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SPECIES OF *TETRAMORIUM SEMILAEVE* COMPLEX FROM BALKANS AND WESTERN TURKEY, WITH DESCRIPTION OF TWO NEW SPECIES OF (HYMENOPTERA: FORMICIDAE: MYRMICINAE)

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Abstract.— *Tetramorium galaticum* Menozzi, 1936, new status and *Tetramorium hippocratis* Agosti & Collingwood, 1987, members of *Tetramorium semilaeve* complex, are redescribed based on new materials from Greece and western Turkey. Detailed description of gyne and male is given for the first time. Two **new species** of this complex with all castes are described: *Tetramorium kephalosi* (Greece and Croatia) and *Tetramorium bellerophoni* (Turkey). Differential diagnoses from *T. semilaeve*, colour photos of all castes and male genitalia are given.

Key words.— Mediterranean Subregion, Crematogastrini, taxonomy, *Tetramorium semilaeve* complex, new status, new species.

INTRODUCTION

Borowiec *et al*. (2015) redescribed *Tetramorium semilaeve* André, 1883, a species considered to be widely distributed in the Mediterranean Basin. In this paper several infraspecific names of *T. semilaeve* proposed between XIX and XX century, were discussed. Their studies showed that true *Tetramorium semilaeve* is distributed only in the western European part of Mediterranean area. While most records from North Africa and the eastern part of Mediterranean basin apply to other taxa, partially described as infraspecific taxa of various rank. Because species of *T. semilaeve* group have been described based only on workers their status is difficult to explain. It's caused by fact that correct identification and interpretation of species belonging to T. *semilaeve* complex require studies of sexual forms. So far, except *T. semilaeve,* only *T. atlante* Cagniant, 1970 was redescribed in detail (Borowiec *et al*. 2016). *T. depressum* Forel and *T. punctatum* Santschi are also without a doubt assigned to the *T. semilaeve* complex but require precise redescription (Espadaler 1997, Sanetra *et al*. 1999).

In redescription of *Tetramorium semilaeve* authors suggested that populations from eastern and western part of the Mediterranean Basin, recorded under name *T. semilaeve,* represent different taxa (Borowiec *et al*. 2015). Previous revisions of various Mediterranean *Tetramorium* groups showed that centre of diversity of this genus is in Balkans, Turkey, and adjacent areas of the Middle East (Csösz *et al*. 2007, Csösz et Schulz 2010, Csösz *et al*. 2014). Our material from Greece, Turkey and Cyprus showed that approximately 6 morphospecies from *T. semilaeve*

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group can be recognized in this region. Unfortunately, only for four of them we completed full nest samples with all castes. One of these species, distributed in whole Greece and Dalmatian coast of Croatia, is particularly similar to true *T. semilaeve*. Only comparison with type material made a possibility to describe it as a new species under name *Tetramorium kephalosi*. Two other species, with southwestern Turkey range, have worker caste very similar to *T. semilaeve*. Nevertheless, their sexual forms distinctly differ in morphological characters. After study of types of all infraspecific taxa we concluded that one of morphospecies has workers with morphological features that match *T. galaticum* Menozzi, 1936 type specimens. *Tetramorium galaticum* was described under unavailable name *Tetramorium caespitum* st. *biskrensis* var. *galatica* Santschi, 1921 from Angora (= Ankara). Menozzi (1936) recorded this taxon under available trinome *T. semilaeve* var. *galatica* based on material from Dodecanese (Rhodes) and became author of the name. Based on characters given by Menozzi (1936) occurrence of *T. galaticum* on Rhodes is doubtful and suggest presence of other species of *T. semilaeve* complex in this region. Workers of *Tetramorium bellerophoni*, new species occurring in mountains of southwestern Turkey, look very similar to *T. galaticum*. Nevertheless they are easy to separate based on characters of sexual forms. At last, we redescribe *Tetramorium hippocratis* Agosti & Collingwood, 1987. This taxon was described from Aegean Turkey under unavailable name *Tetramorium caespitum semilaeve* var. *hippocratis* Emery, 1921. Agosti et Collingwood (1987) recorded this taxon from European part of Turkey under available binome *Tetramorium hippocratis*. It's the only member of *T. semilaeve* complex for eastern Mediterranean region which can be distinguished based on worker caste.

Species of *Tetramorium semilaeve* complex are difficult in taxonomic practice due to great variability of workers in both measurements and body sculpture. As a rule workers from initial nests are smaller than workers from mature nests and are characterized by mostly reduced head sculpture. Such workers are extremely similar to workers of *Tetramorium punctatum* complex, very speciose group in Balkans, Turkey and the Middle East. Thus, only samples of mature nests with gynes and males guarantee the correct identification of species.

Except taxa described below we have also numerous nest samples from southern Greece and western Turkey with workers but without sexual forms. At first glance, part of these samples look distinct from taxa described in this paper and with great probability some other undescribed taxa occur in this region.

Material and methods

Specimens were compared using standard methods of comparative morphology. Photos were taken using a Nikon SMZ 1500 stereomicroscope, Nikon D5200 photo camera and Helicon Focus software.

All given label data are in their original spelling; a vertical bar (|) separates data on different rows and double vertical bar (||) separates labels.

Abbreviation to collection:

CAS – California Academy of Sciences, San Francisco, California, USA;
DBET – Department of Biodiversity and Evolutionary Taxonomy, University of Wrocław, Poland;
MNHW – Museum of Natural History, University of Wrocław, Wrocław, Poland;
NHMB – Naturhistorisches Museum Basel, Basel, Switzerland;
TU – Biological Department, Trakya University, Edirne, Turkey.

Measurements and indices:

CL – length of head in full-face view, measured in a straight line from the anteriormost point of median clypeal margin to the mid-point of the posterior margin of the head. Concavity of posterior margin reduces CL;
CW – maximum width of head in full-face view, including compound eyes;
CS – cephalic size, calculated from the arithmetic mean of CL and CW. It is used as a less variable indicator of body size. For simplicity CS is used to describe body size;
EH – the minimum diameter of the compound eye;
EL – the maximum diameter of the compound eye;
EYE – eye size index, calculated from the arithmetic mean of EL and EH, divided by CS;
OMD – oculo-malar space. The minimal distance between anterior (lower) margin of the compound eye and the mandibular junction in profile;
FL – the maximum distance between external borders of the frontal lobes;
FR – the minimum width of the frons between the frontal carinae;
ML – the diagonal length of mesosoma measured in lateral view from the anteriormost point of the pronotal slope to the posterior (or postero-ventral) margin of the propodeal lobes;
MW – the maximum width of the pronotum from above;
NOH – the maximum height of the petiolar node;
NOL – the length of the petiolar node;
PEH – the maximum height of the petiole;
PEL – the distance between the posteriormost point of the petiole and the petiolar spiracle;
PEW – the maximum width of the petiole in dorsal view;

POC – postocular distance. Measured from the reference line fitted on the posterior margin of compound eyes to median posterior margin of the head;
PPH – the maximum height of the postpetiole in lateral view;
PPL – the maximum length of the postpetiole in lateral view;
PPW – the maximum width of the postpetiole in dorsal view;
SL – the maximum length of the scape, measured from the proximal point of scape lobe to the distal end of scape;
SPL – the minimal distance between the center of propodeal spiracle and the propodeal declivity;
SPSP – the maximum length of propodeal teeth, measured in lateral view from the tip of spine to the propodeal spiracle;
WAIST – (gyne only), waist index, calculated as (PEW+PPW)/CS.

Scheme of description corresponding with revisions of *Tetramorium chefketi* and *T. ferox* groups (Csösz *et al*. 2007, Csösz et Schulz 2010: see Figs 1–4 on p. 4).

TAXONOMY

Tetramorium galaticum Menozzi, 1936 new status (Figs 1–14)

Tetramorium caespitum st. *biskrensis* var. *galatica* Santschi, 1921: 112 (terra typica: Angora), unavailable name.
Tetramorium semilaeve var. *galatica* Menozzi, 1936: 292.

Material examined. Type material: syntype worker (AntWeb resources: Available from: Photo by Alexandra Westrich / URL: https://www.antweb.org/specimen/CASENT0904820; accessed 13 April 2015): T. caespitum L. | st. galatica | Sant | Angora | (G. de Kerville) | Type || CASENT | 0904820 (NHMB); syntype worker on photo: (AntWeb resources: Available from: Photo by Alexandra Westrich / URL: https://www.antweb.org/specimen/CASENT0915047; accessed 13 April 2015): T. caespitum | st. | galatica Sant | F. Santschi det. 1920 || Angora | Asie Min. | (G. de Kerville) || Type || Sammlung | Dr. F. Santschi | Kairouan || CASENT | 0915047.

Other material examined. 12 gynes, 7 males, 35 workers (5 nests): TURKEY, Antalya Prov. | Göltaria, lake shore | 1019 m 36°47 / 29°57 | 4 VII 2010, L. Borowiec; 19 workers: TURKEY, Antalya Prov. | Beldibi, 10-20 m | 36,73333 N / 30,55 E | 27 VI-6 VII 2010, L. Borowiec (DBET, CAS, TU).

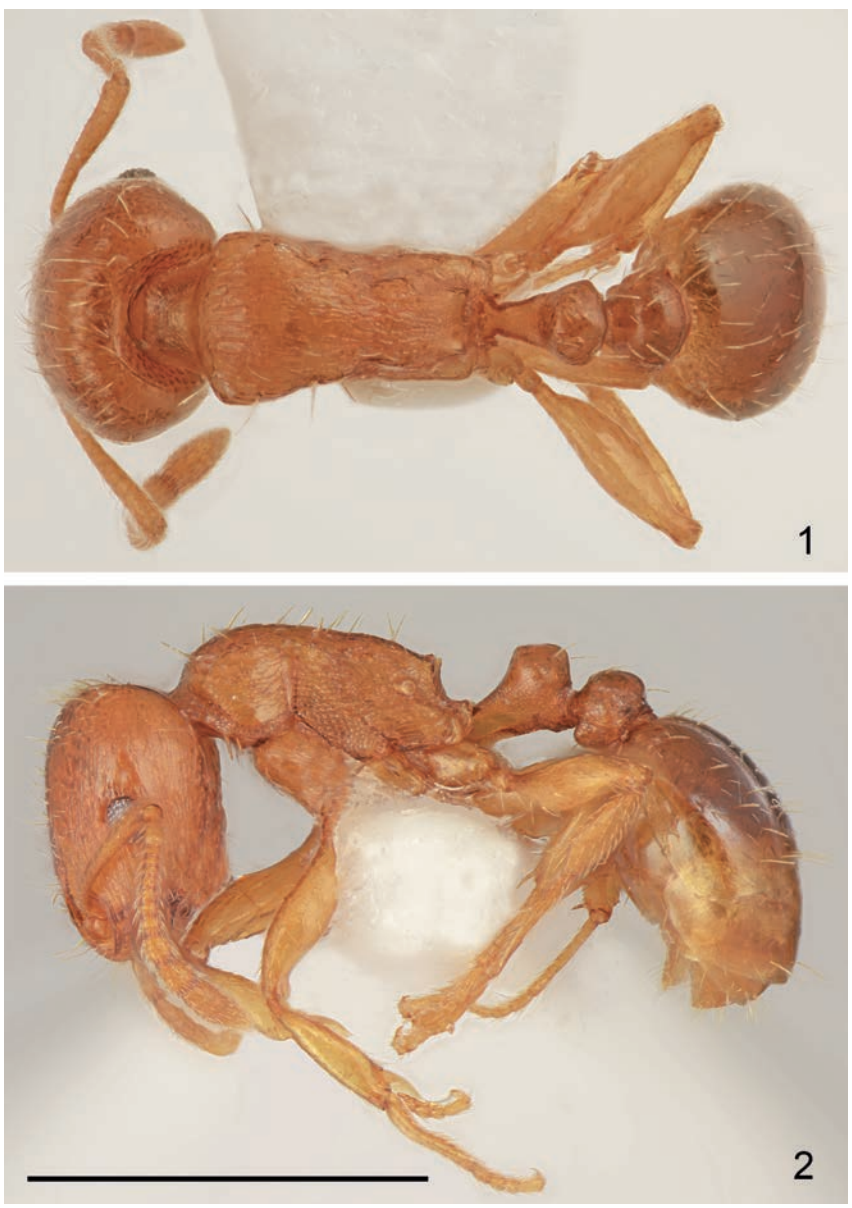
Redescription. **Worker (Figs 1, 2, 5, 6).** Measurements and indices (n=17): CL: 0.717 ± 0.027 (0.648-0.771); POC: 0.286 ± 0.02 (0.257-0.341); CW: 0.682 ± 0.032 (0.603-0.729); FR: 0.252± 0.015 (0.221-0.274); FL: 0.261 ± 0.012 (0.235-0.279); SL: 0.525 ± 0.02 (0.492-0.581); OMD: 0.174 ± 0.011 (0.156-0.201); EL: 0.129 ± 0.01 (0.115-0.145); EH: 0.094 ± 0.007 (0.078-0.106); ML: 0.781 ± 0.037 (0.726-0.86); SPSP: 0.135± 0.01 (0.123-0.162); SPL: 0.1 ± 0.01 (0.089-0.123); PEL: 0.2 ± 0.01 (0.19-0.212); NOL: 0.169 ± 0.012 (0.145-0.19); PPL: 0.186 ± 0.01 (0.168-0.201); PEH: 0.246 ± 0.016 (0.226-0.274); NOH: 0.174 ± 0.014 (0.156-0.201); PPH: 0.248 ± 0.013 (0.223-0.268); MW: 0.442 ± 0.023 (0.402-0.492); PEW: 0.217 ± 0.015 (0.19-0.246); PPW: 0.263 ± 0.013 (0.24-0.285); CS: 0.699 ± 0.03 (0.626-0.75); EYE: 0.16 ± 0.006 (0.148-0.168); CL/CW: 1.051 ± 0.018 (1.025-1.088); FR/CS: 0.363 ± 0.012 (0.348-0.392); FL/FR: 1.034 ± 0.022 (1.0-1.089); SL/CS: 0.752 ± 0.016 (0.725-0.787); MW/CS: 0.634 ± 0.015 (0.611-0.662); PEW/PPW: 0.824 ± 0.044 (0.764-0.931); NOH/NOL: 1.029 ± 0.062 (0.936-1.131); NOH/PEL: 0.869 ± 0.069 (0.764-1.0); NOL/PEL: 0.843 ± 0.047 (0.763-0.926); PEH/NOL: 1.447 ± 0.074 (1.358-1.621); PEW/PEH: 0.886 ± 0.035 (0.841-0.94); CS/PEW: 3.2 ± 0.139 (2.945-3.492); CS/PPW: 2.658 ± 0.115 (2.511-2.998; CW/MW: 1.577 ± 0.038 (1.51-1.637).

Small to medium size, CS 0.699 [0.626, 0.75]. In most specimens whole body yellow, the darkest specimens pale yellowish-brown but never dark brown or black, appendages yellow. Head slightly longer than wide CL/CW 1.051 [1.025, 1.088], with almost parallel sides, slightly concave occipital margin and rounded occipital corners. Eyes small, EYE 0.16 [0.148, 0.168]. Frons moderately wide, FR/CS 0.363 [0.348, 0.392], frontal lobes as wide as frons, FL/FR 1.034 [1.0, 1.089]. Scape short, SL/CS 0.752 [0.725, 0.787], without dorsal carina basally, surface smooth and shiny. Promesonotal dorsum slightly convex, metanotal groove very shallow, sometimes indistinct. Propodeal teeth short, triangular, apex of spine located approximately at $^{2}/_{3}$ height of mesosoma (Fig. 2). Dorsal surface of petiole flat to slightly convex, NOH/NOL 1.029 [0.936, 1.131], petiole moderately high, PEH/NOL 1.447 [1.358, 1.621], postpetiole distinctly transverse. General appearance finely rugose, ground surface shiny. Head dorsum partly longitudinally rugose and shiny between rugae, rugae extend occipital margin of head, occiput laterally mostly smooth and shiny, sides in anterior half longitudinally rugose and shiny between rugae. In most specimens between frontal rugose area and rugosities along ocular area on each side runs longitudinal stripe without rugosities (Fig. 5) but smooth area never exceeds $^{1}/_{5}$ of the anterior surface of head; in extremely sculptured specimens almost whole frontal surface of head with long rugae with very small smooth patch, in extremely fine sculptured specimens only frons with rugae, ocular area, top of head and postocular area smooth and shiny (Fig. 6), the level of development of sculpture is correlated with size and coloration of workers, small and paler coloured specimens usually have less

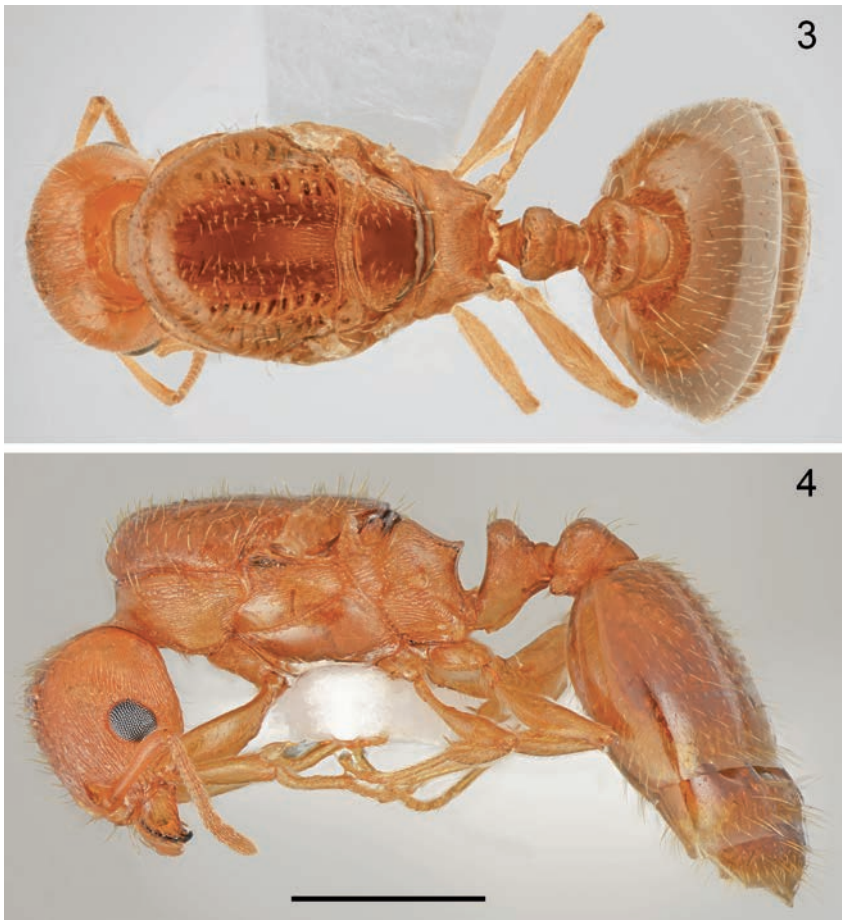
developed sculpture than large and darker coloured specimens. Alitrunk dorsum longitudinally rugose and microreticulate but never reticulate, also specimens with reduced head sculpture have complete rugae along pronotum (Fig. 1). Sides of pronotum and meso- and metapleuron usually coarsely microreticulate, sometimes reticulation tends to form transverse lines but surface never appears striate or rugose, pronotum close to ventral margin with small, convex, shiny patch (Fig. 2). Dorsum of petiolar node smooth and shiny with sides carinate, lateral surface microreticulate. Dorsum of postpetiole smooth and shiny, sides microreticulate. First gastral tergite smooth and shiny. Whole dorsum, including head, covered with sparse setae, the longest on pronotum and the shortest on frons. Ventral surface of head with sparse short and 2–3 moderately long setae not forming a psammophore.

Gyne (Figs 3, 4, 7). Measurements and indices (n=7): CL: 1.164 ± 0.023 (1.117-1.187); POC: 0.426 ± 0.024 (0.387-0.46); CW: 1.27 ± 0.025 (1.239-1.309); FR: 0.457 ± 0.014 (0.436-0.483); FL: 0.454 ± 0.013 (0.43-0.471); SL: 0.824 ± 0.03 (0.76-0.854); OMD: 0.279 ± 0.017 (0.257-0.313); EL: 0.297 ± 0.019 (0.274-0.335); EH: 0.231 ± 0.012 (0.212-0.246); ML: 2.127 ± 0.06 (2.043-2.23); SPSP: 0.349 ± 0.02 (0.324-0.391); SPL: 0.212 ± 0.011 (0.201-0.232); PEL: 0.352 ± 0.017 (0.335-0.38); NOL: 0.274 ± 0.011 (0.257-0.291); PPL: 0.367 ± 0.031 (0.313-0.402); PEH: 0.509 ± 0.018 (0.492-0.536); NOH: 0.341 ± 0.018 (0.313-0.357); PPH: 0.538 ± 0.025 (0.503-0.569); MW: 1.366 ± 0.032 (1.324-1.424); PEW: 0.461 ± 0.012 (0.446-0.482); PPW: 0.646 ± 0.012 (0.62-0.659); CS: 1.217 ± 0.023 (1.178-1.248); EYE: 0.217 ± 0.012 (0.202-0.232); CL/CW: 0.916 ± 0.009 (0.902-0.931); FR/CS: 0.375 ± 0.007 (0.368-0.387); FL/FR: 1.01 ± 0.01 (1.0-1.03); SL/CS: 0.677 ± 0.022 (0.635-0.707); MW/CS: 1.123 ± 0.017 (1.098-1.149); PEW/PPW: 0.715 ± 0.026 (0.678-0.748); NOH/NOL: 1.261 ± 0.084 (1.168-1.389); NOH/PEL: 0.957 ± 0.037 (0.905-1.0); NOL/PEL: 0.783 ± 0.065 (0.676-0.869); PEH/NOL: 1.882 ± 0.061 (1.776-1.921); PEW/PEH: 0.915 ± 0.021 (0.884-0.938); CS/PEW: 2.64 ± 0.095 (2.482-2.779); CS/PPW: 1.88 ± 0.031 (1.827-1.929); CW/MW: 0.891 ± 0.013 (0.87-0.911); WAIST: 0.913 ± 0.02 (0.89-0.95).

Moderate size, CS 1.217 [1.178, 1.248]. Whole body yellow to yellowish-brown, in fully coloured specimens scutum along middle with two yellow stripes and scutellum with dark spot in the middle, appendages yellowish. Head wider than long, CL/CW 0.916 [0.902, 0.931], with straight subparallel sides, shallowly emarginate occipital margin and rounded occipital corners. Frons moderately wide, FR/CS 0.375 [0.368, 0.387], frontal lobes as wide as frons, FL/FR 1.01 [1.0, 1.03]. Scape short, SL/CS 0.677 [0.635, 0.707], without dorsal carina basally, smooth and shiny. Head slightly narrower than scutum, MW/CS 1.123 [1.098, 1.149]. Propodeal teeth short, triangular (Fig. 3). Dorsal crest of petiolar node



Figures 1–2. *Tetramorium galaticum* Menozzi, worker: (1) dorsal, (2) lateral (scale bar = 1 mm).

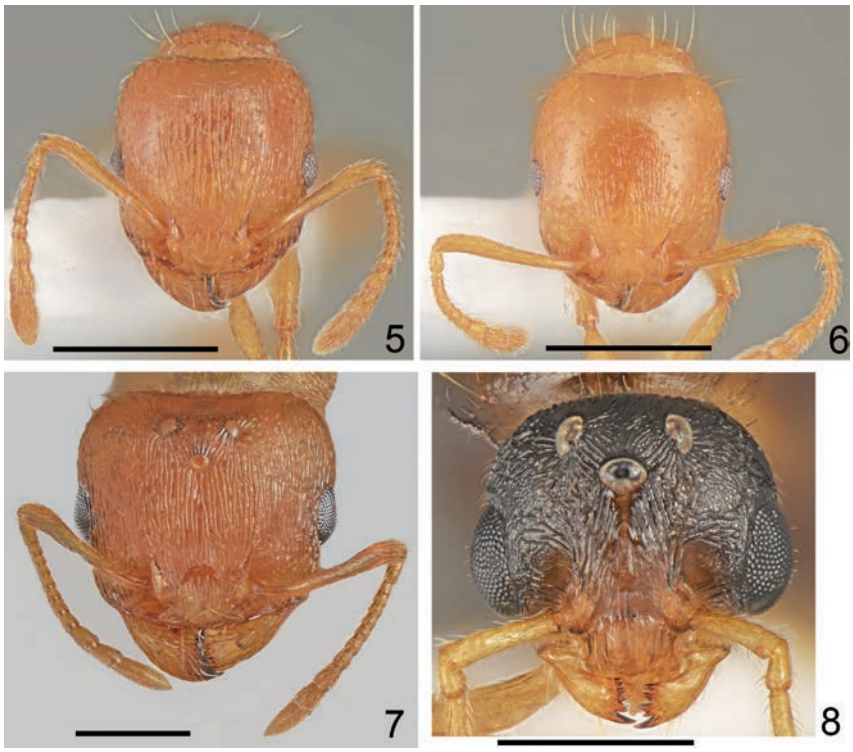


Figures 3–4. *Tetramorium galaticum* Menozzi, gyne: (3) dorsal, (4) lateral (scale bar = 1 mm).

in frontal view shallowly emarginate. Petiolar node dorsum steeply rounded backward. Petiole and postpetiole relatively narrow, but postpetiole distinctly transverse, WAIST 0.913 [0.89, 0.95]. General appearance smooth and shiny. Head dorsum, occiput and sides rugulose, ground surface indistinctly microreticulate but shiny. Frons longitudinally rugulose (Fig. 7). Mesosoma flat, sides of pronotum visible from above. Scutum and scutellum punctate along sides, in less sculptured specimens smooth and shiny with diffused microreticulation, in more sculptured specimens scutellum in corners with very short rugae and scutum in basal part with thin longitudinal rugae never extending to half length of scutum (Fig. 3), in extreme basal $^1/_3$ length of scutum finely striate. Sides of pronotum microreticulate with tendency to form fine longitudinal striation, anepisternum in basal half smooth and shiny in dorsal half with fine longitudinal rugae, katepisternum mostly smooth and shiny only along posterior margin microreticulate and obliquely striate. Whole surface of petiolar node distinctly reticulate. Postpetiole distinctly transverse 1.6-1.7 as wide as long, sides narrowly rounded to subangulate (Fig. 3), dorsum of postpetiole smooth to microreticulate, sides granulate. First gastral tergite smooth and shiny. Whole dorsum, including head, covered with short, sparse setae. Ventral surface of head with several short setae, as long as to 1.5 times longer than frontal setae, arising posteriorly to buccal cavity.

Male (Figs 8–14). Measurements and indices (n=3): CL: 0.723 ± 0.009 (0.715-0.732); POC: 0.289 ± 0.018 (0.268-.302); CW: 0.853 ± 0.039 (0.824-0.897); FR: 0.27 ± 0.008 (0.263-0.279); FL: 0.305 ± 0.009 (0.296-0.313); SL: 0.342 ± 0.006 (0.335-0.346); OMD: 0.069 ± 0.012 (0.056-0.078); EL: 0.339 ± 0.018 (0.318-0.352); EH: 0.259 ± 0.009 (0.251-0.268); ML: 2.017 ± 0.026 (1.989-2.04); SPSP: 0.259 ± 0.021 (0.235-0.273); SPL: 0.251 ± 0.026 (0.223-0.274); PEL: 0.346 ± 0.019 (0.324-0.358); NOL: 0.257 ± 0.019 (0.235-0.268); PPL: 0.345 ± 0.017 (0.33-0.363); PEH: 0.322 ± 0.026 (0.302-0.352); NOH: 0.193 ± 0.028 (0.167-0.223); PPH: 0.459 ± 0.024 (0.435-0.483); MW: 1.234 ± 0.08 (1.179-1.324); PEW: 0.372 ± 0.042 (0.324-0.402); PPW: 0.537 ± 0.032 (0.514-0.559); CS: 0.788 ± 0.024 (0.77-0.815); EYE: 0.379 ± 0.009 (0.37-0.387); CL/CW: 0.848 ± 0.028 (0.816-0.868); FR/CS: 0.343 ± 0.005 (0.337-0.348); FL/FR: 1.132 ± 0.051 (1.1-1.19); SL/CS: 0.435 ± 0.013 (0.425-0.45); MW/CS: 1.566 ± 0.052 (1.532-1.626); PEW/PPW: 0.74 ± 0.029 (0.719-0.761); NOH/NOL: 0.751 ± 0.071 (0.709-0.832); NOH/PEL: 0.557 ± 0.058 (0.515-0.623); NOL/PEL: 0.741 ± 0.014 (0.725-0.751); PEH/NOL: 1.255 ± 0.077 (1.168-1.313); PEW/PEH: 1.155 ± 0.089 (1.073-1.249); CS/PEW: 2.132 ± 0.211 (1.994-2.375); CS/PPW: 1.487 ± 0.042 (1.457-1.516); CW/MW: 0.639 ± 0.021 (0.615-0.653).

Whole body dark brown, appendages yellowish (Figs 9, 10). Head with convex sides, slightly rounded occipital margin and widely rounded occipital corners. Scutum distinctly wider than head. Propodeum rounded in profile or with only indistinct angulation in position of propodeal teeth. Dorsal crest of petiolar node with obtuse transversal edge, slightly emarginated in frontal view. Head distinctly sculptured, with radial rugosities around ocelli, circular rugosities around antennal scapi and oblique rugosities on frons, dull. Area between eye and ocelli partly without distinct rugosities only with dull microsculpture. Clypeus on sides with few parallel rugosities, sometimes inner



Figures 5–8. *Tetramorium galaticum* Menozzi, head: (5) typical worker, (6) fine sculptured worker, (7) gyne, (8) male (scale bar = 0.5 mm).

ridges partly converging but never circular, central part of clypeus shiny. Frons partly smooth and shiny (Fig. 8). Scutum in anterior part and laterally smooth and shiny, behind Mayrian furrows with more or less developed longitudinally striate stripe. Scutellum mostly smooth and shiny, in some specimens with very fine transverse and oblique striation. Sides of pronotum microreticulate and finely striate. Anepisternum from almost whole smooth and shiny to striate along upper margin, in extreme case posterior half striate, katepisternum mostly smooth and shiny only along upper margin and in posterior corner microreticulate, propodeum microreticulate with longitudinal rugosities, dull. Dorsum of petiolar node microgranulate and microreticulate, dull, postpetiole mostly microreticulate only top partly smooth and shiny. First gastral tergite smooth and shiny. Male genitalia stout (Figs 11-14), in lateral view only slightly constricted before apex with obtuse inner angle (Fig. 13), top moderately long and dense pubescent, dorsal margins of parameres shallowly incised, ventral margins deeply incised before apical hook, top of inner margin of paramere before apical denticle straight, without dentiform plate or lamella extending beyond the sharp edge of paramere (Fig. 14).

Biological notes. Ants were collected in dry and sunny habitats from sea coast up to 1100 m. Nests were located at roadsides, pastures, lake shores, scrubs, luminous pine forests. In one nest 1-7 gynes were collected. The following ant species were recorded in the same area with *T. galaticum*:

Turkey, Lake Göltaria: *Aphaenogaster sporadis* Santschi, *Cataglyphis aenescens* (Nylander), *Cataglyphis* sp., *Crematogaster ionia* Forel, *Messor* cf. *structor*, *Plagiolepis pallescens* sensu Radchenko, *Tapinoma* sp., *Tetramorium* cf. *caespitum*, and *Tetramorium chefketi* (Forel).

Turkey, ancient Termessos: *Aphaenogaster festae* Emery, *Aphaenogaster sporadis* Santschi, *Camponotus aethiops* (Latreille), *Camponotus boghossiani* Forel, *Camponotus lateralis* (Olivier), *Camponotus samius* Forel, *Cataglyphis* sp., *Crematogaster gullukdagensis* Salata & Borowiec, *Crematogaster ionia* Forel, *Lasius lasioides* (Emery), *Messor* cf. *structor*, *Pheidole pallidula* (Nylander), *Tetramorium anatolicum* Csösz & Schulz, and *Tetramorium* cf. *semilaeve* (but not conspecific with *T. galaticum*).

Differential diagnosis. *Tetramorium galaticum* in all castes is extremely similar to other species of *T. semilaeve* complex and the best distinguishing character is structure of sexual forms. However, on a nest series the following differences are to perceive (worker characters for *T. galaticum* in parentheses):

Workers of *T. semilaeve* differ in occipital margin of head straight or very shallowly concave (always more or less concave) and usually slightly longer and more spiniform propodeal spines (shorter and triangular), workers of *T. atlante* differ in darker coloured, yellowish-brown to brown body (usually yellow to pale yellowish-brown) and distinctly longer spiniform propodeal spines (shorter and triangular), workers of *T. depressum* Forel and *T. punctatum* Santschi distinctly differ in reduced sculpture of head with at least half frontal surface smooth and shiny, often with whole frons smooth and shiny (frons usually with complete longitudinal rugae). Workers of *T. bellerophoni* n. sp. differ in more distinctly striate head, especially with distinct striation in postocular area (postocular area mostly smooth and shiny) and more spiniform propodeal spines (shorter and triangular). Workers of *T. kephalosi* n. sp. differ in darker coloured, yellowish-brown to brown body (usually yellow to pale yellowish-brown) and workers of *T. hippocratis* differ in

Figures 9–10. *Tetramorium galaticum* Menozzi, male: (9) dorsal, (10) lateral (scale bar = 1 mm).

dark brown to black body (usually yellow to pale yellowish-brown).

Gynes of *T. galaticum* distinctly differ from all species of *T. semilaeve* complex except *T. bellerophoni* in large body with lenght ML above 2.0 (below 2.0 in other species) and MW above 1.3 (blow 1.25 in other species). Gynes of *T. atlante*, and *T. hippocratis* differ also in brown to black body (yellow in *T. galaticum*) and scutum mostly striate (mostly smooth in *T. galaticum*), gynes of *T. punctatum* group differ in very broad postpetiolus, more than 1.8 times as wide as long (1.6-1.7 times as wide as long in *T. galaticum*) and gynes of *T. kephalosi* differ in brown body (yellow in *T. galaticum*) and slimmer mesosoma with ML/MW ratio approximately 1.70 (1.56. in *T. galaticum*). The most similar are gynes of *T. bellerophoni* with similar large and stout body but differ in scutum and scutellum without striation.

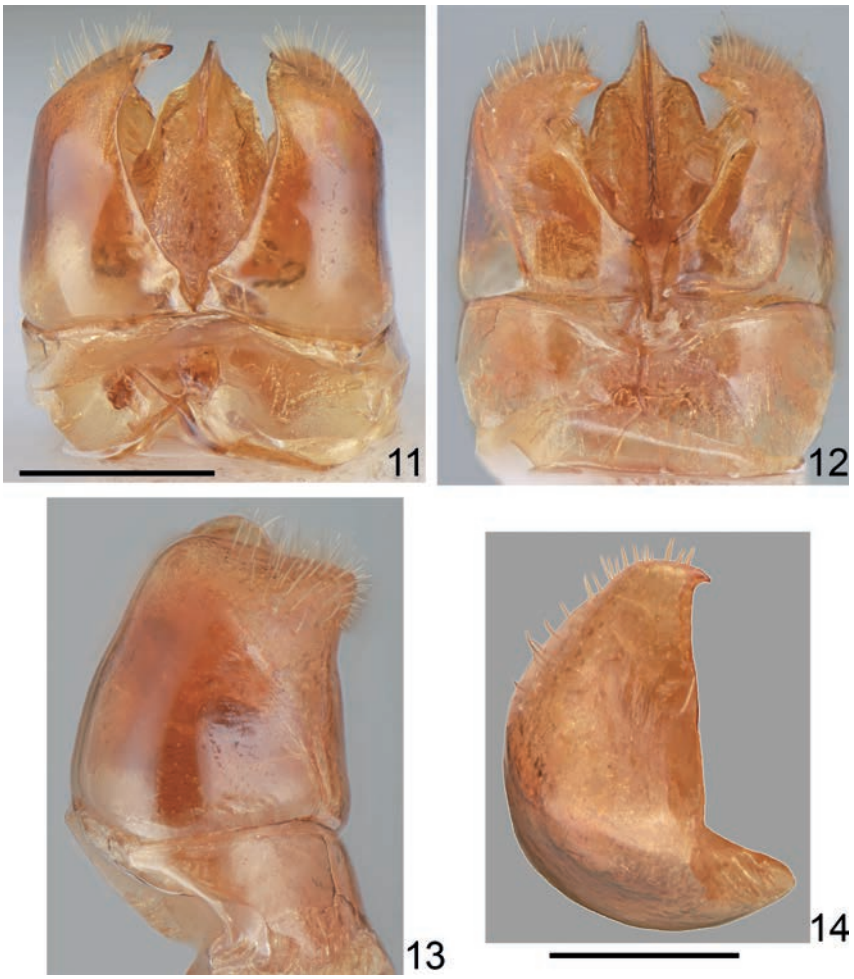
Males of *T semilaeve* differ in broad striate area at base of scutum (absent or narrow) and top of inner margin of paramere with dentiform plate extending beyond the sharp edge of paramere (without plate).

Males of *T. atlante* distinctly differ from males of *T. galaticum* in head behind eyes trapezoidal (rounded), scutum between sutures mostly striate and microreticulate (smooth and shiny), scutellum at whole base microreticulate and striate (completely smooth and shiny or in basal corners with fine sculpture), propodeum slightly angulate (round), katepisternum in both upper corners with broad microreticulate and striate area (narrow sculptured areas), and male genitalia in lateral view distinctly constricted before apex (shallowly constricted). Male of *T. bellerophoni* distinctly differs in smaller head (CL 0.679-0.715 vs. 0.715-0.732), clypeus with circular rugae (parallel in *T. galaticum*) and petiole smaller in relation to postpetiole (PEW/PPW 0.619-0.695 vs. 0.719-0.761).

Tetramorium bellerophoni sp. nov.
(Figs 15–27, 47)

Etymology. Named after Bellerophon (Greek: Βελλεροφων), a hero of Greek mythology and mythical founder of the ancient city Termessos, locus typicus for this new species.

Material examined. Type material: holotype worker: Turkey, Antalya Prov. | ancient Termessos | 1018 m, 36°58/30°27 | 3 VII 2010, L. Borowiec (MNHW no. 1224); paratype gyne: the same data (MNHW no. 1224a); 9 paratype workers, 5 paratype gynes, 3 paratype males: the same data (CAS, DBET, MNHW, TU).



Figures 11–14. *Tetramorium galaticum* Menozzi, male genitalia: (11) dorsal, (12) ventral, (13) lateral, (14) apical (scale bar 11–13 = 0.5 mm, 14 = 0.25 mm).

***Description*. Worker (Figs 15–18).** Measurements and indices (n=15): CL: 0.772 ± 0.034 (0.693-0.816); POC: 0.292 ± 0.018 (0.257-.324); CW: 0.745 ± 0.038 (0.659-0.793); FR: 0.281± 0.018 (0.235-0.302); FL: 0.286 ± 0.017 (0.251-0.313); SL: 0.561 ± 0.025 (0.503-0.589); OMD: 0.192 ± 0.01 (0.179-0.212); EL: 0.146 ± 0.01 (0.123-0.156); EH: 0.111 ± 0.007 (0.101-0.123); ML: 0.852 ± 0.044 (0.76-0.911); SPSP: 0.168± 0.013 (0.148-0.201); SPL: 0.111 ± 0.007 (0.101-0.123); PEL: 0.227 ± 0.014 (0.204-0.246); NOL: 0.182 ± 0.016 (0.156-0.212); PPL: 0.204 ± 0.016 (0.17-0.223); PEH: 0.263 ± 0.015 (0.243-0.291); NOH: 0.194 ± 0.012 (0.168-0.212); PPH: 0.268 ± 0.011 (0.249-0.282); MW: 0.488 ± 0.029 (0.425-0.536); PEW: 0.238 ± 0.017 (0.201-0.268); PPW: 0.287 ± 0.018 (0.26-0.313); CS: 0.759 ± 0.035 (0.676-0.804); EYE: 0.169 ± 0.007 (0.155-0.183); CL/CW: 1.037 ± 0.015 (1.0-1.077); FR/CS: 0.37 ± 0.012 (0.348-0.392); FL/FR: 1.015 ± 0.026 (0.964-1.076); SL/CS: 0.738 ± 0.014 (0.705-0.757); MW/CS: 0.643 ± 0.017 (0.603-0.676); PEW/PPW: 0.829 ± 0.047 (0.773-0.977); NOH/NOL: 1.045 ± 0.081 (0.884-1.218); NOH/PEL: 0.838 ± 0.061 (0.7-0.918); NOL/PEL: 0.801 ± 0.041 (0.753-0.862); PEH/NOL: 1.422 ± 0.102 (1.295-1.558); PEW/PEH: 0.924 ± 0.054 (0.845-1.0); CS/PEW: 3.192 ± 0.155 (2.893-3.565); CS/PPW: 2.642 ± 0.098 (2.504-2.827; CW/MW: 1.557 ± 0.041 (1.479-1.659).

Small to medium size, CS 0.759 [0.676-804]. Head, mesosoma, petiole and postpetiole yellow, the darkest specimens yellowish-ochraceous but never dark brown or black, gaster yellowish-brown with paler basal third, appendages yellow. Head approximately as long as wide CL/CW 1.037 [1.0-1.077], with almost parallel sides, slightly concave occipital margin and rounded occipital corners. Eyes small, EYE 0.169 [0.155-0.183]. Frons moderately wide, FR/CS 0.37 [0.348-0.392], frontal lobes as wide as frons, FL/FR 1.015 [0.964-1.076]. Scape short, SL/CS 0.738 [0.705-0.757], without dorsal carina basally, surface smooth and shiny. Promesonotal dorsum slightly convex, metanotal groove very shallow, sometimes indistinct. Propodeal teeth short to moderately long, triangular to spiniform, apex of spine located approximately at $^{2}/_{3}$ height of mesosoma. Dorsal surface of petiole flat to slightly convex, NOH/NOL 1.045 [0.884-1.218], petiole relatively high, PEH/NOL 1.422 [1.295-1.558], postpetiole distinctly transverse, approximately 1.5 times as wide as long. General appearance distinctly rugose, ground surface shiny. Head dorsum almost completely longitudinally rugose, microreticulate but shiny between rugae, rugae extend occipital margin of head, occiput with complete rugae, sides in anterior half longitudinally rugose and shiny between rugae. In all specimens between frontal rugose area and rugosities along ocular area on each side small area with diffused rugosities (Figs 17, 18) but smooth area never exceeds $^{1}/_{8}$ of the anterior surface of head and never completely smooth. Alitrunk dorsum longitudinally rugose and microreticulate but never reticulate, top of alitrunk occasionally with very small shiny area without rugosities (Fig. 15). Sides of pronotum and meso- and metapleuron usually coarsely microreticulate, reticulation tends to form transverse lines but surface never appears distinctly striate or rugose, pronotum close to

Figures 15–16. *Tetramorium bellerophoni* sp. nov., worker: (15) dorsal, (16) lateral (scale bar = 1 mm).

ventral margin without or with very small, shiny patch (Figs 16). Dorsum of petiolar node smooth and shiny with sides carinate, lateral surface microreticulate. Dorsum of postpetiole smooth and shiny, sides microreticulate. First gastral tergite smooth and shiny. Whole dorsum, including head, covered with sparse setae, the longest on pronotum and the shortest on frons. Ventral surface of head with sparse short and 3-5 moderately long setae not forming a psammophore.

Gyne (Figs 19–21). Measurements and indices (n=5): CL: 1.182 ± 0.019 (1.151-1.206); POC: 0.421 ± 0.037 (0.355-0.465); CW: 1.274 ± 0.05 (1.201-1.237); FR: 0.468 ± 0.019 (0.439-0.489); FL: 0.44 ± 0.043 (0.358-0.478); SL: 0.804 ± 0.025 (0.771-0.739); OMD: 0.262 ± 0.009 (0.246-0.268); EL: 0.306 ± 0.01 (0.291-0.318); EH: 0.248 ± 0.007 (0.237-0.254); ML: 2.124 ± 0.05 (2.033-2.184); SPSP: 0.375 ± 0.017 (0.352-0.405); SPL: 0.233 ± 0.011 (0.218-0.246); PEL: 0.389 ± 0.022 (0.358-0.419); NOL: 0.287 ± 0.018 (0.273-0.318); PPL: 0.357 ± 0.014 (0.346-0.38); PEH: 0.508 ± 0.006 (0.502-0.514); NOH: 0.355 ± 0.01 (0.346-0.369); PPH: 0.534 ± 0.007 (0.525-0.542); MW: 1.351 ± 0.019 (1.324-1.367); PEW: 0.468 ± 0.007 (0.46-0.478); PPW: 0.635 ± 0.011 (0.618-0.651); CS: 1.226 ± 0.035 (1.176-1.267); EYE: 0.221 ± 0.007 (0.213-0.229); CL/CW: 0.926 ± 0.024 (0.898-0.958); FR/CS: 0.383 ± 0.006 (0.373-0.391); FL/FR: 1.079 ± 0.1 (1.015-1.285); SL/CS: 0.649 ± 0.014 (0.636-0.67); MW/CS: 1.1 ± 0.047 (1.045-1.162); PEW/PPW: 0.738 ± 0.019 (0.708-0.758); NOH/NOL: 1.241 ± 0.097 (1.088-1.352); NOH/PEL: 0.916 ± 0.075 (0.826-1.031); NOL/PEL: 0.739 ± 0.022 (0.714-0.763); PEH/NOL: 1.775 ± 0.093 (1.616-1.842); PEW/PEH: 0.922 ± 0.02 (0.897-0.952); CS/PEW: 2.619 ± 0.095 (2.46-2.711); CS/PPW: 1.919 ± 0.04 (1.864-1.979); CW/MW: 0.911 ± 0.039 (0.860-0.957); WAIST: 0.903 ± 0.024 (0.880-0.943)

Moderate size, CS 1.226 [1.176-1.267]. Whole body yellow to yellowish-brown, scutum without pattern, appendages yellowish (Figs 20, 21). Head wider than long, CL/CW 0.926 [0.898-0.958], with straight subparallel sides, shallowly emarginate occipital margin and rounded occipital corners. Frons moderately wide, FR/CS 0.383 [0.373-0.391], frontal lobes approximately as wide as frons, FL/FR 1.079 [1.015-1.285]. Scape short, SL/CS 0.649 [0.636-0.67], without dorsal carina basally, smooth and shiny. Head as wide as scutum, MW/CS 1.1 [1.045-1.162]. Propodeal teeth short, triangular. Dorsal crest of petiolar node in frontal view straight to slightly rounded. Petiolar node dorsum steeply rounded backward. Petiole and postpetiole relatively narrow, postpetiole distinctly transverse, almost twice wider than long, WAIST 0.903 [0.880-0.943]. General appearance smooth and shiny. Head dorsum, occiput and sides completely rugulose, ground surface indistinctly microreticulate but shiny. Frons longitudinally rugulose (Fig. 19). Mesosoma flat, sides of pronotum visible from above. Scutum and scutellum sparsely punctate along sides, interspaces completely smooth and shiny, without striation (Fig. 20). Sides of pronotum microreticulate with distinct longitudinal striation, anepisternum in basal half smooth and shiny in dorsal half with fine longitudinal rugae, katepisternum mostly smooth and shiny only along posterior margin microreticulate and obliquely striate (Fig. 21). Whole surface of petiolar node distinctly reticulate. Postpetiole with sides

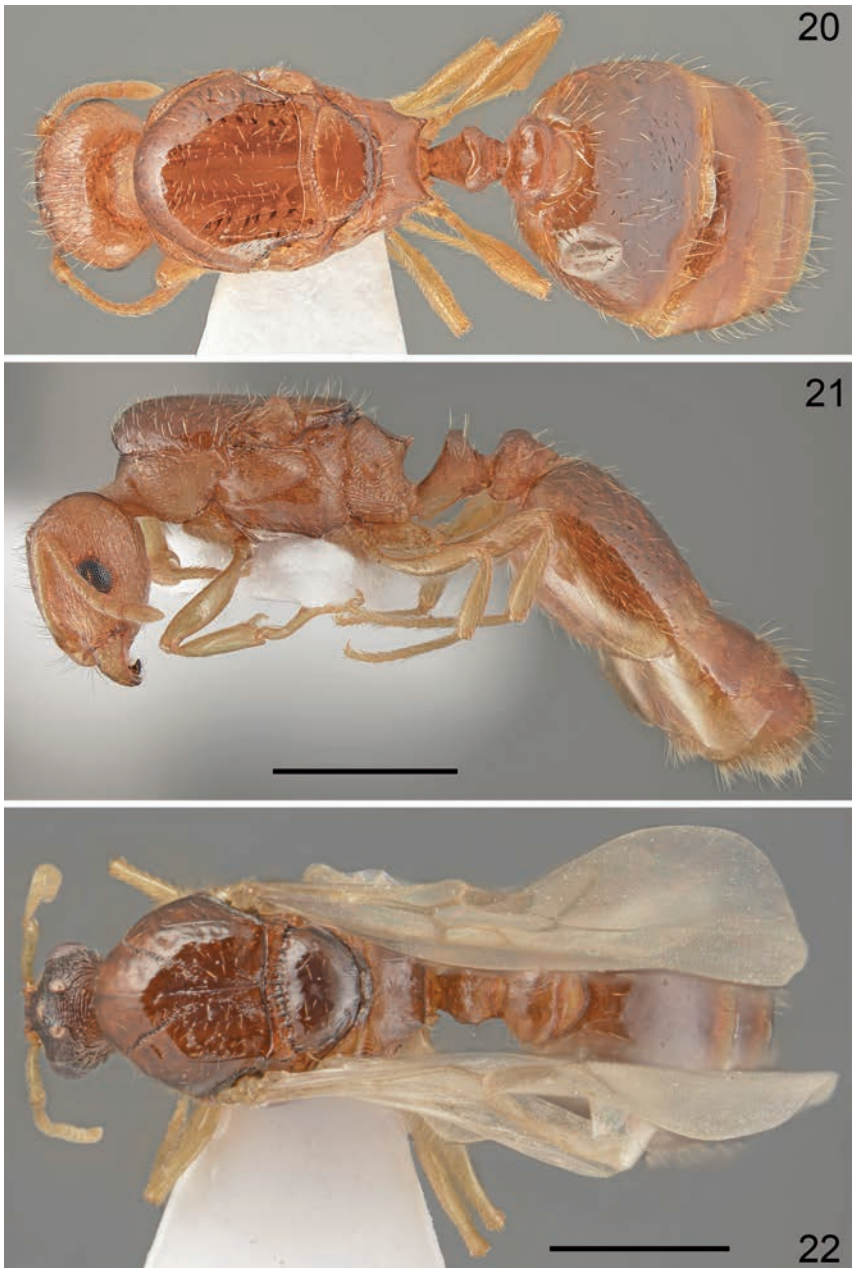
Figures 17–19. *Tetramorium bellerophoni* sp. nov., head: (17) worker in full face view, (18) worker in oblique view, (19) gyne in full face view (scale bar 17, 19 = 0.5 mm).

narrowly rounded (Fig. 20), dorsum of postpetiole microreticulate but appears shiny, sides granulate. First gastral tergite smooth and shiny. Whole dorsum, including head, covered with short, sparse setae. Ventral surface of head with several short setae, as long as to 1.5 times longer than frontal setae, arising posteriorly to buccal cavity.

Male (Figs 22–27, 47). Measurements and indices (n=5): CL: 0.694 ± 0.014 (0.679-0.715); POC: 0.271 ± 0.014 (0.246-.285); CW: 0.823 ± 0.027 (0.785-0.858); FR: 0.254 ± 0.014 (0.24-0.274); FL: 0.283 ± 0.011 (0.268-0.296); SL: 0.325 ± 0.013 (0.307-0.346); OMD: 0.063 ± 0.01 (0.053-0.078); EL: 0.316 ± 0.019 (0.291-0.344); EH: 0.256 ± 0.007 (0.243-0.265); ML: 1.943 ± 0.049 (1.891-2.021); SPSP: 0.281 ± 0.028 (0.24-0.324); SPL: 0.232 ± 0.02 (0.201-0.257); PEL: 0.365 ± 0.015 (0.346-0.391); NOL: 0.262 ± 0.01 (0.245-0.274); PPL: 0.298 ± 0.017 (0.268-0.313); PEH: 0.32 ± 0.011 (0.312-0.341); NOH: 0.203 ± 0.018 (0.179-0.223); PPH: 0.453 ± 0.023 (0.413-0.48); MW: 1.221 ± 0.045 (1.148-1.281); PEW: 0.361 ± 0.019 (0.335-0.38); PPW: 0.549 ± 0.007 (0.541-0.559); CS: 0.759 ± 0.019 (0.733-0.787); EYE: 0.377 ± 0.008 (0.364-0.387); CL/CW: 0.844 ± 0.019 (0.816-0.868); FR/CS: 0.335 ± 0.012 (0.32-0.348); FL/FR: 1.116 ± 0.04 (1.062-1.185); SL/CS: 0.429 ± 0.016 (0.498-0.444); MW/CS: 1.609 ± 0.02 (1.566-1.628); PEW/PPW: 0.657 ± 0.031 (0.619-0.695); NOH/NOL: 0.777 ± 0.087 (0.653-0.91); NOH/PEL: 0.557 ± 0.047 (0.486-0.623); NOL/PEL: 0.719 ± 0.035 (0.684-0.775); PEH/NOL: 1.223 ± 0.07 (1.139-1.327); PEW/PEH: 1.122 ± 0.043 (1.074-1.179); CS/PEW: 2.111 ± 0.139 (1.929-2.267); CS/PPW: 1.384 ± 0.031 (1.34-1.407); CW/MW: 0.621 ± 0.009 (0.614-0.639).

Whole body brown to dark brown, appendages yellowish (Figs 22, 23). Head with convex sides, rounded occipital margin and widely rounded occipital corners. Scutum distinctly wider than head. Propodeum distinctly angulate in profile. Dorsal crest of petiolar node with obtuse transversal edge, slightly emarginated in frontal view. Head distinctly sculptured, dull, with radial rugosities around ocelli, circular rugosities around antennal scapi and oblique rugosities on frons, clypeus with circular rugosities (Fig. 47). Scutum in anterior part and laterally smooth and shiny, behind Mayrian furrows with narrow, longitudinally striate area (Fig. 23). Scutellum partly smooth and shiny, on sides with oblique and along middle longitudinal striation. Sides of pronotum microreticulate and finely striate. Anepisternum from completely smooth and shiny, katepisternum mostly smooth and shiny only along upper margin and in posterior corner microreticulate, propodeum microreticulate with longitudinal rugosities, dull (Fig. 22). Dorsum of petiolar node microgranulate and microreticulate, dull, postpetiole completely microreticulate, mostly dull to slightly shiny. First gastral tergite smooth and shiny. Male genitalia stout (Figs 24-27), in lateral view distinctly constricted before apex with obtuse inner angle (Fig. 26), top moderately long and dense pubescent, dorsal margins of parameres shallowly incised, ventral margins deeply incised before apical hook, top of inner margin of paramere before apical denticle straight, without dentiform plate or lamella extending beyond the sharp edge of paramere (Fig. 27).

Biological notes. Ants were collected in sunny, dry, grassy area inside the archeological site of ancient Termessos, 1018 m a.s.l. Nest was located under stone. The following ant species were recorded in the same area with *T. bellerophoni*: *Aphaenogaster festae*



Figures 20–22. *Tetramorium bellerophoni* sp. nov.: 20 – gyne dorsal, 21 – gyne lateral, 22 – male dorsal (scale bar = 1 mm).

Differential diagnosis. *Tetramorium bellerophoni* in all castes is extremely similar to *T. galaticum* and the best distinguishing character is structure of male. However, on a nest series the following differences are to perceive (characters for *T. galaticum* in parentheses): head in workers of *T. bellerophoni* is striated on almost whole surface, also in postocular area, only between frontal rugose area and rugosities along ocular area on each side with small area of diffused rugosities (usually on sides of frons and in postocular area with large smooth patches), propodeal spines are in *T. bellerophoni* longer and spiniform (shorter and triangular). Head in *T. bellerophoni* is slightly stouter than in *T. galaticum* (CL/CW ratio 1.036 vs. 1.051). Gynes of *T. bellerophoni* have slimmer head (CW/CL ratio 1.078 vs. 1.091). Males of *T. bellerophoni* differ in head less regularly rounded behind eyes, slightly trapezoidal (regularly rounded), clypeus with circular rugosities or at least strongly converging (parallel rugosities at most with only two medial ridges partly convergent), frons microreticulate, dull or with only narrow smooth area (partly smooth and shiny), area between eye and ocelli with high oblique rugosities (partly without rugosities only with dull microretoculation), male genitalia in profile deeper constricted before apex with slightly longer and sharper apical angle and almost twice shorter apical setae (less constricted before apex with slightly shorter and less sharp apical angle and almost twice longer apical setae).

Workers of *T. kephalosi* and *T. hippocratis* differ in darker body, brown to black (in *T. bellerophoni* yellow), in nests of *T. kephalosi* predominate workers with head of distinct smooth areas laterally to frons and in postocular part (in *T. bellerophoni* head is mostly striate with very small smooth areas).

Gynes of *T. kephalosi* and *T. hippocratis* differ in darker body colour, brown to black (yellow to yellowish-brown in *T. bellerophoni*) and smaller size with ML always below 1.96 and MW below 1.22 (in *T. bellerophoni* above 2.0 and 1.3 respectively). Scutum in gynes of *T. kephalosi* are usually more distinctly

Emery, *Aphaenogaster sporadis* Santschi, *Camponotus aethiops* (Latreille), *Camponotus boghossiani* Forel, *Camponotus lateralis* (Olivier), *Camponotus samius* Forel, *Cataglyphis* sp. (small, uniformly yellow species), *Crematogaster gullukdagensis* Salata & Borowiec, *Crematogaster ionia* Forel, *Lasius lasioides* (Emery), *Messor* cf. *structor*, *Pheidole pallidula* (Nylander), *Tetramorium anatolicum* Csösz & Schulz, and *Tetramorium galaticum* Menozzi.

Figure 23. *Tetramorium bellerophoni* sp. nov., male lateral (scale bar = 1 mm).

striated than in both relatives. Males of *T. kephalosi* and *T. hippocratis* differ in top of inner margin of paramere before apical denticle with narrow lamella (without lamella in *T. bellerophoni*), male of *T. bellerophoni* differs also in clypeus with circular striation (parallel in both *T. kephalosi* and *T. hippocratis*).

Tetramorium kephalosi sp. nov.
(Figs 28–44)

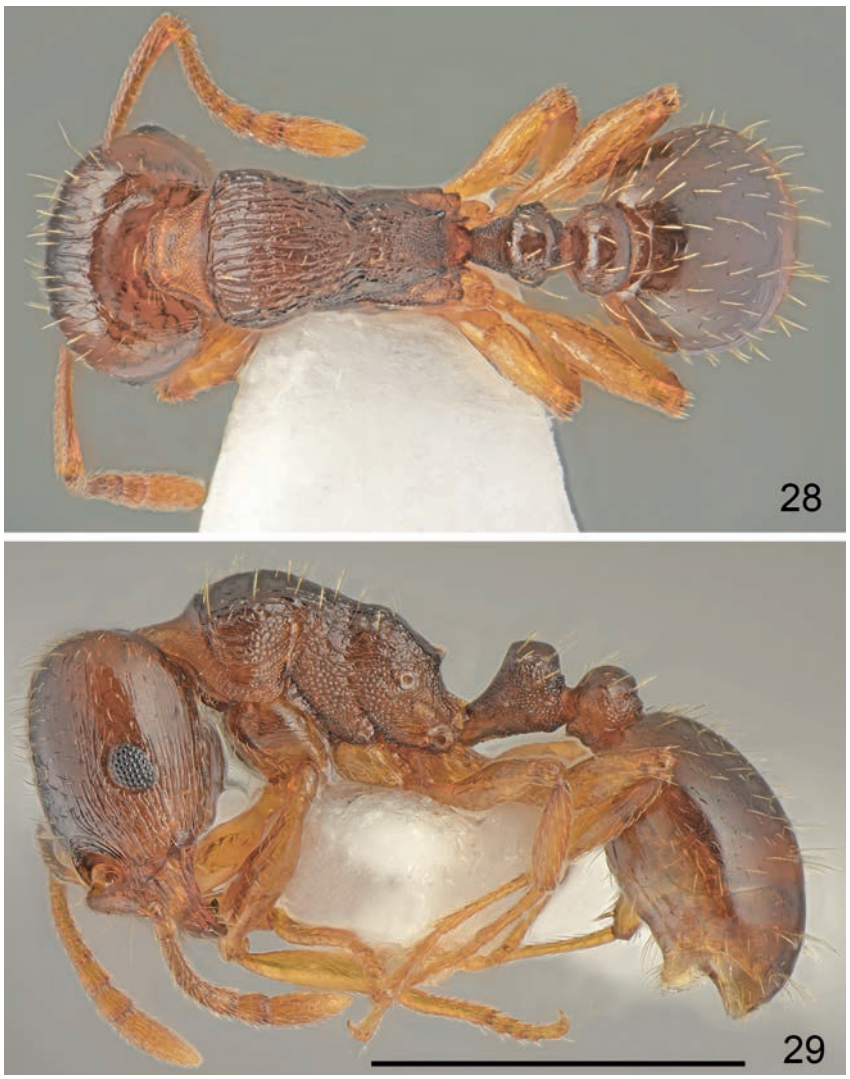
Etymology. Named after Kephalos (Greek: Κέφαλος), a hero of Greek mythology which gave the name of the island Kephalonia, the type locality for this new species.

Material examined. Type material: holotype worker: GREECE, Ionian Is., Kefalonia | Mt. Kalon Oros, 658 m | 38,34205 N / 20,56472 E | 26 VI 2014, L. Borowiec || Collection L. Borowiec | Formicidae | LBC-GR01511 (MNHW no. 1225); paratype gyne: the same data (MNHW no. 1225a); 8 paratype males, 4 paratype gynes, 17 paratype workers: the same data (CAS, DBET, MNHW, TU).

Other material: 82 workers in alcohol: GREECE, Aegean Is., Lesbos | n. Anemotia, 352 m | 39,24127 N/26,10958 E | 8 VI 2015, L. Borowiec (DBET); 7 workers, 1 male in alcohol: GREECE, Aegean Is., Lesbos | n. Antissa, 74 m | 39,23841 N/25,99782 E | 8 VI 2015, L. Borowiec (DBET); 2 males in alcohol: GREECE, Aegean Is., Lesbos | M. Pythariou, 99 m | 39,17322 N/25,96195 E | 8 VI 2015, L. Borowiec (DBET); 2 workers, 1 male in alcohol: GREECE, Aegean Is., Lesbos | 3.4 km NE of Skalochori 292 m | 39,27923 N/26, 10926 E | 9 VI 2015, L. Borowiec (DBET); 2 gynes, 13 workers in alcohol: GREECE, W Crete, 588 m | Kandanos-Floria rd. | 35°21' N / 23°44 E | 2 V 2011, L. Borowiec || Collection L. Borowiec | Formicidae | LBC-GR00483 (DBET); 1 gyne, 14 workers: GREECE, W Crete, 588 m | Kandanos-Floria rd. | 35°21' N / 23°44 E | 2 V 2011, L. Borowiec || Collection L. Borowiec | Formicidae | LBC-GR00484 (DBET); 1 gyne: GREECE, W Crete, 588 m | Kandanos-Floria rd. | 35°21' N / 23°44 E | 2 V 2011, L. Borowiec || Collection L. Borowiec | Formicidae | LBC-GR00488 (DBET); 4 workers: GREECE, NW Crete | Askifou | 35.16 N/ | 24.10 E, 1 V 2007, L. & M.L. Borowiec || Collection L. Borowiec | Formicidae | LBC-GR00053 (DBET); 1 worker: GREECE, W Crete | 6 km S of Vrises | 35.19 N/ | 24.12 E, 1 V 2007, L. & M.L. Borowiec || Collection L. Borowiec | Formicidae | LBC-GR00052 (DBET); 2 workers: GREECE, W Crete, 308 m | Koutsomatados-Mili rd. | 35°23' N / 23°40 E | 2 V 2011, L. Borowiec || Collection L. Borowiec | Formicidae | LBC-GR00487 (DBET); 1 worker: GREECE, W Crete, 308 m | Koutsomatados-Mili rd. | 35°23' N / 23°40 E | 2 V 2011, L. Borowiec || Collection L. Borowiec | Formicidae | LBC-GR00485 (DBET); 3 workers in alcohol: GREECE,

Figure 24–27. *Tetramorium bellerophoni* sp. nov., male genitalia: (24) dorsal, (25) ventral, (26) lateral, (27) apical (scale bar 24–26 = 0.5 mm, 27 = 0.25 mm).

W Crete, 264 m | Tzitzifes n. Vrises | 35°21' N / 24°09 E | 5 V 2011, L. Borowiec (DBET); 2 workers in alcohol: GREECE, W Crete, 173 m | Fres n. Vrises | 35°23' N / 24°09 E | 5 V 2011, L. Borowiec (DBET); 3 workers in alcohol: GREECE, W Crete, 360 m | Therisso Gorge S of | Chania, 35°26' N / 23°59 E | 1 V 2011, L. Borowiec (DBET); 1 worker in alcohol: GREECE, Crete, Rethymno Pr. | Setoures | 35°16.975 N / 24°23.331 E | 15 V 2013, 305 m | L. Borowiec (DBET); 1 gyne, 3 workers: GREECE, Crete, Rethymno Pr. | Klisidi | 35°16.900 N / 24°38.546 E | 16 V 2013, 642 m | L. Borowiec || Collection L. Borowiec | Formicidae | LBC-GR01023 (DBET); 1 gyne, 7 workers: GREECE, Crete, Rethymno Pr. | Fourfouras | 35°13.285 N / 24°43.243 E | 14 V 2013, 578 m | L. Borowiec || Collection L. Borowiec | Formicidae | LBC-GR01049 (DBET); 3 gynes, 4 workers: GREECE, Crete, Rethymno Pr. | Palelimnos | 35°18.706 N / 24°25.103 E | 15 V 2013, 262 m | L. Borowiec || Collection L. Borowiec | Formicidae | LBC-GR00954 (DBET); 1 gyne, 4 workers: GREECE, Crete, Rethymno Pr. | Gerakari | 35°13.172 N / 24°35.586 E | 9 V 2013, 751 m | L. Borowiec || Collection L. Borowiec | Formicidae | LBC-GR00955 (DBET); 5 workers in alcohol: GREECE, Cyclades, Naxos | Zeus Cave vic., 650 m | 37,0341 N/25,4991 E | 1 VII 2016, S. Salata (DBET); 1 gyne, 1 worker, 1 male in alcohol: GREECE, Dodecanese, Kos | Aspri Petra, 236 m | 36,71857 N/ 26,9741 E | 6 VII 2015, S. Salata (DBET); 1 worker in alcohol: GREECE, Epirus, 270 m | 1.2 km S of Paleochori I 39,33311 N/ 20,71333 E | 30 VIII 2016, L. Borowiec (DBET); 1 gyne: GREECE, Ionian Is., Kefalonia | Avithos Lake, 278 m | 38,17293 N / 20,71233 E | 25 VI 2014, L. Borowiec || Collection L. Borowiec | Formicidae | LBC-GR01510 (DBET); 1 gyne, 1 worker: GREECE, Ionian Is., Kefalonia | rd. Razata-Sami, 543 m | 38,20101 N / 20,60002 E | 28 VI 2014, L. Borowiec || Collection L. Borowiec | Formicidae | LBC-GR01512 (DBET); 1 gyne, 2 workers in alcohol: GREECE, Ionian Is., Korfu | Pandokrator, 736 m | 39,74749 N / 19,86375 E | 7 VI 2013, L. Borowiec (DBET); 1 gyne, 3 workers in alcohol: GREECE, Ionian Is., Korfu | Pandokrator | 39°44.850 N / 19°51.824 E | 7 VI 2013, L. Borowiec (DBET); 1 gyne, 5 workers: GREECE, Ionian Is., Korfu | Nymfes | 39°45.292 N / 19°47.721 E | 6 VI 2013, L. Borowiec || Collection L. Borowiec | Formicidae | LBC-GR01124 (DBET)); 1 gyne in alcohol: GREECE, Ionian Is., Korfu | Ag. Stefanos, urban area | 39°45.454 N / 19°38.771 E | 10 VI 2013, 28 m | L. Borowiec (DBET); 50 workers in alcohol: GREECE, Ionian Islands, Lefkada | Asprogerakata, 430 m | 38,46828 N/ 20,39191 E | 2 IX 2016, L. Borowiec (DBET); 1 worker in alcohol: GREECE, Ionian Islands, Lefkada | 2.5 km S of Egklouvi, 1010 m | 38,70876 N/ 20,63711 E | 2 IX 2016, L. Borowiec (DBET); 1 worker in alcohol: GREECE, Peloponnese | Korinthia, Loutraki urban area | 37°57.779 N / 22°58.307 E | 24-25 VIII 2013, 8m | L. Borowiec (DBET); 1 gyne, 1 worker, 1 male in alcohol: GREECE, Peloponnese, Messinia | Taygetos Mts., 2 km W of Arachova, 680 m | 37,0357 N/22,1978 E | 13 VI 2016, L. Borowiec (DBET); 1 gyne, 1 worker, 1 male in alcohol: GREECE, Peloponnese, Messinia | Tetrazi Mts., Karnasi, 460 m |

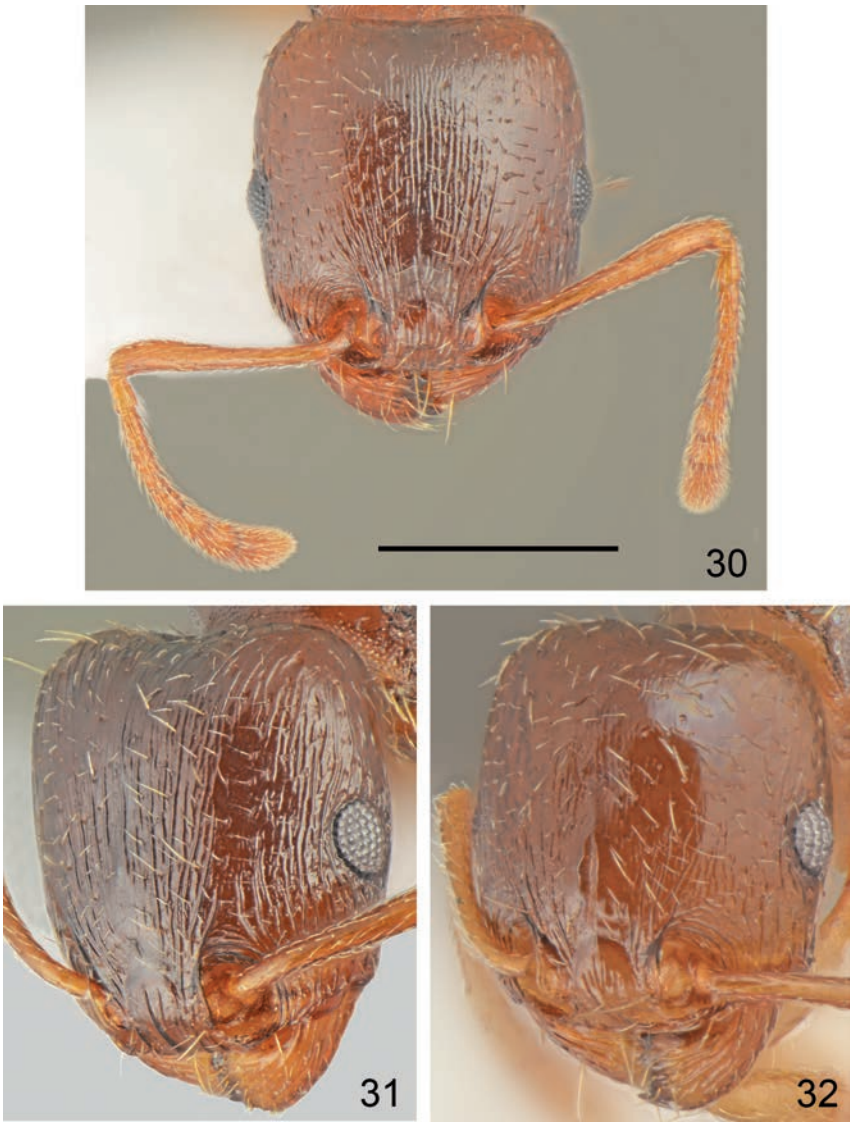


Figures 28–29. *Tetramorium kephalosi* sp. nov., worker: (28) dorsal, (29) lateral (scale bar = 1 mm).

37,31904 N/21,99158 E | 16 VI 2016, L. Borowiec (DBET); 12 workers in alcohol: GREECE, Sterea Ellas | Aetolia-Acarnania, 2.4 km SW Monastiraki | 38,83055 N/ 20,93071 E, 420 m | 31 VIII 2016, L. Borowiec (DBET); 6 workers in alcohol: GREECE, Sterea Ellas | Aetolia-Acarnania, 2.8 km N Vatos | 38,78302 N/ 20,98382 E, 1090 m | 31 VIII 2016, L. Borowiec (DBET); 1 worker in alcohol: GREECE, Thessaly, 5 m | Ossa Mts., Kokkino Nero | 39,833 N/ 22,797 E | 23 VII 2009, W Żyła (DBET); 3 workers in alcohol: CROATIA, Dalmatia | Pakoštane, 45.55 N/ | 15.30 E, 12 IX 2008 | M.L. Borowiec, M. Poprawska (DBET); 1 worker in alcohol: CROATIA, Dalmatia | Vrgada Isl., 45.51 N/ | 15.30 E, 13 IX 2008 | M.L. Borowiec, M. Poprawska (DBET).

***Description*. Worker (Figs 28–32).** Measurements and indices (n=42): CL: 0.742 ± 0.047 (0.615-0.827); POC: 0.289 ± 0.028 (0.235-.346); CW: 0.732 ± 0.054 (0.592-0.827); FR: 0.253± 0.019 (0.212-0.29); FL: 0.257 ± 0.019 (0.212-0.291); SL: 0.534 ± 0.031 (0.444-0.603); OMD: 0.181 ± 0.015 (0.156-0.212); EL: 0.14 ± 0.012 (0.112-0.167); EH: 0.102 ± 0.007 (0.089-0.115); ML: 0.801 ± 0.069 (0.648-0.939); SPSP: 0.141± 0.013 (0.111-0.168); SPL: 0.102 ± 0.013 (0.078-0.123); PEL: 0.203 ± 0.02 (0.156-0.257); NOL: 0.168 ± 0.017 (0.134-0.207); PPL: 0.182 ± 0.017 (0.14-0.223); PEH: 0.243 ± 0.022 (0.193-0.285); NOH: 0.17 ± 0.016 (0.134-0.201); PPH: 0.238 ± 0.023 (0.201-0.291); MW: 0.459 ± 0.035 (0.38-0.528); PEW: 0.23 ± 0.024 (0.178-0.293); PPW: 0.261 ± 0.023 (0.215-0.324); CS: 0.738 ± 0.05 (0.604-0.827); EYE: 0.163 ± 0.007 (0.145-0.175); CL/CW: 1.017 ± 0.022 (0.963-1.059); FR/CS: 0.344 ± 0.012 (0.317-0.37); FL/FR: 1.016 ± 0.02 (0.979-1.054); SL/CS: 0.725 ± 0.017 (0.699-0.769); MW/CS: 0.624 ± 0.011 (0.594-0.646); PEW/PPW: 0.881 ± 0.037 (0.797-0.937); NOH/NOL: 1.026 ± 0.069 (0.884-1.204); NOH/PEL: 0.846 ± 0.074 (0.696-1.123); NOL/PEL: 0.827 ± 0.05 (0.726-0.942); PEH/NOL: 1.462 ± 0.076 (1.321-1.623); PEW/PEH: 0.945 ± 0.045 (0.84-1.051); CS/PEW: 3.203 ± 0.152 (2.788-3.592); CS/PPW: 2.816 ± 0.108 (2.521-2.994); CW/MW: 1.604 ± 0.029 (1.547-1.683).

Small to medium size, CS 738 [604, 827]. In most specimens whole body yellowish-brown, the darkest specimens brown to dark brown but never black, the palest specimens yellow, appendages yellow. Head slightly as long as wide to slightly longer than wide CL/CW 1.017 [0.963, 1.059], with almost parallel sides, straight to slightly concave occipital margin and rounded occipital corners. Eyes small, EYE 0.163 [0.145, 0.175]. Frons moderately wide, FR/CS 0.344 [0.317, 0.37], frontal lobes as wide as frons, FL/FR 1.016 [0.979, 1.054]. Scape short, SL/CS 0.725 [0.699, 0.769], without dorsal carina basally, surface smooth and shiny. Promesonotal dorsum slightly convex, metanotal groove shallow but perceptible. Propodeal teeth short, triangular, apex of spine located approximately at $^{2}/_{3}$ height of mesosoma. Dorsal surface of petiole flat to slightly convex, NOH/NOL 1.026 [0.884, 1.204], petiole moderately high, PEH/NOL 1.462 [1.321, 1.623], postpetiole distinctly transverse. General appearance finely rugose, ground



Figures 30–32. *Tetramorium kephalosi* sp. nov., worker head: (30) full face view, (31) strongly sculptured morphotype in oblique view, (32) finely sculptured morphotype in oblique view (scale bar 30 = 1 mm).

surface shiny. Head dorsum partly longitudinally rugose and shiny between rugae, rugae extend occipital margin of head, occiput laterally mostly smooth and shiny, sides in anterior half longitudinally rugose and shiny between rugae. In most specimens between frontal rugose area and rugosities along ocular area on each side runs longitudinal stripe without rugosities (Figs 30, 31) but smooth area never exceeds 1/5 of the anterior surface of head; in extremely sculptured specimens almost whole frontal surface of head with long rugae with very small smooth patch, in extremely fine sculptured specimens only frons with rugae, ocular area, top of head and postocular area smooth and shiny (Fig. 32), the level of development of sculpture is correlated with size and coloration of workers, small and paler coloured specimens usually have less developed sculpture than large and darker coloured specimens. Alitrunk dorsum longitudinally rugose and microreticulate but never reticulate, also specimens with reduced head sculpture have complete rugae along pronotum (Fig. 28). Sides of pronotum and meso- and metapleuron usually coarsely microreticulate, sometimes reticulation tends to form transverse lines but surface never appears striate or rugose, pronotum close to ventral margin with small, convex, shiny patch (Fig. 29). Dorsum of petiolar node smooth and shiny with sides carinate, lateral surface microreticulate. Dorsum of postpetiole smooth and shiny, sides microreticulate. First gastral tergite smooth and shiny. Whole dorsum, including head, covered with sparse setae, the longest on pronotum and the shortest on frons. Ventral surface of head with sparse short and 2-5 moderately long setae not forming a psammophore.

Gyne (Figs 33–37). Measurements and indices (n=21): CL: 1.037 ± 0.027 (0.994-1.084); POC: 0.4 ± 0.021 (0.363-0.446); CW: 1.137 ± 0.034 (1.078-1.181); FR: 0.393 ± 0.011 (0.366-0.413); FL: 0.39 ± 0.011 (0.369-0.411); SL: 0.729 ± 0.016 (0.704-0.765); OMD: 0.227 ± 0.01 (0.212-0.246); EL: 0.288 ± 0.01 (0.268-0.302); EH: 0.218 ± 0.007 (0.212-0.235); ML: 1.887 ± 0.04 (1.789-1.951); SPSP: 0.297 ± 0.017 (0.257-0.324); SPL: 0.208 ± 0.019 (0.19-0.279); PEL: 0.33 ± 0.011 (0.313-0.355); NOL: 0.251 ± 0.01 (0.234-0.268); PPL: 0.324 ± 0.014 (0.291-0.352); PEH: 0.448 ± 0.014 (0.425-0.469); NOH: 0.29 ± 0.023 (0.245-0.324); PPH: 0.468 ± 0.024 (0.422-0.514); MW: 1.107 ± 0.054 (1.027-1.213); PEW: 0.4 ± 0.022 (0.346-0.441); PPW: 0.528 ± 0.037 (0.469-0.587); CS: 1.087 ± 0.028 (1.036-1.129); EYE: 0.231 ± 0.007 (0.219-0.243); CL/CW: 0.912 ± 0.017 (0.883-0.941); FR/CS: 0.362 ± 0.013 (0.342-0.388); FL/FR: 1.018 ± 0.01 (1.0-1.056); SL/CS: 0.67 ± 0.014 (0.646-0.688); MW/CS: 1.022 ± 0.034 (0.983-1.103); PEW/PPW: 0.76 ± 0.042 (0.685-0.857); NOH/NOL: 1.158 ± 0.09 (1.0-1.317); NOH/PEL: 0.881 ± 0.073 (0.756-1.035); NOL/PEL: 0.761 ± 0.03 (0.685-0.8); PEH/NOL: 1.789 ± 0.09 (1.645-1.974); PEW/PEH: 0.894 ± 0.043

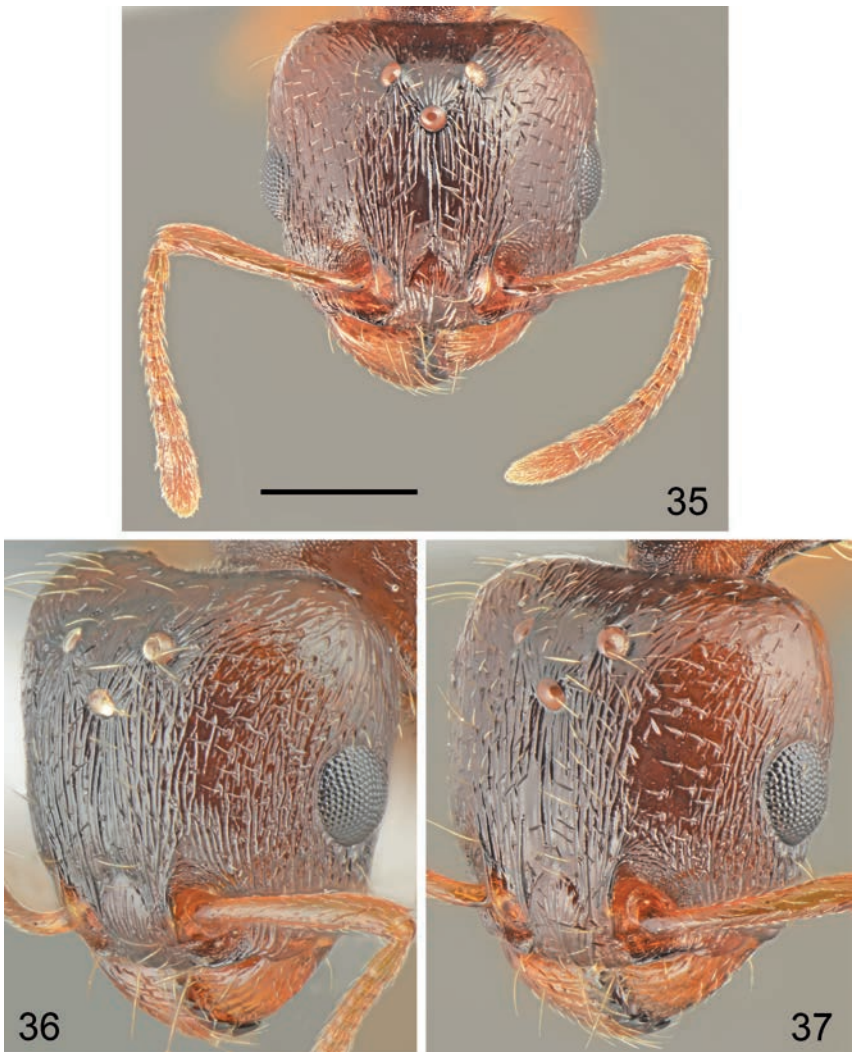
Figures 33–34. *Tetramorium kephalosi* sp. nov., gyne: (33) dorsal, (34) lateral (scale bar = 1 mm).

(0.774-0.972); CS/PEW: 2.718 ± 0.162 (2.553-3.202); CS/PPW: 2.06 ± 0.119 (1.874-2.308); CW/MW: 0.98 ± 0.03 (0.907-1.018); WAIST: 0.856 ± 0.04 (0.745-0.909).

Moderate size, CS 999 [948, 1025]. Whole body brown, gaster slightly paler than head and mesosoma. Head wider than long, CL/CW 0.912 [0.883-0.941], with straight subparallel sides, straight or shallowly emarginate occipital margin and rounded occipital corners (Figs 33, 34). Frons moderately wide, FR/CS 0.362 [0.342-0.388], frontal lobes approximately as wide as frons, FL/FR 1.018 [1.0-1.056]. Scape short, SL/CS 0.67 [0.646-0.688], without dorsal carina basally, smooth and shiny. Head as wide as scutum, MW/CS 1.022 [0.983-1.103]. Propodeal teeth short, triangular. Dorsal crest of petiolar node in frontal view slightly convex. Petiolar node dorsum steeply rounded backward. Petiole and postpetiole relatively narrow, but postpetiole distinctly transverse approximately 1.4 times as wide as long, WAIST 0.896 [0.745-0.909]. General appearance smooth and shiny. Head dorsum, occiput and sides rugulose, ground surface indistinctly microreticulate but shiny. Frons in strongly sculptured morphotype longitudinally rugulose (Fig. 35), in finely sculptured morphotypes with oval, smooth patches close to eyes (Fig. 37). Mesosoma flat, sides of pronotum visible from above. Scutum and scutellum punctate along sides, in less sculptured specimens smooth and shiny with diffused microreticulation and scutum at base with very short striation, in more sculptured specimens scutellum in corners with very short rugae and scutum in basal part with thin longitudinal striae never extending to half length of scutum (Fig. 33). Sides of pronotum microreticulate with fine longitudinal striation only at base with small, smooth and shiny area, anepisternum from completely smooth and shiny to finely striate in posterior half, katepisternum from completely to mostly smooth and shiny, at most in $^1/_4$ posterior part microreticulate and obliquely striate (Fig. 34). Almost whole surface of petiolar node distinctly reticulate only top with small smooth and shiny area. Postpetiole with rounded sides (Fig. 33), on sides granulate, at top microreticulate with small smooth and shiny area. First gastral tergite smooth and shiny. Whole dorsum, including head, covered with short, sparse setae. Ventral surface of head with few short and 3-5 longer setae, the longest as long as to 1.5 times longer than frontal setae, arising posteriorly to buccal cavity.

Male (Figs 38–44). Measurements and indices (n=12): CL: 0.699 ± 0.018 (0.664-0.726); POC: 0.302 ± 0.019 (0.262-0.332); CW: 0.811 ± 0.023 (0.765-0.863); FR: 0.246 ± 0.01 (0.235-0.268); FL: 0.261 ± 0.015 (0.235-0.291); SL: 0.347 ± 0.016 (0.33-0.38); OMD: 0.063 ± 0.012 (0.045-0.089); EL: 0.314 ± 0.007 (0.302-0.324); EH: 0.253 ± 0.008 (0.24-0.265); ML: 1.909 ± 0.055 (1.831-2.022); SPSP: 0.26 ± 0.012 (0.246-0.279); SPL: 0.244 ± 0.018 (0.201-0.268); PEL: 0.344 ± 0.012 (0.324-0.368); NOL: 0.247 ± 0.025 (0.179-0.279); PPL: 0.301 ± 0.022 (0.246-0.335); PEH: 0.325 ± 0.017 (0.291-0.352); NOH: 0.188 ± 0.015 (0.168-0.212); PPH: 0.478 ± 0.034 (0.38-0.525); MW: 1.137 ± 0.045 (1.065-1.213); PEW: 0.377 ± 0.014 (0.345-0.391); PPW: 0.533 ± 0.042 (0.447-0.615); CS: 0.755 ± 0.019 (0.721-0.795); EYE: 0.361 ± 0.05 (0.202-0.398); CL/CW: 0.862 ± 0.017 (0.831-0.887); FR/CS: 0.326 ± 0.016 (0.309-0.363); FL/FR: 1.061 ± 0.04 (1.0-1.146); SL/CS: 0.459 ± 0.013 (0.439-0.478); MW/CS: 1.506 ± 0.059 (1.425-1.609); PEW/PPW: 0.702 ± 0.035 (0.636-0.738); NOH/NOL: 0.773 ± 0.12 (0.627-1.123); NOH/PEL: 0.549 ± 0.059 (0.456-0.633); NOL/PEL: 0.717 ± 0.07 (0.542-0.806); PEH/NOL: 1.342 ± 0.19 (1.086-1.776); PEW/PEH: 1.162 ± 0.079 (1.085-1.326); CS/PEW: 2.013 ± 0.077 (1.91-2.138); CS/PPW: 1.411 ± 0.082 (1.236-1.5); CW/MW: 0.665 ± 0.03 (0.621-0.702).

Head and mesosoma dark brown to almost black, gaster brown, appendages yellowish. Head slightly trapezoidal, with almost straight occipital margin and more or less rounded occipital corners. Scutum



Figures 35–37. *Tetramorium kephalosi* sp. nov., gyne head: (35) full face view, (36) strongly sculptured morphotype in oblique view, (37) finely sculptured morphotype in oblique view (scale bar 35 = 1 mm).

distinctly wider than head. Propodeum from regularly rounded to finely angulate in profile. Dorsal crest of petiolar node with obtuse transversal edge, slightly emarginated in frontal view. Head distinctly sculptured, with radial rugosities around ocelli, circular rugosities around antennal scapi and oblique rugosities on frons, dull (Fig. 44). Scutum in anterior part mostly with distinct striation only in anterior part smooth and shiny, behind Mayrian furrows with more or less developed longitudinal striation, sides broadly smooth and shiny. Scutellum from mostly smooth and shiny to mostly with transverse, circular and oblique striation. Sides of pronotum microreticulate and distinctly striate. Anepisternum from completely smooth and shiny to striate along upper margin, in extreme case posterior third striate, katepisternum mostly smooth and shiny only along upper margin and in posterior corner microreticulate, propodeum microreticulate with longitudinal rugosities, dull. Dorsum of petiolar node microgranulate and microreticulate, dull, postpetiole mostly microreticulate only top partly smooth and shiny. First gastral tergite smooth and shiny. Male genitalia stout (Figs 40-43), in lateral view indistinctly constricted before apex with obtuse inner angle (Fig. 42), top moderately long and dense pubescent, dorsal margins of parameres almost straight, ventral margins deeply incised before apical hook, top of inner margin of paramere before apical denticle almost straight, without dentiform plate extending beyond the sharp edge of paramere but with narrow lamella (Fig. 43).

Biological notes. Ants were collected in dry and sunny habitats from sea coast up to 1090 m. Nests were located at roadsides, pastures, lake shores and scrubs. In one nest 1-7 gynes were collected. The following ant species were recorded in the same area with *T. kepahlosi*:

Greece, Aegean Islands, Lesbos, n. Anemotia: *Camponotus aethiops* (Latreille), *Camponotus gestroi* Emery, *Camponotus kiesenwetteri* (Roger), *Camponotus lateralis* (Olivier), *Camponotus samius* Forel, *Camponotus sanctus* Forel, *Cataglyphis nodus* (Brullé), *Crematogaster ionia* Forel, *Crematogaster sordidula* (Nylander), *Lepisiota frauenfeldi* (Mayr), *Messor oertzeni* Forel, *Messor wasmanni* Krausse, *Monomorium monomorium* Bolton, *Pheidole pallidula* (Nylander), *Plagiolepis taurica* Santschi, *Prenolepis nitens* (Mayr), *Temnothorax* cf. *affinis*, *Temnothorax bulgaricus* (Forel), *Temnothorax angustifrons* Csösz, Heinze & Mikó, *Temnothorax semiruber* (André), *Tetramorium diomedeum* Emery, *Tetramorium* cf. *flavidulum*, and *Trichomyrmex perplexus* (Radchenko).

Greece, Aegean Islands, Lesbos, n. Antissa: *Aphaenogaster festae* Emery, *Camponotus lateralis* (Olivier), *Cataglyphis nodus* (Brullé), *Crematogaster ionia* Forel, *Dolichoderus quadripunctatus* (Linnaeus), *Lepisiota frauenfeldi* (Mayr), *Messor orientalis* (Emery), *Messor wasmanni* Krausse,

Figures 38–39. *Tetramorium kephalosi* sp. nov., male: (38) dorsal, (39) lateral (wings removed, scale bar = 1 mm).

Pheidole pallidula (Nylander), *Tapinoma festae* Emery, *Temnothorax angustifrons* Csösz, Heinze & Mikó, *Temnothorax antigoni* (Forel), *Temnothorax bulgaricus* (Forel), *Temnothorax* cf. *leviceps*, and *Trichomyrmex perplexus* (Radchenko).

Greece, Aegean Islands, Lesbos, n. M. Pythariou: *Aphaenogaster festae* Emery, *Camponotus lateralis* (Olivier), *Cataglyphis nodus* (Brullé), *Crematogaster ionia* Forel, *Lepisiota frauenfeldi* (Mayr), *Liometopum microcephalum* (Panzer), *Pheidole pallidula* (Nylander), *Temnothorax angustifrons* Csösz, Heinze & Mikó, *Temnothorax antigoni* (Forel), and *Temnothorax bulgaricus* (Forel).

Greece, Aegean Islands, Lesbos, n. 3.4 km NE of Skalochori: *Aphaenogaster epirotes* (Emery), *Aphaenogaster festae* Emery, *Camponotus aegaeus* Emery, *Camponotus aethiops* (Latreille), *Camponotus gestroi* Emery, *Camponotus kiesenwetteri* (Roger), *Camponotus oertzeni* Forel, *Camponotus sanctus* Forel, *Crematogaster* sp., *Crematogaster sordidula* (Nylander), *Lasius alienus* (Förster), *Lepisiota frauenfeldi* (Mayr), *Messor oertzeni* Forel, *Messor orientalis* (Emery), *Messor wasmanni* Krausse, *Pheidole pallidula* (Nylander), *Plagiolepis taurica* Santschi, *Prenolepis nitens* (Mayr), *Solenopsis* cf. *wolfi*, *Temnothorax* cf. *affinis*, *Temnothorax angustifrons* Csösz, Heinze & Mikó, *Temnothorax semiruber* (André), *Tetramorium* cf. *punctatum*, *Tetramorium rhodium* Emery, and *Trichomyrmex perplexus* (Radchenko).

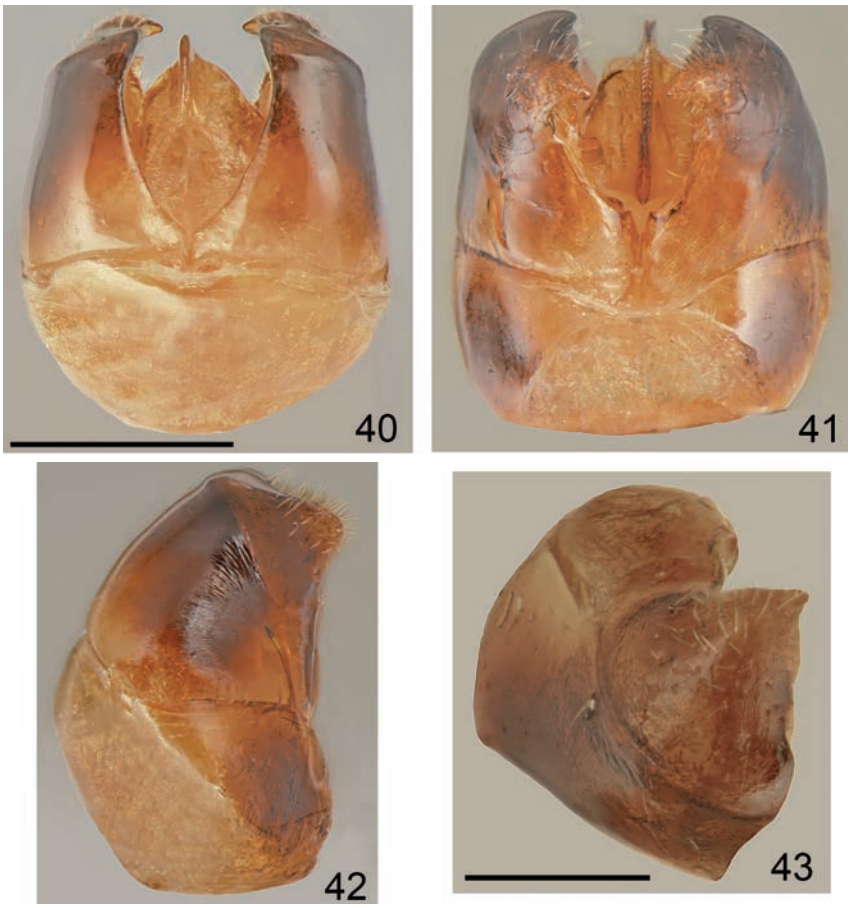
Greece, Crete, Kandanos-Floria rd.: *Camponotus aethiops* (Latreille), *Lepisiota nigra* (Dalla Torre), *Messor orientalis* (Emery), *Monomorium creticum* Emery, *Pheidole pallidula* (Nylander), and *Tapinoma erraticum* (Latreille).

Greece, Crete, Askifou: *Aphaenogaster simonellii* Emery, *Camponotus baldaccii* Emery, *Camponotus kiesenwetteri* (Roger), *Lasius lasioides* (Emery), *Lepisiota nigra* (Dalla Torre), *Messor wasmanni* Krausse, *Monomorium creticum* Emery, *Plagiolepis pygmaea* (Latreille), and *Tetramorium diomedeum* Emery.

Greece, Crete, 6 km S of Vrises: *Aphaenogaster simonellii* Emery, *Camponotus lateralis* (Olivier), and *Tetramorium diomedeum* Emery.

Greece, Crete, Koysomatados-Mili rd.: *Aphaenogaster rugosoferruginea* Forel, *Aphaenogaster simonellii* Emery, *Camponotus baldaccii* Emery, *Camponotus kiesenwetteri* (Roger), *Hypoponera eduardi* (Forel), *Lasius lasioides* (Emery), *Lasius turcicus* Santschi, *Lepisiota melas* (Emery), *Messor orientalis* (Emery), *Monomorium creticum* Emery, *Tapinoma erraticum* (Latreille), *Temnothorax* cf. *graecus*, and *Tetramorium diomedeum* Emery.

Greece, Crete, Tzitzifes n. Vrises: *Aphaenogaster rugosoferruginea* Forel, *Camponotus baldaccii* Emery, *Camponotus lateralis* (Olivier), *Crematogaster* cf. *ionia*, *Pheidole pallidula* (Nylander),



Figures 40–43. *Tetramorium kephalosi* sp. nov., male genitalia: (40) dorsal, (41) ventral, (42) lateral, (43) apical (scale bar 40–42 = 0.5 mm, 43 = 0.25 mm).

Temnothorax recedens (Nylander), and *Tetramorium diomedeum* Emery.

Greece, Crete, Fres n. Vrises: *Camponotus baldaccii* Emery, *Camponotus gestroi creticus* Forel, *Camponotus kiesenwetteri* (Roger), *Crematogaster* cf. *ionia*, *Crematogaster sordidula* (Nylander), *Plagiolepis pallescens* sensu Radchenko, *Solenopsis* cf. *lusitanica*, and *Temnothorax* cf. *graecus*.

Greece, Crete, Therisso Gorge: *Aphaenogaster cecconii* Emery, *Camponotus aethiops* (Latreille), *Camponotus baldaccii* Emery, *Lepisiota melas* (Emery), *Messor* cf. *structor*, *Messor wasmanni* Krausse, *Monomorium creticum* Emery, *Pheidole pallidula* (Nylander), *Solenopsis* cf. *lusitanica*, and *Temnothorax exilis* (Emery).

Greece, Crete, Setoures: *Aphaenogaster simonellii* Emery, *Camponotus candiotes* Emery, *Camponotus gestroi creticus* Forel, *Camponotus kiesenwetteri* (Roger), *Camponotus lateralis* (Olivier), *Crematogaster* cf. *ionia*, *Hypoponera eduardi* (Forel), *Lepisiota nigra* (Dalla Torre), *Messor* cf. *structor*, *Monomorium creticum* Emery, *Temnothorax exilis* (Emery), *Temnothorax recedens* (Nylander), and *Tetramorium* cf. *caespitum*.

Greece, Crete, Klisidi: *Aphaenogaster subterraneoides* Emery, *Camponotus aethiops* (Latreille), *Camponotus baldaccii* Emery, *Camponotus candiotes* Emery, *Camponotus kiesenwetteri* (Roger), *Crematogaster sordidula* (Nylander), *Lasius lasioides* (Emery), *Lepisiota nigra* (Dalla Torre), *Pheidole pallidula* (Nylander), *Plagiolepis pallescens* sensu Radchenko, and *Tetramorium punctatum* Santschi.

Greece, Crete, Fourfouras: *Aphaenogaster cecconii* Emery, *Aphaenogaster rugosoferruginea* Forel, *Aphaenogaster simonellii* Emery, *Aphaenogaster subterraneoides* Emery, *Camponotus aethiops* (Latreille), *Camponotus baldaccii* Emery, *Camponotus gestroi creticus* Forel, *Camponotus jaliensis* Dalla Torre, *Camponotus kiesenwetteri* (Roger), *Crematogaster sordidula* (Nylander), *Lasius paralienus* Seifert, *Lepisiota nigra* (Dalla Torre), *Messor orientalis* (Emery), *Messor* cf. *structor*, *Oxyopomyrmex krueperi* Forel, *Pheidole pallidula* (Nylander), *Plagiolepis pallescens* sensu Radchenko, *Strongylognathus silvestrii* Menozzi, *Temnothorax exilis* (Emery), *Temnothorax recedens* (Nylander), *Tetramorium diomedeum* Emery, and *Tetramorium punctatum* Santschi.

Greece, Crete, Palelimnos: *Aphaenogaster rugosoferruginea* Forel, *Camponotus jaliensis* Dalla Torre, *Crematogaster* cf. *ionia*, *Messor wasmanni* Krausse, *Temnothorax exilis* (Emery), and *Temnothorax* cf. *graecus*.

Greece, Crete, Palelimnos: *Aphaenogaster rugosoferruginea* Forel, *Aphaenogaster subterraneoides* Emery, *Camponotus aethiops* (Latreille), *Lasius psammophilus* Seifert, *Monomorium creticum* Emery, and *Temnothorax* cf. *turcicus*.

Greece, Cyclades, Zeus Cave: *Camponotus ionius* Emery, *Camponotus kiesenwetteri* (Roger), *Camponotus lateralis* (Olivier), *Lasius turcicus* Santschi, *Lepisiota melas* (Emery), *Messor wasmanni* Krausse, *Pheidole pallidula* (Nylander), *Tapinoma erraticum* Latreille, *Temnothorax* cf. *graecus*, *Temnothorax recedens* (Nylander) and *Temnothorax* cf. *tauricus*.

Greece, Dodecanese, Kos, Aspri Petra: *Aphaenogaster sporadis* Santschi, *Camponotus aethiops*

Figures 44–47. Male head in full face view: (44) *Tetramorium kephalosi* sp. nov., (45) *Tetramorium semilaeve* André, (46) *Tetramorium atlante* Cagniant, (47) *Tetramorium bellerophoni* sp. nov. (scale bar = 0.5).

(Latreille), *Camponotus baldaccii* Emery, *Camponotus kiesenwetteri* (Roger), *Camponotus lateralis* (Olivier), *Cataglyphis nodus* (Brullé), *Crematogaster ionia* Forel, *Lepisiota melas* (Emery), *Messor orientalis* (Emery), *Messor wasmanni* Krausse and *Pheidole pallidula* (Nylander).

Greece, Epirus, Paleochori: *Aphaenogaster balcanica* (Emery), *Camponotus atricolor* (Nylander), *Camponotus dalmaticus* (Nylander), *Camponotus oertzeni* Forel, *Cataglyphis nodus* (Brullé), *Crematogaster schmidti* (Mayr), *Crematogaster sordidula* (Nylander), *Liometopum microcephalum* (Panzer), *Messor* cf. *structor*, *Pheidole pallidula* (Nylander), *Ponera coarctata* (Latreille), *Solenopsis* cf. *lusitanica*, *Tapinoma erraticum* (Latreille) and *Temnothorax lichtensteini* (Bondroit).

Greece, Ionian Islands, Kefalonia, Mt. Kalon Oros: *Aphaenogaster balcanica* (Emery), *Camponotus aethiops* (Latreille), *Messor wasmanni* Krausse, *Pheidole pallidula* (Nylander), and *Temnothorax rogeri* Emery.

Greece, Ionian Islands, Kefalonia, Avithos Lake: *Aphaenogaster muelleriana* Wolf, *Camponotus gestroi creticus* Forel, *Camponotus lateralis* (Olivier), *Crematogaster schmidti* (Mayr), *Crematogaster sordidula* (Nylander), *Liometopum microcephalum* (Panzer), *Messor wasmanni* Krausse, *Monomorium monomorium* Bolton, *Myrmecina graminicola* (Latreille), *Pheidole pallidula* (Nylander), *Tapinoma madeirense* Forel, *Temnothorax bulgaricus* (Forel), *Temnothorax exilis* (Emery), and *Temnothorax laconicus* Csösz, Seifert, Müller, Trindl, Schulz & Heinze.

Greece, Ionian Islands, Kefalonia, Razata-Sami rd.: *Aphaenogaster balcanica* (Emery), *Camponotus aethiops* (Latreille), *Camponotus dalmaticus* (Nylander), *Camponotus lateralis* (Olivier), *Camponotus ligniperdus* (Latreille), *Crematogaster schmidti* (Mayr), *Plagiolepis pygmaea* (Latreille), *Ponera testacea* Emery, *Stigmatomma denticulatum* Roger, *Temnothorax bulgaricus* (Forel), *Temnothorax* cf. *interruptus*, and *Temnothorax laconicus* Csösz Seifert, Müller, Trindl, Schulz & Heinze.

Greece, Ionian Islands, Korfu, Pandokrator: *Aphaenogaster balcanica* (Emery), *Aphaenogaster epirotes* (Emery), *Aphaenogaster muellerian*a Wolf, *Aphaenogaster subterranea* (Latreille), *Aphaenogaster subterraneoides* Emery, *Bothriomyrmex communistus* Santschi, *Camponotus aethiops* (Latreille), *Camponotus gestroi creticus* Forel, *Camponotus piceus* (Leach), *Crematogaster schmidti* (Mayr), *Lasius brunneus* (Latreille), *Lasius illyricus* Zimmermann, *Lasius lasioides* (Emery), *Lepisiota melas* (Emery), *Messor* cf. *structor*, *Messor wasmanni* Krausse, *Pheidole pallidula* (Nylander), *Plagiolepis pygmaea* (Latreille), *Prenolepis nitens* (Mayr), *Solenopsis* cf. *fugax*, *Tapinoma erraticum* (Latreille), *Temnothorax exilis* (Emery), *Temnothorax* cf. *interruptus*, *Temnothorax laconicus* Csösz *et al*., *Temnothorax muellerianus* (Finzi), *Temnothorax* cf. *nigriceps*, and *Tetramorium* cf. *caespitum*.

Greece, Ionian Islands, Korfu, Nymfes: *Aphaenogaster epirotes* (Emery), *Aphaenogaster subterranea* (Latreille), *Camponotus* cf. *piceus*, *Formica gagates*, *Lasius illyricus* Zimmermann, *Lasius paralienus* Seifert, *Lepisiota frauenfeldi* (Mayr), *Messor wasmanni* Krausse, *Prenolepis nitens* (Mayr), *Solenopsis* cf. *fugax*, *Tapinoma erraticum*

(Latreille), *Temnothorax laconicus* Csösz *et al.*, *Temnothorax* cf. *tristis*, *Temnothorax* cf. *tuberum*, and *Tetramorium* cf. *caespitum*.

Greece, Ionian Islands, Korfu, Agios Stefanos urban area: *Aphaenogaster balcanica* (Emery), *Camponotus aethiops* (Latreille), *Crematogaster schmidti* (Mayr), *Lasius illyricus* Zimmermann, *Messor* cf. *structor*, and *Plagiolepis pallescens* sensu Radchenko.

Greece, Ionian Islands, Lefkada, Asprogerakata: *Aphaenogaster balcanica* (Emery), *Aphaenogaster muelleriana* Wolf, *Camponotus aethiops* (Latreille), *Camponotus dalmaticus* (Nylander), *Crematogaster schmidti* (Mayr), *Lepisiota frauenfeldi* (Mayr), *Pheidole pallidula* (Nylander), *Prenolepis nitens* (Mayr) and *Temnothorax* cf. *tauricus*.

Greece, Ionian Islands, Lefkada, Asprogerakata: *Aphaenogaster balcanica* (Emery), *Camponotus aethiops* (Latreille), *Crematogaster schmidti* (Mayr), *Messor* cf. *semirufus*, *Messor wasmanni* Krausse, *Plagiolepis pygmaea* (Latreille), *Temnothorax exilis* (Emery), *Temnothorax* cf. *interruptus* and *Temnothorax* cf. *nigriceps*.

Greece, Peloponnese, Loutraki urban area: *Aphaenogaster balcanica* (Emery), *Camponotus ionius* Emery, *Camponotus kiesenwetteri* (Roger), *Cataglyphis aenescens* (Nylander), *Crematogaster ionia* Forel, *Crematogaster schmidti* (Mayr), *Lepisiota frauenfeldi* (Mayr), *Linepithema humile* (Mayr), *Messor wasmanni* Krausse, *Nylanderia jaegerskioeldi* (Mayr), *Pheidole pallidula* (Nylander), *Pheidole indica* Mayr Forel, and *Plagiolepis pygmaea* (Latreille).

Greece, Peloponnese, Arachova: *Aphaenogaster balcanica* (Emery), *Aphaenogaster* cf. *muelleriana*, *Bothriomyrmex communistus* Santschi, *Camponotus boghossiani* Forel, *Camponotus dalmaticus* (Nylander), *Camponotus laconicus* Emery, *Cataglyphis nodus* (Brullé), *Crematogaster schmidti* (Mayr), *Lepisioda frauenfeldi* (Mayr), *Messor wasmanni* Krausse, *Pheidole pallidula* (Nylander), *Plagiolepis pygmaea* (Latreille), *Stigmatomma denticulatum* Roger, *Tapinoma erraticum* (Latreille), *Temnothorax* cf. *bulgaricus*, *Temnothorax laconicus* Csösz Seifert, Müller, Trindl, Schulz & Heinze, *Temnothorax rogeri* Emery, *Temnothorax* cf. *luteus* and *Tetramorium* cf. *punctatum*.

Greece, Peloponnese, Karnasi: *Aphaenogaster balcanica* (Emery), *Aphaenogaster* cf. *muelleriana*, *Camponotus dalmaticus* (Nylander), *Camponotus lateralis* (Olivier), *Crematogaster schmidti* (Mayr), *Lasius illyricus* Zimmermann, *Messor hellenius* Agosti & Collingwood, *Pheidole pallidula* (Nylander), *Temnothorax* cf. *bulgaricus*, *Temnothorax* cf. *interruptus*, *Temnothorax laconicus* Csösz Seifert, Müller, Trindl, Schulz & Heinze, *Temnothorax rogeri* Emery, and *Temnothorax* cf. *turcicus*.

Greece, Sterea Ellas, Monastiraki: *Aphaenogaster balcanica* (Emery), *Camponotus oertzeni* Forel, *Cataglyphis nodus* (Brullé), *Crematogaster schmidti* (Mayr), *Lepisiota frauenfeldi* (Mayr), *Messor wasmanni* Krausse, *Pheidole pallidula* (Nylander), *Plagiolepis pygmaea* (Latreille), *Temnothorax crassispinus* (Karavaiev), *Temnothorax exilis* (Exilis) and *Temnothorax rogeri* Emery.

Greece, Sterea Ellas, Vatos: *Aphaenogaster balcanica* (Emery), *Camponotus dalmaticus* (Nylander), *Camponotus lateralis* (Olivier), *Camponotus nitidescens* Forel, *Crematogaster schmidti* (Mayr), *Lepisiota frauenfeldi* (Mayr), *Messor wasmanni* Krausse, *Myrmoxenus gordiagini* Ruzsky, *Pheidole pallidula* (Nylander), *Plagiolepis pygmaea* (Latreille), *Temnothorax crassispinus* (Karavaiev), *Temnothorax rogeri* Emery and *Temnothorax* cf. *unifasciatus*.

Croatia, Dalmatia, Pakoštane: *Formica fusca* Linnaeus, *Messor* cf. *capitatus*, *Messor wasmanni* Krausse, *Tetramorium* cf. *caespitum*, and *Tetramorium ferox* Ruzsky.

Croatia, Dalmatia, Vrgada Isl.: *Crematogaster scutellaris* (Olivier), *Lasius myops* Forel, and *Messor wasmanni* Krausse.

Distribution. Dalmatia, Cyclades, Epirus, Ionian Islands, Peloponnese, Sterea Ellas, Thessaly, Thrace and Crete. Eastern distribution border unclear due to lack of nest samples with males. Some examined workers and gynes from Thessaly and southern part of Greek Macedonia appear to belong to *T. kephalosi* but some populations from northern Greek Macedonia, Thrace and Bulgaria look slightly different due to generally paler ground colour and often more reduced head rugosities. Also some populations from Dodecanese appear to be different taxa due to less sculptured head and mesosoma.

Differential diagnosis. *Tetramorium kephalosi* in all castes is extremely similar to *T. semilaeve* and the best distinguishing character is structure of male. However, on a nest series the following differences are to perceive (characters for *T. semileve* in parentheses): workers of *T. kephalosi* differ in occipital margin of head more or less concave (usually straight), ground surface of head usually shiny (with more or less visible microreticulation) and head stouter, slightly wider than long (slimmer, slightly longer than wide); in nests of *T. kephalosi* predominate yellowish brown to brown coloured specimens (yellow).

Gynes of *T. kephalosi* differ in darker brown body (light brown) and thinner head rugae and finer and sparser punctuation between rugae (thicker head rugae and coarser and denser punctuation between rugae). Males of *T. kephalosi* differ in larger size with

ML 1.831-2.022 (1.626-1.785) and distinctly narrower, slightly trapezoidal head (broad, rounded on sides), scutum between sutures partly striate (usually completely smooth or with few indistinct striae), behind sutures with broad striate area (not striate or with narrow striate area), scutellum anteriorly with distinct transverse striae (smooth or with indistinct striae), anepisternum in posterior half distinctly striate (smooth or narrowly striate along upper margin); male genitalia of *T. kephalosi* in profile are slightly less constricted before apex (slightly more constricted) with inner margin of paramere before apical denticle with very narrow lamella parallel to the inner margin (with dentiform plate distinctly extending beyond the inner margin).

Workers of *T. galaticum* and *T. bellerophoni* differ in paler colouration, yellow body (in *T. kephalosi* usually yellowish-brown), workers of *T. bellerophoni* usually have more distinctly striated head than workers of *T. kephalosi*. Workers of *T. hippocratis* distinctly differ in dark brown to black body.

Gynes of *T. galaticum* and *T. bellerophoni* differ in paler body colouration, yellow to reddish-yellow (usually brown in *T. kephalosi*) and larger size with ML always above 2.0 and MW above 1.3 (in *T. kephalosi* below 1.96 and 1.22 respectively). Scutum in gynes of *T. kephalosi* is usually more distinctly striated than in both relatives. Males of *T. galaticum* and *T. bellerophoni* differ in top of inner margin of paramere before apical denticle straight, without narrow lamella (with lamella in *T. kephalosi*), male of *T. bellerophoni* differs also in clypeus with circular striation (parallel in *T. kephalosi*).

Gynes of *T. hippocratis* differ in dark brown to black body (brown in *T. kephalosi*) and stouter mesosoma with ML/MW ratio approximately 1.59 (in *T. kephalosi* 1.70). Scutum in *T. hippocratis* is always more striated than in gynes *T. kephalosi*. Males of *T. hippocratis* differs in almost black body (dark brown in *T. kephalosi*) and smaller size with ML 1.698-1.827 vs. 1.831-2.022 and have more converging posterad frontal lobes (FL/FR 1.152-1.267 vs. 1.0-1.146). In structure of male genitalia *T. hippocratis* is very similar to *T. kephalosi*. Both species have sharp lamella on inner margin of apex of paramera but in *T. hippocratis* genitalia in lateral view are more distinctly constricted before apex than in *T. kephalosi* with more angulate inner angle.

Tetramorium hippocratis Agosti & Collingwood, 1987

Tetramorium hippocratis Agosti & Collingwood, 1987: 56 (= *Tetramorium caespitum semilaeve* var. *hippocratis* Emery, 1921: 217 unavailable name).

Material examined. Type material: syntype worker (available from AntWeb resources Photo by Alexandra Westrich / URL: https://www.ant web.org/ specimen/ CASENT0904822; accessed 9 August 2016): ANATOLIA | Budrum | XI 1819 | D^re^ Varialle || T. caespitum | semilaeve | var. hippocratis | Emery || ANTWEB | CASENT | 0904822 (MSNG).

Other material examined: 6 gynes, 3 males, 16 workers: GREECE, Dodecanese | Kos, Aspri Petra 236 m | 36,71857 N / 26,9741 E | 6 VII 2015, S. Salata || Collection L. Borowiec | Formicidae | LBC-GR01969 (DBET); 4 gynes, 1 male, 76 workers in alcohol: the same data (DBET); 10 pined and 28 workers in alcohol: GREECE, Dodecanese, Kos, Paleo Pili loc. 1 304 m | 36,83712 N / 27,18733 E | 7 VII 2015, S. Salata || Collection L. Borowiec | Formicidae | LBC-GR02358 (DBET); 3 workers in alcohol: GREECE, Thrace, Evros, rd. Alexandroupolis-Kirki loc. 4, 40,94409 N / 25,77836 E, 350 m, 29 VIII 2015, L. Borowiec (DBET); 14 workers: TURKEY, Antalya, Lykia | Beldibi, 10-20 m | 36,73333 N / 30,55 E | 6 VII 2010, L. Borowiec || Collection L. Borowiec | Formicidae | LBC-TR00150 (DBET); 15 workers: TURKEY, Antalya, Lykia | Cakirlar-Hurma rd., 17 m | 36,85 N / 30,58333 E | 2 VII 2010, L. Borowiec || Collection L. Borowiec | Formicidae | LBC-TR00151 (DBET).

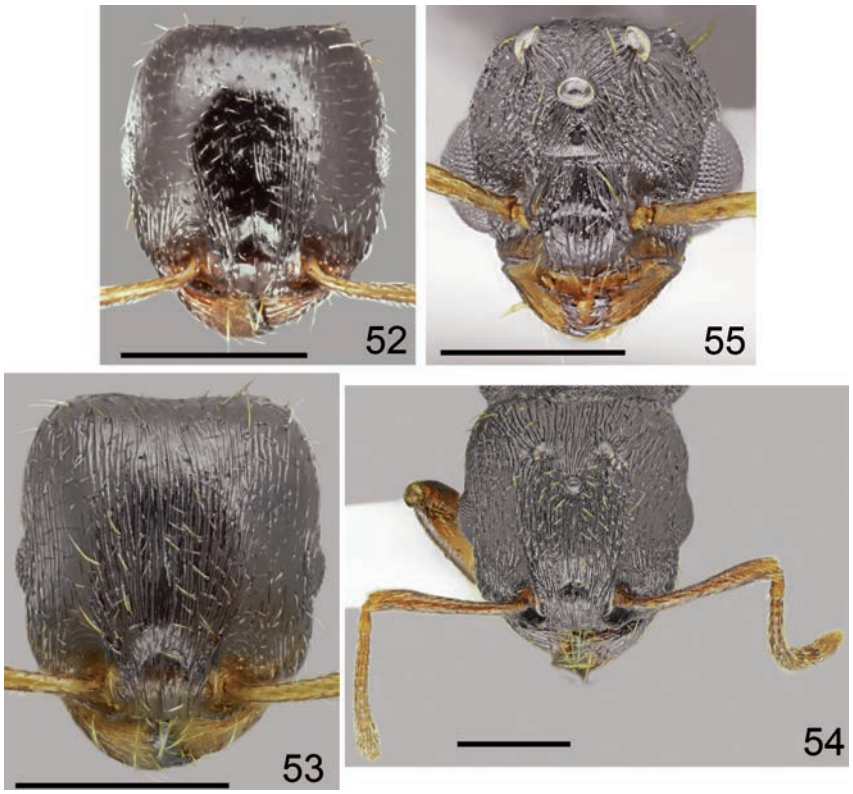
Redescription. **Worker (Figs 48–53).** Measurements and indicates (n=30): CL: 0.774 ± 0.04 (0.687-0.866); POC: 0.312 ± 0.02 (0.268-.357); CW: 0.762 ± 0.04 (0.659-0.841); FR: 0.267± 0.02 (0.223-0.288); FL: 0.271 ± 0.02 (0.229-0.296); SL: 0.563 ± 0.03 (0.486-0.648); OMD: 0.194 ± 0.02 (0.168-0.226); EL: 0.155 ± 0.02 (0.112-0.187); EH: 0.111 ± 0.01 (0.089-0.134); ML: 0.847 ± 0.05 (0.749-0.96); SPSP: 0.153± 0.01 (0.134-0.192); SPL: 0.112 ± 0.01 (0.089-0.142); PEL: 0.207 ± 0.01 (0.167-0.246); NOL: 0.161 ± 0.01 (0.142-0.179); PPL: 0.16 ± 0.02 (0.134-0.196); PEH: 0.266 ± 0.02 (0.232-0.302); NOH: 0.153 ± 0.01 (0.123-0.179); PPH: 0.249 ± 0.02 (0.209-0.291); MW: 0.48 ± 0.04 (0.402-0.57); PEW: 0.24 ± 0.02 (0.184-0.271); PPW: 0.274 ± 0.02 (0.223-0.318); CS: 0.768 ± 0.04 (0.673-0.853); EYE: 0.173 ± 0.01 (0.142-0.195); CL/CW: 1.017 ± 0.02 (0.964-1.049); FR/CS: 0.352 ± 0.01 (0.33-0.375); FL/FR: 1.01 ± 0.01 (1-1.06); SL/CS: 0.733 ± 0.02 (0.706-0.769); MW/CS: 0.625 ± 0.02 (0.592-0.668); PEW/PPW: 0.876 ± 0.04 (0.786-0.939); NOH/NOL: 0.953 ± 0.07 (0.800-1.085); NOH/PEL: 0.744 ± 0.07 (0.611-0.889); NOL/PEL: 0.781 ± 0.05 (0.714-0.889); PEH/NOL: 1.654 ± 0.06 (1.533-1.769); PEW/PEH: 0.892 ± 0.05 (0.75-0.98); CS/PEW: 3.214 ± 0.17 (2.979-3.787); CS/PPW: 2.812 ± 0.1 (2.563-3.012); CW/MW: 1.602 ± 0.05 (1.498-1.689).

Small to medium size, CS 0.768 [0.673-0.820]. In most specimens whole body dark brown, the darkest specimens almost black, appendages yellow. Head approximately as long as wide CL/CW 1.017 [0.964-

Figures 48–49. *Tetramorium hippocratis* Agosti & Collingwood, worker of initial nest: (48) dorsal, (49) lateral. (scale bar = 1 mm).

1.049], with almost parallel sides, slightly concave occipital margin and rounded occipital corners. Eyes small, EYE 0.173 [0.142-0.195]. Frons moderately wide, FR/CS 0.352 [0.330-0.375], frontal lobes as wide as frons, FL/FR 1.01 [1.00-1.06]. Scape short, SL/CS 0.733 [0.706-0.769], without dorsal carina basally, surface smooth and shiny. Promesonotal dorsum slightly convex, metanotal groove very shallow, sometimes indistinct. Propodeal teeth short, triangular, apex of spine located approximately at $^{2}/_{3}$ height of mesosoma. Dorsal surface of petiole flat to slightly convex, NOH/ NOL 0.953 [0.800-1.085], petiole moderately high, PEH/NOL 1.654 [1.533-1.769], postpetiole distinctly transverse. General appearance finely rugose, ground surface shiny. Head dorsum in workers from mature nests mostly longitudinally rugose (Fig. 54), on sides shiny, in frontal part with diffused microreticulation between rugae but never appears dull, rugae extend occipital margin of head, occiput laterally from mostly smooth and shiny to partly with diffused rugar, sides in anterior half longitudinally rugose and shiny between rugae. In most specimens sides of frons with narrow area with diffused rugae but smooth area never exceeds $^{1}/_{6}$ of the anterior surface of head; in extremely sculptured specimens almost whole frontal surface of head with long rugae with very narrow areas with diffused rugae laterally, in extremely fine sculptured specimens only frons with rugae, ocular area, top of head and postocular area smooth and shiny (Fig. 52), the level of development of sculpture is partly correlated with size, small specimens usually have less developed sculpture than large and coloured specimens. Specimens from initial nests always have mostly reduced head sculpture (type series represents such specimens), with the development of the nest overwhelm strongly sculptured specimens. Alitrunk dorsum longitudinally rugose and microreticulate but never reticulate, also specimens with reduced head sculpture usually have complete rugae along pronotum (Figs 48, 50), sometimes central part of promesonotal disc with small shiny

Figures 50–51. *Tetramorium hippocratis* Agosti & Collingwood, worker of mature nest: (50) dorsal, (51) lateral (scale bar = 1 mm).



Figures 52–56. *Tetramorium hippocratis* Agosti & Collingwood, head in full face view: (52) worker of initial nest, (53) worker of mature nest, (54) gyne, 55 – male (scale bar = 0.5 mm).

area without sculpture. Sides of pronotum and meso- and metapleuron usually coarsely microreticulate, sometimes reticulation tends to form transverse lines but surface never appears striate or rugose, base of propodeal spines often with short radial rugae (Figs 49, 51). Dorsum of petiolar node smooth and shiny with sides more or less carinate, lateral surface microreticulate. Dorsum of postpetiole smooth and shiny, sides microreticulate. First gastral tergite smooth and shiny. Whole dorsum, including head, covered with sparse setae, the longest on pronotum and the shortest on frons. Ventral surface of head with sparse short and 2-3 moderately long setae not forming a psammophore.

Gyne (Figs 54, 56, 57). Measurements and indices (n=6): CL: 1.046 ± 0.016 (1.036-1.079); POC: 0.372 ± 0.03 (0.324-0.403); CW: 1.12 ± 0.014 (1.101-1.14); FL: 0.393 ± 0.008 (0.381-0.403); FR: 0.392 ± 0.008 (0.381-0.403); SL: 0.758 ± 0.009 (0.748-0.773); OMD: 0.222 ± 0.012 (0.201-0.237); EL: 0.296 ± 0.01 (0.288-0.316); EH: 0.246 ± 0.011 (0.23-0.266); ML: 1.886 ± 0.05 (1.784-1.935); SPSP: 0.306 ± 0.013 (0.288-0.331); SPL: 0.203 ± 0.014 (0.18-0.216); PEL: 0.337 ± 0.009 (0.324-0.345); NOL: 0.221 ± 0.01 (0.201-0.23); PPL: 0.297 ± 0.017 (0.273-0.316); PEH: 0.454 ± 0.01 (0.446-0.475); NOH: 0.221 ± 0.016 (0.201-0.244); PPH: 0.463 ± 0.017 (0.432-0.489); MW: 1.189 ± 0.016 (1.173-1.216); PEW: 0.405 ± 0.01 (0.388-0.418); PPW: 0.511 ± 0.007 (0.503-0.521); CS: 1.082 ± 0.012 (1.068-1.108); EYE: 0.25 ± 0.007 (0.24-0.26); CL/CW: 0.933 ± 0.01 (0.909-0.949); FR/CS: 0.363 ± 0.004 (0.355-0.370); FL/FR: 1.003 ± 0.004 (1.000-1.009); SL/CS: 0.670 ± 0.01 (0.675-0.724); MW/CS: 1.098 ± 0.01 (1.084-1.120); PEW/PPW: 0.793 ± 0.02 (0.771-0.829); NOH/NOL: 1.003 ± 0.09 (0.875-1.142); NOH/PEL: 0.656 ± 0.06 (0.583-0.739); NOL/PEL: 0.655 ± 0.032 (0.622-0.696); PEH/NOL: 2.063 ± 0.09 (1.937-2.214); PEW/PEH: 0.892 ± 0.03 (0.848-0.935); CS/PEW: 2.674 ± 0.08 (2.573-2.8); CS/PPW: 2.118 ± 0.04 (2.058-2.161); CW/MW: 0.911 ± 0.009 (0.893-0.922); WAIST: 0.847 ± 0.02 (0.819-0.874).

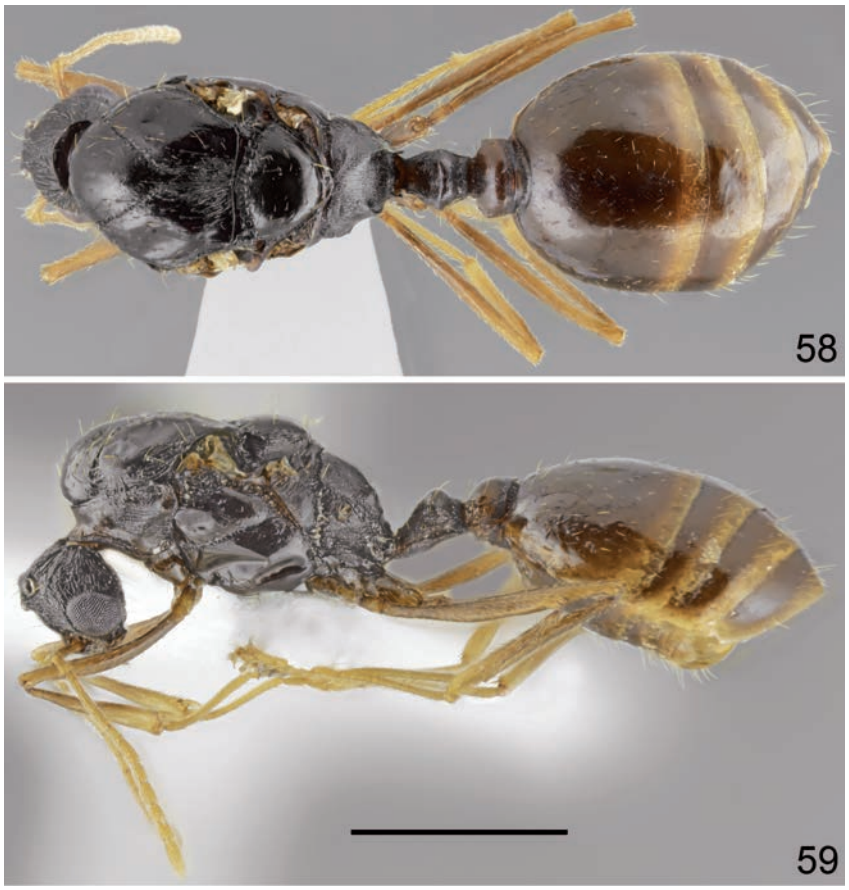
Moderate size, CS 1.082 [1.068-1.108]. Head, thorax, petiole and postpetiole black, gaster dark brown, appendages yellowish. Head wider than long, CL/CW 0.933 [0.909-0.949], with straight subparallel sides, shallowly emarginate occipital margin and rounded occipital corners. Frons moderately wide, FR/CS 0.363 [0.355-0.370], frontal lobes as wide as frons, FL/FR 1.003 [1.000-1.009]. Scape short, SL/CS 0.670 [0.675-0.724], without dorsal carina basally, smooth and shiny. Head approximately as wide as scutum, MW/CS 1.098 [1.084-1.120]. Propodeal teeth short, triangular. Dorsal crest of petiolar node in frontal view truncate. Petiolar node dorsum steeply rounded backward. Petiole and postpetiole relatively narrow, but postpetiole distinctly transverse, approximately 1.4 times as wide as long, WAIST 0.847 [0.819-0.874]. General appearance shiny. Head dorsum, occiput and sides rugulose, ground surface indistinctly microreticulate but shiny. Frons longitudinally rugulose (Fig. 54). Mesosoma flat, sides of pronotum visible from above. Scutum punctate along sides, mostly longitudinally striate extending to $^1/_4$-$^1/_3$ length of scutum except smooth and shiny sides, anterior slope and median narrow stripe (Fig. 56). Scutellum with striate anterior margin and corners and smooth and shiny central part. Sides of pronotum with distinct longitudinal striation, anepisternum in basal half smooth and shiny in dorsal half with fine longitudinal rugae, katepisternum in anterior $^2/_3$ smooth and posterior margin third microreticulate and longitudinally to obliquely striate (Fig. 57). Whole surface of petiolar node distinctly reticulate. Postpetiole with rounded sides (Fig. 56), dorsum of postpetiole microreticulate,

Figures 56–57. *Tetramorium hippocratis* Agosti & Collingwood, gyne: (56) dorsal, (57) lateral (scale bar = 1 mm).

sides granulate and striate. First gastral tergite smooth and shiny. Whole dorsum, including head, covered with short, sparse setae. Ventral surface of head with few short setae, and 5-7 longer setae 1.5-2.0 times longer than frontal setae, arising posteriorly to buccal cavity.

Male (Figs 55, 58–63). Measurements and indices (n=3): CL: 0.699 ± 0.016 (0.683-0.716); POC: 0.242 ± 0.014 (0.23-.259); CW: 0.817 ± 0.01 (0.806-0.823); FR: 0.235 ± 0.02 (0.215-0.258); FL: 0.286 ± 0.012 (0.273-0.298); SL: 0.335 ± 0.02 (0.316-0.36); OMD: 0.09 ± 0.02 (0.07-0.1); EL: 0.312 ± 0.007 (0.302-0.317); EH: 0.269 ± 0.01 (0.259-0.281); ML: 1.76 ± 0.06 (1.698-1.827); SPSP: 0.264 ± 0.02 (0.245-0.273); SPL: 0.24 ± 0.02 (0.215-0.259); PEL: 0.374 ± 0.014 (0.36-0.388); NOL: 0.221 ± 0.03 (0.187-0.245); PPL: 0.317 ± 0.014 (0.302-0.331); PEH: 0.321 ± 0.008 (0.316-0.331); NOH: 0.153 ± 0.02 (0.144-0.173); PPH: 0.432 ± 0.01 (0.417-0.446); MW: 1.215 ± 0.02 (1.194-1.227); PEW: 0.358 ± 0.005 (0.352-0.363); PPW: 0.475 ± 0.008 (0.474-0.476); CS: 0.758 ± 0.01 (0.745-0.768); EYE: 0.382 ± 0.01 (0.37-0.392); CL/CW: 0.856 ± 0.01 (0.847-0.872); FR/CS: 0.378 ± 0.01 (0.367-0.392); FL/FR: 1.223 ± 0.06 (1.152-1.267); SL/CS: 0.443 ± 0.03 (0.412-0.473); MW/CS: 1.603 ± 0.005 (1.597-1.607); PEW/PPW: 0.754 ± 0.01 (0.742-0.765); NOH/NOL: 0.7 ± 0.07 (0.625-0.769); NOH/PEL: 0.411 ± 0.05 (0.37-0.461); NOL/PEL: 0.589 ± 0.07 (0.52-0.654); PEH/NOL: 1.479 ± 0.25 (1.294-1.769); PEW/PEH: 1.116 ± 0.04 (1.065-1.148); CS/PEW: 2.114 ± 0.06 (2.05-2.158); CS/PPW: 1.594 ± 0.02 (1.568-1.613); CW/MW: 0.623 ± 0.002 (0.622-0.626).

Head, thorax, and petiole black, postpetiole and gaster brown, appendages yellowish. Head with convex sides, slightly rounded occipital margin and widely rounded occipital corners. Scutum distinctly wider than head. Propodeum with only indistinct angulation in position of propodeal teeth. Dorsal crest of petiolar node with obtuse transversal edge, slightly convex in frontal view. Head distinctly sculptured, with radial rugosities around ocelli, circular rugosities around antennal scapi and oblique rugosities on frons, dull. Area between eye and ocelli with distinct rugosities. Clypeus on whole surface with parallel rugosities. Frons with longitudinal striation (Fig. 55). Scutum in anterior part and laterally smooth and shiny, behind Mayrian furrows mostly longitudinally striate stripe, only sides smooth and shiny (Fig. 58). Scutellum from partly smooth and shiny to completely striate. Sides of pronotum microreticulate and finely striate. Anepisternum mostly smooth and shiny, only in posterior third striate, katepisternum almost completely smooth and shiny only along upper margin and in posterior corner microreticulate, propodeum microreticulate with longitudinal rugosities, dull (Fig. 59). Dorsum of petiolar node microgranulate and microreticulate, dull, or only upper margin narrowly smooth and shiny, postpetiole mostly microreticulate and striate only top partly smooth and shiny. First gastral tergite smooth and shiny. Male



Figures 58–59. *Tetramorium hippocratis* Agosti & Collingwood, male: (58) dorsal, (59) lateral (wings removed, scale bar = 1 mm).

genitalia stout (Figs 60-63), in lateral view only slightly constricted before apex with angulate inner angle (Fig. 62), top moderately long and dense pubescent, dorsal margins of parameres straight, ventral margins deeply incised before apical hook, top of inner margin of paramere before apical denticle S-shaped, without dentiform plate extending beyond the sharp edge of paramere, only with sharp lamella (Fig. 63).

Biological notes. Ants were collected in dry habitats from 10 to 350 m. Nests were located at sandy dirty road at the seaside, roadsides inside pine and oak forests and on riverbanks of periodic river. In the only nest with sexual forms 6 gynes were collected. The following ant species were recorded in the same area with *T. hippocratis*:

Greece, Kos, Aspri Petra: *Aphaenogaster sporadis* Santschi, *Camponotus baldaccii* Emery, *Camponotus boghossiani* Forel, *Camponotus kiesenwetteri* (Roger), *Camponotus lateralis* (Olivier), *Cataglyphis nodus* (Brullé), *Crematogaster ionia* (Forel), *Lepisiota melas* (Emery), *Messor orientalis* (Emery), *Messor wasmanni* Krausse, *Pheidole* cf. *pallidula*, and *Temnothorax* cf. *smyrnensis*.

Greece, Kos, Paleo Pili loc. 1: *Aphaenogaster sporadis* Santschi, *Camponotus baldaccii* Emery, *Camponotus kiesenwetteri* (Roger), *Cataglyphis nodus* (Brullé), *Crematogaster ionia* (Forel), *Lasius bombycina* Seifert & Galkowski, *Lepisiota melas* (Emery), and *Pheidole* cf. *pallidula*.

Greece, Thrace, rd. Alexandroupolis-Kirki: *Solenopsis* cf. *fugax* and *Temnothorax recedens* (Nylander).

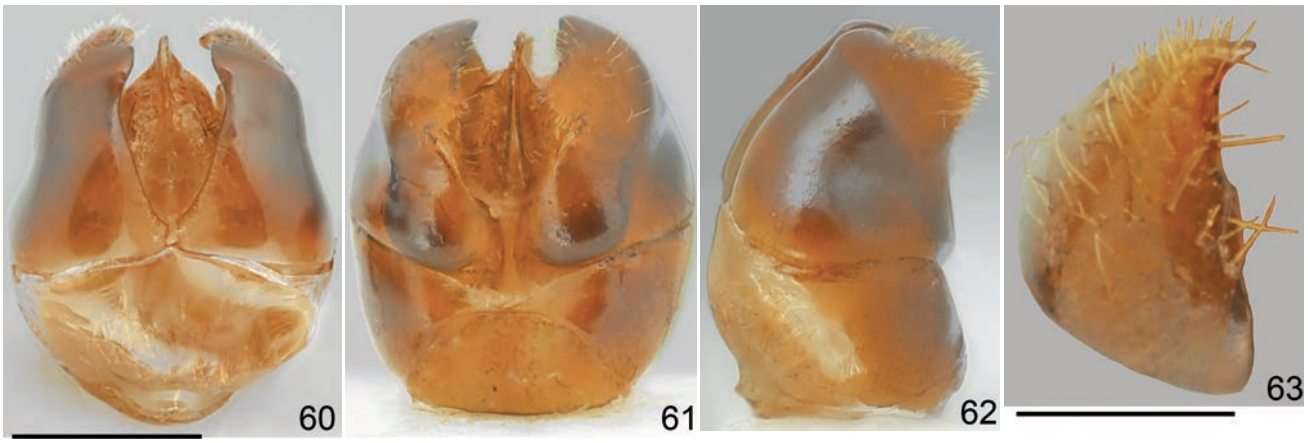
Turkey, Beldibi: *Aphaenogaster festae* Emery, *Aphaenogaster sporadis* Santschi, *Camponotus baldaccii* Emery, *Camponotus lateralis* (Olivier), *Camponotus jaliensis* Dalla Torre, *Camponotus samius* Forel, *Crematogaster ionia* Forel, *Crematogaster lorteti* Forel, *Lasius turcicus* Santschi, *Lepisiota* cf. *caucasica*, *Lepisiota syriaca* (André), *Messor wasmanni* Krausse, *Pheidole* cf. *pallidula*, *Plagiolepis pallescens* sensu Radchenko, *Plagiolepis taurica* Santschi, *Tapinoma* sp., *Tetramorium* cf. *semilaeve* (but not conspecific with *T. galaticum*), and *Trichomyrmex perplexus* (Radchenko).

Turkey, Cakirlar-Hurma rd.: *Cardiocondyla elegans* Emery, *Cardiocondyla mauritanica* Forel, *Cataglyphis nodus* (Brullé), *Lepisiota syriaca* (André) and *Tapinoma* sp.

Differential diagnosis. *Tetramorium hippocratis* is the only species of this group with workers dark coloured, dark brown to black. The darkest forms of *T. atlante* Cagniant, *T. kephalosi* sp. nov. and *T. bellerophoni* sp. nov. are never as dark brown coloured as the palest forms of *T. hippocratis*. In comparison with dark specimens of *T. kephalosi* propodeal spines of *T. hippocratis* are larger and placed closer to the top of mesosoma than in *T. kephalosi*.

Gynes of *T. hippocratis* differ from all species of *T. semilaeve* group in dark brown to black body. Together with *T. atlante* they have the most sculptured scutum with longitudinal striation often extending from base to half length of scutum.

Males of *T. hippocratis* differ from all species of *T. semilaeve* group in dark brown to black body. In structure of male genitalia the most similar species is *T. kephalosi*. Both species have sharp lamella on



Figures 60–63. *Tetramorium hippocratis* Agosti & Collingwood, male genitalia: (60) dorsal, (61) ventral, (62) lateral, (63) apical (scale bar 60–61 = 0.5 mm, 63 = 0.25 mm).

inner margin of apex of paramera but in *T. hippocratis* genitalia in lateral view are more distinctly constricted before apex than in *T. kephalosi* with more angulate inner angle. Males of *T. hippocratis* are smaller from males of *T. kephalosi* with ML 1.698-1.827 vs. 1.831-2.022 and have more converging posterad frontal lobes (FL/FR 1.152-1.267 vs. 1.0-1.146).

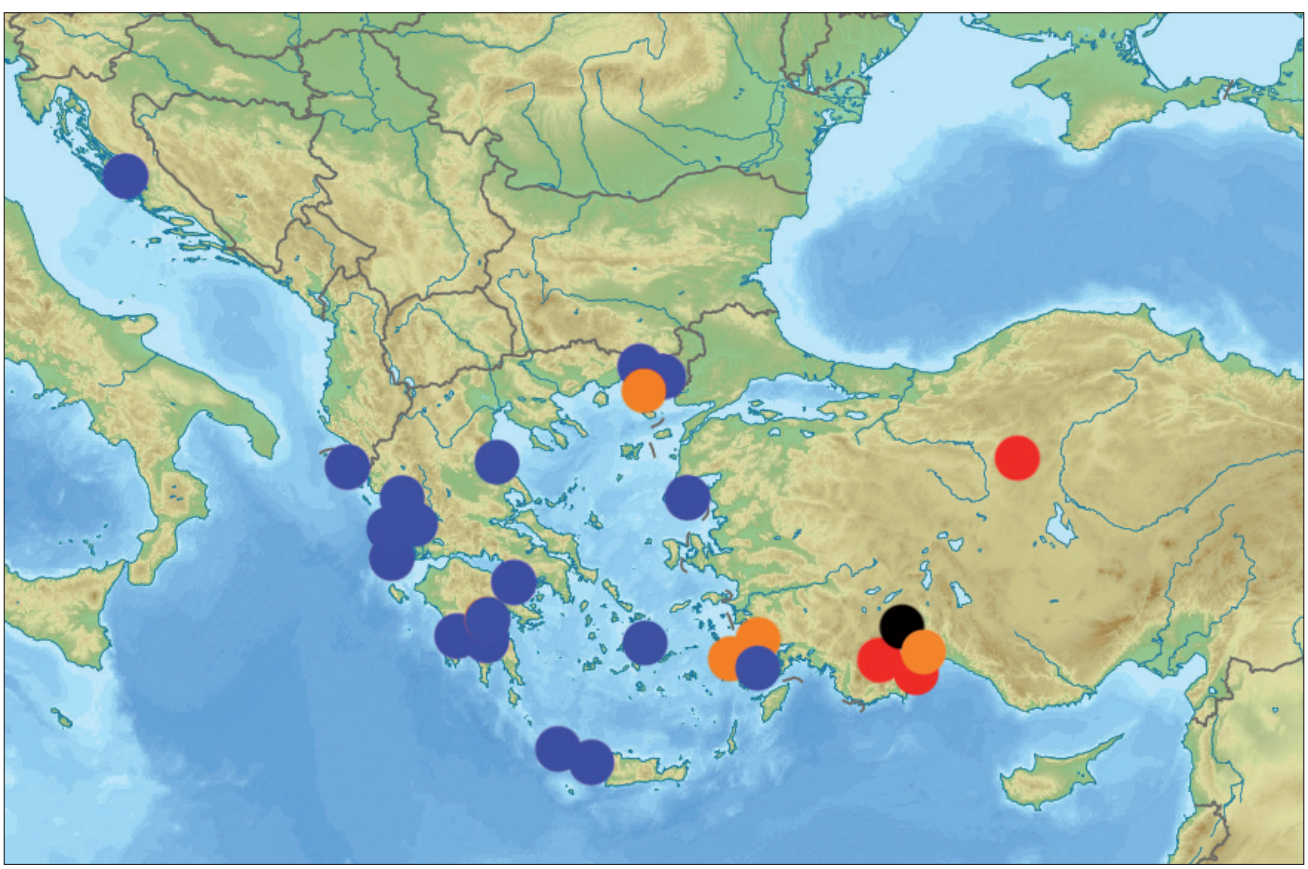


Figure 64. Distribution of *Tetramorium bellerophoni* sp. nov. (●), *Tetramorium galaticum* Menozzi (●), *Tetramorium hippocratis* Agosti & Collingwood (●), and *Tetramorium kephalosi* sp. nov. (●).

Key to workers

1. In nest sample all workers yellowish-brown to black (Figs 28–32, 48–53 and Figs 1–3 p. 45–46 in Borowiec *et al.* 2016) **2**
–. In nest sample workers paler, yellow to pale yellowish-brown (Figs 1–2, 5–6, 15–18 and Figs 1–3, 5–9 on p. 45–47 in Borowiec *et al.* 2015) **4**
2. Occurrence limited to Maghreb . . . . . ***T. atlante***
–. Eastern Mediterranean species **3**
3. Body colouration dark brown to black (Figs 48–53); propodeal spines large and placed closer to the top of mesosoma (Figs 49, 51) . . . . . ***T. hippocratis***
–. Body colouration yellowish brown to brown (Figs 28–32); propodeal spines small and placed lower (Fig. 29) . . . . . ***T. kephalosi***
4. Head striated on almost whole surface, also in postocular area, only between frontal rugose area and rugosities along ocular area on each side with small area of diffused rugosities (Figs 17–18) . . . . . ***T. bellerophoni***
–. Head sculpture partly reduced, at least with postocular area and sides of frons without distinct striation but with at least half of the surface of the anterior part of head striate (Figs 5–6 and Figs 8–9 on p. 48 in Borowiec *et al.* 2015) **5**
5. Occipital margin of head straight or very shallowly concave (Fig. 7 on p. 48 in Borowiec *et al.* 2015); propodeal spines spiniform (Fig. 6 on p. 47 in Borowiec *et al.* 2015); Western Mediterranean species . . . . . ***T. semilaeve***
–. Occipital margin of head always concave (Figs 5–6); propodeal spines triangular (Fig. 2); Eastern Mediterranean species . . . . . ***T. galaticum***

Key to gynes

1. ML > 2; MW > 1.3 . . . . . **2**
–. ML <2, MW<1.3 . . . . . **3**
2. Scutum and scutellum without striation (Fig. 20) . . . . . ***T. bellerophoni***
–. Scutum and scutellum with striation (Fig. 3) . . . . . ***T. galaticum***
3. Scutum at base and laterally with striation extending from base to at least half length of scutum (Fig. 56 and Fig. 5 on p. 46 in Borowiec *et al.* 2016) . . . **4**
–. Scutum completely smooth and shiny or with short striation at base, never extending to half length of scutum (Fig. 33 and Fig. 10 on p. 49 in Borowiec *et al.* 2015) **5**
4. Species occurring in Maghreb . . . . . ***T. atlante***
–. Anatolian species . . . . . ***T. hippocratis***
5. Body colouration dark brown (Figs 33–34), head rugosity thin and fine with sparse punctation between rugae (Fig. 35–37), Eastern Mediterranean species . . . . . ***T. kephalosi***
–. Body colouration light brown (Figs 10–11 on p. 49 in Borowiec *et al.* 2015), head rugosity thick with coarse and dense punctation between rugae (Fig. 12), Western Mediterranean species . . . . . ***T. semilaeve***

Key to males

1. Top of inner margin of paramere, before apical denticle, straight with dentiform plate distinctly extending beyond the sharp edge of paramere (Fig. 19 on p. 53 in Borowiec *et al.* 2015) . . . . . ***T. semilaeve***
–. Top of inner margin of paramere, before apical denticle, straight without distinct, dentiform plate or with narrow lamella (Figs 14, 27, 43, 63 and Fig. 13 on p. 49 in Borowiec *et al.* 2016) **2**
2. Top of inner margin of paramere, before apical denticle, straight without narrow lamella (Figs 14, 27); scutum, in central part, smooth and devoid of longitudinal striation (Figs 9, 22) **3**
–. Top of inner margin of paramere, before apical denticle, straight with narrow lamella (Figs 43, 63); scutum, in central part, with longitudinal striation (Figs 38, 58 and Fig. 8 on p. 48 in Borowiec *et al.* 2016) **4**
3. Head less regularly rounded behind eyes, slightly trapezoidal; clypeus with circular rugosities or at least strongly converging; frons microreticulate, dull or with only narrow smooth area; area between eye and ocelli with high oblique rugosities (Fig. 47); genitalia, in profile, deeply constricted before apex, with slightly longer and sharper apical angle (Fig. 26); top of inner margin of paramere with sparse, erect setae (Fig. 27) . . . . . ***T. bellerophoni***
–. Head regularly rounded; clypeus with parallel rugosities at most with only two medial ridges partly convergent; frons partly smooth and shiny; area between eye and ocelli partly without rugosities, only with dull microreticulation (Fig. 8); genitalia, in profile, less constricted before apex with slightly shorter and less sharp apical angle (Fig. 13); top of inner margin of paramere without setae (Fig. 14) . . . . . ***T. galaticum***
4. Propodeum with distinct angulations in position of propodeal teeth (Fig. 9 on p. 48 in Borowiec *et al.* 2016), Maghreb . . . . . ***T. atlante***
–. Propodeum regularly rounded to finely angulate in position of propodeal teeth (Figs 39, 59), Eastern Mediterranean species **5**
5. Body black (Figs 58, 59); ML<1.83; FL/FR>1.15; head with convex sides, occipital margin slightly rounded, occipital corners widely rounded (Fig. 55); scutum in anterior part and laterally smooth and shiny (Fig. 58) . . . . . ***T. hippocratis***
–. Body black brown (Figs 38, 39), ML>1.83; FL/FR <1.15; head slightly trapezoidal, with almost straight occipital margin and more or less rounded occipital corners (Fig. 44); scutum in anterior part mostly with distinct striation (Fig. 38) . . . . . ***T. kephalosi***

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Table 1. Comparative measurements and indices of worker caste of *Tetramorium semilaeve* complex.

	T. atlante	*T. bellerophoni*	*T. galaticum*	*T. hippocratis*	*T. kephalosi*	*T. semileave*
CL	0.77 ± 0.03 (0.737–0.844)	0.772 ± 0.034 (0.693–0.816)	0.717 ± 0.027 (0.648–0.771)	0.774 ± 0.04 (0.687–0.866)	0.742 ± 0.047 (0.615–0.827)	0.723 ± 0.034 (0.637–0.771)
POC	0.3 ± 0.02 (0.268–0.324)	0.292 ± 0.018 (0.257–0.324)	0.286 ± 0.02 (0.257–0.341)	0.312 ± 0.02 (0.268–0.357)	0.289 ± 0.028 (0.235–0.346)	0.293 ± 0.021 (0.246–0.324)
CW	0.755 ± 0.04 (0.704–0.866)	0.745 ± 0.038 (0.659–0.793)	0.682 ± 0.032 (0.603–0.729)	0.762 ± 0.04 (0.659–0.841)	0.732 ± 0.054 (0.592–0.827)	0.693 ± 0.037 (0.606–0.749)
FR	0.27 ± 0.017 (0.257–0.313)	0.281± 0.018 (0.235–0.302)	0.252 ± 0.015 (0.221–0.274)	0.267± 0.02 (0.223–0.288)	0.253± 0.019 (0.212–0.29)	0.253 ± 0.015 (0.234–0.279)
FL	0.271 ± 0.016 (0.257–0.313)	0.286 ± 0.017 (0.251–0.313)	0.261 ± 0.012 (0.235–0.279)	0.271 ± 0.02 (0.229–0.296)	0.257 ± 0.019 (0.212–0.291)	0.262 ± 0.017 (0.235–0.291)
SL	0.535 ± 0.02 (0.506–0.575)	0.561 ± 0.025 (0.503–0.589)	0.525 ± 0.02 (0.492–0.581)	0.563 ± 0.03 (0.486–0.648)	0.534 ± 0.031 (0.444–0.603)	0.534 ± 0.03 (0.503–0.626)
OMD	0.192 ± 0.015 (0.17–0.212)	0.192 ± 0.01 (0.179–0.212)	0.174 ± 0.011 (0.156–0.201)	0.194 ± 0.02 (0.168–0.226)	0.181 ± 0.015 (0.156–0.212)	0.18 ± 0.021 (0.145–0.223)
EL	0.146 ± 0.08 (0.128–0.291)	0.146 ± 0.01 (0.123–0.156)	0.129 ± 0.01 (0.115–0.145)	0.155 ± 0.02 (0.112–0.187)	0.14 ± 0.012 (0.112–0.167)	0.13 ± 0.01 (0.106–0.145)
EH	0.098 ± 0.01 (0.078–0.101)	0.111 ± 0.007 (0.101–0.123)	0.094 ± 0.007 (0.078–0.106)	0.111 ± 0.01 (0.089–0.134)	0.102 ± 0.007 (0.089–0.115)	0.091 ± 0.006 (0.078–0.101)
ML	0.827 ± 0.039 (0.782–0.927)	0.852 ± 0.044 (0.76–0.911)	0.781 ± 0.037 (0.726–0.86)	0.847 ± 0.05 (0.749–0.96)	0.801 ± 0.069 (0.648–0.939)	0.781 ± 0.043 (0.737–0.894)
SPSP	0.148 ± 0.013 (0.112–0.17)	0.168± 0.013 (0.148–0.201)	0.135± 0.01 (0.123–0.162)	0.153 ± 0.01 (0.134–0.192)	0.141 ± 0.013 (0.111–0.168)	0.133 ± 0.015 (0.112–0.179)
SPL	0.106 ± 0.011 (0.089–0.126)	0.111 ± 0.007 (0.101–0.123)	0.1 ± 0.01 (0.089–0.123)	0.112 ± 0.01 (0.089–0.142)	0.102 ± 0.013 (0.078–0.123)	0.099 ± 0.007 (0.089–0.112)
PEL	0.191 ± 0.014 (0.179–0.229)	0.227 ± 0.014 (0.204–0.246)	0.2 ± 0.01 (0.19–0.212)	0.207 ± 0.01 (0.167–0.246)	0.203 ± 0.02 (0.156–0.257)	0.184 ± 0.01 (0.167–0.201)
NOL	0.153 ± 0.011 (0.134–0.179)	0.182 ± 0.016 (0.156–0.212)	0.169 ± 0.012 (0.145–0.19)	0.161 ± 0.01 (0.142–0.179)	0.168 ± 0.017 (0.134–0.207)	0.144 ± 0.013 (0.128–0.168)
PPL	0.176 ± 0.007 (0.162–0.19)	0.204 ± 0.016 (0.17–0.223)	0.186 ± 0.01 (0.168–0.201)	0.16 ± 0.02 (0.134–0.196)	0.182 ± 0.017 (0.14–0.223)	0.176 ± 0.009 (0.156–0.19)
PEH	0.25 ± 0.013 (0.235–0.282)	0.263 ± 0.015 (0.243–0.291)	0.246 ± 0.016 (0.226–0.274)	0.266 ± 0.02 (0.232–0.302)	0.243 ± 0.022 (0.193–0.285)	0.239 ± 0.018 (0.212–0.291)
NOH	0.177 ± 0.016 (0.165–0.223)	0.194 ± 0.012 (0.168–0.212)	0.174 ± 0.014 (0.156–0.201)	0.153 ± 0.01 (0.123–0.179)	0.17 ± 0.016 (0.134–0.201)	0.158 ± 0.017 (0.14–0.218)
PPH	0.243 ± 0.011 (0.229–0.268)	0.268 ± 0.011 (0.249–0.282)	0.248 ± 0.013 (0.223–0.268)	0.249 ± 0.02 (0.209–0.291)	0.238 ± 0.023 (0.201–0.291)	0.228 ± 0.02 (0.201–0.291)
MW	0.471 ± 0.024 (0.441–0.531)	0.488 ± 0.029 (0.425–0.536)	0.442 ± 0.023 (0.402–0.492)	0.48 ± 0.04 (0.402–0.57)	0.459 ± 0.035 (0.38–0.528)	0.45 ± 0.027 (0.413–0.508)
PEW	0.235 ± 0.013 (0.215–0.267)	0.238 ± 0.017 (0.201–0.268)	0.217 ± 0.015 (0.19–0.246)	0.24 ± 0.02 (0.184–0.271)	0.23 ± 0.024 (0.178–0.293)	0.22 ± 0.014 (0.201–0.246)
PPW	0.261 ± 0.01 (0.246–0.285)	0.287 ± 0.018 (0.26–0.313)	0.263 ± 0.013 (0.24–0.285)	0.274 ± 0.02 (0.223–0.318)	0.261 ± 0.023 (0.215–0.324)	0.256 ± 0.018 (0.223–0.307)
CS	0.763 ± 0.035 (0.721–0.855)	0.759 ± 0.035 (0.676–0.804)	0.699 ± 0.03 (0.626–0.75)	0.768 ± 0.04 (0.673–0.853)	0.738 ± 0.05 (0.604–0.827)	0.707 ± 0.036 (0.622–0.76)
EYE	0.16 ± 0.01 (0.138–0.167)	0.169 ± 0.007 (0.155–0.183)	0.16 ± 0.006 (0.148–0.168)	0.173 ± 0.01 (0.142–0.195)	0.163 ± 0.007 (0.145–0.175)	0.155 ± 0.007 (0.143–0.166)

Table 1. Continued.

	T. atlante	*T. bellerophoni*	*T. galaticum*	*T. hippocratis*	*T. kephalosi*	*T. semileave*
CL/CW	1.021 ± 0.02 (0.975–1.047)	1.037 ± 0.015 (1.0–1.077)	1.051 ± 0.018 (1.025–1.088)	1.017 ± 0.02 (0.964–1.049)	1.017 ± 0.022 (0.963–1.059)	1.042 ± 0.013 (1.015–1.075)
FR/CS	0.353 ± 0.009 (0.341–0.367)	0.37 ± 0.012 (0.348–0.392)	0.363 ± 0.012 (0.348–0.392)	0.352 ± 0.01 (0.33–0.375)	0.344 ± 0.012 (0.317–0.37)	0.358 ± 0.01 (0.345–0.378)
FL/FR	1.009 ± 0.01 (1.0–1.043)	1.015 ± 0.026 (0.964–1.076)	1.034 ± 0.022 (1.0–1.089)	1.01 ± 0.01 (1–1.06)	1.016 ± 0.02 (0.979–1.054)	1.025 ± 0.02 (0.996–1.066)
SL/CS	0.703 ± 0.016 (0.672–0.741)	0.738 ± 0.014 (0.705–0.757)	0.752 ± 0.016 (0.725–0.787)	0.733 ± 0.02 (0.706–0.769)	0.725 ± 0.017 (0.699–0.769)	0.756 ± 0.03 (0.732–0.841)
MW/CS	0.618 ± 0.008 (0.6–0.632)	0.643 ± 0.017 (0.603–0.676)	0.634 ± 0.015 (0.611–0.662)	0.625 ± 0.02 (0.592–0.668)	0.624 ± 0.011 (0.594–0.646)	0.636 ± 0.018 (0.612–0.682)
PEW/PPW	0.902 ± 0.03 (0.857–0.937)	0.829 ± 0.047 (0.773–0.977)	0.824 ± 0.044 (0.764–0.931)	0.876 ± 0.04 (0.786–0.939)	0.881 ± 0.037 (0.797–0.937)	0.861 ± 0.033 (0.801–0.918)
NOH/NOL	1.163 ± 0.08 (1.057–1.336)	1.045 ± 0.081 (0.884–1.218)	1.029 ± 0.062 (0.936–1.131)	0.953 ± 0.07 (0.8–1.085)	1.026 ± 0.069 (0.884–1.204)	1.1 ± 0.113 (0.929–1.298)
NOH/PEL	0.928 ± 0.05 (0.852–1.0)	0.838 ± 0.061 (0.7–0.918)	0.869 ± 0.069 (0.764–1.0)	0.744 ± 0.07 (0.611–0.889)	0.846 ± 0.074 (0.696–1.123)	0.86 ± 0.085 (0.819–1.085)
NOL/PEL	0.801 ± 0.04 (0.729–0.872)	0.801 ± 0.041 (0.753–0.862)	0.843 ± 0.047 (0.763–0.926)	0.781 ± 0.05 (0.714–0.889)	0.827 ± 0.05 (0.726–0.942)	0.784 ± 0.045 (0.705–0.871)
PEH/NOL	1.637 ± 0.08 (1.538–1.722)	1.422 ± 0.102 (1.295–1.558)	1.447 ± 0.074 (1.358–1.621)	1.654 ± 0.06 (1.533–1.769)	1.462 ± 0.076 (1.321–1.623)	1.66 ± 0.152 (1.399–1.922)
PEW/PEH	0.943 ± 0.03 (0.914–0.979)	0.924 ± 0.054 (0.845–1.0)	0.886 ± 0.035 (0.841–0.94)	0.892 ± 0.05 (0.75–0.98)	0.945 ± 0.045 (0.84–1.051)	0.926 ± 0.049 (0.805–1.0)
CS/PEW	3.245 ± 0.07 (3.14–3.351)	3.192 ± 0.155 (2.893–3.565)	3.2 ± 0.139 (2.945–3.492)	3.214 ± 0.17 (2.979–3.787)	3.203 ± 0.152 (2.788–3.592)	3.215 ± 0.089 (3.026–3.336)
CS/PPW	2.927 ± 0.08 (2.816–3.065)	2.642 ± 0.098 (2.504–2.827)	2.658 ± 0.115 (2.511–2.998)	2.812 ± 0.1 (2.563–3.012)	2.816 ± 0.108 (2.521–2.994)	2.769 ± 0.154 (2.425–3.024)
CW/MW	1.619 ± 0.02 (1.582–1.666)	1.557 ± 0.041 (1.479–1.659)	1.577 ± 0.038 (1.51–1.637)	1.602 ± 0.05 (1.498–1.689)	1.604 ± 0.029 (1.547–1.683)	1.541 ± 0.046 (1.435–1.602)

Table 2. Comparative measurements and indices of gyne caste of *Tetramorium semilaeve* complex.

	T. atlante	*T. bellerophoni*	*T. galaticum*	*T. hippocratis*	*T. kephalosi*	*T. semileave*
CL	1.05 ± 0.013 (1.039–1.065)	1.182 ± 0.019 (1.151–1.206)	1.164 ± 0.023 (1.117–1.187)	1.046 ± 0.016 (1.036–1.079)	1.037 ± 0.027 (0.994–1.084)	0.999 ± 0.015 (0.983–1.027)
POC	0.388 ± 0.013 (0.374–0.4)	0.421 ± 0.037 (0.355–0.465)	0.426 ± 0.024 (0.387–0.46)	0.372 ± 0.03 (0.324–0.403)	0.4 ± 0.021 (0.363–0.446)	0.378 ± 0.019 (0.34–0.413)
CW	1.17 ± 0.02 (1.148–1.187)	1.274 ± 0.05 (1.201–1.237)	1.27 ± 0.025 (1.239–1.309)	1.12 ± 0.014 (1.101–1.14)	1.137 ± 0.034 (1.078–1.181)	1.09 ± 0.05 (0.978–1.161)
FL	0.409 ± 0.007 (0.4–0.413)	0.468 ± 0.019 (0.439–0.489)	0.457 ± 0.014 (0.436–0.483)	0.393 ± 0.008 (0.381–0.403)	0.393 ± 0.011 (0.366–0.413)	0.397 ± 0.009 (0.38–0.412)
FR	0.389 ± 0.01 (0.379–0.398)	0.44 ± 0.043 (0.358–0.478)	0.454 ± 0.013 (0.43–0.471)	0.392 ± 0.008 (0.381–0.403)	0.39 ± 0.011 (0.369–0.411)	0.385 ± 0.018 (0.357–0.413)
SL	0.727 ± 0.022 (0.704–0.749)	0.804 ± 0.025 (0.771–0.739)	0.824 ± 0.03 (0.76–0.854)	0.758 ± 0.009 (0.748–0.773)	0.729 ± 0.016 (0.704–0.765)	0.715 ± 0.015 (0.693–0.737)
OMD	0.21 ± 0.016 (0.201–0.229)	0.262 ± 0.009 (0.246–0.268)	0.279 ± 0.017 (0.257–0.313)	0.222 ± 0.012 (0.201–0.237)	0.227 ± 0.01 (0.212–0.246)	0.223 ± 0.016 (0.212–0.257)
EL	0.287 ± 0.007 (0.279–0.291)	0.306 ± 0.01 (0.291–0.318)	0.297 ± 0.019 (0.274–0.335)	0.296 ± 0.01 (0.288–0.316)	0.288 ± 0.01 (0.268–0.302)	0.274 ± 0.01 (0.257–0.291)
EH	0.227 ± 0.02 (0.212–0.246)	0.248 ± 0.007 (0.237–0.254)	0.231 ± 0.012 (0.212–0.246)	0.246 ± 0.011 (0.23–0.266)	0.218 ± 0.007 (0.212–0.235)	0.218 ± 0.012 (0.193–0.235)
ML	1.849 ± 0.001 (1.848–1.85)	2.124 ± 0.05 (2.033–2.184)	2.127 ± 0.06 (2.043–2.230)	1.886 ± 0.05 (1.784–1.935)	1.887 ± 0.04 (1.789–1.951)	1.699 ± 0.217 (1.053–1.813)
SPSP	0.294 ± 0.02 (0.268–0.313)	0.375 ± 0.017 (0.352–0.405)	0.349 ± 0.02 (0.324–0.391)	0.306 ± 0.013 (0.288–0.331)	0.297 ± 0.017 (0.257–0.324)	0.267 ± 0.015 (0.24–0.291)
SPL	0.216 ± 0.006 (0.212–0.223)	0.233 ± 0.011 (0.218–0.246)	0.212 ± 0.011 (0.201–0.232)	0.203 ± 0.014 (0.18–0.216)	0.208 ± 0.019 (0.19–0.279)	0.193 ± 0.01 (0.173–0.201)
PEL	0.29 ± 0.02 (0.279–0.313)	0.389 ± 0.022 (0.358–0.419)	0.352 ± 0.017 (0.335–0.38)	0.337 ± 0.009 (0.324–0.345)	0.33 ± 0.011 (0.313–0.355)	0.298 ± 0.014 (0.279–0.324)
NOL	0.214 ± 0.008 (0.207–0.223)	0.287 ± 0.018 (0.273–0.318)	0.274 ± 0.011 (0.257–0.291)	0.221 ± 0.01 (0.201–0.23)	0.251 ± 0.01 (0.234–0.268)	0.225 ± 0.022 (0.179–0.256)
PPL	0.315 ± 0.011 (0.302–0.324)	0.357 ± 0.014 (0.346–0.38)	0.367 ± 0.031 (0.313–0.402)	0.297 ± 0.017 (0.273–0.316)	0.324 ± 0.014 (0.291–0.352)	0.301 ± 0.01 (0.285–0.313)
PEH	0.458 ± 0.011 (0.446–0.469)	0.508 ± 0.006 (0.502–0.514)	0.509 ± 0.018 (0.492–0.536)	0.454 ± 0.01 (0.446–0.475)	0.448 ± 0.014 (0.425–0.469)	0.424 ± 0.011 (0.408–0.447)
NOH	0.287 ± 0.025 (0.257–0.302)	0.355 ± 0.01 (0.346–0.369)	0.341 ± 0.018 (0.313–0.357)	0.221 ± 0.016 (0.201–0.244)	0.29 ± 0.023 (0.245–0.324)	0.283 ± 0.019 (0.257–0.313)
PPH	0.436 ± 0.007 (0.425–0.446)	0.534 ± 0.007 (0.525–0.542)	0.538 ± 0.025 (0.503–0.569)	0.463 ± 0.017 (0.432–0.489)	0.468 ± 0.024 (0.422–0.514)	0.423 ± 0.017 (0.391–0.447)
MW	1.125 ± 0.01 (1.11–1.135)	1.351 ± 0.019 (1.324–1.367)	1.366 ± 0.032 (1.324–1.424)	1.189 ± 0.016 (1.173–1.216)	1.107 ± 0.054 (1.027–1.213)	1.069 ± 0.04 (1.0–1.141)
PEW	0.39 ± 0.01 (0.38–0.4)	0.468 ± 0.007 (0.46–0.478)	0.461 ± 0.012 (0.446–0.482)	0.405 ± 0.01 (0.388–0.418)	0.4 ± 0.022 (0.346–0.441)	0.393 ± 0.022 (0.348–0.419)
PPW	0.488 ± 0.02 (0.475–0.508)	0.635 ± 0.011 (0.618–0.651)	0.646 ± 0.012 (0.62–0.659)	0.511 ± 0.007 (0.503–0.521)	0.528 ± 0.037 (0.469–0.587)	0.509 ± 0.019 (0.48–0.547)
CS	1.11 ± 0.014 (1.094–1.12)	1.226 ± 0.035 (1.176–1.267)	1.217 ± 0.023 (1.178–1.248)	1.082 ± 0.012 (1.068–1.108)	1.087 ± 0.028 (1.036–1.129)	1.046 ± 0.032 (0.986–1.094)
EYE	0.232 ± 0.012 (0.224–0.246)	0.221 ± 0.007 (0.213–0.229)	0.217 ± 0.012 (0.202–0.232)	0.25 ± 0.007 (0.24–0.26)	0.231 ± 0.007 (0.219–0.243)	0.235 ± 0.012 (0.219–0.251)

Table 2. Continued.

	T. atlante	*T. bellerophoni*	*T. galaticum*	*T. hippocratis*	*T. kephalosi*	*T. semileave*
CL/CW	0.898 ± 0.015 (0.88–0.907)	0.926 ± 0.024 (0.898–0.958)	0.916 ± 0.009 (0.902–0.931)	0.933 ± 0.01 (0.909–0.949)	0.912 ± 0.017 (0.883–0.941)	0.917 ± 0.038 (0.882–0.985)
FR/CS	0.368 ± 0.01 (0.357–0.378)	0.383 ± 0.006 (0.373–0.391)	0.375 ± 0.007 (0.368–0.387)	0.363 ± 0.004 (0.355–0.37)	0.362 ± 0.013 (0.342–0.388)	0.377 ± 0.011 (0.36–0.393)
FL/FR	1.05 ± 0.04 (1.005–1.089)	1.079 ± 0.1 (1.015–1.285)	1.01 ± 0.01 (1.0–1.03)	1.003 ± 0.004 (1.0–1.009)	1.018 ± 0.01 (1.0–1.056)	1.04 ± 0.04 (1.0–1.116)
SL/CS	0.655 ± 0.014 (0.644–0.671)	0.649 ± 0.014 (0.636–0.67)	0.677 ± 0.022 (0.635–0.707)	0.67 ± 0.01 (0.675–0.724)	0.67 ± 0.014 (0.646–0.688)	0.686 ± 0.019 (0.654–0.717)
MW/CS	1.014 ± 0.09 (0.995–1.032)	1.1 ± 0.047 (1.045–1.162)	1.123 ± 0.017 (1.098–1.149)	1.098 ± 0.01 (1.084–1.12)	1.022 ± 0.034 (0.983–1.103)	1.024 ± 0.043 (0.94–1.088)
PEW/PPW	0.801 ± 0.014 (0.787–0.815)	0.738 ± 0.019 (0.708–0.758)	0.715 ± 0.026 (0.678–0.748)	0.793 ± 0.02 (0.771–0.829)	0.76 ± 0.042 (0.685–0.857)	0.773 ± 0.035 (0.692–0.821)
NOH/NOL	1.345 ± 0.168 (1.152–1.459)	1.241 ± 0.097 (1.088–1.352)	1.261 ± 0.084 (1.168–1.389)	1.003 ± 0.09 (0.875–1.142)	1.158 ± 0.09 (1.0–1.317)	1.266 ± 0.136 (1.094–1.587)
NOH/PEL	0.989 ± 0.08 (0.921–1.082)	0.916 ± 0.075 (0.826–1.031)	0.957 ± 0.037 (0.905–1.0)	0.656 ± 0.06 (0.583–0.739)	0.881 ± 0.073 (0.756–1.035)	0.949 ± 0.053 (0.883–1.036)
NOL/PEL	0.74 ± 0.07 (0.661–0.799)	0.739 ± 0.022 (0.714–0.763)	0.783 ± 0.065 (0.676–0.869)	0.655 ± 0.032 (0.622–0.696)	0.761 ± 0.03 (0.685–0.8)	0.755 ± 0.059 (0.63–0.847)
PEH/NOL	2.139 ± 0.03 (2.103–2.16)	1.775 ± 0.093 (1.616–1.842)	1.882 ± 0.061 (1.776–1.921)	2.063 ± 0.09 (1.937–2.214)	1.789 ± 0.09 (1.645–1.974)	1.9 ± 0.175 (1.746–2.374)
PEW/PEH	0.853 ± 0.04 (0.83–0.897)	0.922 ± 0.02 (0.897–0.952)	0.915 ± 0.021 (0.884–0.938)	0.892 ± 0.03 (0.848–0.935)	0.894 ± 0.043 (0.774–0.972)	0.931 ± 0.048 (0.818–0.971)
CS/PEW	2.845 ± 0.106 (2.734–2.946)	2.619 ± 0.095 (2.46–2.711)	2.64 ± 0.095 (2.482–2.779)	2.674 ± 0.08 (2.573–2.8)	2.718 ± 0.162 (2.553–3.202)	2.62 ± 0.123 (2.475–2.879)
CS/PPW	2.278 ± 0.12 (2.152–2.357)	1.919 ± 0.04 (1.864–1.979)	1.88 ± 0.031 (1.827–1.929)	2.118 ± 0.04 (2.058–2.161)	2.06 ± 0.119 (1.874–2.308)	2.052 ± 0.085 (1.947–2.185)
CW/MW	0.987 ± 0.02 (0.967–1.005)	0.911 ± 0.039 (0.86–0.957)	0.891 ± 0.013 (0.87–0.911)	0.911 ± 0.009 (0.893–0.922)	0.98 ± 0.03 (0.907–1.018)	1.02 ± 0.057 (0.911–1.129)
WAIST	0.792 ± 0.035 (0.764–0.83)	0.903 ± 0.024 (0.88–0.943)	0.913 ± 0.02 (0.89–0.95)	0.847 ± 0.02 (0.819–0.874)	0.856 ± 0.04 (0.745–0.909)	0.871 ± 0.035 (0.817–0.918)

Table 3. Comparative measurements and indices of male caste of *Tetramorium semilaeve* complex.

	T. atlante	*T. bellerophoni*	*T. galaticum*	*T. hippocratis*	*T. kephalosi*	*T. semileave*
CL	0.694 ± 0.013 (0.673–0.715)	0.694 ± 0.014 (0.679–0.715)	0.723 ± 0.009 (0.715–0.732)	0.699 ± 0.016 (0.683–0.716)	0.699 ± 0.018 (0.664–0.726)	0.667 ± 0.018 (0.637–0.693)
POC	0.284 ± 0.01 (0.268–0.302)	0.271 ± 0.014 (0.246–0.285)	0.289 ± 0.018 (0.268–0.302)	0.242 ± 0.014 (0.23–0.259)	0.302 ± 0.019 (0.262–0.332)	0.279 ± 0.019 (0.263–0.313)
CW	0.836 ± 0.014 (0.81–0.854)	0.823 ± 0.027 (0.785–0.858)	0.853 ± 0.039 (0.824–0.897)	0.817 ± 0.01 (0.806–0.823)	0.811 ± 0.023 (0.765–0.863)	0.807 ± 0.024 (0.771–0.827)
FR	0.258 ± 0.009 (0.246–0.274)	0.254 ± 0.014 (0.24–0.274)	0.27 ± 0.008 (0.263–0.279)	0.235 ± 0.02 (0.215–0.258)	0.246 ± 0.01 (0.235–0.268)	0.238 ± 0.012 (0.221–0.257)
FL	0.292 ± 0.006 (0.285–0.302)	0.283 ± 0.011 (0.268–0.296)	0.305 ± 0.009 (0.296–0.313)	0.286 ± 0.012 (0.273–0.298)	0.261 ± 0.015 (0.235–0.291)	0.292 ± 0.013 (0.277–0.307)
SL	0.311 ± 0.008 (0.302–0.324)	0.325 ± 0.013 (0.307–0.346)	0.342 ± 0.006 (0.335–0.346)	0.335 ± 0.02 (0.316–0.36)	0.347 ± 0.016 (0.33–0.38)	0.333 ± 0.016 (0.307–0.358)
OMD	0.076 ± 0.007 (0.061–0.084)	0.063 ± 0.01 (0.053–0.078)	0.069 ± 0.012 (0.056–0.078)	0.09 ± 0.02 (0.07–0.1)	0.063 ± 0.012 (0.045–0.089)	0.068 ± 0.016 (0.056–0.089)
EL	0.315 ± 0.008 (0.302–0.324)	0.316 ± 0.019 (0.291–0.344)	0.339 ± 0.018 (0.318–0.352)	0.312 ± 0.007 (0.302–0.317)	0.314 ± 0.007 (0.302–0.324)	0.312 ± 0.01 (0.302–0.324)
EH	0.258 ± 0.005 (0.249–0.263)	0.256 ± 0.007 (0.243–0.265)	0.259 ± 0.009 (0.251–0.268)	0.269 ± 0.01 (0.259–0.281)	0.253 ± 0.008 (0.24–0.265)	0.251 ± 0.011 (0.235–0.263)
ML	1.81 ± 0.113 (1.617–1.935)	1.943 ± 0.049 (1.891–2.021)	2.017 ± 0.026 (1.989–2.04)	1.76 ± 0.06 (1.698–1.827)	1.909 ± 0.055 (1.831–2.022)	1.716 ± 0.069 (1.626–1.785)
SPSP	0.243 ± 0.01 (0.235–0.263)	0.281 ± 0.028 (0.24–0.324)	0.259 ± 0.021 (0.235–0.273)	0.264 ± 0.02 (0.245–0.273)	0.26 ± 0.012 (0.246–0.279)	0.226 ± 0.014 (0.212–0.246)
SPL	0.216 ± 0.011 (0.201–0.232)	0.232 ± 0.02 (0.201–0.257)	0.251 ± 0.026 (0.223–0.274)	0.24 ± 0.02 (0.215–0.259)	0.244 ± 0.018 (0.201–0.268)	0.205 ± 0.013 (0.184–0.223)
PEL	0.32 ± 0.011 (0.302–0.335)	0.365 ± 0.015 (0.346–0.391)	0.346 ± 0.019 (0.324–0.358)	0.374 ± 0.014 (0.36–0.388)	0.344 ± 0.012 (0.324–0.368)	0.275 ± 0.017 (0.257–0.302)
NOL	0.244 ± 0.019 (0.212–0.268)	0.262 ± 0.01 (0.245–0.274)	0.257 ± 0.019 (0.235–0.268)	0.221 ± 0.03 (0.187–0.245)	0.247 ± 0.025 (0.179–0.279)	0.176 ± 0.018 (0.156–0.201)
PPL	0.304 ± 0.018 (0.279–0.324)	0.298 ± 0.017 (0.268–0.313)	0.345 ± 0.017 (0.33–0.363)	0.317 ± 0.014 (0.302–0.331)	0.301 ± 0.022 (0.246–0.335)	0.287 ± 0.017 (0.263–0.302)
PEH	0.333 ± 0.01 (0.313–0.346)	0.32 ± 0.011 (0.312–0.341)	0.322 ± 0.026 (0.302–0.352)	0.321 ± 0.008 (0.316–0.331)	0.325 ± 0.017 (0.291–0.352)	0.286 ± 0.022 (0.257–0.313)
NOH	0.206 ± 0.015 (0.19–0.235)	0.203 ± 0.018 (0.179–0.223)	0.193 ± 0.028 (0.167–0.223)	0.153 ± 0.02 (0.144–0.173)	0.188 ± 0.015 (0.168–0.212)	0.163 ± 0.01 (0.156–0.179)
PPH	0.464 ± 0.029 (0.425–0.503)	0.453 ± 0.023 (0.413–0.48)	0.459 ± 0.024 (0.435–0.483)	0.432 ± 0.01 (0.417–0.446)	0.478 ± 0.034 (0.38–0.525)	0.418 ± 0.015 (0.391–0.425)
MW	1.108 ± 0.049 (1.067–1.2)	1.221 ± 0.045 (1.148–1.281)	1.234 ± 0.08 (1.179–1.324)	1.215 ± 0.02 (1.194–1.227)	1.137 ± 0.045 (1.065–1.213)	1.125 ± 0.056 (1.056–1.223)
PEW	0.36 ± 0.005 (0.351–0.366)	0.361 ± 0.019 (0.335–0.38)	0.372 ± 0.042 (0.324–0.402)	0.358 ± 0.005 (0.352–0.363)	0.377 ± 0.014 (0.345–0.391)	0.337 ± 0.023 (0.307–0.368)
PPW	0.518 ± 0.02 (0.492–0.547)	0.549 ± 0.007 (0.541–0.559)	0.537 ± 0.032 (0.514–0.559)	0.475 ± 0.008 (0.474–0.476)	0.533 ± 0.042 (0.447–0.615)	0.478 ± 0.022 (0.453–0.503)
CS	0.765 ± 0.014 (0.742–0.785)	0.759 ± 0.019 (0.733–0.787)	0.788 ± 0.024 (0.77–0.815)	0.758 ± 0.01 (0.745–0.768)	0.755 ± 0.019 (0.721–0.795)	0.737 ± 0.019 (0.704–0.755)
EYE	0.374 ± 0.002 (0.372–0.379)	0.377 ± 0.008 (0.364–0.387)	0.379 ± 0.009 (0.37–0.387)	0.382 ± 0.01 (0.37–0.392)	0.361 ± 0.05 (0.202–0.398)	0.382 ± 0.009 (0.37–0.395)

Table 3. Continued.

	T. atlante	*T. bellerophoni*	*T. galaticum*	*T. hippocratis*	*T. kephalosi*	*T. semileave*
CL/CW	0.831 ± 0.004 (0.824–0.837)	0.844 ± 0.019 (0.816–0.868)	0.848 ± 0.028 (0.816–0.868)	0.856 ± 0.01 (0.847–0.872)	0.862 ± 0.017 (0.831–0.887)	0.826 ± 0.023 (0.797–0.857)
FR/CS	0.337 ± 0.01 (0.32–0.349)	0.335 ± 0.012 (0.32–0.348)	0.343 ± 0.005 (0.337–0.348)	0.378 ± 0.01 (0.367–0.392)	0.326 ± 0.016 (0.309–0.363)	0.323 ± 0.012 (0.314–0.345)
FL/FR	1.134 ± 0.06 (1.044–1.228)	1.116 ± 0.04 (1.062–1.185)	1.132 ± 0.051 (1.1–1.19)	1.223 ± 0.06 (1.152–1.267)	1.061 ± 0.04 (1.0–1.146)	1.228 ± 0.06 (1.132–1.306)
SL/CS	0.407 ± 0.009 (0.395–0.421)	0.429 ± 0.016 (0.498–0.444)	0.435 ± 0.013 (0.425–0.45)	0.443 ± 0.03 (0.412–0.473)	0.459 ± 0.013 (0.439–0.478)	0.452 ± 0.015 (0.436–0.478)
MW/CS	1.449 ± 0.06 (1.389–1.565)	1.609 ± 0.02 (1.566–1.628)	1.566 ± 0.052 (1.532–1.626)	1.603 ± 0.005 (1.597–1.607)	1.506 ± 0.059 (1.425–1.609)	1.528 ± 0.093 (1.411–1.684)
PEW/PPW	0.696 ± 0.03 (0.655–0.744)	0.657 ± 0.031 (0.619–0.695)	0.74 ± 0.029 (0.719–0.761)	0.754 ± 0.01 (0.742–0.765)	0.702 ± 0.035 (0.636–0.738)	0.705 ± 0.04 (0.668–0.767)
NOH/NOL	0.85 ± 0.093 (0.739–0.955)	0.777 ± 0.087 (0.653–0.91)	0.751 ± 0.071 (0.709–0.832)	0.7 ± 0.07 (0.625–0.769)	0.773 ± 0.12 (0.627–1.123)	0.928 ± 0.076 (0.812–1.0)
NOH/PEL	0.644 ± 0.05 (0.6–0.725)	0.557 ± 0.047 (0.486–0.623)	0.557 ± 0.058 (0.515–0.623)	0.411 ± 0.05 (0.37–0.461)	0.549 ± 0.059 (0.456–0.633)	0.595 ± 0.059 (0.517–0.668)
NOL/PEL	0.762 ± 0.044 (0.702–0.821)	0.719 ± 0.035 (0.684–0.775)	0.741 ± 0.014 (0.725–0.751)	0.589 ± 0.07 (0.52–0.654)	0.717 ± 0.07 (0.542–0.806)	0.643 ± 0.069 (0.559–0.75)
PEH/NOL	1.372 ± 0.08 (1.25–1.476)	1.223 ± 0.07 (1.139–1.327)	1.255 ± 0.077 (1.168–1.313)	1.479 ± 0.25 (1.294–1.769)	1.342 ± 0.19 (1.086–1.776)	1.625 ± 0.114 (1.502–1.788)
PEW/PEH	1.084 ± 0.05 (1.014–1.169)	1.122 ± 0.043 (1.074–1.179)	1.155 ± 0.089 (1.073–1.249)	1.116 ± 0.04 (1.065–1.148)	1.162 ± 0.079 (1.085–1.326)	1.182 ± 0.061 (1.1–1.284)
CS/PEW	2.185 ± 0.06 (2.042–2.191)	2.111 ± 0.139 (1.929–2.267)	2.132 ± 0.211 (1.994–2.375)	2.114 ± 0.06 (2.05–2.158)	2.013 ± 0.077 (1.91–2.138)	2.216 ± 0.165 (2.019–2.438)
CS/PPW	1.478 ± 0.06 (1.402–1.561)	1.384 ± 0.031 (1.34–1.407)	1.487 ± 0.042 (1.457–1.516)	1.594 ± 0.02 (1.568–1.613)	1.411 ± 0.082 (1.236–1.5)	1.558 ± 0.085 (1.443–1.652)
CW/MW	0.691 ± 0.027 (0.639–0.719)	0.621 ± 0.009 (0.614–0.639)	0.639 ± 0.021 (0.615–0.653)	0.623 ± 0.002 (0.622–0.626)	0.665 ± 0.03 (0.621–0.702)	0.719 ± 0.045 (0.639–0.783)