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Supplement to the revision of *Amicromias* Reitter – with the description of a new species (Coleoptera, Curculionidae, Entiminae)

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Amicromias tricholepis sp. n. from Lesbos Island (Greece) is described. The new species differs by its unique morphological characters as well as an outstanding sexual dimorphism from all other representatives of the genus. A new key to the species of the recently revised genus *Amicromias* Reitter, 1912 is given.

Key words. Curculionidae, Entiminae, *Amicromias*, new species, key to species, Greece.

INTRODUCTION

The genus *Amicromias* Reitter, 1912 was established for *Brachysomus rume-licus* Apfelbeck, 1898. In the revision of the genus by Yunakov (2005) eight new species were described and *Brachysomus zellich* Formánek, 1907 was transferred to *Amicromias*. A new species of this genus has been collected during a field study at the Lesbos Island (Greece). Thus, together with the new species described here, the genus *Amicromias* comprises 11 species distributed mainly in the eastern part of the Mediterranean region. These small broad nosed weevils inhabit xerothermic biotopes. Unfortunately no details about host plants or ecological preferences of any species are known. However, we have the indication that species from the Black Sea coast prefer grass-litter and appear early in spring. From *Amicromias euxinus* Yunakov, 2005, its preference for maritime plant associations of *Artemisia* spp. is known, thus the species might be halophilic.

MATERIAL & METHODS

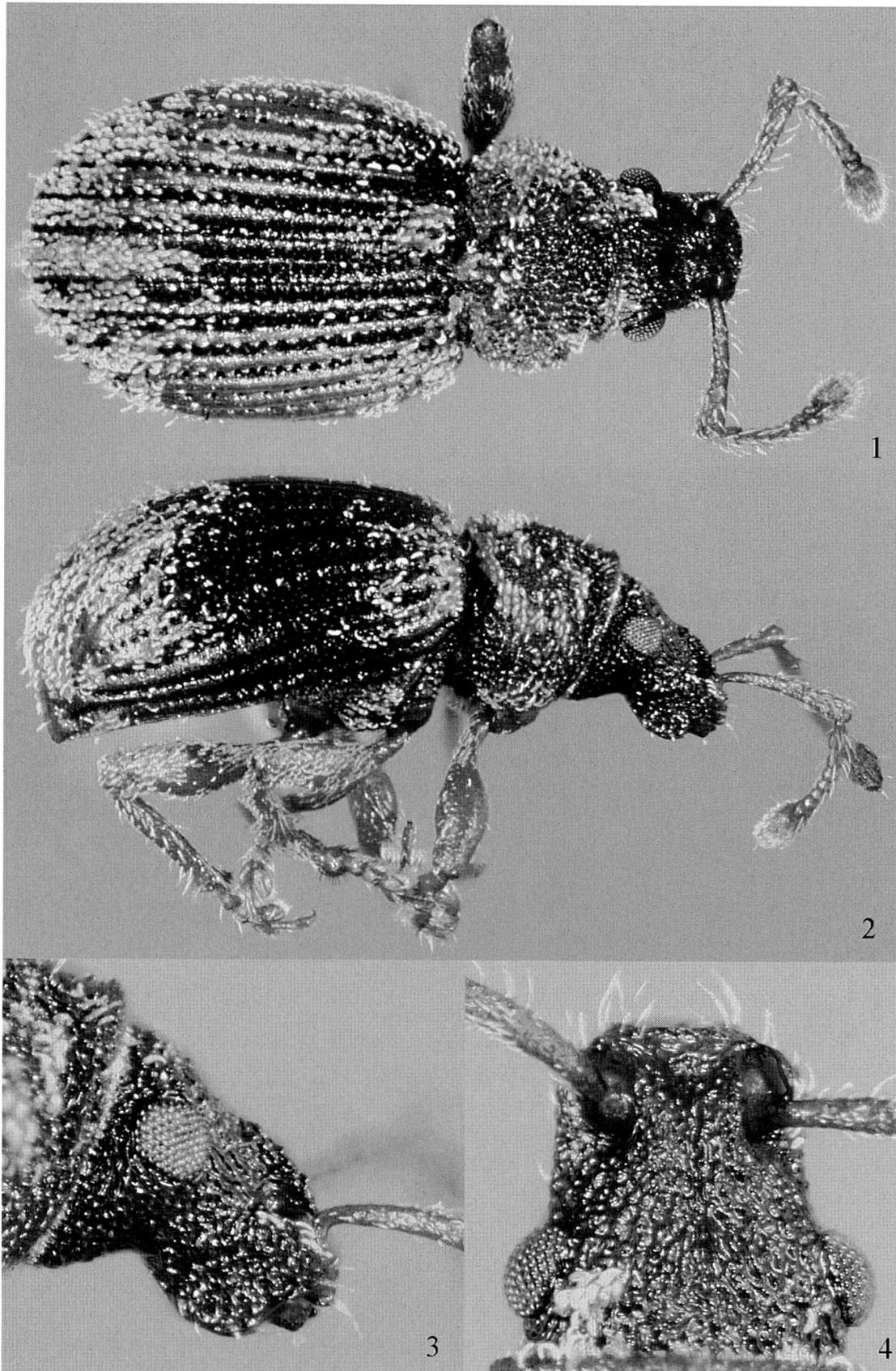
The nomenclature used here follows Yunakov (2005). The following acronyms are used:

NMBE – Natural History Museum, Bern

cCG – Christoph Germann collection, Thun

ZIN – Zoological Institute, Russian Academy of Sciences, St. Petersburg

EH – elytra height; EL – elytra length; ELD – eye longitudinal diameter; EW – elytra width; FW – frons width; PL – pronotum length; PW – pronotum width; RL – rostrum length; RWA – rostrum width at apex; RWB – rostrum width at base. Spermathecal details: Ra – ramus; Co – collum, Cr – cornu.



Figs 1–4. *Amicromias tricholepis* sp. n., male. (1) body dorsal view; (2) body lateral view; (3) head lateral view; (4) head dorsal view.

The illustrations and measurements were made with a stereomicroscope Leica MZ6 through a grid-ocular.

The beetles were caught in pitfall traps filled with formaldehyde-solution. Because of this, the specimens caught were very inflexible. To extract the genital structures they were first treated with a 10 % pepsin solution during 24 hours at 30 °C. The genital structures were macerated in hot 10 % KOH, washed in distilled water and conserved in glycerine containing glass vials pinned under the mounted specimens. Body length was measured from the fore margin of the pronotum to the apex of the elytra.

The photographs were made with a 4-megapixel camera under a stereomicroscope, modified with the program Auto-Montage for best results of depth of sharpness and then reworked using Adobe Photoshop.

DESCRIPTION

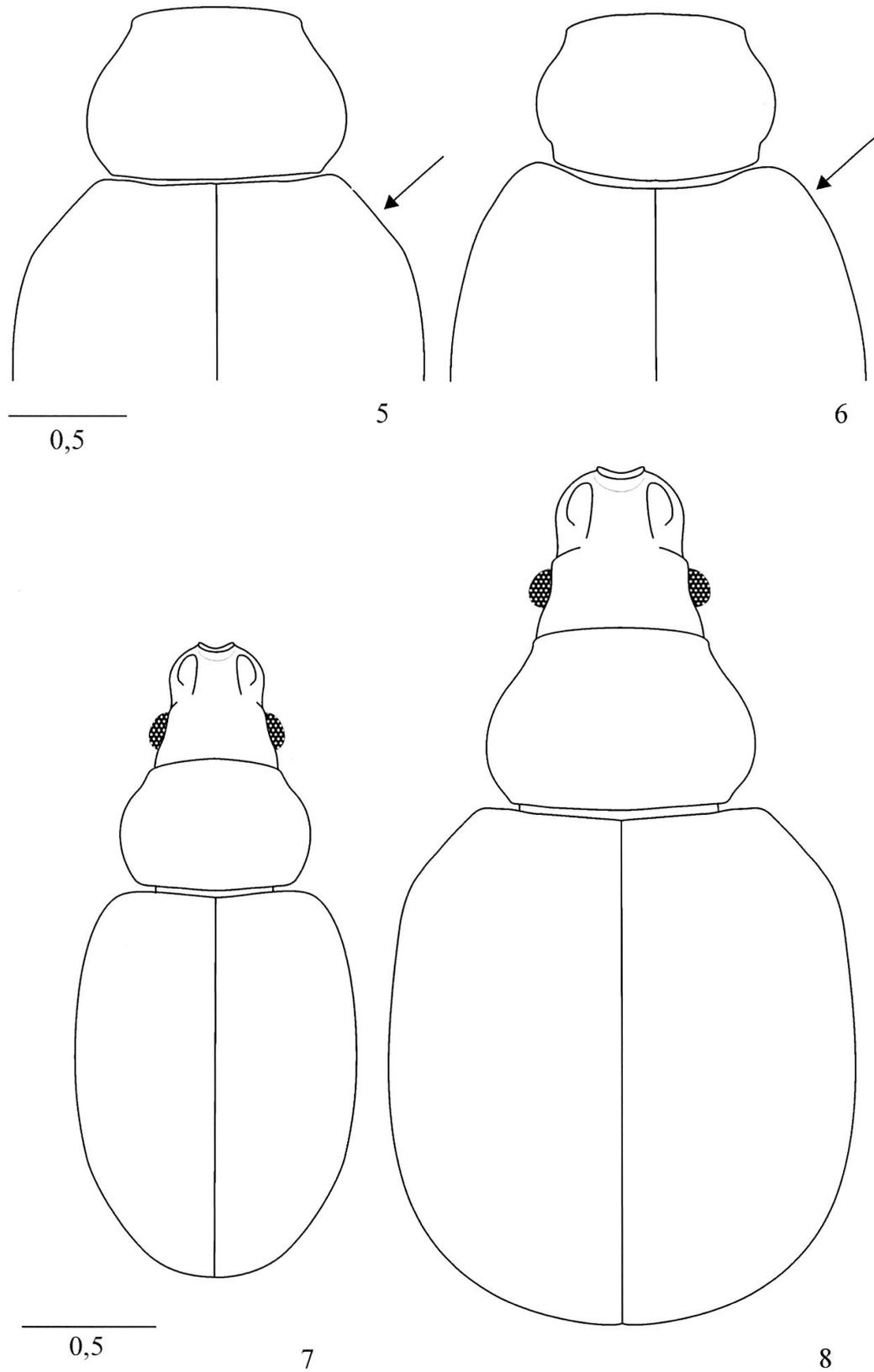
Amicromias tricholepis Yunakov & Germann sp. n.

(Figs 1–4, 5, 7, 8, 9, 11, 14, 15, 17–19)

Holotype: 1 ♂: Greece, Lesbos Isl., Disturbed Site, 67 m, N 39.2° - E 26.47°, Olive orchard, Nr.1, 20.4.2006, leg. ALARM-group members (NMBE). Red label: Holotype *Amicromias tricholepis* des. Yunakov & Germann 2008. Paratypes (9 specimens): 1 ♂: Natural site, 67 m, N 39.2° - E 26.47°, Pasture (*Asphodelus*), Nr. 5, 20.4.2006, leg. ALARM-group members. 1 ♂, 2 ♀♀: Disturbed site, 67 m, N 39.2° - E 26.47°, Olive orchard, Nr. 1, 20.4.2006, leg. ALARM-group members. 1 ♀: Disturbed site, 67 m, N 39.2° - E 26.47°, Olive orchard, Nr. 2, 20.4.2006, leg. ALARM-group members. 3 ♂♂: Disturbed site, 67 m, N 39.2° - E 26.47°, Olive orchard, Nr. 6, 20.4.2006, leg. ALARM-group members. 1 ♂: Disturbed site, 67 m, N 39.2° - E 26.47°, Olive orchard, Nr. 8, 20.4.2006, leg. ALARM-group members. Red label: Paratype *Amicromias tricholepis* des. Yunakov & Germann 2008 (2 ♂♂, 2 ♀♀ cCG; 2 ♂♂, 1 ♀ NMBE; 1 ♂, 1 ♀ ZIN).

Head: Rostrum slightly wider than long (RL/RW: 0.87–0.94 (0.90)), parallel sided (RWB/RWA: 1.00–1.18 (1.08)), pterygia not projecting or slightly projecting beyond contour of rostrum. Rostral dorsum longitudinally convex, coarsely rugoso-punctuate, at base 2.5 times wider than frons, parallel sided from base to middle, from middle slightly widened apically, separated from frons by a distinct transverse depression, forming an obtuse angle with frons. Epistomal area elevated and distinctly protruded forward. Epistome separated by a thin U-shaped carina. Antennal scrobes reduced, antennal sockets entirely visible in dorsal view, not covered by lateral margins of rostral dorsum. Sides of rostrum behind antennal sockets coarsely rugoso-punctuate, sparsely covered with scales. Frons as wide as two and a half times the diameter of an eye. Eyes small, hemispherical (FW/ELD: 2.14–3.00 (2.56)), unevenly convex, towards the base more convex. Temples straight, rugoso-punctuate.

Antennae: Antennal scape thick, hardly gradually curved, slightly gradually thickened towards the apex. 1st funicular segment large, thickest and longest, as long as 2nd and 3rd segments combined. 4th–6th segments as long as wide. 7th seg-



Figs 5–8. *Amicromias* Reitter, body shape. (5) *A. tricholepis* sp. n., pronotum and elytral base; (6) *A. rumelicus* (Apfelbeck), idem; (7) *A. tricholepis* sp. n., male; (8) idem, female.

ment slightly transverse. Antennal club oviform, twice as wide as 7th funicular segment.

Pronotum: Transverse (PL/PW: 0.63–0.75 (0.71)), strongly unevenly convex at sides (especially in females), widest behind the middle, with a well visible, strong, broad apical constriction. Disc of pronotum in females strongly convex, in males slightly flattened.

Elytra: Widely varying in shape: In females broad-oval, strongly convex at sides and at disc (EL/EW: 1.18–1.23 (1.20); EL/EH: 1.44–1.53 (1.49)). Elytral declivity steep, sides at the basal quarter oblique, basal margin not sharpened. In males oblong-oval, moderately convex at sides and at disc (EL/EW: 1.26–1.37 (1.32); EL/EH: 1.60–1.67 (1.64)). Elytral declivity less steep, sides at basal quarter evenly rounded. Striae fine, twice narrower than intervals, punctures strong and deep, indistinctly separated, crosspiece between punctures slightly depressed. Intervals moderately convex (in males more than in females).

Legs: Femora moderately swollen in the middle, not dentate. Fore tibia 8 times longer than wide in the middle, with straight outer margin, distinctly widened outwards at the apex. Hind tibia of the male with a very short and slender mucro. Apical margin of tibiae with sparse long and thick thorns. Tarsi very broad, 2nd tarsal segment strongly transverse in both sexes.

Abdomen: Male anal ventrite flattened, with straight posterior margin.

Male genitalia: Median lobe of aedeagus strongly sclerotized, evenly narrowed towards the apex, sharply rounded at apex, as long as the apophyses. Ventral side of median lobe – except distal third – membranous, ligulae membranous. Tegmen with parameres well developed, manubrium thickened. Internal sac very long, armed with rounded microgranulae, a spiculate field and a lobed sclerite at the apex. Spiculae are very long and thin.

Female genitalia: Ovipositor long, coxites moderately sclerotized with thin and very long sensillae, without styli. Spermatheca with reduced collum. Ramus oblong, constricted at base. VIII sternite (spiculum ventrale) with oblong-triangular moderately sclerotized corpus and long thickened manubrium, the second about 5 times as long as corpus.

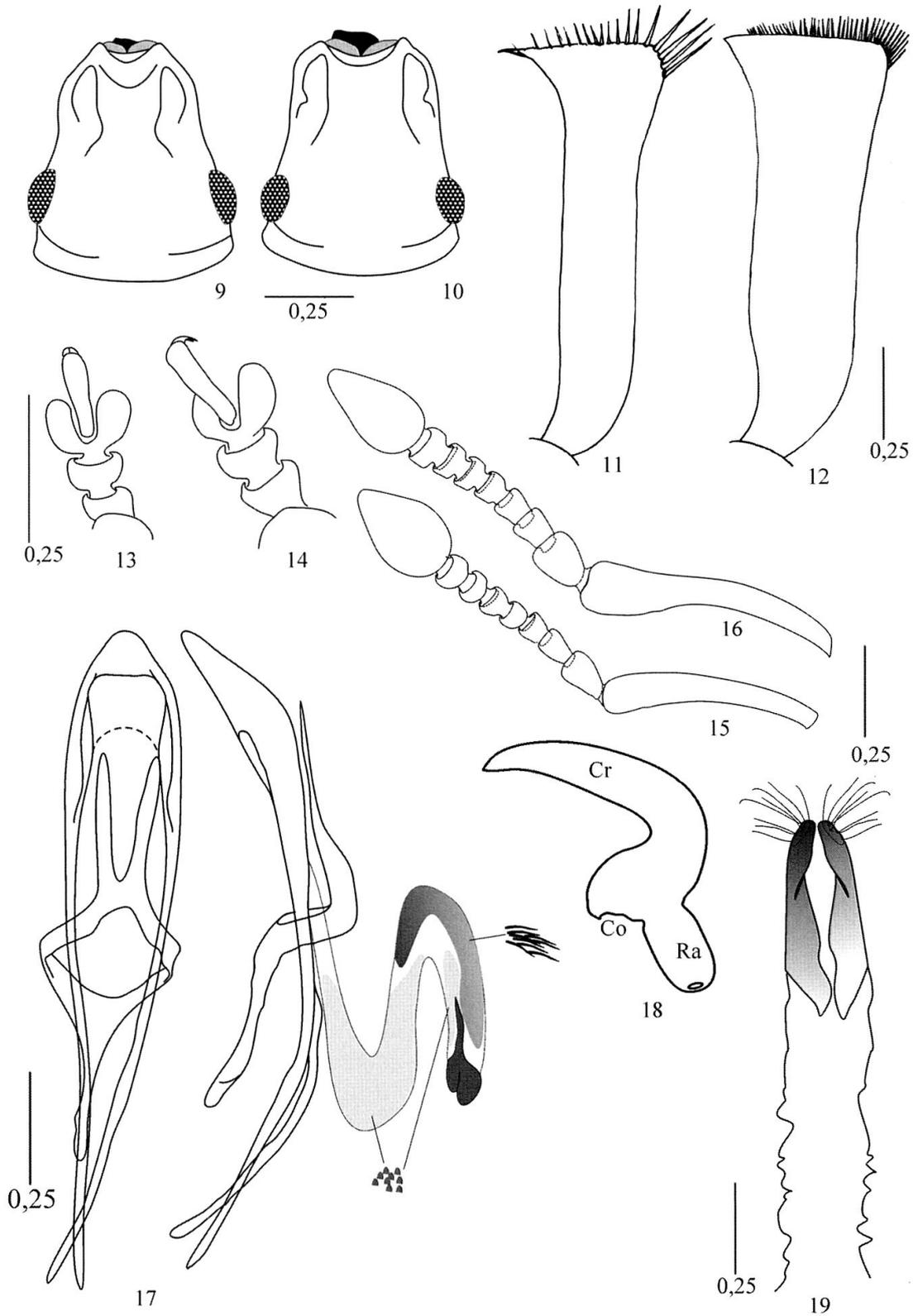
Coloration and vestiture: Body and head deep-brown or black; antennae and legs light-brown. Head and pronotum covered with dense, lanceolate gray and brownish erect and semierect setae. Elytra with dense pubescence of lanceolate greyish scales and brown scales, forming spotty patterns. Intervals with rows of thin erect setae, these are half the size of the width of intervals. Legs sparsely covered with thin, bright setae and hairs.

Variability: Male body length: 1.65–1.82 mm, width: 0.87–1.05 mm. Female body length: 2.17–2.27 mm, width: 1.32–1.45 mm.

Male body slender, distinctly smaller than in females (EL/PL in males: 2.50–2.67 (2.60); in females: 2.87–3.13 (2.99)) (Figs 7, 8). Male head smaller (FW/ELD in males: 2.14–2.33 (2.27), in females: 2.57–3.00 (2.86)).

DIFFERENTIAL DIAGNOSIS

The new species distinctly differs from all known representatives of *Amicromias* by the following characters: Pronotum without recumbent scales, covered instead of with strongly erect, lanceolate, apically curved setae. Epistomal area dis-



Figs 9–19. *Amicromias* Reitter, details. (9 & 10) head, dorsal view; (11 & 12) fore right tibia, male; (13 & 14) fore left tarsus, male; (15 & 16) left antenna; (17) aedeagus, dorsal and lateral view; (18) spermathaeca; (19) ovipositor. 9, 11, 13, 14, 17–19: *A. tricholepis* sp. n. 10, 12, 13, 16: *A. rumelicus* (Apfelbeck).

tinctly convex, protruded strongly forward (especially in females), epistome separated from rostral dorsum by a very fine U-shaped carina (Figs 9, 10). Rostral dorsum separated from frons by a deep transverse depression. Humeral area of elytra in females oblique (Figs 5, 6). Antennal scrobes reduced (Figs 3, 9). Sides of rostrum coarsely rugoso-punctuate, covered with scales behind antennal insertion. Tibia thin and long, fore tibia sharply widened at the apex, apical margin of tibia with sparse longer and thick thorns (Figs 11, 12). Elytra densely covered with recumbent broad-lanceolate, grey scales.

The new species also clearly differs from *A. rumelicus* in its slender antennae, gradually curved and thickened antennal scape and its larger tarsi (Figs 13–16).

The strong sexual dimorphism in respect of the body shape (Figs 7, 8) is a unique character of *Amicromias tricholepis* sp. n., not yet known from other representatives of the genus.

BIONOMY

Pitfall traps were placed in two different habitat types, a kind of «natural» (where only one specimen was found) which means a pasture with vegetation dominated by *Asphodelus*. The second habitat type, where all the other specimens of *A. tricholepis* sp. n. originate, was «disturbed», it consisted of an olive orchard, widespread in the Mediterranean region. All specimens were solely found in early spring (April) when the pitfall traps had just been placed. Although the traps were kept open till late June, no further specimens were caught. This observation fits well with the data known from other species of the genus that these are typically spring active, as mentioned in the introduction. *A. tricholepis* sp. n. was collected together with the following weevil species: *Bagous* cf. *cosiensis* Caldara & O'Brien, 1998 (one single female), *Brachycerus lutosus graecus* Zumpt, 1937, *Liparus tenebrioides* (Pallas, 1781), *Otiorhynchus gemellatus* Stierlin, 1875, *Protapion nigrirtarse* (Kirby, 1808), *Strophomorphus porcellus* (Schönherr, 1832) and *Tychius pusillus* Germar, 1842.

ETYMOLOGY

The new species is named after its unusual vestiture of the head and pronotum consisting of dense, erect, widened, grayish scale-like setae. The name is created by Greek words: «trichos» – a hair and «lepis» – a scale.

NEW KEY TO THE SPECIES OF THE GENUS *AMICROMIAS*

- 1 (20) Antennal scrobes distinctly developed, glabrous, obliquely downward. Pronotum densely covered with round, oval, lanceolate or piliform recumbent scales and sparse, moderately widened erect setae. Epistomal area flattened or slightly convex, not protruded forward **2**
- 2 (3) Body usually with pubescence not concealing integument. Scales round, oval, or lanceolate. Antennae with fine hairs or hair-like scales. Antennae thin. Scape sharply curved at the middle, second to seventh funicular segments as long as wide or slightly transverse. Rostrum flat or weakly convex, usually not separated from frons by a transverse depression, or this depression is very weak **6**

- 3 (2) Body with dense pubescence of wide scales entirely concealing integument of body, legs, and antennal scape. Antennae thick. Scape uniformly curved, strongly club-shaped and thickened in the apical third; second to seventh funicular segments much wider than long. Rostrum distinctly convex, separated from frons by a deep, transverse depression **4**
- 4 (5) Antennal funicle with greyish, distinctly widened, truncate setae. Rostrum separated from frons by a pronounced transverse depression, strongly convex longitudinally. Elytra elongate, parallel sided in middle third
..... *A. mimicus* Yunakov, 2005
(Russia: Samara Prov.)
- 5 (4) Antennal funicle with dark, hair-like setae. Transverse depression between rostrum and frons obsolete. Body with pale brown and whitish scales forming spotty patterns on frons, pronotal disc and elytra. Elytra rounded
..... *A. pictus* Yunakov, 2005
(Western Turkey)
- 6 (7) Erect setae on elytral intervals fine, more or less tapered apically **8**
- 7 (6) Erect setae on elytral intervals distinctly widened and rounded apically **12**
- 8 (9) Body and legs covered with wide, bifurcate, gray scales densest on elytral intervals. Rostral dorsum with pronounced longitudinal groove, forming a distinct angle with frons *A. rumelicus* (Apfelbeck, 1898)
(Bulgaria, Romania, Turkey)
- 9 (8) Body and legs covered with narrowly lanceolate scales with curved apices. Rostral dorsum with vaguely defined longitudinal groove **10**
- 10 (11) Body larger, 2,35 mm long. Rostral dorsum separated from frons by a distinct transverse depression. Basal margin of elytra carinate
..... *A. rhilensis* Yunakov, 2005
(Bulgaria: Rhila Mts.)
- 11 (10) Body smaller, 1,7–1,95 mm long. Rostral dorsum not separated from frons by a transverse depression, lying in one plane with it. Basal margin of elytra smoothly rounded *A. fodori* Yunakov, 2005
(Macedonia: Ohrid)
- 12 (13) Apical margin of fore tibia with sparse spines **16**
- 13 (12) Apical margin of fore tibia with dense spines **14**
- 14 (15) Antennal scape nearly straight. Rostrum as long as wide. Pterygia ill-defined, rostral dorsum weakly narrowed at place of antennal insertion. Frons convex. Eyes weakly convex. Body densely covered with fine oval, grey scales. Elytral intervals with irregular rows of short setae. Setae shorter in basal half of elytra than on apical declivity; their length in basal half of elytra less than half width of intervals, that on apical declivity half the width of intervals. Pronotum strongly transverse, 1.5 times as wide as long
..... *A. intermedius* Yunakov, 2005
(Ukraine: Crimea)

- 15 (14) Antennal scape strongly curved. Rostrum much wider than long. Pterygia pronounced, rostral dorsum not narrowed at place of antennal insertion. Frons slightly convex. Eyes strongly convex. Body with dense, large, round, grey scales. Elytral intervals with one regular row of strongly lobed and widened erect setae, their length less than half width of intervals. Pronotum less transverse, 1,3–1,4 times as wide as long
 *A. euxinus* Yunakov & Korotyaev, 2005
 (Russia: Taman Peninsula; Ukraine: Odessa, Crimea)
- 16 (17) Pronotum 1.5 times as wide as long. Body with long, erect, lobiformly widened, apically rounded setae and fine, grey, lanceolate scales. Elytral intervals with 1 regular row of setae, length of setae less than half the width of intervals. Head capsule and rostrum very wide, forming a cone together. Elytra widely oval
 *A. cephalotes* Yunakov, 2005
 (Greece: Peloponnesus)
- 17 (16) Pronotum more than 1.5 times as wide as long. Body with short, erect, weakly widened, apically obtuse setae and fine, lanceolate, grey scales. Elytral intervals with 2 confused rows of setae**18**
- 18 (19) Length of setae on elytral intervals half the width of intervals. Body with lanceolate scales. Eyes strongly convex. Antennal scape strongly curved. Aedeagus wide, uniformly narrowed towards the apex
 *A. zellich* (Formánek, 1907)
 (Hungary, Romania)
- 19 (18) Length of setae on elytral intervals less than half the width of intervals. Body with round and oval scales. Eyes less convex. Antennal scape weakly curved. Aedeagus narrow, sharply narrowed toward apex
 *A. borysthenicus* Yunakov & Nazarenko, 2005
 (Ukraine: Kyiv)
- 20 (1) Antennal scrobes reduced, sides of rostrum rugose, sparsely covered with lanceolate scales. Pronotum densely covered with lanceolate erect setae. Epistomal area distinctly convex, protruded strongly forward, epistome separated by a U-shaped fine carina
 *A. tricholepis* Yunakov & Germann sp. n.
 (Greece: Lesbos Isl.)

SYSTEMATIC REMARKS

The systematic position of the genus *Amicromias* is poorly known. *Amicromias* was considered earlier as a xeromorphous group, probably derived from the predominantly in meadow-forest habitat types living genus *Brachysomus* and most probably related to it (Yunakov 2005). *Amicromias* shows no clear difference from *Brachysomus* with respect to the rostrum structure, especially concerning the antennal scrobes. Based on solely this character as criterion, *Amicromias* could be regarded as a subgenus of *Brachysomus*, but the rostrum-based characters seem to be an ambiguous trait concerning its phylogenetical relevance. As already Solari (1948) stated, the location of the antennal scrobes varies very much among broad-nosed weevils (Otiorrhynchinae and Brachyderinae sensu Solari). He pointed out, that the several intermediate locations of the scrobes do not allow drawing a sharp line between these weevil «subfamilies». However, the actual situation of one mega diverse,

certainly polyphyletic subfamily of Entiminae (Alonso-Zarazaga & Lyal 1999) is unsatisfying too and one of the principle aims of Entiminae systematics would be to unravel its real evolutionary phylogeny. On the other hand and to point out the ambiguous nature of the rostrum morphology, within Entiminae the structure of the epistomal area of the rostrum is more constant and mostly very significant for determination of closely related species, as we find it also in *A. tricholepis* sp. n. presented here.

In our opinion both *Amicromias* and *Brachysomus* are apterous, separated lineages that originated independently from an ancestor which could be found among winged *Polydrusus*-like taxa. *Amicromias* is a separate, well defined genus, which presumably underwent an adaptive radiation, which resulted in the present numerous species, xeromorphic to a varying extent.

The new species described here shows extreme similarity with respect to body shape and vestiture to the very recently discovered *Bosporomias pruinosulus* Yunakov & Korotyaev, 2005. Both species are active in the early spring and *B. pruinosulus* seems to inhabit similar biotopes in Israel and Taman Peninsula (Black Sea). *Amicromias tricholepis* sp. n. and *Bosporomias pruinosulus* are just one of many striking examples of convergent evolution within Entiminae.

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ZUSAMMENFASSUNG

Amicromias tricholepis sp. n. von der Insel Lesbos (Griechenland) wird beschrieben. Die neue Art unterscheidet sich von allen anderen Arten der Gattung durch einzigartige morphologische Merkmale, sowie durch einen auffälligen Geschlechtsdimorphismus. Ein neuer Schlüssel zu den Arten der erst kürzlich revidierten Gattung *Amicromias* Reitter, 1912 wird vorgestellt.

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