

Report of a third *Camponotus* species with metapleural gland from the world and first from India

(Hymenoptera : Formicidae : Formicinae : Camponotini)

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Abstract : *Camponotus sericeus* Fabricius, a ground-dwelling species occurring all over India was found to possess the metapleural gland. This character is absent in most species of *Camponotus* worldwide, except for *C. gigas* Latreille from Indonesia (Sumatra island) and *C. thadeus* Shattuck from Queensland, Australia. This is the first report of the presence of metapleural gland in an Indian species of *Camponotus* and the third from the world.

Key words : Hymenoptera ; Formicidae ; Formicinae ; *Camponotus* ; metapleural gland ; India.

Camponotus is world's largest and most widespread formicid genus with over 1 500 described species and subspecies (Bolton, 1995). Members of this genus range from large to moderately small, abundant to rare and occur in all terrestrial habitats.

The metapleural gland, also known as metasternal or metathoracic gland is a paired complex glandular structure, which is peculiar to ants and located at the posterolateral corners of the alitrunk. Although varying in shape and size, the metapleural gland was assumed to be a universal and phylogenetically old character of Formicidae but was found to have been lost in a handful of genera, viz., *Oecophylla*, *Camponotus* and *Polyrhachis* (Holdobler and Siegel, 1984; Bolton, 2003).

Holldobler and Siegel (1984), in a comparative study of the internal and external anatomy of exocrine glands in ants discovered the metapleural gland to be absent or significantly reduced in several ant genera besides a widespread absence in the males. Among the 27 species of *Camponotus* they studied, they found the gland absent in all except *C. gigas*. Recently a second *Camponotus* species *C. thadeus* Shattuck (2005),

described from Australia was found to possess this gland.

The *Camponotus orthonotomyrmex* species group includes 14 species worldwide viz., *cubengensis* Forel, *fletcheri* Donisthorpe, *kossuigi* Donisthorpe, *lasioselene* Wang & Wu, *liogaster* Santschi, *mayri* Forel, *mendax* Forel, *puniceps* Donisthorpe, *sankisianus* Forel, *scabrionodis* Arnold, *selene* Emery, *sericeus* Fabricius, *wasmanni* Emery and *yiningensis* Wang & Wu, among which four, viz., *fletcheri*, *selene*, *sericeus*, *wasmanni* have been reported from India.

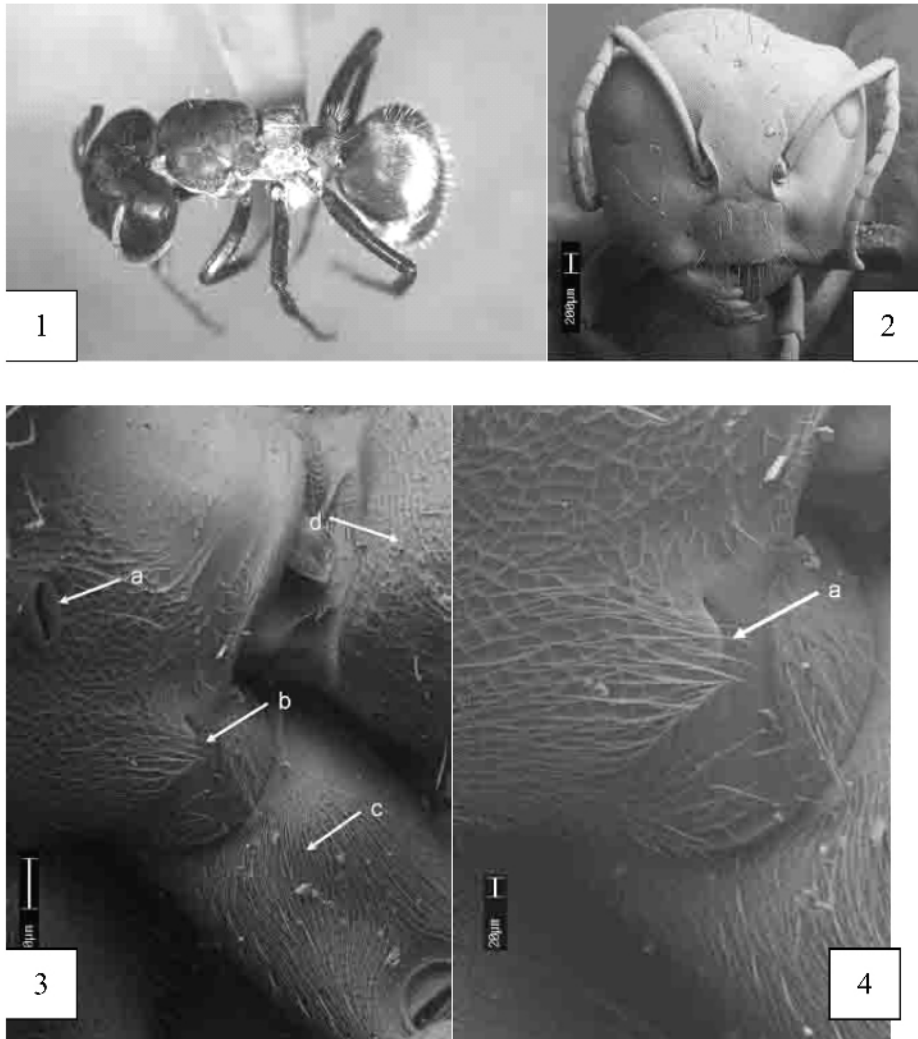
C. sericeus is a ground-dwelling, polymorphic species practically occurring all over India. During our study we found the presence of metapleural gland (Fig. 4) in *C. sericeus* although this character is absent in most species of *Camponotus* except *C. gigas* and *C. thadeus* worldwide. This is the first report of the presence of metapleural gland in an Indian species of *Camponotus* and third from the world.

Further we supplement the existing descriptions of *C. sericeus* with the following :

C. sericeus (Fabricius)

Formica sericea Fabricius, 1798 : 279 (w.) Mayr, 1866 : 886 (q.); Forel, 1886 : 192 (m.); Forel, 1891 : 56 (s. w. q. m.); Imai, et al. 1984 : 9 (k.). Combination in *Camponotus* : Mayr, 1862 : 675; in *Orthonotomyrmex* : Ashmead, 1906 : 31; in *C. (Myrmentoma)* : Forel, 1912 : 92; in *C. (Orthonotomyrmex)* : Forel, 1913 : 129. Senior synonym of *aurulenta* and *obtusa* : Roger, 1863 : 2; of *pyrrhocephala* : Emery, 1893 : 254. Current subspecies : nominal plus *euchrous*, *opaciventris*, *peguensis*, *sanguiniceps*, *sulgeri*.

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Figs. 1 – 4 *Camponotus sericeus* Fabricius

1. Major worker ; 2. Frontal view of head ; 3. Lateral view of alitrunk showing (a : Propodeal spiracle ; b : Metapleural gland ; c : Metacoxa ; d : Node of petiole) ; 4 : Enlarged view of metapleural gland (a : Metapleural gland).

Major worker (Fig. 1): Black , opaque with a granular appearance on the head and thorax , antennae and tibiae and tarsi of the legs more or less dark castaneous ; head , thorax , and node of the petiole with very sparse erect hairs , minute thick golden yellow pubescence hiding the sculpture . Head very broad and massive , almost as broad across at the base of the mandibles as at the occiput , the latter more or less emarginate ; mandibles with 5 teeth ; clypeus broad , somewhat tectiform , the anterior border broadly emarginated at middle (Fig. 2). Alitrunk-pronotum broad in front , mesonotum separated from pronotum by promesonotal suture , mesopleuron compressed , mesonotum and propodeum separated by deep metanotal groove (Fig. 3) ; dorsum of propodeum flat , posterior margin slightly concave , the sides margined ; sides of propodeum and metapleuron highly compressed , pillar like ; legs stout , tibiae cylindrical . Node of petiole

rounded , knob like . Gaster very broad and globose .

Minor worker : Similar , smaller , head more elongate proportionately , occiput rounded , anterior margin of clypeus transverse , antennae and legs lighter in colour than the major worker .

Abbreviations : The size and shape of characters were quantified and are reported as indices , were taken under a stereo microscope using micrometer . The following measurements and indices are determined and included : Cephalic index : $HW/HL \times 100$; Head length (HL) – maximum head length in full face view , measured from the anterior most point of clypeal margin to the midpoint of a line drawn across the posterior margin of head . Head width (HW) – maximum head width in full face view excluding eyes ; Mesosomal length (ML) – measured from the anterior margin of pronotal collar to the postaeior extension of the propodeum lobes when viewed laterally ; Mid tibia

length (MTL) – maximum length of mid tibia , excluding the proximal part of the articulation which is received into the distal end of the femur ; Scape index (SI) – $SL/HW \times 100$; SL – length of scape (first antennal segment) excluding the basal neck and condyle .

Measurements :

Major workers : CI : 115 ; HW : 3.25 mm ; HL : 2.83 mm ; SL : 2.01 mm ; ML : 4.06 mm ; MTL : 2.10 mm ; SI : 62 .

Minor workers : CI : 105 ; HL : 1.60 mm ; HW : 1.68 mm ; SL : 1.68 mm ; ML : 2.75 mm ; MTL : 1.46 mm ; SI : 100 .

Material examined : INDIA : Chakardharpur , Madhya Pradesh , 2 workers , viii . 1907 . Samalkot , 1 worker , 12 – 13 . v . 1915 . Tanjore , Tamil Nadu , 3 workers , 05 . v . 1915 . Pusa , Bihar , 1 worker , 23 . vii . 1907 , Coll . G . R . Dutt . Pusa , Bihar , 1 worker , 17 . iv . 1906 , Coll . , T . V . Ramakrishna Ayyar . Attending *Psylla* nymph , Jungle , Pusa , Bihar , 1 worker , 13 . vii . 1908 , Coll . T . N . J . Pusa , Bihar , 1 worker , 18 . ix . 1912 , Coll . C . C . G . Raipur , Chattisgarh , 2 workers , ix . 1910 . Coimbatore , Tamil Nadu , 2 workers , 04 . ii . 1912 ; 2 workers , 18 . i . 1912 ; 1 worker , 08 – 13 . iv . 1919 ; 1 worker , 25 . viii . 1915 , Coll . T . B . Fletcher . Janjgir , Bilaspur , Jharkand , 1 worker , x . 1915 , Coll . C . S . M . Iynpadi , S . India , 1 worker , 17 . xii . 1917 , Coll . Y . R . Rao . Baripada , Maurbhanj , Bengal , 1 worker , 10 . viii . 1908 , Coll . M . M . L . Bangalore , Karnataka , 2 workers , 26 . xi . 1977 , Coll . T . M . Musthak Ali . Varansi , Uttar Pradesh , 1 worker , 1989 , Coll . Musthak Ali . Cotton field , Coimbatore , Tamil Nadu , 5 workers , vi . 1988 ,

Coll . S . Jayraj . Coconut field , Manamedu , Puducherry , 3 workers , 24 . i . 2005 ; Entomology Division Lawn , IARI , New Delhi , 8 workers , 03 . ix . 2005 ; 5 workers , 23 . v . 2005 , 1 worker , 02 . i . 2006 , 1 worker , 13 . xii . 2006 , Coll . A . Coumar .

Comments : This is the first species from India and only the third species from the world of *Camponotus* to possess metapleural gland . *C. sericeus* is morphologically distinct from any other species found in India . Recently a second *Camponotus* species , *C. thadeus* Shattuck , described from Australia (Shattuck , 2005) was found to possess this gland . While *C. gigas* is currently placed in the monotypic subgenus *Dinomyrmex* (Bolton , 1995) , *C. thadeus* is under the subgenus *Aureopilus* while *C. sericeus* is placed under the subgenus *Orthonotomyrmex* (Bolton , 1995) . The geographical distribution of *C. gigas* is Indonesia (Sumatra island) while that of *C. thadeus* Shattuck is Queensland , Australia . *C. sericeus* is distributed all over India .

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发现自印度的世界第三例具后胸腺的弓背蚁 (膜翅目: 蚁科: 蚁亚科: 弓背蚁族)

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摘要 : 作者通过电镜观察等手段 , 发现并确认产于印度的绢毛弓背蚁 *Camponotus sericeus* Fabricius 为该属第 3 个具有后胸腺的物种 , 揭示了弓背蚁属物种缺乏后胸腺普遍规律基础上的特殊性 , 对阐明后胸腺在蚂蚁进化过程中的演化趋势和生物学意义具有参考价值 .

关键词 : 膜翅目 ; 蚁科 ; 蚁亚科 ; 弓背蚁属 ; 后胸腺 ; 印度

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