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New and little known Palearctic species of the genus *Hydraena* KUGELANN (Insecta: Coleoptera: Hydraenidae) VIII. The *Hydraena* (s.str.) *planata* KIESENWETTER complex

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Abstract

The *Hydraena* (s.str.) *planata* KIESENWETTER species complex (Insecta: Coleoptera: Hydraenidae) is revised. Three new species are described from Russia (Krasnodarskiy Kray): *H.* (s.str.) *krasnodarensis*, *H.* (s.str.) *prokini* and *H.* (s.str.) *solodovnikovi*. *Hydraena* (s.str.) *planata* is redescribed.

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

Zusammenfassung

Der *Hydraena* (s.str.) *planata* KIESENWETTER Artenkomplex (Insecta: Coleoptera: Hydraenidae) wird taxonomisch revidiert. Drei neue Arten werden aus Russland (Krasnodarskiy Kray) beschrieben: *H.* (s.str.) *krasnodarensis*, *H.* (s.str.) *prokini* und *H.* (s.str.) *solodovnikovi*. *Hydraena* (s.str.) *planata* wird wiederbeschrieben.

Introduction

Hydraena (s.str.) *planata* KIESENWETTER was the first representative of the genus *Hydraena* KUGELANN described from the Caucasus Region. Despite of its early discovery (see KOLENATI 1846 and KIESENWETTER 1849), this species, which belongs to the *Haenydra* lineage, has not been collected since more than hundred years.

Numerous hydraenids collected recently from the Krasnodarskiy Kray (southern Russia) turned out to belong to three new species very closely related to *H. planata*. These new species are described herein and *H.* (s.str.) *planata* is redescribed.

Abbreviations:

CPL Coll. Pretner, Ljubljana (now deposited in SASL)
CSV Coll. Solodovnikov, Vitebsk
HUB Museum für Naturkunde, Humboldt-Universität, Berlin
NMW Naturhistorisches Museum, Wien
SASL Slovenian Academy of Sciences and Arts, Ljubljana (Biološki inštitut ZRC SAZU)
ZISP Zoological Institute (Academy of Sciences), St. Petersburg
ZSM Zoologische Staatssammlung, München

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Hydraena (s.str.) *planata* complex

The species of the *Hydraena* (s.str.) *planata* complex are characterized by the elongate elytra with their apices flattened and produced in both sexes, by the male mesotibia, and by the aedeagus (shape of apical third of main piece, morphology of distal lobe, etc.). Geographically, this complex seems to be confined to the Caucasus Region and to the Krym Peninsula.

Hydraena (s.str.) *planata* KIESENWETTER

Hydraena (s.str.) *planata* KIESENWETTER 1849: 179. – KOLENATI 1846 (*angustata*). – KNISCH 1924. – PRETNER 1931. – d'ORCHYMONT 1935. – IENIŞTEA 1978. – JÄCH 1992. – HANSEN 1998. – JÄCH et al. 2000. – KIREYTSHUK & SHATROVSKIY 2001. – JÄCH 2004.

TYPE LOCALITY: Not exactly known. According to the original description, the types were collected in "Armenien" [historical Armenia (today: Armenia, Georgia or northeastern Turkey)] and in the "Provinz Elisabethopol" [= Gäncä (also spelled Gänjä, Gändžă, Gandzha, Gjandza, Giandscha or Gyandzha), formerly Kirovabad (1935-1989), then Yelizavetpol (1804-1918); Azerbaijan]. Gäncä most likely is the true type locality.

MATERIAL EXAMINED: According to the original description there are two type specimens (holotype not designated): "... von Kolenati gesammelt, ein Stück im Berliner Museum und in der Sammlung des Verfassers" [... collected by F.A. Kolenati (1813-1864), one specimen in the HUB and in the collection of the author (today: ZSM)]. While it is obvious that the specimen deposited in the ZSM (= lectotype, designated by d'Orchymont) is one of the two type specimens mentioned in the original description, the identity of the second type specimen is somewhat ambiguous, because in the HUB there are three historical specimens (2 ♂♂, 1 ♀), which are conspecific with the lectotype: 1 ♂: "10753 \ Hydraena angustata Dej. Caucas. Mén. [historical label, handwritten] \ Typus [printed] \ planata Ksw.* [historical label, handwritten] \ Zool. Mus. Berlin \ Hydraena planata KSW. det. Jäch 91", 1 ♂, 1 ♀: "Caucasus Ménetr. Nr. 10753 \ Zool. Mus. Berlin". It is very probable that one of these three specimens represents the second syntype of *H. planata* (possibly the male with the historical labels), although there is no clear evidence. The catalogue of the Historical Collection of the HUB (compiled ca. 1850) does not reveal further information under "10753". Probably, these specimens were once part of the collection of E. Ménétriés (1802–1861), who may have obtained them from F.A. Kolenati (1813-1864).

Lectotype ♂ (ZSM), designated by d'Orchmont (1935: 5): "♂ \ Kiesenwetter \ Type Hydr. planata Kiesw. \ A. d'Orchymont vid. 1934: Kopf u. Thorax [head and thorax] = dentipes Germar ♂; Hinterleib [abdomen] = planata Ksw. ♂ Type \ Sammlung Cl. Müller \ Zool. Staatsslg. München \ LECTOTYPUS Hydr. planata vid. Jäch 2004". As already pointed out by d'ORCHMONT (1935: 5), head and prothorax belong to *Hydraena dentipes* GERMAR.

Paralectotype: One of the three historical specimens deposited in the HUB probably represents the paralectotype (see above).

ADDITIONAL MATERIAL EXAMINED:

A Z E R B A I J A N: 1 ♂ (NMW): "Elisabethopol" [= Gäncä (see above for alternative spellings)], western Azerbaijan, leg. Kolenati.

G E O R G I A: 1 ♂ (ZSM): "Achalzig" [= Akhalzikhe, Akhaltsikhe, Akhalts'ikhe], southern Georgia [aedeagus missing]; 1 ♂ (CPL): same locality [aedeagus missing]; 1 ♀: "Swanetien Leder Reitter" [Svaneti Region], northern Georgia (NMW).

Unknown locality: 1 ♂ (NMW): leg. "Kolenati" [aedeagus missing].

Figs. 1–2: *Hydraena planata*, habitus, dorsal view, 1) male, 2) female.

Figs. 3–5: Female elytra, dorsal view, 3) *Hydraena krasnodarensis*, 4) *H. solodovnikovi*, 5) *H. prokini*.

The males from Akhalts'ikhe (ZSM, CPL) had obviously been examined by Pretner, who probably slide-mounted the aedeagi. Eventually, these slide mounts disappeared.

According to d'ORCHYMONT (1935) one male from "Elisabethopol" (leg. Kolenati) is deposited in the Eläinmuseo (Zoologiska museet), Helsinki. This specimen lacks the abdomen (see d'ORCHYMONT 1935: 5).

DESCRIPTION: 2.15–2.25 mm long. Dark brown to almost black, body appendages paler reddish brown.

Labrum with very deep, V-shaped notch anteriorly; margins very slightly upturned. Fronto-clypeal suture arcuate, not strongly impressed. Middle of frons moderately densely punctate, interstices shining or very superficially shagreened; lateral portions of frons densely or rugosely punctate, punctures and interstices microreticulate; paraocular grooves shallow. Eyes moderately large, protruding, more than 20 facets visible in dorsal view. Maxillary palpi very long, about twice as long as distance between eyes.

Pronotum cordiform, distinctly wider than long; anterior margin concave; anterior angles more or less rectangularly rounded; lateral margin moderately produced at middle, strongly convergent to anterior angle, sinuately convergent to posterior angle; lateral rim denticulate; disc moderately convex, sparsely to moderately densely punctate, more densely punctate near anterior and posterior margin, smooth and punctate between punctures, foveae hardly perceptible; anterior and posterior sublateral foveae well impressed, elongate, confluent; lateral portion of pronotum evenly deflexed, usually sparsely and superficially punctate.

Elytra distinctly elongate, parallel-sided, apically produced and only very weakly declivitous; moderately declivitous laterally; with nine rows of punctures between suture and shoulder; strial punctures moderately large, distinctly impressed and arranged in regular lines, which are moderately deeply impressed in middle of each elytron; punctures rather densely arranged within lines; intervals and interstices almost flat and glabrous or superficially microreticulate; intervals slightly wider than one puncture diameter; explanate margin and pseudepipleura very wide and long, more or less reaching apex.

Mentum and submentum microreticulate. Transverse genal ridges not very prominent, glabrous. Prosternum with median keel. Mesoventrite with a pair of sublateral distinct glabrous streaks; very deeply impressed between disc and posterior process. Metaventral disc shallowly impressed between well developed, posteriorly divergent plaques. Intercoxal segment (= abdominal sternite II) subtrapezoidal (dissection necessary); posterior margin slightly arched; posterior angles acutely produced. First ventrite without glabrous areas behind metacoxal sockets; abdominal sternites III–VI more or less entirely covered with hydrofuge pubescence; abdominal sternites VII and VIII largely or completely glabrous.

Aedeagus (Fig. 6): Main piece (PL: ca. 630 µm) with four setae, three long ones on left side, and a very short one on right side; distinctly bisinuous in apical 0.3–0.5 (dorsal view); with triangular projection on dorsal side of apical 0.35; apical third elongate and slender (lateral view), apex acute, obliquely truncate; prebasal tooth not very prominent. Phallobase more or less symmetrical in ventral view. Distal lobe elongate, roughly composed of three parts: a shaft-like base, a thin elongate intermediate piece and a very thin short flagellum.

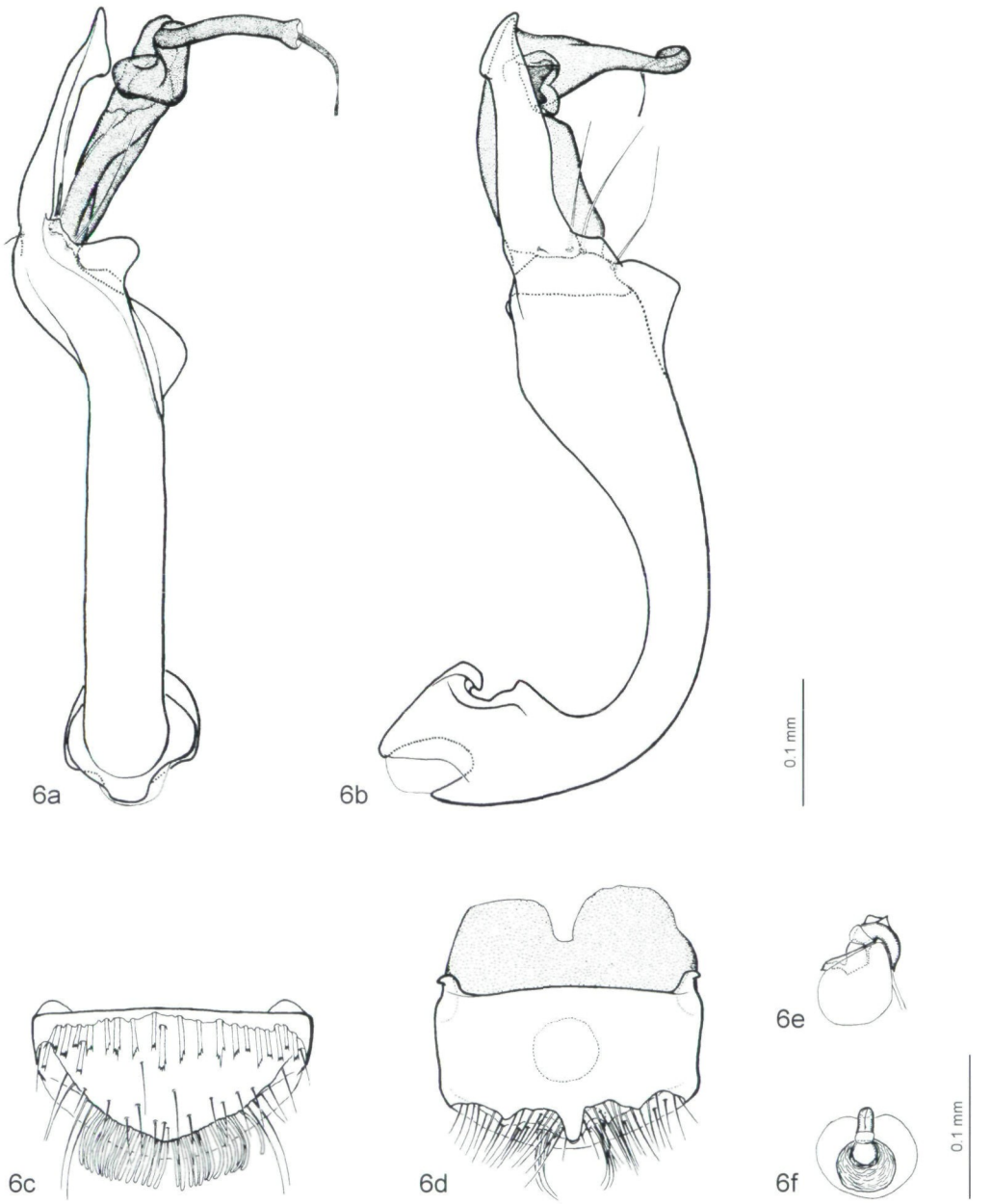

Fig. 6: *Hydraena planata*, a) aedeagus, dorsal view, b) same, lateral view, c) female tergite X, d) gonocoxite, e–f) spermatheca.

Gonocoxite (Fig. 6) subquadrate; caudal margin rounded; lateral sides of outer plate very slightly convergent to large basal condyles; apical area of outer plate well developed; inner plate distinctly surpassing outer plate, asymmetrical, basal margin with conspicuous notch, lateral basal angles rounded; median cavea rather small.

Spermatheca (Fig. 6): Proximal portion crescentic, with small projection; distal portion more or less discoidal, wrinkled.

Secondary sexual characters: Male elytral apices subtruncate, slightly conjointly rounded; in female more strongly acuminately produced and distinctly separately rounded (with sutural notch). Male femora slightly more strongly built. Male mesotibia distinctly dilated subapically in medial face, with a row of short spines and ca. eight minute denticles along dilated part. Male metatibia with fringe of long hairs along medial face of posterior half.

Female tergite X (Fig. 6) subsemicircular; disc sparsely covered with trichoid setae (apical part) and squamose setae (along base); fringe of vermiform setae hardly perceptibly interrupted medially; hyaline margin moderately wide.

VARIABILITY: The female from Svaneti differs in the slightly more slender elytral apices.

DISCUSSION: The species concept is based primarily on five males, which are still provided with their aedeagi: two type specimens (provenance not exactly known) and two additional specimens, which were probably collected together with the types (provenance not exactly known) and a single male from Gäncä, western Azerbaijan, which was collected by Kolenati and therefore is probably part of the same series the types were taken from. The two females examined are very similar and there is little doubt, that they represent the same species and that they are conspecific with *H. planata* (acc. to present concept): one specimen was probably collected together with the types (provenance not exactly known) and the second specimen was collected in northern Georgia.

It should be pointed out that the aedeagi of two specimens (lectotype and a male from Akhalts'ikhe, Georgia) were examined and illustrated by d'ORCHYMONT (1935), who regarded the aedeagi as "identique". However, his illustration (see d'ORCHYMONT 1935: Fig. 2) deviates quite considerably from Fig. 6, which can be explained by insufficient equipment used by d'Orchymont.

Hydraena planata has obviously not been collected since the 19th century! However, examination of new material is necessary to confirm the species concept and to delimit the actual distribution of *H. planata*.

DISTRIBUTION: Known with certainty from Azerbaijan, and – with some reservation – from Georgia (unfortunately, both Georgian males available lack their aedeagi). The occurrence of *H. planata* in "modern" Armenia (acc. to its present boundaries) could not be confirmed by us.

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

TYPE LOCALITY: River Dikar'ka (right tributary of River Matzesta), ca. 2.0–2.5 mm wide, 13 km ENE Sotchi, ca. 200 m a.s.l., Khosta District, southern Krasnodarskiy Kray, southern Russia.

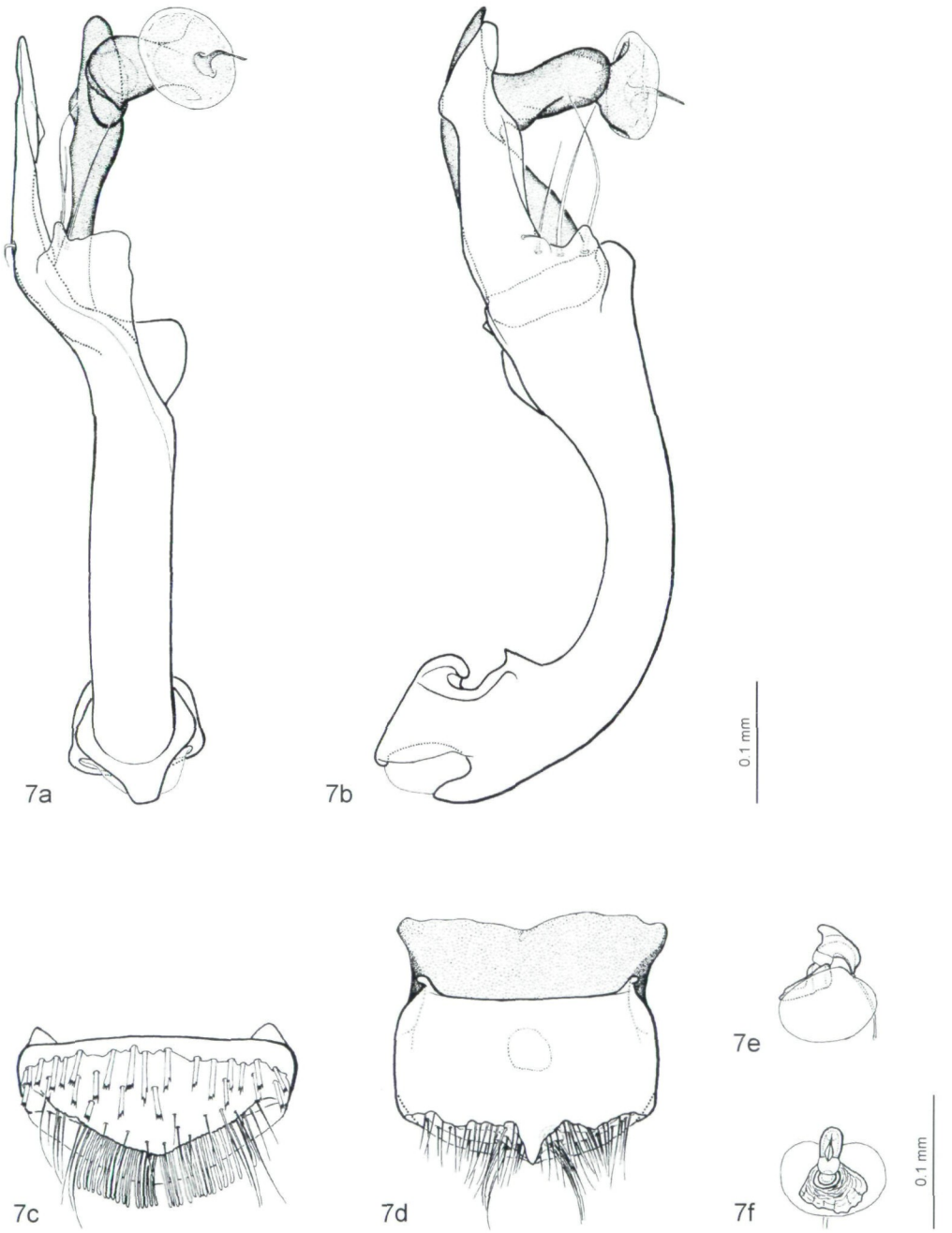

Fig. 7: *Hydraena krasnodarensis*, a) aedeagus, dorsal view, b) same, lateral view, c) female tergite X, d) gonocoxite, e–f) spermatheca.

TYPE MATERIAL: **Holotype** ♂ (NMW): "Sotchi, riv.Dikar'ka (riv. Matzesta), h= 200 3.05.2001 I.A.Solodovnikov". **Paratypes** (NMW, CSV): 2 ♀♀: "NW Caucasus, Sotchi riv.Dikar'ka (riv. Matzesta), h= 200 3.05.2001 I.A.Solodovnikov leg.".

DIFFERENTIAL DIAGNOSIS: 2.15 mm (paratypes) to 2.25 mm (holotype) long. Size, body shape and secondary sexual characters of the holotype agree very well with the males of *H. planata*, except that the explanate margin of the elytra appears to be wider in the new species.

The elytral apices of the females are distinctly produced, but less strongly so than in *H. planata*. Explanate margin less declivitous subapically.

Aedeagus (Fig. 7): The main piece (PL: ca. 640 µm) can be distinguished from *H. planata* by the following characters: short seta more close to dorsal margin and more close to remaining setae; apical third of main piece (lateral view) wider, more strongly sinuous; intermediate piece of distal lobe distinctly thicker, with trumpet-like apex; flagellum very thin and very short.

Gonocoxite (Fig. 7): Lateral margins of outer plate distinctly convergent to base, condyles retracted and smaller than in *H. planata*; inner plate without conspicuous notch.

Spermatheca (Fig. 7) and female tergite X (Fig. 7) obviously not significantly different from *H. planata*, except that there seem to be more squamose setae in the tergite of *H. krasnodarensis*. Significance of various differences may be detected or confirmed when more material becomes available and populational variability will be determined.

DISTRIBUTION: So far known only from the type locality.

ETYMOLOGY: Named in reference to its geographical distribution, which seems to be confined to the Krasnodarskiy Kray, southern Russia.

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

TYPE LOCALITY: Small left tributary (ca. 0.3–0.4 m wide) of River West Dagomys, ca. 150 m a.s.l., near village 3-Rota, ca. 12 km NE Dagomys, Sotchi District, southern Krasnodarskiy Kray, southern Russia.

TYPE MATERIAL: **Holotype** ♂ (NMW): "Sotchi, riv. West Dagomys, near vill. 3-Rota, *Fagus+Buxus* 10.042002, h=150 I.A.Solodovnikov \ in the small stream (left tributary) under stone Stream N3". **Paratypes** (NMW, CSV): 1 ♀: "Caucasus, Sotchi, riv. West Dagomys, near vill. 3-Rota *Fagus+Buxus* 10.IV2002, h= 150 I.A.Solodovnikov leg. \ in the small stream (left tributary), under stone Stream N3)"; 4 ♂♂, 6 ♀♀: "NW Caucasus Sotchi, vill. Soloch-aul, h=400 *Fagus+Castanea* forest 25.IV.2001 I.A.Solodovnikov"; 1 ♂, 1 ♀: "NW Caucasus, Sotchi, vill. Soloch-aul, h= 500 *Fagus+Castanea* forest 19.04.2002 I.A.Solodovnikov \ in the small stream (left tributary riv. Sakhe), under stone Stream N1"; 1 ♂, 1 ♀: "Sotchi, upper reaches of the riv. M.Chosta h= 200 24.IV.2001 I.A.Solodovnikov"; 1 ♂: "Sotchi, upper reaches of the riv. M.Chosta h=700 24.04.2002 I.A.Solodovnikov \ in the small steams[!], under stones"; 2 ♀♀: "NW Caucasus, Sotchi upper reaches of the riv. M. Chosta h= 700 24.04.2002 I.A. Solodovnikov leg. \ in the small streams under stone"; 10 ♂♂, 4 ♀♀: "Sotchi, vill. Kraevsko-Ar-mjanskoe, h= 50 18.IV.2001 I.A.Solodovnikov"; 1 ♂, 2 ♀♀: "Sotchi, vill. Kraevsko-Ar-mjanskoe, h=50-70m vall.riv Matzesta 5.04.2002 I.A.Solodovnikov \ in the small stream (left tributary), under stone"; 1 ♂, 4 ♀♀: "NW Caucasus, Sotchi, Alek Mt.R., h= 700 17.IV. .2001 I.A.Solodovnikov"; 1 ♂: "NW Caucasus, Sotchi, val.r.Jakornaja Stchel h= 200 *Carpinus* forest 12.04.2002 I.A.Solodovnikov \ in the small stream (right tributary), under stone"; 1 ♀: "NW Caucasus, Sotchi, Phlagoch Mt. h= 450 *Fagus+Carpinus* forest 20.IV. 2001 I.A.Solodovnikov".

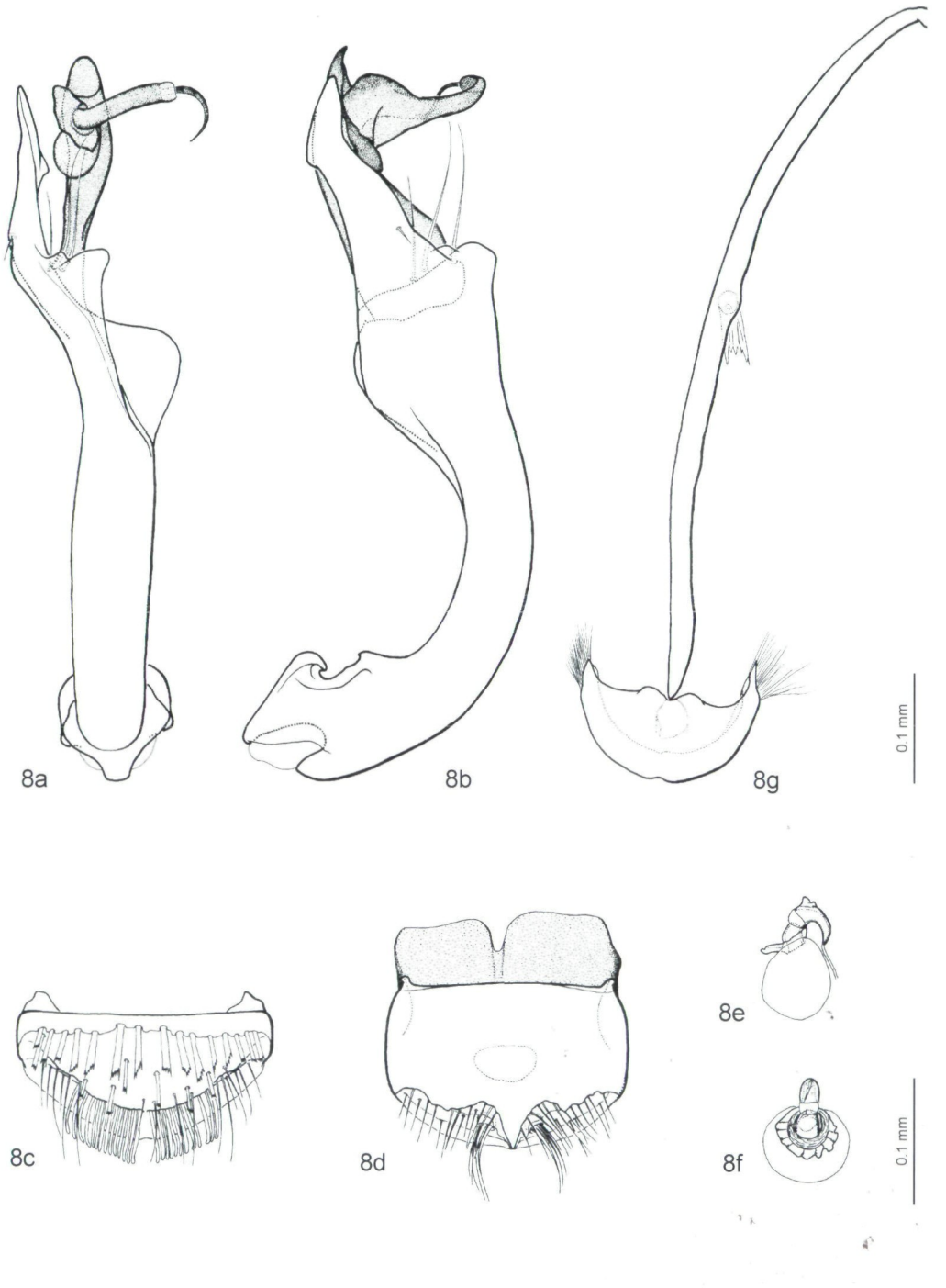

Fig. 8: *Hydraena solodovnikovi*, a) aedeagus, dorsal view, b) same, lateral view, c) female tergite X, d) gonocoxite, e–f) spermatheca, g) spiculum gastrale and male terminal sternite.

DIFFERENTIAL DIAGNOSIS: 2.1–2.3 mm long. In size, body shape and secondary sexual characters the males of *H. solodovnikovi* agree very well with *H. planata* and *H. krasnodarensis*. However, the mesotibial expansion and its denticles and spines appear to be more strongly developed.

The apices of the female elytra of *H. solodovnikovi* are distinctly produced, but more triangular and more distinctly separated than in *H. planata* and *H. krasnodarensis*, with distinct V-shaped sutural excision. Explanate margin not declivitous apically.

Aedeagus (Fig. 8): PL of main piece ca. 630 µm; short seta close to dorsal margin, distinctly separated from remaining setae; apical third of main piece (lateral view) somewhat intermediate between *H. planata* and *H. krasnodarensis*, distal lobe very similar to that of *H. planata*.

Gonocoxite (Fig. 8) resembling that of *H. krasnodarensis* in the shape of the lateral margins of the outer plate (convergent to base) and in the condyles (small and retracted); inner plate with conspicuous basal notch.

Spermatheca (Fig. 8) and female tergite X (Fig. 8) more or less as in *H. planata* and *H. krasnodarensis*. Differences may be worked out when more material of *H. planata* and *H. krasnodarensis* becomes available.

DISTRIBUTION: This species is so far known only from the surroundings of Sotchi, southern Krasnodarskiy Kray, southern Russia.

ETYMOLOGY: Named for I.A. Solodovnikov (Vitebsk, Belarus), who collected the type specimens.

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

Fig. 9: Alexander A. Prokin at type locality of *Hydraena prokini*.

TYPE LOCALITY: Small stream (Shirokaya Balka), tourist camp "Ocean", 44°39'N / 37°41'S, a few km southwest of Novorossiysk, southwestern Krasnodarskiy Kray, southern Russia (see Fig. 9).

TYPE MATERIAL: **Holotype** ♂ (ZISP): "okr. g. Novorossiyska Shirokaya Balka Prokin 4.08.2001" [in Cyrillic script] \ ruchey na t/b „Okean" s kamney" [in Cyrillic script] \ Novorossy'sk [Novorossiysk] Shirokaya balka Prokin. 4.08. 01 \ camp „ocean spring", on stones". **Paratypes** (NMW): 2 ♂♂: same label data as holotype.

DIFFERENTIAL DIAGNOSIS (male): 2.05 mm long. Except for the slightly smaller size, the three males examined are more or less identical with *H. planata* in their external characters. The mesotibial expansion and its denticles and spines appear to be less strongly developed in *H. prokini*.

Aedeagus (Fig. 10): Main piece shorter than in *H. planata* and the remaining two new species (PL:

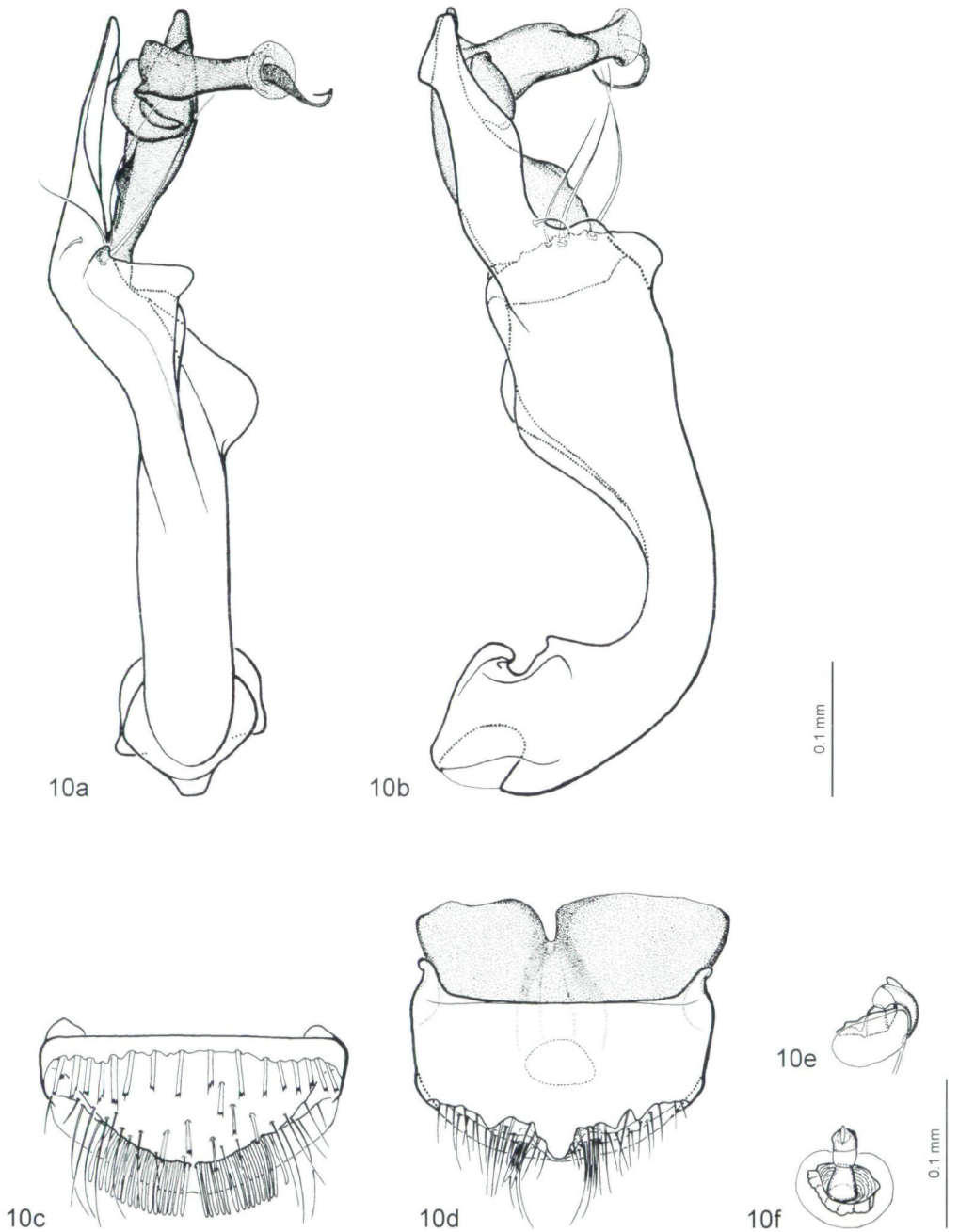

Fig. 10: *Hydraena prokini*, a) aedeagus, dorsal view, b) same, lateral view, c) female tergite X, d) gonocoxite, e–f) spermatheca.

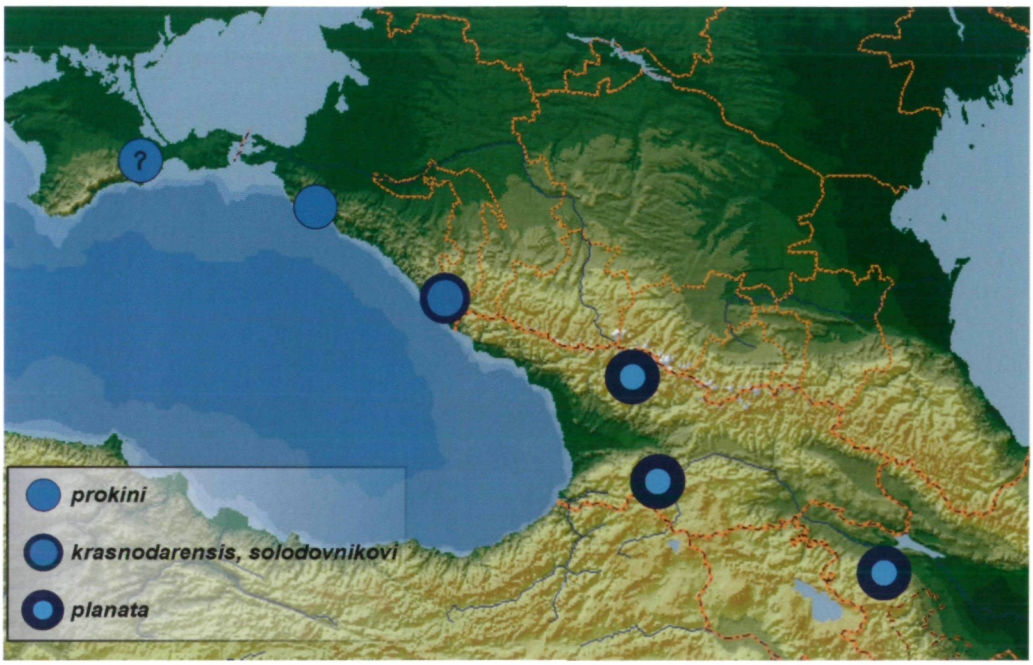

Fig. 11: Geographical distribution of *Hydraena prokini*, *H. krasnodarensis*, *H. solodovnikovi*, and *H. planata*.

580 µm); short seta close to dorsal margin and close to remaining setae (as in *H. krasnodarensis*); basal half of main piece more strongly curved than in all other species of the complex, ventral margin with two longitudinal laminar expansions; shape of apical third of main piece (lateral view) similar to that of *H. planata*; distal lobe similar to *H. planata* and *H. solodovnikovi*, but intermediate piece of distal lobe distinctly thicker than in these two species (but still thinner than in *H. krasnodarensis*).

A single female from the Ukraine (Krym Peninsula, Feodosiya), deposited in the NMW either represents the female of *H. prokini* or a new species. Its elytral apices are strongly produced (longer than in males of *H. planata*) and subtruncate, conjointly arched. Gonocoxite very similar to that of *H. planata*; lateral basal angles of inner plate produced.

Spermatheca (Fig. 10) and female tergite X (Fig. 10) not significantly different from the remaining species of the *H. planata* complex.

DISTRIBUTION: So far known only from the type locality.

ETYMOLOGY: Named for A.A. Prokin (Voronezh, Russia), who collected the type specimens.

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