

# Revision of the species of the *Tychus rufus* group (Coleoptera: Staphylinidae: Pselaphinae)

CLAUDE BESUCHET<sup>(1)</sup> & GIORGIO SABELLA<sup>(2)</sup>

<sup>(1)</sup> Muséum d'histoire naturelle, Case postale 6434, CH-1211 Genève 6, Switzerland

<sup>(2)</sup> Dipartimento di Biologia Animale "M. La Greca" dell'Università, via Androne 81, I-95124 Catania, Italy

**Abstract.** The species belonging to *Tychus rufus* group are revised. Eleven species are recognized, described and illustrated and a key to their identification is provided. Nine taxa are new to science: *Tychus carpathius* n. sp. from Karpathos island (Greece); *T. torticornis* n. sp. from Lesbos Island (Greece); *T. pisidicus* n. sp. and *T. inermis* n. sp. from southwestern Turkey; *T. antiocheus* n. sp. and *T. effeminatus* n. sp. from southeastern Turkey; *T. artvinensis* n. sp. from northeastern Turkey, and *T. sidonicus* n. sp. and *T. libanus* n. sp. from Lebanon.

**Résumé.** Révision des espèces du groupe de *Tychus rufus* (Coleoptera : Staphylinidae : Pselaphinae). Les espèces appartenant au groupe de *Tychus rufus* sont révisées. Onze espèces sont reconnues, décrites et figurées; un tableau d'identification est donné. Neuf taxa sont nouveaux pour la science : *Tychus carpathius* n. sp. de l'île de Karpathos (Grèce) ; *T. torticornis* n. sp. de l'île de Lesbos (= Mytilène, Grèce) ; *T. pisidicus* n. sp. et *T. inermis* n. sp. du sud-ouest de la Turquie ; *T. antiocheus* n. sp. et *T. effeminatus* n. sp. du sud-est de la Turquie ; *T. artvinensis* n. sp. du nord-est de la Turquie ; *T. sidonicus* n. sp. et *T. libanus* n. sp. du Liban.

**Keywords:** Systematics, Taxonomy, Geographical distribution, Identification key, Palaearctic region.

The *Tychus rufus* group was proposed by Karaman (1972: 76) and includes *Tychus rufus* Motschulsky 1851 from southeastern Europe, *T. bysantinicus* (Karaman 1955) from northwestern Turkey, *T. straniensis* Karaman 1972 (now a synonym of *T. bysantinicus* see Besuchet 2004: 319) and *T. baniensis* Karaman 1972 (now a synonym of *Tychus rufus* see Besuchet 2004: 320) from eastern Bulgaria. Karaman (l. c.) illustrated the aedeagi of the species and provided an identification key, but she did not define the diagnostic features of this group.

In the past years we had the opportunity to study copious material of *Tychus* belonging to the *Tychus rufus* group collected in many localities of southeastern Europe, east islands of Greece, Turkey and Lebanon. This work resulted in the discovery of nine new species. We provide here a better definition of the species group, new details concerning the geographical distribution of the attributed species, and a first identification key. All synonymies were established by the first author of this paper (Besuchet 1999: 55; 2004: 29).

## Material and methods

The study is based on material from museums and private

collections. The depositories of the material, their acronyms used in text, and the colleagues that kindly provided the loans, are as follows: **HNHM** Hungarian Natural History Museum, Budapest (O. Merkl); **MHNG** Muséum d'Histoire Naturelle, Genève (G. Cuccodoro); **MZUM** Zoological Museum of State University, Moscow (N.B. Nikitsky); **ZSMC** Zoologische Staatssammlung, München (G. Scherer); **MNHN** Muséum National d'Histoire Naturelle, Paris (N. Berti); **NMBH** National Museum of Bosnia and Herzegovina, Sarajevo; **MSNV** Museo Civico di Storia Naturale, Verona (L. Latella); **NHMS** National Natural History Museum, Sofia (R. Bekchiev); **NHMW** Naturhistorisches Museum, Wien (H. Schillhammer); **PCVB** Private collection of V. Brachat, Geretsried, München (V. Brachat).

The body length excludes the antennae and is measured from the anterior clypeal margin to the posterior margin of the last abdominal tergite. The length and width of body parts were measured between points of maximum extension, e.g. the head length is measured between the anterior clypeal margin and the posterior margin of the neck; the head width including the eyes, the elytral length along the suture line, and the elytral width considering the total width of the two elytra taken together. The abdominal segments are numbered from the first visible segment onwards, i.e. from the tergite 1 (fourth segment) and sternite 1 (third segment). The nomenclature follows that proposed by Chandler (2001) for external morphology and Kurbatov & Sabella (2008) for characters of the aedeagus.

Under sections "type material" or "material examined" the locality data are standardised, with major administrative units in English and names of collectors in parentheses.

The drawings of the male abdomen are schematic, particularly are not represented any punctuation, flattening, slight depression or normal pubescence of the sternites.

E-mail: sabellag@unict.it

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### Taxonomy and descriptions

The species of the *Tychus rufus* group are characterized by the following features: length 1.45–2 mm, head at most slightly wider than long, but generally as long as or longer than wide, with prominent frontal rostrum 0.16–0.20 mm wide. Dorsal vertexal foveae close to the eyes with a small tooth in front, lacking sometimes in *T. rufus* and *T. bysantinicus*. Tempora rounded, antennae relatively long and robust, 0.81–1.25 mm long, with segment 3 more or less narrowed at the base, last segment of maxillary palpi 0.23–0.32 mm long and 0.10–0.15 mm wide with its lateral margin more or less concave. Pronotum with a pair of deep and large lateral antebasal foveae and seven small basal pits, the median generally larger than the lateral. Elytra wider than long with protruding humeri. ♂: posterior margin of mesotrochanters angulated or prolonged into a median spine or lamella, varying in length and sharpness, mesotibiae with a subapical spur, metasternum armed (excluding *T. inermis* n. sp.) with

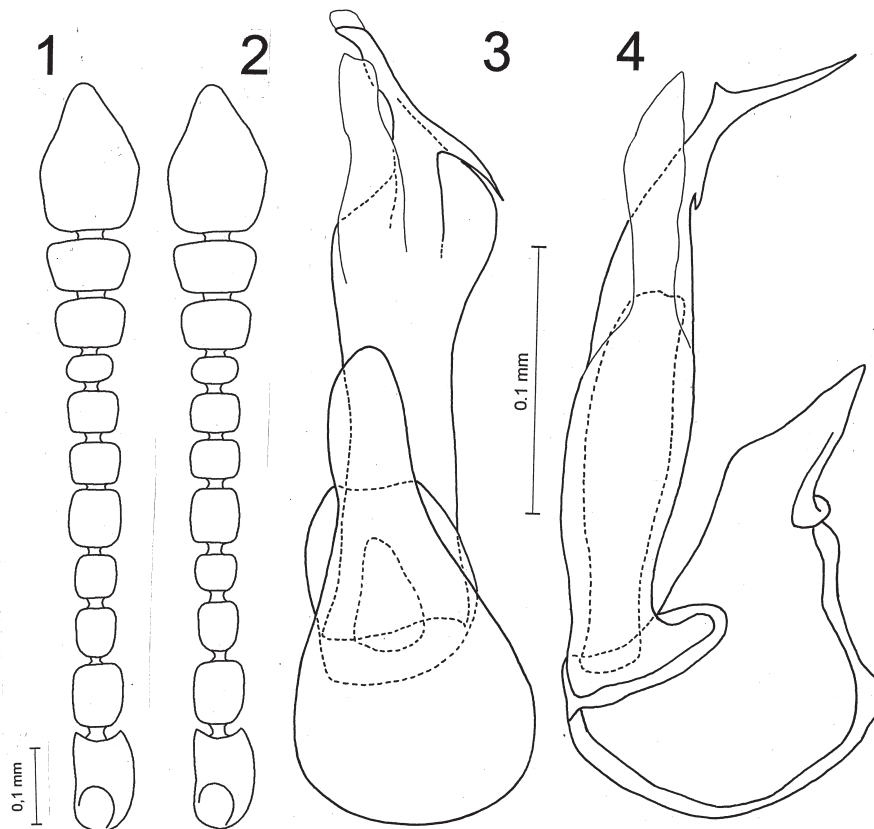
a median spine directed downward, varying in length and width. Abdominal sternites 2 and 3 modified (excluding *T. inermis* n. sp. and *T. effeminatus* n. sp.) and variable in shape. Aedeagus 0.24–0.32 mm long with oval phallobase, with stout short ventral portion of median lobe and dorsal apophysis about twice as long as phallobase; its distal third variable and diagnostic.

The shape of the female telisternite, which harbours good diagnostic characters in many other groups of *Tychus*, is homogenous in all species of the *Tychus rufus* group.

The species of this group have an eastern Mediterranean distribution (fig. 52), including Europe, Greek islands, Turkey, and Lebanon.

The features shared by all species of the *Tychus rufus* group examined in this study are listed below. Subsequently, we provide only characters relevant to taxonomy at the species level.

Winged. Pubescence of flat golden bristles on head, pronotum, elytra and abdomen, particularly



Figures 1–4

*Tychus rufus* Motschulsky. 1, right antenna of male from Ivan Planina (ZMSC). 2, right antenna of female from Castelnuovo (ZMSC). 3, aedeagus of male from Nisista Xerovuni (MHNG), ventral view. 4, aedeagus of male from Loznica (MHNG), lateral view.

dense behind the temples, and of shorter and suberect yellowish bristles on palpi and legs. Tegument smooth and shiny with some large punctures only on elytra.

**Head** widest at eye level and narrowest behind frontal rostrum, latter with median longitudinal sulcus (termed M.L.S. hereafter), more or less impressed and prolonged posteriorly, ending in ovoid impression. Vertex separated from frontal rostrum by slightly transverse depression with very slight punctures. Antennal club consisting of last three segments broadening progressively from segments 9 to 11. Segment 9 transverse, distinctly wider than funicular segments; segment 10 transverse, wider than segment 9; segment 11 longer than wide, longer than combined length of segments 9 and 10.

**Pronotum** wider than head, widest near middle, more clearly tapered and rounded anteriorly than posteriorly.

**Elytra** wider than long and longer than pronotum. Two basal foveae on each elytron; sutural fovea associated with shallow sutural stria reaching elytral apex; discal fovea extended posteriorly in large and deep discal stria reaching about half elytral length.

**Abdomen** with tergite 1 longer than others, bearing pubescent basal impression variable in width from species to species; tergite 1 with pair of basolateral foveae. Paratergite 1 with pair of antebasal impressions. Sternite 2 with pair of antebasal foveae.

**Male.** Metasternum with median impression beginning from metacoxal cavities and extending from  $\frac{1}{2}$  to almost whole sclerite length. Femora and tibiae of all legs slightly thickened.

**Female.** Metatibiae with thin apical spur.

The species of *Tychus rufus* group are distinguished from the congeners by the large dimension (1.45–2 mm long), the last segment of maxillary palpi very long and wide with the lateral margin more or less concave, and by the aedeagal shape.

### *Tychus rufus* Motschulsky (figs 1–4, 43)

*Tychus rufus* Motschulsky 1851, *Bull. Soc. Imp. Nat. Moscou* **24**: 495; Reitter 1880: 216; 1881a: 512; 1881b: 182; 1882: 98; Ganglbauer 1895: 839; Holdhaus 1908: 20; Porta 1935: 137; Karaman 1972: 76–77, fig. 7 (aedeagus);

*Tychoides rufus* Karaman 1955, *Acta Mus. Mac. Scient. Natural.* **3**: 131, figs 35–37 (aedeagus);

*Tychus myops* Kiesenwetter 1858 *In*: Kraatz G., *Beitrag zur Käferfauna Griechenlands. Zweites Stück*: 46;

*Tychus nodicornis* Reitter 1884a, *Deutsche Ent. Zeit.* **28**: 109; Sahlberg 1903: 41;

*Tychus rufus* var. *nodicornis* Reitter 1884b, *In*: Reitter E. & Brenske E., *Neuer Beitrag zur Käferfauna Griechenlands*: 76;

*Tychus rufus* var. *morio* Reitter 1881b, *Deutsche Ent. Zeit.* **25**: 183; 1881a: 512; Sahlberg 1902–03: 41;

*Tychus rufus* var. *puncticollis* Reitter 1887, *Deutsche Ent. Zeit.* **31**: 505;

*Tychus rufus* var. *reitteri* Jakobson 1910, Zhuki Rossii i zapadnoy Evropy.

Rukovodstvo k opredeleniyu zhukov. Part 8: 583. Nom. nov. pro *nodicornis* Reitter 1884 (nec *nodicornis* Beck 1817);

*Tychus baniensis* Karaman 1972, *Nouvelle Revue d'Entomologie* **2**: 77, figs 10–11 (aedeagus) and 13 (abdominal sternites).

**Redescription.** Length 1.65–1.95 mm, colour varying from uniformly reddish with yellow legs and palpi to brown with darker head and abdomen and red elytra; some specimens black with reddish antennae, yellowish or reddish legs, and yellow palpi. Pubescence not very dense. **Head** generally slightly wider (0.325–0.335 mm) than long (0.310–0.325 mm), sometimes as long as wide or slightly longer than wide. Frontal rostrum 0.185–0.20 mm wide with M.L.S. prolonged posteriorly and overstepping anterior margin of eyes. Last segment of palpi 0.25–0.27 mm long and 0.10–0.12 mm wide. **Pronotum** wider (0.385–0.410 mm) than long (0.36–0.38 mm). **Elytra** wider (0.62–0.70 mm) than long (0.48–0.56 mm). **Abdomen** with tergite 1 0.30–0.31 mm long, with basal impression extending on more than 2/5 tergite width. Sternite 2 relatively short (0.15 mm long). **Legs** with posterior margin of protrochanters and mesotrochanters barely angulated in middle.

**Male.** Eyes with 25–30 ommatidia. Antennae (fig. 1) 0.82–0.90 mm long, club 0.31–0.33 mm long; scapus and segment 2 distinctly longer than wide; segment 3 longer than wide; segment 4 slightly longer than wide or as long as wide; segment 5 slightly wider than segment 4 and slightly longer than wide or sometimes as long as wide; segments 6 and 7 subequal and wider than long; segment 8 wider than long and shorter than previous segments. Median impression of metasternum extending over 2/3 of its length; apex of this impression armed with spine 0.055–0.056 mm long and directed downward. Mesotibiae with a small subapical spur. Ventral surface of metafemora in basal third slightly impressed and wrinkled; posterior margin of metafemora with evident blackish carina in basal third.

Abdomen (fig. 43) with surface of sternite 2 slightly flattened and punctuated in middle, its posterior margin raised and covered with yellowish pubescence formed by long hairs. Median surface of sternite 3 raised in an upwards directed median carina that bears a dense yellowish pubescence formed by very short and straight hairs. Aedeagus (figs 3–4) 0.285–0.315 mm long.

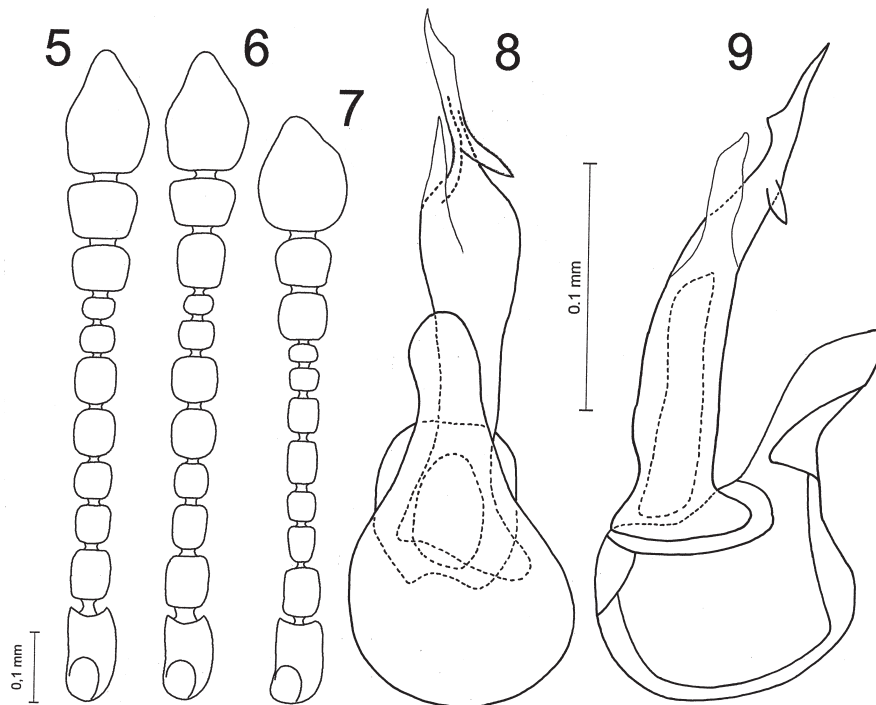
**Female.** Eyes less developed than in male, with 9–11 ommatidia. Antennae (fig. 2) with segments 5–7 slightly thinner than in male, 0.81–0.88 mm long, club 0.30–0.32 mm long; scapus and segment 2 distinctly longer than wide; segment 3 longer than wide; segment 4 slightly wider than long or as long as wide; segment 5 wider than segment 4 and distinctly longer than wide or as long as wide; segments 6 and 7 subequal and wider than long, segment 8 wider than long and shorter than previous segments.

**Distribution.** *Tychus rufus* is a widespread species that is known from northeastern Italy (only Friuli Venezia Giulia), Slovenia, Croatia, Veglia Island, Bosnia and Herzegovina, Serbia, Montenegro, Albania, Corfu, Zante and Cephalonia islands, Greece, Bulgaria, Romania, and southern Hungary.

**Material examined.** **NORTHEASTERN ITALY: Friuli Venezia Giulia:** Trieste, 1851, 2 ♂♂ (Ullrich) (lectotype and paralectotype) (Motschulsky collection, MZUM); Trieste, 06.X.1908, 1 ♂ (J. Natterer) (MHNG); Trieste,

Carso Ferneti, IV.1942, 1 ♀ (G. Pilleri) (MHNG); Trieste, Opicina, 01.IV.1957, 1 ♀ (C. Besuchet) (MHNG); Gorizia, B. Grande, mouth of Isonzo river, 13.IX.1986, 1 ♂ (M. Seriani) (MHNG). - **CROATIA: Dalmatia:** Cattaro, 1 ♂ (E. Reitter) (holotype of *Tychus rufus* var. *morio*) (MNHN); Istria, Lipa, 15.XII.1915, 1 ♂ (J. Fodor) (MHNG); Castelnuovo, 1 ♂ and 2 ♀♀ (G. Paganetti-Hummler) (ZSMC); idem, 1 ♀ (E. Reitter) (MHNG); Ragusa, 30.III.1911, 1 ♀ (ZSMC); Zara, 3 ♂♂ and 1 ♀ (V. M. Duchoň) (MSNV); Maglaj, Megara Pecina, 09-15.VIII.1934, 1 ♂ (J. Fodor) (HNHM); environs of Abbazia, Ist. Strupl., 2 ♂♂ (MHNG); Selce Hrv. Prim., IX.1928, 2 ♂♂ (J. Lautner) (MHNG). - **BOSNIA-HERZEGOVINA:** Ivan Planina, 1 ♂ (V. Apfelbeck) (ZSMC); Sarajevo, 1 ♀ (V. Apfelbeck) (ZSMC); Uvac, 2 ♂♂ and 2 ♀♀ (A. Hensch) (MHNG); idem, 1 ♂ (HNHM); Prozor, 1902, 2 ♂♂ (O. Leonhard) (MHNG); Hizde, 1908, 1 ♂ (MHNG); Jablanica, 1 ♂ and 1 ♀ (MHNG). - **SERBIA:** Loznica, 24.V.1972, 1 ♂ (A. Senglet) (MHNG). - **MONTENEGRO:** Budva, 21.IX.1952, 1 ♂ (H. Schweiger) (MHNG); Antivari (= Bar), 1 ♀ (G. Paganetti-Hummler) (MHNG). - **ALBANIA:** Kruja, 1 ♂ (Mader) (MHNG); Alessio (= Lezhja), 29.III.1916, 1 ♀ (MHNG). - **GREECE: Corfu Island:** Corfu Island, 1 ♂ (E. Reitter) (holotype of *Tychus nodicornis*) (MNHN); Corfu Island, 1 ♀ (E. Moczarski) (ZSMC); Ropa valley, 1 ♀ (A. Winkler) (ZSMC); idem, 1 ♂ (A. Woerz) (MHNG); **Zante Island:** Zante Island, 1 ♀ (H. von Kiesenwetter) (ZSMC); **Cephalonia Island:** Cephalonia Island, 1 ♂ (MHNG); Argostoli, 1 ♂ and 1 ♀ (MHNG); Renos Mount, 1350 m, 31.III.1971, 1 ♀ (V. Mahnert) (MHNG); **Peloponnissos:**

**Achaia:** Kastritsion, near Patras, 820 m, 17.IV.1972 (V. Mahnert) (MHNG); Panachaikon Massif, 260 m, 16.III.1982, 2 ♂♂ (B. Hauser) (MHNG); Erimanthos Mount, Kaléntzi, 1150 m, northwestern slopes Tannenwald, 07.III.1997, 1 ♂ (L. Zerche) (PCVB); **Fokis:** Mormos, Limnitsa, 14.IV.1979, 1 ♀ (S. Vit) (MHNG); **Parnassus:** Parnassus, 1 ♀ (ZSMC); **Epirus:** Nisista Xerovuni, 700-800 m, 19.V/06.VI.1933, 2 ♂ and 3 ♂ (M. Beier) (MHNG, NHMW); Polydroson, 20 km north of Nereida, 04.V.1973, 1 ♂ (I. Löbl) (MHNG). - **ROMANIA:** Herkulesbad (= Herkulesfürdő), 1 ♂ (Pavel) (lectotype of *Tychus rufus* var. *puncticollis* Reitter) (HNHM); Herkulesbad, 1895, 1 ♂ and 1 ♀ (L. Ganglbauer) (MNHN); Rumania, 3 ♂♂ and 2 ♀♀ (MNHN); Valachia, Comana, 2 ♂♂ and 3 ♀♀ (A. L. Montadon) (MNHN); Comana Vlasca, 2 ♂♂ (A. L. Montadon) (MHNG); Bucarest, 1 ♂ and 1 ♀ (A. L. Montadon) (MHNG). - **BULGARIA: Banja:** Kloškovete, 13.X.1970, 1 ♂ (H. Coiffait) (holotype of *T. baniensis*) (MNHN); Kjos Kovete, 22.IX.1968, 1 ♂ (P. Beron) (paratype of *T. baniensis*) (MNHN); Sozopol, 20.VI.1968, 1 ♀ (P. Beron) (paratype of *T. baniensis*) (MNHN); **Burgas:** Obzor, 14.VII.1972, 1 ♀ (A. Senglet) (MHNG); **Rila:** Rila Mount, 28.IV.1966, 1 ♂ (I. Löbl) (MHNG); Kamenno, 2 ♀♀ (G. Paganetti-Hummler) (ZSMC); Stara planina, Vratzanski planina, 950 m, 08.VI.1989, 3 ♂♂ (C. Besuchet) (MHNG); **Blagoevgrad:** Environs of Petrich, Roupite place, Kozhuha hill, in leaf litter, 150 m, 10.IV.2008, 1 ♂ and 1 ♀ (R. Bekchiev) (NHMS).



Figures 5–9

*Tychus pisidicus* n. sp. **5**, right antenna of holotype male (MHNG). **6**, right antenna of paratype male from Gülübeli Geçidi (MHNG). **7**, right antenna of paratype female from Eğirdir-Çandır (MHNG). **8-9**, aedeagus of holotype male, ventral view (8) and lateral view (9).



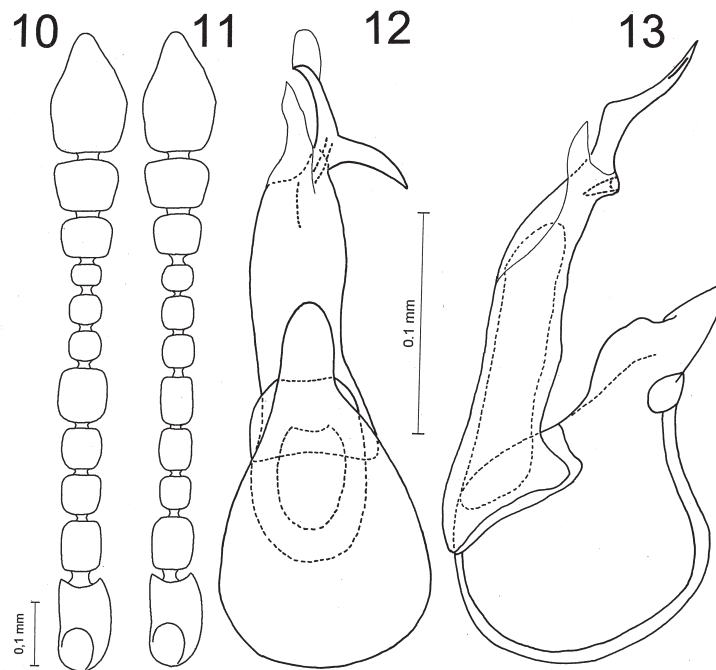
***Tychus pisidicus* n. sp.**  
(figs 5–9, 44)

**Type material. SOUTHWESTERN TURKEY: Isparta:** Eğirdir-Çandır, 950 m, 06.V.1975, under stones, 1 ♂ (C. Besuchet & I. Löbl) (holotype) (MHNG); idem, 950 m, 06.V.1975, under stones, 4 ♂♂ and 7 ♀♀ (C. Besuchet & I. Löbl) (paratypes) (MHNG); south of Eğirdir, environs of Kovada Gölü, 12.IV.1984, 2 ♂♂ and 6 ♀♀ (V. Brachat & C. Brachat) (paratypes) (PCVB); **Antalya:** environs of Alanya, Hotel Alara, 1 ♂ (paratype) (MHNG); Bakaran-Çevizli, 60 km south of Beyşehir, 1400 m, 08.V.1978, under stones, 1 ♂ and 1 ♀ (C. Besuchet & I. Löbl) (paratypes) (MHNG); 40 km southeast of Gazipaşa, 27.IV.1978, under stones, 1 ♀ (C. Besuchet & I. Löbl) (paratype) (MHNG); road Antalya-Saklikent, 1000 m, 11.V.2000, 1 ♂ (H. Meybohm, V. Brachat) (paratype) (PCVB); northwest of Anamur, Ovasi, environs of Kösekbasi, 26.III.1997, 4 ♂♂ and 1 ♀ (V. Brachat) (paratypes) (PCVB and PCSK); environs of Manavgat, 700 m, 04.I.1991, 1 ♂ and 1 ♀ (V. Assing) (paratypes) (PCVB); **Burdur:** west of Kemer and south of Hisar, 1120 m, 02.IV.2002, *Quercus* and *Carpinus*, 1 ♂ and 5 ♀♀ (P. Wunderle) (paratypes) (PCVB); south of Hisar, 1120 m, 36°43'N 30°26'E, 23.IV.2001, 3 ♂♂ (H. Meybohm, V. Brachat) (paratypes) (MHNG, PCSK and PCVB); **Muğla:** 70 km northeast of Fethiye, Gülübeli Geçidi, 1525 m, 29.III.2002, 2 ♂♂ (P. Wunderle) (paratypes) (PCVB); 20 km north-northeast of Fethiye, 970 m, 27.III.2002, oakwood, 2 ♂♂ and 8 ♀♀ (V. Assing) (paratypes) (PCVB); 15 km east-northeast of Ortaca, 470 m, 27.III.2002, *Pinus* and *Quercus*, 1 ♂ (P. Wunderle) (paratype) (PCVB); Bayir, 950 m, 03.V.1975, under stones, 8 ♂♂ and 3 ♀♀ (C. Besuchet & I.

Löbl) (paratypes) (MHNG); Göcek, 02.V.1975, litter, 1 ♀ (C. Besuchet & I. Löbl) (paratype) (MHNG).

**Description.** Length 1.45–1.75 mm, uniformly reddish with yellow legs and palpi, some specimens darker, with abdomen nearly black. Pubescence not very dense. **Head** slightly wider (0.260–0.295 mm) than long (0.260–0.285 mm) or as long as wide. Frontal rostrum 0.160–0.175 mm wide with M.L.S. prolonged posteriorly but not reaching anterior margin of eyes. Occipital region slightly convex. Last segment of palpi 0.23–0.25 mm long and 0.10–0.12 mm wide. **Pronotum** wider (0.335–0.36 mm) than long (0.30–0.33 mm). **Elytra** wider (0.55–0.65 mm) than long (0.44–0.50 mm). **Abdomen** with tergite 1 0.23–0.27 mm long, with basal impression extending on more than 2/5 tergite width. Sternite 2 relatively short (0.15 mm long). **Legs** with posterior margin of protrochanters and mesotrochanters slightly angulated in middle, in some specimens from Muğla province mesotrochanters are unmodified.

**Male.** Eyes with 14–25 ommatidia. Antennae (fig. 5) 0.80–0.90 mm long, club 0.30–0.32 mm long; scapus and segment 2 distinctly longer than wide; segment 3 slightly longer than wide; segment 4 wider than long or as long as wide; segments 5 and 6 wider and longer than other funicular segments and slightly longer than wide; segment 7 wider than long; segment 8 wider than long and shorter than previous segments. In most males from Muğla province antennae a little different in shape (fig. 6) with segments 5–7 a little more thickened. Median impression of metasternum extending over about 2/3 of its length; apex of this impression armed with spine 0.039–0.041 mm long and directed downward. Abdominal tergite 1 convex in middle. Mesotibiae with a tiny subapical spur. Ventral surface



**Figures 10–13**

*Tychus antiocheus* n. sp. **10**, right antenna of holotype male (MHNG). **11**, right antenna of paratype female from Nur Dağları (MHNG). **12**, aedeagus of holotype male (MHNG), ventral view. **13**, aedeagus of paratype male from Osmaniye-Zorkum (MHNG), lateral view.

of metafemora in basal half clearly impressed and wrinkled; posterior margin of metafemora with evident carina in basal third.

Abdomen (fig. 44) with posterior margin of sternite 2 greatly raised and distinctly hollowed in middle, on each side of this groove a thick clump of long yellow hairs. Surface of sternite 3 with a weakly detected carina that bears a median tubercle with a tuft of short yellow hairs. Aedeagus (figs 8–9) 0.260–0.265 mm long.

**Female.** Eyes less developed than in male, with 4–10 ommatidia. Antennae (fig. 7) with segments thinner than in male, especially segments 5 and 6, 0.80–0.83 mm long, club 0.30–0.31 mm long. Scapus distinctly longer than wide; segments 2 and 3 longer than wide, segment 4 slightly wider than long or as wide as long; segment 5 longer than wide and longer than other funicular segments; segment 6 slightly longer than wide, segment 7 wider than long; segment 8 wider than long and shorter than previous segments.

**Discussion.** The male of *Tychus pisidicus* n. sp. can be distinguished from the other species of the group by the shape of antennomeres 5 and 6 (clearly wider and longer than other funicular segments), the features of abdominal sternites 2 and 3, and the shape of the apex of the dorsal apophysis of the aedeagal median lobe. It is furthermore distinguished from *T. rufus* by the M.L.S., which does not reach anterior margin of eyes, and in males the median impression of the metasternum is less marked, the spine that arms the metasternum is shorter and the impression on the ventral surface of the metafemora is deeper.

### *Tychus antiocheus* n. sp. (figs 10–13, 45)

**Type material.** SOUTH TURKEY: **Antakya:** Urabat, near Yakacik, 06.V.1967, under stones, 1 ♂ (C. Besuchet) (holotype) (MHNG); idem, 06.V.1967, under stones, 2 ♂♂ and 2 ♀♀ (C. Besuchet) (paratypes) (MHNG); idem, 06.V.1967, litter, 2 ♂♂ (C. Besuchet) (paratypes) (MHNG); **Osmaniye-Zorkum,** 500 m, 07.V.1967, litter, 2 ♂♂ (C. Besuchet) (paratypes) (MHNG); idem, 07.V.1967, under stones, 3 ♀♀ (C. Besuchet) (paratypes) (MHNG); **Nur Daglari,** road Osmaniye-Zorkum, 550–850 m, 25.IV.2002, 1 ♂ and 5 ♀♀ (H. Meybohm & V. Brachat) (paratypes) (PCVB); **Osmaniye:** Northeast of Kadirli, Torla, near Andirin, 1109 m, 37°33'27.7"N 36°25'53.7"E, 30.IV.2005, 3 ♂♂ and 2 ♀♀ (H. Meybohm & V. Brachat) (paratypes) (MHNG and PCVB); northeast of Kadirli, 10 km north of Andirin, direction Cokak, 1148 m, 37°39'18.9"N 36°20'51"E, 3.V.2005, 7 ♂♂ and 6 ♀♀ (H. Meybohm & V. Brachat) (paratypes) (MHNG and PCVB); northeast of Kadirli, 11 km northeast of Andirin, direction Geben, 1281 m, 37°38'41.7"N 36°25'51"E, 3.V.2005, 2 ♂♂ and 3 ♀♀ (H. Meybohm & V. Brachat) (paratypes) (PCVB); **Kahramanmaraş:** 30 km north of Baskonus Yaylasi, 1270 m, 28.IV.2004, 2 ♂♂ and 2 ♀♀ (H. Meybohm & V. Brachat) (paratypes) (PCVB and PCSK); idem, 1500 m, 28.IV.2004, 1 ♂ (H. Meybohm & V. Brachat) (paratype) (PCVB); **Adiyaman:** 50 km northeast of Adiyaman, 8 km northeast of Narince, 870 m, 37°54'58"N 38°48'45"E, 24.III.2005, 1 ♂ (V.

Assing) (paratype) (MHNG); **Adana:** 24 km north of Kozan 600 m, 05.V.1967, under stones, 1 ♂ (C. Besuchet) (paratype) (MHNG); Nur Daglari, east of Osmaniye, Yarpuz, 700 m, 30.IV.2004, 2 ♂♂ and 2 ♀♀ (H. Meybohm & V. Brachat) (paratypes) (PCVB); idem, 890 m, 30.IV.2004, 1 ♂ and 3 ♀♀ (H. Meybohm & V. Brachat) (paratypes) (PCVB); idem, 920 m, 30.IV.2004, 3 ♂♂ and 1 ♀ (C. Besuchet) (paratypes) (PCVB); 10 km east of Osmaniye, northwest of Yarpuz, 900 m, beech, oak, 06.IV.2004, 1 ♂ (V. Assing) (paratypes) (PCVB); road Kozan-Mansurlu, 7 km after Seyhan bridge, 508 m, 37°35'25.3"N 35°39'09"E, 29.IV.2005, 1 ♂ and 1 ♀ (H. Meybohm & V. Brachat) (paratypes) (PCVB); 22 km north of Kozan, 627 m, 37°38'39"N 35°51'16.5"E, 26.IV.2005, 1 ♂ (H. Meybohm & V. Brachat) (paratype) (PCVB); **Mersin:** north of Silifke, 23 km north of Silifke, 970 m, 36°31'53.8"N 23°56'18"E, 18.IV.2005, 5 ♂♂ (H. Meybohm & V. Brachat) (paratypes) (MHNG and PCVB); north of Silifke, 1 km west of Kirobasi, 1387 m, 36°44'01.7"N 33°51'16"E, 19.IV.2005, 1 ♂ (H. Meybohm & V. Brachat) (paratypes) (PCVB).

**Description.** Length 1.7–1.9 mm, uniformly reddish with yellow legs and palpi. Pubescence not very dense. **Head** slightly longer (0.325–0.340 mm) than wide (0.315–0.320 mm). Frontal rostrum 0.185–0.20 mm wide with M.L.S. prolonged posteriorly but not reaching anterior margin of eyes. Occipital region convex. Last segment of palpi 0.25–0.27 mm long and 0.11–0.125 mm wide. **Pronotum** wider (0.40–0.42 mm) than long (0.375–0.385 mm). **Elytra** wider (0.85–0.89 mm) than long (0.65–0.69 mm). **Abdomen** with tergite 1 0.315–0.325 mm long, with basal impression extending on more than 2/5 tergite width. Sternite 2 longer than in *T. rufus* (0.20 mm long). **Legs** with posterior margin of procoxae and mesotrochanters slightly angulated in middle.

**Male.** Eyes with 12–18 ommatidia. Antennae (fig. 10) 0.94–1 mm long, club 0.36–0.39 mm long; scapus and segment 2 distinctly longer than wide; segment 3 as long as wide, segment 4 slightly wider than long or as long as wide; segment 5 slightly longer than wide and wider and longer than other funicular segments; segments 6–8 wider than long; segments 6–7 subequal; segment 8 shorter than previous segments. Median impression of metasternum extending over more than 2/3 of its length, apex of this impression armed with spine 0.068–0.070 mm long and directed downward. Protibiae with small subapical spur hardly visible. Mesotibiae with a tiny subapical spur. Base of metafemora without depression but slightly wrinkled.

Abdomen (fig. 45) with posterior margin of sternite 2 distinctly raised and hollowed in middle, each side of this groove with a tuft of short yellow hairs. Anterior margin of sternite 3 sinuate and raised in a carina bearing a median tuft of yellow hairs. Median surface of sternite 3 slightly depressed. Aedeagus (figs 12–13) 0.280–0.295 mm long.

**Female.** Eyes less developed than in male, with 4–8 ommatidia. Antennae (fig. 11) with segments thinner than in male, especially segments 3, 4 and 5, 0.95–1 mm long, club 0.35–0.37 mm long; scapus and segment 2 distinctly longer than wide; segment 3 as long as wide, segment 4 longer than wide; segment 5 distinctly longer than wide and longer than other funicular segments; segments 6–7 subequal and as long as wide; segment 8 wider than long and shorter than previous segments.

**Discussion.** The males of *Tychus antiocheus* n. sp. can be distinguished from the males of the others members of the *Tychus rufus* group by the shape of the

antennomere 5, which is clearly wider and longer than the other funicular segments, the features of abdominal sternites 2 and 3, and the shape of the apex of the dorsal apophysis of the aedeagal median lobe.

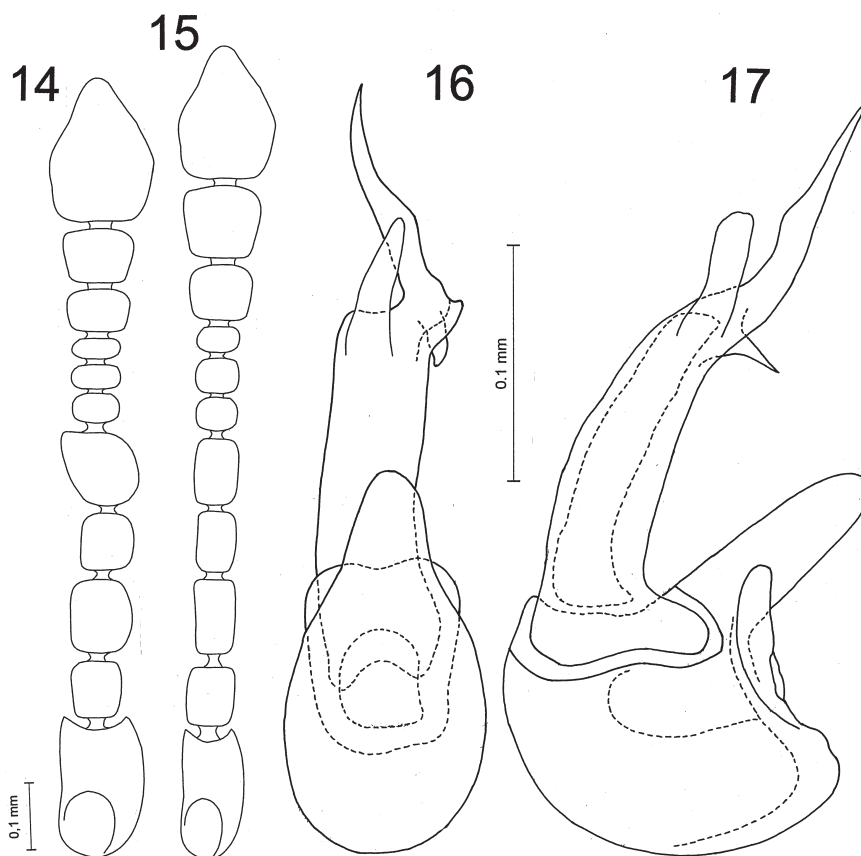
***Tychus torticornis* n. sp.**  
(figs 14–17, 46)

**Type material.** GREECE: **Lesbos Island:** south of Lafionas, 300 m, 39°17'34"N 26°10'48"E, 17.III.2005, 1 ♂ (A. Lompe & H. Meybohm) (holotype) (MHNG); idem, 17.III.2005, 1 ♂ and 6 ♀♀ (A. Lompe & H. Meybohm) (paratypes) (MHNG and PCVB); Lepetimnos, 300 m, 39°21'38"N 26°16'43"E, 18–23.III.2005, 4 ♂♂ and 2 ♀♀ (A. Lompe & H. Meybohm) (paratypes) (MHNG, PCSK and PCVB); Skotino, 200 m, 39°15'52"N 26°12'25"E, 17.III.2005, 1 ♂ (A. Lompe & H. Meybohm) (paratype) (MHNG); Argenos, 470 m, 39°21'22"N 26°15'20"E, 23.III.2005, 1 ♂ (A. Lompe & H. Meybohm) (paratype) (MHNG).

**Description.** Length 1.85–2.0 mm, brown with darker head and abdomen, red elytra, reddish antennae, yellowish legs, and

yellow palpi. Pubescence very dense. **Head** longer (0.370–0.375 mm) than wide (0.325–0.340 mm). Frontal rostrum 0.19–0.20 mm wide with M.L.S. prolonged posteriorly and reaching anterior margin of eyes. Occipital region convex. Last segment of palpi 0.29–0.30 mm long and 0.12–0.13 mm wide. **Pronotum** as long as wide (0.43–0.45 mm). **Elytra** wider (0.72–0.75 mm) than long (0.56–0.57 mm). **Abdomen** with basal impression extending on more than 2/5 tergite width. Sternite 2 longer than in *T. rufus* (0.20 mm long). **Legs** with posterior margin of protrochanters extended into small median spine and mesotrochanters slightly angulated in middle.

**Male.** Eyes with 18–20 ommatidia. Antennae (fig. 14) 1.05–1.10 mm long, club 0.385–0.390 mm long, recurved within segments 3 to 5. Scapus longer than wide; segments 2, 3, and 4 slightly longer than wide. Mesal margin of segment 3 enlarged, mesal-apical edge pronounced; segment 5 wider than other funicular segments, slightly wider than long and with mesal margin strongly enlarged from base to apex; segments 6–8 distinctly transverse. Median impression of metasternum extending over whole sclerite length; apex of this impression armed with spine 0.080–0.081 mm long, and directed downward. Abdominal tergite 1 0.34–0.35 mm long and distinctly convex in middle.



**Figures 14–17**

*Tychus torticornis* n. sp. **14**, right antenna of holotype male (MHNG). **15**, right antenna of paratype female from Skotino (MHNG). **16**, aedeagus of holotype male (MHNG), ventral view. **17**, aedeagus of paratype male from Lepetimnos (PCVB), lateral view.

Protibiae with small subapical spur, difficult to see, ventral surface of mesotrochanters slightly impressed and with median carina, mesotibiae with evident subapical spur. Ventral surface of metafemora on basal half with very deep impression finely wrinkled. Posterior margin of metafemora with evident carina in basal half, metatibiae enlarged and sinuate in apical third.

Abdomen (fig. 46) with posterior margin of sternite 2 feebly raised, two sides of its middle with a tuft of yellow hairs; median surface of sternite slightly concave. Surface of sternite 3 with evident median carina sinuate and pubescent. Surface of sternites 4 and 5 slightly flattened in middle. Aedeagus (figs 16–17) 0.31–0.32 mm long.

**Female.** Eyes less developed than in male, with 12–14 ommatidia. Antennae (fig. 15) 1.05–1.10 mm long, club 0.385–0.390 mm long; scapus distinctly longer than wide; segment 2 slightly longer than wide; segments 3–5 distinctly longer than wide, segments 5 and especially 3 longer than other funicular segments; segments 6–8 wider than long. Abdominal tergite 1 0.325–0.330 mm long.

**Discussion.** *Tychus torticornis* n. sp. can be distinguished from the other species of the *Tychus rufus* group by the peculiar antennal morphology, the

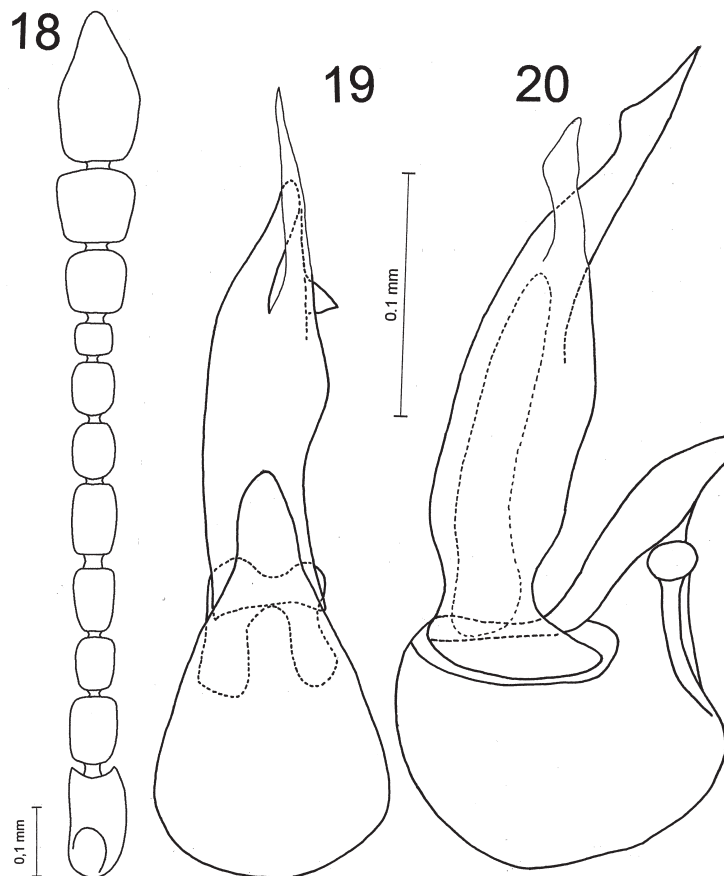
features of abdominal sternites 2 and 3 of male, and the shape of the apex of the dorsal apophysis of median lobe of the aedeagus.

***Tychus libanus* n. sp.**  
(figs 18–20, 47)

**Type material.** LEBANON: **Jeita:** Nahr-el-Kelb valley, 26.III.1975, litter of *Quercus* and *Platanus*, 1 ♂ (C. Besuchet) (holotype) (MHNG).

**Description.** Length 1.85 mm, uniformly reddish with yellow legs and palpi. Pubescence not very dense. **Head** longer (0.325 mm) than wide (0.850 mm). Frontal rostrum 0.175 mm wide with M.L.S. not very marked, prolonged posteriorly and reaching anterior margin of eyes. Eyes with only 4 ommatidia. Last segment of palpi 0.32 mm long and 0.135 mm wide. **Pronotum** wider (0.360 mm) than long (0.335 mm). **Elytra** wider (0.650 mm) than long (0.465 mm). **Abdomen** with tergite 1 0.35 mm long, with basal impression extending on than about 1/2 tergite width. Sternite 2 longer than in *T. rufus* (0.20 mm long).

**Male.** Antennae (fig. 18) 1.25 mm long, club 0.425 mm long;



**Figures 18–20**

*Tychus libanus* n. sp., holotype male (MHNG). 18, right antenna. 19, aedeagus, ventral view. 20, aedeagus, lateral view.



scapus and segments 2–7 longer than wide; segments 4 and especially 5 distinctly longer than other funicular segments; segment 8 wider than long and shorter than previous segments. Median impression of metasternum extending over almost whole sclerite length; apex of this impression armed with a spine 0.088 mm long and directed downward. Posterior margin of protrochanters slightly angulated in middle, protibiae with small subapical spur, hardly visible. Posterior margin of mesotrochanters distinctly angulated in middle, mesotibiae with small subapical spur, metatibiae enlarged and sinuate in apical third with evident subapical spur.

Abdomen (fig. 47) with posterior margin of sternite 2 distinctly raised and hollowed in middle, sides of this groove with a tuft of long yellow hairs. Surface of sternite 3 slightly raised in median pubescent upward directed carina. Aedeagus (figs 19–20) 0.32 mm long.

**Female.** Unknown.

**Discussion.** *Tychus libanus* n. sp. can be distinguished from the other species of the *Tychus rufus* group by the antennomeres 2–7 longer than wide, the features of the abdominal sternites 2 and 3 of the male, and the shape of the apex of the dorsal apophysis of median lobe of the aedeagus.

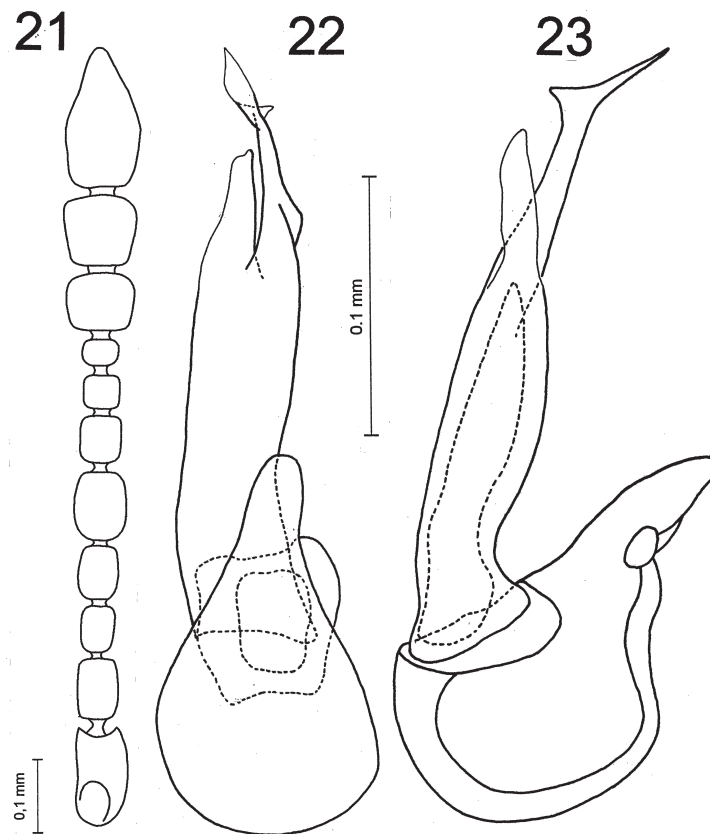
In the *Tychus rufus* group, enlarged and distally sinuate male metatibiae are found only in *T. torticornis* n. sp.; the males of all the other species have unmodified metatibiae.

***Tychus sidonicus* n. sp.**  
(figs 21–23, 48)

**Type material.** LEBANON: Damour: Nahr-el-Damour valley, 28.III.1975, litter, 1 ♂ (C. Besuchet) (holotype) (MHNG).

**Description.** Length 1.7 mm, uniformly reddish with yellow legs and palpi. Pubescence dense. **Head** longer (0.325 mm) than wide (0.285 mm). Frontal rostrum 0.17 mm wide with M.L.S. prolonged posteriorly and reaching anterior margin of eyes. Eyes with only 6 ommatidia. Last segment of palpi 0.31 mm long and 0.12 mm wide, its lateral margin distinctly concave. **Pronotum** wider (0.360 mm) than long (0.335 mm). **Elytra** wider (0.650 mm) than long (0.465 mm). **Abdomen** with tergite 1 0.275 mm long, with basal impression extending on more than 2/5 tergite width. Sternite 2 relatively short (0.15 mm long).

**Male.** Antennae (fig. 21) 1.05 mm long, club 0.38 mm long; scapus and segment 2 distinctly longer than wide; segment 4



**Figures 21–23**

*Tychus sidonicus* n. sp., holotype male (MHNG). 21, right antenna. 22, aedeagus, ventral view. 23, aedeagus, lateral view.

longer than wide and longer and wider than segment 3; latter longer than wide; segment 5 wider and longer than other funicular segments, longer than wide; segment 6 slightly longer than wide, segments 7 and 8 as wide as long; latter shorter than previous segments. Median impression of metasternum extending over almost whole sclerite length; apex of this impression armed with a spine 0.089 mm long and directed downward. Posterior margin of protochanters extended into small median spine. Posterior margin of mesotrochanters strongly angulated and prolonged into short lamella slightly recurved and truncated apically. Mesotibiae with evident subapical spur.

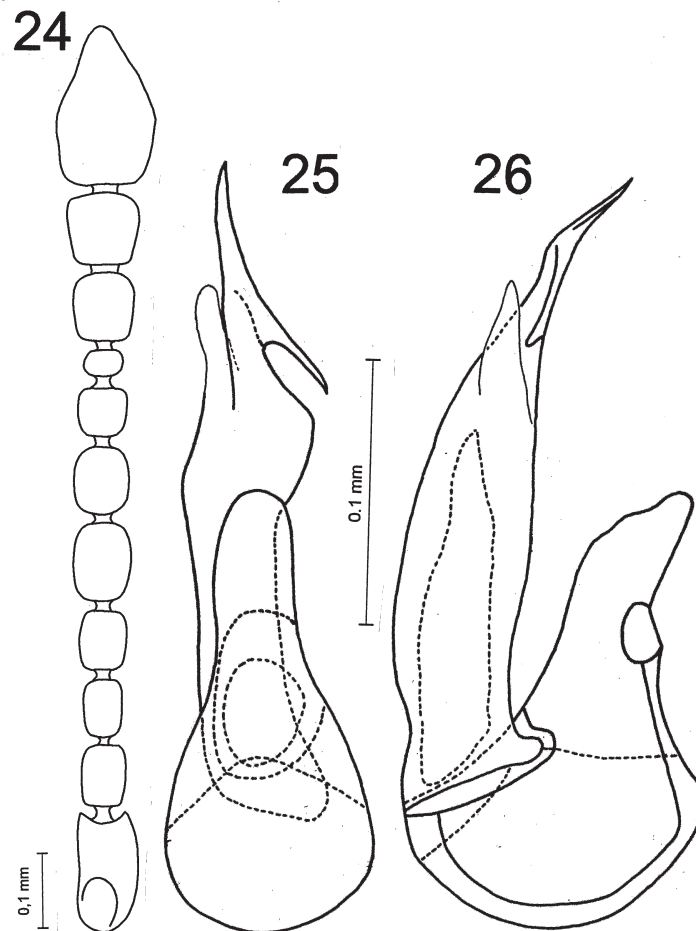
Abdomen (fig. 48) with surface of the sternite 2 slightly flattened in middle, its posterior margin slightly concave and raised in middle with a tuft of long yellow hairs on each side. Posterior margin of sternite 2, near lateral sides with a small triangular tooth. Surface of sternite 3 with a deep transverse median depression, its anterior margin pubescent. Aedeagus (figs 22–23) 0.295 mm long.

**Female.** Unknown.

**Discussion.** *Tychus sidonicus* n. sp. is similar to *T. libanus* n. sp., but it can be distinguished from it by thicker and shorter antennae, antennomere 5 longer and wider than other funicular segments, lateral margin of last segment of maxillary palpi distinctly concave, protibiae armed with small apical spur, posterior margin of mesotrochanters prolonged into short lamella slightly recurved and truncated apically, metatibiae unmodified, abdominal sternites 2 and 3 of male with different features, and apex of the dorsal apophysis of median lobe of the aedeagus differently shaped.

***Tychus carpathius* n. sp.**  
(figs 24–26, 49)

**Type material.** GREECE: Karpathos Island: Massif Lastos, near road Aperi-Spoa, 430 m, 12.III.1979, under stones, 1 ♂



**Figures 24–26**  
*Tychus carpathius* n. sp., holotype male (MHNG). 24, right antenna. 25, aedeagus, ventral view. 26, aedeagus, lateral view.

(B. Hauser) (holotype) (MHNG); idem, 12.III.1979, litter of *Ceratonia siliqua*, 1 ♂ (B. Hauser) (paratype) (MHNG).

**Description.** Length 1.90–1.95 mm, uniformly reddish with yellow legs and palpi. Pubescence dense. **Head** slightly longer (0.315 mm) than wide (0.30 mm). Frontal rostrum very prominent, 0.20 mm wide with M.L.S. prolonged posteriorly, but not reaching anterior margin of eyes. Eyes with only 8 ommatidia. Occipital region very convex. Last segment of palpi 0.275 mm long and 0.125 mm wide, its lateral margin barely concave. **Pronotum** wider (0.41 mm) than long (0.375 mm). **Elytra** wider (0.685 mm) than long (0.575 mm). **Abdomen** with tergite 1 0.31 mm long, with basal impression extending on more than 1/2 tergite width. Sternite 2 longer than in *T. rufus* (0.20 mm long). **Legs** with posterior margin of mesotrochanters slightly angulated in middle.

**Male.** Antennae (fig. 24) 1.0–1.1 mm long, club 0.41 mm long; scapus and segments 2–6 distinctly longer than wide; segments 5 and 6 wider and longer than other funicular segments; segment 5 slightly longer than segment 6; segments 7 and 8 wider than long, latter shorter than previous segments. Median impression of metasternum extending on more than 2/3 of its length; apex of this impression armed with spine 0.055–0.056 mm long and directed downward. Posterior margin of mesotrochanters slightly angulated in middle. Mesotibiae with a tiny subapical spur.

Abdomen (fig. 49) with posterior margin of sternite 2 distinctly raised and slightly hollowed in middle, sides of this groove with a thick tuft of long yellow hairs. Surface of sternite 3 bearing

a large median tubercle densely pubescent on apex. Aedeagus (figs 25–26) 0.285–0.290 mm long.

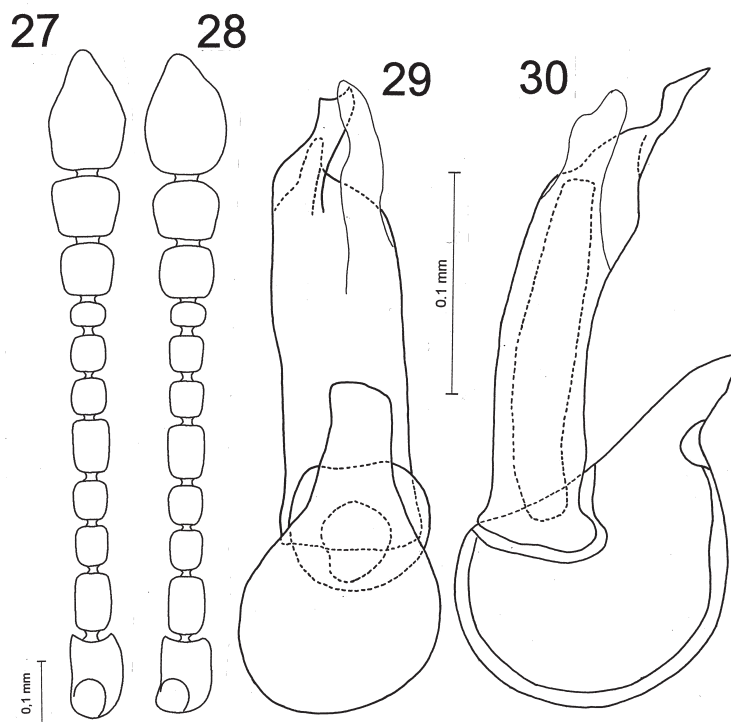
**Female.** Unknown.

**Discussion.** *Tychus carpathius* n. sp. can be easily distinguished from the other species of the *Tychus rufus* group by the very long antennae and the morphology of the antennomeres (segments 2–6 distinctly longer than wide and segments 5–6 wider than other of funicular segments), the morphology of abdominal sternites 2 and 3, and the shape of the apex of the dorsal apophysis of median lobe of the aedeagus.

***Tychus effeminatus* n. sp.**  
(figs 27–30)

**Type material.** SOUTHEASTERN TURKEY: **Antakya:** road Harbiye-Yayladagi, between Senköy and Kislak, 900–930 m, 26–27.IV.2002, 1 ♂ (H. Meybohm, V. Brachat) (holotype) (MHNG); idem, 900–930 m, 26–27.IV.2002, 1 ♂ and 1 ♀ (H. Meybohm, V. Brachat) (paratypes) (PCVB).

**Description.** Length 1.85–2.0 mm, uniformly reddish with yellow legs and palpi. Pubescence not very dense. **Head** slightly longer (0.31 mm) than wide (0.29–0.30 mm). Frontal rostrum 0.185 mm wide with M.L.S. prolonged posteriorly and barely reaching anterior margin of eyes. Occipital region slightly convex. Last segment of palpi 0.31–0.32 mm long and



**Figures 27–30**

*Tychus effeminatus* n. sp. **27**, right antenna of holotype male (MHNG). **28**, right antenna of paratype female from Harbiye-Yayladağı (MHNG). **29–30**, aedeagus of holotype male (MHNG), ventral view (29), lateral view (30).

0.11–0.12 mm wide. **Pronotum** wider (0.395–0.40 mm) than long (0.375–0.380 mm). **Elytra** wider (0.81–0.84 mm) than long (0.62 mm). **Abdomen** with tergite 1 0.325 mm long, with basal impression extending on more than 2/5 tergite width. Sternite 2 longer than in *T. rufus* (0.20 mm long).

**Male.** Eyes with 10–12 ommatidia. Antennae (fig. 27) 1.0 mm long, club 0.375 mm long; scapus and segments 2–5 longer than wide, with segment 5 longer than other funicular segments; segments 6–7 subequal and slightly longer than wide; segment 8 wider than long and shorter than previous segments. Median impression of metasternum not very deep and extending over almost whole sclerite length. Base of mesocoxal cavities with median, stout and short subtriangular process directed downward and pubescent apically. Posterior margin of prothorax and mesothorax extended into small median spine. Mesotibiae with a tiny subapical spur. All sternites unmodified. Aedeagus (figs 29–30) 0.32 mm long.

**Female.** Eyes with only 5 ommatidia. Antennae (fig. 28) 0.98 mm long, club 0.375 mm long, with same morphological features than in male; scapus and segments 2–7 longer than wide, with segment 5 distinctly longer than other funicular segments; segment 8 wider than long and shorter than previous segments. Posterior margin of prothorax and mesothorax slightly angulated in middle.

**Discussion.** The male of *Tychus effeminatus* n. sp. is characterized by the median stout and short subtriangular process at the base of the mesocoxal cavities, and by the unmodified abdominal sternites. Furthermore, the new species is distinguished from

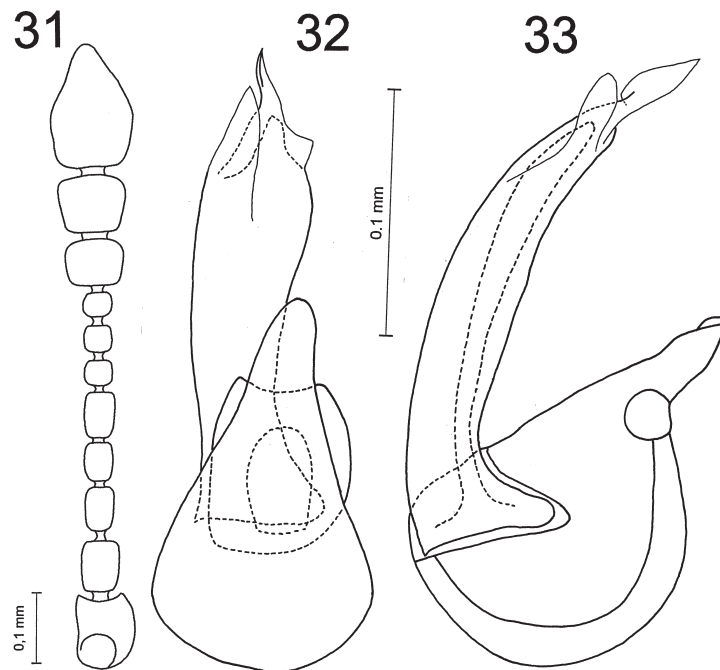
the other species of the group by the morphology of antennomeres 2–7 (long and thin) and the shape of the apex of the dorsal apophysis of median lobe of the aedeagus.

***Tychus inermis* n. sp.**  
(figs 31–33)

**Type material.** SOUTH TURKEY: **Antalya:** between Antalya and Selge, 900 m, 07.V.1989 1 ♂ (V. Brachat) (holotype) (MHNG); idem, 900 m, 07.V.1989, 1 ♀ (V. Brachat) (paratype) (PCVB).

**Description.** Length 1.65–1.70 mm, uniformly reddish with yellow legs and palpi. Pubescence not very dense. **Head** slightly longer (0.275 mm) or as long as wide (0.265–0.275 mm). Frontal rostrum 0.175 mm wide with M.L.S. prolonged posteriorly but not reaching anterior margin of eyes. Occipital region distinctly convex. Last segment of palpi 0.29–0.30 mm long and 0.11–0.12 mm wide. **Pronotum** wider (0.35 mm) than long (0.32 mm). **Elytra** wider (0.62–0.68 mm) than long (0.42–0.43 mm); discal stria barely reaching 1/2 of elytra length. **Abdomen** with tergite 1 0.29–0.30 mm long, with basal impression extending on than about 1/2 tergite width. Sternite 2 longer than in *T. rufus* (0.20 mm long). **Legs** with posterior margin of prothorax angulated in middle.

**Male.** Eyes with 12 ommatidia. Antennae (fig. 31) 0.83 mm long, club 0.325 mm long; scapus and segments 2–3 longer than wide; segment 4 slightly longer than wide; segment 5 longer than wide and longer than other funicular segments;



**Figures 31–33**  
*Tychus inermis* n. sp., holotype male (MHNG). 31, right antenna. 32, aedeagus, ventral view. 33, aedeagus, lateral view.



segments 6–8 slightly wider than long, with segment 8 shorter than previous segments. Metasternum unmodified. Posterior margin of mesotrochanters extended into two well separated small teeth, one median, other lateral and smaller. Mesotibiae with a tiny subapical spur. All sternites unmodified. Aedeagus (figs 32–33) 0.24 mm long.

**Female.** Eyes with only 6 ommatidia. Antennae 0.84 mm long, club 0.335 mm long, similar than in male. Posterior margin of mesotrochanters angulated in middle.

**Discussion.** The male of *Tychus inermis* n. sp. is characterized by the unarmed metasternum and the unmodified abdominal sternites. The new species is also distinguished from the other species of the group by the morphology of the antennomeres and the shape of the apex of the dorsal apophysis of median lobe of the aedeagus.

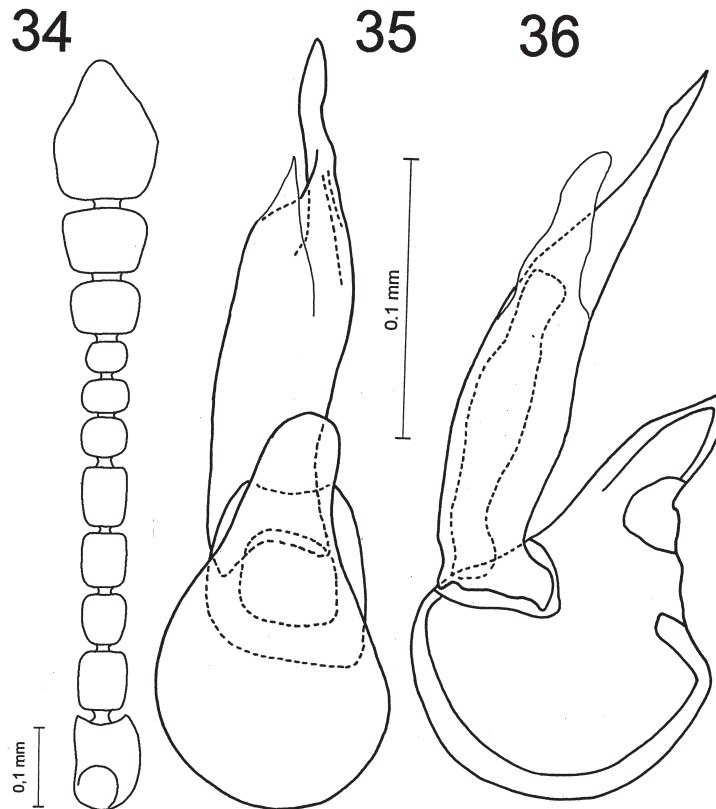
***Tychus artvinensis* n. sp.**  
(figs 34–36, 50)

**Type material.** NORTHEASTERN TURKEY: Artvin: above Artvin, 800 m, oak forest, 07.VI.1986, 1 ♂ (C. Besuchet, D.H. Burckhardt & I. Löbl) (holotype) (MHNG); idem, 800 m,

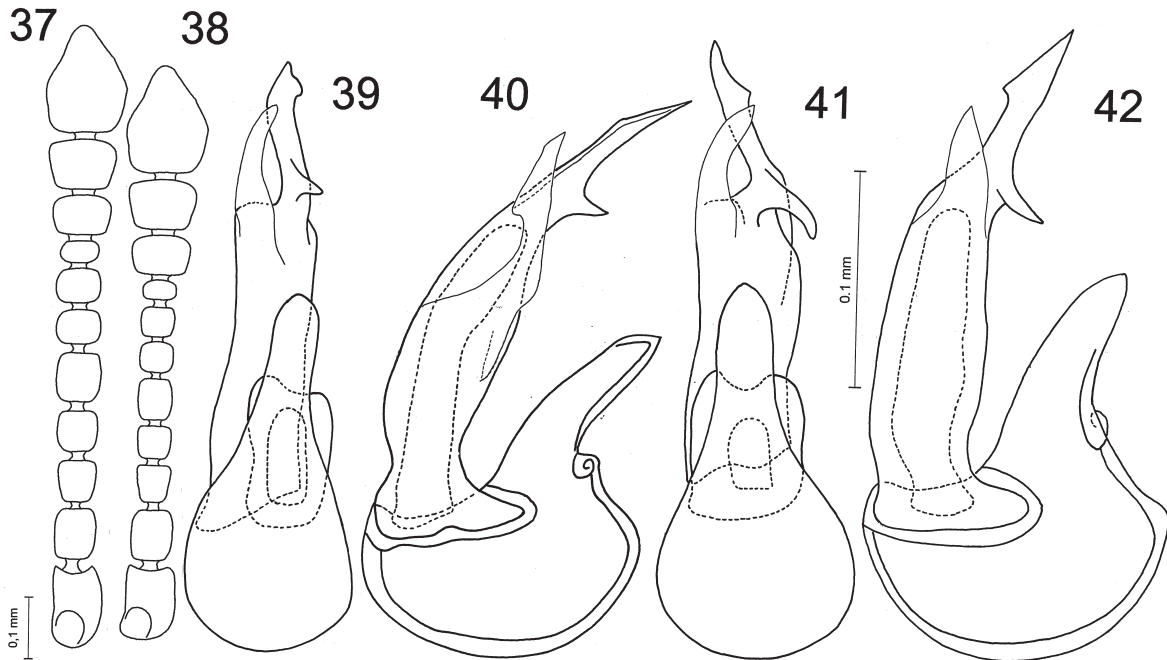
07.VI.1986, 1 ♂ and 1 ♀ (C. Besuchet, D.H. Burckhardt & I. Löbl) (paratypes) (MHNG).

**Description.** Length 1.75–1.80 mm, uniformly reddish with yellow legs and palpi. Pubescence dense. **Head** slightly longer (0.325–0.330 mm) than wide (0.30–0.31 mm). Frontal rostrum 0.19 mm wide with M.L.S. prolonged posteriorly, but not reaching anterior margin of eyes. Last segment of palpi 0.29 mm long and 0.12 mm wide. **Pronotum** wider (0.40–0.41 mm) than long (0.35 mm). **Elytra** wider (0.685–0.70 mm) than long (0.45–0.46 mm). **Abdomen** with tergite 1 0.325 mm long, with basal impression extending on more than 2/5 tergite width. Sternite 2 relatively short (0.15 mm long).

**Male.** Eyes with 8–10 ommatidia. Antennae (fig. 34) 0.90–0.92 mm long, club 0.35 mm long; scapus and segment 2 distinctly longer than wide; segments 3 and 4 longer than wide with segment 4 slightly longer than 3; segment 5 longer than wide and longer than other funicular segments; segments 6–8 wider than long, latter shorter than previous segments. Median impression of metasternum extending over 1/2 of its length; apex of this impression armed with spine 0.035 mm long and directed downward. Posterior margin of protrochanters prolonged into short spine; posterior margin of mesotrochanters prolonged into short truncate and bifid lamella slightly recurved and truncate at apex. Protibiae with a very small subapical spur, hardly visible, mesotibiae with evident subapical spur, Ventral

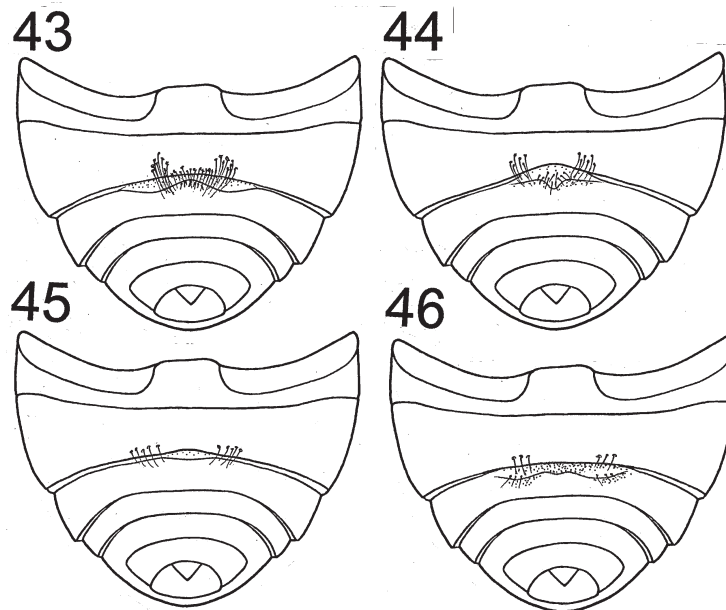


**Figures 34–36**  
*Tychus artvinensis* n. sp., holotype male (MHNG). 34, right antenna. 35, aedeagus, ventral view. 36, aedeagus, lateral view.



**Figures 37–42**

*Tychus bysantinicus* (Karaman). 37, right antenna of male from Beograd forest (MHNG). 38, right antenna of female from Beograd forest (MHNG). 39–40, aedeagus of male from Beograd forest (MHNG), ventral view (39), lateral view (40). 41–42, aedeagus of male from Uludag (MHNG), ventral view (41), lateral view (42).



**Figures 43–46**

Schematic drawings of male abdomen, ventral view. 43, *Tychus rufus* Motschulsky. 44, *Tychus pisidicus* n. sp. 45, *Tychus antiocheus* n. sp. 46, *Tychus torticornis* n. sp.

surface of metafemora in basal half slightly impressed and barely wrinkled; posterior margin of metafemora with weak carina in basal third.

Abdomen (fig. 50) with posterior margin of sternite 2 strongly thickened, weakly hollowed, sinuate and raised in middle, sides of this groove with a tuft of long yellow hairs. Surface of sternite 3 with very deep median transverse depression, this one bearing in middle two tuft of short hairs. Surface of sternites 4 and 5 slightly flattened in middle. Aedeagus (figs 35–36) 0.270–0.275 mm long.

**Female.** Eye with only 6 ommatidia. Antennae 0.92 mm long, club 0.35 mm long, similar than in male, but slightly thinner. Posterior margin of protrochanters angulated in middle, posterior margin of mesotrochanters prolonged into long median pointed spine.

**Discussion.** *Tychus artvinensis* n. sp. is similar to *T. bysantinicus* (Karaman) but it can be distinguished from it by thinner antennae, M.L.S. not reaching anterior margin of eyes, median impression of metasternum extending over 1/2 of its length, basal impression of abdominal tergite 1 extending on more than 2/5 of

its width, abdominal sternites 2 and 3 of male with different features, and apex of dorsal apophysis of median lobe of the aedeagus differently shaped.

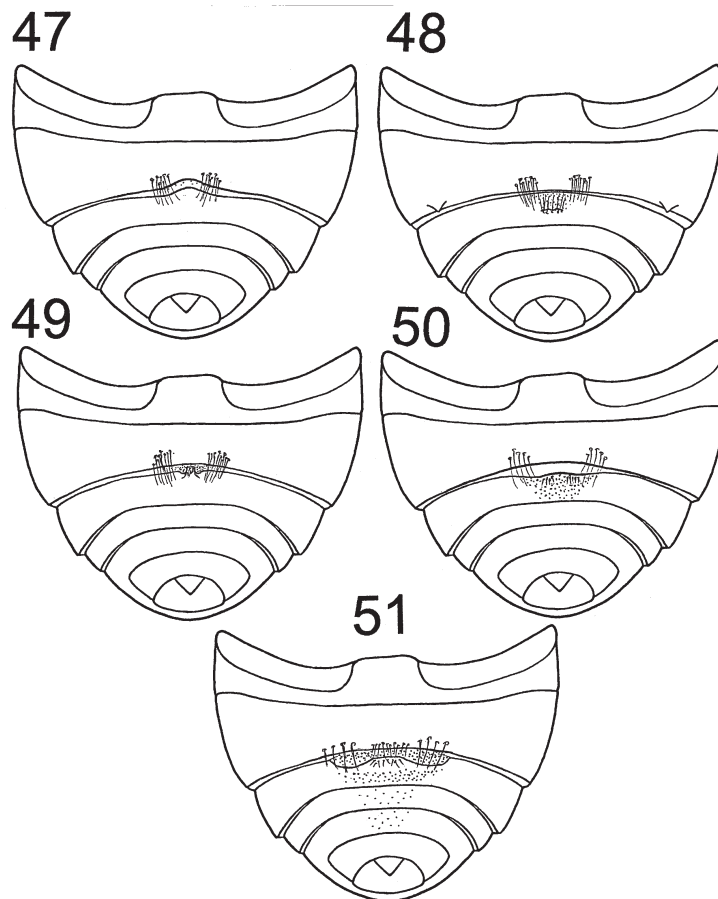
### *Tychus bysantinicus* (Karaman) (figs 37–42, 51)

*Tychoides rufus bysantinicus* Karaman 1955, *Acta Mus. Mac. Scient. Natural.* 3: 132, fig. 38 (aedeagus);

*Tychus bysantinicus* Karaman 1972, *Nouvelle Revue d'Entomologie* 2: 76, fig. 8 (aedeagus);

*Tychus straniensis* Karaman 1972, *Nouvelle Revue d'Entomologie* 2: 76, figs 9 (aedeagus) and 12 (abdominal sternites).

**Description.** Length 1.55–1.80 mm, colour varying from uniformly reddish with yellow legs and palpi to brown with darker head and abdomen, red elytra, reddish antennae, yellowish legs, and yellow palpi. Pubescence not very dense. **Head** generally slightly wider (0.295–0.315 mm) than long (0.290–0.315 mm) sometimes as long as wide or slightly longer than wide. Frontal rostrum 0.175–0.185 mm wide with M.L.S. prolonged posteriorly and reaching posterior margin of eyes. Last segment of palpi 0.25–0.26 mm long and 0.12–0.15 mm



Figures 47–51

Schematic drawings of male abdomen, ventral view. 47, *Tychus libanus* n. sp. 48, *Tychus sidonicus* n. sp. 49, *Tychus carpathius* n. sp. 50, *Tychus artvinensis* n. sp. 51, *Tychus bysantinicus* (Karaman).

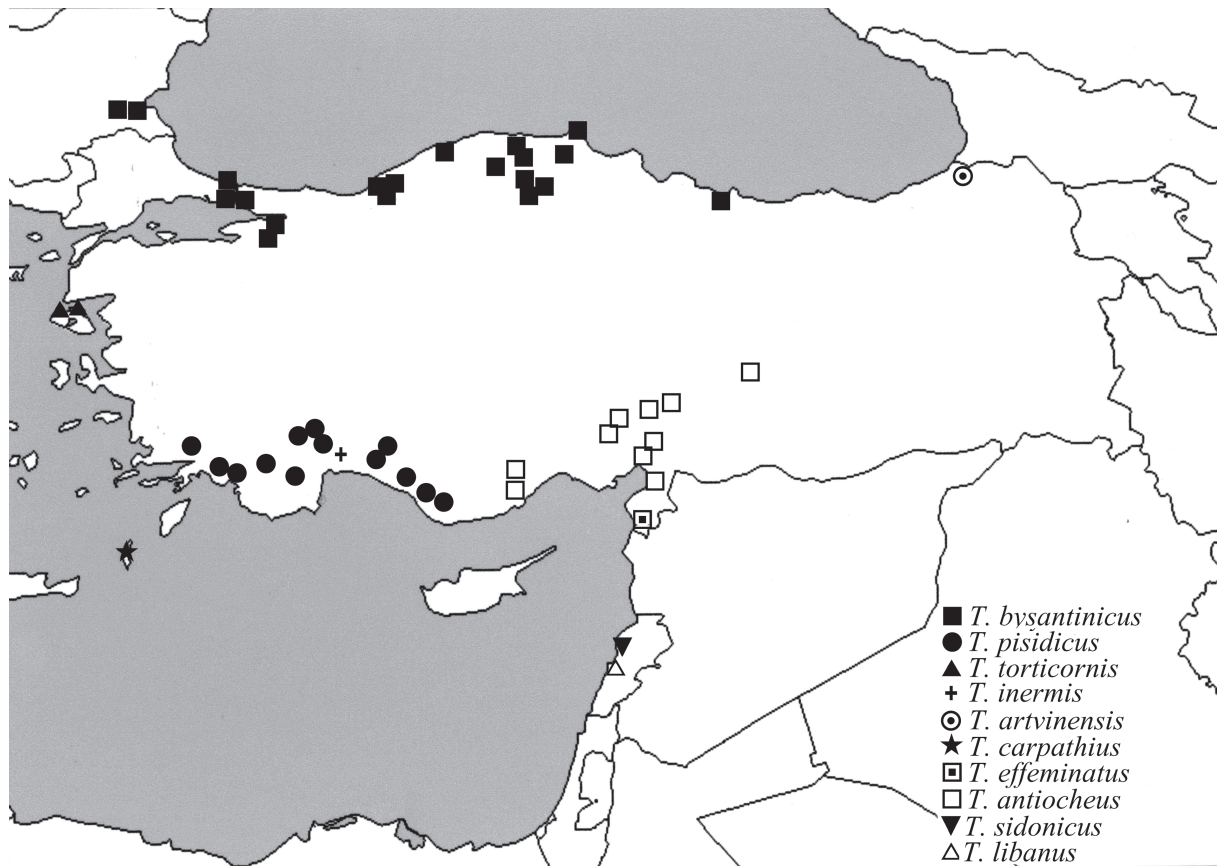
wide. **Pronotum** wider (0.40–0.55 mm) than long (0.35–0.38 mm). **Elytra** wider (0.60–0.69 mm) than long (0.47–0.55 mm). **Abdomen** with tergite 1 0.29–0.30 mm long, with basal impression extending on less than 2/5 tergite width. Sternite 2 relatively short (0.15 mm long). **Legs** with posterior margin of protrochanters extended into small median spine.

**Male.** Eyes with 16–30 ommatidia. Antennae (fig. 37) 0.82–0.90 mm long with club 0.31–0.33 mm long, scapus and segment 2 distinctly longer than wide; segment 3 longer than wide; segment 4 slightly longer than wide or as long as wide; segment 5 wider than segment 4 and generally longer than wide, sometimes as long as wide; segments 6 and 7 subequal and slightly wider than long; segment 8 wider than long and shorter than previous segments. Median impression of metasternum extending over 2/3 of its length; apex of this impression armed with spine 0.55–0.56 mm long and directed downward. Mesotrochanters with posterior margin prolonged in long truncate and marginally denticulated lamella recurved at apex. Protibiae with small subapical spur, hardly visible, mesotibiae with evident subapical spur. Ventral surface of metafemora in basal half very impressed and distinctly wrinkled; posterior margin of metafemora with evident carina in basal half. Abdomen (fig. 51) with posterior margin of sternite 2 right, its entire median surface flattened and with

close punctures. Surface of sternite 2 at its posterior margin slightly concave and bearing a tuft of backwards directed yellow hairs. Surface of sternite 3 with a median pubescent tooth-like ridge. Posteriorly to that ridge, on each side, a deep hairless pit. Surface of sternites 4 and 5 slightly flattened in middle. Aedeagus (figs 39–42) 0.275–0.295 mm long.

**Female.** Eyes less developed than in male, with 9–11 ommatidia. Antennae (fig. 38) with segments 3–8 thinner than in male, 0.81–0.85 mm long, club 0.30–0.32 mm long; scapus distinctly longer than wide; segments 2 and 3 longer than wide; segment 4 slightly longer than wide or as long as wide; segment 5 distinctly longer than wide and longer than other funicular segments; segments 6 and 7 subequal, slightly wider than long, segment 8 wider than long and shorter than previous segments. Posterior margin of mesotrochanters extended into small median spine.

**Material examined. EASTERN BULGARIA: Stranja planina, Burgas:** Varovnik, 10.X.1970, 1 ♂ (H. Coiffait) (holotype of *T. straniensis*) (MNHN); Slivovo, 10.X.1970, 1 ♀ (H. Coiffait) (paratype of *T. straniensis*) (MNHN). - **NORTHWESTERN TURKEY: Istanbul:** Istanbul = Constantinople 1 ♂ (MNHN); idem, 1 ♂ (J. Korb) (HNHM); Belgrader Wald, near Istanbul, 1 ♂ and 1 ♀ (V. Apfelbeck) (holotypes of *Tychus rufus bysantinicus*) (NMBH), “Forêt de Belgrade”, near Istanbul,



**Figure 52**

Distribution of species of the *Tychus rufus* group (excluding *Tychus rufus* Motschulsky): *T. bysantinicus*; *T. pisidicus* n. sp.; *T. torticornis* n. sp.; *T. inermis* n. sp.; *T. artvinensis* n. sp.; *T. carpathius* n. sp.; *T. effeminatus* n. sp.; *T. antiocheus* n. sp.; *T. sidonicus* n. sp.; *T. libanus* n. sp.



04.VI.1967, 5 ♂♂ and 4 ♀♀ (C. Besuchet) (MHNG); idem, 1 ♂ (B. von Bodemeyer) (MHNG); Adampol, 12.IV.1900, 2 ♂♂ and 2 ♀♀ (J. Korb) (ZSMC); Kilyos, 27.VII.1969, litter, 1 ♂ (C. Besuchet) (MHNG); Alhem Dag, 1 ♂ and 1 ♀ (B. von Bodemeyer) (MHNG); Beikos, IX.1911, 2 ♂♂ and 1 ♀ (M. Cameron) (MHNG); environs of Saryeri, Hüncar Suyu, europ. Bosphorosuter, 1966, 2 ♂♂ and 2 ♀♀ (H. Schweiger) (MHNG); **Bursa**: above Bursa, 500 m, 12.V.1976, litter, 1 ♂ and 3 ♀♀ (C. Besuchet & I. Löbl) (MHNG); ravine above city, 13.V.1976, rotten wood, 1 ♂ and 3 ♀♀ (C. Besuchet & I. Löbl) (MHNG); Goek-Dagh, 1 ♂ and 1 ♀ (B. von Bodemeyer) (HNHM) **Bolu**: between Bolu and Kaynash, X.1963, 1 ♂ (H. Schweiger) (MHNG); Konurlap, 17 km from Akcaçoca, 400 m, 15.V.1976, 2 ♂♂ (C. Besuchet & I. Löbl) (MHNG); Uludag, 17 km from Bursa, 110 m, 13.V.1976, litter of *Fagus*, 1 ♂ (C. Besuchet & I. Löbl) (MHNG); **Zonguldak**: Adipasa, 22 km southeast of Bartın, 16.V.1976, under stones, 1 ♂ (C. Besuchet & I. Löbl) (MHNG); **Kastamonu**: Karadere, 32 km north of Tosya, 1400 m, pine forest under stones, 19.V.1976, 2 ♂♂ (C. Besuchet & I. Löbl) (MHNG); Ilgazdag pass, 15 km north of Tosya, 1600–1700 m, 19.V.1976, 1 ♀ (C. Besuchet & I. Löbl) (MHNG); Ilgazdag, road Kastamonu-Çankiri, near pass, 1700–1800 m, 17.V.1976, under stones, 1 ♀ (C. Besuchet & I. Löbl) (MHNG); 5 km north of Küre, 600 m, 18.V.1976, ravine leaf litter, 1 ♂ (C. Besuchet & I. Löbl) (MHNG); idem, 1200 m, 18.V.1976, litter, 1 ♂ (C. Besuchet & I. Löbl) (MHNG); between Inebolu and Küre, 700 m, 18.V.1976, litter of *Fagus* and *Rhododendron*, 1 ♂ (C. Besuchet & I. Löbl) (MHNG); above Inebolu, 600 m, 18.V.1976, 4 ♂♂ (C. Besuchet & I. Löbl) (MHNG); Inebolu, 10 km from Küre, 700 m, 18.V.1976, 2 ♂♂ (C. Besuchet & I. Löbl) (MHNG); 13 km east of Ağlı, 1200 m, 18.V.1976, 3 ♂♂ (C. Besuchet & I. Löbl) (MHNG); **Sinop**: above Bektaş, 23 km north of Boyabat, 1100 m, 20.V.1976, litter of *Fagus*, 1 ♂ and 1 ♀ (C. Besuchet & I. Löbl) (MHNG); Lala, near Sinop, 20.V.1976, litter, 2 ♂♂ (C. Besuchet & I. Löbl) (MHNG); **Ordu**: Tekkiraz, 18.V.1967, 2 ♂♂ and 2 ♀♀ (C. Besuchet) (MHNG).

**Distribution.** The species is known from eastern Bulgaria and northwestern Turkey.

**Discussion.** The aedeagus of the specimen from Uludag (figs 41–42) is slightly different in shape. This specimen also has the lamella of the mesotrochanters shorter and pointed.

### Key to identification of *Tychus rufus* group species

1. Base of antennal segments right in both sexes ..... 2
  - Base of antennal segments 3 to 5 recurved, strongly in ♂, slightly in ♀. Length 1.85–2.0 mm ..... *torticornis* n. sp.
2. Antennal segment 10 at least as long as wide, eyes very small ..... 3
  - Antennal segment 10 always wider than long, eyes more developed ..... 5
3. Antennae especially long, all segments longer than wide, excluding segment 8. Length 1.85 mm ..... *libanus* n. sp.
  - Antennae less long, segment 10 as long as wide ..... 4
4. Antennal segment 7 small (0.05/0.05 mm) not enlarged in ♂; lateral margin of last segment of maxillary palpi distinctly concave. Length 1.70 mm ..... *sidonicus* n. sp.

- Antennal segment 7 bigger (0.08/0.07 mm) slightly enlarged in ♂; lateral margin of last segment of maxillary palpi slightly concave. Length 1.90–1.95 mm ..... *carpathius* n. sp.
- 5. ♂: mesotrochanters with posterior margin prolonged in a long apophysis, mesotibiae with small subapical spur ..... 6
  - ♂: mesotrochanters unarmed, mesotibiae with subapical spur barely visible ..... 7
- 6. Eyes more developed, protruding in ♂; antennae shorter and stronger, antennal segment 5 of ♂ slightly enlarged. Length 1.55–1.80 mm ..... *bysantinicus* (Karaman)
  - Eyes less developed, not protruding in ♂; antennae longer and thinner, antennal segment 5 of ♂ barely enlarged, similar than in ♀. Length 1.75–1.80 mm ..... *artvinensis* n. sp.
- 7. Antennae thinner without modifications in ♂, ventral surface of abdomen not modified in both sexes ..... 8
  - Antennae stronger with segments 5 to 7 more or less enlarged in ♂, ventral surface of abdomen modified in ♂ ..... 9
- 8. ♂: Metasternum unarmed. Length 1.65–1.70 mm ..... *inermis* n. sp.
  - ♂: Metasternum with median apophysis. Length 1.85–2.0 mm ..... *effeminatus* n. sp.
- 9. Antennal segments 5 to 7 enlarged in ♂; antennal segments 4 and 6 of ♀ similar in length, slightly wider than long. Length 1.65–1.95 mm ..... *rufus* Motschulsky
  - Antennae different in shape ..... 10
- 10. Antennal segments 5 and 6 enlarged in ♂; segment 4 of ♀ as long as wide and shorter than segment 6. Length 1.45–1.75 mm ..... *pididicus* n. sp.
  - Only antennal segment 5 enlarged in ♂, segment 4 of ♀ longer than wide and distinctly longer than segment 6. Length 1.70–1.90 mm ..... *antiocheus* n. sp.

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