



ZOOTAXA

5434

The genus *Temnothorax* Mayr, 1861 (Hymenoptera: Formicidae) in Cyprus

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Magnolia Press
Auckland, New Zealand

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(*Zootaxa* 5434)

69 pp.; 30 cm.

10 April 2024

ISBN 978-1-77973-026-8 (paperback)

ISBN 978-1-77973-027-5 (Online edition)

FIRST PUBLISHED IN 2024 BY

Magnolia Press

P.O. Box 41-383

Auckland 1041

New Zealand

e-mail: magnolia@mapress.com

<https://www.mapress.com/zt>

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ISSN 1175-5326 (Print edition)

ISSN 1175-5334 (Online edition)

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Abstract

Only five species of the genus *Temnothorax* Mayr, 1861 have been reported from Cyprus, hitherto. Based on material surveys, the presence of 12 species is reported. Eight of them are described as new to science: *T. akrotiriensis* n. sp., *T. apolloni* n. sp., *T. cerastarum* n. sp., *T. evagorae* n. sp., *T. hippomenesi* n. sp., *T. kykkos* n. sp., *T. nikoklesi* n. sp., and *T. oreades* n. sp. In addition, *T. cypridis* (Santschi, 1930) n. stat. is raised to the species rank, while *T. aeolius* (Forel, 1911) and *T. curtisetosus* Salata & Borowiec, 2015 are reported from Cyprus for the first time. An identification key and color photos of all Cypriot species of *Temnothorax* are provided.

Περίληψη. Μόνο πέντε είδη του γένους *Temnothorax* Mayr, 1861 έχουν μέχρι στιγμής αναφερθεί από την Κύπρο. Εργασίες πεδίου παρουσιάζουν 12 είδη. Οκτώ από αυτά περιγράφονται ως νέα είδη για την επιστήμη: *T. akrotiriensis* n. sp., *T. apolloni* n. sp., *T. cerastarum* n. sp., *T. evagorae* n. sp., *T. hippomenesi* n. sp., *T. kykkos* n. sp., *T. nikoklesi* n. sp. και *T. oreades* n. sp. Επιπλέον, το *T. cypridis* (Santschi, 1930) n. stat. ανάγεται από το επίπεδο του υποείδους στο επίπεδο του είδους, ενώ τα *T. aeolius* (Forel, 1911) και *T. curtisetosus* Salata & Borowiec, 2015 αναφέρονται στην Κύπρο για πρώτη φορά. Παρέχονται κλειδα αναγνώρισης και έγχρωμες φωτογραφίες για όλα τα Κυπριακά είδη του γένους.

Key words: acorn ants and allies, endemism, identification key, new species, taxonomy

Introduction

The genus *Temnothorax* Mayr, 1861 is one of the most speciose in the world, including 466 valid species and 35 valid subspecies (Bolton 2023). Most of them were described from the Northern Hemisphere, with centers of diversity in the Mediterranean Region and southern parts of the USA. Among 298 Palearctic taxa (64.0% of world species), around 200 are known from the Mediterranean region (*sensu* Vigna Taglianti *et al.* 1999). Several of them have been described in the last decade (Radchenko *et al.* 2015; Salata & Borowiec 2015a; Csósz *et al.* 2015,

2018; Galkowski & Lebas 2016; Galkowski & Cagniant 2017; Sharaf *et al.* 2017; Catarineu *et al.* 2017; Ajerrar *et al.* 2018; Salata *et al.* 2018; Salata & Borowiec 2019, 2022; Tinaut & Reyes-López 2020; Arcos González 2021; Schifani *et al.* 2022; Salata *et al.* 2023a).

Cyprus is the third largest island in the Mediterranean Basin, situated in the heart of the Eastern Mediterranean and bordered by Asia and Africa. This oceanic island covers an area of 9,251 km² and is defined by two mountain ranges. The Troodos mountain range on its Southwestern and Central part and the Pentadaktylos mountain range on its Northern part, covering almost half of the island's area. These mountain ranges, with their highest peaks reaching 1,951 m and 1,024 m asl, respectively, receive the highest levels of precipitation and form most rivers running down to the sea. Descending these mountains, the rest of the island is rather arid, with low precipitation levels (Sparrow & John 2016). Due to its topography and climate, Cyprus hosts a variety of habitats and is home to numerous endemic species. Specifically, the island hosts 146 endemic species and subspecies of plants (8.85% endemism rate) (Hand *et al.* 2011, 2019; Cheikh Albassatneh *et al.* 2021). In terms of insect biodiversity, the island is estimated to host around 6,000 species (Department of Forests 2023), many of which are endemic. Regarding its ant biodiversity, Cyprus is relatively understudied, with the latest published studies uncovering new endemic species such as *Cataglyphis aphrodite* Salata, Demetriou, Georgiadis & Borowiec, 2023, *C. chionistrae* Salata, Demetriou, Georgiadis & Borowiec, 2023, *Camponotus troodosensis* Salata, Demetriou, Georgiadis & Borowiec, 2023 and *Messor bucephalus* Salata, Demetriou, Georgiadis & Borowiec, 2023 (Salata *et al.* 2023b, c, d).

A total of five species of the genus *Temnothorax* have been historically recorded from Cyprus:

—*Temnothorax bulgaricus cypridis* (Santschi, 1930) was first described from Limassol as *Leptothorax bulgaricus cypridis* by Santschi (1930). It was noted generally from Cyprus as *Leptothorax bulgaricus* (Forel, 1892) by Radchenko (2004), as *L. bulgaricus cypridis* (Santschi, 1930) in the Fauna Europaea database and later on by Borowiec & Salata (2012) under the name *Temnothorax bulgaricus*. This point of view was repeated by Borowiec (2014).

—*Temnothorax graecus* (Forel, 1911) was recorded generally from Cyprus by Georgiadis *et al.* (2017).

—*Temnothorax muellerianus* (Finzi, 1922) was first recorded generally from Cyprus by Buschinger & Douwes (1993) under the name *Chalepoxenus cf. muellerianus*. Heinze & Kauffman (1993), Radchenko (2004), Beibl *et al.* (2007), Borowiec & Salata (2012), Borowiec (2014) and Salata *et al.* (2018) repeated this record under the name *Chalepoxenus muellerianus*. Beibl *et al.* (2007) collected specimens from the Troodos mountains and noted that populations of *C. muellerianus* from the Eastern part of the Mediterranean Basin may represent a complex of cryptic species.

—*Temnothorax recedens* (Nylander, 1856) was recorded generally from Cyprus by Radchenko (2004) as well as Borowiec & Salata (2012), Borowiec (2014), Salata & Borowiec (2015a, b), Salata *et al.* (2018) and Schifani *et al.* (2022) based on specimen collected by L. Borowiec in Panagia-Cedar Valley rd. and preserved in CAS under number CASENT0732600. Prebus (2017) and Schifani *et al.* (2022) sequenced specimens of *T. recedens* from the island.

—*Temnothorax turcicus* (Santschi, 1934) was recorded from Cyprus, Diarizos R. S of Kidasi by Schifani *et al.* (2022) based on specimen preserved in CAS and noted in AntWeb under number CASENT0732612. The specimen was collected in 2012 by L. Borowiec and provisionally identified as *Temnothorax cf. turcicus*. Sequenced specimens from Cyprus are also reported from Prebus (2017).

Our recent faunistic studies on the ants of Cyprus showed 12 species of the genus *Temnothorax* in the collected materials, with only two: *T. cypridis* and *T. recedens* belonging to the previously reported taxa. *Temnothorax aeolius* (Forel, 1911) and *T. curtisetosus* Salata & Borowiec, 2015 are reported from Cyprus for the first time, and eight species are described as new to science.

Material and methods

Investigated specimens were collected from several sites in Cyprus (provinces Ammochostos, Larnaka, Limassol, Nicosia, Paphos, and the Akrotiri UK SBA) in 2012, 2021, 2022 and 2023. The sites were placed at altitudes from sea level to 1929 m and represent all important habitats for Cyprus, including natural and anthropogenic landscapes. Specimens in the collection of the National and Kapodistrian University of Athens (ZMUA) published in Georgiadis *et al.* (2017) were also re-examined.

The dominant sampling method was direct sampling (hand collecting) and shaking off bushes and tree branches using an entomological umbrella. Nests were also sought in rock crevices, under moss on stones, and inside dry twigs of shrubs and stems of large herbs. All specimens were preserved predominantly in absolute EtOH and partly in 75° EtOH. Photos were prepared by Lech Borowiec using a Nikon SMZ 1500 stereomicroscope, Nikon D5200 photo camera, and Helicon Focus software. All given label data for type material are in the original spelling, presented in square brackets; a vertical bar (|) separates data on different rows, and double vertical bars (||) separate labels. Type specimens' photographs are available online on AntWeb (www.AntWeb.org) and are accessible using the unique CASENT identifying specimen code.

Museum and collection abbreviations:

CAS	California Academy of Sciences, San Francisco, USA;
NHMC	Natural History Museum of Crete, Iraklion, Greece;
JDC	Jakovos Demetriou collection, Cyprus;
MNHW	Museum of Natural History, University of Wrocław, Poland;
MHNG	Muséum d'Historie Naturelle, Genève, Switzerland;
ZMUA	Zoology Museum of the National and Kapodistrian University of Athens, Athens, Greece;
USMB	Upper Silesian Museum, Bytom, Poland.

The pilosity inclination degree follows that used in Wilson (1955). Appressed (0–5°) hairs run parallel or nearly parallel to the body surface. Decumbent hairs stand 10–40°, subdecumbent hair stands ~45° from the surface, suberect hairs bend about 10–20° from vertical, and erect hairs stand vertical or nearly vertical.

Measurements:

All measurements are given in mm.

EL	eye length, maximum eye length;
EW	eye width; measured along the maximum horizontal diameter of eye;
HL	head length; measured in a straight line from mid-point of anterior clypeal margin to mid-point of posterior margin in full-face view;
HW	head width; measured in full-face view directly behind the eyes;
PEH	petiole height; measured in lateral view, the chord of ventral petiolar profile at node level is the reference line perpendicular to which the maximum height of petiole is measured;
PEL	petiole length; measured in lateral view, from anterior corner of subpetiolar process to dorsocaudal corner of caudal cylinder;
PNW	pronotum width; maximum width of pronotum in dorsal view (in gyne maximum width of scutum);
PPL	postpetiole length; maximum length of the postpetiole measured in dorsal view;
PPW	postpetiole width; maximum width of postpetiole in dorsal view;
PSL	propodeal spine length; measured from the centre of the propodeal spiracle to the top of the propodeal spine in lateral view;
SL	scape length; maximum straight-line length of scape excluding the articular condyle;
WL	mesosoma length; measured as diagonal length from the anterior end of the neck shield to the posterior margin of the propodeal lobe.

Ratios

CI	HL/HW;
EI1	EL/EW;
EI2	EL/HL;
SI1	SL/HL;
SI2	SL/HW;
MI	WL/PNW;
PI	PEL/PEH;
PPI	PPW/PPL;
PSLI	PSL/HW.

Other abbreviations (in material examined)

g—gyne

m—male

w—worker

In type material examined in square brackets [], there are more precise administrative locations of collecting sites and full names of collectors that are not listed on labels under the specimen.

The distribution maps for each species were created using QGIS free and open source Geographic Information System (QGIS.org).

Taxonomy

Synopsis of Cypriot *Temnothorax*

Cypriot members of the genus *Temnothorax* were assigned to the provisional species groups established by Salata & Borowiec (2019).

Temnothorax angustulus group

T. apolloni **n. sp.**

T. kykkos **n. sp.**

Temnothorax bulgaricus group

T. cypridis (Santschi) **n. st.**

T. hippomenesi **n. sp.**

Temnothorax exilis group

T. nikoklesi **n. sp.**

Temnothorax graecus group

T. aeolius (Forel)

T. evagorae **n. sp.**

T. cerastarum **n. sp.**

T. oreadesi **n. sp.**

Temnothorax kemali group

T. akrotiriensis **n. sp.**

Temnothorax muellerianus group

(Former genus *Chalepoxenus*)

T. curtisetosus Salata & Borowiec

Temnothorax recedens group

T. recedens (Nylander)

Key to the Cypriot *Temnothorax* species

(workers only)

- 1 Mesosoma with deep metanotal groove (Figs 2, 5). 2.
- Mesosoma without metanotal groove (Figs 17, 24, 27, 30), at most with shallow metanotal impression (Figs 10, 11). 3.
- 2 Ventral margin of postpetiole anteriorly with a small spine (Fig. 2). Body predominantly yellow except predominantly darkened first gastral tergite (Figs 1, 2). Propodeal spines in the form of very short triangular tubercles (Fig. 2). Frontal carinae long, extending to the upper margin of the eyes. Antennae stout, SL/HW below 1.0 (Fig. 3). Social parasite in nests of other *Temnothorax* species ***T. curtisetosus* Salata & Borowiec**

- Ventral margin of postpetiole anteriorly without spine (Fig. 5). Body bicolored with frontal head darker than pronotum, sides of mesonotum and propodeum with a dark patch or whole body predominantly dark, yellowish-brown to brown, head and mesosoma never uniformly yellow (Figs 4, 5). Propodeal spines in the form of moderately long to long thorns (Figs 5, 6). Frontal carinae short, extending only slightly behind antennal cavities. Antennae long, SL/HW above 1.2 (Fig. 7). Nonparasitic species ***T. recedens* (Nylander)**
- 3 Body predominantly dark colored, brown to almost black or bicolored with head and gaster predominantly brown to black and mesosoma with shallow metanotal impression (Figs 9–11, 14, 17) 4.
- Body predominantly pale colored, yellow to ochraceous (Figs 20, 24, 27, 30) or head dark colored and first gastral tergite with basal yellow spot (Fig. 42) and mesosoma without metanotal impression (Fig. 46) 6.
- 4 Petiolar node never triangular in profile with an obtuse or subangulate top (Figs 9–11, 17). Head predominantly with a distinct sculpture of longitudinal and/or reticulate rugae (Figs 12, 18). 5.
- Petiolar node triangular in profile with a sharply angulate top (Fig. 14). Head predominantly smooth and shiny (Fig. 15). ...
..... ***T. kykkos* n. sp.**
- 5 Body predominantly uniformly dark brown to almost black, mesosoma never with shallow metanotal impression (Fig. 17). Head in the middle of frons, on sides of vertex and occipitum with partly diffused sculpture, appears smooth and shiny (Fig. 18). Petiole in profile with long peduncle, concave anterior slope and angulate petiolar node (Fig. 17). Antennal scape longer, mean SL/HW 0.90. Eyes larger, mean EL/HL 0.26 ***T. nikoklesi* n. sp.**
- Body usually bicolored, head and gaster darker than mesosoma, mesosoma usually with shallow metanotal impression (Figs 9–11). Head usually on whole surface with reticulate and longitudinal rugae, at most in the middle of frons with smooth stripe (Fig. 12). Petiole in profile with moderately long peduncle, concave anterior slope and obtuse or obtusely angulate petiolar node (Figs 9–11). Antennal scape shorter, mean SL/HW 0.82. Eyes smaller, mean EL/HL 0.24 ***T. apolloni* n. sp.**
- 6 Antennal club partly brown to black (Figs. 20, 21, 28) 7.
- Antennal club yellow, the same color or only slightly darker yellow than funicle (Figs. 24, 30, 31, 37, 43, 45, 46, 53, 56) ... 8.
- 7 Petiole short with mean PI 1.481, petiolar node regularly rounded in profile, globular, without lateral carinae. Propodeal spines well-marked with mean PSL/HW 0.266 (Fig. 27). Postocular area and occipital corners with strong microreticulation, without or with fine striation, central part of frons, vertex and occipitum with strong microreticulation and variable, more or less visible fine longitudinal striation, frons centrally without or with very narrow smooth and shiny line (Fig. 28) ... ***T. aeolius* (Forel)**
- Petiole longer with mean PI 1.505, petiolar node in lateral view obtusely angulate with sharp lateral carinae. Propodeal spines very short, in form of triangular tubercles, with mean PSL/HW 0.225 (Figs 20, 21). Postocular area and occipital corners predominantly smooth or with fine striation, central part of frons, vertex and occipitum smooth and shiny, sides of vertex often with diffused microreticulation (Fig. 22) ***T. cypridis* (Santschi)**
- 8 Dark band on the first gastral tergite occupies at least 1/3 of posterior surface of the tergite, often more than half space (Figs 24, 30, 37, 43, 45, 46) 9.
- Dark band on first gastral tergite occupies at most 1/4 of posterior surface of the tergite (Figs 53, 56)
..... ***T. akrotiriensis* n. sp.**
- 9 Propodeal spines moderately long to very long, mean PSL/HW above 0.24 (Figs 30, 36, 43, 45, 46). Usually, less than half of the upper part of the head smooth and shiny or head only with smooth stripe along middle of frons and vertex (Figs 31, 38, 44, 47, 48). Body coloration variable, orange-yellow except for dark band on the first gastral tergite (Figs 29, 30) or with head darker than mesosoma (Fig. 45) or with both head and mesosoma darkened (Fig. 46). Femora often infusate in the middle. Erect setae on mesosoma shorter, 0.50–0.65 × as long as eye diameter 10.
- Propodeal spines very short, mean PSL/HW 0.21. At least upper half part of head smooth and shiny (Fig. 25). Whole body pale yellow except dark band on first gastral tergite, femora always uniformly yellow. Erect setae on mesosoma long, approximately 0.7 × as long as eye diameter (Fig. 24) ***T. hippomenesi* n. sp.**
- 10 Head predominantly sculptured except smooth stripe along the middle of frons and vertex or without smooth parts, often more or less darker than mesosoma (Figs 38, 44, 47, 48). Propodeal spines moderate, mean PSL/HW 0.25 spiniform with distinctly widened base, running obliquely upwards (Figs 35–37, 43, 45, 46). Antennae shorter, mean SL/HW below 0.90 (Figs 44, 47, 48). Femora often infusate in the middle 11.
- Central part of frons, vertex and occipitum smooth and shiny, the same yellow color as mesosoma (Figs 30, 31). Propodeal spines long, mean PSL/HW 0.3, running strongly upwards, in form of elongate spines with slightly widened base (Fig. 30). Antennae longer, mean SL/HW 0.93 (Fig. 31). Femora always uniformly yellow ***T. cerastarum* n. sp.**
- 11 Setae on mesosoma longer, length of longest seta/eye diameter ratio 0.571–0.645 (mean 0.604). Head often darker than mesosoma, or both head and mesosoma infusate, especially in populations from higher altitudes (Figs 42, 46, 48), sometimes head and mesosoma yellow, especially in populations from lower altitudes (Fig. 45, 47). Mountain species recorded above 840 m. ***T. oreades* n. sp.**
- Setae on mesosoma shorter, length of longest seta/eye diameter ratio 0.500–0.582 (mean 0.530). Head usually as yellow colored as mesosoma (Fig. 35), occasionally darker than mesosoma (Fig. 37). Lowland and highland species recorded from sea coast to an altitude 838 m. ***T. evagorae* n. sp.**

Review of species

Temnothorax muellerianus group

Temnothorax curtisetosus Salata & Borowiec, 2015 (Figs 1–3, 60)

Temnothorax curtisetosus Salata & Borowiec, 2015a: 140 (Türkiye, Antalya Prov.).

Material examined. Limassol, ad Trooditissa loc. 2, Kampi tou Kalogirou, 34.92709 / 32.83221, 1328 m, 26 IV 2022, 2w in nest of pale form of *Temnothorax oreades*, leg. L. Borowiec (MNHW).

Comparative note. *Temnothorax curtisetosus* belongs to a group of social parasites formerly classified as a separate genus *Chalepoxenus* Menozzi and recently synonymized with *Temnothorax* Mayr (Ward *et al.* 2015). The group comprises several species in Europe and the Mediterranean subregion; all being parasites of various *Temnothorax* species. There are only two species of this species group recorded from the Eastern part of the Mediterranean Basin: *T. muellerianus* and *T. curtisetosus*. *Temnothorax curtisetosus* distinctly differs from *T. muellerianus* by its very short setae on the mesosoma, petiole, and especially on gastral tergites. The mean length of 10 setae combined on the first tergite is 741 μm in *T. curtisetosus* vs. 1218 μm in *T. muellerianus*. From other Cypriot species from the genus *Temnothorax* it well differs in the presence of a distinct spine on the ventral margin of the postpetiole and a deep metanotal groove (except *T. recedens*). The most similar is *T. recedens* which also has a deep metanotal groove and a predominantly smooth and shiny head from which *T. curtisetosus* differs by its predominantly yellow body (in *T. recedens* bicolored or predominantly brown), stout and short antennal scapus with SI1 0.954–0.997 (in *T. recedens* 1.222–1.283), a very short propodeal spine with PSLI 0.261–0.289 (in *T. recedens* 0.294–0.334), and presence of a small spine on the ventral margin of postpetiole anteriorly.

Redescription. Worker (n = 2): HL: 0.778–0.802 (0.790); HW: 0.605–0.632 (0.619); SL: 0.603; EL: 0.176–0.192 (0.184); EW: 0.152–0.157 (0.155); PNW: 0.460–0.476 (0.468); WL: 1.016–1.079 (1.048); PEL: 0.341; PEH: 0.270–0.292 (0.281); PPL: 0.270–0.283 (0.277); PPW: 0.365–0.373 (0.369); PSL: 0.165–0.175 (0.170); CI: 1.269–1.286 (1.278); EI1: 1.121–1.263 (1.192); EI2: 0.226–0.239 (0.233); SI1: 0.954–0.997 (0.976); SI2: 0.752–0.775 (0.764); MI: 2.209–2.267 (2.238); PI: 1.168–1.263 (1.216); PPI: 1.290–1.380 (1.335); PSLI: 0.261–0.289 (0.275).

Color. Almost whole body yellow, only first gastral tergite predominantly yellowish-brown with yellow spot at base. Antennae and legs uniformly yellow, femora never infusate in the middle (Figs 1–3). **Head.** Elongate, approximately $1.3 \times$ as long as wide, sides almost parallel, softly converging behind eyes, occipital corners regularly rounded, occipital margin of head convex (Fig. 3). Anterior margin of clypeus softly convex, without central angulation, with 6 long white setae, medial notch absent. Eyes large, short, oval, approximately $1.2 \times$ as long as wide, $0.23 \times$ as long as head length. Antennal scape moderately long, in lateral view slightly curved, approximately as long as the width of the head, in apex gradually widened without preapical constriction, its base with subangulate dorsal and ventral angle. Funiculus distinctly longer than scape, first segment $2.3 \times$ as long as wide at apex, $2.7 \times$ longer than second segment, segments 2–6 transverse, segment 7 only slightly wider than long, club large, $1.23 \times$ as long as segments 1–8 combined, last segment of club elongate, $1.1 \times$ as long as segments 8 and 9 combined (Fig. 3). Surface of scape with fine microreticulation, shiny, covered with thin, moderately dense, appressed hairs, anterior and ventral margin also with several long, erect setae. Mandibles predominantly smooth and shiny, only external margin with few longitudinal striae, surface covered with short subdocument hairs, apical margin also with 2–3 long setae. Clypeus with median keel and one, short keel on each side, interspaces smooth and shiny. Frons narrow, approximately $0.38 \times$ as wide as head width. Frontal carinae very long, extending up to line connecting posterior margin of eyes. Antennal fossa deep, not margined with circular striae, with finely microreticulate surface. Frontal lobes narrow, placed only slightly upwards (Fig. 3). Gena with longitudinal rugae, malar area, and frons laterally with few longitudinal striae or rugae, rest of head smooth and shiny, frons centrally without setose punctuation. Surface of head without appressed pubescence, frons, vertex, and occipital area with erect, pale, long setae, the longest on occipitum $0.53 \times$ as long as eye diameter (Fig. 2). **Mesosoma.** Elongate, approximately $2.2 \times$ as long as wide, slightly arched in anterior third, with deep metanotal groove, dorsal propodeum flat (Fig. 2). Pronotum convex on sides. Anterior slope and dorsum of pronotum smooth and shiny, sides predominantly smooth and shiny only posteriorly with fine longitudinal striation. Dorsum of mesonotum diffusely microreticulate, shiny, only lateral margins with longitudinal 1–2 carinae, sides in upper part predominantly smooth and shiny, in ventral half with few fine longitudinal rugae and smooth and shiny interspaces (Fig. 1). Dorsum of propodeum diffusely microreticulate,



FIGURES 1, 2. Worker of *Temnothorax curtisetosus* Salata & Borowiec (specimen from Trooditissa loc. 2) **1** dorsal **2** lateral (scale bar = 1 mm).

posterior face smooth and shiny, sides of propodeum predominantly microgranulate, ventral part with few longitudinal rugae, especially on metapleural lobe, surface appears irregular but shiny. Propodeal spines very short, mean PSL/HW 0.27, running strongly upwards, in form of triangular tubercles with strongly widened base and angulate apex (Fig. 2). Entire mesosoma bearing erect, yellow, moderately long setae, the longest on pronotum $0.6 \times$ as long as eye diameter (Fig. 1). **Petiole.** Short, mean PEL/PEH 1.22, anterior face straight, ventral margin anteriorly with sharp spine, node in lateral view rounded with fine lateral carinae, with few short rugae on sides of top, lateral face and in front of posterior margin, surface basally microreticulate, top smooth and shiny. **Postpetiole.** In dorsal view transverse, $1.3 \times$ as wide as long, and approximately $1.5 \times$ as wide as petiole, surface predominantly smooth and shiny, without longitudinal striation or rugae (Fig. 1). Dorsal surface of petiole and postpetiole with long erect setae, as long as or slightly longer than setae on pronotum (Fig. 2). **Gaster.** Smooth and shiny, bearing erect, thin, pale setae, the longest as long as or slightly shorter than setae on mesosoma (Fig. 2). **Legs.** Moderately elongate, femora swollen in the middle, tibiae widened from base to $\frac{3}{4}$ length, surface of legs smooth and shiny, covered with sparse, moderately long decumbent to subdecumbent hairs, ventral margin of femora and external margin of tibiae additionally with long erect setae, the longest slightly shorter than setae on gaster (Fig. 2).



FIGURE 3. Worker head of *Temnothorax curtisetosus* Salata & Borowiec (scale bar = 0.5 mm).

Biological note. This social parasite was observed in Cyprus in a nest of the pale form of *Temnothorax oreades* located in a cracked stone inside a resting area with a pine forest. From Greece and Türkiye it was noted in nests of *T. antigoni* (Forel, 1911).

Distribution note. This species has been known only from Western Türkiye and Samos island in Greece. The Cypriot record of *Temnothorax muellerianus* by Buschinger & Douwes (1993) with great probability concerns *T. curtisetosus*. We agree with Beibl *et al.* (2007) that populations of *C. muellerianus* from the Eastern part of Mediterranean Basin represent a complex of cryptic species and populations from Eastern Aegean islands, Southwestern Türkiye and Cyprus belong to *T. curtisetosus*.

Temnothorax recedens group

Temnothorax recedens (Nylander, 1856) (Figs 4–7, 60)

Myrmica recedens Nylander, 1856: 94 (Gallia meridionali).

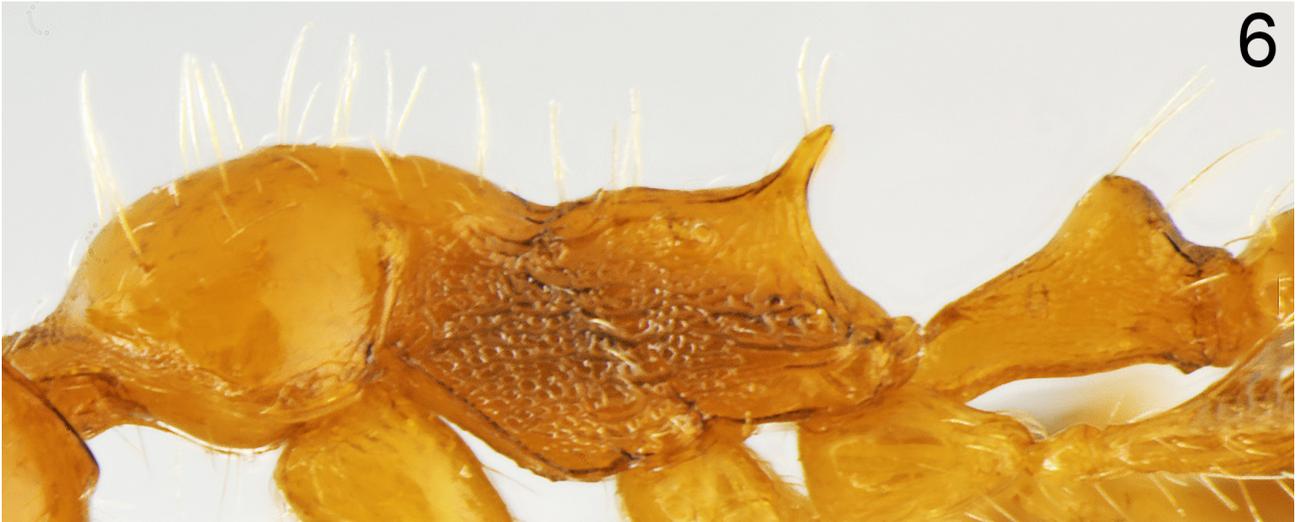
Material examined. Limassol, Agros, 34.9113 / 33.0065, 1062 m, 19 VIII 2001, 3w leg. Tsaousis (NHMC); Limassol, Chantara waterfall, 34.90299 / 32.84024, 1047 m, 25 IV 2022, 3w, leg. L. Borowiec & S. Salata (MNHW); Limassol, ad Trooditissa loc. 2, Kampi tou Kalogirou, 34.92709 / 32.83221 and 34.92694 / 32.83206, 1327–1328 m, 26 IV 2022, 20w, leg. L. Borowiec, J. Demetriou, C. Georgiadis & S. Salata (JDC, MNHW, ZMUA); Nicosia, Cedar Valley, 34.99503 / 32.68732, 1196 m, 5 V 2012, 4w, leg. L. Borowiec (MNHW); Nicosia, Cedar Valley loc. 2, 34.99503 / 32.68732, 1138 m, 22 IV 2022, 29w, leg. L. Borowiec & S. Salata (MNHW); Nicosia, 3.4 km N of Farmakas, 34.94145 / 33.14369, 677 m, 24 IV 2022, 1w, leg. L. Borowiec & S. Salata (MNHW); Nicosia, Panagia Machaira monastery, 34.94057 / 33.18929, 884 m, 24 IV 2022, 1w, leg. L. Borowiec & S. Salata (MNHW); Paphos, Agios Nicolaos, Tzelefos Bridge, 34.89093 / 32.74762, 19 IV 2022, 463 m, 1w, leg. L. Borowiec, J. Demetriou, C. Georgiadis & S. Salata (MNHW); Paphos, Diarizos river valley, Agios Georgios, Extreme View Cafe loc. 2, 34.7895 / 32.6939, 272 m, 19 IV 2022, 1w, leg. J. Demetriou (JDC); Paphos, Diarizos riv., Kidasi, Rock of Chasampoulion, 34.79767 / 32.70502, 262 m, 6 V 2012, 8w, leg. L. Borowiec (MNHW); Paphos, ad Kalepia, 34.83728 / 32.50318, 414 m, 29 IV 2022, 1w, leg. L. Borowiec, J. Demetriou, C. Georgiadis & S. Salata (MNHW); Paphos, Kouklia, Ranti Forest Beach 34.67337 / 32.60695, 31 m, 20 IV 2022, 3w, leg. L. Borowiec & S. Salata (MNHW); Paphos, Kritou Tera, Kremiotis Waterfall, 34.96254 / 32.43356, 330 m, 22 IV 2022, 3w, leg. L. Borowiec & S. Salata (MNHW); Paphos, Neo Chorio, Baths of Aphrodite, 35.05668 / 32.34433, 54 m, 4 V 2012, 2w, leg. L. Borowiec (MNHW); Paphos, Neo Chorio, around Baths of Aphrodite area, 35.06008 / 32.32999, 261 m, 4 V 2012, 28w, leg. L. Borowiec (MNHW); Paphos, Panagia-Cedar Valley rd. loc. 1, 34.92718 / 32.64728, 755 m, 5 V 2012, 4w, leg. L. Borowiec (MNHW); Paphos, Panagia-Cedar Valley rd. loc. 2, 34.94883 / 32.64575, 848 m, 5 V 2012, 1w, leg. L. Borowiec (MNHW); Paphos, Paphos Forest loc. 4, 35.06776 / 32.61513, 808 m, 23 IV 2022, 30w, leg. L. Borowiec & S. Salata (MNHW); Paphos, Paphos Forest, 3.3 km W of Helicopter Landing Pad, 35.02547 / 32.595378, 800 m, 21 IV 2022, 1g, 36w, leg. L. Borowiec & S. Salata (MNHW); Paphos, Paphos Forest, Mouflon Enclosure, 35.02664 / 32.63098, 842 m, 21 IV 2022, 29w, leg. L. Borowiec & S. Salata (MNHW); Paphos, Pegeia Forest n. Pegeia loc. 1, 34.89749 / 32.36742, 364 m, 4 V 2012, 1w, leg. L. Borowiec (MNHW); Paphos, Pegeia Forest n. Pegeia loc. 2, 34.89579 / 32.37039, 374 m, 7 V 2012, 1w, leg. L. Borowiec (MNHW); Paphos, Peyia, Avakas Gorge, 34.92415 / 32.34564, 114 m, 3 V 2012, 4w, leg. L. Borowiec (MNHW); Paphos, Peyia, Avakas Gorge, 34.92454 / 32.34622, 124 m, 18 IV 2022, 7w, leg. L. Borowiec & S. Salata (MNHW); Paphos, Peyia, Avakas Gorge, 34.9245 / 32.3462, 38 m, 18 IV 2022, 7w, leg. J. Demetriou (JDC); Paphos, Peyia, Avakas Gorge, 34.9976 / 32.332, 33 m, 18 IV 2022, 4w, leg. J. Demetriou & C. Georgiadis (JDC); Paphos, Peyia, Avakas Gorge, 34.9233 / 32.3414, 33 m, 18 IV 2022, 1w, leg. J. Demetriou (JDC); Paphos, Peyia, Avakas Gorge, 34.91832 / 32.3331, 38 m, 18 IV 2022, 2w, leg. J. Demetriou & C. Georgiadis (JDC); Paphos, Peyia, Pikni forest, 34.8929 / 32.3739, 390 m, 18 IV 2022, 2w, leg. J. Demetriou & C. Georgiadis (JDC); Paphos, road F612 ad Ag. Konstantinos loc. 1, 34.73358 / 32.64293, 368 m, 28 IV 2022, 2w, leg. L. Borowiec & S. Salata (MNHW); Paphos, Tala, Agios Neofytos Monastery, 34.84602 / 32.44784, 424 m, 29 IV 2022, 11w, leg. L. Borowiec, J. Demetriou, C. Georgiadis & S. Salata (JDC, MNHW, ZMUA); Limassol, Pissouri, Trachonas 1, 34.6472 / 32.6951, 225 m, 4-18 VIII 2013, 2w, leg. K. Leonidou (ZMUA); Paphos, Pegeia, Pikni Forest, 34.8966 / 32.3702, 375 m, 21 VII – 05 VIII 2013 + 05-19 VIII 2013, 3w, leg. Ch. Tsipouridou (ZMUA).

Comparative note. A very distinct species, from other Cypriot *Temnothorax* differs in the presence of a deep metanotal groove while other species have no metanotal groove or only a very shallow impression. It has the least developed sculpture with a head and pronotum predominantly smooth and shiny, while other species have a head and pronotum at least partly microreticulate and/or with longitudinal rugae. The only known parasitic

species, *T. curtisetosus* also has a deep metanotal groove but differs in several characters (see comparative note in *T. curtisetosus*).



FIGURES 4, 5. Worker of *Temnothorax recedens* (Nylander) (specimen from Paphos Forest loc. 4) 4 dorsal 5 lateral (scale bar = 1 mm).



FIGURES 6, 7. Worker of *Temnothorax recedens* (Nylander) **6** mesosoma with long spined propodeum **7** head (scale bar = 0.5 mm).

Cypriot populations of *T. recedens* are similar to Greek mainland and Cretan populations in distinctly bicolored or predominantly dark bodies but have slightly longer propodeal spines than most Greek populations. Cypriot specimens with very long propodeal spines (Fig. 6) are similar to *T. rogeri* known from Bulgaria, Croatia, Greece, Montenegro, and Turkish Thrace. However, body coloration in *T. rogeri* is usually more uniform, not as bicolored

as in specimens from Cyprus. The third species of this group known from Eastern Greece and Western Türkiye, *T. antigoni* (Forel, 1911), differs in mesosoma uniformly yellow, devoid of any darker discolorations, the gaster predominantly yellow with a darker transverse apical band on the first gastral tergite and in very short propodeal spines in form of triangular denticle not or only slightly longer than its width at base. The fourth species of this group, *T. solerii* (Menozzii, 1936), known only from Karpathos island differs in its entire body uniformly yellowish-brown to brown (Salata & Borowiec 2015a).

Redescription. Worker (n = 10): HL: 0.532–0.746 (0.674); HW: 0.460–0.579 (0.531); SL: 0.590–0.714 (0.664); EL: 0.128–0.157 (0.147); EW: 0.082–0.103 (0.096); PNW: 0.317–0.429 (0.382); WL: 0.722–0.928 (0.847); PEL: 0.263–0.365 (0.313); PEH: 0.163–0.219 (0.197); PPL: 0.163–0.263 (0.217); PPW: 0.178–0.257 (0.222); PSL: 0.119–0.176 (0.160); CI: 1.157–1.302 (1.269); EI1: 1.446–1.602 (1.533); EI2: 0.208–0.241 (0.218); SI1: 1.222–1.283 (1.252); SI2: 0.953–1.109 (0.988); MI: 2.151–2.294 (2.217); PI: 1.513–1.721 (1.586); PPI: 0.948–1.121 (1.030); PSLI: 0.259–0.334 (0.300).

Color. Frontal part of head reddish-brown, postocular area and ventral side yellow, pronotum predominantly yellow to yellowish-brown, sometimes on sides with obscure spot of diffused borders, mesonotum distinctly darker colored than pronotum, dorsum yellowish-brown, sides brown, dorsum of propodeum yellow, sides yellowish-brown, often with darker patch centrally, petiole and postpetiole yellow to yellowish-brown with brown top, gaster predominantly dark brown with small yellowish-brown patch at base of first tergite (Figs 4, 5, 7). In the palest forms head, mesosoma, petiole, and postpetiole yellow only head with yellowish-brown spot in center of frons, and sides of mesonotum and propodeum with diffused yellowish-brown patch (Fig. 6), gaster at base with yellow patch occupying $\frac{1}{4}$ of space of first gastral tergite. In the darkest form almost whole body yellowish-brown with paler colored postocular area, dorsum of pronotum and propodeum and very small patch at base of first gastral tergite. Antennae in all forms yellow, scapus in the middle usually more or less distinctly infusate. Legs yellow, femora in swollen part darkened, yellowish-brown to brown (Figs 4, 5). **Head.** Slightly elongate, $1.2\text{--}1.3 \times$ as long as wide, sides softly rounded, behind eyes softly converging, occipital corners broadly rounded, occipital margin slightly convex (Fig. 8). Anterior margin of clypeus distinctly convex, with 8–10 long white setae, medial notch absent. Eyes moderate, elongate oval, $1.5\text{--}1.6 \times$ as long as wide, $0.21\text{--}0.23 \times$ as long as head length. Antennal scape very long, in lateral view slightly curved, $1.22\text{--}1.28 \times$ as long as width of the head, in apex gradually widened with strong preapical constriction, its base with obtuse dorsal and ventral angle. Funiculus distinctly longer than scape, first segment $2.4 \times$ as long as wide at apex, $1.8 \times$ longer than second segment, segments 2–7 slightly longer than wide, club elongate, as long as segments 1–8 combined, last segment of club elongate, as long as segments 8 and 9 combined (Fig. 7). Surface of scape smooth and shiny, covered with thin, long, suberect to erect hairs. Mandibles with thick sparse, longitudinal striae, shiny, covered with short appressed and moderately long decumbent to subdecumbent hairs. Clypeus with long median keel and one short keel on each side, interspaces smooth and shiny. Frons narrow, approximately $0.39 \times$ as wide as head width. Frontal carinae short, slightly extending beyond frontal lobes. Antennal fossa deep, not margined by circular striae, surface smooth and shiny. Frontal lobes narrow, placed only slightly upwards (Fig. 7). Almost whole surface of head smooth and shiny only gena with short rugae and diffusely microreticulate interspaces, and along frontal carinae run 1–2 striae. Surface of head with extremely sparse decumbent pubescence, frons, vertex and occipital area with erect, pale, very long and thick setae, the longest on occipitum $1.3 \times$ as long as eye diameter (Fig. 4). **Mesosoma.** Elongate, approximately $2.2 \times$ as long as wide, distinctly arched in anterior third, flat to indistinctly convex in propodeal part, smooth and shiny. Very short dorsum of mesonotum irregular, with short rugae, sides predominantly microgranulate without rugae but granules often tend to form longitudinal striae. Dorsum of propodeum centrally microreticulate with slightly irregular surface, between and behind propodeal spines predominantly smooth and shiny, sides of propodeum in upper half granulate, in ventral half with sharp longitudinal rugae, especially on metapleural lobe, surface appears irregular but shiny. Propodeal spines long to very long, PSL/HW 0.26–0.33, running strongly upwards, usually in form of elongate spines with moderately widened base, straight or with only slightly curved apex, sharply acute apically (Fig. 5), occasionally spines very long with distinctly curved apex (Fig. 6). Entire mesosoma bearing erect, yellow, very long setae, the longest on pronotum $1.45 \times$ as long as eye diameter (Fig. 6). **Petiole.** Very long, mean PEL/PEH 1.59, anterior face shallowly concave, ventral margin anteriorly with sharp spine, node in lateral view angulate, without lateral carinae, anterior face smooth and shiny, sides and top microreticulate, without or with few rugae. **Postpetiole.** In dorsal view almost as long as wide, approximately $1.6 \times$ as wide as petiole, surface on sides and posterior face microreticulate with few short striae or rugae, top predominantly smooth and shiny. Dorsal surface of petiole and postpetiole with

very long erect setae, as long as setae on pronotum (Fig. 5). **Gaster.** Smooth and shiny, bearing erect, thin, pale, very long setae, as long as setae on mesosoma (Figs 4, 5). **Legs.** Elongate, femora swollen in the middle, tibiae widened from base to $\frac{3}{4}$ length, surface of legs covered with extremely sparse, decumbent hairs, upper margin of fore femora, ventral margin of all femora and external margin of tibiae with numerous long, subdecumbent to semierect hairs, as long as width of tibiae at base, surface appears smooth and shiny.

Biological note. Less thermophilic than other Cypriot species of the genus *Temnothorax*. Prefers shady habitats, such as stream valleys, both deciduous and coniferous forests with rocks and stones, stone walls, and bushes. Foraging workers were observed on rock walls inside canyons and close to waterfalls, on the riverbanks inside deciduous forests, but they were also shaken off into the entomological umbrella from bushes or herbs close to streams. Nest samples were collected from rock crevices inside pine forests.

Temnothorax angustulus group

Temnothorax apolloni n. sp. (Figs 8–12, 61)

Etymology. Named after Apollo (ancient Greek: Ἀπόλλων), the mythological god of oracles, healing, archery, music and arts, sunlight, knowledge, herds and flocks, and protection of the young. The *locus typicus* for this species is located right next to the archaeological site named Apollo Temple, about 2.5 kilometers west of the ancient town of Kourion along the road that leads to Paphos.

Material examined. Holotype: worker (pin) “CYPRUS, Limassol, 129 m | Apollo Temple a. Kourion | 34.67399 / 32.86412 | 20 IV 2022, L. Borowiec” (MNHW). **Paratypes** (109 workers pin): 13w, the same data as for holotype; 9w “CYPRUS, Limassol Prov. | Apollo Temple a. Kourion | 34.67404 / 32.8638, 131 m | 20 IV 2022, S. Salata” (MNHW); 9w “CYPRUS, Paphos, Diarizos | riv., Extr. View Café, 251 | m 34.78952 / 32.6939 | 19 IV 2022, L. Borowiec” (MNHW); 6w “CYPRUS, Akrotiri UK SBA, 0 m | Limassol Salt Lake loc. 2 | 34.60987 / 32.94685 | 20 IV 2022, L. Borowiec” (MNHW); 4w “CYPRUS, Paphos, 31 m | Ranti Forest | 34.67337 / 32.60695 | 20 IV 2022, L. Borowiec” (MNHW); 1w “CYPRUS, Nicosia, 680 m | Kapedes | 34.9669 / 33.2404 | 24 IV 2022, L. Borowiec” (MNHW); 6w “CYPRUS, Paphos, 368 m | rd. F612 loc. 1 | 34.73358 / 32.64293 | 28 IV 2022, L. Borowiec” (MNHW); 7w “CYPRUS, Paphos, 397 m | rd. F612 loc. 2 | 34.74329 / 32.67197 | 28 IV 2022, L. Borowiec” (MNHW); 5w “CYPRUS, Larnaka, 47 m | Dipotamos dam | 34.91442 / 33.19712 | 23 IV 2022, J.D. & C.G. [J. Demetriou & C. Georgiadis]” (MNHW); 1w “CYPRUS, Ammochostos (Famagusta), 51m | Cavo Greco | 34.96647 / 34.06698 | 25 IV 2022, J.D. & C.G. [J. Demetriou & C. Georgiadis]” (MNHW); 2w “CYPRUS, Paphos Prov., | Peyia Forest loc. 3, 390 m | 34.89366 / 32.3739 | 18.04.2022, S. Salata” (MNHW); 1w “CYPRUS, Paphos Prov., | Peyia Forest loc. 3, 390 m | 34.889366 / 32.37390 18– | 04.2022, S. Salata, CY010” (MNHW); 1w “CYPRUS, Paphos distr. 363 m | Pegeia Forest n. Pegeia | 34°53.853 N / 32°22.046 E | 4 V 2012, L. Borowiec” (MNHW); 12w “CYPRUS, Paphos distr. 363 m | Pegeia Forest n. Pegeia | 34°53.853 N / 32°22.046 E | 4 V 2012, L. Borowiec || Collection L. Borowiec | Formicidae | LBC–CY00155” (MNHW); 12w “CYPRUS, Paphos distr. 374 m | Pegeia Forest n. Pegeia | 34°53.751 N / 32°22.224 E | 7 V 2012, L. Borowiec || Collection L. Borowiec | Formicidae | LBC–CY00154” (MNHW); 12w “CYPRUS, Paphos distr. 374 m | Pegeia Forest n. Pegeia | 34.88333 N / 32.36666 E | 7 V 2012, L. Borowiec || Collection L. Borowiec | Formicidae | LBC–CY00156” (MNHW); 5w “CYPRUS, Paphos distr. 363 m | Pegeia Forest n. Pegeia | 34.88333 N / 32.3666 E | 4 V 2012, L. Borowiec || Collection L. Borowiec | Formicidae | LBC–CY00157” (MNHW); 3w “CYPRUS, Paphos Prov. | Aphrodite’s Rock, Kouklia | 5 m, 34.66417 N / 32.6269 E | 4 II 2017, S. Salata || Collection L. Borowiec | Formicidae | LBC–CY00193” (MNHW).

Comparative note. *Temnothorax apolloni* and *T. kykkos* are the only Cypriot members of the *T. angustulus* group characterized by partly or predominantly brown color, shallowly impressed metanotal groove, petiole with straight anterior face and strong sculpture of mesosoma with reticulate and longitudinal rugae. Both species are strongly thermophilous, nesting in the hollow stems, under the bark, or sometimes in dried fruit that has fallen to the ground. *Temnothorax apolloni* differs from *T. kykkos* by its distinctly bicolored body with head and gaster predominantly brown and mesosoma, petiole and postpetiole yellowish-brown. *Temnothorax apolloni* has slightly longer petiole with mean PI 1.415 with a petiolar node in profile obtusely angulate. Body sculpture in *T. apolloni* is stronger and sharper than in *T. kykkos*, with reticulate and longitudinal rugae on almost the whole head surface except smooth, narrow median area. Geographically closest member of the *T. angustulus* group outside of Cyprus,

T. dessyi (Menozzi, 1936) (known from Greece and Western Türkiye) differs in the almost uniformly brown body, shorter petiole with triangular and angulate node, and extremely short erect setae on anterior half of the first gastral tergite with mean length 0.035 (in *T. apolloni* 0.045). The species of the *T. angustulus* group distributed in the western part of the Mediterranean Basin and recently reviewed by Galkowski & Cagniant (2017) differ in shorter, triangular, and sharply angulate petiolar node. *Temnothorax apolloni* has the least angulate petiolar node in the whole *T. angustulus* group.

Description. Worker (n = 10): HL: 0.637–0.746 (0.680); HW: 0.524–0.627 (0.567); SL: 0.429–0.521 (0.465); EL: 0.135–0.187 (0.161); EW: 0.095–0.144 (0.115); PNW: 0.363–0.444 (0.398); WL: 0.738–0.897 (0.807); PEL: 0.254–0.333 (0.293); PEH: 0.183–0.238 (0.207); PPL: 0.183–0.214 (0.200); PPW: 0.186–0.239 (0.217); PSL: 0.127–0.195 (0.156); CI: 1.164–1.227 (1.200); EII: 1.299–1.758 (1.412); EI2: 0.210–0.262 (0.237); SII: 0.802–0.864 (0.820); SI2: 0.659–0.711 (0.683); MI: 1.966–2.076 (2.031); PI: 1.337–1.500 (1.415); PPI: 1.000–1.163 (1.084); PSLI: 0.239–0.311 (0.274).



FIGURES 8, 9. Holotype worker of *Temnothorax apolloni* n. sp. 8 dorsal 9 lateral (scale bar = 1 mm).



FIGURES 10, 11. Workers of *Temnothorax apolloni* n. sp., lateral **10** the darkest form from Extreme View Cafe **11** the palest form from rd. F612 loc. 2 (scale bar = 1 mm).

Color. In typical specimens head brown, slightly paler colored in postocular area, darker in frontal area, mesosoma, petiole and postpetiole rusty yellow, gaster dark brown except yellow posterior margins of tergites and small paler brown area at base of postpetiole. Antennal scapus brown, funicle yellow, club often slightly darker yellow than basal funicle segments. Coxa brown, trochanters yellow, femora predominantly brown to dark brown except yellow base and knee, tibiae and tarsi yellow (Figs 8, 9). In the palest specimens head predominantly ochraceous with obscure spot on frons, mesosoma, petiole and postpetiole yellow, gaster predominantly pale brown with yellowish-

brown base of first gastral tergite, coxa, femora and antennal scapus pale brown (Fig. 11). In the darkest specimens mesosoma, petiole and postpetiole reddish-brown (Fig. 10). **Head.** Slightly elongate, approximately $1.2 \times$ as long as wide, sides almost parallel or gena softly converging anterad and sides behind eyes softly converging posterad, occipital corners regularly rounded, occipital margin of head straight (Fig. 12). Anterior margin of clypeus softly convex, without central angulation but usually with very shallow emargination, with 6–8 short setae. Eyes moderate, short oval, $1.4 \times$ as long as wide, $0.24 \times$ as long as head length. Antennal scape moderately long, in lateral view slightly curved, approximately $0.8 \times$ as long as width of the head, in apex gradually widened with shallowly marked preapical constriction, its base with obtuse dorsal and ventral angle. Funiculus distinctly longer than scape, first segment $2.3 \times$ as long as wide at apex, $3.2 \times$ longer than second segment, segments 2–6 transverse, segment 7 only slightly wider than long, club large, the last segment of club elongate, $1.2 \times$ as long as segments 8 and 9 combined (Fig. 12). Surface of scape with fine microreticulation, shiny, covered with thin, moderate dense, predominantly appressed hairs. Mandibles with thick sparse, longitudinal striae, shiny, covered with short to moderately long appressed to decumbent hairs. Clypeus with median keel and two keels on each side, interspaces smooth and shiny. Frons narrow, approximately $0.37 \times$ as wide as head width. Frontal carinae short, slightly extending beyond frontal lobes. Antennal fossa deep, margined with sharp circular striae with smooth interspaces. Frontal lobes narrow, placed only slightly upwards (Fig. 12). Gena, malar area and frons laterally with sharp reticulate sculpture and longitudinal rugae, postocular area and occipital corners with vanished fine striation and reticulation, central part of frons, vertex and occipitum with narrow, smooth and shiny stripe or with vanishing sculpture, frons centrally without or with extremely small setose punctation. In the darkest specimens sculpture more evident than in the palest specimens. Surface of head without appressed pubescence, frons, vertex and occipital area with erect, pale, short and thick setae, the longest on occipitum $0.35 \times$ as long as eye diameter (Fig. 12). **Mesosoma.** Elongate, approximately twice as long as wide, dorsal promesonotum slightly arched, dorsal propodeum flat to indistinctly arched, usually with shallow but well-marked metanotal impression (Figs 9–11). Pronotum convex on sides. Anterior slope of pronotum with granulate sculpture, sometimes with short transverse rugae, dorsum with sharp longitudinal rugae and microreticulate interspaces but appears slightly shiny (Fig. 8). Sides of pronotum with sharp longitudinal rugae and microreticulate interspaces. Dorsum of mesonotum microreticulate with longitudinal rugae, on sides predominantly microgranulate with sharp longitudinal rugae. Dorsum of propodeum microreticulate, with longitudinal rugae, posterior face microreticulate with transverse rugae, sides of propodeum predominantly with sharp longitudinal rugae, especially on metapleural lobe and microreticulate interspaces, surface appears irregular but shiny. Longitudinal rugae are generally sharper and higher in darker specimens (Figs 9–11). Propodeal spines moderately long, mean PSL/HW in most specimens 0.27, running strongly upwards, in form of needle with slightly widened base, straight, sharply acute apically (Figs 9, 11), sometimes, especially in the darkest specimens propodeal spines very long with PSL/HW up to 0.31 in form of very narrow needle slightly curved in lateral view (Fig. 10). Entire mesosoma bearing erect, white, short setae, the longest on pronotum $0.5 \times$ as long as eye diameter (Figs 9–11). **Petiole.** Elongate, mean PEL/PEH 1.42, anterior face straight or very shallowly concave, ventral margin anteriorly with sharp spine, node in lateral view obtuse to obtusely angulate with sharp lateral carinae, with few short rugae on top, sides distinctly microreticulate with longitudinal rugae, surface appears irregular and slightly dull. **Postpetiole.** In dorsal view almost as long as wide, approximately $1.2 \times$ as wide as petiole, surface microreticulate, top without sides with more or less visible striation, appears slightly dull. Dorsal surface of petiole and postpetiole with long erect setae, slightly longer and thicker than setae on pronotum (Figs 9–11). **Gaster.** Smooth and shiny, bearing erect, thin, short pale setae, $\frac{2}{3}$ as long as setae on mesosoma (Figs 9–11). **Legs.** Moderately elongate, femora swollen in the middle, tibiae widened from base to $\frac{3}{4}$ length, surface of legs smooth and shiny covered with extremely sparse, appressed hairs.

Biological note. Thermophilous species. Most specimens were shaken off into the entomological umbrella from bushes located on the sunny outskirts of pine forests, sunny meadows, along roadsides, on sunny hills, or the outskirts of salt lakes. The preferred shrub was *Pistacia*; a few specimens have been found inside old galls on *Pistacia* branches. Nests could not be found, probably as in the Greek representatives of the *Temnothorax angustulus* group, they can nest inside the dry stems and branches of shrubs and large herbs.



FIGURE 12. Holotype worker head of *Temnothorax apolloni* n. sp. (scale bar = 0.5 mm).

***Temnothorax kykkos* n. sp. (Figs 13–15, 61)**

Etymology. Named after its *locus typicus*, the Kykkos Monastery placed in Troodos Mts., one of the wealthiest and best-known monasteries in Cyprus. The Greek name Kykkos [Κύκκος] according to one belief is related to the Kermes oak (Latin *Quercus coccifera*), which developed in this area; a different account attributed the expression 'kykkos' to a bird whose call 'kik-ko, kik-ko' became the name of the monastery.

Type material examined. Holotype worker (pin): “CYPRUS, Nicosia, 1130 m | Kykkos Monastery | 34.98375 / 32.74145 | 22 IV 2022, L. Borowiec” (MNHW). **Paratypes** (26 workers, pin): 13w “CYPRUS, Limassol | Trooditissa loc. 1, 1344 m | 34.91365 / 32.84265 | 22 IV 2022, L. Borowiec [+ J. Demetriou, C. Georgiadis & S. Salata]” (MNHW); 1w “CYPRUS, Paphos, 368 m | rd. F612 loc. 1 | 34.73358 / 32.64293 | 28 IV 2022, L. Borowiec” (MNHW); 1w “CYPRUS, Nicosia, 680 m | Kapedes | 34.9669 / 33.2404 | 24 IV 2022, L. Borowiec” (MNHW); 3w “CYPRUS, Nicosia, 181 m | Machairas Forest | 34.8533 / 33.36188 | 23 IV 2022, J.D. & C.G. [J. Demetriou & C. Georgiadis]” (MNHW); 1w “CYPRUS, Paphos Prov., | Peyia Forest loc. 3, 390 m | 34.889366 / 32.3739 | 18.04.2022, S. Salata” (MNHW); 1w “CYPRUS, Paphos distr. 363 m | Pegeia Forest n. Pegeia | 34°53.853 N / 32°22.046 E | 4 V 2012, L. Borowiec || Collection L. Borowiec | Formicidae | LBC-CY00155” (MNHW); 6w

“CYPRUS, Paphos distr. 374 m | Pegeia Forest n. Pegeia | 34.89754 / 32.36743 | 7 V 2012, L. Borowiec || Collection L. Borowiec | Formicidae | LBC-CY00182” (MNHW).



FIGURES 13, 14. Holotype worker of *Temnothorax kykkos* n. sp. 13 dorsal 14 lateral (scale bar = 1 mm).



FIGURE 15. Holotype worker head of *Temnothorax kykkos* n. sp. (scale bar = 0.5 mm).

Other material examined. Nicosia, 4 km SW of Kapedes, 34.956326 / 33.214662, 677 m, 24 IV 2022, 1w (EtOH), leg. L. Borowiec; Akrotiri UK SBA, Lady's mile beach, 34.5962 / 33.0073, alt. 2 m, 04 V 2008, leg. S. Zotos, 1w (ZMUA).

Comparative note. *Temnothorax kykkos* and *T. apolloni* are the only Cypriot members of the *T. angustulus* group (for characteristics see *T. apolloni*). *Temnothorax kykkos* differs from *T. apolloni* in an almost uniformly brown body with mesosoma not or insignificantly paler brown than head and gaster. *Temnothorax kykkos* has a shorter petiole with mean PI 1.306 with a petiolar node in profile triangular and sharply angulate. Body sculpture in *T. kykkos* is finer than in *T. apolloni*, with the head predominantly smooth and shiny and sculpture present predominantly on lateral frons and gena. Also, *T. kykkos* has shorter propodeal spines with a mean length 0.127 and PSLI index 0.215. Geographically, the closest member of the *T. angustulus* group outside of Cyprus is *T. dessyi* (Menozzi, 1936) (known from Greece and Western Türkiye). It is very similar but differs in stronger microreticulate and rugose head sculpture covering almost the whole surface except for the central frons, and in strong microreticulate or/and longitudinal sculpture dorsal pronotum. None of the species of the *T. angustulus* group distributed in the western part of the Mediterranean basin and recently reviewed by Galkowski & Cagniant (2017) have head surfaces so largely smooth and shiny as in *T. kykkos* and none of them have top of pronotum with partly diffused sculpture or with a shiny background.

Description. Worker (n = 10): HL: 0.619–0.738 (0.696); HW: 0.508–0.630 (0.589); SL: 0.430–0.524 (0.490); EL: 0.143–0.169 (0.159); EW: 0.098–0.127 (0.116); PNW: 0.348–0.420 (0.388); WL: 0.746–0.889 (0.823); PEL: 0.246–0.304 (0.277); PEH: 0.183–0.240 (0.213); PPL: 0.177–0.222 (0.204); PPW: 0.173–0.222 (0.206); PSL: 0.111–0.138 (0.127); CI: 1.144–1.222 (1.182); EI1: 1.233–1.459 (1.369); EI2: 0.205–0.242 (0.228); SII: 0.789–0.890 (0.833); SI2: 0.682–0.728 (0.704); MI: 2.036–2.157 (2.125); PI: 1.192–1.650 (1.306); PPI: 0.905–1.111 (1.015); PSLI: 0.197–0.236 (0.215).

Color. Almost whole body brown with varying intensity, often dorsum of pronotum, petiole and postpetiole and base of first gastral tergite paler brown than head, rest of mesosoma and posterior part of gaster, in the palest specimens dorsum of pro- and mesonotum and base of first gastral tergite orange-brown but without sharp borders between paler and darker parts. Legs in the darkest specimens predominantly brown with yellowish or yellowish-brown trochanters and tarsi, in the palest specimens legs predominantly yellowish to yellowish-brown only femora predominantly brown. Antennal scapus brown, funicle from yellowish to brown with more or less darkened club. Mandibles yellowish (Figs 13, 14). **Head.** Slightly elongate, 1.14–1.22 × as long as wide, sides almost parallel, occipital corners regularly rounded, occipital margin of head straight (Fig. 15). Anterior margin of clypeus softly convex, without central angulation truncate or shallowly emarginate in the middle, with 8 short setae. Eyes moderate, short oval, 1.2–1.4 × as long as wide, 0.23 × as long as head length. Antennal scape moderately long, in lateral view slightly curved, approximately 0.8 × as long as width of the head, in apex gradually widened with shallow preapical constriction, its base with obtusely angulate dorsal and ventral angle. Funiculus distinctly longer than scape, first segment 2.2 × as long as wide at apex, approximately 3.2 × longer than second segment, segments 2–6 transverse, segment 7 slightly wider than long, club large, only slightly longer than segments 1–8 combined, last segment of club elongate, 1.2 × as long as segments 8 and 9 combined (Fig. 15). Surface of the scape with fine microreticulation, shiny, covered with thin, moderate dense, appressed hairs. Mandibles with thick sparse, longitudinal striae, shiny, covered with very short appressed hairs. Clypeus with long median keel and one short keel on each side, sometimes without lateral keels, interspaces smooth and shiny. Frons narrow, approximately 0.35 × as wide as head width. Frontal carinae short, slightly extending beyond frontal lobes. Antennal fossa deep, margined with very fine, partly diffused circular striae with smooth interspaces. Frontal lobes narrow, placed distinctly upwards. Gena and malar area with sharp longitudinal rugae gradually disappearing toward the back of the head; frons laterally with few striae partly disappearing, rest of head smooth and shiny, frons centrally without or with extremely small setose punctation. Surface of head without appressed pubescence, frons, vertex and occipital area with erect, pale, short and thick setae, the longest on occipitum 0.4 × as long as eye width (Fig. 15). **Mesosoma.** Elongate, approximately 2.1 × as long as wide, slightly arched in pronotal part, flat in posterior $\frac{3}{4}$ length, with very shallow metanotal impression, occasionally without impression. Pronotum convex on sides. Anterior slope of pronotum with diffused microreticulation, in the middle smooth and shiny, dorsum diffused microreticulation, shiny, sides of pronotum with fine longitudinal striation without or with few sharp longitudinal rugae and distinctly microreticulate interspaces. Dorsum of mesonotum predominantly diffusely microreticulate without or with rudiments of longitudinal striae, on sides with microgranulation often tending to form longitudinal rows, without few fine longitudinal rugae especially close to ventral margin. Dorsum of propodeum and space between propodeal spines microreticulate, posterior slope with few transverse rugae, on sides predominantly microreticulate to microgranulate with few longitudinal rugae especially on metapleural lobe, in front of spiracle usually small smooth and shiny area, surface of propodeum appears slightly irregular but shiny. Propodeal spines short, mean PSL/HW 0.22, running obliquely upwards, in form of narrow spine or needle with slightly widened base, straight and acute apically (Fig. 14). Occasionally spines reduced to very small triangular tubercle. Entire mesosoma bearing erect, white, moderately long setae, the longest on pronotum 0.49 × as long as eye diameter (Fig. 14). **Petiole.** Moderately elongate, mean PEL/PEH 1.31, anterior face shallowly concave, ventral margin anteriorly with sharp spine, node in lateral view almost regularly triangular with sharp top margined by short carinae, whole surface microgranulate, on sides with fine longitudinal rugae, surface appears slightly dull. **Postpetiole.** In dorsal view almost as long as wide, approximately 1.4 × as wide as petiole, surface predominantly microgranulate only top with diffused granulation, without striation or rugae. Dorsal surface of petiole and postpetiole with moderately long erect setae, slightly longer and thicker than setae in mesosoma (Fig. 14). **Gaster.** Smooth and shiny, bearing erect, short, pale setae, 0.7–0.8 × as long as the longest setae on mesosoma (Fig. 14). **Legs.** Moderately elongate, femora swollen in the middle, tibiae widened from base to $\frac{3}{4}$ length, surface of legs covered with extremely sparse, appressed hairs, surface with diffused microreticulation or partly smooth, shiny.

Biological note. Less thermophilous. Workers were observed on trunks and stems of *Robinia pseudoacacia* in rest area close to stream and shaken off into the entomological umbrella from *Pistacia* and leguminose bushes located inside pine forests. The holotype was collected on a low wall surrounding the courtyard of Kykkos Monastery. Nests could not be found, probably as in the Greek representatives of the *Temnothorax angustulus* group, they can nest inside the dry stems of shrubs and large herbs.

Temnothorax exilis group

Temnothorax nikoklesi n. sp. (Figs 16–18, 62)

Etymology. Named after Nikokles (Greek: Νικόκλης), King of Paphos who at the end of the 4th century B.C.E. moved the capital of his state from Palaipaphos to the newly founded Nea Paphos. The *locus typicus* of *Temnothorax nikoklesi* is located in recent Kato Paphos, a quarter of Paphos municipality.

Material examined. Holotype: worker (pin) “CYPRUS, Paphos, Kato | Paphos, ruins, 34 m | 34.75368 / 32.43391 | 17 IV 2022, S. Salata” (MNHW); **Paratypes** (21 workers, pin): 5w, the same data as for holotype; 6w “CYPRUS, Paphos, Kato | Paphos, 32 m | 34.75368 / 32.43391 | 17 IV 2022, L. Borowiec” (MNHW); 9w “CYPRUS, Paphos, 6 m | Lempa-Kisonegra | 34.816 / 32.3931 | 20 III 2022, J. Demetriou” (MNHW); 1w “CYPRUS, Paphos, 387 m | rd F612 loc. 2 | 34.74385 / 32.6722 | 28 IV 2022, S. Salata” (MNHW).

Comparative note. *Temnothorax nikoklesi* is a member of the *T. exilis* species group and belongs to the complex of species characterized by the dark (brown to black) body, predominantly brown antennal scapus and femora, dark antennal club, head with the partly smooth and shiny area but strongly sculptured sides of mesosoma, petiole with well-marked peduncle and subangulate or angulate petiolar node. This complex of species is poorly known and requires a revision, especially fauna of the Balkans and Greek islands appear to be diverse and severely understudied.

Temnothorax nikoklesi well differs from all studied populations from the Eastern part of the Mediterranean Basin in very long, needle-shaped propodeal spines. Only some populations from Karpathos (Dodecanese, Greece) have similarly long propodeal spines but the spines are not needle-shaped, have distinctly widened bases, and are often slightly curved; while in *T. nikoklesi* spines have base not or only slightly widened and tops are not or very slightly curved. The propodeal spines in populations from Karpathos run more obliquely posterad while in *T. nikoklesi* they run almost perpendicular to the surface of the propodeum. Sculpture of mesosoma in *T. nikoklesi* is stronger and more rugose than in most studied populations from Balkans and Greek islands. No Cypriot species of *Temnothorax* is similar to *T. nikoklesi*, species from *T. angustulus* group differ in shorter petiole lacking distinct peduncle, mesosoma with shallow metanotal groove and shorter erect setae on mesosoma and first gastral tergite.

Description. Worker (n = 10): HL: 0.619–0.698 (0.661); HW: 0.478–0.603 (0.550); SL: 0.447–0.538 (0.494); EL: 0.158–0.182 (0.171); EW: 0.114–0.143 (0.126); PNW: 0.348–0.405 (0.381); WL: 0.659–0.787 (0.739); PEL: 0.246–0.324 (0.286); PEH: 0.179–0.216 (0.200); PPL: 0.135–0.175 (0.155); PPW: 0.177–0.206 (0.189); PSL: 0.154–0.216 (0.187); CI: 1.134–1.295 (1.206); EI1: 1.238–1.439 (1.362); EI2: 0.244–0.266 (0.258); SI1: 0.855–0.935 (0.899); SI2: 0.722–0.771 (0.747); MI: 1.894–2.000 (1.940); PI: 1.345–1.573 (1.430); PPI: 1.132–1.321 (1.223); PSLI: 0.318–0.373 (0.341).

Color. Head dark brown to black, postocular part often slightly paler colored than frontal part, mesosoma, petiole and postpetiole brown to dark brown, gaster dark brown to black except yellowish posterior margin of tergites. Antennal scapus brown except yellowish base and extreme apex, funicle basally yellowish-brown to pale brown. Coxa brown, trochanters yellowish, femora predominantly brown except yellowish base and knee, tibiae brown except yellow extreme apex, tarsi yellow (Figs 16, 17). **Head.** Slightly elongate, approximately $1.2 \times$ as long as wide, sides almost parallel, occipital corners regularly rounded, occipital margin of head straight (Fig. 18). Anterior margin of clypeus softly convex, without central angulation or emargination, with 4–6 short setae. Eyes moderate, oval, $1.3\text{--}1.4 \times$ as long as wide, $0.26 \times$ as long as head length. Antennal scape long, in lateral view slightly curved, approximately $0.9 \times$ as long as the width of the head, in apex gradually widened with very shallow preapical constriction, its base with obtuse dorsal and ventral angle. Funiculus distinctly longer than scape, first segment $2.2 \times$ as long as wide at apex, $3.6 \times$ longer than second segment, segments 2–7 transverse, club large, $1.3 \times$ as long as segments 1–8 combined, last segment of club elongate, $1.25 \times$ as long as segments 8 and 9 combined (Figs 17, 18).



FIGURES 16, 17. Holotype worker of *Temnothorax nikoklesi* n. sp. **16** dorsal **17** lateral (scale bar = 1 mm).

Surface of scape with fine microreticulation, shiny, covered with thin, moderate dense, basally appressed then to apex gradually decumbent or subdecumbent hairs. Mandibles with thick sparse, longitudinal striae and microreticulate interstriae but shiny, covered with moderately long decumbent to subdecumbent hairs. Clypeus with median keel and 2–3 short keels on each side, interspaces smooth and shiny. Frons narrow, approximately $0.35 \times$ as wide as head width. Frontal carinae short, slightly extending beyond frontal lobes. Antennal fossa deep, margined with sharp circular striae with smooth interspaces. Frontal lobes narrow, placed only slightly upwards, area between lobes with deeply impressed smooth and shiny frontal triangle (Fig. 18). Gena, malar area and frons laterally with sharp longitudinal rugae or striae, disappearing in the postocular area, vertex and occipital corners, central part of frons often with smooth and shiny stripe but sometimes whole frons with regular striae, frons centrally without or with extremely

small setose punctation. Interspaces between rugae and striae in anterior half of head with fine microreticulation, in posterior half of head predominantly smooth, thus head appears shiny. Sides of head, vertex and occipitum with short, very sparse decumbent pubescence, frons, vertex and occipital area with erect, pale, short, and thin setae, the longest on occipitum $0.36 \times$ as long as eye diameter (Fig. 18). **Mesosoma.** Elongate, approximately $1.9 \times$ as long as wide, slightly arched in anterior third, flat in posterior $\frac{2}{3}$ length, without metanotal groove or impression. Pronotum convex on sides. Anterior slope of pronotum microreticulate with rudiments of rugae, dorsum on sides with few longitudinal rugae, central part smooth and shiny. Sides of pronotum with sharp longitudinal rugae, in dorsal half interspaces smooth and shiny, in ventral part microreticulate. Dorsum of mesonotum irregular and diffusely microreticulate, on sides microgranulate with few several short rugae, whole surface appears strongly irregular to rugose (Fig. 17). Dorsum of propodeum with rugose sculpture and microreticulate interspaces, along dorsal margin with irregular rugae, between spines smooth and shiny, behind spines with transverse rugae and smooth interspaces, sides of propodeum predominantly with microgranulate sculpture and short more or less regular rugae, only metapleural lobe with regular longitudinal rugae, surface appears irregular but shiny. Propodeal spines very long and thin, mean PSL/HW 0.34 , running strongly upwards, in form of elongate spines with only slightly widened base, straight or with only slightly curved apex, sharply acute apically (Fig. 17). Entire mesosoma bearing erect, yellow, long setae, the longest on pronotum $0.56 \times$ as long as eye diameter. **Petiole.** Elongate, mean PEL/PEH 1.43 with well-marked peduncle, anterior face deeply concave, ventral margin anteriorly with sharp spine, node in lateral view angulate with sharp anterior and lateral carinae, lateral surface predominantly microreticulate with short rugae, dorsum with sharp irregular rugae, whole surface appears slightly dull (Fig. 17). **Postpetiole.** In dorsal view $1.2 \times$ as wide as long, approximately $1.18 \times$ as wide as petiole, surface microreticulate with short striae, appears irregular but shiny. Dorsal surface of petiole and postpetiole with long erect setae, as long as or slightly longer than setae on pronotum (Figs 16, 17).



FIGURE 18. Holotype worker head of *Temnothorax nikoklesi* n. sp. (scale bar = 0.5 mm).

Gaster. Smooth and shiny, bearing erect, thin, pale setae, the longest as long as setae on mesosoma (Figs 16, 17).
Legs. Moderately elongate, femora swollen in the middle, tibiae widened from base to $\frac{3}{4}$ length, surface of legs covered with sparse, decumbent to subdecumbent hairs, surface appears smooth and shiny.

Biological note. Thermophilous species. Most workers were collected from limestone rocks in the open, sunny ruderal area near the citrus orchard and stones near the beach. A few workers were shaken off into the entomological umbrella from juniper bushes growing on the limestone rock. Also, one specimen was shaken off into the entomological umbrella from bushes inside a pine forest. Nests could not be found, probably as in the Greek representatives of the *Temnothorax exilis* group, they nest inside the rock crevices.

Temnothorax bulgaricus group

Temnothorax cypridis (Santschi, 1930), new status (Figs 19–22, 62)

Leptothorax bulgaricus st. *cypridis* Santschi, 1930: (Cyprus, Limassol).

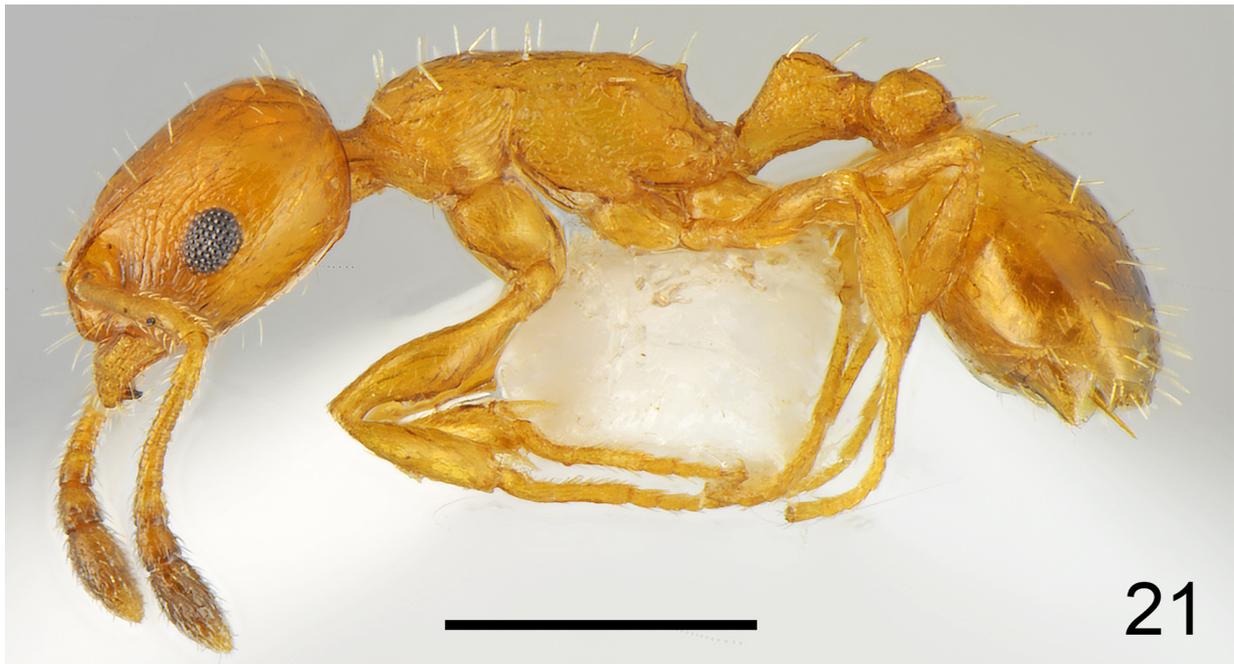
Material examined. Ammochostos (Famagusta), Kavο Greco, 34.96647 / 34.06698, 51 m, 25 IV 2022, 4w, leg. J. Demetriou & C. Georgiadis (JDC); Famagusta, Paralimni, 35.03886 / 33.9752, 70 m, 25 IV 2022, 1w, leg. J. Demetriou & C. Georgiadis (MNHW); Larnaka, Skarinou, 34.81835 / 33.35652, 156 m, 25 IV 2022, 13w, leg. J. Demetriou & C. Georgiadis (JDC, MNHW); Limassol, Apollo Temple 2.5 km W of Kourion, 34.67399 / 32.86412 and 34.67404 / 32.86382, 129–131 m, 20 IV 2022, 8w, leg. L. Borowiec & S. Salata (MNHW); Limassol, ad Dora, 34.77257 / 32.75035, 432 m, 20 IV 2022, 19w, leg. L. Borowiec & S. Salata (MNHW); Paphos, Diarizos riv., Kidasi, Rock of Chasampoulion, 34.79767 / 32.70502, 262 m, 6 V 2012, 2w, leg. L. Borowiec (MNHW); Paphos, Evretou, Evretou Dam, 34.96165 / 32.47749, 172 m, 21 IV 2022, 1w, leg. L. Borowiec & S. Salata (MNHW); Paphos, ad Kalepia, 34.83728 / 32.50318, 414 m, 29 IV 2022, 37w, leg. L. Borowiec, J. Demetriou, C. Georgiadis & S. Salata (MNHW); Paphos, Kouklia, Ranti Forest Beach 34.67337 / 32.60695, 31 m, 20 IV 2022, 5w, leg. L. Borowiec & S. Salata (MNHW); Paphos, Kritou Tera, Kremiotis Waterfall, 34.96254 / 32.43356, 330 m, 22 IV 2022, 2w, leg. L. Borowiec & S. Salata (MNHW); Paphos, 2.2 km S of Lemona, 34.84254 / 32.5479, 219 m, 6w, 29 IV 2022, leg. L. Borowiec, J. Demetriou, C. Georgiadis & S. Salata (JDC, MNHW); Paphos, Paphos Forest loc. 1 ad Pachiamos, 35.16617 / 32.59157, 126 m, 23 IV 2022, 32w, leg. L. Borowiec & S. Salata (MNHW); Paphos, Peyia, sea caves, 34.8842 / 32.3335, 20 m, 18 X 2022, 1w, leg. J. Demetriou (JDC); Paphos, road F612 ad Ag. Konstantinos loc. 1, 34.73358 / 32.64293, 368 m, 28 IV 2022, 1w, leg. L. Borowiec & S. Salata (MNHW); Paphos, Tala, Agios Neofytos Monastery, 34.84485 / 32.44509, 398 m, 7 V 2022, 3w, leg. L. Borowiec (MNHW); Paphos, Tala, Agios Neofytos Monastery, 34.84602 / 32.44784, 424 m, 29 IV 2022, 27w, leg. L. Borowiec, J. Demetriou, C. Georgiadis & S. Salata (MNHW); Akrotiri UK SBA, Agiophyla, 0 m, 34.6006 / 32.9721, 10 X 2023, 6w, leg. J. Demetriou (JDC); Paphos, Gialia, 150 m, 35.0950 / 32.5352, 03 V 2023, 1w, leg. J. Demetriou (JDC).

Comparative and taxonomic note. This taxon was described from Cyprus: Limassol as a trinome *Leptothorax bulgaricus cypridis* Santschi, 1930 and further treated as a subspecies of *T. bulgaricus* (Bolton 1995: 237). We have examined the syntype of *Leptothorax bulgaricus cypridis* preserved in the Basel Museum (AntWeb.org, CASENT0912914) and numerous specimens from Cyprus conspecific with the syntype. In our opinion, this taxon represents a distinct species, which differs well from *Temnothorax bulgaricus* (Forel, 1892) in a shorter setation of body. In *T. bulgaricus*, erect setae on the head, mesosoma, and gaster are very long, the longest setae on mesosoma are longer than the eye diameter while in *T. cypridis* dorsal setae of mesosoma are short, distinctly shorter than the eye diameter (mean ratio length of setae/eye diameter 0.71, in *T. bulgaricus* 1.06). The third member of the *T. bulgaricus* group known from the Eastern part of the Mediterranean Basin, *T. nadigi* (Kutter, 1925), differs in distinctly bicolored body, with a head predominantly distinctly darker colored than mesosoma, from yellowish-brown to dark brown. Other Cypriot species of *Temnothorax* well differ from *T. cypridis* in uniformly yellow antennae and usually well-marked propodeal spines. Only *T. aeolius* has an antennal club similarly darkened, partly brown to black, but differs in well-marked propodeal spine with mean PSL/HW 0.266 (in *T. cypridis* the spine is reduced to very small, triangular tubercle or spine with mean PSL/HW 0.225), shorter petiole with mean PI 1.481 (in *T. cypridis* 1.505), and in more globular petiolar node, without lateral carinae.

Redescription. Worker (n = 10): HL: 0.563–0.706 (0.643); HW: 0.444–0.589 (0.530); SL: 0.429–0.540 (0.475); EL: 0.114–0.151 (0.143); EW: 0.087–0.115 (0.105); PNW: 0.294–0.413 (0.367); WL: 0.635–0.860 (0.763); PEL: 0.225–0.341 (0.294); PEH: 0.160–0.238 (0.195); PPL: 0.163–0.238 (0.217); PPW: 0.175–0.240 (0.211); PSL: 0.090–0.139 (0.117); CI: 1.170–1.268 (1.216); EI1: 1.313–1.469 (1.368); EI2: 0.202–0.233 (0.223); SI1: 0.868–0.966 (0.897); SI2: 0.693–0.765 (0.738); MI: 2.000–2.160 (2.081); PI: 1.406–1.589 (1.505); PPI: 0.890–1.074 (0.978); PSLI: 0.179–0.262 (0.225).



FIGURES 19, 20. Worker of *Temnothorax cypridis* (Santschi) (specimen from Evretou Dam) **19** dorsal **20** lateral (scale bar = 1 mm).



FIGURES 21, 22. Worker of *Temnothorax cypridis* (Santschi) **21** microworker lateral (scale bar = 1 mm) **22** head (scale bar = 0.5 mm).

Color. Almost whole body yellow, gena usually more or less infuscate, yellowish-brown to brown, antennal club predominantly brown to almost black, first gastral tergite in basal $\frac{2}{3}$ length yellow and in posterior $\frac{1}{3}$ length with brown band, only posterior margin yellow. Legs uniformly yellow, femora never infuscate in the middle (Figs 19, 20). In the palest specimens band on first gastral tergite very narrow, occupying only $\frac{1}{5}$ – $\frac{1}{4}$ length of the tergite, in the darkest specimens almost whole posterior half of first gastral tergite is darkened. **Head.** Slightly elongate, approximately $1.2 \times$ as long as wide, subparallel or gena softly converging anterad and sides behind eyes slightly converging posterad, occipital corners broadly rounded, occipital margin of head straight (Fig. 22). Anterior margin of clypeus softly convex, without central angulation, with 4–6 short setae, medial notch absent. Eyes moderate, elongate, 1.3 – $1.5 \times$ as long as wide, $0.22 \times$ as long as head length. Antennal scape long, in lateral view slightly curved, approximately $0.9 \times$ as long as width of the head, in apex gradually widened with softly marked preapical constriction, its base with obtuse dorsal and ventral angle. Funiculus distinctly longer than scape, first segment $2.3 \times$ as long as wide at apex, $4.5 \times$ as long as second segment, segments 2–6 transverse, segment 7 only slightly wider than long, club large, $1.2 \times$ as long as segments 1–8 combined, last segment of club elongate, $1.4 \times$ as long as segments 8 and 9 combined (Fig. 22). Surface of scape with smooth and shiny, covered with thin, moderate dense, appressed hairs. Mandibles with thick sparse, longitudinal striae, shiny, covered with short appressed hairs. Clypeus with median keel and one or two keels on each side, interspaces smooth and shiny. Frons narrow, approximately $0.35 \times$ as wide as head width. Frontal carinae short, slightly extending beyond frontal lobes. Antennal fossa deep, margined with sharp circular striae with smooth interspaces. Frontal lobes moderately broad, placed slightly upwards (Fig. 22). Gena, malar area and frons laterally with sharp longitudinal rugae gradually diffused posterad, postocular area and occipital corners predominantly smooth or with fine striation, central part of frons, vertex and occipitum smooth and shiny, sides of vertex often with diffused microreticulation, frons centrally without setose punctation. The smooth and shiny area varies from narrow stripe along middle to broad stripe which occupies central $\frac{1}{3}$ width of head. Surface of head without appressed pubescence, frons, vertex and occipital area with erect, pale, moderately long setae, the longest on occipitum $0.57 \times$ as long as eye width (Fig. 22). **Mesosoma.** Elongate, approximately $2.1 \times$ as long as wide, slightly arched in anterior third, flat in posterior $\frac{2}{3}$ length, without metanotal groove or impression. Pronotum convex on sides. Anterior slope of pronotum partly microgranulate, partly with longitudinal rugae, dorsum with fine longitudinal rugae and diffusely microreticulate interspaces, appears shiny. Sides of pronotum with longitudinal rugae and smooth and shiny interspaces. Dorsum of mesonotum microreticulate, without or with rudiments of rugae, sometimes along middle with smooth and shiny stripe, on sides with longitudinal rugae and microreticulate interspaces, sides of mesonotum with longitudinal rugae and microreticulate interspaces, appears slightly irregular. Dorsum of propodeum centrally microreticulate, on sides with longitudinal rugae, posterior face microreticulate with few transverse rugae, sides of propodeum from predominantly microgranulate with few rugae to predominantly with sharp longitudinal rugae, especially on metapleural lobe, surface appears irregular but shiny. Propodeal spines very short, sometimes almost reduced, usually in form of triangular tubercle, mean PSL/HW 0.22. Entire mesosoma bearing erect, yellow, moderately long setae, the longest on pronotum 0.6 – $0.71 \times$ as long as eye diameter (Figs 20, 21). **Petiole.** Elongate, mean PEL/PEH 1.51, anterior face straight or very shallowly concave, ventral margin anteriorly with sharp spine, node in lateral view obtusely angulate with sharp lateral carinae, on top microgranulate or with few short rugae, on sides with distinct rugae, interspaces microreticulate, shiny. **Postpetiole.** In dorsal view almost as long as wide, approximately $1.3 \times$ as wide as petiole, surface microreticulate or with short longitudinal striation, appears irregular but shiny. Dorsal surface of petiole and postpetiole with long erect setae, as long as setae on pronotum (Figs 20, 21). **Gaster.** Smooth and shiny, bearing erect, thin, pale setae, usually twice shorter than setae on mesosoma (Figs 20, 21). **Legs.** Moderately elongate, femora swollen in the middle, tibiae widened from base to $\frac{3}{4}$ length, surface of legs covered with extremely sparse, appressed hairs, surface smooth and shiny.

Biological note. Less thermophilous. Most workers were shaken off into the entomological umbrella from Mediterranean bush, predominantly *Pistacia* and *Rubus*, inside pine forests or nearby streams, or growing around dams or shadow roadsides. A few specimens were shaken off into the entomological umbrella from herbs on a sowed field next to the road. Nests could not be found.

Temnothorax hippomenesi n. sp. (Figs 23–25, 63)

Etymology. Named after mythological Hippomenes [Greek *Ἴππομένης*] who received from Aphrodite three golden apples (according to Ovid from her sacred apple-tree in Tamasus, Cyprus). With these golden apples he distracted Atalanti, won her in a race and married her. We chose the name because of the uniformly yellow color of specimens, without sculpture, resembling a golden, smooth object, like an apple.



FIGURES 23, 24. Holotype worker of *Temnothorax hippomenesi* n. sp. 23 dorsal 24 lateral (scale bar = 1 mm).

Material examined. Holotype: worker (pin) “CYPRUS, Paphos, 1067 m | Cedar Valley loc. 1 | 34.98837 / 32.67748 | 22 IV 2022, L. Borowiec” (MNHW). **Paratypes** (8 workers, pin): 1w, the same data as for holotype (MNHW); 1w “CYPRUS, Paphos, 424 m | Agios Neofytou Mon. | 34.84602 / 32.44784 | 29 IV 2022, L. Borowiec” (MNHW); 5w “CYPRUS, Paphos, 171 m | Evretou Dam | 34.96168 / 32.47749 | 21 IV 2022, S. Salata” (MNHW); 1w “CYPRUS, Paphos, 361 m | rd. F612 ad Ag. Konstantinos | 34.73397 / 32.64312 | 28 IV 2022, S. Salata” (MNHW).

Comparative note. A very distinct species, well characterized by an almost uniformly yellow body except a yellowish-brown band in the posterior half of the first gastral tergite, very small, triangular propodeal spines, and predominantly smooth and shiny head with sculpture limited to gena, few striae along frontal carinae and

semicircular striae around frontal cavities. Only *Temnothorax satunini* (Ruzsky, 1902), a species known from Armenia, Georgia, and eastern Türkiye, has a similar set of characters, but it differs in shorter petiole (triangular in profile with angulate apex of petiolar node) and slightly stronger and sharper longitudinal rugae running along inner margin of eye. From Cypriot species, the most similar are *T. aeolius* and *T. cypridis*, but they differ in partly brown to black antennal club and infuscate gena. *Temnothorax aeolius* also differs in more rounded petiolar node and shorter erected setae on dorsal mesosoma with mean length 0.045, approximately 0.4 × as long as eye diameter (in *T. hippomenesi* mean length 0.067, approximately 0.7 × as long as eye diameter). *Temnothorax cypridis* differs also in larger size with mean HL 0.643 and WL 0.763 (in *T. hippomenesi* 0.580 and 0.644 respectively), longer antennae with mean SL/HW 0.897 (in *T. hippomenesi* 0.861) and stronger sculpture on lateral sides of mesosoma with sharp longitudinal rugae.

Description. Worker (n = 8): HL: 0.524–0.603 (0.580); HW: 0.429–0.508 (0.468); SL: 0.379–0.428 (0.402); EL: 0.110–0.129 (0.122); EW: 0.083–0.098 (0.093); PNW: 0.304–0.341 (0.322); WL: 0.605–0.683 (0.644); PEL: 0.229–0.283 (0.256); PEH: 0.175–0.206 (0.190); PPL: 0.151–0.183 (0.167); PPW: 0.190–0.224 (0.205); PSL: 0.087–0.109 (0.097); CI: 1.187–1.267 (1.240); EI1: 1.202–1.411 (1.314); EI2: 0.182–0.242 (0.210); SI1: 0.795–0.937 (0.861); SI2: 0.669–0.767 (0.694); MI: 1.958–2.048 (1.999); PI: 1.279–1.389 (1.349); PPI: 1.170–1.321 (1.231); PSLI: 0.183–0.226 (0.207).



FIGURE 25. Holotype worker head of *Temnothorax hippomenesi* n. sp. (scale bar = 0.5 mm).

Color. Almost whole body pale yellow, only posterior $\frac{1}{3}$ length of first gastral tergite with yellowish-brown band of diffused borders (Figs 23, 24). **Head.** Slightly elongate, $1.19\text{--}1.27 \times$ as long as wide, sides almost parallel, occipital corners regularly rounded, occipital margin of head straight (Fig. 25). Anterior margin of clypeus distinctly convex, subangulate centrally, with 4–8 short setae, medial notch absent. Eyes moderate, short, oval, approximately $1.3 \times$ as long as wide, $0.2 \times$ as long as head length. Antennal scape short, in lateral view slightly curved, $0.8\text{--}0.9 \times$ as long as width of the head, in apex gradually widened with well-marked preapical constriction, its base with angulate dorsal and ventral angle. Funiculus distinctly longer than scape, first segment $1.96 \times$ as long as wide at apex, $4.4 \times$ longer than second segment, segments 2–7 very short, transverse, club large, $1.3 \times$ as long as segments 1–8 combined, last segment of club very elongate, $1.8 \times$ as long as segments 8 and 9 combined (Fig. 25). Surface of scape with fine microreticulation, shiny, covered with thin, moderate dense, basally appressed, apically decumbent setae. Mandibles with thick, sparse, longitudinal striae, shiny, covered with short appressed hairs. Clypeus without keel anteriorly with short longitudinal rugae, posteriorly smooth and shiny. Frons narrow, approximately $0.37 \times$ as wide as head width. Frontal carinae short, slightly extending beyond frontal lobes. Antennal fossa deep, margined with thin circular striae with smooth interspaces. Frontal lobes well-marked placed slightly upwards (Fig. 25). Gena, frons laterally close to eyes, and postocular area with fine striation, stronger in gena, finer posteriorly, with interspaces smooth to diffusely microreticulate but shiny, rest of head surface smooth and shiny, frons centrally with sparse setose punctation. Surface of head without appressed pubescence, frons, vertex and occipital area with erect, pale, long and thick setae, the longest on occipitum $0.6 \times$ as long as eye width (Fig. 25). **Mesosoma.** Elongate, approximately twice as long as wide, slightly arched in profile, without metanotal groove or impression. Pronotum convex on sides. Dorsum of pronotum with fine longitudinal rugae and diffusely microreticulate interspaces, shiny. In some specimens central part of pronotal dorsum with almost reduced rugae and microreticulation, smooth and shiny. Sides of pronotum microgranulate, without or with rudiments of longitudinal rugae. Dorsum of mesonotum microreticulate with few fine longitudinal rugae or striae, sides of mesonotum only microgranulate. Dorsum of propodeum microreticulate, posterior face microreticulate with few transverse rugae, sides of propodeum predominantly microgranulate without or with few short rugae below spiracle and sharp rugae on metapleural lobe but surface appears shiny. Propodeal spines very short, mean PSL/HW 0.21, in form of triangular tubercle or tooth with subacute to acute apex (Fig. 24). Entire mesosoma bearing erect, pale, long setae, the longest on pronotum almost as long as or slightly longer than eye width (Fig. 24). **Petiole.** Moderately elongate, mean PEL/PEH 1.35, anterior face shallowly concave, ventral margin anteriorly with sharp spine, node in lateral view rounded with fine and sharp lateral carinae, without or with few short rugae on top, whole surface diffusely microreticulate, appears shiny. **Postpetiole.** In dorsal view transverse, approximately $1.4 \times$ as wide as petiole, surface diffusely microreticulate without or with few short rugae, appears shiny. Dorsal surface of petiole and postpetiole with long erect setae, as long as setae on pronotum (Fig. 24). **Gaster.** Smooth and shiny, bearing erect, thin, pale setae almost as long as setae on mesosoma (Fig. 24). **Legs.** Moderately elongate, femora swollen in the middle, tibiae widened from base to $\frac{3}{4}$ length, surface of legs covered with extremely sparse, appressed hairs, appears smooth and shiny.

Biological note. A few specimens were shaken off to the entomological umbrella from *Pistacia* bush close to the shore of a dam, three specimens from *Pistacia* inside a pine forest, and a single specimen from a bush in a shadow valley close to the monastery. The lowest site was placed at an altitude 171 m, and the highest one was at an altitude of 1067 m.

Temnothorax graecus group

Temnothorax aeolius (Forel, 1911) (Figs 26–28, 63)

Leptothorax bulgaricus subsp. *aeolius* Forel, 1911: (Türkiye, Coccarinali and Cordelio near Smyrna [now Izmir]).

Material examined. Akrotiri UK SBA, Akrotiri Marsh, 34.63282 / 32.934037, -1 m, 20 IV 2022, 3w (pin), leg. L. Borowiec, J. Demetriou, C. Georgiadis & S. Salata (MNHW); Larnaka, Larnaka Salt Lake, 34.91047 / 33.60489, 4 m, 22 IV 2022, 1w (pin), leg. J. Demetriou & C. Georgiadis (MNHW); Nicosia, Athalassa Park (west), 35.1258 / 33.38463, 140 m, 21 IV 2022, 8w (pin), leg. J. Demetriou & C. Georgiadis (MNHW).



FIGURES 26, 27. Worker of *Temnothorax aeolius* (Forel) (specimen from Akrotiri Marsh) **26** dorsal **27** lateral (scale bar = 1 mm).



FIGURE 28. Worker head of *Temnothorax aeolius* (Forel) (scale bar = 0.5 mm).

Comparative note. *Temnothorax aeolius* is a member of the recently revised *T. graecus* group (Salata *et al.* 2023), which is speciose in the Balkan area and is represented in Cyprus by four species. *Temnothorax aeolius* differs from other Cypriot members of this group in darkened antennal club (partly brown to black), and in globular petiolar node without lateral carinae. Other species have usually not darkened antennal clubs in the same color as the funiculus or only slightly darker yellow than the basal segments of the funiculus. Among Cypriot species of *Temnothorax* only *T. cypridis* has a similarly darkened antennal club, but differs in reduced to a very small, triangular tubercle propodeal spine with mean PSLI 0.225 (in *T. aeolius* propodeal spine is short but well-marked with mean PSLI 0.266). *Temnothorax akrotiriensis* has a similarly narrow dark band on the first gastral tergite but differs in a uniformly yellow antennal club, not or only indistinctly darkened gena, and not as regularly globular as in *T. aeolius* petiolar node. Similarly colored *T. bulgaricus*, a common species of *T. bulgaricus* group widely distributed in the Balkans and western Türkiye has longer setae on mesosoma, predominantly longer than the eye diameter (in *T. aeolius* only $0.7 \times$ as long as eye diameter), slightly longer petiole with mean PI 1.505 (in *T. aeolius* only 1.481), shorter propodeal spines with mean PSL/HW 0.225 (in *T. aeolius* only 0.266), and less globular petiolar node with usually well-marked lateral carinae.

Description. Worker (n = 10): HL: 0.563–0.683 (0.624); HW: 0.446–0.552 (0.512); SL: 0.389–0.476 (0.446); EL: 0.132–0.151 (0.142); EW: 0.093–0.111 (0.103); PNW: 0.314–0.407 (0.366); WL: 0.635–0.798 (0.738); PEL: 0.254–0.317 (0.289); PEH: 0.175–0.213 (0.195); PPL: 0.182–0.206 (0.193); PPW: 0.190–0.246 (0.222); PSL: 0.111–0.165 (0.136); CI: 1.176–1.262 (1.221); EI1: 1.282–1.464 (1.381); EI2: 0.213–0.242 (0.229); SII: 0.845–0.888 (0.872); SI2: 0.691–0.742 (0.714); MI: 1.960–2.089 (2.020); PI: 1.386–1.601 (1.481); PPI: 1.016–1.291 (1.154); PSLI: 0.243–0.302 (0.266).

Color. Body predominantly yellow, only gena darkened, yellowish-brown to brown, first gastral tergite apically with narrow yellowish-brown to brown occupying less than $\frac{1}{5}$ of length of the tergite, antennal club partly brown to black with segments 10 and 11 usually yellow basally and brown apically and last segment predominantly or completely brown to black band except yellow basal spot and posterior margin. In some specimens frontal part of head partly ochraceous yellow, slightly darker than pale yellow mesosoma. Legs uniformly yellow, femora never infuscate in the middle (Figs 26, 27). **Head.** Slightly elongate, $1.18\text{--}1.26 \times$ as long as wide, sides almost parallel or softly converging behind eyes, occipital corners regularly rounded, occipital margin of head straight (Fig. 28). Anterior margin of clypeus softly convex, without central angulation, with 4–6 short setae, medial notch absent. Eyes moderate, short oval, $1.3\text{--}1.4 \times$ as long as wide, $0.23 \times$ as long as head length. Antennal scape long, in lateral view slightly curved, approximately $0.9 \times$ as long as width of the head, in apex gradually widened with well-marked preapical constriction, its base with angulate dorsal and softly marked ventral angle. Funiculus distinctly longer than scape, first segment $2.3 \times$ as long as wide at apex, $3.9 \times$ longer than second segment, segments 2–7 transverse, club large, $1.26 \times$ as long as segments 1–8 combined, last segment of club elongate, $1.4 \times$ as long as segments 8 and 9 combined (Fig. 28). Surface of scape with distinct microreticulation, shiny, covered with thin, moderate dense, predominantly appressed and inly apically decumbent hairs. Mandibles with thick sparse, longitudinal striae, shiny, covered with moderately long appressed to subdecumbent hairs. Clypeus with median keel and one to two keels on each side, interspaces smooth and shiny. Frons moderately broad, approximately $0.38 \times$ as wide as head width. Frontal carinae short, slightly extending beyond frontal lobes. Antennal fossa deep, margined with sharp circular striae with distinctly microreticulate interspaces. Frontal lobes narrow, placed only slightly upwards (Fig. 28). Gena with sharp irregular rugae, malar area and frons laterally with sharp longitudinal rugae, postocular area and occipital corners with strong microreticulation, without or with fine striation, central part of frons, vertex and occipitum with strong microreticulation and variable, more or less visible fine longitudinal striation, frons centrally without or with very narrow smooth and shiny line, without setose punctation. Surface of head without appressed pubescence, frons, vertex and occipital area with erect, pale, moderately long and thick setae, the longest on occipitum $0.61 \times$ as long as eye width (Fig. 28). **Mesosoma.** Elongate, approximately twice as long as wide, slightly arched in anterior third, flat in posterior $\frac{2}{3}$ length, without metanotal groove or impression. Pronotum convex on sides. Anterior slope of pronotum microgranulate, dorsum with fine longitudinal rugae, in anterolateral corners also with oblique to transverse rugae with microreticulate interspaces, appears slightly irregular. Sides of pronotum and dorsum and sides of mesonotum with sharp longitudinal rugae and strongly microreticulate interspaces, surface appears irregular. Dorsum of propodeum centrally microreticulate with irregular to longitudinal rugae, posterior face microreticulate with transverse rugae, sides with sharp longitudinal rugae, especially on metapleural lobe, surface strongly microreticulate appears irregular. Propodeal spines very short, mean PSL/HW 0.27, in form of triangular to slightly elongate spine with broad base, running obliquely upwards, sharply acute apically (Fig. 27). Entire mesosoma bearing erect, yellow, moderately long setae, the longest on pronotum $0.7 \times$ as long as eye diameter (Fig. 27). **Petiole.** Moderately elongate, mean PEL/PEH 1.485, anterior face straight or very shallowly concave, ventral margin anteriorly with sharp spine, node in lateral view regularly rounded, appears globular, without lateral carinae but dorsum and sides with short irregular rugae, whole surface microreticulate, appears slightly dull. **Postpetiole.** In dorsal view $1.1\text{--}1.2 \times$ as long as wide, approximately $1.35 \times$ as wide as petiole, surface microreticulate with short longitudinal striae, appears slightly dull. Dorsal surface of petiole and postpetiole with long erect setae, as long as the longest setae on pronotum (Fig. 27). **Gaster.** Smooth and shiny, bearing erect, thin, pale setae, with short erect setae, $0.8 \times$ as long as the longest setae on pronotum (Fig. 27). **Legs.** Moderately elongate, femora swollen in the middle, tibiae widened from base to $\frac{3}{4}$ length, surface of legs diffusely microreticulate, covered with extremely sparse, appressed hairs, appears smooth and shiny.

Biological note. Few workers were shaken off into the entomological umbrella from Mediterranean bush growing on pasture at the marsh and from reeds close to a dirt road. A short series of specimens were collected in an urban area, on the trunk of an *Eucalyptus* tree next to a parking lot. Nests could not be found.

Temnothorax cerastarum n. sp. (Figs 29–34, 64)

Etymology. Named after Cerastes (horned ones) [Greek Κεραστές], a group of men native to Cyprus, who Aphrodite transformed into a tribe of bull-horned centaurs, as punishment for murdering foreign visitors to the island (probably pilgrims visiting the goddess' famous shrine). They were born of Gaia, the Earth, when Zeus accidentally impregnated her during a failed attempt to couple with the goddess Aphrodite. We gave this name from the propodeum's protruding spines (resembling horns).



FIGURES 29, 30. Holotype worker of *Temnothorax cerastarum* n. sp. 29 dorsal 30 lateral (scale bar = 1 mm).

Material examined. Holotype: worker (pin) “CYPRUS, Paphos, 1138 m | Cedar Valley loc. 2 | 34.99092 / 32.68846 | 22 IV 2022, L. Borowiec” (MNHW). **Paratypes** (1 gyne, 41 workers, pin): the same data as for holotype (MNHW, JDC, ZMUA).

Other material examined. 15 workers (EtOH): the same data as for the holotype.

Comparative note. *Temnothorax cerastarum* is a member of the *T. graecus* group. It has uniformly yellow antennae and in this character is similar to *T. evagorae* and *T. oreades*, while the fourth species of this group, *T. aeolius*, well differs in partly brown to black antennal club. *Temnothorax cerastarum* differs from *T. oreades* and *T. evagorae* in the less sculptured head with a great part of frontal and occipital area smooth and shiny, longer, needle-shaped propodeal spines with mean PSLI 0.297, and longer antennal scapus with mean SI1 0.933 and SI2 0.785. The last yellow Cypriot species, *T. akrotiriensis* differs from the pale form of *T. cerastarum* in a more sculptured head with a distinctly microreticulate background between the prominent sculpture and thus dull frontal part of the head while in *T. cerastarum* this background sculpture is diffused or absent thus frontal part of the head is distinctly shiny. *Temnothorax akrotiriensis* has a very narrow dark band at the end of the first gastral tergite, which occupies at most its ¼ posterior surface, while in *T. cerastarum* this band usually occupies more than half the surface of the tergite. *Temnothorax cerastarum* was collected in a mountain pine forest at an altitude of 1138 m while *T. akrotiriensis* was collected only in lowland open habitats from the sea coast to an altitude of 156 m.

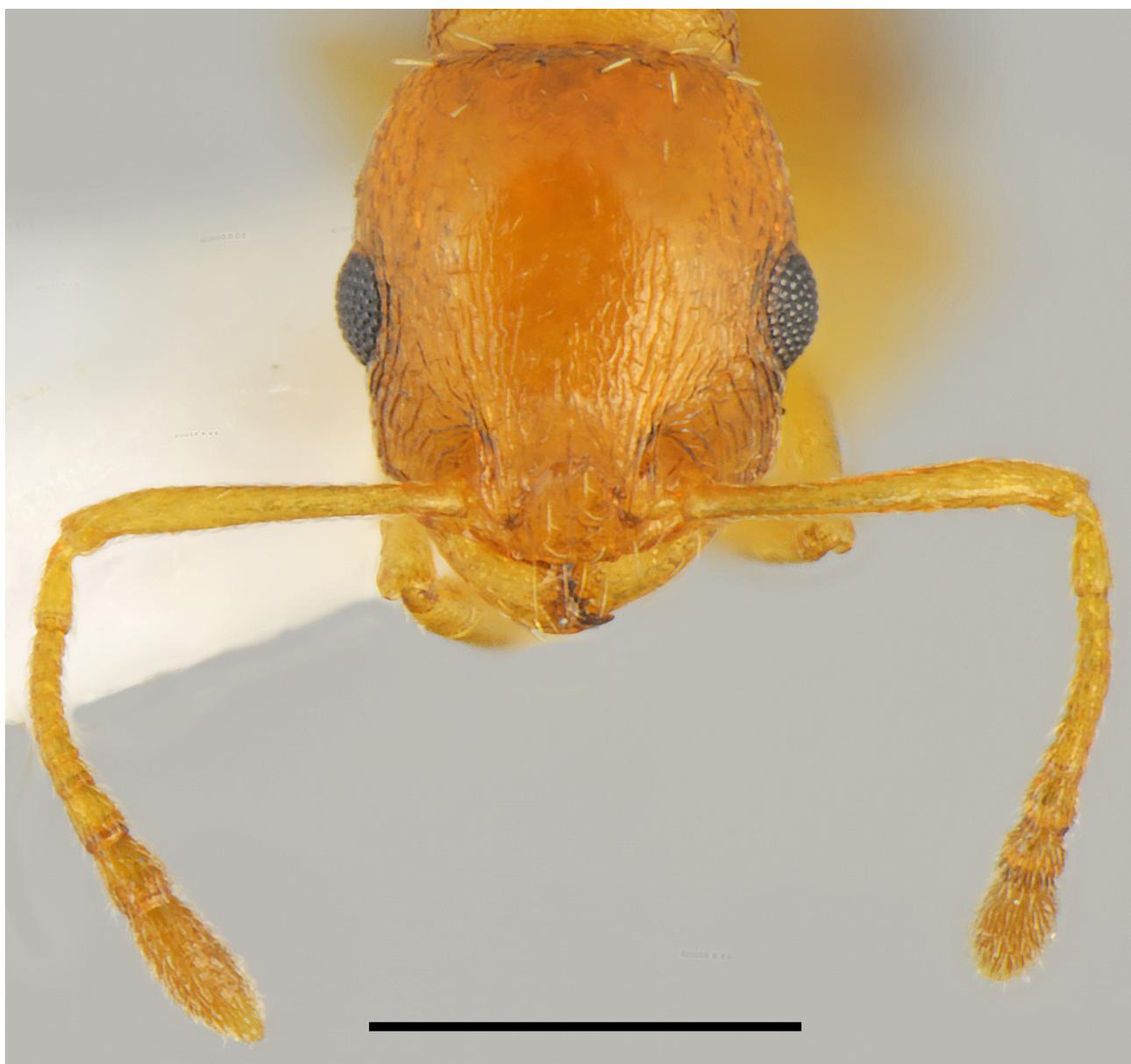


FIGURE 31. Holotype worker head of *Temnothorax cerastarum* n. sp. (scale bar = 0.5 mm).



FIGURES 32, 33. Gyne of *Temnothorax cerastarum* n. sp. **32** dorsal **33** lateral (scale bar = 1 mm).

Description. Worker (n = 10): HL: 0.527–0.686 (0.635); HW: 0.437–0.587 (0.581); SL: 0.421–0.552 (0.498); EL: 0.111–0.158 (0.143); EW: 0.087–0.124 (0.111); PNW: 0.294–0.398 (0.370); WL: 0.603–0.825 (0.754); PEL: 0.190–0.302 (0.258); PEH: 0.143–0.222 (0.207); PPL: 0.144–0.198 (0.185); PPW: 0.167–0.237 (0.218); PSL: 0.127–0.192 (0.168); CI: 1.149–1.231 (1.190); EI1: 1.269–1.377 (1.293); EI2: 0.211–0.243 (0.225); SI1: 0.766–0.963 (0.933); SI2: 0.766–0.804 (0.785); MI: 1.955–2.094 (2.037); PI: 1.072–1.379 (1.253); PPI: 1.083–1.267 (1.183); PSLI: 0.224–0.329 (0.297).

Color. Almost whole body yellow, only first gastral tergite with $\frac{2}{3}$ of space yellowish-brown band except yellow basal spot and posterior margin. Antennae and legs uniformly yellow, femora never infuscate in the middle (Figs 29, 30). **Head.** Slightly elongate, 1.14–1.23 \times as long as wide, sides almost parallel or softly converging behind eyes, occipital corners regularly rounded, occipital margin of head straight (Fig. 31). Anterior margin of clypeus softly convex, without central angulation, with 4–6 short setae, medial notch absent. Eyes moderate, short oval, 1.3–1.4 \times as long as wide, 0.23 \times as long as head length. Antennal scape long, in lateral view slightly curved, approximately 0.9 \times as long as width of the head, in apex gradually widened with well-marked preapical constriction, its base with angulate dorsal and ventral angle. Funiculus distinctly longer than scape, first segment 2.7 \times as long as wide at apex,

2.6–2.7 × longer than second segment, segments 2–6 transverse, segment 7 only slightly wider than long, club large, 1.2 × as long as segments 1–8 combined, last segment of club elongate, 1.4 × as long as segments 8 and 9 combined (Fig. 31). Surface of scape with fine microreticulation, shiny, covered with thin, moderate dense, appressed hairs. Mandibles with thick sparse, longitudinal striae, shiny, covered with short appressed hairs. Clypeus with median keel and two keels on each side, interspaces diffusely microreticulate, shiny. Frons narrow, approximately 0.42 × as wide as head width. Frontal carinae short, slightly extending beyond frontal lobes. Antennal fossa deep, margined with sharp circular striae with smooth interspaces. Frontal lobes narrow, placed only slightly upwards (Fig. 31). Gena, malar area and frons laterally with sharp longitudinal rugae, postocular area and occipital corners with fine striation, central part of frons, vertex and occipitum smooth and shiny, frons centrally without or with extremely small setose punctation. Surface of head without appressed pubescence, frons, vertex and occipital area with erect, pale, short and thick setae, the longest on occipitum 0.46 × as long as eye width (Fig. 30). **Mesosoma.** Elongate, approximately twice as long as wide, slightly arched in anterior third, flat in posterior $\frac{2}{3}$ length, without metanotal groove or impression. Pronotum convex on sides. Anterior slope of pronotum with transverse rugae, dorsum with fine longitudinal rugae and microreticulate interspaces, shiny. Sides of pronotum with sharp longitudinal rugae and diffusely microreticulate interspaces. Dorsum of mesonotum microreticulate, on sides or on whole surface with few fine longitudinal rugae, sides of mesonotum predominantly microgranulate but in upper $\frac{1}{3}$ of space with more or less marked striation or rugae, occasionally also lower space with rudiments of rugae. Dorsum of propodeum centrally microreticulate, on sides with longitudinal rugae, posterior face microreticulate without or with few transverse rugae, sides of propodeum predominantly with sharp longitudinal rugae, especially on metapleural lobe, surface appears irregular but shiny. Propodeal spines long, mean PSL/HW 0.3, running strongly upwards, in form of elongate spines with slightly widened base, straight or with only slightly curved apex, sharply acute apically (Fig. 30). Entire mesosoma bearing erect, yellow, moderately long setae, the longest on pronotum 0.6 × as long as eye diameter (Fig. 30). **Petiole.** Moderately elongate, mean PEL/PEH 1.25, anterior face straight or very shallowly concave, ventral margin anteriorly with sharp spine, node in lateral view obtusely angulate with sharp lateral carinae, with few short rugae on top, whole surface microreticulate, shiny. **Postpetiole.** In dorsal view almost as long as wide, approximately 1.3 × as wide as petiole, surface microreticulate with longitudinal striation, appears irregular but shiny. Dorsal surface of petiole and postpetiole with long erect setae, as long as setae on pronotum (Fig. 30). **Gaster.** Smooth and shiny, bearing erect, thin, pale setae, twice shorter than setae on mesosoma (Fig. 29). **Legs.** Moderately elongate, femora swollen in the middle, tibiae widened from base to $\frac{3}{4}$ length, surface of legs covered with extremely sparse, appressed hairs, appears smooth and shiny.

Gyne (n = 1): HL: 0.732; HW: 0.683; SL: 0.540; EL: 0.214; EW: 0.175; PNW: 0.849; WL: 1.373; PEL: 0.397; PEH: 0.273; PPL: 0.278; PPW: 0.317; PSL: 0.246; CI: 1.072; EI1: 1.223; EI2: 0.292; SI1: 0.791; SI2: 0.738; MI: 1.617; PI: 1.454; PPI: 1.140; PSLI: 0.360.

Color. Head predominantly yellowish-brown, with yellow postocular area and ventral surface, mesosoma predominantly yellow, only scutellum brown centrally and yellowish-brown laterally, petiole and postpetiole yellow, gaster predominantly brown, first tergite with large, yellow basal spot, second tergite with yellow basal and posterior margins. Antennae uniformly yellow, legs yellow with infusate femora (Figs 32, 33). **Head.** Broad, approximately 1.1 × as long as wide, widest behind eyes, gena parallel, behind eyes softly convergent, occipital corners rounded, occipital margin slightly convex (Fig. 34). Anterior margin of clypeus softly convex, without central angulation with minute median notch, with 2 long and 4 short setae. Eyes large, short oval, 1.2 × as long as wide, 0.23 × as long as head length. Antennal scape moderately long, in lateral view slightly curved, approximately 0.8 × as long as width of the head, in apex only slightly widened with very shallow preapical constriction, its basal corners obtusely angulate. Funiculus distinctly longer than scape, first segment 2.3 × as long as wide at apex, 2.3 × longer than second segment, segments 2–6 transverse, segment 7 only slightly wider than long, club large, almost as long as segments 1–8 combined, last segment of club elongate, 1.3 × as long as segments 8 and 9 combined (Fig. 34). Surface of scape with fine microreticulation, shiny, covered with thin, moderate dense, basally appressed apically subdecumbent hairs. Mandibles with thick, sparse, longitudinal striae, shiny, covered with short to moderate subdecumbent to decumbent hairs. Clypeus with median keel and two keels on each side, interspaces smooth, shiny. Frons narrow, approximately 0.35 × as wide as head width. Frontal carinae short, extending to $\frac{1}{2}$ length of eyes. Antennal fossa deep, margined with sharp circular striae with smooth interspaces. Frontal lobes very narrow, placed only slightly upwards (Fig. 34). Whole surface of head with sharp longitudinal rugae extending to occipital margin, interspaces smooth or with diffused microreticulation, shiny, frons centrally without punctation.



FIGURE 34. Gyne head of *Temnothorax cerastarum* n. sp. (scale bar = 0.5 mm).

Surface of head without appressed pubescence, only sides with short decumbent hairs, frons, vertex and occipital area with erect, pale, short and thick setae, the longest on occipitum $0.4 \times$ as long as eye width. **Mesosoma.** Elongate, approximately $1.6 \times$ as long as wide. Pronotum not visible from above, scutum and scutellum flat dorsally. Anterior slope of pronotum with granulate sculpture, sides with longitudinal rugae and diffusely microreticulate interspaces, appears shiny. Dorsum of scutum with longitudinal striation, slightly diffused on anterior slope and lateral lobes, interspaces smooth to diffusely microreticulate, shiny. Dorsum of scutellum predominantly smooth and shiny, only sides and close to basal margin with diffused striation (Fig. 32). Anepisternum anteriorly and dorsally with longitudinal striation, ventrally and posteriorly predominantly smooth, shiny, katepisternum predominantly smooth and shiny only close to posterior margin with short longitudinal rugae. Dorsum of propodeum with oblique and longitudinal rugae, between spines and posteriorly with diffused irregular rugae, shiny, sides of propodeum with sharp longitudinal rugae, interspaces smooth or diffusely microreticulate, shiny. Propodeal spines moderately long, mean PSL/HW 0.36, in form of triangulate spines with broadly widened base, sharply acute apically (Fig. 33). Entire mesosoma bearing erect, yellow, moderately long setae, the longest $0.4 \times$ as long as eye diameter (Fig. 33).

Petiole. Elongate, mean PEL/PEH 1.45, anterior face straight, ventral margin anteriorly with small, sharp spine, node in lateral view sharply angulate, anterior slope smooth to diffusely microreticulate, sides with longitudinal rugae, ventral part with microreticulation but surface appears shiny. **Postpetiole.** Transverse, approximately 1.3 × as wide as petiole, surface microreticulate with longitudinal striation, appears shiny. Dorsal surface of petiole and postpetiole with erect setae, slightly longer than setae on pronotum (Fig. 33). **Gaster.** Smooth and shiny, bearing erect, thin, pale setae, 1/3 shorter than setae on mesosoma (Figs 32). **Legs.** Moderately elongate, femora swollen in the middle, tibiae widened from base to 3/4 length, surface of legs covered with extremely sparse, appressed hairs, appears smooth and shiny.

Biological note. A single nest was observed under a moderately large stone inside a mixed pine and cedar forest, in mountains at an altitude of 1138 m.

Temnothorax evagorae n. sp. (Figs 35–41, 64)

Etymology. Named after two men named Evagoras, important in the history of Cyprus. The first one is Evagoras I [Greek *Ευαγόρας*] the King of Salamis in Cyprus (411–374 BC). King Evagoras was an important historical figure for Cyprian civilization, a model ruler, whose aim was to promote the welfare of his state and of his subjects by the cultivation of Greek refinement and civilization. The second one is Evagoras Pallikarides [Greek *Ευαγόρας Παλλικαρίδης*, 1938–1957], a young poet and revolutionary who was executed (hanged) during the war of 1955–1959 against English colonials.

Material examined. Holotype: worker (pin) “CYPRUS, Paphos, 387 m | rd. F612 loc. 2 | 34.74385 / 32.6722 | 28 IV 2022, S. Salata” (MNHW). **Paratypes** (1 gyne, 102 workers, pin): 5w, the same data as for holotype; 1w “CYPRUS, Akrotiri UK SBA, 0 m | Limassol Salt Lake loc. 2 | 34.60987 / 32.94685 | 20 IV 2022, L. Borowiec” (MNHW); 2w “CYPRUS, Limassol, 129 m | Apollo Temple a. Kourion | 34.67399 / 32.86412 | 20 IV 2022, L. Borowiec” (MNHW); 1w “CYPRUS, Nicosia, Selladi | Tis Foinoklis, 807 m | 35.06773 / 32.61516 | 23 IV 2022, S. Salata” (MNHW); 1g, 12w “CYPRUS, Paphos, Tzelefos | Bridge, 463 m | 34.89093 / 32.7462 | 19 IV 2022 | L. Borowiec” (MNHW); 12w “CYPRUS, Paphos, Tzelefos | Bridge, 453 m | 34.88989 / 32.7462 | 19 IV 2022 | S. Salata” (MNHW); 3w “CYPRUS, Paphos, 172 m | Evretou Dam | 34.96165 / 32.47749 | 21 IV 2022, L. Borowiec” (MNHW); 3w “CYPRUS, Paphos, 424 m | Agios Neofytou Mon. | 34.84602 / 32.44784 | 29 IV 2022, L. Borowiec” (MNHW); 2w “CYPRUS, Paphos, 397 m | rd. F612 loc. 2 | 34.74329 / 32.67197 | 28 IV 2022, L. Borowiec” (MNHW); 5w “CYPRUS, Paphos, 361 m | road F612 ad Ag. Konstantinos | 34.73397 / 32.64312 | 28 IV 2022, S. Salata” (MNHW); 2w “CYPRUS, Paphos, Avakas | Gorge, 38 m | 34.91832 / 32.3331 | 18 IV 2022, L. Borowiec” (MNHW); 2w “CYPRUS, Limassol, 129 m | Apollo Temple a. Kourion | 34.67399 / 32.86412 | 20 IV 2022, L. Borowiec” (MNHW); 5w “CYPRUS, Paphos, 433 m | Tzionoues Pic. Ar. | 35.07501 / 32.56583 | 28 IV 2022, S. Salata” (MNHW); 4w “CYPRUS, Paphos, Diarizos | riv., Chasampoulion, 272 | m, 34.79656 / 32.70236 | 19 IV 2022, 23w (EtOH), S. Salata” (MNHW); 4w “CYPRUS, Paphos distr., 264 m | Diarizos riv. south of Kidasi | 34°47.865 N / 32°42.305 E | 6 V 2012, L. Borowiec || Collection L. Borowiec | Formicidae | LBC–CY00161” (MNHW); 13w “CYPRUS, Paphos distr., 264 m | Diarizos riv. south of Kidasi | 34°47.865 N / 32°42.305 E | 6 V 2012, L. Borowiec || Collection L. Borowiec | Formicidae | LBC–CY00166” (MNHW); 1w “CYPRUS, Paphos distr., 59 m | Kato Paphos, Limnaria Riv. | 34.764438 / 32.440221 | 4–13 VII 2019, G. Hebda || Collection L. Borowiec | Formicidae | LBC–CY00215” (MNHW); 1w “CYPRUS, Paphos distr., 51 m | Avakas Pen., Aphrodite’s Baths | 35°03.403 N / 32°20.660 E | 4 V 2012, L. Borowiec || Collection L. Borowiec | Formicidae | LBC–CY00161” (MNHW); 13w “CYPRUS, Paphos distr., 51 m | Akamas Pen., Aphrodite’s Baths | 35°03.403 N / 32°20.660 E | 4 V 2012, L. Borowiec || Collection L. Borowiec | Formicidae | LBC–CY00163” (MNHW); 2w “CYPRUS, Paphos distr., 117 m | Akamas Pen., Avakas Gorge | 34°55.451 N / 32°20.740 E | 3 V 2012, L. Borowiec || Collection L. Borowiec | Formicidae | LBC–CY00164” (MNHW); 1w “CYPRUS, Paphos distr., 363 m | Pegeia Forest n. Pegeia | 34°53.853 N / 32°22.046 E | 4 V 2012, L. Borowiec || Collection L. Borowiec | Formicidae | LBC–CY00159” (MNHW); 6w “CYPRUS, Paphos distr., 398 m | Agiou Neofytou church n. Tala | 34°50.672 N / 32°26.686 E | 7 V 2012, L. Borowiec || Collection L. Borowiec | Formicidae | LBC–CY00159” (MNHW).

Other material examined. Limassol, ad Dora, 34.772575 / 32.750353, 432 m, 28 IV 2022, 34w (EtOH), leg. L. Borowiec (MNHW); Nicosia, Kionia, 34.92110 / 33.19827, 1217 m, 23 IV 2022, 59w (EtOH), leg. J. Demetriou & C. Georgiadis (MNHW); Nicosia, ad Lazanias, 34.941458 / 33.143697, 838 m, 24 IV 2022, 13w (EtOH), leg. L.

Borowiec (MNHW); Paphos, Peyia, Avakas gorge, 34.917575 / 32.332048, 33 m, 18 IV 2022, 46w (EtOH), leg. L. Borowiec, J. Demetriou, C. Georgiadis & S. Salata (MNHW); Paphos, Peyia, Avakas gorge, 34.918320 / 32.333109, 38 m, 18 IV 2022, 11w (EtOH), leg. L. Borowiec, J. Demetriou C. Georgiadis & S. Salata (MNHW); Paphos, Peyia, Avakas gorge, 34.924541 / 32.346221, 124 m, 18 IV 2022, 1w (EtOH), leg. L. Borowiec (MNHW); Paphos, Pikni Forest ad Peyia loc. 1, 34.89749 / 32.36742, 364 m, 4 V 2012, 6w (EtOH), leg. L. Borowiec (MNHW); Paphos, Pikni Forest ad Peyia loc. 2, 34.89579 / 32.37039, 374 m, 7 V 2012, 12w (EtOH), leg. L. Borowiec (MNHW); Kidasi, Diarizos river valley, Rocks of Chasampoulion loc. 2, 34.795389 / 32.702027, 254 m, 19 IV 2022, 23w (EtOH), leg. L. Borowiec (MNHW); Paphos, Agios Nicolaos, Tzelefos Bridge, 34.890931 / 32.747628, 463 m, 19 IV 2022, 49w (EtOH), leg. L. Borowiec (MNHW); Paphos, Agios Nicolaos, Tzelefos Bridge, 34.8899 / 32.7475, 453 m, 19 IV 2022, J. Demetriou (MNHW); Paphos, Agios Nicolaos, Tzelefos Bridge, 34.889892 / 32.747474, 453 m, 19 IV 2022, 14w (EtOH), leg. S. Salata (MNHW); Paphos, Agios Nicolaos, Tzelefos Bridge-Elias Bridge rd., 34.898395 / 32.756894, 494 m, 19 IV 2022, 22w (EtOH), leg. L. Borowiec (MNHW); Paphos, Agios Nicolaos, Tzelefos Bridge-Elias Bridge rd., Platis valley, 34.8979 / 32.7564, 496 m, 19 IV 2022, 10w (EtOH), leg. J. Demetriou (MNHW); Paphos, Evretou, Evretou Dam, 34.961659 / 32.477493, 172 m, 21 IV 2022, 9w (EtOH), leg. L. Borowiec (MNHW); Paphos, 2.9 km E of Lisos, 35.004479 / 32.542561, 540 m, 21 IV 2022, 7w (EtOH), leg. L. Borowiec (MNHW); Paphos, Kritou Tera, Kremiotis Waterfall, 34.962545 / 32.433563, 330 m, 21 IV 2022, 1g, 30w (EtOH), leg. L. Borowiec (MNHW); Paphos, Paphos Forest loc. 1, 35.166170 / 32.591576, 126 m, 23 IV 2022, 9w (EtOH), leg. L. Borowiec (MNHW); Paphos, Neo Chorio, Baths of Aphrodite, 35.056245 / 32.345005, 47 m, 27 IV 2022, 24w (EtOH), leg. L. Borowiec (MNHW); Paphos, road F612 ad Ag. Konstantinos, 34.733589 / 32.642930, 368 m, 28 IV 2022, 16w (EtOH), leg. L. Borowiec (MNHW); Paphos, road F612 loc. 2, 34.743291 / 32.671972, 397 m, 28 IV 2022, 1w (EtOH), leg. L. Borowiec (MNHW); Paphos, Tala, Agios Neofytos Monastery, 34.846027 / 32.447846, 424 m, 29 IV 2022, 4w (EtOH), leg. L. Borowiec (MNHW); Paphos, ad Kalepia, 34.837284 / 32.503188, 414 m, 29 IV 2022, 15w (EtOH), leg. L. Borowiec (MNHW); Paphos, 2.2 km S of Lemona, 34.842542 / 32.54799, 219 m, 29 IV 2022, 27w (EtOH), leg. L. Borowiec (MNHW); Akrotiri UK SBA, near Akrotiri village, 34.6022 / 32.9486, 10 m, 12 X 2023, 1w, leg. J. Demetriou (JDC).

Comparative note. *Temnothorax evagorae* is a member of the *T. graecus* group, very variable in size, morphological details, and body color. It has uniformly yellow antennae or its antennal club might be only slightly darker yellow than the funicle, and this character is similar to *T. cerastarum* and *T. oreades*. While *T. aeolius* well differs in antennal club partly brown to black. Pale specimens of *T. evagorae* are very similar to *T. cerastarum* but this species differs in the less sculptured head with a great part of the frontal and occipital area smooth and shiny (in *T. evagorae* smooth area is restricted to a narrow frontal stripe); longer, needle-shaped propodeal spines with mean PSLI 0.297 (in *T. evagorae* 0.258), and longer antennal scapus with mean SI1 0.933 and SI2 0.785 (in *T. evagorae* 0.849 and 0.700 respectively). The pale form of *T. oreades* is very similar to *T. evagorae* in sculpture and shape of the petiole, and the best distinguishing characteristic is the length of mesosomal erect setae. In *T. oreades*, these setae are longer, with the longest seta/eye diameter ratio 0.571–0.645 (mean 0.604), while in *T. evagorae* the ratio is 0.500–0.582 (mean 0.530). Both species are separated ecologically, *T. evagorae* is a lowland and highland species recorded from the sea coast to an altitude of 838 m, while *T. oreades* was collected only in mountain habitats from 1100 to 1928 m with only one locality below 1100 m at an altitude 842 m but placed in very shadow and wet site. The last yellow Cypriot species: *T. akrotiriensis* which was collected in one site with *T. evagorae* differs in its more sculptured head with a distinctly microreticulate background between the large reticulation and rugae thus frontal part of the head looks slightly dull, while in *T. evagorae* this background microreticulate sculpture is diffused or absent thus frontal part of head looks shiny. *Temnothorax evagorae* has slightly shorter antennae with a mean SI1 0.849 (in *T. akrotiriensis* 0.917), but the range of variability overlaps in both species. *Temnothorax akrotiriensis* has a very narrow band at the end of the first gastral tergite that occupies at most ¼ posterior surface of the tergite, while in *T. evagorae* this band always occupies more than ½ or very often more than half length of the tergite.

Description. Worker (n = 10): HL: 0.603–0.794 (0.702); HW: 0.473–0.667 (0.581); SL: 0.428–0.571 (0.491); EL: 0.130–0.190 (0.160); EW: 0.097–0.130 (0.114); PNW: 0.333–0.468 (0.395); WL: 0.683–0.976 (0.825); PEL: 0.254–0.341 (0.297); PEH: 0.181–0.240 (0.210); PPL: 0.174–0.222 (0.198); PPW: 0.178–0.271 (0.225); PSL: 0.125–0.176 (0.150); CI: 1.171–1.275 (1.212); EI1: 1.284–1.479 (1.399); EI2: 0.211–0.240 (0.227); SI1: 0.775–0.921 (0.849); SI2: 0.660–0.756 (0.700); MI: 2.021–2.221 (2.087); PI: 1.315–1.651 (1.416); PPI: 1.011–1.233 (1.130); PSLI: 0.220–0.269 (0.258).



FIGURES 35–37. Worker of *Temnothorax evagorae* n. sp. **35** holotype dorsal **36** holotype lateral **37** the darkest form from rd. F612 ad Ag. Konstantinos (scale bar = 1 mm).



FIGURE 38. Holotype worker head of *Temnothorax evagorae* n. sp. (scale bar = 0.5 mm).

Color. Almost whole body yellow, only first gastral tergite in posterior $\frac{2}{3}$ of space with yellowish-brown to brown band. Antennae yellow, legs predominantly yellow but femora usually more or less infuscate in the middle (Figs 35, 36). In dark forms frons with ochraceous yellow spot with diffused borders, mesosoma, petiole and postpetiole orange-yellow, dark band on first gastral tergite almost black, femora with dark brown swollen part and antennal club ochraceous yellow, slightly darker than basal segments of funicle (Fig. 37). **Head.** Slightly elongate, approximately $1.2 \times$ as long as wide, sides softly converging anterad and posterad, occipital corners regularly rounded, occipital margin of head straight (Fig. 38). Anterior margin of clypeus softly convex, truncate centrally or with very shallow emargination, with 4–6 short setae, medial notch absent. Eyes moderate, short oval, $1.3\text{--}1.5 \times$ as long as wide, $0.23 \times$ as long as head length. Antennal scape moderately long, in lateral view slightly curved, approximately $0.9 \times$ as long as the width of the head, in apex gradually widened with very shallow preapical constriction, its base with obtuse dorsal and ventral angle. Funiculus distinctly longer than scape, first segment $2.2 \times$ as long as wide at apex, $2.9 \times$ longer than second segment, segments 2–6 transverse, segment 7 only slightly wider than long, club large, $1.13 \times$ as long as segments 1–8 combined, last segment of club elongate, $1.2 \times$ as long as segments 8 and 9 combined (Fig. 38). Surface of scape with fine microreticulation, shiny, covered with thin, moderate dense, basally appressed, apically decumbent hairs. Mandibles with thick sparse, longitudinal striae, shiny, covered with very sparse, short appressed and long subdecumbent to suberect hairs. Clypeus with median keel and two keels on each side, interspaces smooth and shiny. Frons narrow, approximately $0.35 \times$ as wide as head width.



FIGURES 39, 40. Gyne of *Temnothorax evagorae* n. sp. 39 dorsal 40 lateral (scale bar = 1 mm).

Frontal carinae short, slightly extending beyond frontal lobes. Antennal fossa deep, margined with sharp circular striae and smooth interspaces. Frontal lobes narrow, placed only distinctly upwards (Fig. 38). Frons anteriorly with deep, smooth and shiny frontal triangle. Gena, malar area and frons laterally with sharp longitudinal or slightly irregular rugae but usually not forming a reticulation, postocular area, vertex and occipital corners with fine striation disappearing posterad, interspaces microreticulate but appear shiny, central part of frons usually with narrow smooth and shiny stripe, postocular area and occipital corners sometimes only microreticulate, without striae, occasionally whole vertex and occipitum only with diffused microreticulation. In darker specimens sculpture of head usually more evident than in the palest form. Frons centrally without setose punctation. Surface of head without appressed pubescence, frons, vertex and occipital area with erect, pale, short and thin setae, the longest on occipitum $0.33 \times$ as long as eye width (Fig. 38). **Mesosoma.** Elongate, approximately $2.1 \times$ as long as wide, slightly arched in anterior third, flat in posterior $\frac{2}{3}$ length, without metanotal groove or impression. Pronotum convex on sides.



FIGURE 41. Gyne head of *Temnothorax evagorae* n. sp. (scale bar = 0.5 mm).

Anterior slope of pronotum microgranulate, dorsum with fine longitudinal rugae and microreticulate interspaces, shiny. Sides of pronotum with sharp longitudinal rugae and distinctly microreticulate interspaces. Dorsum of mesonotum anteriorly with sharp longitudinal rugae and distinctly microreticulate interspaces, sides of mesonotum predominantly microgranulate but in ventral half with more or less marked, in darker forms also upper half with rugae. Dorsum of propodeum anteriorly microreticulate with longitudinal rugae, area between propodeal spines only microreticulate, posterior face microreticulate with transverse rugae, sides of propodeum predominantly with sharp longitudinal rugae, especially on metapleural lobe, with distinct microreticulation, surface appears slightly irregular but shiny. Propodeal spines moderately long, mean PSL/HW 0.3, running obliquely upwards, in form of elongate spines with slightly widened base, straight, acute or obtuse apically (Figs 35–37). Entire mesosoma bearing erect, white, moderately long setae, the longest on pronotum 0.500–0.582 (mean 0.530) × as long as eye diameter (Figs 35–37). **Petiole.** Elongate, mean PEL/PEH 1.4, anterior face straight or very shallowly concave, ventral margin

anteriorly with sharp spine, node in lateral view obtusely angulate with sharp lateral carinae, with few short rugae on top, laterally distinctly microreticulate with few longitudinal rugae, surface appears slightly dull. **Postpetiole.** In dorsal view $1.1\text{--}1.2 \times$ as long as wide, approximately $1.4 \times$ as wide as petiole, surface strongly microreticulate with fine longitudinal striation, appears irregular and slightly dull. Dorsal surface of petiole and postpetiole with long erect setae, as long as the longest setae on pronotum (Figs 35–37). **Gaster.** Smooth and shiny, bearing erect, thin, pale setae, $\frac{2}{3}$ as long as setae on mesosoma (Figs 35–37). **Legs.** Moderately elongate, femora strongly swollen in the middle, tibiae widened from base to $\frac{3}{4}$ length, surface of legs covered with extremely sparse, appressed hairs, appears smooth and shiny.

Gyne (n = 1): HL: 0.746; HW: 0.682; SL: 0.509; EL: 0.214; EW: 0.160; PNW: 0.714; WL: 1.288; PEL: 0.349; PEH: 0.270; PPL: 0.238; PPW: 0.286; PSL: 0.177; CI: 1.094; EI1: 1.338; EI2: 0.287; SI1: 0.746; SI2: 0.682; MI: 1.804; PI: 1.293; PPI: 1.202; PSLI: 0.260.

Color. Head pale brown, mesosoma predominantly pale brown, only scutellum dark brown centrally and yellowish-brown laterally, petiole pale brown with yellowish ventral margin, postpetiole pale brown, gaster dark brown with slightly paler area close to postpetiole. Antennae predominantly yellow only club partly yellowish-brown, coxa and trochanters yellow, femora predominantly yellowish-brown to dark brown with yellow base and knee, tibiae and tarsi yellow (Figs 39, 40). **Head.** Broad, approximately $1.1 \times$ as long as wide, widest behind eyes, gena parallel, behind eyes softly convergent, occipital corners rounded, occipital margin straight (Fig. 41). Anterior margin of clypeus softly convex, without central angulation with minute median notch, with 2 long and 4 short setae. Eyes large, oval, $1.3 \times$ as long as wide, $0.29 \times$ as long as head length. Antennal scape moderately long, in lateral view slightly curved, approximately $0.75 \times$ as long as width of the head, in apex only slightly widened with very shallow preapical constriction, its basal corners obtusely angulate. Funiculus distinctly longer than scape, first segment $2.1 \times$ as long as wide at apex, $3.8 \times$ longer than second segment, segments 2–7 transverse, club large, almost as long as segments 1–8 combined, last segment of club elongate, as long as segments 8 and 9 combined (Fig. 41). Surface of scape with fine microreticulation, shiny, covered with thin, moderate dense, basally appressed apically subdecumbent hairs. Mandibles with thick sparse, longitudinal striae, shiny, covered with short to moderate subdecumbent to decumbent hairs. Clypeus without median keel and two keels on each side, interspaces smooth, shiny. Frons narrow, approximately $0.36 \times$ as wide as head width. Frontal carinae short, extending to $\frac{1}{2}$ length of eyes. Antennal fossa deep, margined with sharp circular striae with smooth interspaces. Frontal lobes very narrow, placed only slightly upwards, frontal triangle deep impressed, smooth and shiny (Fig. 41). Whole surface of head with sharp longitudinal rugae extending to occipital margin, only area behind ocelli with longitudinal striae, interspaces smooth or with diffused microreticulation, shiny, frons centrally without punctation. Surface of head without appressed pubescence, only sides with short decumbent hairs, frons, vertex and occipital area with erect, pale, short and thick setae, the longest on occipitum $0.4 \times$ as long as eye width. **Mesosoma.** Elongate, approximately $1.8 \times$ as long as wide. Pronotum not visible from above, scutum and scutellum flat dorsally. Anterior slope of pronotum with granulate sculpture, sides with longitudinal rugae and diffusely microreticulate interspaces, appears shiny. Dorsum of scutum with longitudinal striation, slightly diffused on anterior slope and lateral lobes, interspaces anteriorly smooth posteriorly diffusely microreticulate, shiny. Dorsum of scutellum predominantly smooth and shiny, only sides and close to basal margin with diffused striation (Fig. 39). Anepisternum completely covered with longitudinal striation and diffusely microreticulate interspaces, shiny, katapisternum with longitudinal striation and in upper half narrow and in ventral half broad, smooth and shiny interspaces. Dorsum of propodeum microreticulate with few short longitudinal rugae, between spines and posteriorly only with microreticulation, slightly dull. Propodeal spines short, PSL/HW 0.26, in form of triangulate spines with broadly widened base, angulate apically (Fig. 40). Entire mesosoma bearing erect, yellow, short setae, the longest $0.37 \times$ as long as eye diameter. **Petiole.** Moderately elongate, PEL/PEH 1.29, anterior face straight, ventral margin anteriorly with large, sharp spine, node in lateral view angulate, anterior slope diffusely microreticulate, sides microreticulate with longitudinal rugae, ventral part with microreticulation but surface appears shiny. **Postpetiole.** Transverse, approximately $1.2 \times$ as wide as petiole, surface microreticulate with longitudinal striation, appears shiny. Dorsal surface of petiole and postpetiole with erect setae, slightly longer than setae on pronotum (Fig. 40). **Gaster.** Smooth and shiny, bearing erect, thin, pale setae, as long as or slightly longer than setae on mesosoma (Fig. 39). **Legs.** Moderately elongate, femora swollen in the middle, tibiae widened from base to $\frac{3}{4}$ length, surface of legs covered with extremely sparse, appressed hairs, appears smooth and shiny.

Biological note. The commonest Cypriot species of the genus *Temnothorax*, noted from numerous lowland and highland sites from seashore to an altitude of 838 m. Most specimens were shaken off to the entomological umbrella from bushes and small trees growing by the streams, roadsides, on the outskirts of pine forests, and also from deciduous trees inside shadow sub-mountain forests and young pine trees in tree nurseries. It is the most ubiquitous species from Cypriot members of the genus *Temnothorax*, collected both in warm and sunny places and in shady mountain valleys, along streams, and on the edges of dam lakes. Only one nest sample was collected under moss on a rocky wall inside a mountain valley close to a stream, but probably as in the Greek representatives of the *Temnothorax graecus* group, they can nest inside the dry stems of shrubs and large herbs, especially in dry sites.

Temnothorax oreades n. sp. (Figs 42–51, 64)

Etymology. Named after mythological Oreades [Greek Ὀρειάδες], mountain nymphs associated with highland forests. This species is associated with high-altitude forests, and we perceive them as guardians of Troodos.

Material examined. Holotype: worker (pin) “CYPRUS, Limassol Mt | Olympos [= Chionistra] loc. 1, 1862 m | 34.92943 / 32.87001 | 25 IV 2022, L. Borowiec” (MNHW). **Paratypes** (7 gynes, 53 workers, pin): 4g, 33w (4 nests), the same data as for holotype; 1g, 6w “CYPRUS, Limassol Mt | Olympos [= Chionistra] loc. 2, 1609 m | 34.94746 / 32.84706 | 25 IV 2022, L. Borowiec” (MNHW); 1g, 6w “CYPRUS, Limassol Mt | Olympos [= Chionistra] loc. 3, 1929 m | 34.93568 / 32.86242 | 26 IV 2022, S. Salata” (MNHW); 1g, 6w “CYPRUS, Limassol Mt | Olympos [= Chionistra] loc. 3, 1928 m | 34.93563 / 32.8624 | 26 IV 2022, L. Borowiec” (MNHW); 2w “CYPRUS, Limassol 1600 m | ad Kalidonia Waterfall 1 | 34.91508 / 32.87037 | 25 IV 2022, L. Borowiec” (MNHW).

Other material examined. 15 workers (EtOH): the same data as for holotype; Limassol, ad Trooditissa loc. 2, Kampi tou Kalogirou, 34.92709 / 32.83221, 1328 m, 26 IV 2022, 1g, 6w (pin), host nest of *Temnothorax curtisetosus*, 1g, 75w (EtOH) leg. L. Borowiec (MNHW); Limassol, Troodos, Mt Olympos (= Chionistra) loc. 1, 34.929437 / 32.870011, 1862 m, 25 IV 2022, 2g, 244w (7 nests, EtOH), leg. L. Borowiec & S. Salata (MNHW); Limassol, Troodos, Mt Olympos (= Chionistra) loc. 2, 34.947468 / 32.847068, 1609 m, 25 IV 2022, 4g, 341w (8 nests, EtOH), leg. L. Borowiec & S. Salata (MNHW); Limassol, Troodos, Pano Platres, Caledonia Waterfall trail, 34.90901 / 32.86405, 1464 m, 25 IV 2022, 1w (pin), leg. S. Salata (MNHW); Limassol, Troodos, Pano Platres, ad Kalidonia waterfall loc. 1, 34.915089 / 32.870371, 1600 m, 25 IV 2022, 21w (EtOH), leg. L. Borowiec (MNHW); Limassol, Troodos, Pano Platres, Troodos marsh (Almyrolivado), 34.930595 / 32.902493, 1604 m, 26 IV 2022, 23w (EtOH), leg. L. Borowiec & S. Salata (MNHW); Nicosia, Cedar Valley loc. 2, 34.99094 / 32.6886, 1140 m, 22 IV 2022, 10w (pin), leg. S. Salata (MNHW); Paphos, Stavros tis Psokas, mouflon farm, 35.026647 / 32.630986, 842 m, 21 IV 2022, 1g (pin), 30w (8 pin, 22 EtOH), leg. L. Borowiec (MNHW).

Comparative note. *Temnothorax oreades* is a member of the *T. graecus* group, variable in size, morphological details, and body color. Generally, species from higher altitudes are darker colored and more distinctly bicolor with the head usually darker than mesosoma, while specimens from lower altitudes are paler colored with the head not or only slightly darker than mesosoma. *Temnothorax oreades* has uniformly yellow antennae or its antennal club might be slightly darker yellow than the funicle and in this character is similar to *T. evagorae* and *T. cerastarum*. *Temnothorax aeolius* differs in antennal club partly brown to black. Pale specimens of *T. oreades* are similar to *T. cerastarum* but differ in less sculptured head with the greater part of the frontal and occipital areas smooth and shiny, longer and needle-shaped propodeal spines with mean PSLI 0.297, and longer antennal scapus with mean SI1 0.933 and SI2 0.785. *Temnothorax evagorae* is very similar to the pale form of *T. oreades* in sculpture and shape of petiole, and the best distinguishing characteristic is the length of mesosomal erect setae (*T. oreades* has longer setae, with the length of longest seta/eye diameter ratio 0.571–0.645 (mean 0.604). Both species are separated ecologically, *T. evagorae* is a lowland and highland species recorded from the seacoast to an altitude of 838 m, while *T. oreades* was collected only in mountain habitats from 1100 to 1928 m with only one locality below 1100 m at an altitude 842 m but placed in very shadow and wet site. The last yellow Cypriot species *T. akrotiriensis* differs from the pale form of *T. oreades* in the more sculptured head with a distinctly microreticulate background between large reticulation and rugae thus frontal part of the head looks slightly dull, while in *T. oreades* this background sculpture is diffused or absent thus frontal part of head looks shiny. *Temnothorax akrotiriensis* has a very narrow band at the end of its first gastral tergite, which occupies at most ¼ posterior surface of the tergite, while in *T. oreades* this band usually occupies more than half the length of the tergite. Both species are separated ecologically, *T. akrotiriensis* was collected only at low altitudes, from the seacoast to 156 m.



FIGURES 42, 43. Holotype worker of *Temnothorax oreades* n. sp. 42 dorsal 43 lateral (scale bar = 1 mm).



FIGURE 44. Holotype worker head of *Temnothorax oreades* n. sp. (scale bar = 0.5 mm).

Description. Worker (n = 10): HL: 0.611–0.754 (0.706); HW: 0.505–0.663 (0.604); SL: 0.460–0.568 (0.542); EL: 0.135–0.183 (0.159); EW: 0.105–0.121 (0.115); PNW: 0.341–0.452 (0.411); WL: 0.709–0.892 (0.832); PEL: 0.271–0.365 (0.325); PEH: 0.193–0.241 (0.225); PPL: 0.175–0.238 (0.221); PPW: 0.195–0.261 (0.236); PSL: 0.137–0.183 (0.151); CI: 1.137–1.196 (1.170); EI1: 1.286–1.512 (1.378); EI2: 0.216–0.245 (0.226); SI1: 0.857–0.940 (0.898); SI2: 0.751–0.806 (0.768); MI: 1.949–2.079 (2.026); PI: 1.403–1.521 (1.444); PPI: 0.946–1.114 (1.069); PSLI: 0.220–0.291 (0.250).

Color. In typical specimens frontal part of head ochraceous with slightly obscure gena, posteriorly head gradually paler, ochraceous yellow, postocular area and ventral side ochraceous yellow to yellow. Mesosoma ochraceous yellow with slightly paler yellow dorsum, petiole and postpetiole ochraceous to orange-yellow, gaster predominantly dark brown except yellow posterior margins of tergites and orange-yellow to yellow basal spot on first gastral tergite occupying not more than $\frac{1}{4}$ of surface of the tergite. Antennae and legs yellow, femora slightly infuscate in the middle, antennal club sometimes slightly darker yellow than basal segments of funicle but never brown (Figs 42–44). In the palest specimens body predominantly yellow (Fig. 45) with only gena and frons slightly darker, orange-yellow (Fig. 47) and basal yellow spot on first gastral tergite occupying almost $\frac{1}{3}$ anterior space of

the tergite (Fig. 45). In the darkest specimens head yellowish-brown, except ochraceous postocular area, mesosoma ochraceous yellow with brown sides of mesonotum and propodeum, petiole and postpetiole yellowish-brown, mid and hind femora predominantly brown except yellow base and knee and basal spot on first gastral tergite small occupying less than $\frac{1}{5}$ of anterior space of the tergite (Figs 46, 48). **Head.** Slightly elongate, $1.14\text{--}1.21 \times$ as long as wide, sides widest at eye level then softly converging anterad and posterad, occipital corners regularly rounded, occipital margin of head straight to slightly convex (Fig. 44). Anterior margin of clypeus softly convex, without central angulation, with 4–6 short setae, medial notch absent. Eyes moderate, short oval, $1.3\text{--}1.4 \times$ as long as wide, $0.23 \times$ as long as head length. Antennal scape moderately long, in lateral view slightly curved, approximately $0.9 \times$ as long as width of the head, in apex gradually widened, without or with very shallow preapical constriction, its base with obtuse angles. Funiculus distinctly longer than scape, first segment $2.2 \times$ as long as wide at apex, $2.9 \times$ longer than second segment, segments 2–6 transverse, segment 7 only slightly wider than long, club large, $1.2 \times$ as long as segments 1–8 combined, last segment of club elongate, $1.4 \times$ as long as segments 8 and 9 combined (Fig. 44). Surface of scape with fine microreticulation, shiny, covered with thin, moderate dense, basally appressed apically gradually subdecumbent hairs. Mandibles with thick sparse, longitudinal striae, shiny, covered with short appressed and few subdecumbent hairs. Clypeus with median keel and two keels on each side, interspaces smooth and shiny. Frons narrow, approximately $0.39 \times$ as wide as head width. Frontal carinae short, slightly extending beyond frontal lobes. Antennal fossa deep, margined with sharp circular rugae with smooth interspaces. Frontal lobes narrow, placed only slightly upwards (Fig. 44, 47, 48). Gena, malar area and frons laterally with sharp longitudinal rugae and usually with reticulate connections better marked in dark forms (Fig. 48), indistinct in the palest forms (Fig. 47), postocular area, vertex and occipital corners with fine striation, interspaces from smooth to diffusely microreticulate. Central part of frons, with smooth and shiny median stripe, better marked in pale forms, in dark forms often reduced to a smooth central line, frons centrally without or with extremely small setose punctation. Surface of head without appressed pubescence, frons, vertex and occipital area with erect, pale, short and thick setae, the longest on occipitum $0.59 \times$ as long as eye width (Figs 44, 47, 48). **Mesosoma.** Elongate, approximately twice as long as wide, slightly arched in anterior third, flat to slightly convex in posterior $\frac{2}{3}$ length, without metanotal groove or impression. Pronotum convex on sides. Anterior slope of pronotum with transverse rugae, dorsum with fine longitudinal rugae and microreticulate interspaces, shiny. Sides of pronotum with sharp longitudinal rugae and diffusely microreticulate interspaces, shiny. Dorsum of mesonotum microreticulate with sharp longitudinal rugae, sides of mesonotum predominantly microgranulate with sharp longitudinal rugae, surface appears irregular. Dorsum of propodeum microreticulate, with longitudinal rugae, area between propodeal spines only microreticulate or with remnants of rugae, posterior face microreticulate with transverse rugae, sides of propodeum predominantly with sharp longitudinal rugae, especially on metapleural lobe, and microreticulate interspaces, surface appears irregular but shiny. Propodeal spines moderately long, mean PSL/HW 0.25, running obliquely upwards, in form of elongate spines with moderately widened base, straight, acute apically (Figs 43, 45, 46). Entire mesosoma bearing erect, yellow, moderately long setae, the longest seta/eye diameter ratio $0.571\text{--}0.645$ (mean 0.604) (Figs 43, 45, 46). **Petiole.** Elongate, mean PEL/PEH 1.44, anterior face straight or very shallowly concave, ventral margin anteriorly with sharp spine, node in lateral view obtusely angulate with sharp lateral carinae, with few short rugae on top and longitudinal rugae on sides, whole surface microreticulate, shiny. **Postpetiole.** In dorsal view $1.1 \times$ as long as wide, approximately $1.3 \times$ as wide as petiole, surface microreticulate in pale forms without or with rudiments of rugae, in dark forms with longitudinal striation and on sides irregular rugae, appearing irregular but shiny. Dorsal surface of petiole and postpetiole with long erect setae, as long as longest setae on pronotum (Fig. 43). **Gaster.** Smooth and shiny, bearing erect, thin, pale setae, almost as long as setae on mesosoma (Figs 42, 43). **Legs.** Moderately elongate, femora moderately swollen in the middle, tibiae widened from base to $\frac{3}{4}$ length, surface of legs covered with extremely sparse, appressed hairs, appears smooth and shiny.

Gyne (n = 3): HL: 0.730–0.743 (0.737); HW: 0.683–0.698 (0.690); SL: 0.525–0.573 (0.551); EL: 0.200–0.230 (0.215); EW: 0.168–0.183 (0.175); PNW: 0.814–0.857 (0.832); WL: 1.333–1.389 (1.354); PEL: 0.349–0.428 (0.394); PEH: 0.270–0.287 (0.276); PPL: 0.286–0.317 (0.303); PPW: 0.302–0.325 (0.314); PSL: 0.190–0.209 (0.199); CI: 1.046–1.088 (1.068); EI1: 1.190–1.257 (1.227); EI2: 0.274–0.310 (0.292); SI1: 0.752–0.830 (0.799); SI2: 0.719–0.776 (0.748); MI: 1.621–1.638 (1.628); PI: 1.293–1.500 (1.428); PPI: 1.025–1.056 (1.039); PSLI: 0.272–0.303 (0.288).



45



46

FIGURES 45, 46. Worker of *Temnothorax oreades* n. sp. lateral **45** the palest form from mouflon farm in Paphos forest **46** the darkest form from Kalidonia Waterfall area loc. 1 (scale bar = 1 mm).

Color. Head brown, with slightly paler postocular area and ventral surface, mesosoma predominantly brown, only scutellum dark brown centrally, postpetiole, petiole and gaster brown, first tergite with yellowish-brown basal spot, second tergite with yellow posterior margin. Antennae yellow with infusate club, legs predominantly yellow, swollen part of femora brown (Figs 49, 50). **Head.** Broad, approximately $1.1 \times$ as long as wide, widest behind eyes, gena parallel, behind eyes softly convergent, occipital corners rounded, occipital margin slightly convex (Fig. 51). Anterior margin of clypeus softly convex, median notch absent, with 4 long and 2 short setae. Eyes large, short oval, $1.2 \times$ as long as wide, $0.27\text{--}0.31 \times$ as long as head length. Antennal scape moderately long, in lateral view slightly curved, $0.75\text{--}0.83 \times$ as long as width of the head, in apex only slightly widened with very shallow preapical



FIGURES 47, 48. Worker head of *Temnothorax oreades* n. sp. **47** the palest form from mouflon farm in Paphos forest **48** the darkest form from Kalidonia Waterfall area loc. 1 (scale bar = 0.5 mm).



FIGURES 49, 50. Gyne of *Temnothorax oreades* n. sp. 49 dorsal 50 lateral (scale bar = 1 mm).

constriction, its basal corners obtusely angulate. Funiculus distinctly longer than scape, first segment $2.2 \times$ as long as wide at apex, $3.3 \times$ longer than second segment, segments 2–6 transverse, segment 7 only slightly wider than long, club large, $1.2 \times$ as long as segments 1–8 combined, last segment of club elongate, $1.2 \times$ as long as segments 8 and 9 combined (Fig. 51). Surface of scape with fine microreticulation, shiny, covered with thin, moderate dense, basally appressed apically subdecumbent hairs. Mandibles with thick sparse, longitudinal striae, shiny, covered with short to moderate subdecumbent to decumbent hairs. Clypeus with median keel and two keels on each side, interspaces smooth, shiny. Frons narrow, approximately $0.38 \times$ as wide as head width. Frontal carinae short, extending to $\frac{1}{3}$ length of eyes. Antennal fossa deep, margined with sharp circular striae with smooth interspaces. Frontal lobes very narrow, placed only slightly upwards (Fig. 51). Whole surface of head with sharp longitudinal rugae extending to occipital margin, in malar area rugae tends to form reticulation, interspaces smooth or with diffused microreticulation, shiny, frons centrally without punctation. Surface of head without appressed pubescence, only sides with short decumbent hairs, frons, vertex and occipital area with erect, pale, short and thick setae, the longest on occipitum $0.34 \times$ as long as eye width. **Mesosoma.** Elongate, approximately $1.6 \times$ as long as wide. Pronotum not visible from above, scutum

and scutellum flat dorsally. Anterior slope of pronotum with rugose sculpture, sides with sharp longitudinal rugae and smooth to diffusely microreticulate interspaces, appears shiny. Dorsum of scutum with longitudinal striation, diffused or disappearing on anterior slope and lateral lobes, interspaces smooth to diffusely microreticulate, shiny. Dorsum of scutellum predominantly smooth and shiny, only sides and close to anterior margin with diffused striation (Fig. 49). Anepisternum anteriorly and dorsally with longitudinal striation, ventrally and posteriorly partly smooth, shiny, katepisternum predominantly smooth and shiny only close to posterior margin with short longitudinal rugae. Dorsum of propodeum with oblique and transverse rugae, between spines and posteriorly with transverse rugae, shiny, sides of propodeum with sharp longitudinal rugae, interspaces smooth or diffusely microreticulate, shiny. Propodeal spines short, mean PSL/HW 0.29, in form of triangular denticle with broadly widened base and acute apex (Fig. 50). Entire mesosoma bearing erect, yellow, moderately long setae, the longest $0.4 \times$ as long as eye diameter (Fig. 50). **Petiole.** Elongate, mean PEL/PEH 1.43, anterior face straight, ventral margin anteriorly with small, sharp spine, node in lateral view obtusely angulate, anterior slope smooth to diffusely microreticulate, sides with longitudinal rugae, ventral part with microreticulation but surface appears shiny. **Postpetiole.** Approximately as wide as long, $1.3\text{--}1.4 \times$ as wide as petiole, surface microreticulate with longitudinal striation, appears shiny. Dorsal surface of petiole and postpetiole with erect setae, slightly longer than setae on pronotum (Fig. 49). **Gaster.** Smooth and shiny, bearing erect, thin, pale setae, as long as setae on mesosoma (Fig. 50). **Legs.** Moderately elongate, femora moderately swollen in the middle, tibiae widened from base to $\frac{3}{4}$ length, surface of legs covered with extremely sparse, appressed hairs, appears smooth and shiny.

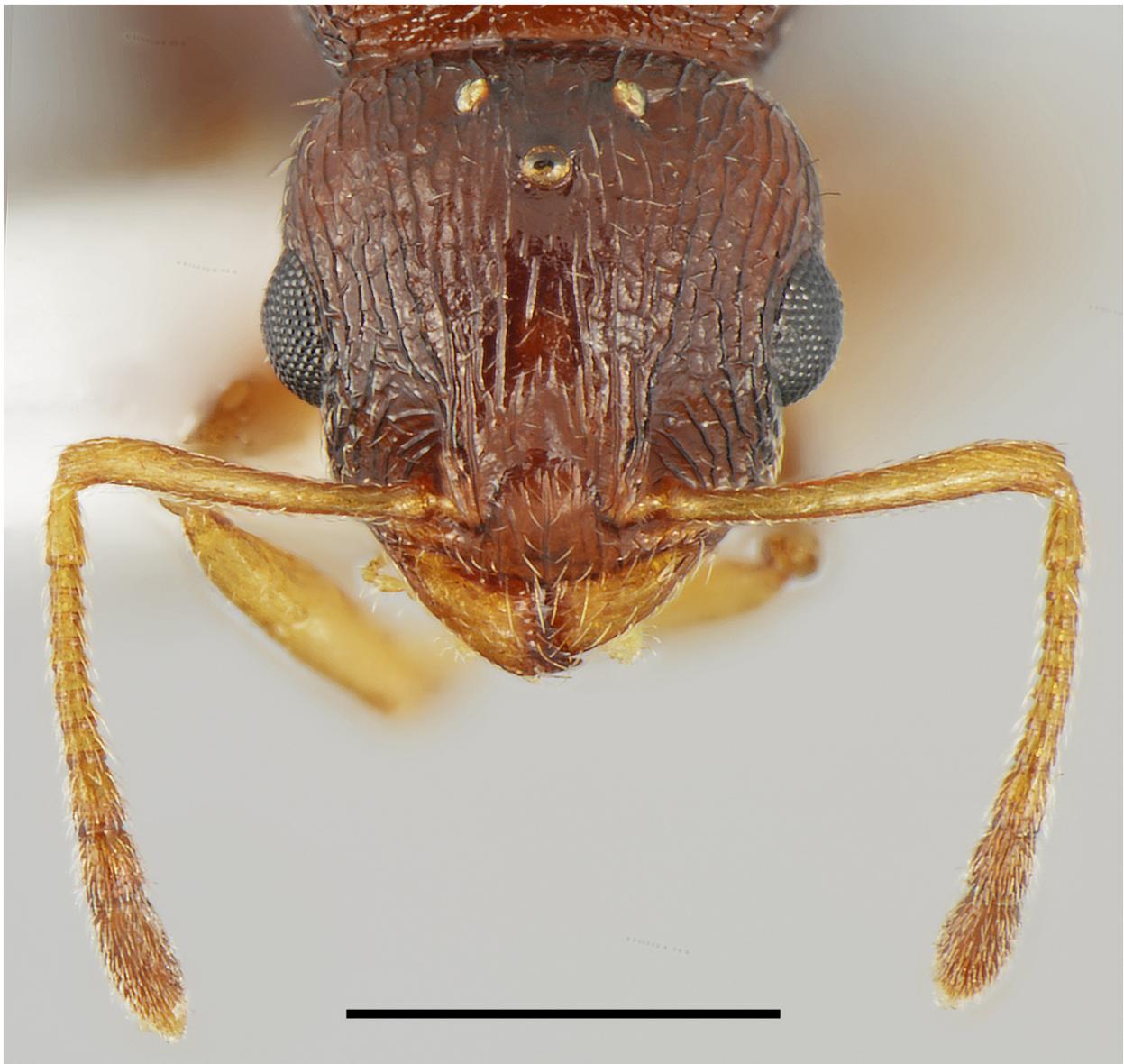


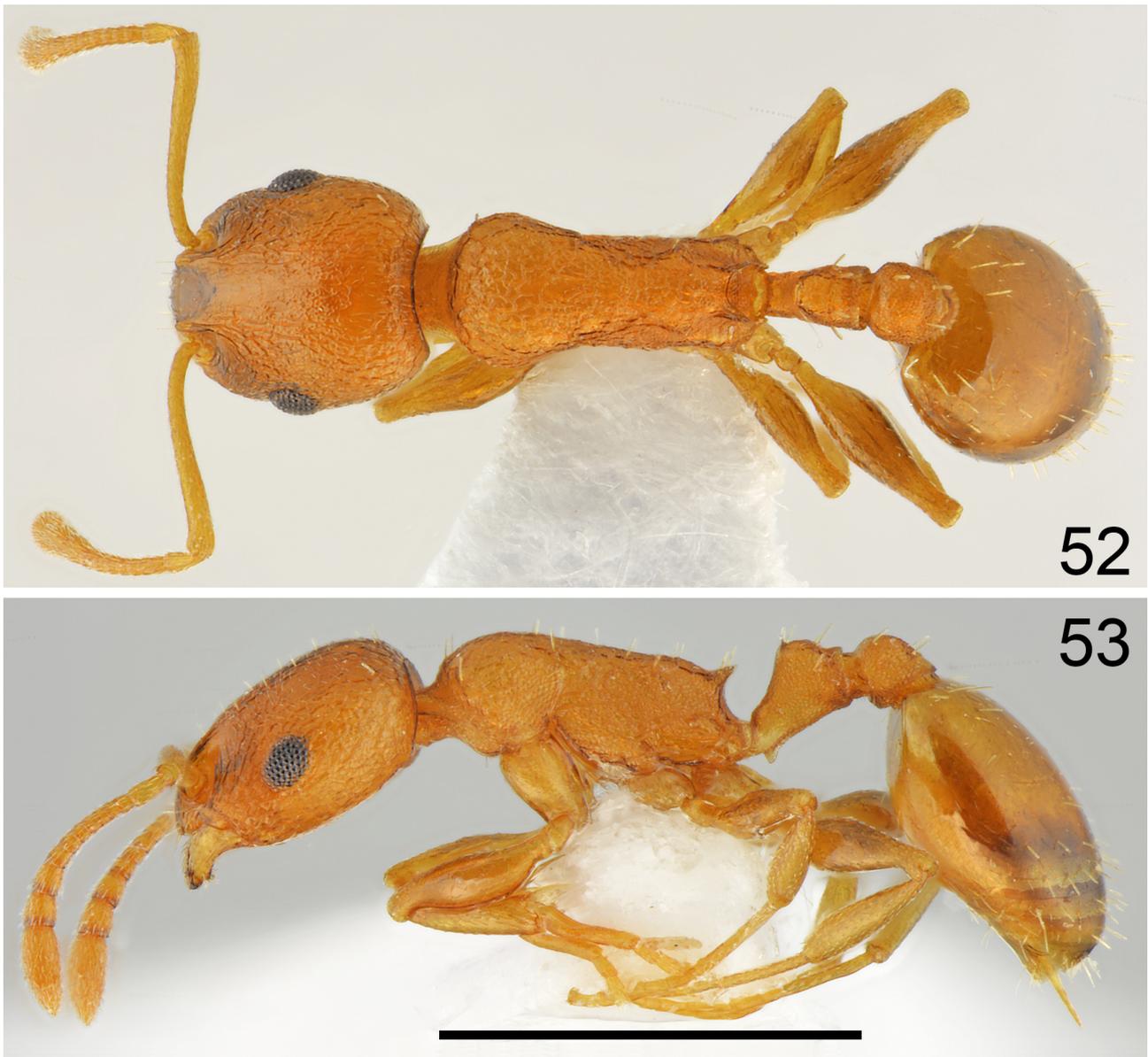
FIGURE 51. Gyne head of *Temnothorax oreades* n. sp. (scale bar = 0.5 mm).

Biological note. Mountain species. Numerous nests were observed under small and moderate stones inside the shadow *Pinus nigra* forest; a few nests were also under moss on stones in the rest area with pine trees. Most sites were at an altitude above 1100 m up to the peak of Mt Chionistra (the highest nest was observed at an altitude of 1862 m). The only site that was placed below 1100 m, at an altitude of 842 m, in a very shady place on a mountainside in a valley running along a fenced mouflon farm. Nests were observed in the crevice of a large stone.

Temnothorax kemali group

Temnothorax akrotiriensis n. sp. (Figs 52–59, 65)

Etymology. Named after its *locus typicus*, Akrotiri Peninsula, due to the importance of the Akrotiri Peninsula and Cyprus as a whole as a biodiversity hotspot of ants.



FIGURES 52, 53. Holotype worker of *Temnothorax akrotiriensis* n. sp. (morphotype 1) 52 dorsal 53 lateral (scale bar = 1 mm).

Material examined. Holotype: worker of strongly sculptured morphotype (pin) “CYPRUS, Akrotiri UK SBA, 0 m | Limassol Salt Lake loc. 2 | 34.60987 / 32.94685 | 20 IV 2022, L. Borowiec” (MNHW). **Paratypes** (6 workers

of strongly sculptured morphotype, pin): 4w, the same data as for holotype (MNHW); 1w “CYPRUS, Akrotiri UK SBA, -1 m | Akrotiri west beach | 34.62095 / 32.92262 | 20 IV 2022, L. Borowiec” (MNHW); 1w “CYPRUS, Larnaka, 156 m | Skarinou | 34.81835 / 33.35652 | 25 IV 2022, J.D & C.G. [J. Demetriou & C. Georgiadis]” (MNHW).

Other material examined. 4 workers of softly sculptured morphotype (pin): 1w, the same data as for holotype (MNHW); Larnaka, Skarinou, 156 m, 34.81835 / 33.35652, 25 IV 2022, 3w, leg. J. Demetriou & C. Georgiadis (MNHW); Akrotiri UK SBA, Agiophyla, 0 m, 34.6006 / 32.9721, 10 X 2023, 5w, leg. J. Demetriou (JDC) (worker of strongly sculptured morphotype, EtOH).



FIGURE 54. Holotype worker head of *Temnothorax akrotiriensis* n. sp., morphotype 1 (scale bar = 0.5 mm).

Comparative note. *Temnothorax akrotiriensis* is a member of the *T. kemali* group characterized by a predominantly yellow body, well-marked head sculpture with a frontal part almost completely covered with microreticulate sculpture and few longitudinal or semicircular rugae, and by sharp, moderately long to very long propodeal spines. Pale forms or pale species of the *T. graecus* group differ in a larger shiny area in the frontal part of the head or, if the head is almost completely covered with reticulate sculpture, diffused or absent background microreticulation. *Temnothorax akrotiriensis* has a very narrow band at the end of the first gastral tergite, which occupies at most $\frac{1}{4}$ of its posterior surface while in species of the *T. graecus* group, this band usually occupies more than $\frac{1}{3}$ or often half of the tergite's surface. Predominantly yellow *T. cypridis* and *T. aeolius* differ in partly brown to black antennal club. Pale yellow *T. hippomenesi* differs in predominantly smooth and shiny frontal part

of the head, very short propodeal spines in the form of a triangular tooth with mean PSLI 0.207 (in *T. akrotiriensis* 0.282), and wide band at the end of the first gastral tergite which occupies more than $\frac{1}{3}$ posterior surface of the tergite. *Temnothorax akrotiriensis* with *T. aeolius* are the most lowland species among yellow members of Cypriot *Temnothorax* with known localities placed in an altitude below 160 m.

Description (see note below). Worker, strongly sculptured form (n = 7): HL: 0.603–0.697 (0.639); HW: 0.475–0.603 (0.533); SL: 0.444–0.508 (0.474); EL: 0.127–0.145 (0.135); EW: 0.095–0.113 (0.102); PNW: 0.320–0.378 (0.354); WL: 0.670–0.797 (0.740); PEL: 0.257–0.310 (0.275); PEH: 0.162–0.206 (0.188); PPL: 0.137–0.194 (0.169); PPW: 0.167–0.214 (0.189); PSL: 0.119–0.171 (0.145); CI: 1.068–1.281 (1.203); EI1: 1.171–1.408 (1.329); EI2: 0.195–0.242 (0.211); SI1: 0.763–0.962 (0.895); SI2: 0.714–0.784 (0.742); MI: 2.017–2.138 (2.089); PI: 1.325–1.586 (1.472); PPI: 0.979–1.285 (1.124); PSLI: 0.214–0.318 (0.266).



FIGURES 55, 56. Worker of *Temnothorax akrotiriensis* n. sp. (morphotype 2) **55** dorsal **56** lateral (scale bar = 1 mm).



FIGURE 57. Worker head of *Temnothorax akrotiriensis* n. sp., morphotype 2 (scale bar = 0.5 mm).

Color. Whole body yellow, only first gastral tergite in posterior $\frac{1}{3}$ length with narrow, reddish-brown band. Antennae and legs uniformly yellow, femora never infuscate in the middle (Figs 52, 53, 55, 56). **Head.** From as long as wide to slightly elongate, $1.07\text{--}1.28 \times$ as long as wide, sides almost parallel or softly converging behind eyes, occipital corners regularly rounded, occipital margin of head straight (Fig. 54). Anterior margin of clypeus softly convex, without central angulation, with 4–6 short setae, medial notch absent. Eyes moderate, short oval, $1.3\text{--}1.4 \times$ as long as wide, $0.21 \times$ as long as head length. Antennal scape long, in lateral view slightly curved, approximately $0.9 \times$ as long as width of the head, in apex gradually widened with very shallow preapical constriction, its base with obtuse dorsal and ventral angle. Funiculus distinctly longer than scape, first segment $1.9 \times$ as long as wide at apex, $3.0 \times$ longer than second segment, segments 2–6 transverse, segment 7 only slightly wider than long, club large, $1.2 \times$ as long as segments 1–8 combined, last segment of club elongate, $1.2 \times$ as long as segments 8 and 9 combined (Fig. 54). Surface of scape with fine microreticulation, shiny, covered with thin, sparse, appressed hairs. Mandibles with thick sparse, longitudinal striae, shiny, covered with short appressed hairs. Clypeus with long median keel, without or with one short keel on each side, interspaces smooth and shiny. Frons very narrow, approximately $0.34 \times$ as wide as head width. Frontal carinae short, slightly extending beyond frontal lobes. Antennal fossa deep,



FIGURES 58, 59. Worker mesosoma and petiole of *Temnothorax akrotiriensis* n. sp. **58** morphotype with short propodeal spine **59** morphotype with long propodeal spine.

margined with sharp circular striae with more or less microreticulate interspaces. Frontal lobes narrow, placed only slightly upwards (Fig. 54). Gena, malar area and frons laterally with sharp longitudinal rugae, sculpture tends to form reticulation, especially in malar area, postocular area and occipital corners with macroreticulate sculpture, interspaces on almost whole surface of head distinctly microreticulate, frons centrally usually with narrow smooth and shiny stripe, without setose punctation. Surface of head without appressed pubescence, frons, vertex and occipital area with erect, pale, short and thick setae, the longest on occipitum $0.32 \times$ as long as eye diameter (Fig. 53). **Mesosoma.** Elongate, approximately $2.1 \times$ as long as wide, slightly arched in anterior third, flat in posterior $\frac{2}{3}$ length, without metanotal groove or impression. Pronotum convex on sides. Anterior slope of pronotum with granulate sculpture, dorsum with irregular to zigzag rugae and strongly microreticulate interspaces, appears irregular. Sides of pronotum strongly microreticulate with few sharp longitudinal rugae, anteriorly tending to form reticulate sculpture. Dorsum of mesonotum microgranulate, without rugae, on sides predominantly microgranulate with few longitudinal or irregular rugae, surface appears irregular. Dorsum of propodeum strongly microgranulate, anteriorly with few irregular rugae, posteriorly, between propodeal and on posterior face without rugae, sides of propodeum predominantly strongly microgranulate, only close to anterior margin, and ventrally and on metapleural lobe with longitudinal rugae, surface appears irregular (Figs 53, 58). Propodeal spines moderate to long, PSL/HW $0.21\text{--}0.32$ (mean 0.27), running obliquely upwards, in form of triangular spine with moderately widened base, straight, sharply acute apically (Figs 53, 58). Entire mesosoma bearing erect, yellow, short setae, the longest on pronotum $0.54 \times$ as

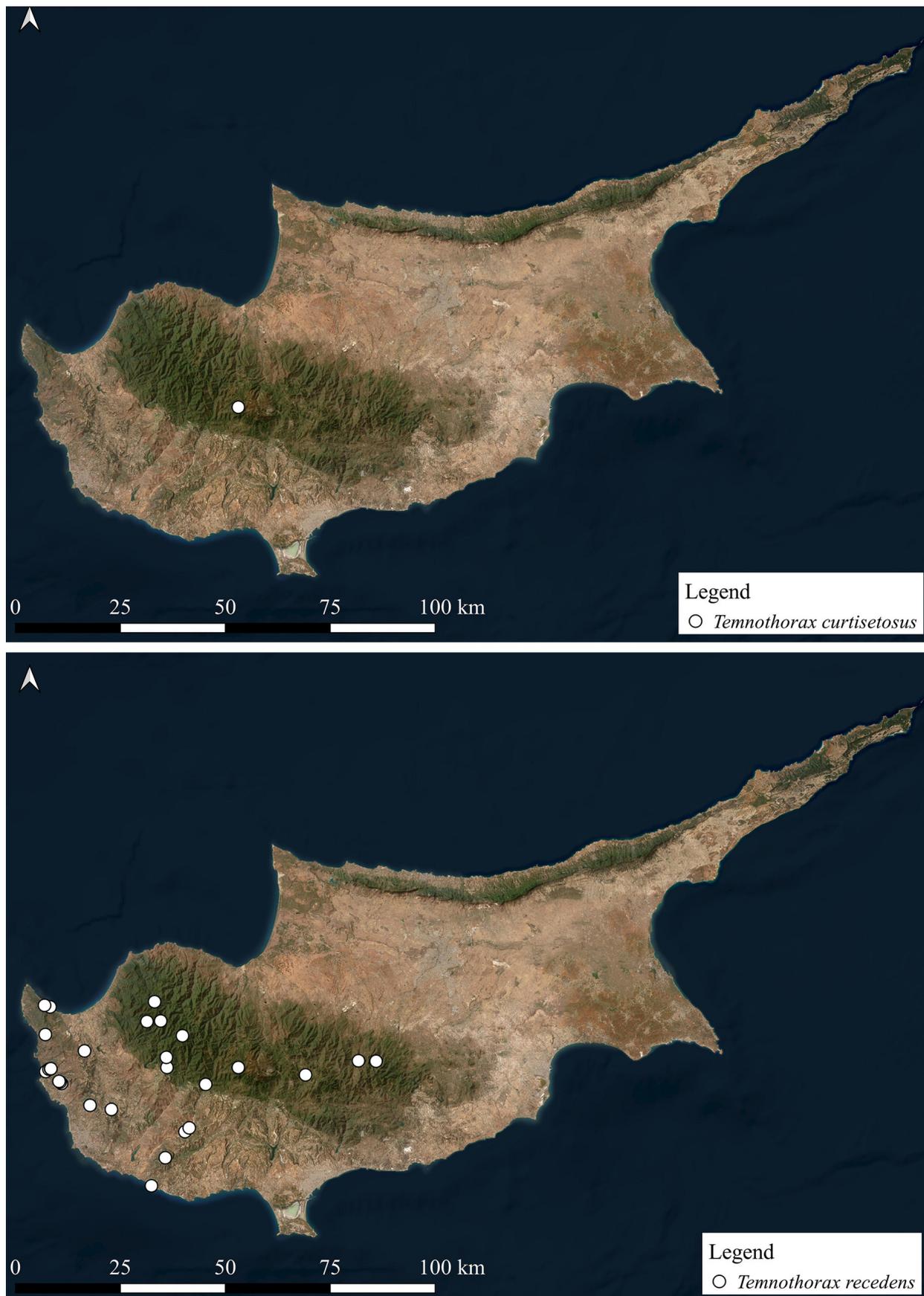


FIGURE 60. Distribution in Cyprus *Temnothorax curtisetosus* Salata & Borowiec (upper map) and *T. recedens* (Nylander) (bottom map)

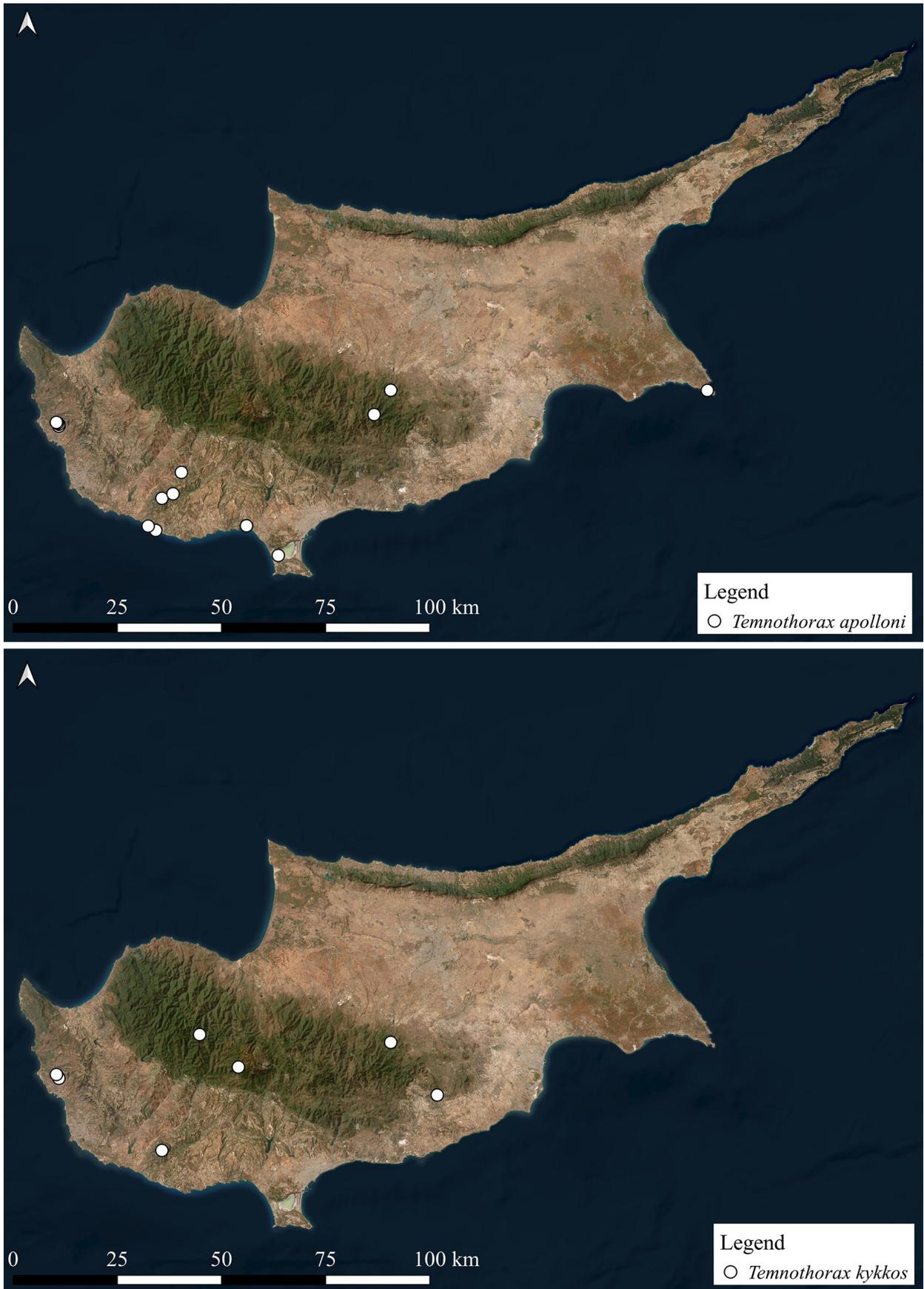


FIGURE 61. Distribution in Cyprus *Temnothorax apolloni* n. sp. (upper map) and *T. kykkos* n. sp. (bottom map)



FIGURE 62. Distribution in Cyprus *Temnothorax nikoklesi* n. sp. (upper map) and *T. cypridis* (Santschi) (bottom map)

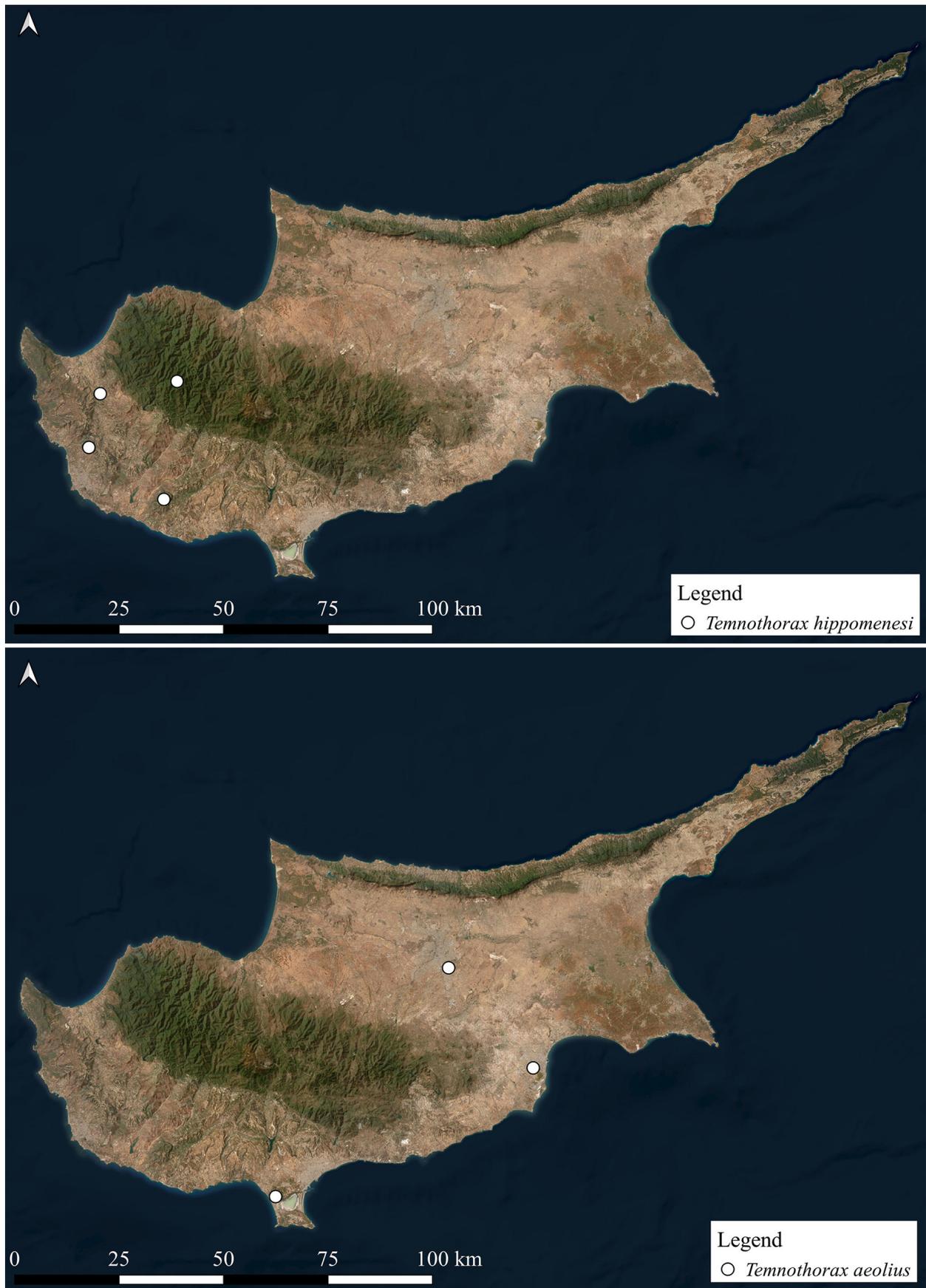


FIGURE 63. Distribution in Cyprus *Temnothorax hippomenesi* n. sp. (upper map) and *T. aeolius* (Forel) (bottom map)

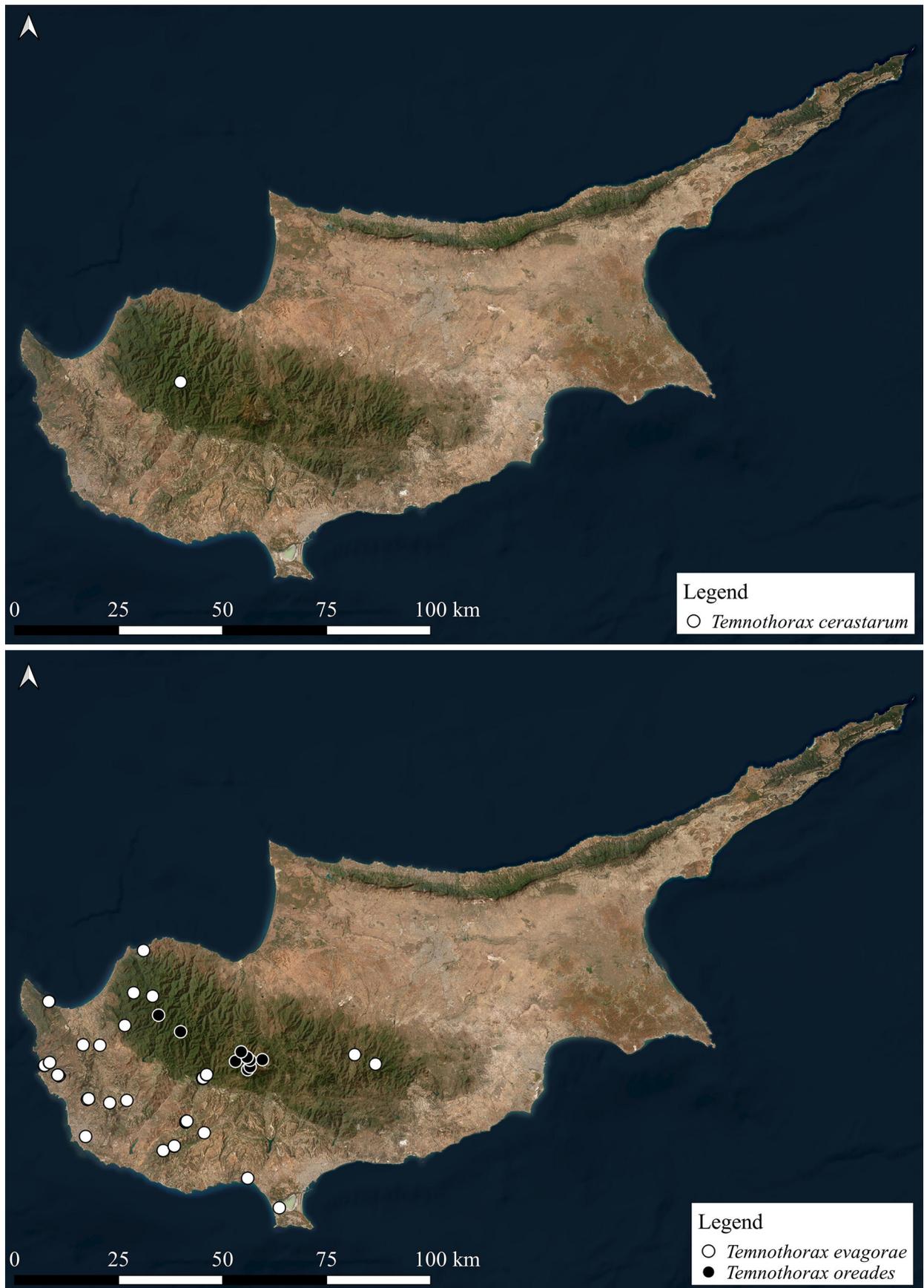


FIGURE 64. Distribution in Cyprus *Temnothorax cerastarum* n. sp. (upper map) and *T. evagorae* n. sp. + *T. oreades* n. sp. (bottom map)

long as eye diameter (Fig. 58). **Petiole.** Elongate, mean PEL/PEH 1.47, anterior face shallowly concave, ventral margin anteriorly with large spine, node in lateral view obtusely angulate with sharp lateral carinae, with few short rugae on top, whole surface microreticulate, sides with few rugae, appears slightly dull. **Postpetiole.** In dorsal view $1.1 \times$ as long as wide, approximately $1.26 \times$ as wide as petiole, surface microreticulate, without longitudinal striation or rugae, appears irregular but shiny. Dorsal surface of petiole and postpetiole with long erect setae, as long as setae on pronotum (Fig. 58). **Gaster.** Smooth and shiny, bearing erect, thin, pale setae, shorter than setae on mesosoma (Fig. 56). **Legs.** Moderately elongate, femora swollen in the middle, tibiae widened from base to $\frac{3}{4}$ length, surface of legs covered with extremely sparse, appressed hairs, appears smooth and shiny.

Worker, finely sculptured form ($n = 4$): HL: 0.556–0.667 (0.588); HW: 0.432–0.548 (0.475); SL: 0.383–0.460 (0.404); EL: 0.113–0.151 (0.126); EW: 0.092–0.108 (0.101); PNW: 0.287–0.368 (0.319); WL: 0.621–0.771 (0.675); PEL: 0.222–0.278 (0.245); PEH: 0.159–0.203 (0.174); PPL: 0.135–0.190 (0.166); PPW: 0.173–0.206 (0.183); PSL: 0.127–0.167 (0.142); CI: 1.209–1.287 (1.238); EI1: 1.046–1.398 (1.251); EI2: 0.197–0.230 (0.214); SII: 0.835–0.887 (0.850); SI2: 0.679–0.691 (0.687); MI: 2.048–2.165 (2.118); PI: 1.369–1.488 (1.408); PPI: 1.012–1.296 (1.112); PSLI: 0.276–0.309 (0.298).

Color. As in typical strongly sculptured form (Figs 55, 56). **Head.** Slightly more elongated than in the typical form, 1.21 – $1.29 \times$ as long as wide, with more parallel sides (Fig. 57). Rest of the head characters are similar to the typical form only the sculpture of the head looks different. Antennal fossa deep, margined with interrupted circular striae with microreticulate interspaces (Fig. 57). Gena, malar area and frons laterally with fine longitudinal and reticulate rugae, vertex, postocular area and occipital corners with only microreticulate sculpture, without or with only remnants of rugae and striae, frons centrally usually with slightly broader shiny median stripe. **Mesosoma.** Less sculptured than in typical form. Dorsum of pronotum and mesonotum with only microreticulate sculpture, without rugae or with remnants of longitudinal striae. Pronotum and mesonotum on sides with predominate microgranulate sculpture, without or with remnants of longitudinal rugae or striae. Propodeal spines relatively long, mean PSL/HW 0.28 – 0.31 (mean 0.30), in some specimens very long, needle shaped and distinctly curved in profile (Fig. 59). Rest of characters as in typical form.



FIGURE 65. Distribution in Cyprus *Temnothorax akrotiriensis* n. sp.

Note. We observed two morphological forms of this species. The first one is characterized by a strongly sculptured head with numerous longitudinal rugae, the second form has a predominantly microreticulate head with only a few longitudinal rugae. This character is usually correlated with the body size, larger specimens have more rugose heads than smaller specimens. Although we did not observe intermediate specimens we treated both morphotypes as variations of a single species. Both morphotypes were collected in the same localities and sites e.g. in samples from shaking the branches of bush and both forms have similar variability in the length of propodeal spines. Above, we described separate measurements for both forms and noted differences in small, finely sculptured morphotype in separate paragraph. Similar variability within population we observed also in Greek members of this group *Temnothorax kemali*, where smaller specimens have a relatively slender head and relatively longer propodeal spines.

Biological note. Thermophilous, lowland species. A few workers were shaken off into the entomological umbrella from bushes and herbs growing around the salt lake; one worker was collected on a gravel beach, probably blown away by the wind from the surrounding saline herbs; four specimens were shaken off into the entomological umbrella from herbs in a sowed field next road.

Acknowledgements

Lech Borowiec and Sebastian Salata thank the University of Wrocław for supporting collecting trips to Cyprus. Jakovos Demetriou acknowledges the UK Government through Darwin Plus (DPLUS124 and DPLUS200), for funding part of this project and surveys in Akrotiri UK SBA. Lech Borowiec thanks Dr Jolanta Świętojańska (University of Wrocław) for her assistance during his first collecting field trip to Cyprus in 2012.

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