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Revision of the Cleptinae of the World. Genus *Cleptes* subgenera and species groups. (Hymenoptera, Chrysididae)

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Abstract

Key words: Hymenoptera, Chrysididae, *Cleptes*, Taxonomy, Keys.

A new key is compiled for subgenera and species groups concerning all presently known valid species of the genus *Cleptes* LATREILLE, 1802. Instead of the lost holotype of *C. putoni* BUYSSON, 1886 the male (det. BUYSSON) is indicated as neotype and a female as neotype of *C. dahlbomi* SEMENOV, 1920. A new subgenus, *Maculosicleptes* subgen. nov., is described. New synonymy is established: *C. saussurei* MOCSÁRY, 1889 syn. nov. is identical with *C. putoni* BUYSSON, 1886. The synonymy of *C. buyssoni* SEMENOV, 1891 is confirmed, based on a study of the holotype. The subgenera *Oxycleptes*, *Chryso-cleptes*, *Maculosicleptes* and *Neocleptes* with the new species groups *putoni*, *semenovi*, *dahlbomi* and *asianus* and their keys are discussed. *Cleptes dahlbomi* SEMENOV, 1920 is revalidated from synonymy and transferred to *Maculosicleptes* subgenus. New data and variability of species are given.

Zusammenfassung

Ein Bestimmungsschlüssel der Untergattungen und Artengruppen der gesamten Gattung *Cleptes* LATREILLE, 1802 wird präsentiert. Anstatt des verloren gegangenen Holotypus von *C. putoni* BUYSSON, 1886 wird das Männchen (det. BUYSSON) als Neotypus eingesetzt, und ein Weibchen wird als Neotypus von *C. dahlbomi* SEMENOV, 1920 festgelegt. Eine neue Untergattung, *Maculosicleptes* subgen. nov., wird beschrieben. Eine neue Synonymie wird erkannt: *C. saussurei* MOCSÁRY, 1889 syn. nov. ist identisch mit *C. putoni* BUYSSON, 1886. Die Synonymie von *C. buyssoni* SEMENOV, 1891 wird bestätigt, basierend auf dem Studium des Holotypus. Die Untergattungen *Oxycleptes*, *Chryso-cleptes*, *Maculosicleptes* und *Neocleptes* mit den neuen Artengruppen *putoni*, *semenovi*,

dahlbomi und *asianus* sowie deren Schlüssel werden diskutiert. *Cleptes dahlbomi* SEMENOV, 1920 wird aus der Synonymie genommen und in die Gattung *Maculosicleptes* gestellt. Neue Daten und Variabilitäten der Arten werden angegeben.

Subfamily Cleptinae

Cleptinae species can be easily recognized by the convex venter and face, by the robust mandibles and by the pronotum, that usually has two transverse groove depressions, or a sulcus anteriorly and posteriorly. The body is mostly with different metallic highlights. The abdomen has five visible segments in males and four in females. Cleptinae are parasitoids of tenthredinid sawfly larvae.

The main differences of the related genera

- 1 Claws with one perpendicular submedial tooth (Fig.7). Head wider (Fig.1), as wide as long or longer. Pronotum with or without sulcus along the mid-line. *Cleptes* LATREILLE, 1802
- Claws bifid, with single, large, subparallel subsidiary tooth (Fig.8). 2
- 2 Head length somewhat more than half the width. Pronotum without a median longitudinal sulcus or line. *Lustrinia* KURIAN, 1955
- Head considerable wider than long. Pronotum with deep sulcus along mid-line. *Cleptidea* MOCSÁRY, 1904

The newest main literatures of *Cleptidea* were published by KIMSEY (1981, 1986), KIMSEY & BOHART (1991) and MÓCZÁR (1996a, 1996b). The number of *Cleptidea* and *Lustrinia* species is 21 at present.

Cleptidea species are distributed in the Neotropical Region, *Lustrinia* species in the Oriental Region (India).

Genus *Cleptes* LATREILLE, 1802

The newest main literature of *Cleptes* published by KIMSEY (1981, 1987), BOHART & KIMSEY (1982), KIMSEY & BOHART (1991), LINSSENMAIER (1968, 1994) and MÓCZÁR (1951, 1962, 1997a, 1997b, 1998a, 1998b). At present 74 valid *Cleptes* species are known.

Cleptes species are distributed in the Holarctic, one in the Neotropical Region and several in the Oriental Region.

Former papers of the revisional series on Cleptinae were published listed above. In the present contribution a new subgenus *Maculosicleptes* subgen. nov. is described and new species groups are established: *putoni*, *semenovi*, *dahlbomi*, *asianus*. They were compiled together with the previously published *morawitzi*, *rugulosus*, *fudzi*, *juengeri* and with some already known species groups, together with *Oxycleptes*, *Chrysocleptes*, *Maculosicleptes*, *Neocleptes* subgenera. The revision of the four groups of *Cleptes* s.str. subgenus will be finished in the near future in a new synthetical key.

In the course of the elaboration of the subgenera comprise the checklist, with the new data of spreadings, additions, corrections and informations are given concerning the variability of species in place of the long description. *Cleptes dahlbomi* SEMENOV, 1920 is revalidated from synonymy and transferred to *Maculosicleptes* subgenus. A new synonym is established: *Cleptes saussurei* MOCSÁRY, 1889 syn. nov. = *C. putoni* BUYSSON, 1886. The status of some earlier species groups is changed. The synonymy of *C. buyssoni* SEMENOV, 1891 is confirmed based on a study of the holotype.

It seems to be useful to give a comparative and more detailed enumeration of every single main character in the key, to insure a speedy identification of the species, instead of

short details and the long, circumstantial descriptions of the earlier monographs. The correct and detailed enumeration of all data of the original labels of the type material (in italics, inverted comes) may facilitate the identification in the future. In this and the next papers only those references are included, which contain type material description, the previously unknown sex or new informations not comprised in the detailed work of KIMSEY & BOHART (1991).

Acronyms of museums, universities and institutions: The names of towns concerning the origin of the examined material are briefly enumerated. I should like to express my sincere thanks for the loan of types, type material and unidentified material to curators and technical staff of the listed as follows: Berlin = Museum für Naturkunde der Humboldt-Universität zu Berlin, Germany (F. KOCH, A. KLEINE-MÖLLHOF); Budapest = Magyar Természettudományi Múzeum, Hungarian Natural History Museum, Budapest, Hungary (L. ZOMBORI, J. PAPP); Davis = Bohart Museum of Entomology, University of California, Davis, USA (L.S. KIMSEY, L.A. BAPTISTE); Linz = Oberösterreichisches Landesmuseum, Linz, Austria (F. GUSENLEITNER); Luzern = W. LINSENMAIER, private collection, Ebikon, Luzern, Switzerland; Paris = Museum National d'Histoire Naturelle Laboratoire d'Entomologie, Paris, France (J. CASEVITZ-WEULERSSE); Stockholm = Naturhistoriska Riksmuseet, Entomologiska avdelningen, Stockholm, Sweden (L.-A. JANZON, B. GUSTAFSSON); Wien = Naturhistorisches Museum Wien, Wien, Austria (S. SCHÖDL, B. MAYERL).

Symbols F-I. (II-III) = flagellomere I (or II-III); MS = malar space (measured across the narrowest interval (Fig.2) between the ventral eye margin and the ventral edge of malar space, between the two mandibular inserctions); MOD = middle ocellus diameter transversally; Ped = pedicellus (measured in its whole length, including the base, bending resembling a knee); PD = puncture diameter; T-I etc. tergum or tergite (the first segment of the abdomen etc.).

Key to *Cleptes* subgenera and species groups

- 1 All abdominal tergites laterally bent by a sharp edge into sternite, especially in males. The whole abdomen, including ventral side entirely or largely bright flame red with more or less greenish, golden reflection or tints in some specimens. Body bulky. Subgen. *Oxycleptes* MÓCZÁR, 1962
- Lateral sides of tergites broadly rounded and gradually bend into the sternite, at most a low, hardly protruding, chestnut coloured and longitudinal sharp edge (the torus), present only on T-I in some species; the edge along further segments relatively sharp in some species (cf. *Leioacleptes* subgenus, *alienus* group). 2
- 2 Abdominal tergites and sternites usually entirely or largely flame red, with greenish, golden, reddish or coppery reflections, tints in different extent, without or with black, or blackish bronze spots. Pronotum different, posterior margin from irregular punctures to distinct pits-row and also sulcus on mid-line longitudinally present. . . . 3
- Abdomen never largely flame red or reddish golden, at most in spots, but yellowish red, yellowish brown, chestnut coloured anteriorly or abdomen entirely or largely brown or black; then yellowish-reddish brown most on T-I, and so in lateral spots on other tergites and with or without metallic reflection usually posteriorly or only laterally. 4
- 3 Pronotum without a distinct transverse furrow posteriorly, at most hardly depressed; golden reddish (♀), or bluish green (♂). Abdominal tergite entirely flame red, golden red with greenish reflection laterally or with coppery tints. Body slender. (Subgenus).-Sternite entirely or partly flame red, golden, greenish gold, or partly brown. Clypeus apparently reaching the mandible basis (Fig.1). Subgen. *Chrysocleptes* MÓCZÁR, 1962, *putoni* group
- Posterior margin of pronotum depressed with distinct row of punctures and with a

- more or less complete longitudinal sulcus medially; bluish green (♀♂). Abdominal tergites largely flame red, golden red, or reddish gold with brownish black bands or small streaks on each tergite posteriorly, and a longitudinal streak or band medially across T-I-II or more tergites. Size of clypeus normal (Fig.6), lower margin extends hardly beyond antennal sockets. . . . *Maculosicleptes* subgen. nov., *dahlbomi* group
- 4 Pronotum simple without posterior deepening or groove, row of pits or without distinct sulcus along mid-line. 5
- Pronotum mostly with a row of distinct outlined pits in posterior groove (Fig.12 MÓCZÁR 1998) or only with irregular punctures in the narrower depression and with a more or less developed longitudinal furrow or sulcus medially. Anterior segments of abdomen often yellowish red. 9
- 5 Body entirely bluish green or green, partly dark blue with or without transverse or longitudinal black streaks. *semenovi* group
- Head and thorax differently coloured, abdomen usually yellowish red, chestnut in front, the rest or exceptionally the whole abdomen brown to black with different metallic reflections apically or tints laterally. . . . Subgen. *Leiocleptes* MÓCZÁR, 6
- 6 Basal segments of abdomen reddish orange, yellowish red, yellowish brown or chestnut coloured, except in some specimen, *Cleptes blaisdelli* and *doii* ♂ or dark brown to black posteriorly. Head and thorax multicoloured. 7
- Abdomen entirely dark brown to black except T-I-II and 2/3 part of T-III anteriorly in *C.canadensis* ♂, with or without metallic highlights. Head and thorax concolorous. . . . 8
- 7 Body differently, but unusually not coarsely sculptured; when deep punctures present, they are rarely fixed striatiform. Head and thorax with partly greenish gold, green, flame red, coppery or cyclamen highlights, exceptionally with bronze reflection. Apical segments black and/or with metallic colour similar to thorax. . . . *nitidulus* group
- Body, especially pronotum, mesonotum and scutellum with unusual coarse sculpture, punctures deep and fixed partly striatiform (Fig.6 MÓCZÁR 1997b). Pronotum (♀) bright gold with green reflection. Apical segments with flame red highlights and with golden reflection. *rugulosus* group
- 8 Abdomen with metallic green, blue or purple highlights along lateral margins or last tergite (except in *C. speciosus* ♀) brown. Head and usually thorax blue to purple or bright green to bluish green(♂) or bronze to copper (*C. speciosus* ♀). T-III rarely with double punctures. Lateral edges of abdomen rather sharp on all segments especially in males (distinctly less sharp in subgenus *Oxycleptes*). *alienus* group
- Abdomen without metallic highlights. Head and thorax unicoloured coppery with greenish reflection, except dark greenish propodeum with bluish reflection (in *C. canadensis* ♂) or flame red with golden reflection including propodeum. Lateral tooth of propodeum stumpy. T-III normal, without double punctures. . . . *morawitzi* group
- 9 Pronotum with transverse groove with a distinct row of pits or foveae along the posterior margin; or this groove is narrow, only as sulcus with irregular punctures present in some species, or difficulty separable owing the rugose sculpture of pronotum. The longitudinal furrow medially not always reaching the anterior row of pits, exceptionally ending about half length of disc. Postscutellum not always reaching scutellum medially, in this case some or a row of minute foveae present in depth. Abdomen with yellowish red usually only on basal segments in smaller species or body entirely black in larger species, with different metallic highlights.
- Pronotum with a differently complete or insufficiently developed transverse row of pits or depression before posterior margin; longitudinal furrow lacking medially. At least thorax and abdomen with different colour or body entirely bright green, bluish green concolorous. 12

- 10 Postscutellum strongly converging backwards, isosceled-, or equilateral triangle formed, with one usually large and deep pit in front. Posterior row of pits on pronotum well developed. Body nearly dark, with green, blue, violet-purple or bronze mixed coloured metallic highlights, reflections or tints. *fudzi* group
- Postscutellum oblong distinctly wider than long or quadrangular. Posterior row of pits on pronotum usually moderately developed. Abdomen exceptionally entirely black or with yellowish red, chestnut coloured or different with lighter, often with bright metallic colour. 11
- 11 T-I with very fine, T-II with denser, T-III mostly with closely punctures mainly anteriorly. Head, thorax with distinctly deeper, partly with rugose or double punctures. Propodeal spine with strong thornlike basis. Abdomen largely black with dark malachit green or rarely dark bluish reflection and some dark brownish spots. *juengeri* group
- Body, particularly, abdomen densely usually with rather deep, coarse punctates. T-III-IV often with double punctures. Propodeal spine not always with thornlike basis. Colour is never malachit green, propodeum at most exceptionally reddish medially, terga usually yellowish or brownish red in front, exceptionally also T-III largely black, partly metallic posteriorly. Head, thorax with strikingly metallic reddish, greenish or violet highlights. Postscutellum not reaching scutellum, there is usually a deep, minute row of foveae in depth between those. *aerosus* group
- 12 "Head and thorax coarsely punctate, punctures generally much less than one puncture diameter apart and usually contiguous. Pronotum with medial depression or groove along posterior margin. Head, thorax, and abdomen metallic." (According to KIMSEY). Subgen. *Neocleptes* KIMSEY, 1981
- Head and thorax usually not coarsely punctured, exceptionally at most rugose striate. Pronotal transverse depression or groove usually with well developed and distinctly outlined row of pits or less depressed, narrower and shallower one; punctures irregular or also foveae obscure outlined in some species. Subgen. *Cleptes* LATREILLE, 1802, 13
- 13 Thorax, legs, and abdomen not metallic black or brown. Mid legs, fore coxae largely white. Pronotum without a distinct posterior groove or longitudinal mid-line sulcus, only with a shallow depression along posterior margin. *townesi* group
- Body more or less with metallic colour. Pronotum usually depressed along posterior margin with, sometimes without complet row of pits. Coxae, femora never white. . . 14
- 14 Basal abdominal segments I-II usually entirely and III or more tergites laterally reddish brown, yellowish brown or chestnut coloured, often with metallic colouration usually on last tergite laterally more, or hardly discernible on T-V. The rest of segmentos brownish black. The row of pits on posterior groove of pronotum different from remarkably sharp outlines to normal or to hardly developed form. *semiauratus* group
- All abdominal segments black or dark brown, with or without metallic reflection, exceptionally entirely lighter, at most with some lighter brownish spots or streaks especially on T-I(-II). The same is possible also on more tergites (T-II-IV) laterally, in some species. T-III-IV with double punctures (fig.10 MÓCZÁR 1998). 15
- 15 Abdomen brown or black, never metallic. Head, thorax largely without or partly with metallic green, golden red highlights. At most lighter brownish spots on T-I(-II), exceptionally on T-I-IV. Pronotal depression posteriorly differently developed, often with a row of pits, or with a short keel medially and/or with irregular punctures. Pronotum at most rugose striate. *satoi* group
- Abdomen partly, head, thorax entirely or largely with different green, greenish blue, violet purple metallic highlights. Pronotum depressed posteriorly, usually with dis-

tinct row of pits, which is somewhat small and punctures are indistinctly out-lined.
..... *asianus* group

Subgenus *Oxycleptes* MÓCZÁR, 1962
***Cleptes orientalis* group**

Cleptes (Oxycleptes) MÓCZÁR, 1962: 124. - Type species: *Cleptes orientalis* DAHLBOM, 1854: 20.

Cleptes (Oxycleptes): KIMSEY & BOHART 1991: 57 (syn. of *orientalis* group).

Cleptes orientalis group partly: KIMSEY & BOHART 1991: 57 (new syn.)

Cleptes (Oxycleptes): MÓCZÁR 1998a: 323 (revalidated).

Upper side of abdomen bends into the lower side sharply, lateral edge always well developed along on its whole length and sharp especially in males; segment I with a low, narrow, hardly protruding and often chestnut coloured torus. Head, pronotum, mesonotum, legs and all abdominal terga together with sterna bright flame red, or often partly with more greenish gold (♀) or bright bluish green (♂). Pronotum convex, nearly simple, hardly, narrowly depressed partly, posterior margin with remarkably smaller, denser and irregular punctures than on disc.

***Cleptes orientalis* DAHLBOM, 1854**

Cleptes orientalis DAHLBOM, 1854: 20 ♀ T.1. Fig.2. Holotype ♀; Turkey (Copenhagen).

Cleptes orientalis: MOCSÁRY 1889: 57 ♀♂ Figs 11, 12.

Cleptes orientalis: KIMSEY & BOHART 1991: 62 (*orientalis* group).

Material examined: 10♀ 18♂♂. - Hungary: Budapest 12.VII.1903 (Bartkó), 1♂; VII. (Szöcs), 3♀♀, 13♂♂; Pécel (Kuthy) 3♀♀ 2♂♂ (1♀ Luzern, 2♀♀ and all the formers Budapest); South Hungary 17.VII.1863 (Frivaldszky), 1♀ (Budapest). - Bulgaria: Untere Kamtschija 30.VI.1935, 1♀ 2♂♂ (Berlin); Orisare (Barakli) 10.VII.1935, 2♀♀ (Berlin and Budapest). - Russia: Umgeb. Upsjenskaja Gouv. Jekaterinoslav 8.IX.1918 (A. Spaney), 1♀ (Berlin).

Comparing the proportions: ♀: MS 0.8 MOD long. Ped 1.8 times as long as wide, F-I 2.1 times as long as wide, F-II 1.2 times and T-III 1.0 times as long as wide. - ♂: MS 0.6 times, Ped 1.3 times, F-I 2.0 times, F-II 1.5 times and F-III 1.5 times as long as wide. Postscutellum transversal, anterior margin with deep and relatively broad groove (Fig.3) with a row of well outlined foveae before scutellum. The groove and foveae on males more than half as long as the length of postscutellum; posterior margin intact. Lateral sides of propodeum remarkably concav, lateral corners nearly rectangular (Fig.3). Body with deep, partly closely punctures. Abdomen without double punctures. Interestingly the punctures on disc of T-I rather deep and scattered in female, and deep and dense along the entire surface of disc including laterally, on male. T-II-III denser punctured anteriorly and gradually scattered posteriorly; T-IV deeper and denser punctured compared to former tergite in female. T-II-III very dense and deep, T-IV-V closely and more deeply punctured in male. Last sternite with a longitudinal deep and oval deepening medially. Male genitalia: Fig.4.

This species is easily discernible among all *Cleptes* species. The variability concern the colouring of the head, pronotum and mesonotum of females, which are more greenish gold (3♀♀ specimens from Pécel), as well as 1-1♀ (from Kamtschija and Russia). Abdominal terga is with green reflection laterally and partly ventrally in 1♂ (Budapest). These are not significant colour differences among the *Cleptes* species.

Distribution. Turkey (DAHLBOM 1854). Moravia penes Freiberg, Hungaria (MOCSÁRY 1889). South Europe (KIMSEY & BOHART 1991). Bulgaria and Russia.

Subgenus *Chrysocleptes* MÓCZÁR, 1962
***Cleptes putoni* group**

Cleptes (Chrysocleptes) MÓCZÁR, 1962: 116, 122. - Type species: *Cleptes putoni* BUYSSON, 1886: 151. Orig. desig.

Cleptes (Chrysocleptes): KIMSEY & BOHART 1991: 54 (syn.).

Cleptes (Chrysocleptes): MÓCZÁR 1998a: 323 (revalidated).

Posterior margin of pronotum without a depression, a row of pits and a longitudinal sulcus medially; at most hardly and narrowly depressed with some irregular, often hardly perceptible minute punctures or wrinkles. Apical margin of clypeus is truncate and sits close to the lower face in a great extent, that it seems to be melted into it (Fig.1), therefore clypeus apparently reaches the mandible basis, really begins beyond the half of antennal sockets; surface of clypeus is raised longitudinally, lateral sides often hardly perceptible, convergent. Abdomen normal, lateral margin broadly rounded except T-I with longitudinal torus. Punctures of body are dense, but much finer than in *Cleptes orientalis*. T-I with distinct, partly scattered or dense punctures. T-III with double punctures laterally and T-IV basally.

The *Chrysocleptes* subgenus was based on two taxa: *Cleptes putoni* BUYSSON, 1886 and *Cleptes saussurei* MOCSÁRY, 1889. The two taxa were differently interpreted by authors owing to the rare capture and the variability of the specimens. They are distributed in South and Middle Europe as far as to Jordan, and southern part of Russia.

Cleptes putoni BUYSSON, 1886

Cleptes putoni BUYSSON, 1886: 151, 1♀. Holotype ♀, France: Basses-Alpes, Sisteron (lost). Neotype ♂ (desig. herein), France: Gréouls (Paris); BUYSSON 1888: 13, 1♂.

Cleptes Buyssonis SEMENOW, 1891: 183, 1892: 501, 1♂. Holotype ♂; Montenegro (Budapest).

Cleptes putoni: ZIMMERMANN 1954: 1.

Cleptes putoni: LINSENMAIER 1959: 13 ♂♀; LINSENMAIER 1968: 9 (*saussurei* MOCS. ist wahrscheinlich identisch).

Cleptes putoni: MÓCZÁR 1962: 122 ♂♀ (*Chrysocleptes* subgen.-type, compar. with *C. saussurei* MOCSÁRY).

Cleptes putoni: KIMSEY & BOHART 1991: 62 (*buyssonis* SEMENOV (sic!) 1892: 501. Holotype ♂ as synonym, *orientalis* group).

Cleptes saussurei MOCSÁRY, 1889: 57, 1♀. Holotype ♀, Russia: Sarepta (Geneva); MOCSÁRY 1892: 213 ♀.

Cleptes saussurei: ZIMMERMANN 1954: 1 (synonym of *C. putoni* BUYSSON).

Cleptes saussurei: LINSENMAIER 1959: 13 (*C. buyssonis* SEMENOV, 1892 as synonym; ? = *putoni* BUYSSON); LINSENMAIER 1994: 516 ♀♂ (*C. dahlbomi* SEMENOV, 1920: 306, Ersatzname für *C. aurata* DAHLBOM, 1854: 2, syn.); LINSENMAIER 1997: 42.

Cleptes saussurei: MÓCZÁR 1962: 122 ♂♀ (subg. *Chrysocleptes*).

Cleptes saussurei: KIMSEY & BOHART 1991: 63 ♀ (*orientalis* group).

Material examined (*putoni*): 10♀♀ 7♂♂. - France: "Museum Paris Gréouls (B. ^{es} alpes), Coll. R. du Bysson 1900"; "Gréoulsc B. ^{es} Alpes Com. Abeille"; "Type ♂" red label; "*Cleptes Putoni* Buyss. ♂ R. du Bysson 1898"; "Neotypus *Cleptes putoni* Buyss. ♂ des. Móczár 998", 1♂; Menton 6.VII.1952 J.F. AUBERT, 1♀ (Paris). - Switzerland: Peney environs, Morraines 4.VII.1889, 1♂ (Budapest). - Austria: Hochwald VI.1875 (*putoni* BUYSS. det. ZIMMERMANN), 1♂ (Wien); Tullnerbach b.w. Sommer 1928 (with genitalia on slide) (leg. WINKLER jun.), 1♂ (Wien); Burgenland, Neusidlersee 11.VII.1960, 1♀ and Winden-See 13.VIII.1960 (tot aus einem Weintrieb genommen, leg. M. SCHWARZ), 1♂ (Budapest). - Jugoslavia: "Montenegro 67 Erber"; "*Cleptes Buyssonis* /sic!/ m. ♂ un. typ.

cf. S. VI.91"; "*Cleptes buyssoni* m. Typ. un. ♂. A. Semenov - Tian-Shansky det. 1891. VIII.18"; "Holotypus" red label, 1♂ (Budapest). - (*saussurei*): - Slovenia: Krapina 19.VI.1909 1♂ (slide Fig.9) and 22.VII.1909, 1♀ (Budapest). - Hungary: Budapest, Mártonhegy, Usually 8-10.VII. (leg. STIPANICS, all det. MOCSÁRY) 5♀♀ (3 without abdomen); Hársbokorhegy (leg. SOLYMOŠNÉ), 1♀ (Budapest). - Jordan: O. Jordan Zerkatal b. Romana, 400 m, 26.IV.1958 (leg. KLAPPERICH), 1♀ (Budapest).

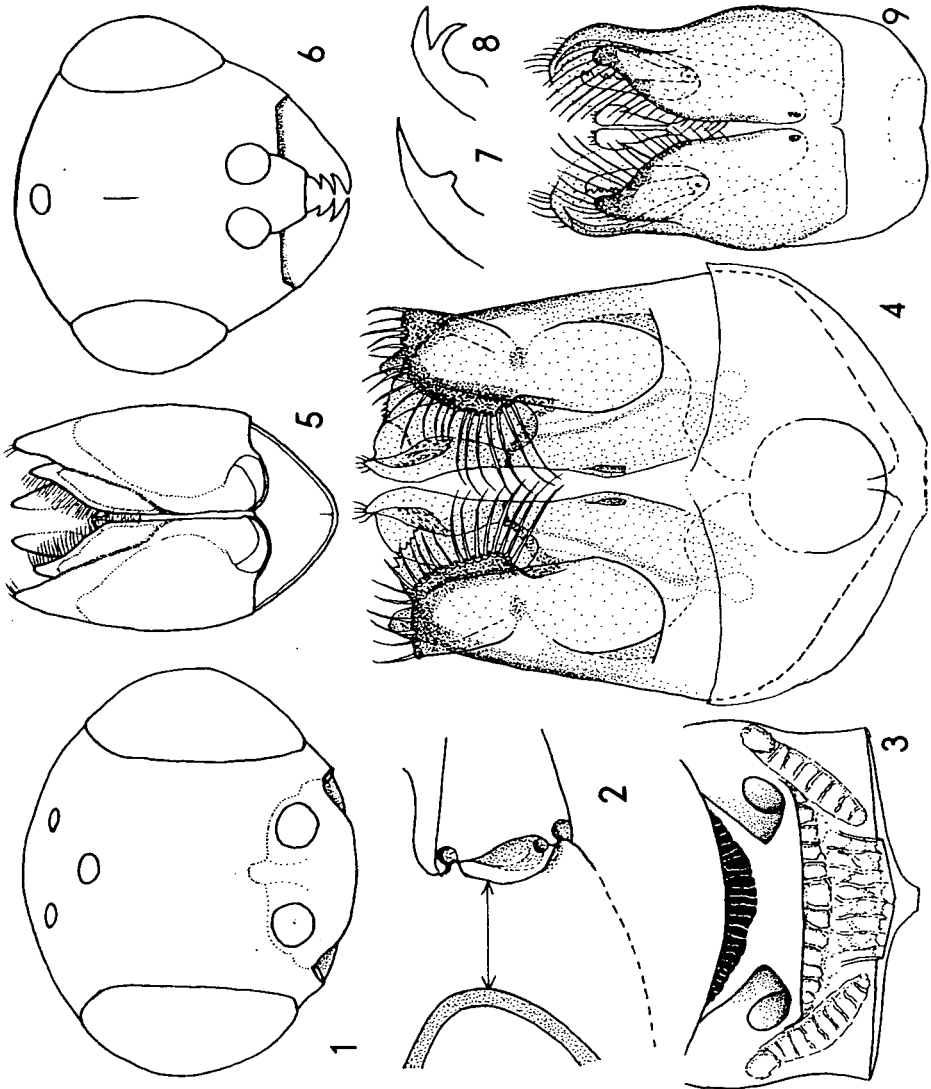
The holotype female of *putoni* was not found by S. KELNER-PILLAULT (1960 personal communication) and by J. CASEVITZ-WEULERSSE (1998 notice by letter), but the male "Type" was kindly sent by her. Instead of the lost holotype female I propose as neotype the specimen collected similarly in Basses Alpes: Gréouls and labelled as "Type" by BUYSSON in 1898.

The comparison of this *putoni* neotype male with *C. saussurei* MOCSÁRY det. male, as well as with *buyssoni* SEMENOW holotype (♂) resulted as follows. The sculpture is nearly uniform, the main different characters are the body colour, and the hairs. T-I-V is largely flame red (in *buyssoni* holotype, except the green lateral spots on T-I; in *putoni* neotype, spec. from Tullnerbach) or golden partly greenish tints on T-I-III (in *saussurei* from Peney, Hochwald and Krapina) or T-I-III largely golden red with broad green streak laterally on T-I-IV (Winden-See). Sternite II-IV flame red (*buyssoni* holotype), flame red only on S-III-IV and golden, posteriorly green (neotype), or bright green entirely on S-II-III (Winden-See, Hochwald), or greenish gold with reddish tints on S-II-III (Tullnerbach, Krapina) or partly golden red on II-III (Peney). The variability of the colour of the head and thorax is similar to the abdomen. The primary colours are violet with few greenish tints on lower face and on collar medially (*putoni* neotype), not greenish blue as in BUYSSON (1886, 1888), and more or less bluish-greenish reflections on pronotum and mesonotum (*buyssoni* holotype); moreover it is bright green on lower face, entirely on collar, laterally on pronotum, largely on mesonotum (in *saussurei*); the pronotal disc largely, scutellum bluish violet, head nearly entirely, pronotum, mesonotum, scutellum entirely darker green and what is more, propodeum greenish dark blue (Tullnerbach), not violet, similar to all males. - The third difference could be in the hairs. They are dark brown on abdomen (Tullnerbach), not black (in BUYSSON 1886) or light brown (*saussurei*, *putoni* neotype, *buyssoni* holotype) and usually proclinate mostly on abdomen and erect on head and thorax, etc. The genitalia of the specimens from Tullnerbach and Krapina (Fig.9) agrees with one another.

The variability in female is the same as in males. The hairs fairly dark, stout and erect (sp. from Menton), light brown, thin and partly erect (Burgenland, Budapest, Krapina) and short, light brown, proclinate (Jordan). The head flame red, mesonotum golden red, scutellum dark blue and propodeum dark violet, tergite flame red except T-I with green lateral spots; sternite II green, III golden, IV red (Burgenland); head-mesonotum flame red with greenish blue reflection, all tergite flame red, sternite partly green (Budapest); vertex, mesonotum flame red, pronotum golden red, scutellum greenish blue, tergite, sternite as in sp. Burgenland (and Krapina); head, pronotum flame red, mesonotum golden red, scutellum dark blue, tergite flame red, T-I and T-II with a black longitudinal streak (cf. *C. dahlbomi* !); sternite II golden red, III flame red (Jordan). Punctures of body usually deep and dense, on pronotum remarkably coarse (Jordan).

After the above listed variabilities I agree with the former authors, that *Cleptes saussurei* MOCSÁRY, 1889 **syn. nov.** and *Cleptes buyssoni* SEMENOW, 1891 are synonyms of *C. putoni* BUYSSON, 1886.

Distribution. France (BUYSSON 1886). South Europe and Austria (ZIMMERMANN 1954). Switzerland, Turkey (LINSENMAIER 1959, 1968). Sarepta (Russia), Budapest (MOCSÁRY 1889, 1892). Jugoslavia: Montenegro (SEMENOW 1891). Slovenia, Jordan.



Figs 1-9: 1-2 *Cleptes saussurei* 1 head, front view, 2 malar space. 3-4 *C. orientalis* 3 postscutellum and propodeum, 4 male genitalia. 5-6 *C. dahlbomi* 5 male genitalia, 6 head front view. 7-8 claws of fore legs 7 *Cleptes* sp., 8 *Cleptidea fasciata*. 9 *Cleptes saussurei* male genitalia. (Orig.)

Cleptes semenovi group

This group includes two species at present: *Cleptes semenovi* KUZNETZOV-UGAMSZKII, 1927 and *Cleptes viridis* GRAVENHORST, 1807. The type material is unknown for both species. Unfortunately the diagnosis of *viridis* is very short. However *semenovi* was compared by the author with *C. dahlbomi* SEMENOV; otherwise it would belong to *Leiocleptes* subgenus because of the simple pronotum. The body of both species is nearly entirely concolorous and with metallic highlights. The most simple solution to separate these is to form an isolated group, being in equal distance from the other groups and subgenera.

Key to the species

- 1 Head, thorax shining green; abdomen with brass (? golden) highlights. Scape and legs entirely yellow. Ovipositor as long as abdomen. Length more than "eine Linie" ("zwölfterzoll" ? 3 mm). (According to GRAVENHORST). *viridis* GRAVENHORST
- Body entirely shining bluish green, with long erect hairs, only propodeum partly dark blue. Lateral angles of propodeum with lengthened thornlike spine directed obliquely. T-I-II-III anteriorly and posteriorly with a strongly broadened black band in the middle; T-III with narrower longitudinal black streaks connecting the transversal bands. Legs bluish green, tarsi yellowish. Clypeus anteriorly with a sharp projection. Scape black, with very short erect hairs; as long as the length of pedicel + F-I-II together. Head strongly narrowed behind eyes. Pronotum evenly scattered by punctures. Body with rather coarse, scattered punctures. Punctures of mesonotum, scutellum finer, surface shining medially. Length 4.6-5.2 mm. (According to KUSNETZOV-UGAMSZKII).
..... *semenovi* KUSNETZOV-UGAMSZKII

Cleptes semenovi KUSNETZOV-UGAMSZKII, 1927

Cleptes semenovi KUSNETZOV-UGAMSZKII, 1927: 26 ♂. Syntypes ♂; Turkestan: Mt. Kengrak, 26 km north of Tashkent (Usbekistan) (Mus.?).

Cleptes semenovi: KIMSEY & BOHART 1991: 63 (erroneously females, *orientalis* group).
Material examined: -

The author published two data of length, therefore the syntypes are right. The rectification of some data made on the basis of the original diagnosis.

Cleptes viridis GRAVENHORST, 1807

Cleptes viridis GRAVENHORST, 1807: 270 (no more data).

Cleptes viridis: KIMSEY & BOHART 1991: 57, 64. (Unknow species, *orientalis* group).
Material examined: -

Cleptes (Maculosicleptes) subgen. nov.

Pronotum depressed along posterior or posteromedial margin with a distinct row of pits and with a longitudinal sulcus medially. Size of clypeus normal (Fig.6). Notaulix on mesonotum remarkably deep. Torus developed on abdominal segment I laterally. Nervulus hardly antefurcal. Punctures of body different: dense or fine, also on disc of T-I; punctures of T-III-IV double on some species. Body usually with metallic flame red or coppery with different reflections.

Type species: *Cleptes dahlbomi* SEMENOV, 1920. Present designation.

Cleptes dahlbomi group

Body entirely flame red, golden red, coppery, green or blue, partly with reflections of those. The black band of all tergites posteriorly often present as a more or less large spot medially; the reddish golden colour of tergite II always, on tergite I, III rarely separated by

black longitudinal streaks or bands. Members of this group seem to belong near to *putoni* group owing to the similarity by color of abdomen. On the other hand the pronotum of this group reminds of the *aerosus* group inside *Holcocleptes* subgenus by the presence of the longitudinal mid-line sulcus. The slender size and especially the particular colour pattern of abdomen, and the restricted area of distribution of the species give reason for the establishment of a new isolated subgenus and species group. This group is distributed in the East Mediterran Region.

Checklist of species

Cleptes affulgens LINSENMAIER, 1994 - Israel, Jordan, Palestine.

Cleptes dahlbomi SEMENOV, 1920 - Turkey, Israel.

Cleptes schmidti LINSENMAIER, 1968 - Greece.

Key to the species

- 1 Vertex with an irregular row of shallow punctures connected with the larger pits of hind ocelli; colour bluish with violet reflections. Head, face, thorax, legs inclusive scape, pedicel and tegulae greenish blue or blue. Tergites and sternites largely coppery red with golden and greenish tints. T-III with black band along posterior margin; besides T-I-II black with a broad longitudinal band medially and T-I, T-III also black with narrow ones. Propodeum with longitudinal shallow and broad groove medially and a minute small tooth on corner laterally. 5.5 mm. *schmidti* LINSENMAIER
- Vertex without a connection between the small pits of hind ocelli; the colour green and violet only behind ocelli. Sternites black with small red spots anteriorly. Face greenish gold, golden flame red or blue; mesonotum, tegulae, scutellum golden green or flame red. 2
- 2 Head, pronotum, mesonotum closely punctured, scutellum, postscutellum shining with scattered double punctures. Propodeum with a longitudinal broad and flat groove between the wrinkles medially. Pronotum medially with a not always complet sulcus. Scutellum green, blue with contrary reflections, postscutellum blue. Tergite usually golden red or flame red, last terga coppery. 5.5 - 6 mm. *dahlbomi* SEMENOV
- Head, pronotum finely punctured, with shining interspaces between punctures, which are about equal with themselves; mesonotum, scutellum and postscutellum shining, with very fine punctures. Propodeum without medial furrow. Pronotum medially with distinct, longitudinal complet sulcus. Narrow streaks of tergite I-II posteriorly and longitudinal line of T-II blackish to greenish bronze, in the middle broadened like a spot especially in male. The rest of tergites with golden red highlights. Scutellum golden flame red or somewhat lighter, in allotype (♀) light green with golden reflections. 5 - 5.5 mm. *affulgens* LINSENMAIER

Cleptes affulgens LINSENMAIER, 1994

Cleptes affulgens LINSENMAIER, 1994: 515, 1♂, 2♀♀. Holotype ♂; Palestine, Jordan: Tivon (Luzern).

Material examined: -

Further data in original diagnosis: Mesopleuron green or partly gold in female. Malar space and F-I equal in length (♀); F-I twice as long as Ped, F-II twice as long as wide. Other localities: envir. Amman and "In LINSENMAIER 1959 u.1969 irrümlich als *auratus* Dahlbom, 1845 angeführt: Klein Asien, Palästina, Jerusalem".

Distribution. Jordan, Israel and Turkey (LINSENMAIER l.c.).

Cleptes dahlbomi SEMENOV, 1920

Cleptes aurata DAHLBOM, 1845: 2 ♂, Holotype ♂; Turkey: Bosfor (?) (Mus.); DAHLBOM 1845: 20 Turkey: Bosphor (compar. *C. semiaurata* and *C. ignita*).

Cleptes dahlbomi SEMENOV, 1920: 306 (nom. nov.) ♂, Holotype ♂; Turkey: Bospor (Stockholm) (*C. aurata* nec. PANZ./DAHLBOM 1845 ♂ synonym).

Cleptes aurata: BUYSSON 1897: 579 ♂ (synonym of *C. putoni* BUYSSON, Austria).

Cleptes aurata: MOCSÁRY 1889: 56 ♂ (nec PANZER as bona species).

Cleptes auratus: LINSENMAIER 1959: 12 ♂, 234 gen. Fig. 712; 1969: 346.

Cleptes dahlbomi: KIMSEY & BOHART 1991: 64 (repl. name for *auratus* DAHLBOM, 1845; as synonym of *semiauratus* LINNAEUS).

Material examined: 5♀ 3♂♂. Israel-Palestine: Jerusalem 1♀ 3♂♂ were collected April and 3♀ 2♂♂ in May (leg. HOUSKA); 2♀ 2♂♂ (Wien), 2♀ 1♂ (Budapest). "Jerusalem Palestine 16.V.46 Houska lgt.", "Neotypus *Clept. dahlbomi* Sem. des. Móczár 998", "Hym. Typ. No. 3859 Budapest", 1♀ (Budapest).

According to L.A. JANSON (notice by letter, Stockholm) the type can be found neither in Stockholm, nor in Lund; similar in the museums in Berlin, Copenhagen, London and Paris. Consequently I propose as neotype one female among the population from Palestine collected by HOUSKA. The main characters of neotype are: colour on frons clypeus flame red, on mesonotum golden with greenish and few reddish tints, scutellum, postscutellum bright green, pronotum and propodeum dark greenish blue with violet reflections. Abdomen largely flame red, tergites posteriorly and T-II medially black; femora, lateral sides of thorax green partly bluish green. Clypeus broad, distinctly separated from lower face, strongly raised basally, lateral sides slightly convergent (Fig.6) towards the truncate apical margin, here with 2 rows of distinct punctures. MS 2.3 MOD long, Ped 2.2 times as long as wide, F-I 2.8 times, F-II 2.0 times, F-III 1.0 times as long as wide. Longitudinal sulcus of pronotum complet medially. Postscutellum reaching scutellum only laterally, between them is a small split, with some minute foveae at the bottom. Lateral corners of propodeum with a small but distinct tooth laterally, directed outwards. Disc of T-I fine und dense punctured, T-II with very dense, T-III anteriorly with close, laterally with double punctures, T-IV with deeper punctures. All tergites towards posterior part gradually, T-IV entirely with scattered punctures. - Males similar to females with small differences; clypeus green, face golden green. Pronotum, scutellum, postscutellum lighter bluish green, propodeum largely violet. Abdominal tergite with more greenish reflection posteriorly, largely golden and with less reddish tints, without black spots medially, T-IV-V largely golden-coppery. MS 1.8 MOD long, Ped 1.9 times, F-I 3.3 times, T-II 2.0 times as long as wide. The split between scutellum and postscutellum narrower. Genitalia: Fig.5. In male pronotum bluish or golden green with violet tints in some specimens and pronotum rarely partly violet also in female.

Distribution. Turkey (DAHLBOM 1845). Palestine-Israel, Jordan (LINSENMAIER 1959, 1969).

Cleptes schmidti LINSENMAIER, 1968

Cleptes schmidti LINSENMAIER, 1968: 8, 1♀ 3♂♂. Holotype ♀; Greece: Alt Korinth (Luzern).

Cleptes schmidti: KIMSEY & BOHART 1991: 63 (*schmidti* group).

Material examined: 2♂♂. Greece: "Alt-Korinth Pelop. Graecia 22.V.1964 leg. J. Schmidt", "*Cleptes* Ltr. *schmidti* Lins. ♂ Paratype Linsenmaier det. 1966", the same labels except 25.V. not 22.V., 2♂♂ (Linz).

Some additions to the original diagnosis. Clypeus with moderately convergent lateral sides, anterior margin emarginated. Pronotum with moderate and not always complet longitudinal sulcus medially, posterior row of pits well outlined. Face closely, mesonotum and scutellum double punctured. Upper surface of mesopleuron smooth with fine punctures. Postscutellum reaches scutellum only laterally, between them is a small, but distinct split, with about 7-8 minute foveae at the bottom (cf. Fig.3); the split as wide medially as

half or one third length of postscutellum.

Distribution. Greece (LINSENMAIER 1968).

Subgenus *Neocleptes* KIMSEY, 1981

Cleptes (Neocleptes) KIMSEY, 1981: 816. - Type species: *Cleptes fritzi* KIMSEY, 1981.

"Head, thorax and abdomen metallic"...the same as in key.

Cleptes fritzi KIMSEY, 1981

Cleptes fritzi KIMSEY, 1981: 816, Fig. 25, 2 ♂. Holotype ♂; Argentina: Entre Rios, Palmar Colon (DAVIS).

Cleptes fritzi: KIMSEY & BOHART 1991: 58, 60 (*schmidti* group).

Material examined: -

Additions to the recognition of the species: "Length 6 mm. Head, thorax and abdomen bright green with T-I and posterior part of T-II-III darker and somewhat bluish; legs except tarsi green; ...Pedicel length 1.2 times width; F-I 2.3 times as long as wide; F-II 1.5 times as long as wide, malar space 0.7 MOD; ...pronotal punctures less than 0.5 puncture diameter apart; mesopleural punctures mostly contiguous; propodeal teeth short, almost peglike ..." (according to KIMSEY).

Distribution. Central Argentina (KIMSEY 1981).

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Literaturbesprechung

Tewi 1998: Body Works, eine 3D-Reise durch den menschlichen Körper. - Tewi Verlag, München, 1 CD-ROM für Windows 95/3.11.

Body Works ist eine interaktive Software zur Erforschung der menschlichen Anatomie anhand von Texten, Bildern und Multimediaelementen. Wohlthuend fällt am Hauptbildschirm der auch direkt von der CD zu betreibenden Bildungssoftware auf, daß die Menüleiste sowie die drei Fenster erstens gut gegliedert sind und zweitens ohne modischen Schnickschnack wie nervige Animationen etc. auskommen. Die Ganzkörperansicht zu den verschiedenen Körpersystemen (Skelett, Muskeln usw.) enttäuscht zunächst ein wenig angesichts der groben Auflösung. Ein Doppelklick auf das entsprechende System (z.B. Herz mit Pumpbewegungen) enthüllt dann aber die recht detailgenaue Welt der menschlichen "Innereien". Daß hier die Auflösung ausreichend aber nicht gerade berauschend ist, kann man einer Software zu diesem günstigen Preis nicht vorwerfen. Zu jedem angeklickten und sofort farbig markierten Detail erscheint im Textfenster die passende Erläuterung. Bemerkenswert ist die reduktionistische, technisch orientierte Sichtweise der Produzenten, die den Menschen in einzelne Systeme zerlegt zeigen aber niemals in einer Ansicht zur Gesamtintegration der Einzelkomponenten. Die Suche nach Details über den ausführlichen Index, die Definition anatomischer Fachausdrücke im Glossar und die Textsuche gehören zu den inzwischen üblichen Features derartiger Bildungssoftware. Außerdem gibt es da noch teilweise recht nette Video-Vorlesungen zu den Körpersystemen im virtuellen Hörsaal. Warum man allerdings der dozierenden "Professorin" eine derartig scheußliche Uniform verpaßt hat, bleibt das Geheimnis der Produzenten. Fazit: Für den interessierten Laien, den Schüler und für alle Hypochonder sehr brauchbar.

Michael CARL

Creative Wonders 1998: 3D Atlas 98 CD-ROM für Windows 95/3.11. - Tewi Verlag, München.

Prinzipiell ist so ein digitaler Satellitenbildatlas eine feine Sache für den Biogeographen etc. Die Kartenausschnitte lassen sich relativ frei wählen und mit Zusatzdaten wie Flußläufen, Ortsnamen etc. versehen. Das wäre alles sehr schön, wenn die Auflösung der Karten annehmbar wäre. Ist sie aber nicht. Vor Pixeln sieht man die Karte nicht, insbesondere bei Vergrößerungen macht sich das unangenehm bemerkbar. Für den Entomologen wesentlich wäre die Ausgabe der Karten in ein anderes Anwendungsprogramm zwecks Weiterbearbeitung. Dies ist nicht möglich. Der Ausdruck funktioniert, allerdings wird das gesamte Fenster ausgedruckt. Der Kartenausdruck im Vollbildmodus ist nicht möglich. Prinzipiell schöne Features wie klimatologische Karten sind dank der unscharfen Farbkodierung nur die Hälfte wert. Hier hätte man Buntes weglassen und den altgedienten Isothermen den Vorzug geben sollen.

Die Software kann im Bedarfsfall nicht nur automatisch deinstalliert werden, sondern ist auch direkt von der CD aus lauffähig, was Speicherplatz auf der Festplatte spart. Der Statistik- und Länderteil ist ausführlich und ansehnlich geraten. Fazit: Um dieses grundsätzlich interessante geographische Softwarepaket wirklich nutzbar zu machen, muß als erstes die Auflösung verbessert werden.

Michael CARL

HECKMAN, C.W. 1998: The Pantanal of Poconé. Biota and Ecology in the northern section of the world's largest pristine wetland. - Kluwer Academic Publishers, Dordrecht. 622 S.

Das Pantanal - das größte naturbelassene Feuchtgebiet der Erde - liegt im Zentrum Südamerikas. Der größte Teil gehört zu Brasilien, kleinere Regionen liegen in Bolivien und Paraguay.

Bei dieser Monographie handelt es sich um das einzige verfügbare Buch, das einen

ausführlichen Überblick über die Flora und Fauna dieser Region gibt. Dadurch ist es besonders für Ökologen und Biogeographen interessant, kann aber auch als unerschöpfliche Quelle hinsichtlich tropischer Ökologie und Feuchtgebietsbiologie genutzt werden. Neben Geographie, Geologie, Klima, Hydrologie und Wasserchemie wird sehr ausführlich die Flora und Fauna vorgestellt. Es folgen Kapitel über biotische Gemeinschaften, saisonale Sukzession, Dynamik von Ökosystemen, der Einfluß des Menschen und naturschützerische Aspekte. Entsprechend umfangreich sind Literaturverzeichnis und Index.

Roland GERSTMEIER

WITT, R. 1998: Wespen beobachten, bestimmen. - Naturbuch Verlag/Weltbild Verlag, Augsburg. 360 S.

In bewährter Weise legt der Naturbuch Verlag einen weiteren „Naturführer“ vor, der einer - auf den ersten Blick - vielleicht nicht ganz so attraktiven Insektengruppe gewidmet ist. Wie üblich beginnt dieses Bestimmungsbuch mit einem „Allgemeinen Teil“, der eine systematische Übersicht bietet und sehr detailliert über Körperbau, Fortpflanzung, Entwicklung und Lebensweisen (solitär, sozial, parasitisch), Ernährung, Nester und Nistweise, natürliche Feinde, Vorkommen und Lebensweise sowie den Bezug zum Menschen informiert.

Der „Spezielle Teil“ beginnt mit einer Tabelle der ca. 630 in Deutschland vorkommenden Wespenarten (Sphecidae, Vespidae, Sapygidae, Tiphiidae, Scoliidae, Myrmosidae, Mutillidae). Der Schwerpunkt des darauffolgenden Bestimmungsschlüssels liegt auf den 120 Gattungen. Die Artportraits beinhalten Merkmale, Verbreitung, Lebensraum, Phänologie, Biologie (soweit bekannt sehr ausführlich) und Bestandssituation. Den Texten gegenübergestellt sind die Farbfotos, die fast alle von sehr guter Qualität sind. Ein kleines Glossar, das durchaus akzeptable Literaturverzeichnis, wichtige Zeitschriften, zwei Hinweise auf Internet-Adressen und das Tier- und Pflanzenregister beschließen diese kompakte „Monographie“.

Eine überaus lobenswerte Arbeit, die neben einem umfassenden Einblick in diese Insektengruppe sicher auch zu einer Imageverbesserung und damit größeren Akzeptanz der Wespen in der Bevölkerung führen wird.

Roland GERSTMEIER

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