To Dr. Donat #21330
Best wishes
Mostafa

Monomorium dentatum sp. n., a new ant species from Egypt (Hymenoptera: Formicidae) related to the *fossulatum*-group

by Mostafa R. Sharaf

Abstract. *Monomorium dentatum* sp. n. is described and illustrated from Egypt, based on the worker caste collected in different parts of the country. It belongs to the *Monomorium fossulatum*-group, with closest resemblance to *M. sersalatum* Bolton and *M. thrascoleptum* Bolton.

Kurzfassung. *Monomorium dentatum* sp. n. wird anhand von Arbeitern, die in verschiedenen Teilen Ägyptens gesammelt wurden, beschrieben und illustriert. Die Art gehört zur *Monomorium fossulatum*-Gruppe und steht *M. sersalatum* Bolton und *M. thrascoleptum* Bolton am nächsten.

Key words. Worker ant, North African fauna, alpha taxonomy.

Introduction

The ant genus *Monomorium* was created by Mayr in 1855, based on the type species *M. minutum* Mayr, 1855 (given the new name *Monomorium monomorium* BOLTON (1987: 287)). It is one of the largest genera in the subfamily Myrmicinae, including 296 species (BOLTON 1995), and is found in all zoogeographic regions with most species occurring in the Old World tropics. Most species nest in rotten wood, under stones, or directly in the earth (BOLTON 1973).

There are few revisionary works on the genus *Monomorium*. In his genus-level study of the ants related to *Solenopsis* and *Pheidologeton*, ETTERSHANK (1966) tabulated a summary of all generic and subgeneric names applied to these groups. He considered *Syllophopsis* Santschi (1915), in which all the species of the *fossulatum*-group were classified, as a valid genus despite not having seen any material referable to that taxon. Additionally, ETTERSHANK presented a list of the five known species of *Syllophopsis* and synonymized two species. The large Afrotropical fauna of the genus *Monomorium* was fully revised and keyed by BOLTON (1987) in a broader study of the *Solenopsis* genus-group. He listed 145 species in 8 species-groups, 46 of which were described as new, and regarded *Syllophopsis* as a synonym of *Monomorium*, with seven species, of which two were new, forming the Afrotropical component of the *Monomorium fossulatum*-group. More recently, the Australian ants of the genus *Monomorium* were revised by HETERICK (2001), who recognized 59 species including 41 newly described.

The Egyptian ants of *Monomorium* Mayr, 1855 have never received a comprehensive taxonomic treatment, and contributions have slowly accumulated in a number of papers, including MAYR (1904), FOREL (1907), SANTSCHI (1908), KARAVAEIV (1911), WHEELER & MANN (1916), MENOZZI (1929), VIEHMEYER (1923), SANTSCHI (1927), ALFIERI (1931),

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FINZI (1936), SANTSCHI (1936), DONISTHORPE (1942) and BOLTON (1987). The bulk of the previous studies by these authors have consisted largely of isolated descriptions of new taxa, seldom provided with relevant illustrations, sometimes with very short descriptions and keys, and no new species have been described for many years. According to the definitions by BOLTON (1987), all thirteen recorded *Monomorium* species fall into four species-groups: *scabriceps*-group, *salomonis*-group, *monomorium*-group, and *destructor*-group.

Despite the number of records of the Egyptian ant fauna, there are only two analytical studies. The first was by MOHAMMED (1979) in which 9 species, 6 subspecies and 4 varieties of *Monomorium* were recorded. Several taxonomic changes have been made since that time. The second and most recent revision of the Egyptian ants was by SHARAF (2006) in which twenty *Monomorium* species were recognized. In this unpublished thesis, *M. exiguum* Forel, *M. jizane* Collingwood & Agosti and an undescribed third species were recorded for the first time from Egypt. This third species is now described as a new species and is named *Monomorium dentatum*. It belongs to the *fossulatum*-group, which is added to the previously mentioned species-groups in Egypt.

The *fossulatum*-group is distinguished from all other *Monomorium* species-groups by the following characters: eyes minute, reduced to a single ommatidium or with two ommatidia at most; mandibles unsculptured except for hair pits, smooth, shining and armed with 4 teeth; palp formula (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 a weakly denticulate junction (BOLTON 1987).

Measurements and indices

Measurements and indices were taken according to BOLTON (1987). TL = Total length: the outstretched length of the ant from the mandibular apex to the gastral apex. – EL = Eye length: the maximum diameter of the eye. – HL = Head length: the maximum length of a straight line from the mid-point of the anterior clypeal margin to the mid-point of the occipital margin, in full-face view. – HW = Head width: the maximum width in full-face view, measured behind the eyes. – PL = Petiole length: the maximum length measured from above, from the anterior margin to the posterior margin of the helcium. – PW = Petiole width: maximum measured width of petiole in dorsal view. – PPL = Postpetiole length: maximum measured length of postpetiole in dorsal view. – PPW = Postpetiole width: maximum measured width of postpetiole in dorsal view. – SL = Scape length, excluding basal neck. – SI = Scape index (SL x 100/HW). – CI = Cephalic Index (HW x 100/HL). – All measurements were taken in millimetres.

The photographic images were taken using a digital camera attached to a stereomicroscope. The microscope was equipped with a Z-Stepper to enable the generation of usually 30 images in different focus layers from which a montage image was computed using AutoMontage Pro.

Monomorium dentatum sp. n. (Figs 1 & 2)

Holotype. Worker, Egypt, Damietta, 20.viii.2003, 31°26'N, 31°48'E, leg. M. R. SHARAF. – Paratypes: 17 workers, same series as holotype, 13 workers, Abu-Swelem, El-Minyia, 29.vi.2003, 28°06'N, 30°45'E, leg. M. R. SHARAF; 3 workers, Abuẓabal, Qalyubiya, 21.vi.2003, 30°03'N, 31°15'E, leg. M. R. SHARAF; 1 worker, Port Said, 26.viii.2003, 31°16'N, 32°18'E, leg. M. R. SHARAF.

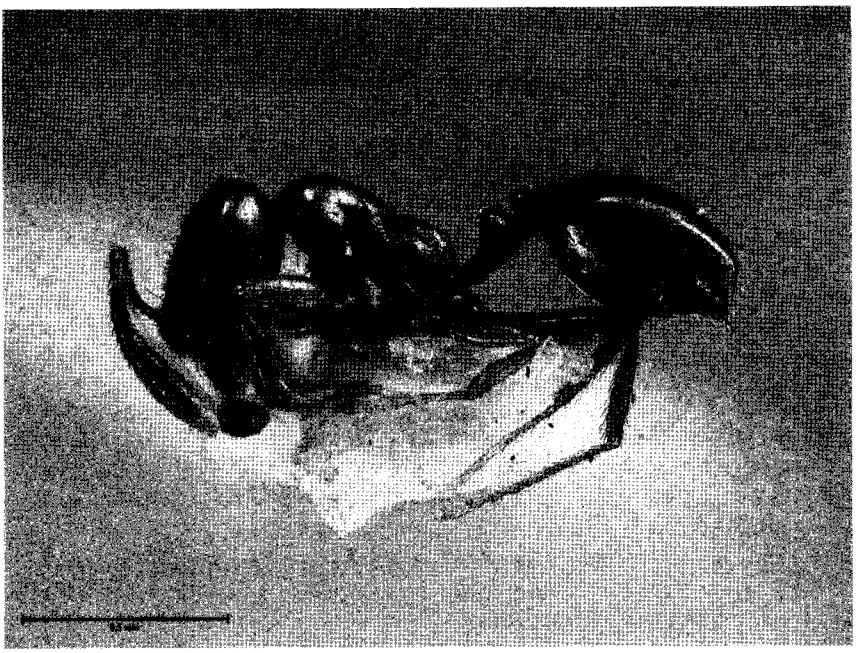

Fig. 1. Profile of *Monomorium dentatum* sp. n.

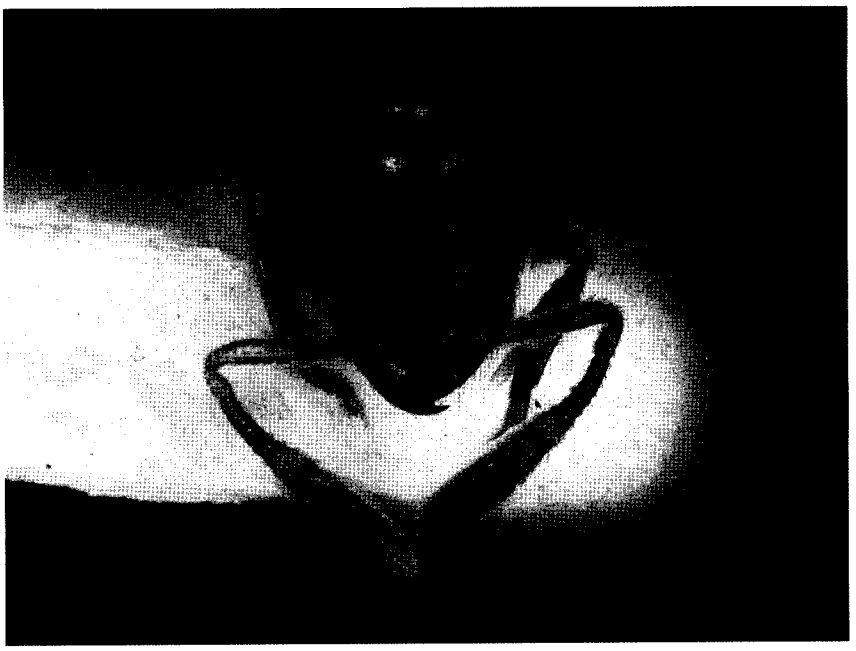

Fig. 2. Full-face view of *Monomorium dentatum* sp. n.

The holotype is deposited in the entomological collection of the Egyptian Entomological Society, Cairo (EESC); paratypes are deposited in the entomological collection of the Entomology Department, Faculty of Science, Ain Shams University, Cairo (ASUC) and in the entomological collection of the Ministry of Agriculture, Giza (MAC).

Measurements of workers [holotype in brackets]. TL 1.49-1.63 [1.63]; HL 0.39-0.43 [0.41]; HW 0.33-0.36 [0.34]; CI 82.9-92.3 [82.9]; SL 0.34-0.35 [0.34]; SI 98.6-101.4 [100]; EL 0.02 [0.028]; PL 0.184-0.210 [0.184]; PW 0.110-0.120 [0.113]; PPL 0.110-0.127 [0.127]; PPW 0.09-0.127 [0.127] (13 specimens measured including the holotype and the same series, Damietta, 20.viii.2003, 31°26'N, 31°48'E).

Worker description. A 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 on the dorsum; sides of head with dense and relatively long yellow hairs. Mandibles armed with 4 teeth, the 3rd and the 4th teeth not close to each other; the whole mandible surface with relatively long and abundant yellow hairs. Frontal carinae very short; the area behind the lateral clypeal margins and adjacent to antennal insertions widely depressed. 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; antennal club with very dense pubescence; the terminal funicular segment clearly longer than the two preceding segments together; the 2nd to 8th funicular segments clearly wider than long. Eyes very tiny with one ommatidium. Occiput raised. Pronotum sides smooth; promesonotum in profile with dorsal outline evenly convex; metanotal groove sharply defined as a U-shaped impression; junction of propodeal dorsum and declivity equipped with a pair of minute tubercles or tiny denticles; propodeal spiracles relatively large and round; lower part of mesopleuron faintly but conspicuously punctulate-shagreenate; impression between mesopleuron and metapleuron faintly cross-ribbed. Pronotum with about 9 pairs of relatively long erect hairs; mesonotum with 3 pairs, propodeal dorsum with 2 pairs of hairs. Petiole 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.

Remarks. This new species is a member of the *Monomorium fossulatum*-group as defined by BOLTON (1987) and cannot be identified with any of the *Monomorium* species in BOLTON'S key to the Afrotropical species. *M. dentatum* appears taxonomically closest to *M. sersalatum* Bolton, 1987, which was described from Rwanda, and *M. thrascoleptum* Bolton, 1987, which was described from Ivory Coast. All three species are uniformly yellow; the promesonotum profile is evenly convex, the propodeum immediately behind the metanotal groove rises to an acute peak then slopes posteriorly to a pair of distinct projecting denticuliform angles at the junction of the dorsum and declivity; the propodeum with two or three pairs of hairs; the scapes and sides of the head behind the eyes have erect to suberect pubescence; sides of pronotum are smooth; and the area between the mesopleuron and metapleuron is faintly cross-ribbed.

M. dentatum may be closer to *M. thrascoleptum*, but is consistently smaller, TL 1-49-1.63 versus TL 1.9-2.2 mm; has a lower scape index, SI<100 versus SI 103-110; and *M. dentatum* also has sculpturation on the mesopleuron, which is smooth in *M. thrascoleptum*. The latter is known only from a single collection from Ivory Coast, West Africa.

Comparing *M. dentatum* with *M. sersalatum*, the scape index is similar but *M. dentatum* is smaller, TL 1.63 mm or less, versus TL 2.0-2.2 mm; the metanotal groove in *M. dentatum* is

distinctly U-shaped whereas in *M. sersalatum* it has a sharply defined V-shape; in *M. sersalatum* the erect hairs on the body are shorter (BOLTON 1987).

The *Monomorium fossulatum*-group contains seven species, widely distributed in tropical Africa (BOLTON 1987) and two species, *M. fossulatum* Emery and *M. australicum* Forel, which are widespread in the Indo-Australian region and on the islands of the Pacific and Indian Oceans (WILSON & TAYLOR 1967).

The new species has been collected from different localities in Egypt (Damietta, El-Minyia, Qalyubiya and Port Said) and represents the first record of the *fossulatum*-group from Egypt and the Palaearctic region. It seems likely that *M. dentatum* sp.n. has a wide distribution inside Egypt especially in the Nile river valley because specimens collected from Damietta, Abu-Swelem (El-Minyia) and Abuzabal (Qalyubiya) are all rather close to the river with the exception of the single specimen collected from Port Said.

Derivatio nominis. The species name is based on the dentate propodeum and was proposed by Cedric A. COLLINGWOOD.

Ecological observations. One type series, including the holotype, was found nesting under a rock in a small village 3 km from El-Minyia city (Upper Egypt); there were many Collembola and a single unidentified specimen of the ant genus *Pyramica (Trichoscapa)* Roger, 1862, living in the same niche.

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