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Five New *Trechus* from Northeastern Turkey (Coleoptera: Carabidae: Trechinae)

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Abstract

Five new species of the genus *Trechus* CLAIRVILLE, 1806 are described from the eastern Pontic region of Turkey: *T. davidwrasei* sp.n., *T. dostali* sp.n., *T. schuhi* sp.n., *T. weiserti* sp.n. and *T. zetteli* sp.n. All new species are closely related to *T. lazicus* PAWLOWSKI, 1976 and *T. karadenizus* PAWLOWSKI, 1976 and are therefore assigned to the *T.* (s.str.) *osmanilis* group sensu PAWLOWSKI (1979). Two new and exact collection sites of the insufficiently known *T. fritzbeneschi* DONABAUER, 2006 are reported. A list of taxa from the Pontic region in Turkey is provided.

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

Zusammenfassung

Fünf neue Arten der Gattung *Trechus* CLAIRVILLE, 1806 werden aus der östlichen pontischen Region in der Türkei beschrieben: *T. davidwrasei* sp.n., *T. dostali* sp.n., *T. schuhi* sp.n., *T. weiserti* sp.n., und *T. zetteli* sp.n. Alle neuen Arten sind mit *T. lazicus* PAWLOWSKI, 1976 und *T. karadenizus* PAWLOWSKI, 1976 nahe verwandt und werden der *T.* (s.str.) *osmanilis* Gruppe sensu PAWLOWSKI (1979) zugeordnet. Zwei neue und exakte Fundorte des ungenügend bekannten *T. fritzbeneschi* DONABAUER, 2006 werden gemeldet. Alle Arten, die bisher aus der Pontischen Region in der Türkei gemeldet worden sind, werden gelistet.

Introduction

This is my fourth contribution to the knowledge of *Trechus* CLAIRVILLE, 1806, from Turkey. The main purpose of this paper is to describe five new species from the Tatos Daglari mountain range in the eastern Pontic region of Turkey collected by Dr. M. Schülke and Prof. H. Franz. All new species belong to the *osmanilis*-group, which is of special importance for the high diversity of this genus in northern Turkey (DONABAUER 2004, 2006, 2007).

Many new species from the Pontic region have been described in recent years, and therefore the latest monographic treatment (PAWLOWSKI, 1979) is already out-dated. A list of all taxa reported from this region is appended in order to provide a quick review of our present knowledge. This extraordinary diverse fauna consists of 47 species: Six taxa are widespread, all others are of limited distribution (87%).

I want to thank David Wrase (Berlin) and Dr. Heinrich Schönmann (Natural History Museum Vienna), who provided me with specimens for determination. Furthermore I am grateful to Dr. Alexander Dostal and Dr. Peter Cate for reviewing this paper. Please refer to DONABAUER (2006) for methods.

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Description of new species

The description of 19 (DONABAUER 2004, 2006, 2007; MORAVEC & ZIERIS 1998) new species since the last monographic treatment by PAWLOWSKI (1979) makes it necessary to adapt the established grouping of species at least for the Pontic region. The extraordinary complicated situation in the Caucasus is out of the scope of this paper. I propose the inclusion of the *bradycelloides*-group sensu PAWLOWSKI, 1979, in the *osmanilis*-group sensu PAWLOWSKI, 1979. The extreme similarity between *T. lazicus* (previously assigned to *osmanilis*-group) and *T. michaeli* (previously *bradycelloides*-group) in respect of several aedeagal characteristics (compare fig. 9 with 10) strongly indicates that these two groups cannot be separated. Further more, all Turkish members of the *bradycelloides*-group sensu PAWLOWSKI, 1979 are closely related to *T. michaeli*.

The *osmanilis*-group in Turkey is the result of a moderate adaptive radiation in the first step, followed by an extreme pulverization into vicariant sister-species by fragmentation. The highest level of diversification is found in the Tatos Daglari in NE Turkey.

All species treated in the following section belong to the *T. osmanilis* group and are within this group closely related to *T. michaeli*, *T. schillhammeri* (both placed originally in the *bradycelloides*-group), *T. lazicus* and *T. karadenizus* (placed originally in the *osmanilis*-goup). All herein treated species are distributed in the eastern Pontic region and are extremely similar to each other. These species can be characterized by the complicated shape of the copulatory plate in the aedeagus:

- Aedeagus in lateral view thick and large, basal part strongly developed, apex variable but always turned up.

- Apex of aedeagus in dorsal view more or less symmetric or often twisted to left side, tip pointed. Apex never parallel-sided or bottle-like.

- Copulatory pieces fused and forming a complicated, large-sized and antler-like, strongly asymmetric shaped plate in the ventral part of the aedeagus. This plate consists of an apical, strongly developed spike (LV – left ventral), twisted to left AND a more basal shorter spike or plate on the right side (RV – right ventral). Basal part strongly developed and armed with a dorsal spike (D – dorsal) of variable prominence (almost obsolete in *T. michaeli*).

A close relationship to species with less modified copulatory plates on the one hand (e.g. *T. walteri*) and to such with more derived ones (e.g. *T. ziganensis*) is obvious. Therefore the herein treated species do not form a monophyletic group. Nevertheless for practical reasons I call it "*lazicus*-subgroup".

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Trechus (s.str.) *dostali* sp.n. (Fig. 1, 2)

TYPE MATERIAL: Holotype ♂ (coll. NMW) and 5 paratypes (1♂, 4♀♀): Turkey NE, S of Rize, Tatos/Soganli Daglari, Soganli Pass, 2000-2200 m, leg. F. Schubert (coll. NMW, MD); 6 paratypes (2♂♂, 4♀♀): "Turkey (Gümushane), ca. 50 km S Trabzon, NE Kürtün, 1430 m, 40°43'42N, 39°12'54E, 27.VII.2006 M. Schülke [11]" (coll. DW, MD); 9 paratypes (3♂♂, 6♀♀): "Turkey (Trabzon), ca. 40 km S Trabzon, Altindere Milli Park, 1650 m, 40°40'42N, 39°40'08E, 26.VII.2006 M. Schülke [9]" (coll. DW, MD); 1 paratype (1♂): "Turkey (Trabzon); ca. 40 km S Trabzon, Altindere Milli Park, 1650 m; 40°40'42N, 39°39'25E, 26.VII.2006 M. Schülke [10]" (coll. DW).

DIAGNOSIS: This species is closely related to *T. karadenizus* and *T. lazicus* and can be separated solely by aedeagal characteristics, especially by the shape of the copulatory pieces.

DESCRIPTION: Body broad and moderately convex. Body entirely reddish; legs pale; antennae pale reddish.

Head with strong microsculpture; elytra and pronotum shinier and with less developed, but clearly visible microsculpture (examined at 40 x). Antennae 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 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: Aedeagus in lateral view (Fig. 1A, 2A) typical for the *lazicus*-subgroup, average in every respect, apex slightly turned up at tip. Aedeagus in dorsal view (Fig. 1B, 2B) almost straight, apex slightly asymmetric (much less so than in most other species). Copulatory pieces (Fig. 1C, 2C) of typical shape for *lazicus*-subgroup: D well developed, of average length, not reaching level of RV; LV sharp, slightly turned to left; RV sharply angled, much shorter than LV; LV and RV generate a flat triangle without prominent ridges. Inner sack strongly covered with scales, perfectly hiding the copulatory pieces in lateral view.

DISCUSSION: This new species is comparably widespread, the westernmost representative of the *lazicus*-subgroup and one of the most basic taxa in respect of the modifications of the copulatory pieces. It is slightly variable within the distribution range in respect of the form of the copulatory pieces and the shape of the aedeagus. Nevertheless a separation of distinct subspecies is not indicated by the material at hand.

ETYMOLOGY: This species is dedicated to Dr. Alexander Dostal (Vienna), specialist on Scaritinae (Carabidae).

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Trechus (s.str.) *weiserti* sp.n. (Fig. 3)

TYPE MATERIAL: Holotype ♂ (coll. DW) and 41 paratypes (27♂♂, 14♀♀): "Turkey (Rize), 25 km SSE Rize, 4 km E Ikizdere 750 m; 40°47'14N, 40°35'31E, 1.VIII.2006 M. Schülke [23]" (coll. DW, MD).

DIAGNOSIS: This new species is closely related to *T. dostali* sp.n., *T. karadenizus* and *T. lazicus* and can be separated solely by aedeagal characteristics, especially by the very distinct shape of the copulatory pieces: inner sack armed with much fewer scales, D spike of copulatory pieces significantly longer and apical plate convex (instead of flat) and much larger.

DESCRIPTION: Please refer to the description of *T. dostali* sp.n.

AEDEAGUS: Aedeagus in lateral view (Fig. 3A) typical for the *lazicus*-subgroup, average in every respect, apex slightly turned up at tip. Aedeagus in dorsal view (Fig. 3B) almost straight, apex slightly asymmetric (much less so than in most other species); the right lateral side strongly enlarged just before apex. Copulatory pieces (Fig. 3C) of typical shape for *lazicus*-subgroup: D extraordinary elongated, reaching level of RV; LV shortly rounded, slightly turned to left, plate strongly convex and overlapping; RV rounded, shorter than LV; LV and RV generate a large convex triangle with rounded corners, without prominent ridge. Inner sack hardly covered with scales, copulatory pieces fully visible in lateral view.

ETYMOLOGY: This species is dedicated to Fritz Weisert (Vienna), the enthusiastic editor of this journal. I want to thank him for the many hours he has already spent on my publications.

Trechus (s.str.) *karadenizus* PAWLOWSKI, 1976 (Fig. 4)

MATERIAL EXAMINED: 48 ex.: "Turkey (Rize), ca. 40 km S Ardesen, Cat, 1240 m (Alnus forest), 40°51'44N, 40°56'25E, 3.VIII.2006 M. Schülke [33]" (coll. DW, MD); 2♂♀: "Turkey (Rize), 25 km SE Rize, 860 m (mixed forest, Rhod.), 40°54'04N, 40°46'04E, 2.VIII.2006 M. Schülke [30]" (coll. DW, MD); 7 ex. (4♂♂, 3♀♀): "Turkey (Rize), ca. 30 km S Ardesen, 750 m (moist forest, Rhodod.), 40°55'31N, 40°57'46E, 3.VIII.2006 M. Schülke [32]" (coll. DW, MD).

DIAGNOSIS: Immediately recognized by the prominent and strongly developed ridge on the copulatory plate (Fig. 4C). Such a ridge is missing in all other known species with the exception of *T. schuhi* sp.n. (Fig. 7C) and *T. schillhammeri* (Fig. 8C) with totally differently shaped copulatory pieces.

AEDEAGUS: Aedeagus in lateral view typical for the *lazicus*-subgroup, very similar to aedeagus of *T. dostali* sp.n. Aedeagus in dorsal view not straight, S-shaped, apex strongly asymmetric (more so than in previous species). Copulatory pieces of typical shape for *lazicus*-subgroup: D strongly developed, rather long, not reaching level of RV; LV sharp, slightly turned to left; RV rounded, not sharply angled, much shorter than LV; LV and RV generate triangle with a very prominent transversal ridge (difference to *T. dostali* sp.n. and *weisert* sp.n.). Inner sack covered with scales, partly hiding the basal-central parts of copulatory pieces in lateral view.

DISCUSSION: *Trechus kackardagi* was described from the same area, but from higher altitudes. This species was placed together with *T. lazicus* and *T. karadenizus* in the same species-group. Unfortunately I could not study any specimens, but according to the line drawings provided by PAWLOWSKY (1979: pg. 325, Fig. 125-128) this

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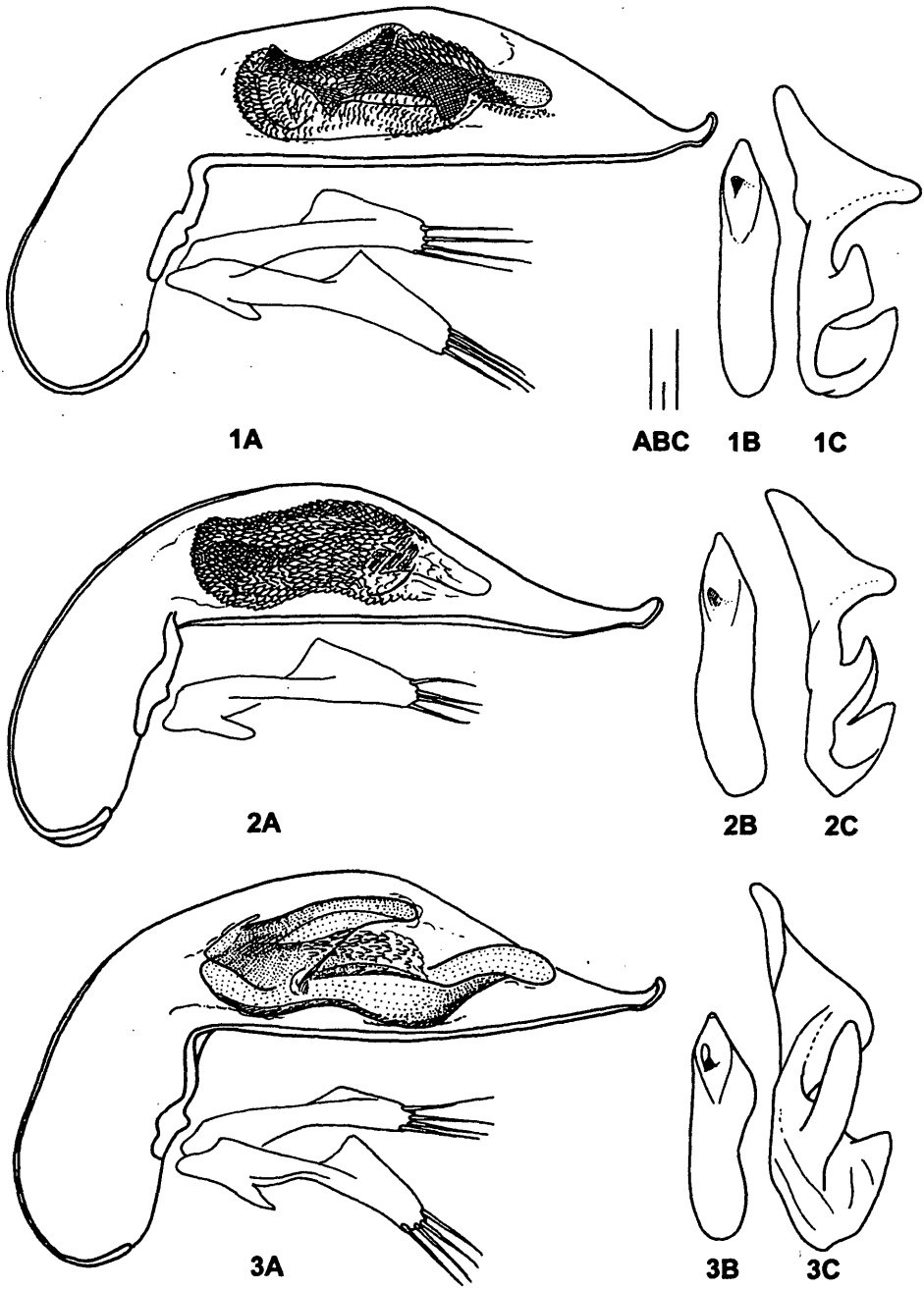

Fig. 1-3: Aedeagus in lateral (A), dorsal view (B), extracted copulatory pieces (C); scale = 0.1 mm: 1) *T. dostali* sp.n. (Altindere Mili Park); 2) *T. dostali* sp.n. (Soganli Pass); 3) *T. weiserti* sp.n. (Ikizdere).

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species is not closely related to the herein treated species. It seems to be closely related to *T. machardi* and *T. fritzbeneschi* as indicated by the significantly more elongated shape of aedeagus with hooked apex and the smaller and simpler copulatory pieces. Nevertheless these three species should be included in the *T. osmanilis*-group as well.

***Trechus* (s.str.) *zetteli* sp.n.** (Fig. 5)

TYPE MATERIAL: Holotype ♂ (coll. NMW) and 3 paratypes (2♂♂, 1♀): "Turkey NE, Tatos Daglari, Rize, Ikizdere, 26.VI.1973, leg. F. Schubert" (coll. NMW, MD); 20 paratypes (8♂♂, 12♀♀): "Turkey (Rize), 25 km SSE Rize, 7 km E Ikizdere 1030 m; 40°47'01N, 40°38'18E (mixed forest), 31.VII.2006 M. Schülke [24]" (coll. DW, MD, TL); 26 paratypes (15♂♂, 11♀♀): "N-Anatolien, lg. H. Franz, Camova b. Dereköy, unt. Ovoidagi Cecidi [M16]" (coll. NMW, MD).

DIAGNOSIS: This new species is closely related to *T. dostali* sp.n., *T. weiserti* sp.n., *T. karadenizus* and *T. lazicus* and can be separated solely by aedeagal characteristics, especially by the very distinct shape of the copulatory pieces: LV is much more elongated than in any other species.

DESCRIPTION: Please refer to the description of *T. dostali* sp.n.

AEDEAGUS: Aedeagus in lateral view (Fig. 5A) typical for the *lazicus*-subgroup, average in every respect, apex slightly turned up at tip. Aedeagus in dorsal view (Fig. 5B) almost straight, apex strongly asymmetric; just before apex the right lateral side strongly enlarged. Copulatory pieces (Fig. 5C) of typical shape for *lazicus*-subgroup: D short, far away from reaching level of RV, but still well-developed; LV sharp, slightly turned to left, straight, extraordinary elongated; RV rounded, much shorter than LV; LV and RV do not generate a triangle; without prominent ridge. Inner sack hardly covered with scales, copulatory pieces fully visible in lateral view.

ETYMOLOGY: This species is dedicated to Dr. Herbert Zettel (Vienna), specialist on water bugs at the Natural History Museum, Vienna.

DISCUSSION: This interesting species was collected just some hundred meters away from *T. weiserti* sp.n., from which it can be consistently distinguished by several aedeagal characteristics.

***Trechus* (s.str.) *davidwrasei* sp.n.** (Fig. 6)

TYPE MATERIAL: Holotype ♂ (coll. DW) and 1♀ paratype: "Turkey (Rize), 25 km ESE Rize, S Kaptanpasa, 690 m, 40°56'56N, 40°46'30E (mixed forest), 5.VIII.2006 M. Schülke [28]" (coll. DW); 2♂♀ paratypes: "Turkey (Rize), 25 km SE Rize, 860 m, 40°54'04N, 40°46'04E (mixed forest, Rhododendron), 2.VIII.2006 M. Schülke [30]" (coll. MD).

DIAGNOSIS: This new species is closely related to *T. dostali* sp.n., *T. weiserti* sp.n., *T. karadenizus, T. zetteli* sp.n. and *T. lazicus* and can be separated solely by aedeagal characteristics, especially by the distinct shape of the copulatory pieces: apical plate of copulatory pieces is very large and flat forming a parallelogram.

DESCRIPTION: Please refer to the description of *T. dostali* sp.n.

AEDEAGUS: Aedeagus in lateral view (Fig. 6A) typical for the *lazicus*-subgroup, average in every respect, but more slender, apex slightly turned up at tip. Aedeagus in dorsal view (Fig. 6B) almost straight, apex strongly asymmetric; just before apex the right lateral side strongly enlarged. Copulatory pieces (Fig. 6C) of typical shape for

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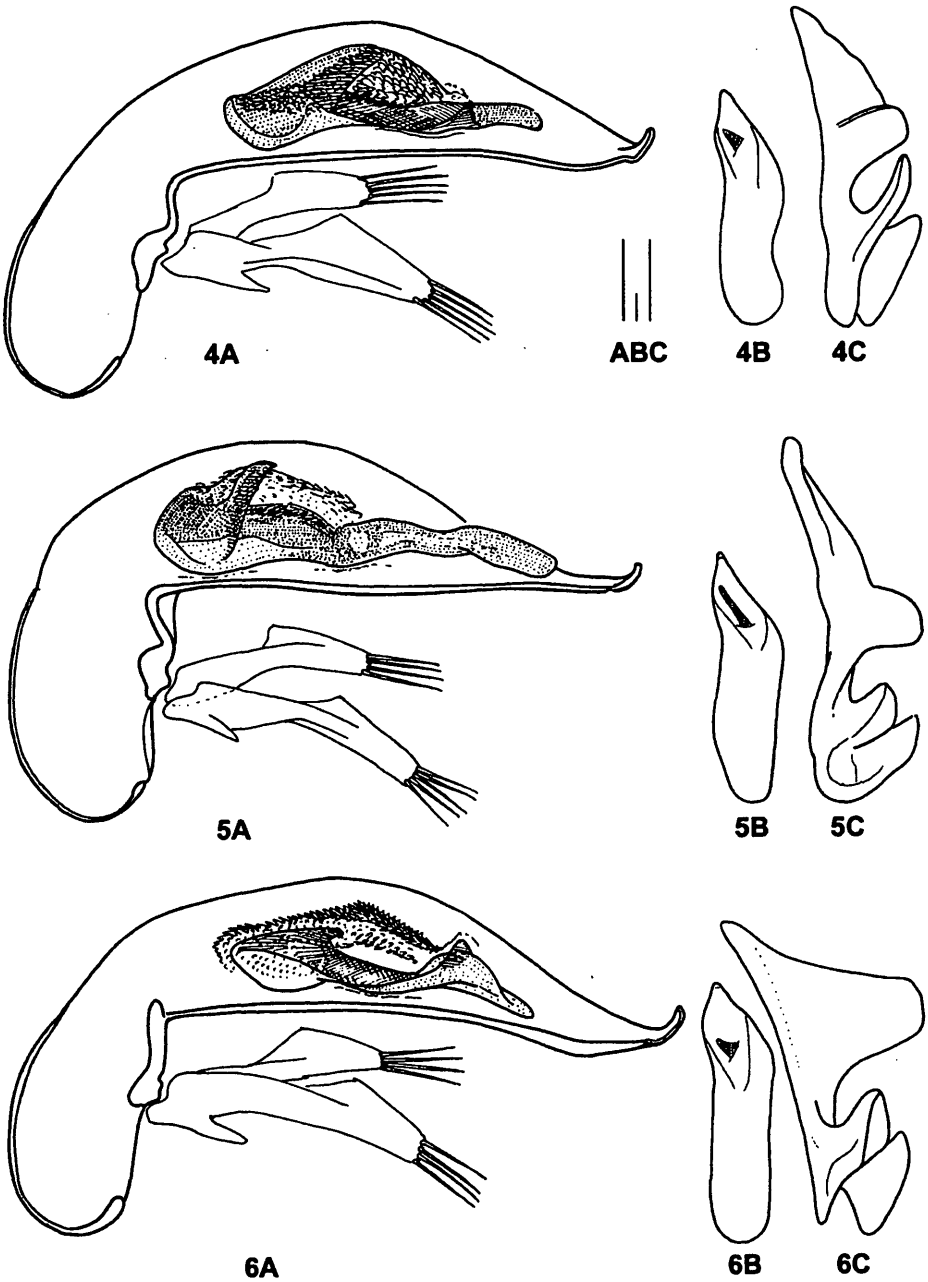

Fig. 4-6: Aedeagus in lateral (A), dorsal view (B), extracted copulatory pieces (C); scale = 0.1 mm: 4) *T. karadenizus* (Ardesen); 5) *T. zetteli* sp.n. (Ikizdere); 6) *T. davidwrasei* sp.n. (25 km SE Rize).

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lazicus-subgroup: D short, far away from reaching level of RV, but still well-developed; LV sharp, slightly turned to left, straight, rather short; RV huge, like a flag with rounded corners; LV and RV do not generate a triangle, but a large parallelogram; apical plate without prominent ridge. Inner sack hardly covered with scales, copulatory pieces fully visible in lateral view.

ETYMOLOGY: This species is dedicated to David Wrase (Berlin), specialist on carabid beetles.

Trechus (s.str.) *schuhi* sp.n. (Fig. 7)

TYPE MATERIAL: Holotype ♂ (coll. NMW) and 27 paratypes (14♂♂, 13♀♀): "N-Anatolien, lg. H. Franz, Umg. Rize, Küstengebirge [AZ32]" (coll. NMW, MD).

DIAGNOSIS: This new species is closely related to *T. schillhammeri* and can be separated solely by aedeagal characteristics, especially by the very distinct shape of the copulatory pieces. Nevertheless it is clearly showing all aedeagal characteristics of the previously treated species, although significantly more developed. Therefore *T. shillhammmeri* (originally placed in the *bradycelloides*-group) and *T. schuhi* sp.n. belong to the *T. osmanilis*-group.

DESCRIPTION: Please refer to the description of *T. dostali* sp.n.

AEDEAGUS: Aedeagus in lateral view (Fig. 7A) typical for the *lazicus*-subgroup, but slightly thicker, slightly blown up in central part resulting in more convex ventral and dorsal borders, apex turned up at tip, thicker than in all previous species. Aedeagus in dorsal view (Fig. 7B) almost straight, apex strongly asymmetric; the right lateral side strongly enlarged just before apex. Copulatory pieces (Fig. 7C) of typical shape for *lazicus*-subgroup, but highly modified: D strongly developed; RV extraordinary large, straight; LV shorter, transformed into a complex plate with two sharp angles; RV and LV generating a medium sized plate with U-shaped apical border AND an extraordinary high U-shaped transversal ridge connecting the two most apical corners. Inner sack hardly covered with scales, copulatory pieces fully visible in lateral view.

ETYMOLOGY: This exciting new species is dedicated to Rudi Schuh (Wiener Neustadt), specialist on Colidiidae.

Trechus (s.str.) *schillhammeri* Donabauer, 2006 (Fig. 8)

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

AEDEAGUS: Aedeagus in lateral view (Fig. 8A) slightly atypical for the *lazicus*-subgroup due to the slightly blown up central part and a uniquely modified, spoon-like and slightly upturned apex. Aedeagus in dorsal view (Fig. 8B) not straight, apex strongly asymmetric, twisted to the left and – unique within *Trechus* of Turkey – strongly constricted before apex, spoon-shaped. Copulatory pieces extraordinary complicated but in principal of typical shape for *lazicus*-subgroup: Dorsal spike (D) very strongly developed, rather long, reaching the level of apical plate; left ventral spike (LV) is short, sharp, slightly turned to right (!); RV splitted into two angles, apically sharply angled and of equal length as LV (!); between LV and RV the apical plate is cut out in U-shape (!) and accompanied by a parallel apical and vertical ridge in U-shape reaching from LV to RV; LV and RV generate a large and strongly 3 dimensional plate. Inner sack not covered with dense scales.

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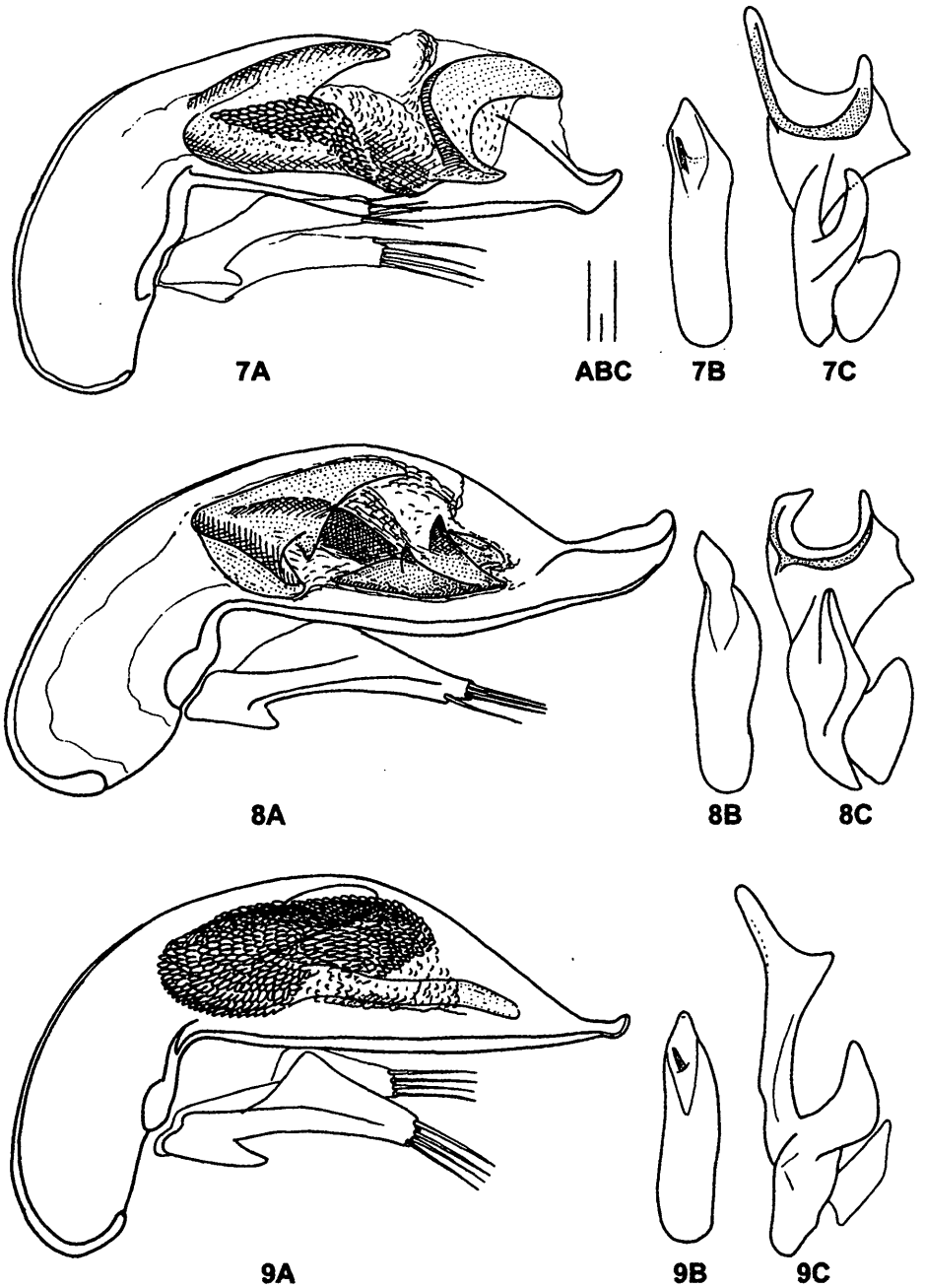

Fig. 7-9: Aedeagus in lateral (A), dorsal view (B), extracted copulatory pieces (C); scale = 0.1 mm: 7) *T. schuhi* sp.n. (Rize); 8) *T. schillhammeri* (Rize); 9) *T. lazicus* (Borcka).

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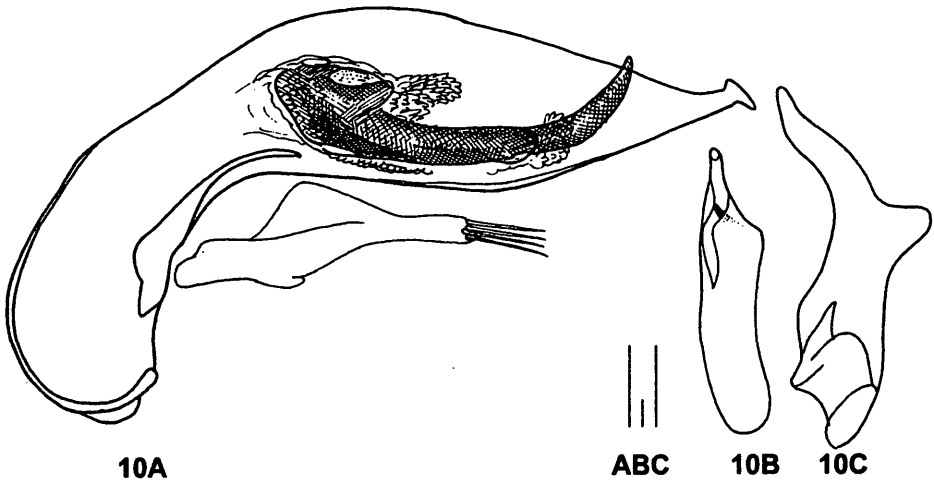

Fig. 10: Aedeagus in lateral (A), dorsal view (B), extracted copulatory pieces (C); scale = 0.1 mm: 10) *T. michaeli* (Borcka).

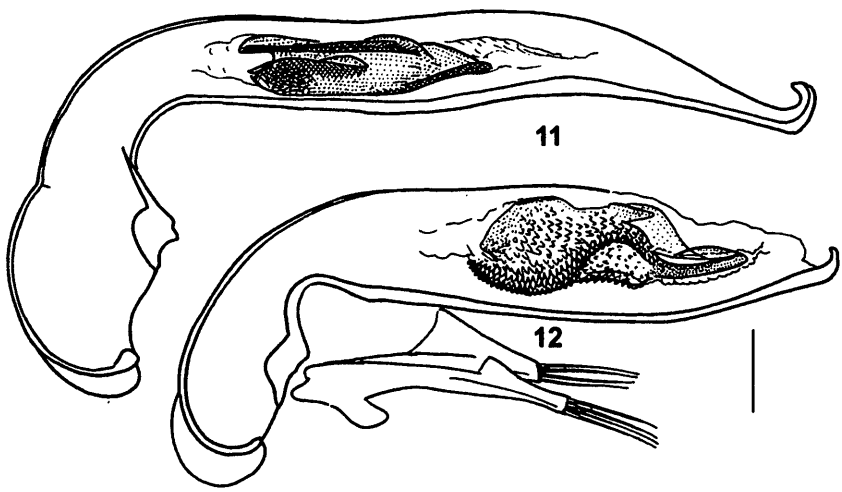

Fig. 11-12: Aedeagus in lateral view; scale = 0.1 mm: 11) *T. fritzbeneschi* (Rize); 12) *T. machardi* (Borcka).

Trechus (s.str.) *lazicus* Pawlowski, 1976 (Fig. 9)

MATERIAL EXAMINED: 22 ex.: Turkey NE, Tatos Daglari, Borcka, 1700 m, 13-27.VI.1970, leg. F. Schubert (coll. MD, NMW).

AEDEAGUS: Aedeagus in lateral view (Fig. 9A) typical for the *lazicus*-subgroup, rather thick, apex very slightly turned up at tip. Aedeagus in dorsal view (Fig. 9B) almost straight, apex almost symmetric. Copulatory pieces (Fig. 9C) of typical shape for *lazicus*-subgroup: D strongly developed, not reaching level of RV; LV very sharp and elongated,

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slightly turned to left; RV sharp, much shorter than LV; LV and RV generate an elongated piece without the otherwise typical flat apical plate and without prominent ridges. Inner sack strongly covered with scales, perfectly hiding the copulatory pieces in lateral view.

DISCUSSION: This species is the easternmost representative of the *lazicus*-subgroup and is very characteristic by the highly diagnostic shape of copulatory pieces: the slender and elongated shape is most similar to that of *T. michaeli* (Fig. 10), which might be the closest related species. *Trechus michaeli* can be distinguished immediately by the strongly reduced dorsal spike, the totally different shape of the aedeagal apex in lateral view and the strongly asymmetric aedeagal apex in dorsal view.

Additional Faunistic and Taxonomic Notes

***Trechus* (s.str.) *fritzbeneschi* DONABAUER, 2006** (Fig. 11)

MATERIAL EXAMINED: Holotype ♂: Turkey NE, Tatos Daglari, Rize/Ikizdere, 26.VI.1976, leg. F. Schubert (coll. NMW); 2 ex. (1♂, 1♀): Turkey (Rize), ca. 40 km SSE Rize, W Sivrikaya, 2050 m, 40°41'27N, 40°38'44E (Abies forest), 1.VIII.2006 M. Schülke [26]" (coll. DW); 2 ex. (1♂, 1♀): Turkey (Rize), ca. 35 km SSE Rize, S Camisk, 1380 m, 40°42'33N, 40°38'36E (Alnus forest), 1.VIII.2006 M. Schülke [26]" (coll. MD).

This species was previously known solely from the unique holotype. The two new records provide the first exact distributional records. The condition of the new specimens is significantly better than that of the holotype. The general shape of the aedeagus and of the copulatory pieces indicate a close relationship of *T. fritzbeneschi* (originally placed in the *bradycelloides*-group, Fig. 11) to *T. machardi* (*maculicornis*-group, Fig. 12) and *T. kackardagi* (*osmanilis*-group). Therefore these species should better be included in the *osmanilis*-group as well.

List of *Trechus* of the "Pontic region" in Turkey

"Pontic region" is understood as used by PAWLOWSKI (1979, page 430: region B and C)

Abbreviations used: END – endemic species with limited distribution (single mountain or mountain range); W – distributed in the west Pontic region; E – distributed in east Pontic area; A – alpine habitats; S – subalpine habitats; M – montane habitats.

T. (s.str.) *osmanilis*-group
= *bradycelloides* group sensu PAWLOWSKI (1979)

1. *T. amasraensis* DONABAUER, 2004	END	W	M	Küre Daglari West: Amasra env.
2. *T. besucheti* PAWLOWSKI, 1977	END	W	M	Küre Daglari Central
3. *T. boludagensis* DONABAUER, 2006	END	W	M	Bolu Dag
4. *T. diogenes* PAWLOWSKI, 1979	END	W	M	Küre Daglari East
5. *T. ilgazicus* PAWLOWSKI, 1976	END	W	S	Ilgaz Daglari
6. *T. osmanilis* K. & J. DANIEL, 1902	END	W	M	Istanbul env.
7. *T. safranboluensis* DONABAUER, 2004	END	W	M	Küre Daglari West: N of Safranbolu
8. *T. zonguldakensis* DONABAUER, 2004	END	W	M	Zonguldak env.

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9. *T. barbaritae* DONABAUER, 2004	END	E	M	Giresun Daglari
10. *T. lebenbaueri* DONABAUER, 2004	END	E	M	Giresun Daglari
11. *T. orduensis* DONABAUER, 2007	END	E	M	Giresun Daglari
12. *T. uenyeensis* DONABAUER, 2006	END	E	M	Giresun Daglari
13. *T. akkusianus* DONABAUER, 2006	END	E	M	Giresun Daglari
14. *T. davidwrasei* sp.n.	END	E	M	Tatos Daglari
15. *T. dostali* sp.n.	END	E	M	Tatos Daglari
16. *T. fritzbeneschi* DONABAUER, 2006	END	E	S	Tatos Daglari
17. *T. heinzianus* PAWLOWSKI, 1979	END	W	S	Tatos Daglari
18. *T. ilgazensis* DONABAUER, 2006	END	W	S?	Ilgaz Dag
19. *T. kackardagi* PAWLOWSKI, 1978	END	E	A	Tatos Daglari
20. *T. karadenizus* PAWLOWSKI, 1976	END	E	M	Tatos Daglari
21. *T. lazicus* PAWLOWSKI, 1976	END	E	M	Tatos Daglari
22. *T. machardi* JEANNE, 1976 = *korgei* PAWLOWSKI, 1976	END	E	A	Tatos Daglari
23. *T. michaeli* PAWLOWSKI, 1978	END	E	S	Tatos Daglari
24. *T. schillhammeri* DONABAUER, 2006	END	E	M	Tatos Daglari
25. *T. schuhi* sp.n.	END	E	M	Tatos Daglari
26. *T. skoupyi* P. MORAVEC & ZIERIS, 1998	END	E	A	Mescit Daglari
27. *T. walteri* PAWLOWSKI, 1978	END	E	S	Tatos Daglari
28. *T. weiserti* sp.n.	END	E	M	Tatos Daglari
29. *T. zetteli* sp.n.	END	E	M	Tatos Daglari
30. *T. ziganensis* JEANNE, 1976	END	E	S	Zigana pass

T. (s.str.) *subnotatus*-group

31. *T. asiaticus* JEANNEL, 1927	-			Widespread in Turkey
32. *T. byzantinus* APFELBECK, 1901	END	W	M	Istanbul env.
33. *T. genevanorum* PAWLOWSKI, 1977	END	W	M	Bursa env.
34. *T. quadrimaculatus* MOTSCHULSKY, 1850	-	E	M	Tatos Daglari, Caucasus and Iran

T. (s.str.) *austriacus*-group

35. *T. austriacus* DEJEAN, 1831	-			Widespread in Turkey
36. *T. crucifer* LA BRÛLERI, 1876	-			Widespread in Turkey
37. *T. paphlagonicus* MARAN, 1940	END	W	A	Ilgaz Dag

T. (s.str.) *gravidus*-group

38. *T. gravidus* PUTZEYS, 1870	-	E	M	W-Caucasus

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		***T.* (s.str.) *caucasicus*-group**		
39. *T. viti* PAWLOWSKI, 1977	END	E	M	Tatos Daglari C: Rize env.
40. *T. franzschuberti* DONABAUER, 2006	END	E	M	Tatos Daglari E: Borcka env.
		***T.* (s.str.) *liopleurus*-group**		
41. *T. loebli* PAWLOWSKI, 1977	END	W	M	
		***T.* (s.str.) *quadristriatus*-group**		
42. *T. cappadocicus* PAWLOWSKI, 1976	END	E	A	Giresun Daglari
43. *T. obtusus thracicus* PAWLOWSKI, 1973	END	W	M, S	NW Turkey
44. *T. quadristriatus* (SCHRANK, 1781)	-			W-palaearctic
45. *T. witkovskii* PAWLOWSKI, 1978	END	E	A	Tatos Daglari: Kackar Dag
		***T.* (s.str.) *tristis*-group**		
46. *T. tristis* (DUFTSCHMID, 1812)	-			Widespread in Turkey
		***T.* (s.str.) *aquilus*-group**		
47. *T. ulrichi* PAWLOWSKI, 1976	END	E	A	Tatos Daglari

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See next page for "Table of measurements"!

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Table of measurements (mm) and proportions of new species

AVG – Average; MIN – Minimum; MAX – Maximum; N – Number of observations; 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; AE – Maximal length of aedeagus in lateral view (diagonal).

		BL	HW	PWA	PW	PWB	PL	EW	EL	AL	AEL	EL/EW	PW/PL	AL/BL	AE/BL
T. dostali sp.n.	AVG	3.32	0.67	0.63	0.96	0.63	0.69	1.37	1.94	1.72	1.01	1.42	1.39	0.52	0.49
	MIN	3.05	0.63	0.60	0.88	0.60	0.63	1.25	1.75	1.60	1.00	1.37	1.36	0.50	0.47
	MAX	3.75	0.70	0.68	1.05	0.68	0.75	1.53	2.18	1.88	1.03	1.43	1.43	0.52	0.50
	N	5	5	5	5	5	5	5	5	5	2	5	5	5	2
T. weiserti sp.n.	AVG	3.37	0.69	0.66	0.99	0.66	0.69	1.44	2.04	1.78	0.99	1.42	1.44	0.53	0.48
	MIN	3.20	0.68	0.65	0.93	0.65	0.65	1.38	1.93	1.65	0.98	1.36	1.38	0.51	0.46
	MAX	3.50	0.73	0.70	1.03	0.70	0.73	1.50	2.15	1.88	1.00	1.54	1.48	0.55	0.49
	N	9	9	9	9	9	9	9	9	9	6	9	9	9	6
T. zettelli sp.n.	AVG	3.34	0.70	0.65	0.98	0.65	0.69	1.44	1.98	1.75	0.93	1.38	1.41	0.52	0.47
	MIN	3.15	0.68	0.60	0.90	0.60	0.65	1.40	1.90	1.68	0.90	1.35	1.34	0.51	0.46
	MAX	3.45	0.73	0.70	1.03	0.70	0.73	1.50	2.03	1.80	0.95	1.40	1.48	0.53	0.49
	N	8	8	8	8	8	8	8	8	8	5	8	8	8	5
T. davidwrasei sp.n.	AVG	3.33	0.69	0.64	0.97	0.64	0.69	1.38	2.00	1.71	1.08	1.45	1.40	0.51	0.51
	MIN	3.15	0.68	0.63	0.93	0.63	0.65	1.30	1.88	1.63	1.05	1.42	1.33	0.50	0.51
	MAX	3.60	0.73	0.65	1.00	0.65	0.75	1.50	2.13	1.80	1.10	1.49	1.43	0.53	0.52
	N	4	4	4	4	4	4	4	4	4	2	4	4	4	2
T. schuhi sp.n.	AVG	3.45	0.72	0.66	0.99	0.66	0.73	1.47	2.02	1.78	0.99	1.38	1.37	0.52	0.48
	MIN	3.30	0.68	0.63	0.95	0.63	0.68	1.43	1.93	1.73	0.95	1.35	1.33	0.49	0.48
	MAX	3.65	0.75	0.68	1.03	0.68	0.75	1.53	2.10	1.88	1.03	1.39	1.41	0.53	0.49
	N	8	8	8	8	8	8	8	8	8	5	8	8	8	5

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