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Five beetles new for Thuringia, and records of endangered water beetles (Coleoptera: Dytiscidae, Helophoridae, Hydrophilidae, Staphylinidae)

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Abstract

Hydroporus morio Aubé (Dytiscidae), *Helophorus paraminutus* Angus (Helophoridae), *Enochrus halophilus* (Bedel) (Hydrophilidae), *Chaetarthria similis* Wollaston (Hydrophilidae) and *Carpelimus ganglbaueri* (Bernhauer) (Staphylinidae) are recorded for the first time from Thuringia. The sampling-localities of these species are shortly described. Other water beetle species on the Thuringian Red List, as far as not previously reported from the same locality, are mentioned. The male genitalia of *Chaetarthria similis* and *C. seminulum* Herbst are figured.

Zusammenfassung

Funde von *Hydroporus morio* Aubé (Dytiscidae), *Helophorus paraminutus* Angus (Helophoridae), *Enochrus halophilus* (Bedel) (Hydrophilidae), *Chaetarthria similis* Wollaston (Hydrophilidae) und *Carpelimus ganglbaueri* (Bernhauer) (Staphylinidae) werden als neu für Thüringen aufgeführt. Die Fundorte dieser Arten werden kurz beschrieben. Weiterhin werden Funde von für in Thüringen seltenen Wasserkäfer genannt. Das männlichen Genitale von *Chaetarthria similis* und *C. seminulum* sind zur besseren Unterscheidung mit beigegeben.

Introduction

A meeting of members of the Balfour-Browne Club (an international group of specialists on water beetles) during the Whitsun weekend of 16-18 May 1997 at the Museum der Natur in Gotha was attended by fifty participants. The meeting started with lectures on Friday evening and Saturday morning, followed by some excursions on Saturday afternoon and Sunday, interrupted by a Saturday evening dinner and some presentations. The first two authors spent the remainder of the week in the surroundings of Gotha, during which they were partly accompanied by the third author. Most of the visited localities were already investigated by the third author during recent years.

The additions to the Thuringian fauna of the five species treated below are based on their absence in recent surveys of German beetles (LUCHT 1987; HEBAUER 1989; KÖHLER & KLAUSNITZER 1998) and in "Check-Listen Thüringer Insekten" (BELLSTEDT 1993a, 1994a, 1997; APFEL 1995). Further, all water beetle species treated in the Thuringian Red List (BELLSTEDT 1993b) are mentioned, as far as they are not reported in previous publications on the same localities.

Most of the material of the new Thuringian beetles is placed in the collection of the Museum der Natur Gotha. Two specimens of *Enochrus halophilus* are placed in the collection of the Naturhistorisches Museum Wien, while most of the other material is preserved in the collections of the authors.

Hydroporus morio Aubé

Hydroporus morio was found on two localities in the Thüringerwald (Kreis Gotha) on 19 May 1997. The first locality concerned one of the few peatbog areas in the Thüringerwald, the Saukopfmoor near Oberhof at an altitude of ca. 820 m. This peatbog is a nature conservancy area described by ZIMMERMANN (1990) harbouring several rare water beetles as *Ilybius crassus* Thomson and *Crenitis punctatostriata* (Letzner). The collections here came from various small (peat)pools, small drains and the central draining ditch. Most probably, all *Hydroporus morio* material (3 males, 2 females) originated from one of the larger (and deeper) pools on the southern edge of the peatbog with some *Sphagnum* and bordered by *Vaccinium myrtillus* L., *Vaccinium vitis-idaea* L., *Erica tetralix* L., *Calluna vulgaris* (L.) Hull and *Eriophorum vaginatum* L. The humic water had a pH of 3.9, conductivity of 51 µS/cm, a chlorinity of 8.9 mg/l and a total hardness (°D) of 1, all normal values for water in peatbogs.
The second locality concerned the helocrenes and uppercourse of the Siegelbach above Crawinkel at an altitude of 650 m. Conditions here ranged from peaty pools with clear, stagnant water via slightly running water with gravel soils embedded in a loamy matrix near springs, to the running water of the Siegelbach itself. Only a single female of *Hydroporus morio* was collected in a shallow, peaty pool without vegetation. The physico-chemical parameters, measured in a springfed pool with *Sphagnum*, differed only slightly from those of the Saukopfmoor: pH: 5.3; conductivity 53 µS/cm; Cl^-: 14.9 mg/l; °D: 1.
Hydroporus morio is a Holarctic species with a Palaearctic range extending from Great Britain and France to Japan (NILSSON & HOLMEN 1995). In northern Great Britain, Fennoscandia and northern Russia the species is common. Also in the Alps *H. morio* is quite common. In intermediate areas *Hydroporus morio* becomes much rarer and more or less restricted to peatbogs in secondary mountain-chains. In both The Netherlands (CUPPEN 1985) and Belgium (VAN DORSSELAER 1957) *H. morio* is only recorded from one locality. SCHAEFLEIN (1979, 1983, 1989) and KLAUSNITZER (1996) give an enumeration of recent records of *H. morio* in Germany, while KÖHLER & KLAUSNITZER (1998) give a general overview. They confirm, as far as can be deduced, the restriction to either peatbogs or mountainous areas, and the scarcity of the species. Mountain-chains mentioned for Central Germany are Fichtelgebirge, Schiefergebirge, Harz, Erzgebirge, Elbsandsteingebirge and Rhön. The localities in the Thüringerwald fill a gap between these mountain-chains and the present records are, therefore, not a real surprise.

Helophorus paraminutus Angus

Helophorus paraminutus was described from Karasuk and Novosibirsk, on the west Siberian steppe, by ANGUS (1986). This species is very difficult or even impossible to distinguish from *Helophorus minutus* Fabricius (ANGUS 1992). However, on the basis of chromosome investigations and hybridisation experiments by ANGUS (1986), there can be no doubt that *H. paraminutus* is a distinct species. Two males, respectively two males and one female, from a gravelpit near Immelborn and from an adjacent small pool, were send to Dr. Angus as their large size did suspect us that they could be *H. paraminutus*. Angus identified the specimens as *H. paraminutus*, but, without investigation of chromosomes, a small uncertainty remained.
A shallow pool in connection with a large gravelpit near Immelborn in the valley of the river Werra (Wartburgkreis) produced three specimens of *H. paraminutus*. This slightly shaded pool had clear water and a soil consisting of reddish (seepage) brown detritus mixed with fine gravel. The pool was surrounded by a dense willow-brushwood (*Salix*). The water had a pH of 6.9, conductivity of 438 µS/cm, a chlorinity of 15.8 mg/l and a total hardness (°D) of 7. The vegetation was dominated by helophytes as *Phalaris arundinacea* L. (12%), *Eleocharis palustris* (20%), *Rorippa amphibia* (L.) Besser (20%) and unidentified Bryophyta (15%),

while *Alisma plantago-aquatica* L., *Lythrum salicaria* L., *Lysimachia vulgaris* L., *Carex acuta* L., *Phragmites australis* (Cav.) Steudel and *Sparganium erectum* L. occurred with a lower abundancy. During a sampling-period of approximately one hour, 28 species of water beetles were collected. Apart from the species treated below, *Dryops similaris* Bollow was the only rather rare species. The gravelpit near Immelborn is described under *Chaetarthria similis*.
The distribution area of *Helophorus paraminutus* ranges from west Siberia over southern and central European Russia to the Black Sea coast and the Neusiedler See district of Austria. Chromosome investigated specimens are also known from the vicinity of Hamburg (ANGUS 1992). KÖHLER & KLAUSNITZER (1998) record *H. paraminutus* from several German areas.

Enochrus halophilus (Bedel)

Severe difficulties were met with the identifation of *Enochrus* material. Especially species of the *Enochrus quadripunctatus*-complex are notorious for problems. This complex comprises three "species": *Enochrus quadripunctatus* (Herbst), inhabiting eutrophic ponds and ditches, *Enochrus halophilus*, inhabiting coastal, brackish waters, and *Enochrus fuscipennis*, an inhabitant of peaty waters. The status of these "species" is still uncertain, but most recent authors (e.g. HANSEN 1987; VAN BERGE HENEGOUWEN 1992) recognize these three species. Especially females are sometimes difficult to name. Males of all three species (teste Schödl) were found in recently excavated ponds in a calcareous sand pit near Herbsleben (Unstrut-Hainich Kreis), which seems rather unusual. The pondsystems (and water beetles) of Herbsleben are extensively described by BELLSTEDT (1994b).
Two males and two females of *E. halophilus* were sampled in the unshaded ponds and puddles of the calcareous sand pit. Ponds and puddles were interconnected and disconnected by shallow drains and dams in such a complex way that they were all considered to belong to one aquatic system. The presence of interconnections is probably strongly dependent on the amount of rainfall in the preceding period. Maturity of the ponds and puddles however, differed as some were bare and without vegetation, while others had already a well developed vegetation (though with little detritus). The site as a whole could be best described as a developing pioneer environment. The water in one of these ponds showed the following characteristics: pH: 7.0; conductivity: 2720 µS/cm; chlorinity: 136.3 mg/l; °D: 64. These values underscribe the calcareous conditions (hardness) and the slightly brackish conditions in the pit. The luxurious vegetation in a minority of the investigated ponds was dominated by *Juncus effusus* L., *Juncus articulatus* L., *Eleocharis palustris* (L.) Roemer & Schultes, *Scirpus lacustris* L., *Phragmites australis*, *Typha latifolia* L., characeans and algae.
Apart from *E. halophilus*, the following water beetles taken are considered as halophilic species: *Hygrotus parallelogrammus* (Ahrens) and *Ochthebius marinus* (Paykull). The absence of additional brackish water beetle species is possibly due to the only slightly brackish character of the water and the distance from other (coastal) brackish water habitats. The terrestrial fauna as well revealed some species indicative for brackish conditions: *Bembidion azurescens* (Dalla Torre), *Bledius limicola* Tottenham, and *Carpelimus ganglbaueri* (Bernhauer) (see below).

Chaetarthria similis Wollaston

Until very recently *Chaetarthria seminulum* Herbst was considered as the only representative of the genus in Europe. For this reason investigations of male genitalia seemed unnecessary. Dissection of males from Bayern (Germany) showed that *Chaetarthria similis*, formerly known from the Canary Islands only, had a much wider distribution in Europe (HEBAUER 1993). Apart from Bayern, HEBAUER reported *C. similis* from the Sinai peninsula (Egypt)

and Morocco in North-Africa, and Italy, Switzerland and Spain in Europe. Females, possibly belonging to *C. similis*, were recorded from France and Israel. KÖHLER (1996) reported *C. similis* from Rheinland-Pfalz and Saarland (Germany), based on samples from the first two authors and confirmed by Hebauer. The discovery of *C. similis* in Thüringen necessitates a revision of all Central European *Chaetarthria*. With the new extension of the distribution area, even the identity of the type of *Chaetarthria seminulum*, originating from the surroundings of Berlin, becomes uncertain. This is, however, not available for study as it has got lost (HEBAUER 1993).
A reliable identification of *Chaetarthria* is only possible in the male sex (Figs 1 and 2). The aedeagus of *C. seminulum* (Fig. 2) is characterized by a twicely excavated basal piece (in dorsal view) and by a median piece with two clearly sclerotized internal structures. In general the aedegus of *C. similis* (Fig. 1) is broader and less sclerotized; the excavation of the basal piece is simply concave and less pronounced, but shows some variation towards the form of *C. seminulum*. The median piece in *C. similis* shows different and less sclerotized internal structures. On external morphological characteristics the two species can not be separated, but on average *C. similis* is larger than *C. seminulum*.
Chaetarthria similis was found in a large series (10 males, 11 females) among the debris washed ashore of a deep gravelpit near Immelborn in the valley of the river Werra (Wartburgkreis) on 23 May 1997. This large, unshaded water body had clear water with a soil consisting of bare gravel embedded in a loamy substrate; in dead corners on the eastern bank relatively large amounts of organic debris, floating leaved algae and *Myriophyllum spicatum* L. were washed ashore. The water had a pH of 7.4, a conductivity of 425 µS/cm, a chlorinity of 38.9 mg/l and a total hardness of 5. The eastern bank was relatively high and steep with a very sparse emergent vegetation. No *C. seminulum* was found here.

Carpelimus ganglbaueri (Bernhauer)

Four specimens of *C. ganglbaueri* (2 males and 2 females) were collected in a calcareous sand pit near Herbsleben (see also under *Enochrus halophilus*) on 18 May 1997. The bare soil in this recently excavated section of the pit was wet and covered only with a sparse vegetation. The beetles that were hiding away could only be detected after severe trampling of the soil. This halophilic species is rare in Central Europe (HORION 1963) where it seems to have a southeastern distribution. It has been recorded from the Czech Republic, Slovakia (JELINEK 1993) and Austria. In Germany, it is only mentioned from Schleswig-Holstein and Brandenburg (KÖHLER & KLAUSNITZER 1998), while Segers (1986) records *C. ganglbaueri* from Belgium. It is absent from the nordic countries, The Netherlands, Poland and Italy (BRAKMAN 1966; BURAKOWSKI et al. 1979; CICERONI et al, 1995; SILFVERBERG 1992).
Other beetles collected on the same spot include *Nebria livida* (Linnaeus), *Bembidion azurescens*, *Chlaenius nitidulus* (Schrank), *Georissus crenulatus* (Rossi), *Carpelimus despectus* (Baudi), *Bledius limicola*, *Bledius* cf *nanus* Erichson, *Scopaeus minutus* Erichson, *Neobisnius procerulus* (Gravenhorst) and *Curimopsis setigera* (Illiger).

Species on the Thuringian Red List

The sampling-localities of the water beetles are not further described here as far as they are mentioned above or in the publications of BELLSTEDT (1994b, 1996a, 1996b) and Weipert (1996). Also Red List species mentioned in these publications are not repeated here. The species status on the Red List is based on BELLSTEDT (1993b). Several of the species on the list below are known from Thuringia only prior to 1950 (KÖHLER & KLAUSNITZER 1998). All collections were made between 17 and 23 May 1997.

Haliplidae

Peltodytes caesus (Duftschmid) (RL P): two males from ponds along the Unstrut near Herbsleben, a recently excavated as well as an old one.

Haliplus obliquus (Fabricius) (RL 3): one male from the gravelpit in the valley of the river Werra near Immelborn.

Haliplus variegatus Sturm (RL 2): one female from a recently excavated calcareous sand pit overgrown with Characeae near Herbsleben.

Dytiscidae

Agabus chalconatus (Panzer) (RL 3): one male in the northern branch of the Bieberbach (former military practice-ground Kindel) above Hütscheroda (Wartburgkreis).

Agabus congener (Thunberg) (RL 3): one male and three females in small peaty drains of the Saukopfmoor above Oberhof.

Agabus melanarius Aubé (RL 3): two females in a large peatpit of the Saukopfmoor; one male and one female in peaty pools of the helocrene uppercourse of the Siegelbach near Crawinkel (Kreis Gotha). The female from the Siegelbach was remarkably dull.

Graptodytes granularis (Linnaeus) (RL 3): one female in the southern branch of the Bieberbach above Hütscheroda.

Hydroporus discretus Fairmaire & Brisout (RL 3): 25 specimens in both branches of the Bieberbach.

Hydroporus gyllenhalii Schiödte (RL 3): one female each from the Saukopfmoor and the Siegelbach.

Hydroporus incognitus Sharp (RL 3): one male, two females and two females, and three males and one female from, respectively, the former "Erlebach" fishponds near Crawinkel, the Saukopfmoor and the Siegelbach.

Hydroporus longicornis Sharp (RL ?): recently recorded for the first time from Thüringen in the Wiedersbach (BELLSTEDT 1997). Remarkably this was the most numerous *Hydroporus* in the helocrenes of the Siegelbach.

Hydroporus melanarius Sturm (RL 3): numerous in peat-pools of the Saukopfmoor.

Hydroporus memnonius Nicolai (RL 3): one male and two females from the former "Erlebach fishponds and numerous in peaty pools of the Siegelbach.

Hydroporus obscurus Sturm (RL 3): the most common *Hydroporus*-species in peat-pools and peaty drains of the Saukopfmoor.

Hydroporus tristis (Paykull) (RL 3): numerous in peat-pools of the Saukopfmoor, two males and one female in the peaty helocrenes of the Siegelbach.

Hygrotus decoratus (Gyllenhal) (RL 3): five specimens from an overgrown, shallow pond in the Apfelstädt-Aue.

Hydraenidae

Hydraena britteni Joy (RL 3): both the Ickersbach and the helocrenes of the Siegelbach produced one male and one female.

Hydraena minutissima Stephens (RL 1): one male was taken in the lower parts of the Ickersbach close to the outlet in the Schmalkalde.

Hydraena nigrita Germar (RL 3): this species was taken in both branches of the Bieberbach above Hütscheroda (4 males, 5 females).

Hydraena pygmaea Waterhouse (RL 3): at an altitude of ca 600 m six males and three females were collected in the Sembach above Winterstein.

Hydraena subimpressa Rey (RL 2): six males and three females were found in the northern branch of the Bieberbach above Hütscheroda. The Bieberbach is one of the most northern localities in Europe for this species.

Hydrochidae

Hydrochus angustatus Germar (RL P): two males and five females were collected near the water's edge of the former "Erlebach" fishponds near Crawinkel.

Helophoridae

Helophorus nanus Sturm (RL 3): this species was taken at three localities: pond in the Apfelstädt-Aue (male), former "Erlebach" fishponds (3 male) and Saukopfmoor (female). Probably a rather common species in Thuringia in springtime.

Helophorus strigifrons Thomson (RL ?): recorded for the first time from Thuringia (Hirschberg; coll. Skale) by BELLSTEDT (1997). One male was collected in the former "Erlebach" fishponds and one female in a shallow pool near to the gravelpit at Immelborn (Wartburgkreis). Possibly confused in the past with *H. flavipes* Fabricius and/or *H. obscurus* Mulsant.

Hydrophilidae

Crenitis punctatostriata (Letzner) (RL 2): this inhabitant of mountainous peatbogs was present with one male in a peaty pool at the Siegelbach.

Enochrus coarctatus (Gredler) (RL 3): one male and one female from the dense *Phragmites*-vegetation of the Hinterer Breitunger See near Breitungen (Landkreis Schmalkalden-Meiningen).

Enochrus fuscipennis (Thomson) (RL?): the only Thuringian record so far is from the nature conservancy area "Nägelstedt-Großvargulaer Unstruttal" (WEIPERT 1995). According to KÖHLER & KLAUSNITZER (1998) this should be also the only German record for *E. fuscipennis*. We collected one male in a recently excavated pond in a calcareous sand pit east of Herbsleben, also in the Unstrut valley and not far removed from Nägelstedt. The occurrence of this inhabitant of peaty waters is remarkable.

Enochrus ochropterus (Marsham) (RL 3): one female from a peaty pool in the Saukopfmoor.

Hydrochara caraboides (Linnaeus) (RL 2): two males and two first instar larvae were collected in, respectively, an old pond and a recently excavated pit near Herbsleben; one second instar and one third instar larva were found in a shallow pool near the gravelpit at Immelborn.

Laccobius atratus Rottenberg (RL 2): this typically inhabitant of *Sphagnum*-rich helocrene springs and uppercourses of brooklets was numerous in the Siegelbach.

Limnoxenus niger (Zschach) (RL P): one female of this strongly declined species was found in the shallow pool at the gravelpit near Immelborn.

Georissidae

Georissus crenulatus (Rossi) (RL 3): one specimen was swept from the vegetation in a meadow bordering the northern branch of the Bieberbach above Hütscheroda. Several specimens were found at Herbsleben.

Scirtidae

Cyphon punctipennis Sharp (RL 2): one female of this inhabitant of mountainous moorlands was collected in the Saukopfmoor.

Discussion

It is quite surprising to find four new water beetle species within one week especially when most of the localities were investigated already in the past. The status of the discoveries is however different. *Hydroporus morio* is probably the only real addittion to the fauna of

Thuringia as it was described already in 1838, known from other mountainous peatbogs in the Harz, Schiefergebirge, Erzgebirge and Rhön, and not difficult to identify (at least not in the male sex). It would probably not have escaped from the attention of earlier collectors. Two other new water beetles added are probably the result of unawareness of recent literature (*Helophorus paraminutus* and *Chaetarthria similis*) as they are not mentioned in the most often used keys for Central European water beetles (LOHSE 1971; HEBAUER 1989). Both species will probably have wider distribution areas in Central Europe. The lack of *Enochrus halophilus* on the Thuringian list could be the result of a different opinion on the status of this taxon in publications concerning Central European fauna. However, appropriate habitats for this halophilic species in Thuringia are rare.

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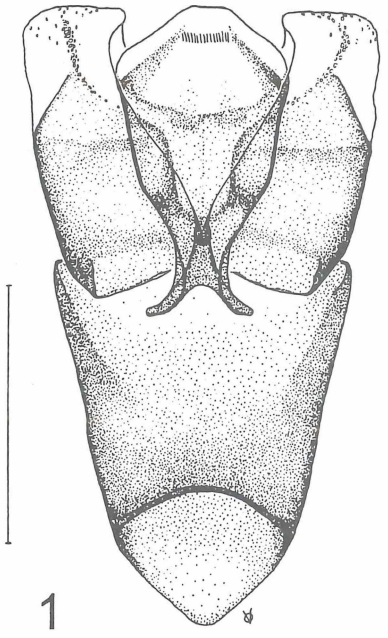

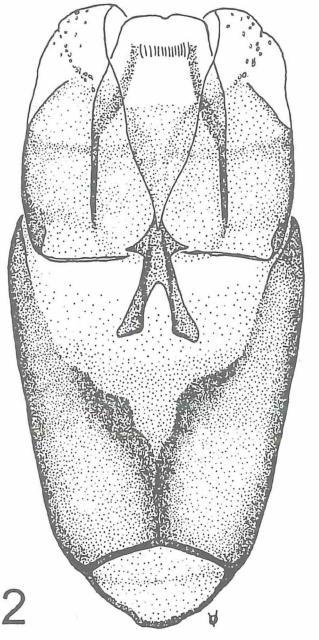

Figs 1-2. Aedeagus of *Chaetarthria similis* (1), Kanzem, Rheinland-Pfalz and *Chaetarthria seminulum* (2), Bunnik, The Netherlands. Scale 200 μm.