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New and little known Palearctic species of the genus *Hydraena* KUGELANN VII (Insecta: Coleoptera: Hydraenidae)

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Abstract

Five new species of *Hydraena* s.str. KUGELANN (Coleoptera: Hydraenidae) are described from Turkey: *Hydraena bodemeyeri*, *H. imbria*, *H. pamphylia*, *H. schmidi*, *H. schubertorum. Hydraena terraevastatae* JÄCH, *H. samia* JÄCH, and *H. sinope* JÄCH stat.n. are considered as distinct species. *Hydraena aydini* JANSSENS is regarded as subspecies of *H. canakcioglui* JANSSENS. A revised check list of the Turkish species of the genus *Hydraena* is presented and includes 105 species.

Zusammenfassung

Fünf neue Arten von *Hydraena* s.str. KUGELANN (Insecta: Coleoptera: Hydraenidae) werden aus der Türkei beschrieben: *Hydraena bodemeyeri*, *H. imbria*, *H. pamphylia*, *H. schmidi*, *H. schubertorum. Hydraena terraevastatae* JÄCH, *H. samia* JÄCH und *H. sinope* JÄCH stat.n. werden formell als gute Arten ausgewiesen. *Hydraena aydini* JANSSENS wird als Subspezies von *H. canakcioglui* JANSSENS betrachtet. Eine revidierte Checklist der türkischen Arten der Gattung *Hydraena* wird präsentiert und inkludiert nunmehr 105 Arten.

Key words: Insecta, Coleoptera, Hydraenidae, *Hydraena*, taxonomy, new species, Turkey, Greece.

Introduction

The *Hydraena* KUGELANN fauna of Turkey is remarkably diverse: a total of 97 species was recorded from that country by JÄCH (1997), and there are obviously still numerous undescribed species roaming the remoter parts of Anatolia. In the present paper we describe five new species. In addition, we present a number of nomenclatoral notes on a few Greek and Turkish species and a revised check list of the Turkish species of this genus.

Acronyms:

CHG	Coll. Hebauer, Grafling	NMW	Naturhistorisches Museum, Wien
CSW	Coll. Schmid, Wien	PL	Projected Length of aedeagus (sensu JÄCH 1998)

Taxonomic notes on little known species

***Hydraena canackioglui* ssp. *aydini* JANSSENS** stat.n.: *Hydraena aydini* was originally described as a distinct species. It was regarded as possible synonym of *H. canakcioglui*

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JANSSENS by JÄCH (1988). However, due to several differences in the external morphology (see JÄCH 1988: 760) we regard *H. aydini* at least as a valid subspecies of *H. canakcioglui*. Further field work in northern Turkey seems necessary to find out whether there is any morphological overlap between these two morphotypes or whether they can in fact be regarded as distinct species.

***Hydraena samia* JÄCH**: *Hydraena samia* was originally described as a distinct species. It was synonymized with *H. levantina* by JÄCH (1992). However, this synonymy was based on the examination of the considerably teneral lectotype of *H. levantina.* Meanwhile, the senior author was able to collect 19 specimens of *H. levantina* in Lesbos (type locality of *H. levantina*). Based on the careful study of these specimens we conclude that *H. samia* is indeed a distinct species, which differs from *H. levantina* externally (see JÄCH 1992: 88) and genitalically (see Figs. 6 - 7): main piece slightly longer (PL: ca. 280 µm), more straight apically (lateral view); distal lobe distinctly thinner and more elongate; right paramere thinner. In the holotype of *H. samia* the dorsal cluster of setae on the main piece has three setae, which might be another specific difference to *H. levantina*, but may turn out to be an artefact.

***Hydraena sinope* JÄCH** stat.n.: *Hydraena sinope* was described as a subspecies of *H. septemlacuum* JÄCH by JÄCH (1992). However, there is very little morphological variability in each of them and we were so far not able to observe any morphological intermediates between *H. sinope* and *H. septemlacuum.* Therefore we regard *H. sinope* as a distinct species.

***Hydraena terraevastatae* JÄCH**: *Hydraena terraevastatae* was originally described as a distinct species. It was regarded as subspecies of *H. plastica* d'ORCHYMONT by JÄCH (1992). However, there is very little morphological variability in each of them and we were so far not able to observe any morphological intermediates between *H. terraevastatae* and *H. plastica.* Accordingly, we herewith re-establish the specific status for *H. terraevastatae*. Furthermore, these two species are geographically widely separated. *Hydraena terraevastatae* is quite common in easternmost Anatolia, whereas *H. plastica* seems to be endemic to the Uludağ [mountain] in western Turkey.

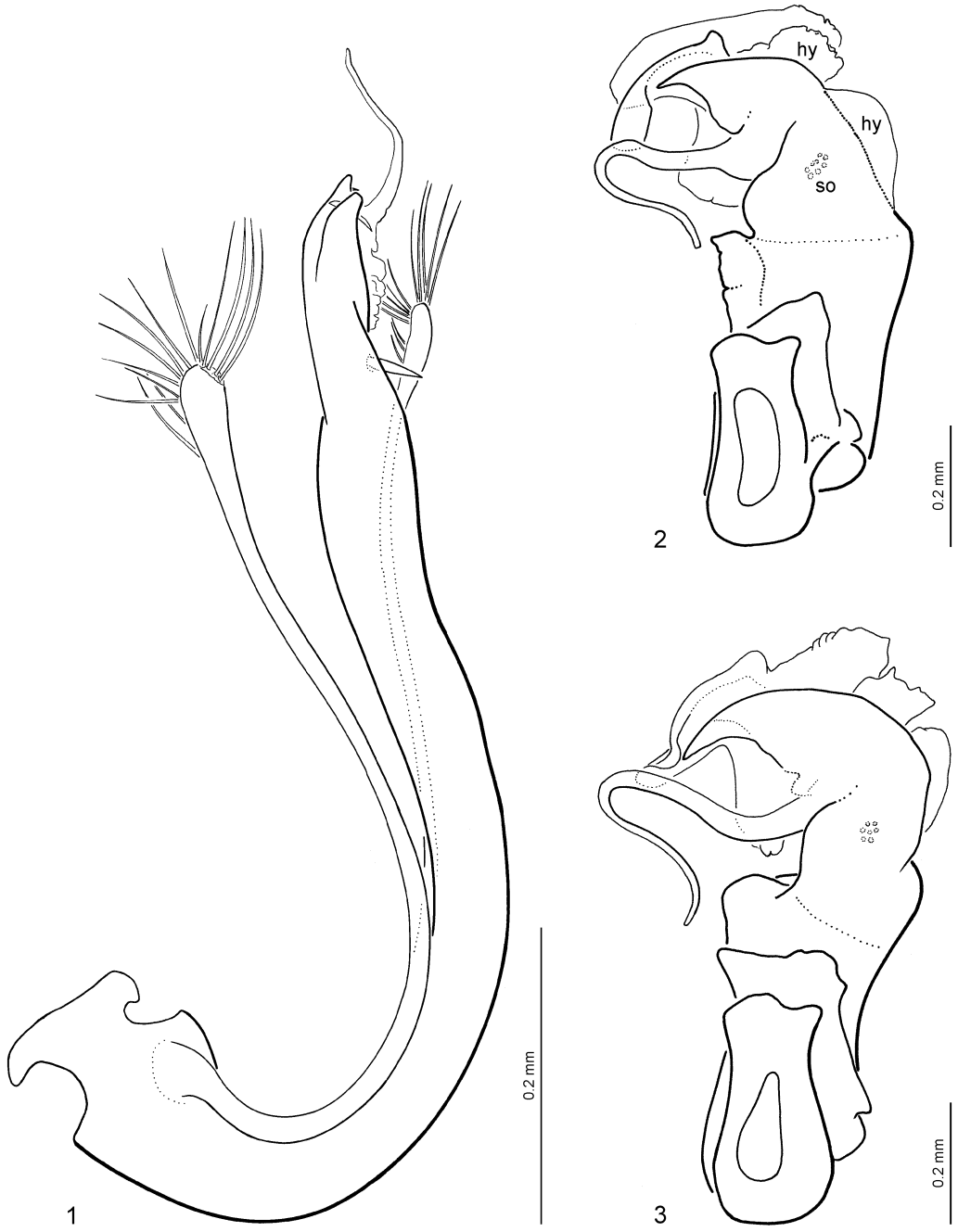
Description of new species

Hydraena (s.str.) *bodemeyeri* sp.n.

TYPE LOCALITY: Stream, ca. 1 m wide, ca. 4 km northwest of Soğukpınar, foot of Uludağ [mountain], south of Bursa, province of Bursa, northwestern Turkey.

TYPE MATERIAL: **Holotype** ♂ (NMW): "NW-ANATOLIEN(48) Uludag s Bursa leg.Jäch 1.8.88". **Paratypes**: 2 ♂♂, 2 ♀♀ (NMW), same label data as holotype.

DIFFERENTIAL DIAGNOSIS: 2.2 - 2.5 mm long. In general appearance (size, shape, colouration, secondary sexual characters), this species agrees very well with *H. holdhausi* PRETNER. Externally, these two species cannot be distinguished easily: metasternal plaques distinctly smaller in *H. bodemeyeri*; males: elytra slightly more parallel-sided in *H. bodemeyeri* (more oval in *H. holdhausi*); females: elytra more distinctly roof-like at posterior declivity in *H. bodemeyeri*, elytral apex more oblique in *H. holdhausi*.



Figs. 1 - 3: Aedeagus of 1) *Hydraena bodemeyeri*, lateral view, 2) *Hydraena carica*, ventral view, 3) *H. griphus*, ventral view. Parameres not illustrated in Figs. 2 - 3; and setae on dorsal side of main piece not illustrated, their position is indicated by their sockets (so). hy = hyaline parts of distal lobe.

Aedeagus (Fig. 1): very similar to that of *H. holdhausi*, from which it differs mainly in the following characters: 1) main piece longer (PL: 700 µm in *H. bodemeyeri*, 580 - 630 µm in *H. holdhausi*); 2) main piece more or less straight in ventral view (apical part not distinctly curved to left side); 3) left apex of main piece more distinctly surpassing right one (ventral view); 4) right paramere shorter than left one.

Fused gonocoxites: Lateral margins clearly diverging caudad; posterior margin evenly rounded; inner plate surpassing outer plate anteriorly, anterior corners produced anteriad; cavea subtrapezoidal, large (width: ca. 0.6 of gonocoxite width). In *H. holdhausi* the lateral margins are more or less parallel-sided.

Spermatheca: Proximal portion crescentic and gently wrinkled on distal half, distal portion discoidal. In both specimens examined the proximal portion seems to be slightly more swollen basally than in *H. holdhausi*, but this character is slightly variable in *H. holdhausi*.

Female tergite X not significantly different from that of *H. holdhausi*. Strongly transverse, almost twice as wide as long; hyaline apical margin not notched; subapical fringe of blunt setae continuous.

VARIABILITY: As in *H. holdhausi*, the posterior elytral margin of the female seems to be somewhat variable, more or less straight or sinuous; a pair of small, rounded parasutural projections may be developed.

DISCUSSION: It seems that *H. holdhausi* and *H. bodemeyeri* have different habitat preferences. Both species occur on Uludağ mountain, but not in the same streams. We collected seven specimens of *H. holdhausi* at about 1800 m a.s.l. (near Oteller), whereas *H. bodemeyeri* was taken from a stream below 1000 m a.s.l.

DISTRIBUTION: So far known only from the type locality.

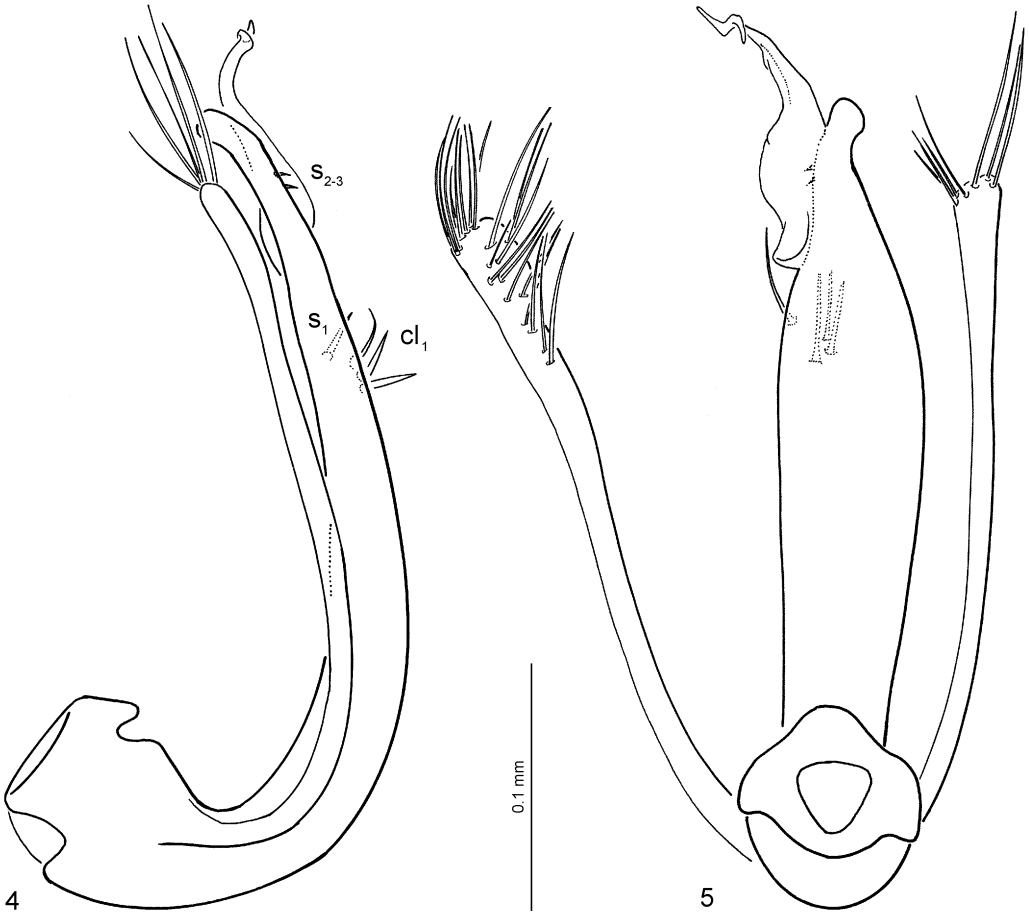
ETYMOLOGY: Named for August Rudolf Eduard von Bodemeyer (1854 - 1918), who was probably the first entomologist who ever collected *Hydraena* in Turkey. During his expedition to Anatolia in the spring of 1899 (see BODEMEYER 1900) he caught several specimens of *H. grandis* REITTER and the holotype of *H. holdhausi*, which is most closely related with *H. bodemeyeri*. Although *Hydraena levantina* SAHLBERG and *H. smyrnensis* SAHLBERG were described already in 1908 (21 years before *H. holdhausi*) they were collected during Sahlberg's journey (1903/1904) several years after *H. holdhausi* (see NONVEILLER 1999: 247).

Hydraena (s.str.) *imbria* sp.n.

TYPE LOCALITY: Stream, ca. 200 m a.s.l., ca. 3 km east of Şahinkaya, northwestern part of island of Gökçeada (= İmbroz, İmroz), northeastern Aegean Sea, western part of province of Çanakkale, northwestern Turkey.

TYPE MATERIAL: **Holotype** ♂ (NMW): "TR – Prov. Canakkale, 1992 Gökceada, 6.6. 25°46'E 40°11'N, 200m leg. Malicky (TR 44)".

DIAGNOSIS: 1.75 mm long. Externally, the holotype of the new species is very similar to specimens of *H. levantina* from Lesbos (type locality of *H. levantina*) and *H. samia*. It is distinguished from these two species by the maxillary palpi being slightly darkened preapically, by the elytra being strongly declivitous laterally (development of a longi-



Figs. 4 - 5: *Hydraena imbria*, aedeagus, 4) lateral view, 5) ventral view. s_{1-3}: setae on main piece. cl_1: setal cluster on main piece.

tudinal humeral edge) and by the male hind tibiae being slightly more strongly widened. Furthermore, it can be distinguished from *H. levantina* by the more elongate body form and by the hind tibiae being more evenly (less angulately) widened. From *H. samia* it can be also distinguished by the coarser elytral punctation.

Aedeagus (Figs. 4 - 5): Main piece slender (PL: 330 µm); apex elongate, curved ventrad (lateral view) and to right side (ventral view); with six setae [3 + 1 + 2], two subapical ones on dorsal margin (very small and difficult to see), one on left side near base of distal lobe and a cluster of three setae on dorsal margin, close to third one. Phallobase almost symmetrical. Distal lobe rather inconspicuous, with a moderately long flagellum-like appendage, with bifid apex. Parameres long and slender, not distinctly widened apically; left one slightly longer and more setose than right one.

The aedeagus of *Hydraena imbria* differs from that of *H. levantina* (Fig. 6) from Lesbos and *H. samia* (Fig. 7) from Samos in the following characters: 1) main piece longer (PL:

ca. 280 µm in *H. samia*, ca. 260 - 270 µm in *H. levantina*), 2) the four dorsal setae of the main piece distinctly shorter and separated into a cluster of three setae and a single one. From *H. levantina* it can be furthermore distinguished by the flagellum of the distal lobe being more slender and elongate (not spirally wound) and by the left paramere being more abruptly (not evenly) widened apically.

DISCUSSION: Undoubtedly, *Hydraena imbria* is most closely related with *H. levantina* and *H. samia*. The setal configuration on the main piece may be of phylogenetic relevance, because the position of the single dorsal seta (on left side near base of distal lobe, "S_1" in Fig. 4) agrees with the position of the "dorsal" seta in many species of the *H. riparia* species group. These two setae may be homologous and *H. imbria* might be regarded as evolutionary intermediate between the *H. riparia* group and the *H. rufipes* group, because the single "dorsal seta" (of the *H. riparia* group) and the "cluster of dorsal setae" (of the *H. rufipes* group) are present. The cluster of dorsal setae on the main piece of many species of the *H. rufipes* group could thus be regarded as secondary, having probably not developed by duplication of the "dorsal" seta of the *H. riparia* species group.

DISTRIBUTION: So far known only from the island of Gökçeada, where it is probably endemic.

ETYMOLOGY: Imbrius, 3 (Latin: pertaining to Imbrus). Imbrus (or Imbros) was the name of the island of Gökçeada during the Roman Empire.

Hydraena (s.str.) *pamphylia* sp.n.

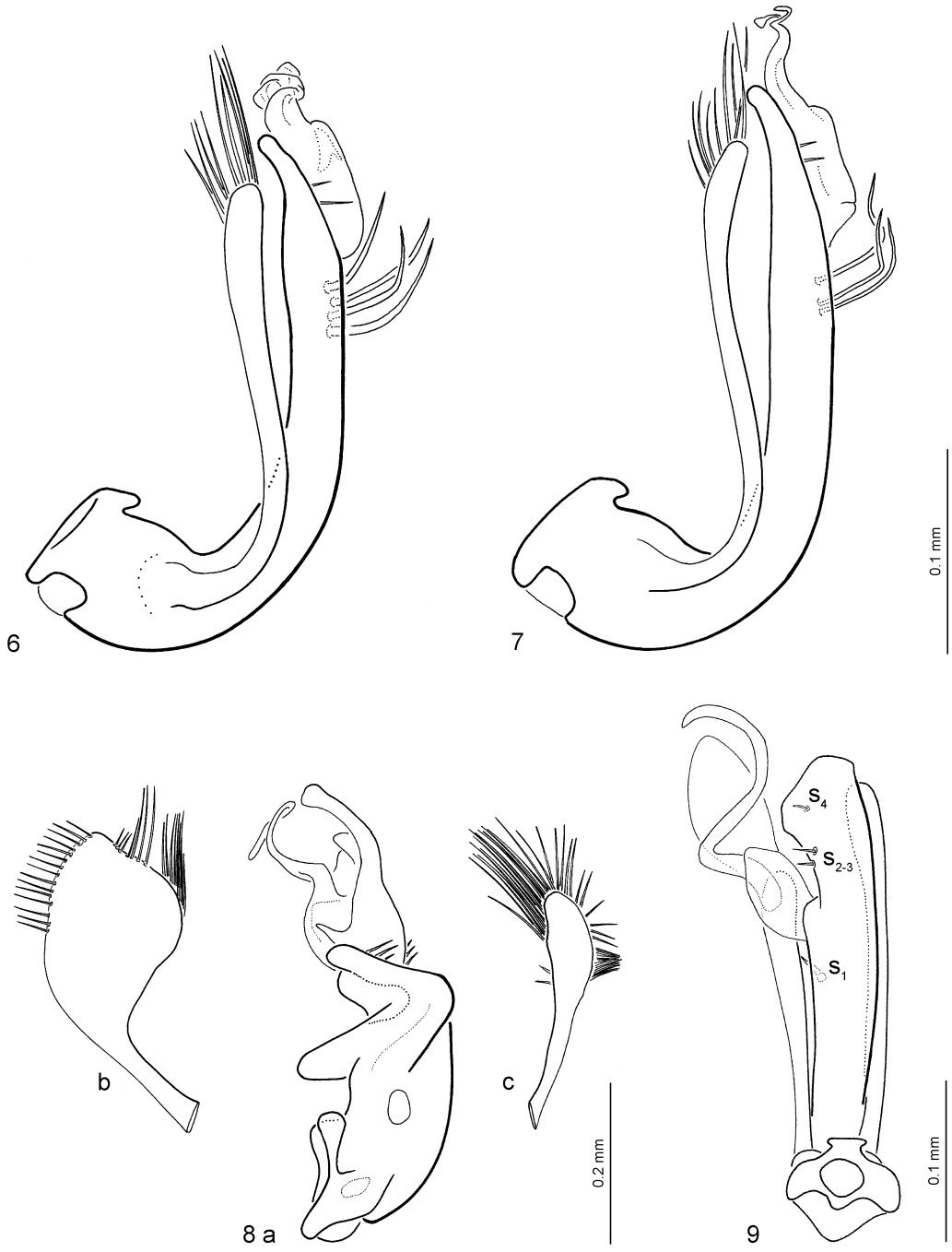
TYPE LOCALITY: River Köprü, near Beşkonak, Köprülü Kanyon National Park, central part of province of Antalya, southwestern Turkey.

TYPE MATERIAL: **Holotype** ♂ (NMW): "TR-ANTALYA 26.7.90 Köprü Irmağı]/Beskonac[Beşkonak] leg.Schödl (9)". **Paratypes** (NMW): 23 exs.: same label data as holotype.

DIFFERENTIAL DIAGNOSIS: Males: 2.8 - 3.1 mm long; females: 2.6 - 2.7 mm long. Very closely related with *Hydraena griphus* d'ORCHYMONT and *H. carica* JÄCH. Externally, it can be hardly distinguished from these two species. *Hydraena carica* is on average a little shorter and the male metatibial projection is usually more slender and the mesotibial projection comparatively larger. The male meso- and metatibia of *H. pamphylia* appears slightly longer than in the two other species and the mesotiba is more strongly curved.

The aedeagus of the new species (see JÄCH 1992: Fig. 43, sub nomen *H. griphus* ssp.) is ca. 600 µm long. It differs significantly from those of *H. griphus* (Fig. 3) and *H. carica* (Fig. 2) by the considerably wider general appearance (especially in ventral view) and by the different shape of main piece and distal lobe. The parameres of all three species are very similar to those of *H. grandis* REITTER (see JÄCH 1992: Fig. 46).

DISCUSSION: JÄCH (1992) assumed that *Hydraena carica* might in fact be a subspecies of *H. griphus*. However, following examination of numerous specimens we are able to conclude that they are definitely distinct species, which are well differentiated by aedeagal characters (e.g., length of aedeagus: *H. carica*: 490 - 520 µm, *H. griphus*: 550 - 600 µm; shape of main piece in ventral view; length of flagellum; shape of distal lobe), and by the geographical distribution (see below).



Figs. 6 - 9: Aedeagus of 6) *Hydraena levantina*, lateral view, left paramere not illustrated, 7) *H. samia*, lateral view, left paramere not illustrated, 8) *H. schmidi*, lateral view, parameres detached and illustrated separately, 9) *H. schubertorum*, ventral view, parameral setae omitted. s_{1-4}: setae on main piece.

DISTRIBUTION: The new species is so far known only from the type locality; *Hydraena carica* seems confined to the province of Muğla, where G. Wewalka, S. Schödl and myself collected it at seven localities in 1983 and 1991; *H. griphus* is known only from western parts of the province of Antalya, where S. Schödl and myself found it at five localities in 1991.

ETYMOLOGY: Pamphylius, 3 (Latin: pertaining to Pamphylia). Pamphylia was the name of the Roman province where the type locality of this species is situated.

Hydraena (s.str.) *schmidi* sp.n.

TYPE LOCALITY: Small stream, ca. 0.5 m wide, very shallow, ca. 1800 m a.s.l., near Saklıkent Skiing Resort [not Saklıkent Village, which is about 20 km further west], ca. 20 km west of Antalya, province of Antalya, southwestern Turkey.

TYPE MATERIAL: **Holotype** ♂ (NMW): "TÜRKEI 13.V.1998 Saklikent [Saklıkent] Antalya leg. H.Schmid". **Paratypes** (CHG, CSW, NMW): 1 ♂, 6 ♀♀: same label data as holotype; 15 ♂♂, 30 ♀♀: "TÜRKEI Antalya Saklikent [Saklıkent] 14.V.2001 leg. H.Schmid".

ADDITIONAL MATERIAL EXAMINED: 1 ♂ (CHG): "♂ \ TR Korkuteli 10.6.1988 leg.H.Hebauer \ coll.H.Hebauer". This specimen is very teneral.

DIAGNOSIS: 2.2 - 2.5 mm long (males on average slightly longer than females). This species is quite similar to *H. eucnemis* JANSSENS. Externally, it can be distinguished reliably from the latter only by the male metatibia, which is more slender, less strongly flattened, with the projection on mesial face being more distinctly pronounced.

Aedeagus (Fig. 8): Total length: ca. 570 µm. Main piece ca. 370 µm long; short and thick, in lateral view with a very conspicuous ventral projection, which is slightly directed craniad; apex obliquely truncate (lateral view), with two clusters of setae (ca. 3 setae on right side, near tip of main piece, and ca. 5 dorsal setae); phallobase distinctly asymmetrical. Distal lobe with two conspicuous, long projections: one is rather strongly sclerotized, the second is less strongly sclerotized and rather flagellum-like. Parameres not inserted very close to the phallobase; right paramere not very strongly enlarged apically, with a fringe of long setae; left paramere very strongly enlarged in apical half, margin with three clusters (fringes) of setae.

The aedeagus is quite distinctive. It vaguely resembles that of *H. eichleri* (see JÄCH 1988: Fig. 7, sub nomen *H. carducha*) and *H. eucnemis* (see JANSSENS 1970: Fig. 2, sub nomen *H. euscelis*) by the general morphology. It is easily distinguished from these two, among many other characters, by the conspicuous ventral projection of the main piece.

DISCUSSION: JANSSENS (1970) described the microreticulation of the clypeus and a "ligne de séparation d'avec l'espace interoculaire" of his *H. eucnemis* to be sexually dimorphic. However, the microreticulation of *H. eucnemis* (and probably of *H. schmidi*) is very variable individually and certainly not correlated with sexual dimorphism. As for the second character described by JANSSENS (1970) ("ligne de séparation d'avec l'espace interoculaire") we could not observe any variation at all.

DISTRIBUTION: So far known only from two localities in the province of Antalya, southwestern Turkey.

ETYMOLOGY: Named for Viennese coleopterist Herbert Schmid.

Hydraena (s.str.) *schubertorum* sp.n.

TYPE LOCALITY: Çangal Mountain [between Boyabat and Yenikonak], western part of province of Sinop, northern Turkey.

TYPE MATERIAL: **Holotype** ♂ (NMW): "Anat[olia].b[orealis].,Cangal Dagh [Çangal Mountain],7.-15.6.[19]60 leg.F.Schubert".

DIAGNOSIS: 1.8 mm long. *Hydraena schubertorum* agrees in all major characters (e.g. shape, colouration, size, secondary sexual characters) with *H. helena*, which is very common in northern Turkey (incl. province of Sinop). Provided the two facts, that *H. helena* is quite variable (with respect to size, pronotal shagrination, elytral punctation), and that we have examined only a single specimen of the new species, we were not able to find a significant distinguishing character. However, the metasternal plaques of the holotype of *H. schubertorum* appear to be slightly more slender and parallel-sided than in *H. helena*.

Aedeagus (Fig. 9): Main piece long and slender (PL: ca. 300 µm long); with four setae: a very small subapical one on dorsal side, two closely set ones on left side distal of base of distal lobe, and a slightly larger one on dorsal side near left margin slightly proximal of base of distal lobe. In ventral view, apex distinctly widened, left margin emarginate subapically. Distal lobe composed of a weakly sclerotized basal part, a very hyaline oval distal part, which is hardly visible in the stereoscopic microscope (at 80 X), and a long, multisinuate flagellum. Parameres inconspicuous, not strongly widened apically, with rather long setae; right paramere almost reaching apex of main piece, left paramere distinctly shorter.

The aedeagus differs significantly from that of *H. helena* and all other species of the genus by the conspicuously widened apex of the main piece (ventral view).

DISCUSSION: Without any doubt the new species is a member of the *H. riparia* species group, which is corroborated by the setal pattern of the main piece.

DISTRIBUTION: So far known only from the type locality.

ETYMOLOGY: Named for F.T.A. Schubert (1876 - 1973) and his son F.X. Schubert (1905 - 1992).

Updated check list of the Turkish species of the genus *Hydraena*

1) *H. abbasigili* JÄCH
2) *H. akbesiana* AUDISIO, DEBIASE & JÄCH
3) *H. amidensis* JÄCH
4) *H. anatolica* JANSSENS
5) *H. ancyrae* JÄCH
6) *H. antiochena* JÄCH
7) *H.* cf. *armeniaca* JANSSENS
8) *H. assimilis* REY
9) *H. attaleiae* FERRO
10) *H. aurita* JÄCH
11) *H. avuncula* JÄCH
12) *H. beyarslani* JÄCH
13) *H. bicolorata* JÄCH
14) *H. bodemeyeri* JÄCH & DÍAZ
15) *H. bulgarica* BREIT
16) *H. canakcioglui* JANSSENS (incl. ssp. *aydini* JANSSENS)
17) *H. cappadocica* JÄCH
18) *H. carica* JÄCH
19) *H. cata* d'ORCHYMONT
20) *H. caucasica* KUWERT (= *H. amarantina* JANSSENS)

21) *H. cervisophila* JÄCH
22) *H. ciliciensis* JÄCH
23) *H. colchica* JANSSENS
24) *H. coryleti* JÄCH
25) *H. crepidoptera* JÄCH
26) *H. dentipalpis* REITTER
(= *H. trapezuntina* JANSSENS)
27) *H. ebriimadli* JÄCH
28) *H. eichleri* d'ORCHYMONT
29) *H. eucnemis* JANSSENS
30) *H. falcata* JÄCH
31) *H. finita* d'ORCHYMONT
32) *H. fontiscarsavii* JÄCH
33) *H. fritzi* JÄCH
34) *H. galatica* JANSSENS
35) *H. gnatella* d'ORCHYMONT
36) *H. gnatelloides* d'ORCHYMONT
37) *H. gracilis* GERMAR
38) *H. graciloides* JÄCH
39) *H. grandis* REITTER
40) *H. grata* d'ORCHYMONT
41) *H. gressa* d'ORCHYMONT
(= *H. carducha* JANSSENS)
42) *H. griphus* d'ORCHYMONT
43) *H. guentheri* JÄCH
44) *H. hainzi* JÄCH
45) *H. helena* d'ORCHYMONT
(= *H. bithynica* JANSSENS)
46) *H. holdhausi* PRETNER
47) *H. ilica* JÄCH
48) *H. integra* PRETNER
(= *H. ponticola* JANSSENS)
49) *H. janczyki* JÄCH
50) *H. kasyi* JÄCH
51) *H. kurdistanica* JÄCH
52) *H. lapsissectilis* JÄCH
53) *H. lazica* JANSSENS
54) *H. levantina* SAHLBERG*
55) *H. ligulipes* JÄCH
56) *H. liriope* d'ORCHYMONT
57) *H. lycia* JÄCH
58) *H. macedonica* d'ORCHYMONT
59) *H. magnessa* JÄCH
60) *H. mariannae* JÄCH
61) *H. modili* JÄCH
62) *H. monscassius* JÄCH
63) *H. morio* KIESENWETTER
64) *H. muezziginea* JÄCH
65) *H. mylasae* JÄCH
66) *H. nike* JÄCH
67) *H. nilguenae* JÄCH
68) *H. nivalis* JÄCH
69) *H. olidipastoris* JÄCH
70) *H. paganettii* GANGLBAUER
71) *H. pamphylia* JÄCH & DÍAZ
72) *H. imbria* JÄCH & DÍAZ
73) *H. phallerata* d'ORCHYMONT
(= *H. byzantina* JANSSENS)
74) *H. philyra* d'ORCHYMONT
75) *H. plastica* d'ORCHYMONT
76) H. platycnemis JÄCH
77) *H. platynaspis* JÄCH
78) *H. platysoma* JANSSENS
79) *H. pontica* JANSSENS
80) *H. prusensis* JÄCH
81) *H. pseudoriparia* d'ORCHYMONT
82) *H. pygmaea* WATERHOUSE
83) *H. richardimbi* JÄCH
84) *H. riparia* KUGELANN
85) *H. schilfii* JÄCH
86) *H. schillhammeri* JÄCH
87) *H. schmidi* JÄCH & DÍAZ
88) *H. schoedli* JÄCH
89) *H. schoenmanni* JÄCH
90) *H. schubertorum* JÄCH & DÍAZ
91) *H. scitula* d'ORCHYMONT
92) *H. septemlacuum* JÄCH
93) *H. serpentina* JÄCH
94) *H. sinope* JÄCH stat.n.
95) *H. smyrnensis* SAHLBERG
96) *H. speciosa* d'ORCHYMONT
97) *H. subgrandis* JÄCH
98) *H. sublamina* d'ORCHYMONT
99) *H. sublapsa* d'ORCHYMONT
100) *H. tauricola* JÄCH
101) *H. terebrans* JÄCH
102) *H. terraevastatae* JÄCH
103) *H. turcica* JANSSENS
104) *H. virginalis* JANSSENS
105) *H. wewalkai* JÄCH

* One female of *Hydraena levantina* was recorded from Turkey (İzmir) so far. However, this record needs to be confirmed by the examination of males.

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