

## A third Palearctic species of *Chaetarthria* STEPHENS (Coleoptera: Hydrophilidae)

O. VORST & J.G.M. CUPPEN

### Abstract

*Chaetarthria simillima* sp.n. (Coleoptera: Hydrophilidae) is described. It is very closely related to *C. seminulum* (HERBST) with which it has been confused until now. The new species is widely distributed in western Europe. The aedeagi of both species are figured. Lectotypes are designated for *C. seminulum* and *C. seminulum* ssp. *sithonica* HEBAUER. *Chaetarthria seminulum* ssp. *sithonica* HEBAUER, 1993 is synonymized with *Chaetarthria seminulum seminulum*.

**Key words:** Coleoptera, Hydrophilidae, *Chaetarthria*, new species, new synonymy, lectotype designations, Europe.

### Introduction

In the course of a faunistic revision of the hydrophilid genus *Chaetarthria* STEPHENS, 1835 in The Netherlands a new species was discovered. At present, a total of 46 species is recognised, of which 38 are limited in their distribution to the New World (HANSEN 1999, MILLER 1974, WATTS 2000). From the Palearctic Region only two species were known: *C. seminulum* (HERBST, 1797) and *C. similis* WOLLASTON, 1864.

*Chaetarthria seminulum* is small (1.3 – 1.6 mm) and globular. It lives along the margins of several types of water bodies where it can be collected by trampling or flushing. For a long time it was considered the only species occurring in the Palearctic, except for the very similar *C. similis* WOLLASTON (1864) from the Canary Islands. Both species were synonymised by BALFOUR-BROWNE (1939) based on "dissection of authentic material of Wollaston's species". d'ORCHYMONT (1940) in his study of the Atlantic Hydrophilidae, however, confirmed the specific difference of both taxa. Unfortunately, d'ORCHYMONT (1940) was unable to examine any syntypes due to the Second World War. He noticed not only differences in the elytral punctuation, which is in the scutellar region more pronounced in *C. similis*, but he also figured the aedeagi of both species, which are clearly different. In addition to Canarian localities three records were presented for the Western Mediterranean: Sierra Córdoba (Spain), Terra Nova (Sardegna) and Oued Massa (Morocco). Although the aedeagi of these specimens are identical to those of Canarian specimens, d'ORCHYMONT (1940) mentioned that the elytral punctuation is aberrant and close to that of *C. seminulum*. These findings let him speculate on the existence of a local form on the Canary Islands, evolved following the colonisation of these islands.

Recently, HEBAUER (1993, 1998), unaware of d'Orchymont's findings, showed that both *Chaetarthria*-species are widespread in Europe. In contrast to *C. seminulum* sensu auctorum that occurs in Europe, from Scandinavia to the Mediterranean and from the British Isles to the Ural Mountains, *C. similis* seems to be restricted to the Mediterranean and the southern part of Central Europe. At the moment *C. similis* is known as far north as Thuringia and Rheinland in Germany (CUPPEN et al. 1998, KÖHLER & KLAUSNITZER 1998).

The newly discovered species is very close to *C. seminulum*, and can only be reliably separated by small differences in the structure of the aedeagus. Nevertheless we are convinced of its specific status as these differences are rather constant and consist of several unrelated characters. The only external characters associated with aedeagal morphology involve the surface structure of the head and the coloration of the pronotal disc. The specific status is further supported by the co-occurrence of both species at several localities without any transitional forms.

To solve the nomenclature of both species relevant type material was sought for examination. We were not able to study syntypes representing *Chaetarthria picea* HOCHHUTH, 1871, which is the oldest synonym of *C. seminulum*. The Hochhuth collection was originally kept at the Institute of Zoology of the Ukrainian Academy of Sciences (HORN et al. 1990, BEHNE 1991), but was in recent years transferred to the National Museum of Nature, Kiev (A. Putchkov i.l., SOLODOVNIKOV 2002). However, judging from the original description it is unclear whether this species should be considered a synonym of *C. seminulum* at all, because HOCHHUTH (1871) stated that it was almost just half the size of *C. seminulum*. This seems to fit with the mentioned size of 3/8 lin. (about 0.9 mm). *Chaetarthria picea* was treated as a doubtful synonym by GANGLBAUER (1904) who apparently did not study any type material: "dürfte aber kaum spezifisch verschieden sein".

The only other published name available is *C. seminulum* ssp. *sithonica* HEBAUER, 1993, referring to a taxon from Makedonia (Greece) and southern Spain, based on the emargination of the basal piece of the aedeagus.

Originating from REDTENBACHER (1849), *Agathidium carbonarium* STURM, 1807 is mentioned for over a century as a (doubtful) junior synonym of *C. seminulum* in the major catalogues (GEMMINGER & HAROLD 1868, KNISCH 1924, HANSEN 1999). However, the accurate figures in the work of STURM (plate XXVII, Figs. d, D-F) convincingly show that this species is not a hydrophilid but belongs to Leiodidae, as the antennomeres 7 and 9-11 are enlarged to form a characteristic club. The species is treated as such in the catalogue of HATCH (1929) and a recent revision of the Palearctic *Agathidium* (ANGELINI 1995).

#### Acronyms

cCE	coll. J.G.M. Cuppen, Ede
cHG	coll. F. Hebauer, Grafing
cVU	coll. O. Vorst, Utrecht
NNM	Nationaal Natuurhistorisch Museum Naturalis, Leiden
NMW	Naturhistorisches Museum, Wien
ZMA	Zoölogisch Museum, Amsterdam
ZMHB	Museum für Naturkunde der Humboldt-Universität, Berlin

### *Chaetarthria seminulum* (HERBST)

*Hydrophilus seminulum* HERBST 1797: 314, pl. cxiv: fig. 11, L.

? *Chaetarthria picea* HOCHHUTH 1871: 246.

*Chaetarthria seminulum* ssp. *sithonica* HEBAUER 1993: 1, fig. 2; **syn.n.**

**TYPE MATERIAL:** *Hydrophilus seminulum*: **Lectotype** ♂ (here designated): "Hist.-Coll. (Coleoptera) \ Nr. 10692 (3. Ex.) \ Cyllidium seminulum Payk. \ Suecia – Sardin. \ Zool. Mus. Berlin", "Lectotypus, *Hydrophilus seminulum* Herbst, des. O. Vorst x.2001" [red] (ZMHB), remounted on card with abdomen and aedeagus glued separately.

**Paralectotypes:** three specimens with the same label data as the lectotype, except for numbering: labelled as 2., 4. and 5. Ex.

The type material of *Hydrophilus seminulum* is to be sought in the collection of the Museum für Naturkunde der Humboldt-Universität (Berlin), where the collection of Herbst has been included in the "historical collection". Here a series of seven specimens is kept of which the first is labelled as follows: "10692", "*seminulum* \ Ht. Pk. \* \ Suecia. Payk.". This latter label indicates the presence of typical material ["\*"] of *C. seminulum*. However, the series is certainly not homogeneous as the sixth specimen (a ♂ of *C. similis*) is labelled: "Sardin. Gené". The other specimens

do not carry an original label, and according to the historical relabelling practice, the first five specimens should be considered as, at least partly, collected by Paykull in Sweden ["Suecia. Payk."] and the sixth (and possibly seventh) as originating from Sardegna. However, *C. seminulum* was described from Germany not Sweden: HERBST (1797) stated "Er ist aus hiesiger Gegend" [= Berlin]. As the imperfectly labelled series in the "historical collection" should be considered as potentially heterogeneous, a lectotype was nevertheless selected from specimens number two through five, potentially originating from Germany. The third specimen is herewith designated as lectotype, leaving the other three specimens (2, 4 and 5) as paralectotypes.

*Chaetarthria seminulum* ssp. *sithonica*: **Lectotype** ♂ (here designated): "GR-MAKED. 25.7.88 \ Orfanion 50 km w \ Kavala; Jäch (18)", "♂", "*Chaetarthria* \ *seminulum* HBST. \ det. F. HEBAUER", "ssp. *sithonica* \ det. F. Hebauer", "TYPUS" [red], "Coll. F. Hebauer", "*Chaetarthria* \ *seminulum* (Hbst.) \ det. O. Vorst 2002" (cHG), remounted on card with abdomen and aedeagus glued separately. **Paralectotypes**: Spain, Malaga, San Roque, dunes near Torre Nueva, 2.VI.1991, 1 ♂, leg. D. Wrase (cHG); Spain, Cádiz, Jimena Frontera, 6.VI.1992, 1 ♂, leg. D. Wrase (cHG).

Of the three syntypes in the collection of F. Hebauer the specimen from Makedonia is herewith designated as lectotype in accordance with its name referring to the type locality, Sithonia. This is also the specimen of which the aedeagus is depicted in the original description [Halkidiki, Sithonia]. Moreover this is the only of the three specimens bearing a type label. In overall appearance and aedeagal structure the type specimen is a typical *C. seminulum*. The extremely and simply excavated basal piece seems insufficient to justify a subspecific rank.

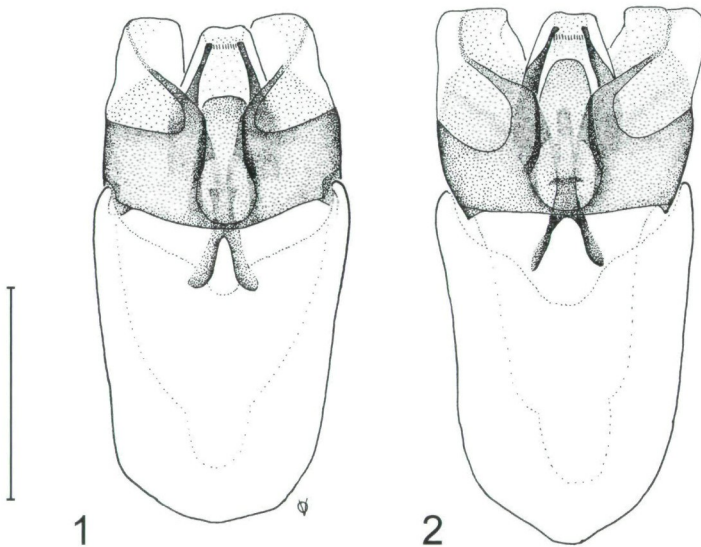
#### ADDITIONAL MATERIAL EXAMINED (♂♂ only):

- NORWAY: Akershus, Ås, Lake Årungen, 27.VII.1998, 1 ♂, leg. J.G.M. Cuppen (cCE); Kristiania [= Oslo], 1 ♂, leg. Kaufmann (NMW).
- SWEDEN: Västerbotten, Skatan, Lake Västre Skärträsket, 28.V.1987, 1 ♂, leg. J.G.M. Cuppen (cCE).
- DENMARK: South Jutland, Rømø, Lakolk, ditch in dunes, 26.V.1991, 1 ♂, leg. J.G.M. Cuppen (cCE).
- GREAT BRITAIN: East-Sussex, Winchelsea Beach, ditch N of Long Pool, 8.IX.1986, 2 ♂♂, leg. J.G.M. Cuppen (cCE).
- NETHERLANDS: Wollinghuizen, Ruiten Aa, 16.VI.2001, 22 ♂♂, leg. O. Vorst (NMW, NNM, ZMA, cHG, cVU); Weerribben, Schut- en Grafkampen, 1.IX.2001, 5 ♂♂, leg. O. Vorst (cVU); Retranchement, 1.IX.2002, 3 ♂♂, leg. O. Vorst (cVU).
- LUXEMBOURG: Schlindermanderscheid, Schliennerberg, Sûre, 3 ♂♂, leg. J.G.M. Cuppen (cCE).
- FRANCE: "Gallia", 1873, 1 ♂ (NNM); Dept. Meuse, Pouilly-sur-Meuse, Meuse, 13.VIII.2002, 1 ♂, leg. J.G.M. Cuppen (cCE); Dept. Meuse, Saulmory-et-Villefranche, Ruisseau de Froide Fontaine, 10.VIII.2002, 5 ♂♂, leg. J.G.M. Cuppen (cCE); Dept. Ardennes, Bar-lès-Buzancy, le Grand Marais, ditch, 5.VIII.2002, 1 ♂, leg. J.G.M. Cuppen (cCE).
- GERMANY: Bremen, Lesum, III.1961, 1 ♂, leg. Budberg (ZMW); Hildesheim, 1 ♂, leg. Plason (NMW); Berlin, Spandau Forst, 2.IV.1920, 1 ♂, leg. Laß (ZMHB); Berlin, 3.III.1910, 1 ♂, leg. M. Ude (ZMHB); Köthen, 1 ♂ (NMW); Thüringen, 18.IV.1895, 1 ♂, leg. W. Hubenthal (ZMA); Erlangen, 2 ♂♂, leg. Everts (ZMA); Erlangen, 1 ♂, leg. Rosenhauer (NMW); near Regensburg, 20.VII.1959, 2 ♂♂, leg. L. v.d. Hammen (NNM); Emmerich, Praets, Bienener Altrhein, 27.IV.2002, 1 ♂, leg. J.G.M. Cuppen (cCE).
- AUSTRIA: Krems, 1 ♂, leg. I. Bachinger (NMW); Bisamberg, 1 ♂, leg. Spaeth (NMW); Groißenbrunn, 9.VII.1963, 1 ♂, leg. E. Gotz (cHG); Draufner bei Kleblach, 2 ♂♂, leg. Konschegg (NMW).
- POLAND: "Rosenberg" [= Różnowo], 1 ♂, leg. Mülverstedt (NMW); Woj Słupskie, Bytow, Pomysk Wielki, small mesotrophic lake, 29.V.1993, 2 ♂♂, leg. J.G.M. Cuppen (cCE); "Silesia, Teschen" [= Cieszyn], 1 ♂, leg. W. Prock (NMW).
- CZECH REPUBLIC: "Paskau" [= Paskov], 1 ♂, leg. Reitter (NNM); Třeboň, Opatovický ryb., 15.VI.1998, 2 ♂♂, leg. O. Vorst (cVU); Suchdol dan Lužnici, 16.VI.1998, 1 ♂, leg. O. Vorst (cVU).
- HUNGARY: Debrecen, Vámospercs, inundated pasture, 19.VIII.1980, 1 ♂, leg. R. Evers (cCE); Dombóvár, 1 ♂, leg. Gebhardt (NNM); Dombóvár, Kapos, 27.IV.1919, 1 ♂ (NNM).
- SLOVENIA: "Lai. Moor" [= Ljubljana Bog], 23.X.1917, 2 ♂♂, leg. Staudacher (ZMA); "Marburg" [= Maribor], 1 ♂, leg. Lang (NMW).
- ITALY: "Garda See" [= Lago di Garda], 1 ♂, leg. Wingelmüller (NMW).
- MACEDONIA (former Yugoslav republic): Pelister near Bitola, 21.VII.1988, 1 ♂, leg. M.A. Jäch (NMW).
- GREECE: Makedonia, Akhladhokhori, 11.VIII.1988, 1 ♂, leg. M.A. Jäch (NMW); Halkidiki, Sithonia, 22.VII.1988, 1 ♂, leg. M.A. Jäch (NMW); Attica, 1 ♂, leg. Reitter (NMW); Lesbos, Mytilini-Kallonni near Lambou Mili, 7.VI.1996, 1 ♂, leg. M.A. Jäch (NMW); Milos, 1 km E Siderianos, 19.IX.1990, 2 ♂♂, leg. M.A. Jäch (NMW).
- TURKEY: Prov. Çanakkale, 5 km W Yenice, 4.VIII.1988, 1 ♂, leg. M.A. Jäch (NMW); Prov. Çanakkale, Ezine, Sarmisaki River, 17.V.1991, 3 ♂♂, leg. H. Schönmann & H. Schillhammer (NMW); Prov. Izmir, Aydın-Tire, 20.V.1991, 1 ♂, leg. S. Schödl (NMW).

**DIAGNOSIS:** Very similar to *C. simillima* sp.n. from which it can be distinguished by some constant aedeagal differences (Fig. 1). The external morphology of *C. seminulum* shows only very few characters separating it from its sister species. The only difference with some diagnostic value seems the surface structure of the head. Due to its denser microreticulation the dorsal surface of the head seems dull and devoid of any micropunctures under reflective light at low magnification (20 X).

**DISTRIBUTION:** Insufficiently known. North and Central Europe, Balkan Peninsula and Turkey; in Central Europe probably the more common species. Not yet known from the western Mediterranean. Many published records of *C. seminulum* from the Mediterranean probably refer to *C. similis*.

**BIONOMICS:** Found at edges of all types of water bodies, often together with the following species.

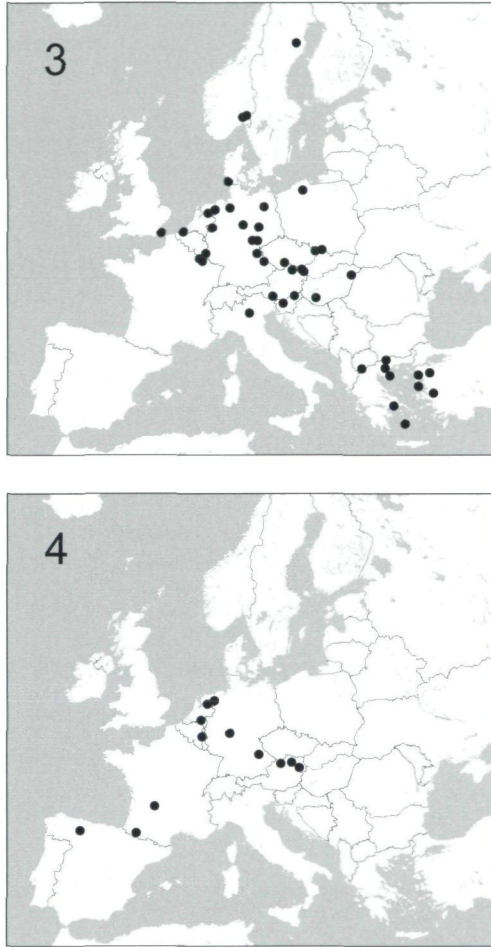


Figs. 1 - 2: Ventral aspect of the aedeagi of 1) *Chaetarthria seminulum*, The Netherlands, Wollinghuizen and 2) *C. simillima*, holotype, The Netherlands, Wollinghuizen. Scale = 200  $\mu$ m.

### *Chaetarthria simillima* sp.n.

**TYPE MATERIAL:** **Holotype**  $\sigma$  (NNM): "The Netherlands: \ prov. of Groningen: \ Wollinghuizen, Ruiten Aa \ 16.VI.2001, leg. O. Vorst \ AC 272.5-558.1, V2949b", "Holotypus, *Chaetarthria simillima* Vorst & Cuppen" [red].  
**Paratypes:** 2  $\sigma\sigma$  (NNM), 2  $\sigma\sigma$  (ZMA), 2  $\sigma\sigma$  (cVU), 1  $\sigma$  (cHG), same locality data as holotype.  
**NETHERLANDS:** Griendtsveen, 6.XII.1996, 1  $\sigma$ , leg. O. Vorst (NMW); Naardermeer, 18.VI.1994, 1  $\sigma$ , leg. O. Vorst (cVU); Selligen, Rijsdam, Ruiten Aa, 17.VI.2001, 1  $\sigma$ , leg. O. Vorst (ZMHB); Terschelling, Kroonpolder,

31.V.1996, 1 ♂, leg. O. Vorst (cVU); Vlieland, West-Vlieland, 30.IV.1995, 3 ♂♂, leg. O. Vorst (cVU); Weerribben, Woldakkers, 31.VIII.2001, 1 ♂, leg. O. Vorst (NMW); Woold, 12.VI.1993, 1 ♂, leg. O. Vorst (cVU).



Figs. 3 - 4: European distribution of 3) *Chaetarthria seminulum* and 4) *C. simillima*.

ADDITIONAL MATERIAL EXAMINED (♂♂ only):

NETHERLANDS: Oisterwijk, 18-22.VI.1924, 1 ♂, leg. Van Eldik (NNM).

BELGIUM: Liège, Stoumont, La Gleize, La Venne, 19.IV.1995, 1 ♂, leg. J.G.M. Cuppen (cCE).

FRANCE: Dordogne, La Cassagne, Coly, La Grande Prade, 24.VII.2000, 6 ♂♂, leg. J.G.M. Cuppen (cCE); Pyrénées-Atlantiques, Bielle, Plateau de Houndas, Ruisseau de Houndas, 31.VII.1992, 3 ♂♂, leg. J.G.M. Cuppen (cCE).

GERMANY: Hessen, Kreis Waldeck-Frankenberg, Hatzfeld, 3.IV.1999, 13 ♂♂, leg. J.G.M. Cuppen (cCE); Bayern, near Regensburg, 20./21.VII.1959, 2 ♂♂, leg. L. v.d. Hammen (NNM).

AUSTRIA: Bad Vöslau, 1 ♂ (NMW); Krems, 1 ♂ (NMW); Linz, 1 ♂, leg. H. Priesner (NMW).

SPAIN: León, Genicera, Collada de Valdeteja, 9.VI.1990, 1 ♂, leg. J.G.M. Cuppen (cCE).

DIAGNOSIS: *Chaetarthria simillima* sp.n. is very similar to *C. seminulum* from which it can be distinguished reliably by the structure of the aedeagus (Fig. 2). On average, the median sclerite of

the penis is apically further extended and nearing the apical annulus. In *C. seminulum* the median sclerite is less extended, leaving a gap between sclerite and annulus. The sclerotised basal part of the parameres is characteristically emarginate at the ventral side; this character is relatively constant and most reliably separates this species from *C. seminulum*. The apicolateral angle of the parameres with a more or less developed membranous extension, which is absent in *C. seminulum*.

The dorsal surface of the head usually with less pronounced microreticulation and more distinct micropunctures than in *C. seminulum*. As a result the head seems slightly more shiny with a more pronounced micropunctuation under reflecting light (magnification 20X).

In *C. simillima* sp.n. the pronotal disc is black to dark brown and in most cases clearly reddish brown towards the sides. In *C. seminulum* the pronotal disc is hardly lighter towards the sides.

DISTRIBUTION: Insufficiently known. West and Central Europe.

BIONOMICS: This species lives at edges of water bodies.

ETYMOLOGY: simillimus, Latin: very similar; the species is even more similar to *C. seminulum* than *C. similis*.

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