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New Turkish *Trechus* from the Schubert Collection (Natural History Museum, Vienna) (Coleoptera: Carabidae: Trechinae)

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Abstract

Material of *Trechus* CLAIRVILLE, 1806, from the Schubert Collection (Natural History Museum, Vienna) was examined. Seven new species and one new subspecies from Turkey are described: *T. akkusianus* sp.n., *T. boludagensis* sp.n., *T. franzschuberti* sp.n., *T. fritzbeneschi* sp.n., *T. jaechi* sp.n., *T. pamphylicus rudischuhi* ssp.n., *T. schillhammeri* sp.n. and *T. uenyeensis* sp.n.

Key words: Carabidae, Trechinae, *Trechus*, new species, new subspecies, taxonomy, Turkey.

Zusammenfassung

Türkisches Material der Gattung *Trechus* CLAIRVILLE, 1806 aus der Schubert Sammlung (Naturhistorisches Museum, Wien) wurde untersucht. Sieben neue Arten und eine neue Unterart werden aus der Türkei beschrieben: *T. akkusianus* sp.n., *T. boludagensis* sp.n., *T. franzschuberti* sp.n., *T. fritzbeneschi* sp.n., *T. jaechi* sp.n., *T. pamphylicus rudischuhi* ssp.n., *T. schillhammeri* sp.n. und *T. uenyeensis* sp.n.

Introduction

The genus *Trechus* CLAIRVILLE, 1806, is represented in Turkey with more than 50 species (MORAVEC et al. 2003), many of very limited distribution. The first comprehensive treatment of Turkish *Trechus* faune was that by PAWLOWSKI (1979), who listed 32 species. Eleven additional species have been described since then by PAVESI & SCIAKY (1990, 1992, 1994), JEANNE (1996), MORAVEC & ZIERES (1998) and DONABAUER (2004). More species can be expected in this poorly studied country with many barely accessible mountain ranges.

Franz Schubert visited Turkey several times and collected a rich material of Coleoptera, including a significant number of specimens belonging to the genus *Trechus*. Unfortunately, no detailed information is available on his collection methods or the exact localities visited (altitude, microhabitat, surrounding vegetation, etc.). As Franz Schubert travelled by train, he collected more around villages and towns than in high mountain areas, which were inaccessible for him. Therefore, it may be assumed that many of his

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collection sites have been destroyed since then. The fast growing population and the even faster growing economy have a severe impact on forested areas in lower altitudes, especially in the northern part of the country.

Acknowledgements

The collection of Franz Schubert is now housed and accessible in the Natural History Museum, Vienna. An informative summary of the entomological life of Franz Schubert was published by SCHÖNMANN (1996). I want to thank Dr. Schönmann and Dr. Schillhammer, who invited me to study the interesting collection of Franz Schubert.

Furthermore I am grateful to Dr. Alexander Dostal, Dr. Peter Cate, and Dr. Herbert Zettel for reviewing this paper.

Abbreviations

MD	Martin Donabauer
NMW	Natural History Museum, Vienna
BL	Body length
EL	Elytra length

Method

Full taxonomic descriptions are provided for new species only. Descriptive statistics for measurements and proportions are provided in tables at the end of the paper. The body length is measured from labrum to the apex of the elytra. A key for determination of species is not provided, as there are not sufficient significant distinguishing characteristics other than the aedeagus and a review of all Turkish species is outside the scope of this paper. For identification please use the aedeagus and habitus figures in this paper and in the publications mentioned. All holotypes and the majority of paratypes are deposited in the NMW, some paratypes are stored in the author's collection. Line drawings of habitus and aedeagus have been made by standard techniques as described by DONABAUER (2006).

Treatment of species groups often differs from those previously published by other authors. Rearrangements are out of the scope of this paper but would be urgently required for species from Turkey. PAWLOWSKI (1979) suggested lineages and groups which are partly not monophyletic, sometimes highly artificial and contradictory to the treatment of the fauna from the Caucasus area as provided by JEANNEL (1927, 1960) and BELOUSOV (1987, 1989, 1990).

Descriptions of new species and subspecies

Trechus (s.str.) *franzschuberti* sp.n. (Fig. 1, 4, 8, 9)

Type material: Holotype ♂ and 12 paratypes (4 ♂♂, 8 ♀♀): Turkey NE, Tatos Daglari, Borcka, VII.1974, leg. F. Schubert (coll. NMW, MD).

Diagnosis: This new species deviates strongly from all other Turkish *Trechus* by the combination of the following characteristics: rather large body size (ca. 4 mm), dark brown color, pronotum strongly constricted at the base with sharp and strongly projecting basal angles and a very small aedeagus with complicated and very characteristic copulatory pieces in the internal sack (Figure 4).

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Description: Habitus as in Figure 1; length 3.6-4.0 mm. Body rather elongated and convex, elytra elongate oval. Body strongly pigmented, entirely reddish piceous, paler along suture; elytra shiny with slight bluish lustre; legs entirely pale reddish, contrasting with body; first two segments of antenna pale reddish, segment 3 and all following ones darker.

Head with very strong microsculpture; elytra and pronotum shinier and with less well-developed, hardly visible microsculpture (examined at 40 x). Antenna moderately slender, of normal length. Eyes moderately large, slightly reduced in size, length of temples shorter than eye diameter.

Pronotum strongly rounded laterally, slightly convex on disc, maximal width before middle, strongly constricted and strongly sinuate before large basal angles, anterior and posterior margins nearly straight; front angles rounded and not prominent; basal angles sharply angled and projecting; basal fovae present and strongly impressed; median line distinct, almost extended to margins.

Elytra ovate, rather convex, shoulders completely rounded and not prominent; inner striae (1-4) fine but clearly impressed and slightly irregularly punctuate, posterior and lateral (5-6) increasingly shallow, hardly visible; outermost striae indistinct; stria 3 with two strongly impressed and large dorsal pores.

Aedeagus (Figures 4, 8, 9): The aedeagus is highly characteristic and enables an easy determination: aedeagus in lateral view simple, very small (ca. 25 % of EL), short and thick, apex very short, simple, moderately down-turned; aedeagus in dorsal view parallel-sided, short and thick, apex not visible because it is hidden beneath projecting internal sack and copulatory pieces (Figure 8); in apical-dorsal view with broad, equally rounded apex, apex slightly turned to right (Figure 9). Internal sack without scales, with one large copulatory piece of very characteristic form, copulatory piece clearly projecting out of aedeagus, apically very large and equally rounded, shaped like spatula with apex turned around its axis. Parameres in compliance with general form of aedeagus very short and thick, with 4 short apical seta each.

Notes: I am not aware of any closely related species in Turkey. This new species is best placed in the diverse *T. caucasicus* group s.l. (sensu JEANNEL, 1960, or PAWLOWSKI, 1979) due to several similarities in habitus (body size, shape of basal angles of pronotum, rather deep and punctuate stria of elytra) and/or shape of the copulatory piece to *T. angelicae* REITTER, 1892 (compare with JEANNEL 1927: pg. 473, Figures 1109-1112), *T. ithae* PAWLOWSKI, 1977 (compare with PAWLOWSKI 1979: pg. 296, Figures 59-63), and *T. nairicus* PAVESI & SCIAKY, 1992 (refer to original description).

Trechus (s.str.) *fritzbeneschi* sp.n. (Fig. 2, 5, 10)

Type material: Holotype ♂: Turkey NE, Tatos Daglari, Rize/Ikizdere, 26.VI.1976, leg. F. Schubert (coll. NMW).

Diagnosi: This new species deviates strongly from all other Turkish *Trechus* by the extraordinary form of the aedeagus, which is very large, extraordinarily elongate and with a hooked apex. *Trechus fritzbeneschi* sp.n. should be assigned to the *T. bradycelloides* group sensu JEANNEL (1927) because of strong similarities in habitus and general structure of the aedeagus to *T. bradycelloides* REITTER, 1903, from the Caucasus (compare with JEANNEL, 1927: pg. 331, Figures 859-861). The several other species from Turkey belonging to this group have totally different aedeagi (e.g. *T. schillhammeri* sp.n.: Figure 23).

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Description: Habitus as in Figure 2; BL 3.75 mm. Body broad and rather flat; body entirely pale reddish, head darker; elytra moderately shiny with very slight bluish lustre; legs entirely pale, contrasting moderately with body; antenna pale reddish, segment 5 and all following ones slightly darker.

Head with strong microsculpture; elytra and pronotum shinier and with less developed, hardly visible microsculpture (examined at 40 x). Antenna moderately slender, of normal length. Eyes moderately large, slightly reduced in size, length of temples shorter than eye diameter.

Pronotum comparatively broad, moderately rounded laterally, convex on disc, maximal width before middle, moderately constricted towards base, not sinuate before small and right-angled basal angles, anterior and posterior margins nearly straight; front angles rounded and not prominent; basal angles right-angled and very slightly projecting; basal fovae present but small and very weakly impressed; median line distinct, very shallow, almost extended to margins; lateral furrow very narrow.

Elytra ovate, rather flat, shoulders completely rounded and not prominent; inner striae (1-3) very fine but clearly impressed, all other striae hardly visible or indistinct; stria 3 with two weakly impressed and small dorsal pores.

Aedeagus (Figures 5, 10): The aedeagus is highly characteristic and enables an exact determination: aedeagus in lateral view straight, very large (53 % of EL), extraordinarily elongate and slender, apex very long and strongly reflexed; aedeagus in dorsal view parallel and straight, with a pointed and symmetric apex. Internal sack not dissected, because I did not risk the destruction of the single available aedeagus. Internal sack partly covered with scales, hardly transparent. A rather small copulatory piece visible with simple, broadly rounded apex. Parameres in accordance with general form of aedeagus elongate and slender, with 4 and 5 apical seta as shown in Figure 5.

Notes: This new species can easily be separated from all other Turkish species by the extraordinarily elongate shape of the aedeagus. Nevertheless, the general form of aedeagus, copulatory pieces of the internal sack and general habitus clearly indicates that this new species is closely related to *T. bradycelloides* REITTER, 1903, and therefore belongs in the *T. bradycelloides* group sensu PAWLOWSKI (1979). This group contains several other species distributed in northeastern Turkey, but all of them have much shorter and thicker aedeagi with totally different apices and copulatory pieces.

Etymology: This species is dedicated to DI Fritz Benesch, who was an enthusiastic hobby-entomologist in Vienna and a relative of mine. He introduced me into entomology when I was a little boy and invited me on many collecting trips. He passed away in 2001 at the age of 93.

Trechus (s.str.) *boludagensis* sp.n. (Fig. 3, 6, 7, 11)

Type material: Holotype ♂ and 9 ♂♂ paratypes: Turkey N, S of Zonguldak, Bolu, 13.VIII.1975, leg. F. Schubert (coll. NMW, MD).

Diagnosis: This new species is closely related to *T. ilgazicus* PAWLOWSKI, 1976, and *T. safranboluensis* DONABAUER, 2004 (*T. osmanilis* group sensu PAWLOWSKI 1979), and can be separated solely by aedeagal characteristics: aedeagus large and elongate, dorsally not straight but equally curved (distinguishing difference to *T. safranboluensis*) and with simple apex (distinguishing difference to *T. ilgazicus*).

Description: Habitus as in Figure 3, BL 3.2-3.6 mm. Body broad and moderately convex. Body entirely pale reddish, but disc of elytra often and disc of pronotum sometimes darker; legs entirely pale; antenna pale reddish.

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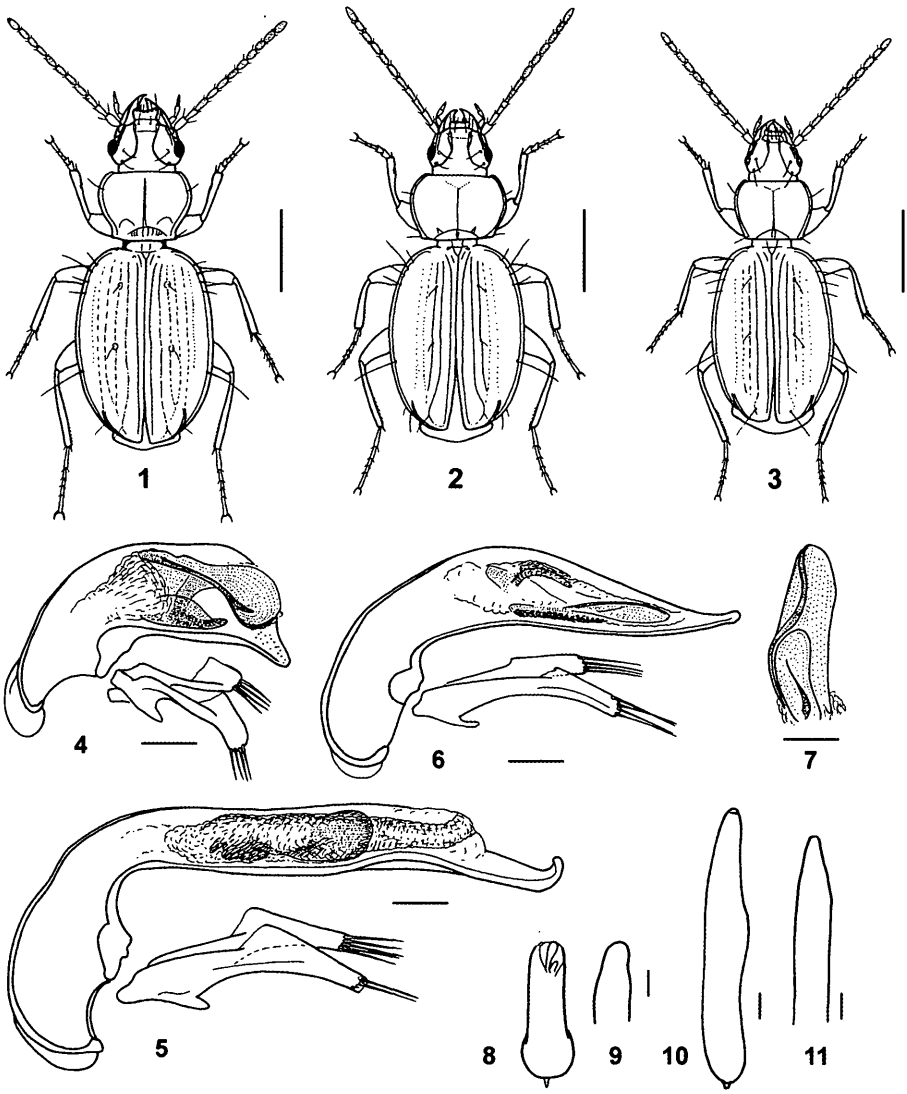

Fig. 1-11: Habitus (1-3) and aedeagus in lateral (4-6), dorsal (8,10-11), and apico-dorsal view (9), aedeagal copulatory pieces (7), scale = 1 mm for habitus, otherwise scale = 0.1 mm. 1, 4, 8, 9: *T. franzschuberti* sp.n.; 2, 5, 10: *T. fritzbeneschi* sp.n.; 3, 6, 7, 11: *T. boludagensis* sp.n.

Head with strong microsculpture; elytra and pronotum shinier and with less developed, but clearly visible microsculpture (examined at 40 x). Antenna moderately slender, of normal length. Eyes moderately large, slightly reduced in size, length of temples shorter than eye diameter.

Pronotum moderately rounded laterally, convex on disc, maximal width before middle, moderately constricted towards base, slightly sinuate before small and slightly obtuse basal angles, anterior and posterior margins nearly straight; front angles rounded and not

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prominent; basal angles acute and moderately projecting; basal fovae present but very weakly impressed; basal furrow strongly impressed; median line distinct, very shallow, almost extended to margins.

Elytra ovate, moderately convex, rather flat on disc, shoulders completely rounded and not prominent; inner striae (1-4) fine but clearly impressed, not punctuate, all other striae hardly visible or indistinct; stria 3 with two weakly impressed and small dorsal pores.

Aedeagus (Figures 6, 7, 11): The aedeagus is very similar in general appearance to most other species of the *osmanilis* group in NW Turkey (see DONABAUER 2004): aedeagus large (42-45 % of EL) and elongate, slender, ventral side equally curved (straight in all other species except *T. ilgazicus*); apex long and slightly up-turned, simple (hooked in *T. ilgazicus*); aedeagus in dorsal view straight and elongate with elongate, pointed and symmetric apex, more or less identical to those of *T. ilgazicus* and *T. safranboluensis*. Internal sack with a ventral, moderately dense field of scales and two copulatory pieces (Figure 7) more or less identical to those of *T. ilgazicus*. Parameres in accordance with general form of aedeagus elongate and slender, with 4 apical seta as shown in Figure 6.

Etymology: This species is named after the type locality, a mountain range well known for endemism in N Turkey.

Discussion: Two male specimens of *T. osmanilis* K. & J. DANIEL, 1902, were glued on the same card together with the type specimens. The two species can easily be separated by several aedeagal characteristics (see figures in DONABAUER 2004). Nevertheless, there is no chance to separate these two species by external characteristics alone and I therefore cannot determine the 11 female specimens. Thus, I had to exclude all female specimens from the type series.

Trechus boludagensis sp.n. is intermediate between *T. ilgazicus* and *T. safranboluensis* in respect to aedeagal characteristics, but its distribution lies west of those of both these species.

Trechus (s.str.) *akkusianus* sp.n. (Fig. 12, 14, 16, 18)

Type material: Holotype ♂ and 4 paratypes (1 ♂, 3 ♀♀): Turkey NE, WSW of Ordu, Akkus, VIII.1977, leg. F. Schubert (coll. NMW, MD); 6 paratypes (2 ♂♂, 4 ♀♀): idem, 3-5.VI.1961, leg. F. Schubert (coll. NMW, MD); 2 paratypes (1 ♂, 1 ♀): Turkey NE, WSW of Ordu, Niksar, VII.1972, leg. F. Schubert (coll. NMW, MD).

Diagnosis: This new species is closely related to *T. uenyeensis* sp.n., *T. barbaritae* DONABAUER, 2004, and especially to *T. lebenbaueri* DONABAUER, 2004 (*T. osmanilis* group sensu PAWLOWSKI 1979). It can be separated solely by aedeagal characteristics, especially by the shape of the copulatory pieces.

Description: Habitus as in Figure 18; BL 3.5-3.6 mm; body moderately convex. Body entirely pale reddish, but disc of elytra often and disc of pronotum sometimes darker. legs entirely pale; antenna pale reddish.

Head with strong microsculpture; elytra and pronotum shinier and with less developed, but clearly visible microsculpture (examined at 40 x). Antenna moderately slender, of normal length. Eyes moderately large, slightly reduced in size, length of temples shorter than eye diameter.

Pronotum moderately rounded laterally, convex on disc, maximal width before middle, moderately constricted towards base, slightly sinuate before small and slightly obtuse basal angles, anterior and posterior margins nearly straight; front angles rounded and not

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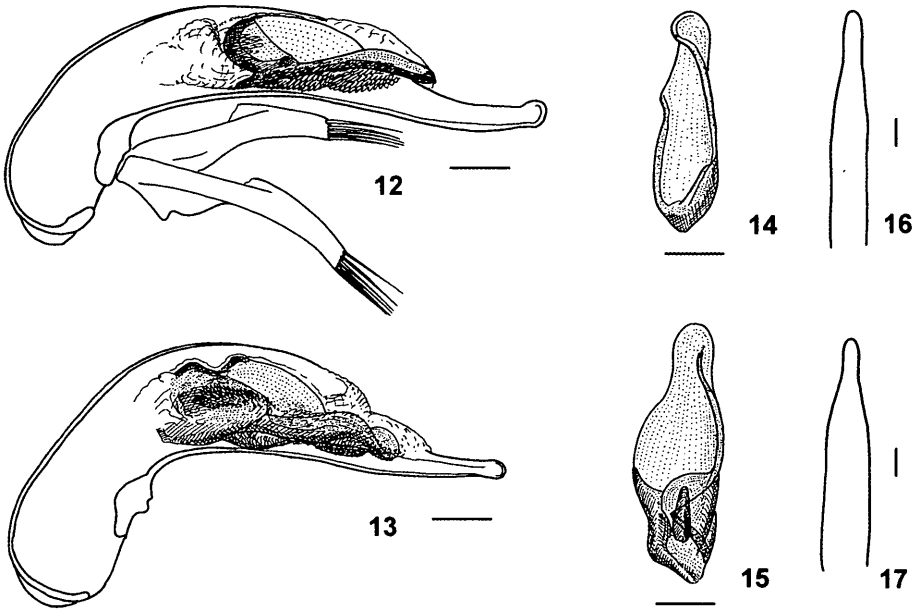

Fig. 12-17: Aedeagus in lateral (12-13) and dorsal view (16-17), aedeagal copulatory pieces (14-15), scale = 0.1 mm. 12, 14, 16: *T. akkusianus* sp.n.; 13, 15, 17: *T. uenyeensis* sp.n. (parameres destroyed during preparation).

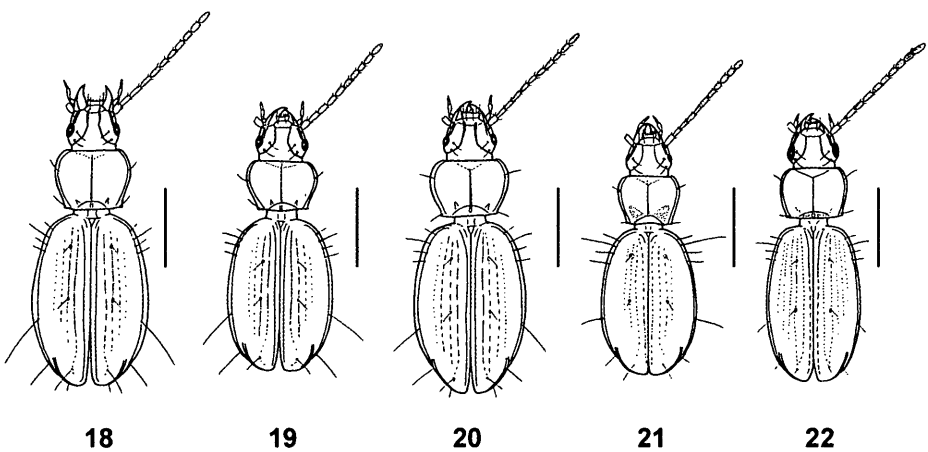

Fig. 18-22: Habitus, scale = 1 mm. 18: *T. akkusianus* sp.n.; 19: *T. uenyeensis* sp.n.; 20: *T. schillhammeri* sp.n.; 21: *T. jaechi* sp.n.; 22: *T. pamphylicus rudischuhi* ssp.n.

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prominent; basal angles acute and moderately projecting; basal fovae present but very weakly impressed; basal furrow strongly impressed; median line distinct, very shallow, almost extended to margins.

Elytra ovate, moderately convex, rather flat on disc, shoulders completely rounded and not prominent; inner striae (1-4) fine but clearly impressed, not punctuate, all other striae hardly visible or indistinct; stria 3 with two weakly impressed and small dorsal pores.

Aedeagus (Figures 12, 14, 16): The aedeagus is very similar in general appearance to that of several other species in Turkey, but well characterized by shape of the copulatory pieces. The most similar species is *T. lebenbaueri* DONABAUER, 2004. Aedeagus in lateral view more or less straight, large (58 % ob EL), elongate and slender, apex very long and slightly up-turned, slightly knobbed at end; aedeagus in dorsal view parallel, slender and straight with more slender, parallel-sided, symmetric apex, end shortly rounded. Internal sack with dense field of scales on ventral side and armed with single, large and complex copulatory piece; second copulatory piece missing (as in *T. lebenbaueri*). Copulatory piece of characteristic shape, especially base and apex very different from that of *T. lebenbaueri* (compare with DONABAUER 2004: Figures 32, 33). Parameres in accordance with general form of aedeagus elongate and slender, with 5 apical seta as shown in Figure 12.

Etymology: This species is named after the type locality.

***Trechus* (s.str.) *uenyeensis* sp.n. (Fig. 13, 15, 17, 19)**

Type material: Holotype ♂ and 17 paratypes (7 ♂♂, 10 ♀♀): Turkey NE, W of Ordu, Ünye, VII.1972, leg. F. Schubert (coll. NMW, MD).

Diagnosis: This new species belongs to the *T. osmanilis* group sensu PAWLOWSKI, 1979, and is very closely related to *T. akkusianus* sp.n., *T. lebenbaueri* and *T. barbaritae* and can be separated solely by aedeagal characteristics, especially by the shape of the copulatory pieces.

Description: Habitus as in Figure 19, BL 3.2-3.4 mm. *Trechus uenyeensis* sp.n. is indistinguishable from *T. akkusianus* sp.n. (refer to previous description) with the following exceptions: body length in average smaller and pronotum with acute basal angles.

Aedeagus (Figures 13, 15, 17): The aedeagus is very similar in general appearance to that of *T. akkusianus* sp.n., but slightly thicker and shorter, with a different and larger copulatory piece and with an additional second copulatory piece: aedeagus in lateral view more or less straight, large (51 % ob EL), elongate and less slender, apex long and less markedly up- turned, slightly knobbed at tip; aedeagus in dorsal view parallel, slender and straight with a more slender, parallel-sided, symmetric apex, end shortly rounded. Internal sack with a dense field of scales on ventral side and armed with two copulatory pieces: one large and complex, the other very small and tooth-like (missing in *T. lebenbaueri* and *T. akkusianus* sp.n., much larger and shaped differently in *T. barbaritae*). Relatively large copulatory piece (Figure 15) of characteristic and complex shape, especially base and apex very different from that of *T. lebenbaueri* (compare with DONABAUER 2004: fig 32 and 33) and *T. akkusianus* sp.n. (compare with Figure 14).

Notes: The type series is in very poor condition. A few specimens are broken and therefore some measurements are estimated.

Etymology: This species is named after the type locality.

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***Trechus* (s.str.) *schillhammeri* sp.n. (Fig. 20, 23, 24, 25)**

Type material: Holotype ♂: Turkey NE, Tatos Daglari, Rize, 28.VI.1970, leg. F. Schubert (coll. NMW).

Diagnosis: This new species belongs to the *T. bradycelloides* group sensu PAWLOWSKI, 1979, but is distinguished by many aedeagal characteristics, especially the shapes of the aedeagal apex and copulatory pieces.

Description: Habitus as in Figure 20; BL 3.4 mm. Body broad and moderately convex. Body entirely reddish; legs entirely pale; antenna pale reddish.

Head with strong microsculpture; elytra and pronotum shinier and with less developed, but clearly visible microsculpture (examined at 40 x). Antenna moderately slender, of normal length. Eyes moderately large, slightly reduced in size, length of temples shorter than eye diameter.

Pronotum strongly rounded laterally, convex on disc, maximal width before middle, constricted towards base, shortly sinuate before small and acute basal angles, anterior and posterior margins nearly straight; front angles rounded and not prominent; basal angles acute and moderately projecting; basal fovae present but very weakly impressed; basal furrow strongly impressed; median line distinct, very shallow, almost extended to margins.

Elytra ovate, moderately convex, rather flat on disc, shoulders completely rounded and not prominent; inner striae (1-4) fine but clearly impressed, weakly and irregularly punctuate, all other striae hardly visible or indistinct. Stria 3 with two normally impressed and small dorsal pores.

Aedeagus (Figures 23-25): The aedeagus is very characteristic, shape of apex and copulatory pieces enable an immediate determination. Aedeagus very large (52 % of EL) and thick, in lateral view ventral and dorsal side strongly convex, apex moderately long and up-turned, spoon-like (not hooked or reflexed as in all other species of the *bradycelloides* group from Turkey); aedeagus in dorsal view thick with equally rounded sides, strongly constricted before apex; apex therefore well separated from rest of aedeagus, strongly twisted to left side, spoon-like with a pointed end. Internal sack not dissected, because I did not risk the destruction of the single available aedeagus. Internal sack without fields of dense scales, more or less transparent; copulatory pieces very large and complex with three remarkable spines (Figure 24). Parameres in accordance with general form of aedeagus rather short, with 4 apical seta as shown in Figure 24.

Etymology: This species is dedicated to Dr. Harald Schillhammer of the staff of the NMW and specialist on Staphylinidae.

***Trechus* (s.str.) *jaechi* sp.n. (Fig. 21, 26, 31)**

Type material: Holotype ♂ and 10 paratypes (4 ♂♂, 6 ♀♀): „südl. Tatvan, Asm., 1700-2000 m or.; 23.6.-1.7.1973; leg. F. Schubert" (Turkey SE, Lake Van, south of Tatvan) (coll. NMW, MD); 1 paratype (♀): „Tatvan, 1800m or.; 1.-13.6.1970, Asm.; leg. F. Schubert" (coll. NMW).

Additional material: 3 ♀♀: "Ostw. Vansee, Asm; 1800-2200 m; VI.71, F. Schubert" (Turkey SE, eastwards Lake Van) (coll. NMW, MD). 2 ♂♂, 2 ♀♀: "ostw.

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Osmaniye/A; 12-1700m Asm.; leg. Franz Schubert" (coll. NMW) (Note: Osmaniye is in S Turkey, east of Adana. These specimens are definitely identical to those from Tatvan, therefore I strongly believe that they were mislabelled).

Diagnosis: This new species belongs to the *T. aquilus* group and is small, wingless, strongly depigmented, with reduced eyes, and strongly deviating from all other southern Turkish *Trechus* by the dense ventral field of scales in the internal sack. The most similar species in regard to aedeagal and habitus characteristics is *T. ulrichi* PAWLOWSKI, 1976, from the Pontic Alps in northeastern Turkey.

Description: Habitus as in Figure 21; length 3.0-3.3 mm. Body moderately elongate and moderately convex, elytra elongate oval. Body weakly pigmented, entirely pale reddish; legs and antenna pale, not contrasting much with body.

Head and pronotum with strong microsculpture; elytra shinier and with less developed, hardly visible microsculpture (examined at 40 x). Antenna moderately slender, of normal length. Eyes small, reduced in size, flat, length of temples slightly shorter than eye diameter.

Pronotum normal, rounded laterally, convex on disc, maximal width before middle, moderately constricted and sinuate before normal-sized basal angles, anterior and posterior margins nearly straight; front angles rounded and not prominent; basal angles right-angled and slightly projecting; basal fovae present, large and strongly impressed; median line distinct, almost extended to margins.

Elytra ovate, rather convex, shoulders completely rounded and not prominent; inner striae (1-4) on disc very fine, slightly impressed, irregularly punctuate, posterior and lateral (5-6) increasingly shallow, hardly visible; outermost striae indistinct. Stria 3 with two normal dorsal pores.

Aedeagus (Figures 26, 31): The aedeagus – although rather simple – is highly characteristic, at least for the species from southern Turkey: aedeagus in lateral view simple and – like in dozens of other species of *Trechus* – rather small (ca. 33 % of EL), apex of normal length, up-turned at end; aedeagus in dorsal view parallel-sided, apex deviating to the right side and pointed; internal sack with characteristic, strongly developed ventral field of very dense scales, scales slender and spike-like; one large copulatory piece clearly visible, ventrally fully covered by the above mentioned spines; parameres in accordance with general form of aedeagus normal, with 4 short apical seta each.

Etymology: This species is dedicated to Dr. Manfred Jäch of the staff of the NMW and specialist on water beetles.

Notes: I assign this species to the *T. aquilus* group (sensu PAWLOWSKI, 1979) due to the many similarities in the aedeagus and habitus with the only other representative of this small group in Turkey, the pontic *T. ulrichi* PAWLOWSKI, 1976 (compare with Figure 32).

Trechus (s.str.) *pamphylicus rudischuhi* ssp.n. (Fig. 22, 31-33)

Type material: Holotype ♂ and 8 paratypes (3 ♂♂, 5 ♀♀): "b. Namrun, Anat., 1800m, V/63, leg. F. Schubert" (coll. NMW, MD). The type locality Namrun is located in southern Turkey, Toros, Mersin env., Bolkar daglari.

Additional material studied: 3 ♂♂, 2 ♀♀: "Osmaniye, Asm. 1000 m, 1.-8.5.69, leg. F. Schubert" (coll. NMW, MD). Note: Two other species are obviously mislabelled with "Osmaniye" in the Schubert collection and therefore I also exclude these specimens from the type series. This locality needs confirmation, because 1000 m is very low for *T. pamphylicus* and Osmaniye is not in the Toros range.

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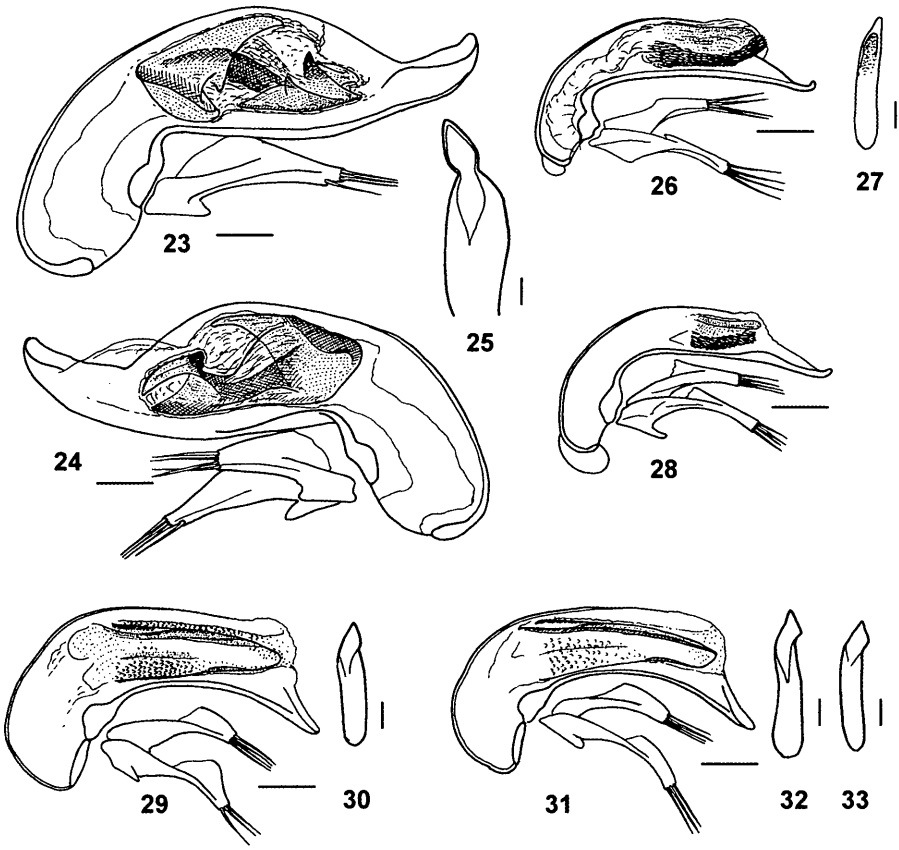

Fig. 23-33: Aedeagus in lateral (23-24, 26, 28, 29, 31) and dorsal view (25, 27, 30, 32, 33), scale = 0.1 mm. 23-25: *T. schillhammeri* sp.n.; 26-27: *T. jaechi* sp.n.; 28: *T. ulrichi;* 29-30: *T. pamphylicus pamphylicus*; 31-32: *T. pamphylicus rudischuhi* ssp.n. (Namrun, type locality); 33: *T. pamphylicus rudischuhi* ssp.n. (Osmaniye).

Material of *T. pamphylicus pamphylicus* JEANNE, 1996 examined (Figures 39, 30): 49 ♂♀: Turkey S, Antalya Prov., W-Toros, Geyik Daglari, Pass ENE of Yarpuz, 1800 m, 2.IV.2004, leg. Donabauer (coll. MD).

Diagnosis: Specimens of the newly described taxon are small, slender, with strongly reduced and non-functional wings, strongly depigmented, and with large eyes. They are very closely related to *T. pamphylicus* s.str. in the *T. austriacus* group, but the males have a significantly more strongly pronounced constriction on the aedeagus which is located, in dorsal view, before the apex on the right side (compare Figure 30 with 32 and 33).

Description: Habitus as in Figure 22; length 2.9-3.4 mm. Body elongate and flat, elytra elongate. Body weakly pigmented, entirely pale; head slightly darker; legs and antenna pale, not contrasting with body.

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Head and pronotum with strong microsculpture; elytra shinier and with slightly less developed, clearly visible microsculpture (examined at 40 x). Antenna moderately slender, of normal length. Eyes large, not reduced in size, convex, length of temples much shorter than eye diameter.

Pronotum weakly rounded laterally, rather flat on disc, maximal width before middle, weakly constricted and not sinuate before small and obtuse basal angles, anterior margins nearly straight; posterior margin straight in the middle, oblique near basal angles; front angles rounded and not prominent; basal angles obtuse and slightly projecting; basal fovae very weakly impressed; median line distinct, almost extended to margins.

Elytra elongate, flat, shoulders rounded and moderately prominent; inner striae (1-4) on disc very fine, slightly impressed, irregularly punctuate, posterior and lateral (5-6) hardly visible; outermost striae indistinct. Stria 3 with two normal dorsal pores.

Aedeagus (Figures 31-33): The aedeagus – although rather simple – is highly characteristic, at least for the species from southern Turkey. Aedeagus in lateral view simple, equally rounded, normal-sized (ca. 34 % of EL), apex short, down-turned; aedeagus in dorsal view parallel-sided, apex on right side with characteristic projection; internal sack with weakly developed scales; one simple and very large copulatory piece clearly visible (Figure 31); parameres in accordance with general form of aedeagus normal, with 3 or 4 short apical seta each.

Etymology: This subspecies is dedicated to the Austrian entomologist Rudolf (Rudi) Schuh.

Notes: Further investigations in the Toros Mountains are needed to clarify if this population represents a valid species or just a subspecies. Both subspecies are known from single locations in a distance of approximately 200 km. I collected *T. pamphylicus pamphylicus* exactly at the type locality in a deep sinkhole at the border of a melting snow field at timberline. This might indicate a highly specialized way of life and therefore isolation between populations sufficient for speciation. On the other hand additional populations possibly exist in the hardly accessible mountain ranges between these two locations.

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Table of measurements (mm) and proportions of new species

		BL	HW	PWA	PW	PWB	PL	EW	EL	AL	AEL	EL/EW	PW/PL	AL/BL
T. franzschuberti	AVG	3.87	0.88	0.77	1.10	0.76	0.75	1.63	2.19	1.87	0.59	1.34	1.47	0.48
	MIN	3.65	0.85	0.75	1.05	0.70	0.75	1.55	2.05	1.70	0.55	1.28	1.40	0.45
	MAX	4.00	0.90	0.80	1.15	0.80	0.75	1.70	2.30	2.00	0.60	1.41	1.53	0.52
T. fritzbeneschi		3.75	0.75	0.75	1.10	0.85	0.75	1.60	2.25	2.00	1.20	1.41	1.47	0.53
T. boludagensis	AVG	3.38	0.68	0.66	0.90	0.67	0.64	1.44	2.01	1.67	0.88	1.40	1.41	0.49
	MIN	3.20	0.60	0.60	0.80	0.60	0.60	1.25	1.85	1.60	0.85	1.33	1.29	0.48
	MAX	3.55	0.75	0.70	1.00	0.70	0.70	1.60	2.20	1.75	0.95	1.48	1.50	0.52
T. schillhammeri		3.35	0.70	0.70	1.00	0.70	0.68	1.40	2.00	1.65	1.05	1.43	1.48	0.49
T. akkusianus	AVG	3.57	0.70	0.70	0.99	0.70	0.72	1.50	2.06	1.84	1.13	1.37	1.38	0.52
	MIN	3.55	0.70	0.70	0.95	0.65	0.70	1.45	2.05	1.80	1.10	1.35	1.33	0.50
	MAX	3.60	0.70	0.70	1.05	0.75	0.75	1.55	2.10	1.90	1.20	1.41	1.43	0.53
T. uenyeensis	AVG	3.32	0.70	0.67	0.98	0.68	0.67	1.47	1.94	1.78	0.98	1.32	1.46	0.54
	MIN	3.20	0.70	0.60	0.95	0.65	0.65	1.40	1.85	1.70	0.95	1.30	1.43	0.52
	MAX	3.40	0.70	0.70	1.00	0.70	0.70	1.50	2.05	1.85	1.00	1.37	1.54	0.55
T. jaechi	AVG	3.08	0.63	0.62	0.86	0.59	0.58	1.28	1.78	1.62	0.59	1.39	1.47	0.52
	MIN	3.00	0.60	0.60	0.80	0.55	0.55	1.20	1.70	1.50	0.55	1.33	1.42	0.50
	MAX	3.25	0.65	0.65	0.90	0.65	0.60	1.35	1.90	1.70	0.60	1.42	1.55	0.55
T. pamphylicus	AVG	3,15	0,61	0,61	0,85	0,66	0,61	1,26	1,85	1,71	0,68	1,47	1,40	0,54
rudischuhi	MIN	2,85	0,55	0,55	0,80	0,65	0,55	1,15	1,70	1,60	0,65	1,44	1,31	0,53
	MAX	3,40	0,65	0,65	0,90	0,70	0,65	1,35	2,00	1,85	0,70	1,48	1,45	0,56

AVG – Average; MIN – Minimum; MAX – Maximum; BL – Body length from labrum to apex of elytra; HW – Head width including eyes; PWA – Width of pronotum between front angles; PW – Maximal width of pronotum; PWB – Width of pronotum between basal angles; PL – Length of pronotum; EW – maximal width of elytra; EL – Length of elytra; AL – Length of antenna; AEL – Maximal length of aedeagus in lateral view (diagonal).

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