Research Article

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Taxonomy and Diversity of Ant Genus: *Tetraponera* (Pseudomyrmicinae: Formicidae) From Forest Area of Aurangabad District, Maharashtra, India

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ABSTRACT

Ants are the most diverse, abundant and ecologically significant organisms on the earth. Present work discusses the taxonomy and diversity of Genus *Tetraponera* belonging to subfamily Pseudomyrmicinae from the forest area of Aurangabad district of Maharashtra. Ants were collected and identified as per the standard keys suggested by Bolton. The present paper reveals that there are three species of Genus *Tetraponera.*

Keywords: Taxonomy, Diversity, *Tetraponera* and Forest.

Introduction:

The subfamily Pseudomyrmicinae is a group of slender bodied, large- eyed, arboreal ants found throughout the old and new World tropics. The Old World species belong to the genus Tetraponera F. Smith, containing approximately 110 nominal species of subspecies (Ward 1990; Bolton 1995). Species of Tetraponera have piqued the interests of biologists studying ant-plant interactions. The importance of ants in the terrestrial environment cannot be underestimated. Ants are arguably one of the most successful organisms on the earth and account for 15-20% of terrestrial animal biomass (Holldobler and Wilson 1990). Up to 2003 42 ant species were identified representing 15 genera five subfamilies by survey of Acadia National Park (G.D. Ouellette 2010).

Currently, there are 11,000 described species of ants (Wilson and Holldobler 2005). Ants constitute an important faunal group by acting as scavengers (Lenoir et al 2003), serving as primary predators invertebrates (Holldobler and Wilson 1990), and altering the terrestrial environment through the movement of soil, the transportation of plant and animal materials (Folgarait 1998), and dispersal of seeds (Beattie 1985). The Formicidae are dominant numerically, geographically, and ecologically; yet, the status of species richness is in mist bioregions is largely unknown (Holldobler and Wilson 1990). Thus it is necessary that we gain knowledge about this family to better understand both ecological and biological diversity in the terrestrial ecosystem throughout the world. In order for taxonomy to

be respected as an independent science it must return a focus to the exploration of characters.

Material and Method:

Study area

The study is conducted in the forest area of Aurangabad of Maharashtra. The ants were randomly collected from January 2010 to June 2010 by handpicking method with the help of forceps. The collected ants were transferred into the bottles and brought to the laboratory after that the ants were sorted from the bottles and preserved in 70% alcohol for further analysis. Photography done with the help of camera, the identification is made with the help of stereoscope trinocular microscope based on standard taxonomic keys suggested by Bolton 1994, Holldobler and Wilson 1990, Mathew & Tiwari 2000 and Sheela 2008 etc.

Result and discussion

During the present study we find three species belonging to one genus Tetraponera and subfamily Pseudomyrmicinae. They are tabulated in the table 1.

Table 1: Showing Subfamily, Genus and species of ants reported from Aurangabad forest.

Taxonomy

Subfamily	Genus	Species
Pseudomyr-micinae	*Tetraponera*	*Tetraponera allborans*
		Tetraponera nigra
		Tetraponera rufonigra

Keys to the subfamily Pseudomyrcinae

The subfamily Pseudomyrcinae is a group of slender bodied, large eyed, arboreal ants found throught the old and new world tropics (Ward, 2001). Members of this subfamily mostly arboreal, some species have mutualistic association with particular plants; ants nest is modified cavities of the living plants, and provide protection against herbivores reviewed in ward, 1990). There is only one genus, Tetraponera from our study area to represent this subfamily. Ward (2001) revised the ant genus Tetraponera in the Oriental and Australian region and revealed 33 species

1. Body with two reduced segments (petiole & postpetiole) in between thorax and gaster……2

2.Eyes present……3

3. Posterior margin of clypeus not projecting in between antennal sockets; promesonotal suture present; hind tibia with a conspicuous pectinate spur……..**Pseudomyrmicinae**.

Genus: Tetraponera Smith

We have only three species under this genus. The worker of this genus can be distinguished from those of all other ants by the combination of well developed postpetiole, short mandibles, large oval eyes and flexible promesonotal suture (Ward, 2001).

Keys for Tetraponera genus of Pseudomyrmicinae from the forest area Aurangabad district

1. Antennae with 12 segments……..2
2. Basal margin of mandibles unarmed, without teeth close to the articulation. Barsitursus of hind legs usually with a distinct longitudinal sulcus basally on its anterior surface. Eyes broader, the width two-third or more than the length.(Old world tropics) ……..***Tetraponera***

Keys to the species of forest area from Aurangabad district (Modified from Bingham 1903).

1. Ocelli present in workers head second joint of pedicel and abdomen black, rest is orange red length 10-13 mm……..……..***rufonigra*** (Jerdon)
2. Black, larger in size (greater than 5 mm)……3
3. Petiole anteriorly of first node shorter than node……..……***allborans*** (Walker)

- Petiole anteriorly of first node as but distinctly not longer than node itself ……..***nigra*** (Jerdon)

Tetraponera allaborans (Walker, 1859)

Family: Formicidae

Subfamily: Pseudomyrmicinae

Genus: *Tetraponera*

Species: *Tetraponera allaborans*

Description: Black, highly polished and shining; mandibles and antennae reddish yellow, legs reddish brown, the femora fuscous; pilosity very sparse, consisting only of a few scattered pale hairs, pubescence entirely wanting, head, thorax, and abdomen with only a few scattered punctures. Head rectangular, longer than broad, the posterior lateral angles not prominent, rounded; mandibles comparatively broad, obscurely longitudinally striate and punctured clypeus vertical, its posterior portion slightly produced, anteriorly crenulate; antennae short, comparatively stout; eyes lateral and a little to the front, placed about the middle of the head. Thorax anteriorly flat, compressed; the pronotum nearly square, subumarjined, contracted anteriorly into a short neck; pro-mesonotal suture distinct but not emarginate; mesonotum longitudinally oval; thorax in profile emarginate at the meso-metanotal suture; metanotum raised, convex, strongly compressed; legs of moderate length, rather stout. Pedicel with the nodes comparatively large, the 1st oval, petiolate anteriorly, the 2nd broader than the 1st, conical; abdomen elongate, narrowly oval. Lenght 5-6 mm.

Tetraponera nigra (Jerdon)

Family: Formicidae

Subfamily: Pseudomyrmicinae

Genus: *Tetraponera*

Species: *Tetraponera nigra*

Description: Black, antennae, mandibles and tarsal segments with a red tint; pubescence thin, pilosity very rear, body lightly punctured, shinning; clypeus narrow, anterior margin transverse; scape of antennae reaching posterior eye margin; flagellum thickening towards apex; eyes large, oval lateral; pronotum flat, sides slightly margined; pro-meso and meso-metanotal sutures distinct; mesonotum nearly circular in dorsal view; meso-metanotal suture deeply marked; propodeum in a higher position than mesonotum; propodeum evenly rounded form front to back; petiole node as long as peduncle; dorsally looking arrow; post-petiole broad; tibial spurts pectinate and claws toothed; basitarsi swollen above middle with sulcus distinct; sting very powerful, exserted. Size: 7 to 8 mm.

Tetraponera rufonigra (Jerdon)

Family: Formicidae

Subfamily: Pseudomyrmicinae

Genus: *Tetraponera*

Species: *Tetraponera rufonigra*

Description: Head, post petiole and gaster brownish black, mandibles except black apex, antennae, thorax and petiole reddish yellow, legs brownish yellow, tarsi more yellow; whole insect covered with minute, abundant, silky pubescence and a few sparse, scattered, suberect, long, brownish yellow hairs; whole body finely minutely punctuate, punctures going weak to posterior side, so on gaster sculpture not clearly visible; clypeal margin anteriorly toothed; antennae 12- jointed, scape of antennae reaching beyond the level of middle of eyes, flagellum thickening towards apex; eyes large, slightly prominent; ocelli present; anterior pronotal angles tuberculate; pronotum broad, elongate and flat above; mesonotum small, semicircular from above; meso-metanotal suture very deep; propedeum evenly sloping towards apex; hind and mid tarsi with both pectinate and simple spurs, claws toothed; petiole elongate, antero-ventral margin of long; sting very powerful, exserted. Size: 10 to 13 mm

Table- 2: Shows that the frequency of occurrence of ants belonging to the Genus Tetraponera in various habitat of the study area

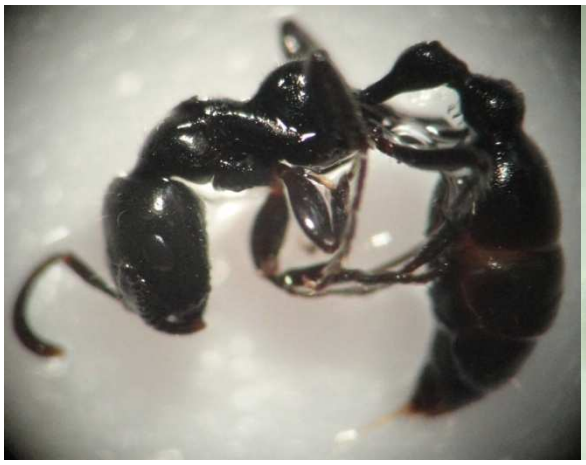
Subfamily	*Genus*	Species	Frequency of occurrence				Total Frequency
			A	B	C	D	
Pseudomyrmicinae	*Tetraponera*	*Tetraponera allborans* (Walker, 1859)	25	13	09	00	47
		Tetraponera nigra (Jerdon, 1851*)*	35	21	17	15	88
		Tetraponera rufonigra (Jerdon, 1851*)*	45	29	31	20	125
Total 01	01	03	105	63	57	35	260

Dorsal View

Body Profile

Head

Plate: I- Photographs of *Tetraponera allborans* showing dorsal view, body profile & Head



Dorsal View

Body Profile

Head

Plate: II- Photographs of *Tetraponera nigra* showing dorsal view, Body Profile and Head

Dorsal View

Body Profile

Head

Plate: III- Photographs of *Tetraponera rufonigra* showing dorsal view, Body Profile and Head

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