis* Smith is the most diverse genera with 4 species (*P. proxima* Roger, *P. exercita* (Walker), *P. convexa* Roger and *P. lacteipennis* Smith). *P. proxima* is the most dominant ant species in the study.

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