

***MONOMORIUM DENTATUM* SP. N., A NEW ANT  
(HYMENOPTERA: FORMICIDAE) RELATED TO THE  
*MONOMORIUM FOSSULATUM*-GROUP FROM EGYPT**

By  
**MOSTAFA R. SHARAF**

*Biology Department, Teachers college, Abha, Saudi Arabia, P. O. Box 249*

*E-mail:antsharaf@yahoo.com*

**ABSTRACT**

*Monomorium dentatum* sp. nov. is described and illustrated from Egypt based on worker castes. It is characterized by the following characters: eyes minute and point-like consisting of only one ommatidium; the lower half of mesopleuron finely but conspicuously punctulate-sharpeenate; propodeum in profile with the dorsum and declivity meeting in a sharp angle which is equipped with a minute dent. This species belongs to the *Monomorium fossulatum*-group, with closest resemblance to *M. sersalatum* Bolton, 1987 but distinguished from it and all species of the *Monomorium fossulatum*- group by a distinct U-shaped mesopropodeal groove, relatively long standing hairs on the dorsal surfaces of head and body, a clearly smaller body size 1.63 mm or less. It was named as *Monomorium dentatum* on the basis of the dentate propodeum.

**KEY WORDS:** *Monomorium*, *dentatum*, New species, Hymenoptera, Formicidae, *fossulatum*-group, Egypt.

**INTRODUCTION**

The ant genus *Monomorium* was created by Mayr in 1855, based on the type species *Monomorium minutum*. This genus is one of the largest genera in the subfamily myrmicinae, including 296 species (Bolton, 1995). It is found in all zoogeographical regions but most species are found in the old world tropics. *Monomorium* can be distinguished from other myrmicine genera by a combination of the following characters: Median portion of clypeus with two distinct longitudinal carinae, the clypeus sometimes concave between the carinae on the anterior margin and projecting as a pair of blunt teeth; Palp formula 1,2 or 2,2; Eyes present; Antennae 11- or 12- segmented with a 3-segmented club; Promesonotal suture absent on dorsum of alitrunk; Mesopropodeal groove impressed; Propodeum unarmed but sometimes denticulate; Petiole pedunculate, the node high and rounded. Most species nesting in rotten wood, under stones or directly into the earth (Bolton, 1973).

Little revisionary works have been carried out on *Monomorium* species. In his genus-level study of the ants related to *Solenopsis* and *Pheidologeton*, Ettershank (1966) tabulated a summary of the all genera and subgenera applied to these groups.

In this study, the author considered *Syllophopsis* Santschi, 1915, in which all species of the *fossulatum*-group were classified, as a valid genus despite he has not seen any material referable to this taxon. In addition, the author presented a list of the five known world species of *Syllophopsis* and synonymize two species. The large Afrotropical fauna of the genus *Monomorium* is fully revised and keyed by Bolton (1987) in a broader study of the *Solenopsis* genus- group. The author listed 145 species in 8 species- groups, 46 of which were described as new and regarded *Syllophopsis* and a straight synonym of *Monomorium* and all members of *Syllophopsis* being no more than the Afrotropical component of the *Monomorium fossulatum* group . More recently, the Australian ants of the genus *Monomorium* were revised by Heterick (2001). The author recognized 59 species, 41 of these were described as a new. Moreover, a key is provided to enable researchers to identify workers of all Australian *Monomorium*.

The Egyptian ants of *Monomorium* Mayr, 1855 have never received a comprehensive taxonomic treatment, therefore, contributions to our knowledge of this genus in Egypt have been slowly brought together in a number of papers by Santschi (1908), Wheeler and Mann (1916), Alfieri (1931), Finzi (1936) and Donisthorpe (1942). The bulk of the previous studies, by such authors, have consisted largely of isolated descriptions of new taxa, seldom pertinent illustrations provided and sometimes very short descriptions and keys and no new species have been described for many years.

Among all the taxonomic treatments of the Egyptian ant fauna, only two revisionary works were carried out. The first was done by Mohammed (1979) in which the author recorded 9 species, 6 subspecies and 4 varieties of *Monomorium*. From that time several taxonomic emendations were taken place to all these taxa. The other most recent revision of the Egyptian ants was achieved by Sharaf (2006) in which twenty *Monomorium* species were recognized, of these *M. exiguum* Forel, 1894 and *M. jizane* Collingwood & Agosti, 1996 were recorded for the first time from Egypt and a new species *Monomorium dentatum* was described which will be given in this paper. All the twelve recorded *Monomorium* species fall into four-species groups, *scabriceps*-group, *salomonis*- group, *monomorium*-group, *destructor*-group and the *fossulatum*-group which is recently added to the previously mentioned species- groups in Egypt and represented by *Monomorium dentatum* sp. nov.

The *Monomorium fossulatum*-group is distinguished from all *M.* species-groups by the following characters: Eyes minute, reduced to a single ommatidium or with two ommatidia at most; mandibles sculptured except for hair pits, smooth and

shining and armed with 4 teeth; PF 2, 2; anterior clypeal margin without a pair of projecting teeth; antennae with 12 segments, terminating in a large 3-segmented club. Propodeum without transverse sculpture dorsally, with the spiracle circular to subcircular; propodeal dorsum meeting declivity in an obtuse angle or weakly denticulate at junction (Bolton, 1987). In the present study, a new species of the genus *Monomorium*, *M. dentatum* sp. nov. which belongs to the *M. fossulatum*-group is described from Egypt.

**Measurements and indices: (According to Bolton, 1987)**

**TL** The total outstretched length of the ant from the mandibular apex to the gastral apex.

**EL** Eye length, the maximum diameter of the eye.

**HL** The length of the straight line from the mid-point of the anterior clypeal margin to the mid-point of the occipital margin, in full-face view.

**HW** The maximum width of the head in full-face view, measured from the eyes.

**PL** Petiole length.

**PW** Petiole width.

**PPL** Postpetiole length.

**PPW** Postpetiole width.

**SL** scape length, excluding basal neck.

**SI** Scape index:=SL X 100 divided HW.

**CI** Cephalic Index = HW X 100 divided HL

All measurements were taken in millimeter.

**DESCRIPTION ( Fig. 1, 2)**

***Monomorium dentatum* Sharaf, sp. nov.**

**Type series. Holotype:** 1 worker, Egypt, Damietta, 20.VIII.2003; N:31.26; E:31.48; Leg. Dr. M. R. Sharaf; **Paratypes:** 17 workers, same series as holotype; 13 workers, Abu-Swelem, El-Minyia, 29.VI.2003; N:28.06; E:30.45; Leg. Dr. M. R. Sharaf; 3 workers, Abuzabal, Qalyubiya; 21.VI.2003; N: 30.03; E: 31.15; Leg. Dr. M. R. Sharaf; 1 workers, Port Said, 26.VIII.2003, N: 31.16; E: 32.18, Leg. Dr. M. R. Sharaf.

**Type depository.** The holotype is deposited in the entomological collection of the Egyptian entomological society, Cairo (EESC), and the paratypes are deposited in the entomological collection of entomology department, Faculty of science, Ain Shams University, Cairo (ASUC) and in the entomological collection of the Ministry of Agriculture, Giza (MAC).

**Type locality:** Egypt-Abu-Swelam, El-Minyia.

**Measurements of Holotype:**

**TL:1.63; HL:0.41; HW:0.34; SL:0.34; SI:100; EL:0.028; PL:0.184; PW:0.113; PPL: 0.127; PPW:0.127; CI: 82.9**

**(Worker)**

Unicolorous yellow, smooth, shining and slightly hairy ant. Monomorphic with very small size variation within the same nest. Head clearly longer than broad, smooth and shining with abundant, minute and scattered hair pits at its dorsum; head sides with dense and relatively long yellow hairs; antennae 12-segmented with a well defined 3-segmented club; antennal scapes with abundant and relatively long hairs; funiculus with very short and dense hairs; frontal carinae very short; antennal club with very dense pubescence; the terminal funicular segment clearly longer than the two proceeding segments together; the 2<sup>nd</sup> to the 8<sup>th</sup> funicular segments clearly wider than long; the area behind the lateral clypeal margins and adjacent to antennal insertions greatly depressed; mandibles armed with 4 teeth, the 3<sup>rd</sup> and the 4<sup>th</sup> teeth not closed to each other; the whole mandibles surface with relatively long and abundant yellow hairs; eyes very tiny with only one ommatidium; occiput raised. Pronotum sides smooth; promesonotum in profile with dorsal outline evenly convex; mesopropodeal groove a sharply defined U-shaped impression; junction of propodeal dorsum and declivity equipped with a pair of minute tubercles or tiny denticles; propodeal spiracles relatively large and rounded; lower part of mesopleuron finely but conspicuously punctulate-sharpeenate; impression between mesopleuron and metapleuron finely cross-ribbed. Pronotum with about 9 pairs of relatively long standing hairs; mesonotum with 3 pairs; propodeal dorsum with 2 pairs of hairs. Petiole clearly pedunculate, with a high rounded node and one pair of long hairs; subpetiolar process simply dentiform. Postpetiole as long as broad, with one or two pairs of hairs. Gaster smooth and shining with abundant scattered and relatively long hairs. Dorsal surfaces of head, alitrunk and gaster unsculptured except for scattered hair-pits.

**Measurements of paratype workers. TL:1.491-1.63 ; HL: 0.39-0.426 ; HW:0.33-0.36 ;SL:0.34-0.35 ;SI: 98.6-101.4 ; EL:0.02; PL:0.184-0.21; PW:0.11-0.12; PPL:0.11-0.127; PPW:0.09-0.127; CI:82.9-92.3 ( 12 specimens measured).**

**Differential Diagnosis.** This new species is a member of the *Monomorium fossulatum*- group as defined by Bolton (1987) and would not key to any species in the afrotropical region. It was found that *Monomorium dentatum* sp. nov. is taxonomically closest to *Monomorium sersalatum* Bolton, 1987 which was described from Rwanda. Both species have the following characters: colour uniformly yellow,

the same value of scape index (SI); the promesonotum in profile with dorsal outline evenly convex, propodeum immediately behind the mesopropodeal groove rising to and acute peak then slopping quite steeply posteriorly to a pair of distinct projecting denticuliform angles which separate dorsum from declivity; propodeum with two pairs of hairs; the head in full-face view with the scapes and sides of the head behind the eyes with erect to suberect pubescence; sides of pronotum smooth; the area between mesopleuron and metapleuron finely cross-ribbed. But *Monomorium dentatum* sp. nov. is separated from *Monomorium sersalatum* Bolton, 1987 by its smaller body size which is 1.63 mm or less and smaller dimensions of all body parts, the mesopropodeal groove is a distinct U-shaped impression ( in *M. sersalatum* the mesopropodea groove a sharply defined V-shaped impression); all dorsal surfaces of head and body with numerous relatively long standing hairs ( in *M. sersalatum* the hairs are shorter); the 2<sup>nd</sup> to the 8<sup>th</sup> funicular segments clearly wider than long ( not mentioned in the description of *M. sersalatum*).

**Derivatio nominis :** This species is named based on the dentate propodeum and this name is proposed by Dr. Cedric A. Collingwood, Skipton, U.K.

**Ecological observations:**

The holotype and specimens of the same series were found nesting under a rock in a small village 3 km before El-Minyia city (Upper Egypt); there were many spring tails and a single unidentified specimen of the genus *Trichoscapa* F. Smith, 1860 living in the same niche.

**Discussion.**

The *Monomorium fossulatum*-group is a small species group which contains seven Afrotropical species which are widely distributed within the region (Bolton, 1987) and two extralimital species, *M. fossulatum* and *M. talpa* which are widespread in the Indo-Australian region and on the islands of the Pacific and Indian Oceans (Wilson & Taylor, 1967). The present new species, *M. dentatum* is collected from different localities in Egypt (Damietta , El-Minyia, Qalyubiya and Port Said) and represents the first record of the *M. fossulatum* from Egypt and the Palaearctic region as a whole. It seems that this species has a more wide distribution inside Egypt due to the presence of the same habitats, from which the species was collected, in many unexplored sites and more definitely it is expected to have a more wide distribution in Nile valley and Delta because most of the collected specimens-except the single specimen collected from Port Said, were collected from sites which are quite convenient to Nile river. In addition, the author expects the presence of this species or at least some additional

members of the *M. fossulatum* group from the adjacent countries like Palestine or Libya.

### ACKNOWLEDGEMENTS

The author is indebted to Dr. Brian Taylor and Dr. Xavier Espadaler for a critical reading of the manuscript. Special thanks to Dr. Cedric A. Collingwood and Dr. Donat Agosti for great help and advice they kindly gave during this work.

### REFERENCES

**Alfieri, A. (1931)**

Contribution à l'étude de la fauna myrmecologique de l'Égypte.  
Bull. Soc. Roy. Ent. Egypte, 15:42-48.

**Bolton, B. (1973)**

The ant genera of West Africa: A synonymic synopsis with keys  
(Hymenoptera: Formicidae). Bull. Brit. Mus. (Nat. Hist.)  
(Ent.) 27:317-368.

**Bolton, B. (1987)**

A review of the *Solenopsis* genus group and revision of  
Afrotropical *Monomorium* (Hymenoptera: Formicidae). Bull. Brit.  
Mus. (Nat. Hist.) (Ent.) 54:263-452.

**Bolton, B. (1995)**

A new general catalogue of the ants of the world. Harvard  
University Press, London, 504 pp.

**Donisthorpe, H. (1942)**

The Formicidae of the Armstrong College expedition to the Siwa  
Oasis. Ann. Mag. Nat. Hist. (11) 9: 26-33.

**Ettershank, G. (1966)**

A generic revision of the world Myrmicinae related to *Solenopsis* and  
*Pheidologeton*. Aust. J. Zool. 14: 73-171.

**Finzi, B. (1936)**

Risultati scientifici della spedizione di S.A.S. il Principe  
Alessandro della Torre e Tasso nell'Egitto e Penisola del Sinai.  
Bull. Soc. Roy. Ent. Egypte 20: 155-210.

**Heterick, B. E. (2001)**

Revision of the Australian ants of the genus *Monomorium* (Hymenoptera:  
Formicidae). Inver.Tax. 15:353-459.

**Mohammed, A. H. (1979)**

Taxonomic studies of family Formicidae (Hymenoptera) in A. R. Egypt. Faculty of Science, Ain Shams University, Entomology Dep. Cairo, Egypt. (unpublished thesis), 288 pp.

**Santschi, F. (1908)**

Nouvelles fourmis de l'Afrique du Nord (Egypte, Canaries, Tunisie). Ann. Soc. Ent. Fr. **77**: 517–534.

**Sharaf, M. R. (2006)**

Taxonomic and Ecological studies on family Formicidae (Order: Hymenoptera) in Egypt including some protectorates with a study of some insect fauna associated with ant species. Faculty of Science, Ain Shams University, Entomology Dep. Cairo, Egypt. (unpublished thesis), 340 pp.

**Wheeler, W. M. & Mann, W. M. (1916)**

The ants of the Phillips expedition to Palestine during 1914. Bull. Mus. Comp. Zool. 60(5): 167–174.

**Wilson, E. O. & Taylor, R. W. (1967)**

The ants of Polynesia. Pac. Ins. Monog. 14:1-109.

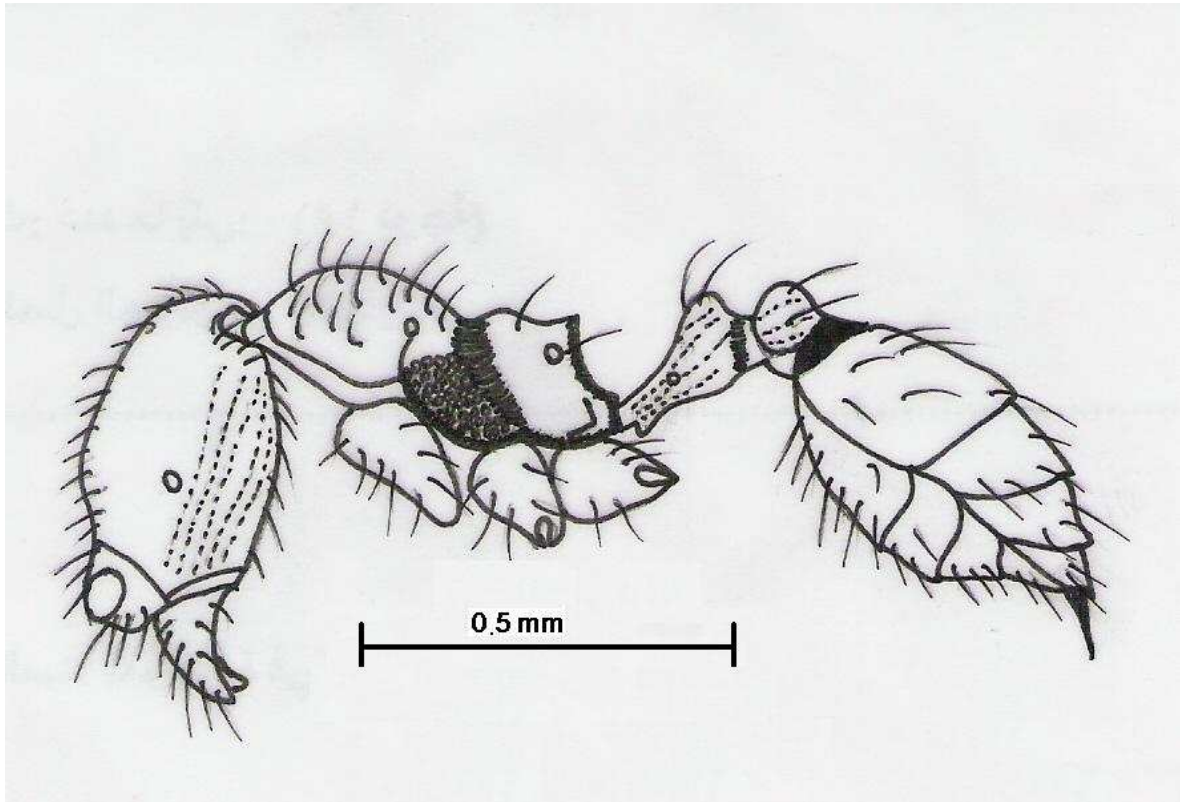


Figure (1) Profile view of body of *Monomorium dentatum* sp. nov.

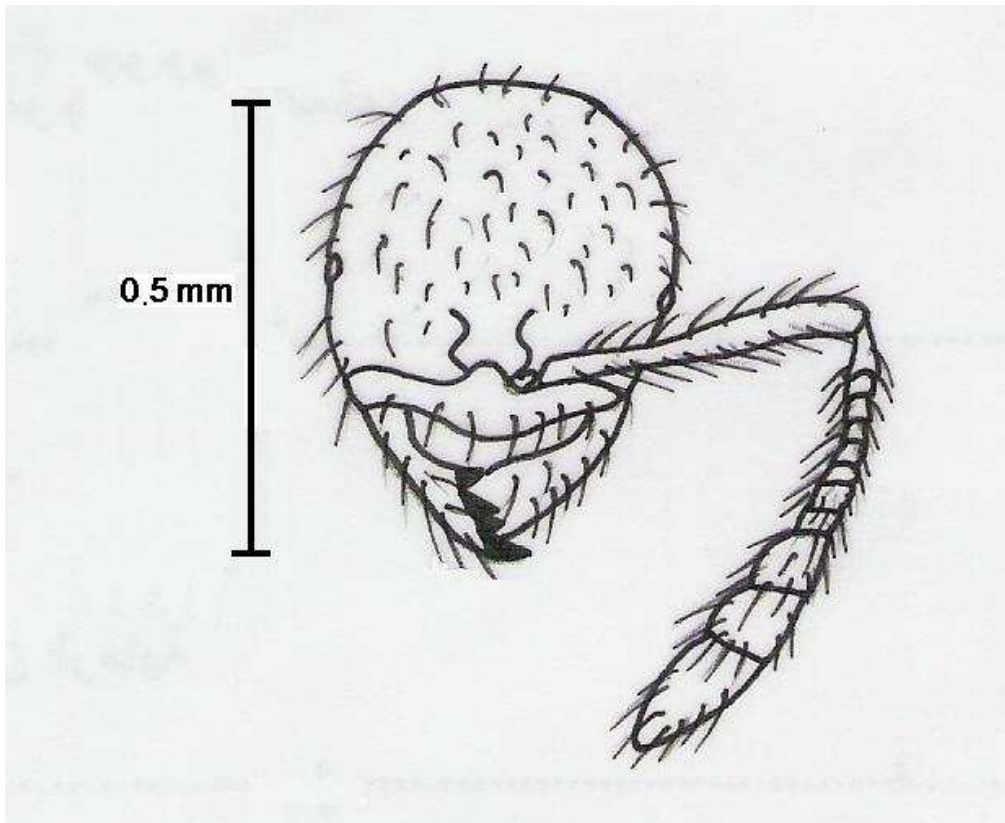


Figure (2) Full-face view of head of *Monomorium dentatum* sp. nov.