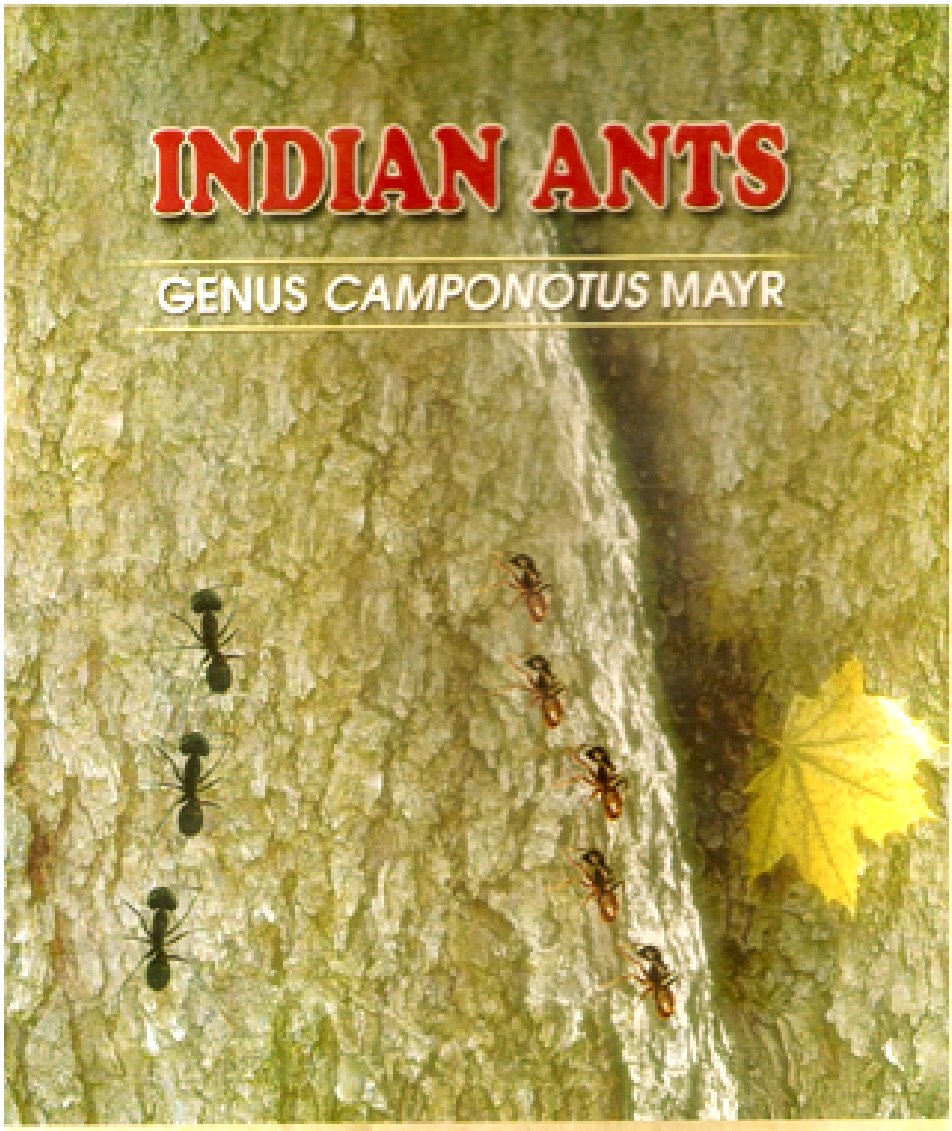

INDIAN ANTS

GENUS *CAMPONOTUS* MAYR

Sr. K.A. KARMALY
&
T.C. NARENDRAN

SYSTEMATIC MONOGRAPH

INDIAN ANTS

GENUS *CAMPONOTUS* MAYR

[FORMICIDAE - HYMENOPTERA]

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INDIAN ANTS :
GENUS *CAMPONOTUS* MAYR

by

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[FORMICIDAE - HYMENOPTERA]

K. A. KARMALY & T. C. NARENDRAN

Abstract

The Indian species of the genus *Camponotus* Mayr (Subfamily Formici are revised. Sixty two species and nineteen subspecies are recognised. Twc described as new species to science, sixty species and nineteen subspecies redescribed since their original descriptions are inadequate for the identifica The newly described species are *Camponotus ashokai* sp.nov.and *Campon keralensis* sp.nov. Index to species are given at the end. A dichotomous ke species *Camponotus* Mayr is prepared. Historical review, classification phylogenic importance, intraspecific variations, diagnostic features of all subfamilies of formicidae and checklist are also provided.

INTRODUCTION

The Hymenopteran family Formicidae is one the most species rich and biogically social groups of insects. The family Formicidae includes about 9536 deribed species (Bolton 1994), However this number is only a small fraction of the ecies that actually exist in the world. About 7236 species are found in Indoustralian Region (Tiwari - 1999).``

The ants belong to one of the most polymorphic and eusocial groups of the rder Hymenoptera. Among terrestrial invertebrates the ants occupied a status milar to that of man (Wood 1994). This is because of the peculiar habit of maniputing and modifying their immediate surrounding according to their needs. The its are capable to explore all possible ecological niches for their exploitation and eir adaptation. Ants exhibit a specialised social behaviour with marked degree of vision of labour among its members.

Ants are both beneficial and harmful. Their harmfulness lies in their stinging d biting habits as well as their mode of life as pests. The most harmful nature of its is their habit of nurturing pests like aphids and mealy bugs.

In the beneficial role, ants are effective predators of many insects that are rmful to man. Formic acid prepared from the ant is placed in the pharmacopoeia.

Considering the great diversity of habits and economic importance of ants, eir faunastic studies and taxonomy are very poorly done in India. Since Bingham empted a revision of Indian ants in 1903 only very few workers attempted for a stematic studies of the members of the family.

The present monograph comprises a review of the species of the genus *mponotus* Mayr occuring in India. The genus *Camponotus* Mayr contains arly 50 subgenera, 995 species and 603 subspecies in the world. Since the genus *mponotus* is poorly known, it is necessary to study their taxonomy. Having tained reasonably good material of Indian Sub-Continent, we have made an empt here to revise the species of the genus *Camponotus* Mayr occuring in dia. It is hoped that this work will facilitate identification of the species of the nus *Camponotus* Mayr.

Camponotus [Dinomyrmex] ashokai **sp. nov.**

(Figs. 7 – 8)

Worker: TL = 10.8 mm; HL = 2.46 mm; HW = 2.17 mm; CI = 88.21 mm; SL = 1.66 mm; SI = 76.49 mm; ED = 0.06 mm; PW = 1.6 mm; AL = 4.53 mm.

Colour: Head and legs yellowish brown; thorax yellowish brown shaded with fuscous brown above; antennal scape reddish brown; all segments of funiculus yellowish brown; node of pedicel fuscous brown; abdomen dark brown; posterior margin of abdominal segments narrow whitish yellow.

Sculpture and Hair pattern: Head and abdomen somewhat shining; mandibles, clypeus and head granulate rugulose; legs, thorax, node of pedicel, abdomen rugulose and feebly granulate; body clothed with short silky white adpressed pubescence; pale brown erect hairs distinct only on head and abdomen; tibiae and tarsi spinous beneath.

Head: Small elongate, wider at the articulation of the mandibles than vertex, occiput very strongly constricted and elongated into a neck; mandibles subtriangulr, 6-toothed (3 apical teeth followed by 3 acute teeth); clypeus broad with a longitudinal furrow at the middle, convex medially and concave laterally, its anterior margin transverse and shortly produced, median lobe prominent, posterior margin with a short depression medially; frontal lobe short; frontal carinae short and parallel; antennal carinae reduced; antennal scrobe very much short, passing above the eye, reaching frontal carinae; antennae long, slender, filiform, 12 jointed; antennal scape cylindrical, all segments of funiculus longer than broad; club single segmented. Relative measurement of length of antennal segments : Scape 1.66 mm; F_1 = 0.86 mm; F_2 = 0.6 mm; F_3 = 0.6 mm; F_4 = 0.53 mm; F_5 = 0.86 mm; F_6 = 0.73 mm; F_7 = 0.2 mm; F_8 = 0.2 mm; F_9 = 0.2 mm; F_{10} = 0.2 mm; Club (F_{11}) 0.46 mm. Eyes small, rounded situated at the posterior margin of the head.

Thorax: Elongate and narrow; pronotum convex, narrowed in front, constricted with a neck anteriorly; pro-mesonotal and meso-metanotal suture distinct; metanotal groove absent; metanotal orifice present; metanotal spiracles distinct; basal region of metanotum along with propodeum steeply sloped and forming a circular region; legs elongate; tibiae compressed, longitudinally channelled, spinous beneath; tarsi with tarsal spines.

Abdomen: Pedicel with a short peduncle in front; nodiform, petiolar node thick at front, flat at base, very convex above, upper margin rounded, posteriorly flat and truncate; in dorsal view node lobate, depressed, concave; gaster short,

massive, oval; posterior margin of gastral segments with whitish yellow band; last gastral segment ends with circular anal orifice guarded by guard hairs.

Holotype : Worker : India: Kerala, Silent Valley (Palakkad Dist.), Alloak, 24-i-2001 [DZSXCA].

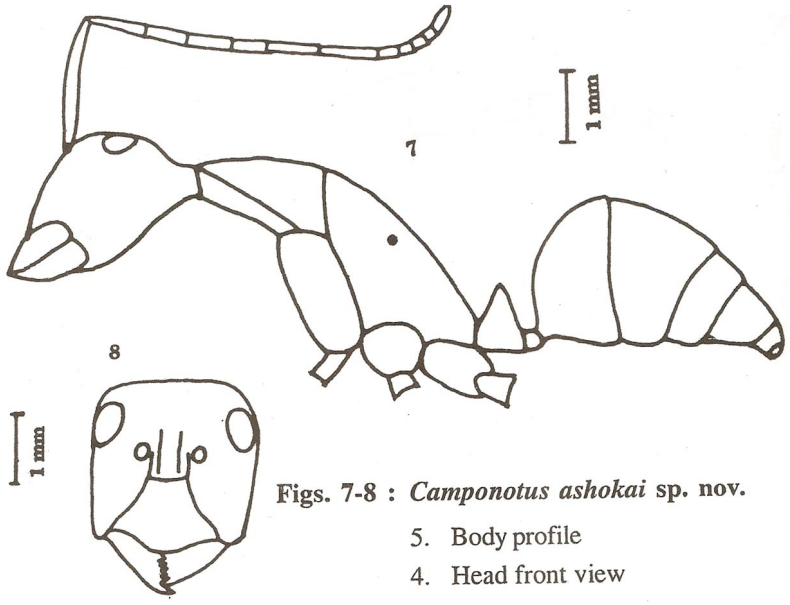
Para type : *1 w : with the same data as that of holotype (DZSXCA)*

Distribution : India [Kerala : Palakkad]

Biology : Unknown.

Etymology: The species name is after Ashoka the wise king of India.

Discussion : This new species comes close to *Camponotus angusticollis* (Jerdon) in general appearance and in the following features: 1 Head elongate; 2. Antennae elongate, slender, filiform, 12 jointed; 3. Circular anal orifice at the apex of last gastral segment guarded by guard hairs. However this new species differs from *Camponotus angusticollis* (Jerdon) in having: 1. Anterior margin of clypeus somewhat rounded, not dentate (in *Camponotus angusticollis* anterior margin of clypeus transverse and dentate). 2. Eyes oval, convex, black at the center, surrounded by greyish brown (in *Camponotus angusticollis* eyes convex oval, black); 3. Metanotum not gibbous (in *Camponotus angusticollis* metanotum gibbous); 4. Apex of pedicel flattened (in *Camponotus angusticollis* apex of pedicel cylindrical); 5. Node of pedicel convex anteriorly, flat posteriorly, rounded above (in *Camponotus angusticollis* node of pedicel thick at front, flat at base, very concave above, upper margin transverse and notched).



Figs. 7-8 : *Camponotus ashokai* sp. nov.

5. Body profile
4. Head front view

***Camponotus [Tanaemyrmex] keralensis* sp. nov.**

(Figs. 23-24)

Worker: TL = 5 mm; HL = 1.2 mm; HW = 0.94 mm; CI = 78.33 mm; SL = 1.03 mm; SI = 109.57 mm; ED = 0.23 mm; PW = 0.73 mm; AL = 1.9 mm.

Colour: Very dark castaneous brown; antennae, pedicel, legs lighter than remaining parts; basal half of the scape, 1st funicular segment, coxa, trochanter, tarsi, pale yellowish brown; pronotum reddish brown.

Sculpture and Hair pattern: Whole body very minutely reticulate punctate; pubescence almost absent; very scanty scattered erect hairs visible; abdomen shining.

Head: Rectangular, as broad posteriorly as in front; cheeks straight; occiput rounded; mandibles moderately broad, 6-toothed (one apical tooth followed by 5 acute teeth); clypeus carinate with a short lobe, its anterior margin transverse, posterior margin concave; frontal lobe distinct; frontal carinae short, wide apart posteriorly; antennal carinae short, moderately close together, divergent posteriorly; antennal scrobe very short; antennae slender, filiform, 12 jointed, antennal scape extending above the vertex; all segments of funiculus longer than broad; club single segmented, longer than other funicular segments. Relative measurements of length of antennal segments. Scape = 1.03 mm; F_1 = 0 23 mm; F_2 = 0.23 mm; F_3 = 0.23 mm; F_4 = 0.33 mm; F_5 = 0.28 mm; F_6 = 0.23 mm; F_7 = 0.19 mm; F_8 = 0.14 mm; F_9 = 0.23 mm; F_{10} = 0.19 mm; Club (F_{11}) = 0.38 mm. Eyes small, situated above the midlength of head, postero-lateral.

Thorax: Viewed from side forming a regular arch, somewhat depressed in front, strongly compressed posteriorly; pronotum anteriorly rounded, narrow, posteriorly broad; pro-mesonotal suture distinct; meso-metanotal stuture indistinct; propodeum steeply sloping from ventral base of petiole; legs short; tibiae compressed, not prismatic, destitute of spines beneath; basal region of tarsi rounded, slightly curved, tibial spurs visible.

Abdomen: Pedicel sessile, nodiform; petiolar node convex anteriorly, flat posteriorly; gaster laterally forming an arch, elongate, last gastral segment ends with circular anal orifice guarded by guard hairs.

Holotype: ***Worker***: INDIA: Kerala, Bharanaganam [Kottayam], Sureshan P.M., 28.x.2000 [DZSXCA].

Paratype: 1W: With the same data as that of holotype [DZSXCA].

Distribution: India [Kerala: Kottayam].

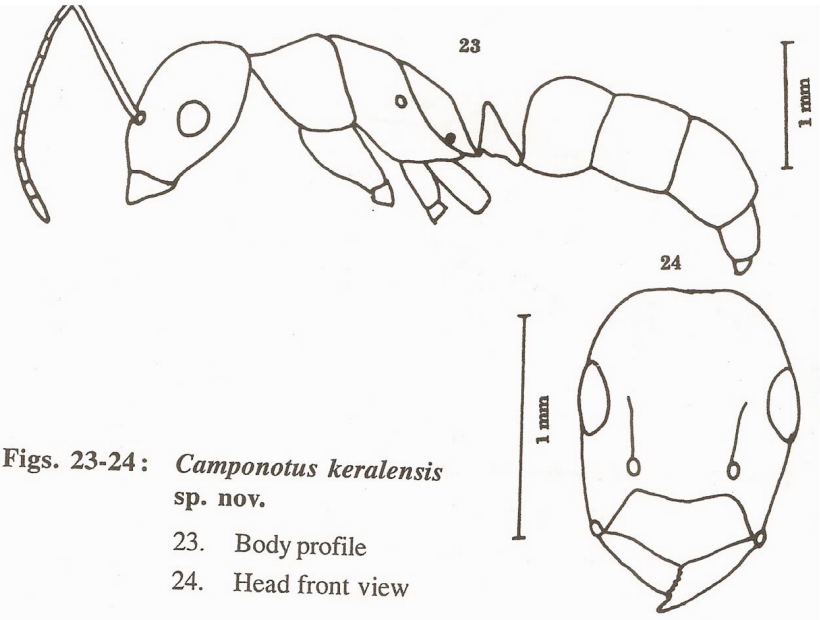
Biology: Unknown.

Habitat: Collected from disturbed habitats.

Etymology: Named after the State from which the specimen was collected.

Discussion: This species comes close to *Camponotus thraso* Forel in the following characters: 1. Head rectangular; 2 Clypeus carinate with a short lobe, its

anterior margin transverse; 3. Antennae slender filiform, 12 jointed; 4. Thorax viewed from side forming a regular arch; 5. Circular anal orifice at the apex of the hypopygim ventrally guarded by guard hairs. However it differs from *Camponotus thraso* Forel in having: 1. Teeth not obsolete (in *Camponotus thraso* teeth obsolete); 2. Meso-metanotal suture distinct (in *Camponotus thraso* meso-metanotal suture indistinct); 3. Petiolar node convex infront, flat posteriorly (in *Camponotus thraso* petiolar node biconvex as long as broad).



Figs. 23-24: ***Camponotus keralensis* sp. nov.**

23. Body profile
24. Head front view

INDIAN ANTS

GENUS *CAMPONOTUS* MAYR

Dr. Sr. K.A. Karmaly, the Vice-Principal of St. Xavier's College for Women, Aluva has a meritorious record of academic excellence to her credit. She has been teaching in the college for the last twenty four years and has got ten years of research experience. She did her M.Phil & Ph.D under the guidance of Dr. T.C. Narendran, Professor & Head of the Dept. of Zoology, University of Calicut. Her Ph.D. Thesis was on systematic studies on some subfamilies of Formicidae (Hymenoptera) of Kerala at the Alpha level. She has published nine research papers on Hymenoptera & Presented papers in various seminars.

Dr. T.C. Narendran, F.A.Sc, FIAE (Former Professor and Head of the Dept. of Zoology, University of Calicut) is a world renowned entomologist, currently working in the Dept. of Zoology, University of Calicut as professor Emeritus. His wide research experience spans over 36 years. Besides the present work he has published 5 Research monographs and about 300 research papers on Hymenoptera. So far 22 students have taken Ph.D under his guidance. He has done research at the Dept. of Entomology, Natural History Museum, London and systematic Entomology Laboratory at the U.S. National Museum of Natural History, Washington DC. U.S.A. Recently he received Janakiyammal award for his excellent service of 36 years as taxonomist.

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