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A revision of the Eastern Palaearctic species of *Myrmecopora* SAULCY, 1864 with notes on some species from the Oriental region

(Coleoptera: Staphylinidae, Aleocharinae, Falagriini)

With 5 figure plates

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Summary

The types and further material of the Eastern Palaearctic *Myrmecopora rufescens* (SHARP), *M. algarum* (SHARP), *M. martensi* (PACE), and the Oriental *M. chinensis* CAMERON, *M. elegans* CAMERON and *M. nilgiriensis* CAMERON are revised. *M. rufescens*, *M. algarum*, *M. chinensis* and the new species *M. reticulata* sp. n. are recognized as a monophylum and placed in *Lamproxenus* subgen. n. of the genus *Myrmecopora* SAULCY. *M. martensi* (PACE) and *M. elegans* CAMERON are transferred to *Anaulacaspis* GANGLBAUER, *M. nilgiriensis* CAMERON to the falagriine genus *Indomyrmecopora* gen. n. Lectotypes are designated for *Tachyusa rufescens* SHARP, *T. algarum* SHARP and *Myrmecopora chinensis* CAMERON. For the species of *Myrmecopora* and *Indomyrmecopora* and the new supraspecific taxa descriptions and drawings of relevant characters are presented. A diagnostic key is provided for the species of *Lamproxenus*.

Keywords: Coleoptera - Staphylinidae - Aleocharinae - Falagriini - Myrmecopora - Lamproxenus - Indomyrmecopora - Anaulacaspis - Eastern Palaearctic - Oriental region - distribution - ecology - taxonomy - revision - new genus - new subgenus - new species - lectotype designation - new combinations

Zusammenfassung

Die Typen und weiteres Sammlungsmaterial der ostpaläarktischen *Myrmecopora rufescens* (SHARP), *M. algarum* (SHARP), *M. martensi* (PACE), sowie der aus der Orientalis beschriebenen *M. chinensis* CAMERON, *M. elegans* CAMERON und *M. nilgiriensis* CAMERON werden revidiert. *M. rufescens*, *M. algarum*, *M. chinensis* und die neue Art *M. reticulata* sp. n. werden als monophyletisch erkannt und dem Subgenus *Lamproxenus* subgen. n. der Gattung *Myrmecopora* SAULCY zugeordnet. *M. martensi* (PACE) und *M. elegans* CAMERON werden in die Gattung *Anaulacaspis* GANGLBAUER, *M. nilgiriensis* CAMERON in die Gattung *Indomyrmecopora* gen. n. gestellt. Für *Tachyusa rufescens* SHARP, *T. algarum* SHARP und *Myrmecopora chinensis* CAMERON werden Lectotypen designiert. Die Beschreibungen der Arten der Gattungen *Myrmecopora* und *Indomyrmecopora* sowie der neuen Taxa werden durch Abbildungen wesentlicher Differentialmerkmale ergänzt. Für die *Lamproxenus*-Arten wird ein Bestimmungsschlüssel vorgelegt.

Introduction

Following a recent revision of the Western Palaearctic species of the genus (ASSING, 1997), the types and further material of the Eastern Palaearctic representatives of *Myrmecopora* SAULCY sensu lato were examined. BERNHAUER & SCHEERPELTZ (1926) list only two Japanese species from this region: *M. (Xenusia) algarum* (SHARP, 1874) and *M. (X.) rufescens* (SHARP, 1874), both originally described as *Tachyusa* ERICHSON. No further taxa became known until PACE (1991), without stating his reasons, transferred the Himalayan species *Almorja martensi* PACE, 1984 to *Myrmecopora*. Although originally described from the Oriental region (southern China) *Myrmecopora (Xenusia) chinensis* CAMERON, 1944 was included in the study, since according to the original description this species lives in coastal habitats and was therefore suspected to have a wider distribution, possibly reaching the Manchurian subregion of the Eastern Palaearctic. In addition two species described by CAMERON (1939, 1944b) from India were examined. For a detailed account of the systematics and the taxonomic history of *Myrmecopora* see ASSING (1997).

Material examined, acknowledgements and abbreviations

Material from the following museum and private collections was studied:

BMNH	The Natural History Museum London (M. J. B. BRENDILL)
DEI	Deutsches Entomologisches Institut, Eberswalde (L. ZERCHE)
NHMW	Naturhistorisches Museum Wien (H. SCHILLHAMMER)
NMP	Národní Muzeum v Praze (J. JELÍNEK)
ZSM	Zoologische Staatssammlung München (G. SCHERER)
cAss	author's private collection

I am much indebted to the persons listed above for arranging loans of types and further material. In addition, I would like to thank LOTHAR ZERCHE for his critical review of the manuscript.

In the description below, the measurements indicate the range, if not indicated otherwise. The following abbreviations are used:

TL: total length from front of labrum to tip of abdomen (in mm); AL: length of antennae (in μm); HL: head length from front of clypeus to neck (in μm); HW: maximal head width (in μm); PL: length of pronotum along midline (in μm); PW: maximal width of pronotum (in μm); EL: length of elytra along suture from apex of scutellum to posterior margin (in μm); HTiL: length of hind tibiae (in μm); HTaL: length of hind tarsi (in μm); HT1L: length of first metatarsomere (in μm); HT24L: combined length of second to fourth metatarsomere (in μm).

The Eastern Palearctic species of *Myrmecopora* and *M. chinensis* CAMERON

An examination of the species of *Myrmecopora* occurring in coastal habitats of the Eastern Palearctic region and of southern China revealed that they form a well-defined monophylum within the genus. Since it was not possible to attribute them to any of the other known monophyla, they are here placed in a new subgenus described below.

***Lamproxenus* subg. n.**

Type species: *Tachyusa rufescens* SHARP, present designation.

Diagnosis:

Species of small to intermediate size; body light-coloured, reddish to brown; integument of forebody, except for scutellum, shining and without microsculpture between punctures; abdomen with or without microsculpture; forebody with distinct and dense punctation.

Head of variable shape, slightly transverse, with rounded posterior corners, dorsal surface weakly convex or flat; sexual dimorphism very weak: in ♂♂ with very shallow, weakly defined, ± triangular impression posteriorly extending into hind half of head; impression in ♀♀ even shallower, smaller, usually restricted to area between eyes.

Antenna distinctly incrassate apically; antennomeres 1 - 3 clearly elongate and subequal in length, distinctly longer than 4 - 10; antennomeres 4 - 10 increasing in width, antennomere 11 1.5 - 2x longer than penultimate joint (Fig. 1a).

Right mandible with distinct molar tooth, only with faint notches in dorsal molar region (Fig. 1e); labrum with chaetotaxy similar to other subgenera, but with anterior membranous appendage simply rounded (Fig. 1d); pubescence of third joint of maxillary palpus moderately dense (Fig. 1b); labium as in Fig. 1c.

Pronotum with maximal width in anterior half, approximately as long as wide; outline in posterior half ± trapezoid with the sides straightly converging; hind angles rounded; dorsally with rather shallow median impression, which is usually slightly deeper in ♂♂ than in ♀♀, but sexual dimorphism on the whole very indistinct; prosternum with distinct carina posteriorly; mesosternal process acute, reaching between mesocoxae.

Elytra approximately as long as pronotum.

Abdomen with tergal punctation less pronounced and sparser than on forebody; hind margin of tergum VIII truncate to weakly convex, usually without distinct micropubescence, occasionally with scattered microscopic hairs.

♂: sternum VIII without fringe of microscopic pubescence posteriorly. Aedeagus with the ventral process unmodified, of rather uniform shape, and with characteristic pair of distinctly sclerotized structures in internal sac (Figs 1g, 2b, 3b, 4b); condylite of paramere clearly shorter than paramerite (Fig. 2c).

♀: hind margin of sternum VIII with - sometimes ± reduced - fringe of micropubescence (see e. g. Fig. 1l). Spermatheca ± S-shaped; capsule simple, not truncate, slightly more sclerotized than the proximally enlarged duct, and without apical processes; cuticular protrusion small.

Distribution and ecology:

The known distribution of the new subgenus is restricted to Manchurian subregion of the Eastern Palaearctic and southern China. The species live in coastal habitats; presumably they are ecologically similar to the Western Palaearctic species of *Xenus* MULSANT & REY.

Comparative notes:

In view of their unique combination of external and sexual characters the species of *Lamproxenus* form a well-defined monophylum within the genus *Myrmecopora*. In body shape, size and ecology they resemble the Western Palaearctic *Xenus* MULSANT & REY, particularly the species of the *sulcata*-group; in punctation and lack of microsculpture of the integument they are similar to *Iliusa* MULSANT & REY. From the former they are readily distinguished by the lack of microsculpture on the integument of the forebody, from the latter by their size and ecology,

and from both and other Western Palaearctic subgenera by the weak sexual dimorphism of the impressions on head and pronotum, the shape of the labrum, the lack of distinct micropubes-
cence on the hind margin of tergum VIII, the shape and the internal structures of the aedeagus,
and the construction of the spermatheca.

***Myrmecopora (Lamproxenus) rufescens* (SHARP)**

Figs 1 a - 1

Tachyusa rufescens SHARP, 1874, 11f.

Myrmecopora (Xenus) rufescens (SHARP): BERNHAUER & SCHEERPELTZ 1926, 582

Myrmecopora (s. str.) algarum (SHARP): SAWADA 1971, 296ff.

Myrmecopora (Xenus) rufescens (SHARP): SCHEERPELTZ 1972, 105f.

Xenus algarum (SHARP): YOSII & SAWADA 1976, 120f.

Myrmecopora rufescens (SHARP): NAOMI 1989, 285

Types examined:

Lectotype ♀, here designated and labelled accordingly: Japan, Japan. G. Lewis, *Tachyusa rufescens* Sharp. Types, Type [curator label], Sharp Coll. 1905-313 (BMNH).

Paralectotypes, present designation: 1 ♀, originally on same label as lectotype, now mounted on separate pin; 1 ♀, Japan, Japan. G. Lewis, *Tachyusa rufescens* Sharp. Ind. typ. D. S. Japan, Sharp Coll. 1905-313; 1 ♂ (two legs missing), Japan. G. Lewis, *Tachyusa rufescens*, Sharp Coll. 1905-313 (all in BMNH).

Comments:

In his original description Sharp (1874) specified neither the number of specimens he had before him nor a holotype. Since the ♂ was somewhat damaged, a ♀ in good condition was selected as lectotype.

Further material examined:

1 ♂ (originally in type series of *Tachyusa algarum*), Japan G. Lewis 1910-320 (BMNH); 1 ♀, Japan, Tango, Miyazu, 7.VI.33, J.E.A. Lewis (cAss); 1 ♀, Yokohama, Japan, G. Lewis, Sharp Coll., 1905-313, Cotype [red label], *Tachyusa rufescens* Shp. det. K. G. Blair, 'keine Cotype!' [handwritten label] (Frey collection, originally loaned from ZSM, now in Basel).

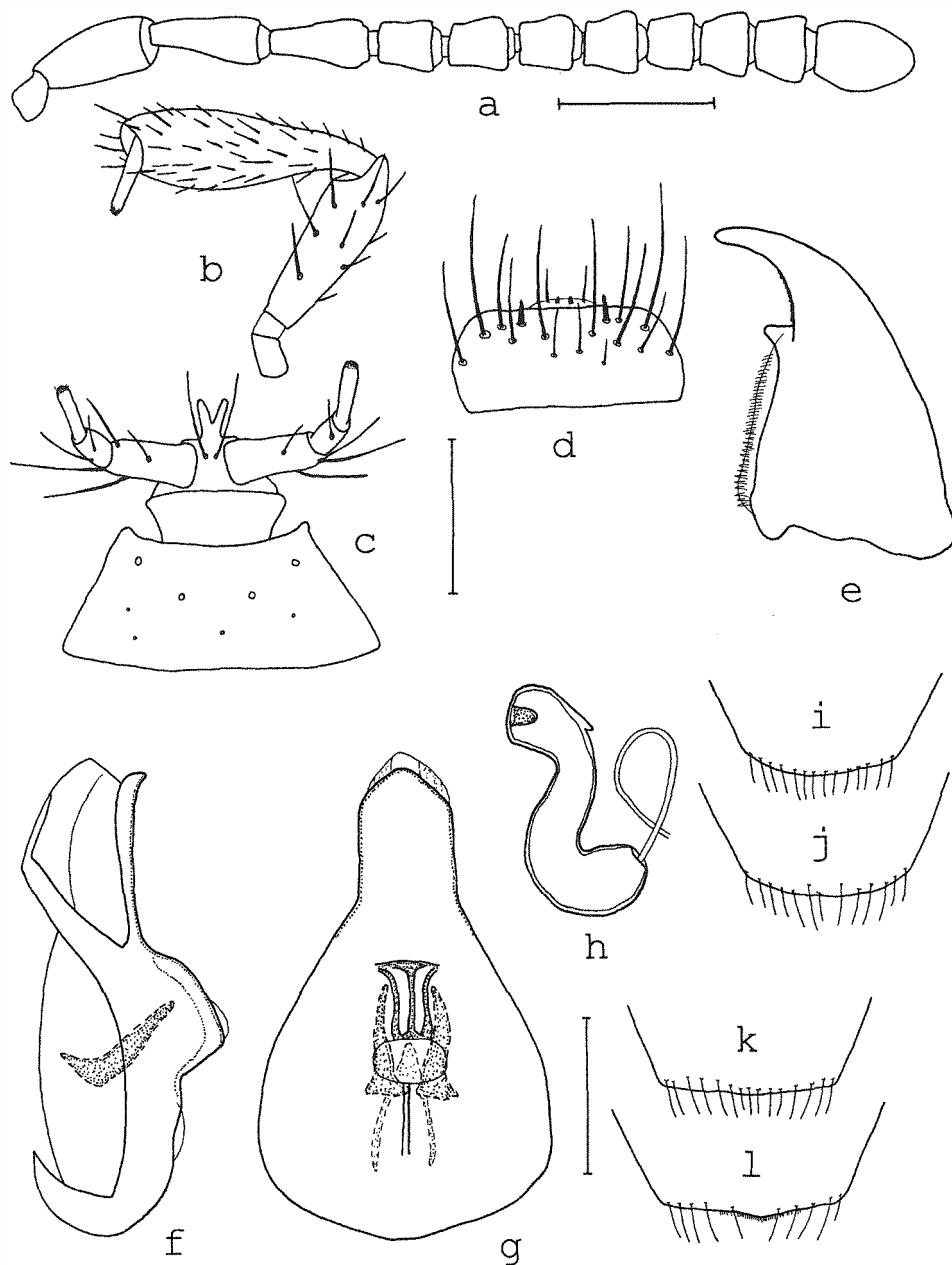
Description (see also description of subgenus):

Measurements (n=7): TL: 2.7 - 3.4; AL: 1050 - 1210; HL: 375 - 455; HW: 415 - 500; PL: 375 - 475; PW: 405 - 510; EL: 390 - 490; HTiL: 515 - 620; HTaL: 330 - 390; HTiL: 95 - 150; HT24L: 115 - 145.

Body colour reddish to reddish brown with abdominal terga VI and VII often slightly darker. Body size and proportions subject to considerable variation (see measurements).

Head slightly transverse (HW/HL: 1.06 - 1.13); shape variable; sides behind eyes in most specimens converging, rarely weakly rounded or \pm subparallel; hind angles mostly broadly rounded; temples of variable length, but distinctly longer than eyes in dorsal view; hind margin \pm straight; dorsal surface with dense and rather coarse punctation, punctures usually distinctly larger than interstices; pubescence rather long but fine, suberect to decumbent, mostly directed diagonally antero-mediad; dorsal surface in ♂♂ with shallow, subtriangular impression, which on average is more extensive and extends further backwards than in ♀♀.

Antennae rather slender, antennomeres 4 - 5 slightly oblong, 6 - 7 weakly oblong or subquadrate, and 8 - 10 slightly to distinctly transverse (Fig. 1a).



Figs 1 a - l: *Myrmecopora rufescens* (SHARP) (a-g, i-k: PLT): Antenna (a); maxillary palpus (b); labium (c); labrum (d); right mandible (e); aedeagus in lateral and in ventral view (f, g); spermatheca (h); hind margins of ♂ tergum and sternum VIII (i, j); hind margins of ♀ tergum and sternum VIII (k, l). Scale: b - h: 0.1 mm; a, i - k: 0.2 mm.

Pronotum with maximal width near anterior angles, moderately convex, as wide as or slightly wider than long (PW/PL: 1.01 - 1.08) and about as wide as head (PW/HW: 0.95 - 1.06); lateral margins posteriorly \pm straight, hind angles obtuse, distinct or indistinct; dorsal surface with punctation similar to head; pale pubescence decumbent to \pm suberect, directed cephalad along midline, transverse or \pm diagonally cephalad on either side of midline; $\delta\delta$ with distinct, but shallow and only weakly sulcate longitudinal impression, which almost reaches anterior margin and posteriorly extends into transversely triangular impression near hind margin; longitudinal impression in ♀♀ similar, but on average shallower and anteriorly shorter.

Elytra clearly wider and at suture approximately as long as pronotum (EL/PL: 0.84 - 1.04), relative length rather variable; punctation distinctly coarser than on head and pronotum; pubescence pale, thin, rather sparse and decumbent, transverse near hind margin and directed \pm diagonally caudad in central area of each elytron; hind wings present.

Legs with hind tarsi clearly shorter than hind tibiae (HTaL/HTiL: 0.63 - 0.66); first tarsomere of hind tarsi approximately as long as the combined length of tarsomeres 2 - 4 (HT1L/HT24L: 0.90 - 1.10).

Abdomen with more shine than forebody due to sparser punctation, which is denser and coarser on terga III - V than on terga VI - VII; hind margin of tergum VIII truncate to slightly convex in both sexes (Figs 1 i, k).

δ : sternum VIII convex posteriorly (Fig. 1j); aedeagus Figs 1 f - g.

♀ : hind margin of sternum VIII \pm straight (Fig. 1l); spermatheca S-shaped (Fig. 1h).

Comments:

SAWADA (1971) gives a detailed description of *Myrmecopora algarum* (SHARP) with special reference to the mouthparts and chaetotaxy; complementary information is presented by YOSII & SAWADA (1976). Judging from the drawings particularly of the antenna and the spermatheca, however, these descriptions refer to *M. rufescens* (SHARP).

Bionomics and distribution:

Apart from the type series, for which no locality is specified, specimens from Miyazu and Yokohama (Honshu, Japan) were examined. SAWADA (1971) indicates several further localities for *M. algarum*, which obviously refer to *M. rufescens* (see comments above): Shingu, Kushimoto, Seto, Kirime, Magarizaki (Kumamoto), Tororo (Kumamoto). Apparently the species is widespread in Honshu and Kyushu. According to SAWADA (1971) it is "fairly common among the wrack of the sea-shore".

Myrmecopora (Lamproxenusa) algarum (SHARP)

Figs 2 a - h

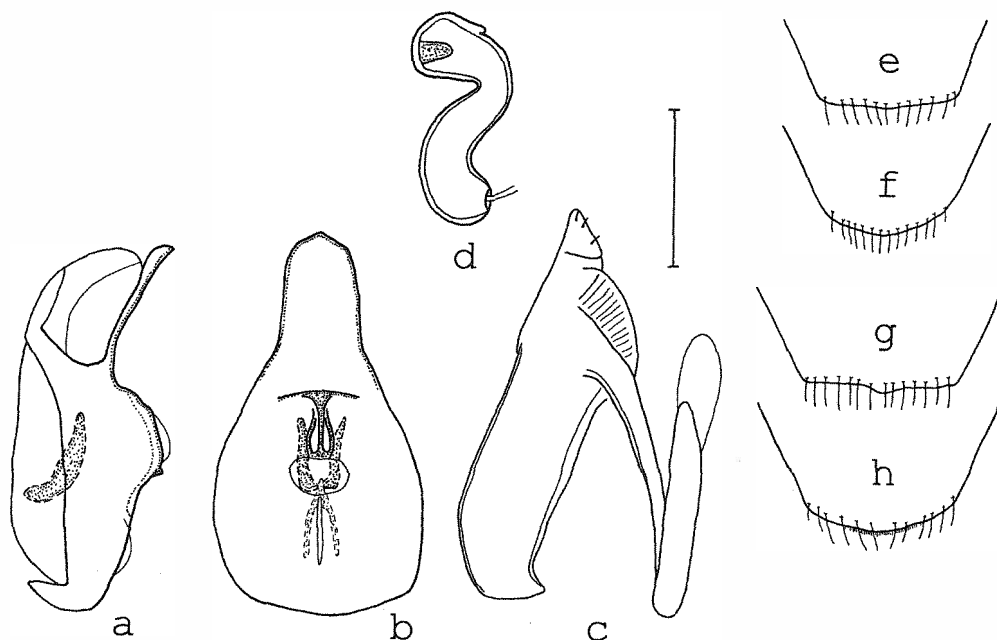
Tachyusa algarum SHARP, 1874, 12

Myrmecopora (Xenusa) algarum (SHARP): BERNHAUER & SCHEERPELTZ 1926, 581

Myrmecopora algarum (SHARP): NAOMI 1989, 285

Types examined:

Lectotype δ , here designated and labelled accordingly (aedeagus dissected): Japan, Japan. G. Lewis, *Tachyusa algarum* Sharp. Type, Type [curator label], Sharp Coll. 1905-313 (BMNH). Paralectotype ♀ , Japan, Japan. G. Lewis, *Tachyusa algarum* Ind. typ. D. S. Japan, Sharp Coll. 1905-313 (BMNH).



Figs 2 a - h: *Myrmecopora algarum* (SHARP) (a-c, e-f: LT; d, g-h: PLT): Median lobe in lateral and in ventral view (a, b); paramere (c); spermatheca (d); hind margins of ♂ tergum and sternum VIII (e, f); hind margins of ♀ tergum and sternum VIII (g, h). Scale: a - d: 0.1 mm; e - h: 0.2 mm.

Description:

Since *M. algarum* is externally very similar to *M. rufescens*, the description will focus on differential characters.

Measurements (LT, PLT): TL: 2.3, 2.5; AL: 850, 850; HL: 345, 375; HW: 375, 420; PL: 355, 390; PW: 370, 410; EL: 345, 390; HTiL: 400, 450; HTaL: 255, 270; HTiL: 75, 90; HT24L: 100, 115.

Body size on the whole smaller than in the preceding species (see measurements); colour as in *M. rufescens*.

Head transverse (HW/HL: 1.1); temples behind eyes \pm subparallel in dorsal view; punctuation of dorsal surface distinct, but near occiput less dense than in *M. rufescens*; sexual dimorphism of dorsal impression similar to *M. rufescens*.

Antennae shorter and stouter than in *M. rufescens* (see measurements), antennomeres 4 - 5 subquadrate, 6 - 10 increasingly transverse.

Pronotum in the two type specimens without appreciable sexual dimorphism.

Legs of similar proportions as in *M. rufescens*, but with distinctly shorter hind tibiae and hind tarsi (see measurements).

Abdomen with distinctly less dense and finer punctuation, particularly on terga III - V, and therefore more shine than in *M. rufescens*; hind margin of tergum VIII truncate with the middle slightly protruding (Figs 2 e, g).

♂: sternum VIII strongly convex posteriorly (Fig. 2f); aedeagus smaller (Fig. 2 a - b); paramere as in Fig. 2c.

♀: hind margin of sternum VIII moderately convex (Fig. 2h); spermatheca with proximal part of duct shorter and capsule relatively larger (Fig. 2d).

Bionomics and distribution:

Apart from the information indicated by SHARP (1874) (see below the description of the subgenus) no data were available.

Myrmecopora (Lamproxenusa) reticulata sp. n.

Figs 3 a - g

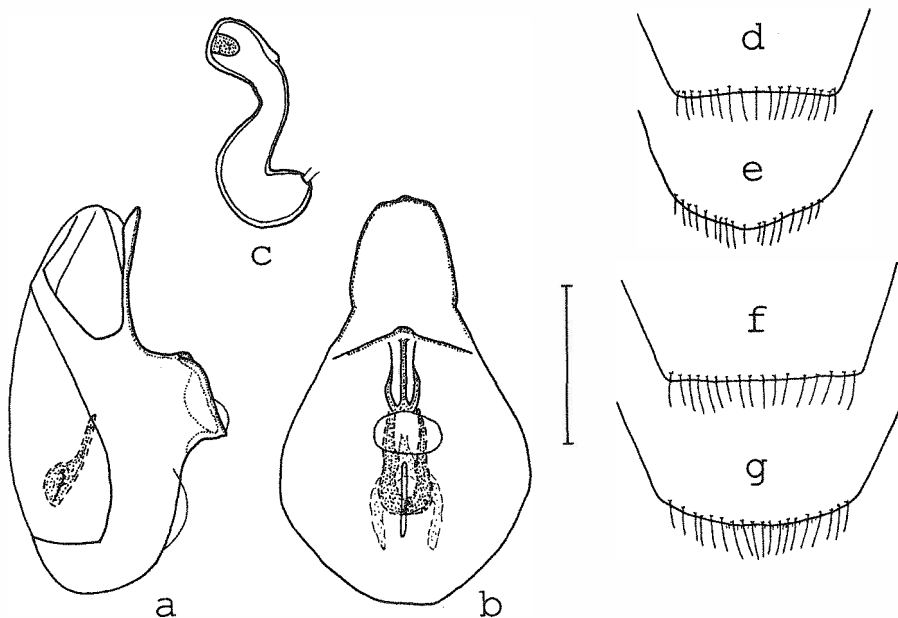
Holotype ♂, Russia, Primorskiy Kray, Ryazanovka, 14 km SW Slavyanka, Beach, 16.VI.1993, leg. Zerche (DEI).

Paratypes: 1♀, As. or. 919, Vladivostok, Dr. Jureček, *Myrm. rufescens* Sharp, det. Rambousek (NMP); 1♂, 4♀♀, Seishin, Korea (NHMW, NMP, cAss).

Description:

Measurements (n=7): TL: 2.4 - 3.0; AL: 980 - 1180; HL: 345 - 400; HW: 390 - 455; PL: 370 - 425; PW: 385 - 440; EL: 360 - 455; HTiL: 390 - 440; HTaL: 225 - 290; HT1L: 75 - 100; HT24L: 90 - 115.

Body colour reddish brown to blackish, with the pronotum and the elytra usually distinctly lighter than head and abdomen; legs and antennae yellowish to reddish brown.



Figs 3 a - g: *Myrmecopora reticulata* sp. n. (a-b, d-e: HT; c, f-g: PT): Median lobe in lateral and in ventral view (a, b); spermatheca (c); hind margins of ♂ tergum and sternum VIII (d, e); hind margins of ♀ tergum and sternum VIII (f, g). Scale: a - c: 0.1 mm; d - g: 0.2 mm.

Head slightly transverse (HW/HL: 1.09 - 1.15); shape variable, similar to *M. rufescens*; temples of variable length, but more than 1.5x longer than eyes in dorsal view; hind margin \pm straight to slightly concave; punctation and pubescence similar to *M. rufescens*; sexual dimorphism of dorsal surface almost absent, in both sexes with rather extensive but shallow, roughly triangular impression, posteriorly often almost extending to hind margin of head.

Antennae rather slender, longer than in *M. algarum* and, on average, shorter than in *M. rufescens* (see measurements); shape of antennomeres highly variable, 4 - 6 subquadrate or slightly oblong, 8 - 10 only weakly transverse.

Pronotum with shape, punctation and pubescence similar to *M. rufescens* (PW/PL: 1.01 - 1.04), slightly narrower than head (PW/HW: 0.94 - 0.98); $\sigma\sigma$ with distinct and rather broad, but shallow and only weakly sulcate longitudinal impression, which almost reaches anterior margin and posteriorly extends into transversely triangular impression near hind margin; longitudinal impression in $\varphi\varphi$ similar, but on average shallower and anteriorly shorter.

Elytra clearly wider and at suture approximately as long as pronotum (EL/PL: 0.96 - 1.07); diameter and density of punctures somewhat variable, but mostly similar to head; pubescence similar to *M. rufescens*, but on inner half of each elytron almost transverse; hind wings present. Legs shorter than in *M. rufescens* (see measurements); hind tarsi clearly shorter than hind tibiae (HTaL/HTiL: 0.57 - 0.65); first tarsomere of hind tarsi shorter than the combined length of tarsomeres 2 - 4 (HT1L/HT24L: 0.7 - 0.9).

Abdomen with punctation variable, but clearly less dense than on forebody; terga III - VI without or with very superficial microsculpture; tergum VII with distinct microreticulation (name!); hind margin of tergum VIII truncate to slightly concave in both sexes (Figs 3 d, f).

σ : sternum VIII distinctly convex posteriorly (Fig. 3e); median lobe in ventral view with rather short and wide ventral process (Figs 3 a - b).

φ : hind margin of sternum VIII weakly convex (Fig. 3g); spermatheca S-shaped (Fig. 3c).

Bionomics and distribution:

At present the species is known from the coast of Primorskiy Kray in the surroundings of Vladivostok (Russian Far East) in the north to the coast of North Korea in the south. Judging from the information on the labels attached to the holotype, *M. reticulata* is ecologically similar to the two preceding species.

Myrmecopora (Lamproxenus) chinensis CAMERON

Figs 4 a - g

Myrmecopora chinensis CAMERON, 1944a, 158.

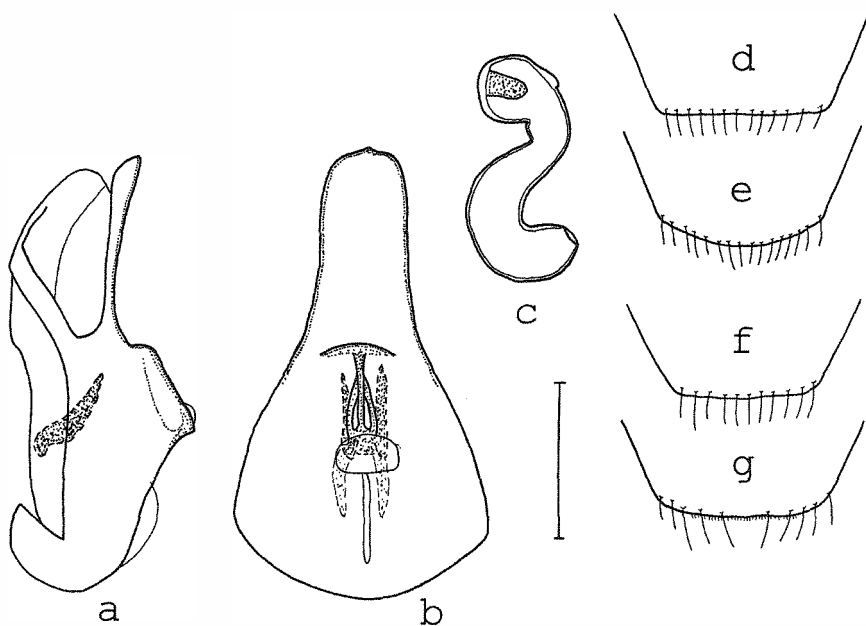
Types examined:

Lectotype σ , here designated and labelled accordingly (aedeagus dissected): Mirs Bay China, Seaweed, *M. chinensis* Cam. Type, Holotype [curator label], M. Cameron. Bequest B.M. 1955-147., *Myrmecopora chinensis* Cam. Holotype, P.M. Hammond det. 1973 (BMNH).

Paralectotype φ , here designated and labelled accordingly (spermatheca dissected): Mirs Bay China, Paratype [curator label], M. Cameron. Bequest B.M. 1955-147., *Myrmecopora chinensis* Cam. Paratype, P.M. Hammond det. 1973 (BMNH).

Comments:

CAMERON (1944a) based his original description on three specimens without specifying a holotype. Therefore, the two type specimens examined have to be considered syntypes, now lectotype and paralectotype, irrespective of the labels attached to them.



Figs 4 a - g: *Myrmecopora chinensis* CAMERON (a-b, d-e: LT; c, f-g: PLT): Median lobe in lateral and in ventral view (a, b); spermatheca (c); hind margins of ♂ tergum and sternum VIII (d, e); hind margins of ♀ tergum and sternum VIII (f, g). Scale: a - c: 0.1 mm; d - g: 0.2 mm.

Description:

Measurements (LT, PLT): TL: 2.6, 2.5; AL: 970, 910; HL: 360, 360; HW: 390, 410; PL: 360, 380; PW: 380, 400; EL: 380, 390; HTiL: 480, 490; HTaL: 300, 290; HT1L: 105, 100; HT24L: 100, 110.

In general appearance (colour, size, shape, punctuation, microsculpture) highly similar to *M. algarum*, from which *M. chinensis* is distinguished as follows:

Shape, size and punctuation of head as in *M. algarum*, but impression on frons more distinct and more extensive, especially in ♂.

Antennae slightly slenderer and longer than in *M. algarum* (see measurements), antennomere 7 subquadrate, antennomere 8 subquadrate or only weakly transverse.

Pronotum less distinctly dilated in anterior half, lateral margins in dorsal view forming a smooth curve (in *M. algarum* and the other species of the subgenus more abruptly curved); median longitudinal impression in ♂ distinct but very shallow, in ♀ barely visible in anterior half and effaced in posterior half.

Legs slightly longer than in *M. algarum*, first metatarsomere relatively longer (see measurements).

Abdomen somewhat more densely punctate than in *M. algarum*; hind margin of tergum VIII ± truncate (Figs 4 d, f).

♂: sternum VIII convex posteriorly (Fig. 4e); aedeagus larger and with relatively longer and slenderer ventral process than in other species of the subgenus (Fig. 4 a - b).

♀: hind margin of sternum VIII weakly convex (Fig. 4g); spermatheca as in Fig. 4c.

Bionomics and distribution:

M. chinensis has become known only from the type locality near Hong Kong, where it was collected under seaweed (CAMERON, 1944a). At present, it is the only true species of *Myrmecopora* I have seen from regions other than the Palaearctic.

Key to the species of *Lamproxenusa*

Note that in most species only few specimens were available, so that intraspecific variation may not be fully accounted for.

1. Abdomen with distinct microsculpture at least on tergum VII; pubescence on inner half of each elytron almost transverse.
 δ : aedeagus with ventral process in ventral view rather short and wide (Fig. 3a).
 φ : spermatheca as in Fig. 3c.
 Western coast of Sea of Japan from Primorskiy Kray to North Korea. *M. reticulata* sp. n.
 - Abdomen without microsculpture; pubescence on inner half of each elytron \pm diagonal. Genitalia different. 2
2. Larger species, 2.7 - 3.4 mm; antennae longer, AL: > 1000; antennomeres 4 - 5 oblong; legs longer, HTiL: > 500, HTaL: > 300; abdomen with denser punctation on terga III - V.
 δ : aedeagus as in Figs 1 f - g.
 φ : spermatheca as in Fig. 1h.
 Japan. *M. rufescens* (SHARP)
 - Smaller species, 2.3 - 2.5 mm; antennae shorter, AL: < 1000; legs shorter, HTiL: < 500, HTaL: < 310.
 δ : aedeagus either smaller or with relatively longer ventral process 3
3. Impressions on frons somewhat deeper and more extensive in both sexes; antennae slenderer and longer (AL: > 900), antennomere 7 subquadrate, antennomere 8 at most weakly transverse; lateral margins in anterior half of pronotum in dorsal view smoothly curved; longitudinal impression on pronotum in φ barely visible and restricted to anterior half; abdomen more densely punctate.
 δ : aedeagus larger and with longer ventral process (Figs 4 a - b).
 φ : spermatheca with longer and S-shaped duct (Fig. 4c).
 Southern China. *M. chinensis* (CAMERON)
 - Impressions on frons very shallow and indistinct; antennae shorter (AL: < 900) and stouter, antennomeres 7 and 8 transverse; lateral margins in anterior half of pronotum in dorsal view more abruptly curved; longitudinal impression on pronotum distinct in both sexes; abdomen very sparsely punctate.
 δ : aedeagus smaller and with relatively shorter ventral process (Figs 2 a - b).
 φ : spermatheca different (Fig. 2d).
 Japan. *M. algarum* (SHARP)

Species excluded from *Myrmecopora* SAULCY

Anaulacaspis martensi (PACE, 1984) comb. nov.

Almoria martensi PACE, 1984, 315f

Myrmecopora martensi (PACE): PACE, 1991, 112

Material examined:

1♀, 1 ex, Nepal, Mustang Distr., Lete, 2550 m, 2.X.1983, leg. Smetana & Löbl, *Myrmecopora martensi* (m.), det. R. Pace 1988 (MHNG); 1 ex., Nepal, Prov. Bagmati, Tarke Ghyang, 2650m, 19.IV.1981, leg. Löbl & Smetana, *Myrmecopora martensi* (m.), det. R. Pace 1988 (MHNG).

Comments:

Based on an examination of material from the type region, identified and published by the author of the species (PACE, 1991) and in absolute agreement with the detailed drawings of habitus and genitalia (PACE, 1984), *Myrmecopora martensi* (PACE) is here transferred to *Anaulacaspis* GANGLBAUER. Though more shining and distinctly less densely punctate, the species shares numerous taxonomically relevant characters (AHN & ASHE, 1995; ASSING, 1997) with *Anaulacaspis nigra* (GRAVENHORST), the type species of the genus: the general facies (see Fig. 49 in PACE, 1984), the characteristic shapes of head and pronotum, the construction and chaetotaxy of ligula and labrum, the shape of the mesospiracular peritremes, the construction of meso- and metasternum, the punctuation of the elytra, the lack of carinae on the scutellum, the chaetotaxy of tergum and sternum VIII, and the construction of the genitalia (see Figs 50-52 in PACE, 1984). *A. martensi* differs from *Myrmecopora* particularly in the shape of the head, the different shape and chaetotaxy of the labrum, the more convex pronotum, the large but not contiguous mesospiracular peritremes, the short mesosternal process and the different construction of the genitalia.

Notes on two Oriental species of *Myrmecopora* described by CAMERON

Anaulacaspis elegans (CAMERON, 1944), comb. n.

Myrmecopora (*Ihyusa*) *elegans* CAMERON, 1944b, 52

Types examined:

Holotype ♂ (aedeagus examined): Type [round curator label], under fallen leaves in tomato field, Lyallpur, 22.6.1939, Ghani, *Myrmecopora elegans* Cam., Type, Govt. Entomologist Punjab C13, Pres. by Imp. Inst. Ent. B.M. 1940-119 (BMNH).

Further material examined:

1♀ (somewhat damaged), same data as holotype, but with curator label "Paratype".

Comments:

Although there are two specimens collected in the same locality and on the same date the Cameron collection, CAMERON (1944b) based his original description on a singular "Type". Consequently, since a handwritten identification label with the addition "type" was only attached to the ♂, this specimen must be regarded as the holotype, and the ♀ is not a paratype, irrespective of the labels attached to it.

Despite a distinct sexual dimorphism of the pronotum, whose dorsal surface is rather extensively impressed in the ♂, the species does not belong to *Myrmecopora*, particularly because of the large, though not contagious mesospiracular peritremes and the different construction of the genitalia (median lobe, paramere, spermatheca). Instead, *M. elegans* is here transferred to *Anaulacaspis* GANGLBAUER, its relevant external and sexual characters being in accordance with the current concept of this genus (see comments below *A. martensi* (PACE)). The conspicuous sexual dimorphism of the pronotum is here regarded as an autapomorphy of this species, which in addition is also characterized by its colour. The body is \pm bicoloured, with the pronotum, the elytra, abdominal terga III - IV and the appendages yellowish, the head, a somewhat extensive mark in the posterior half of the elytra and tergum V slightly darker, and terga VI - VII dark brown.

"*Myrmecopora*" *nilgiriensis* CAMERON, 1939

Although externally highly similar to species of *Myrmecopora* s. str., an examination of the holotype showed that it does not fit in with the current concept of this genus and revealed a character combination apparently unique among Falagriinae (AHN & ASHE 1995; ASSING 1997). Therefore, it is here placed in a new genus.

***Indomyrmecopora* gen. n.**

Type species: *Myrmecopora nilgiriensis* CAMERON, present designation

Description:

In size and general appearance somewhat resembling small *Myrmecopora* s. str.

Head transverse, with rounded posterior corners, dorsal surface \pm flat, in ♂ central area with small impression; eyes large, in dorsal view longer than temples; ca. 1/3 of head width.

Antenna very long and slender, very weakly incrassate apically; mandibles long and slender, right mandible with distinct molar tooth, without row of weak teeth in dorsal molar region; labrum and ligula as in Figs 5 d, e; labial and maxillar palpi long, 3- and 4-segmented, respectively.

Pronotum with maximal width in anterior half; lateral margins in posterior half weakly converging; median line rather shallowly sulcate; hypomera delimited from disk by carina; mesospiracular peritremes reduced; mesocoxal cavities not carinate posteriorly.

Elytra and scutellum unmodified, the former uniformly punctate; hind wings present.

Legs very long and slender, similar to *Myrmecopora* s. str.; tarsal formula 4,5,5.

Abdominal terga III - V with transverse impression anteriorly; posterior margin of tergum VIII with comb of spines shaped like denticles (Fig. 5f); tergum and sternum VIII very long.

♂: sternum VIII acutely pointed posteriorly (Fig. 5g). Median lobe with very long and slender ventral process, rather long flagellum and distinctly sclerotized structures in internal sac (Figs 5 a - b); paramere with short and characteristic apical lobe (Fig. 5c).

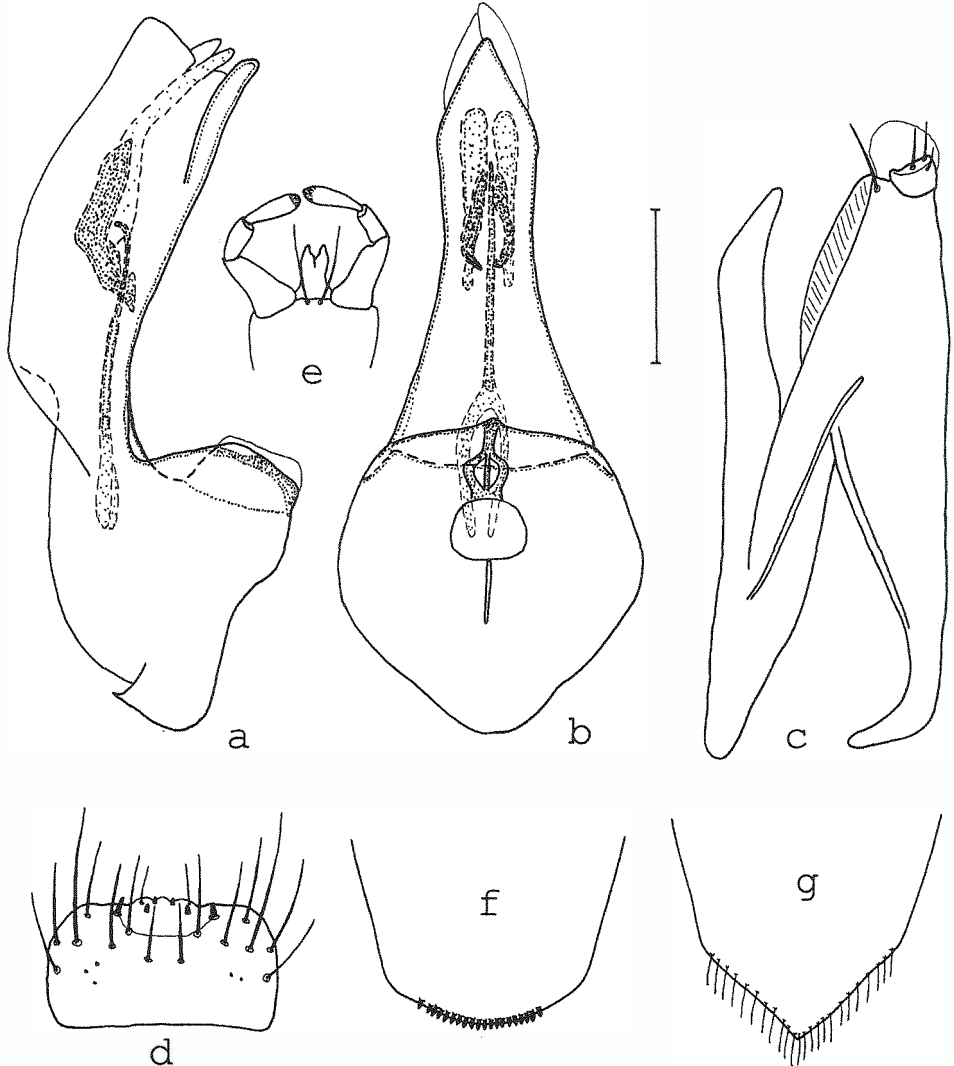
♀: unknown.

Comparative notes:

Although very similar in shape, size, dorsal impressions on head and pronotum, long and slender body appendages and particularly the reduced mesospiracular peritremes to *Myrmecopora* s. str., *Indomyrmecopora* is distinguished from that genus by such taxonomically significant characters as the construction of the mouthparts (ligula, labrum), the different chaetotaxy of tergum VIII and the construction of median lobe and paramere. In *Myrmecocephalus* MACLEAY, with which it shares the slender build of body, legs and antennae, it differs in the

much shallower pronotal impression, the much less strongly converging lateral margins of the pronotum, the construction of the mesospiracular peritremes, the chaetotaxy of tergum VIII, the construction of the δ genitalia and further characters.

From all falagrine genera listed by AHN & ASHE (1995) and those known to me, *Indomyrmecopora* is distinguished by the combination of the chaetotaxy of tergum VIII and the reduced mesospiracular peritremes alone. In addition, it is characterized by the primary and secondary sexual characters.



Figs 5 a - g: *Indomyrmecopora nilgiriensis* (CAMERON) (HT): Median lobe in lateral and in ventral view (a, b); paramere (c); labrum (d); labium (e); hind margins of δ tergum and sternum VIII (f, g). Scale: a-c: 0.1 mm; f-g: 0.2 mm.

***Indomyrmecopora nilgiriensis* (CAMERON), comb. n.**

Figs 5 a - g

Myrmecopora nilgiriensis CAMERON, 1939, 263

Type examined:

Holotype ♂ (3 legs, 1 antenna, 1 elytron missing; aedeagus and mouthparts dissected prior to present study): Holotype [round curator label], Nilgiri Hills, H.L. Andrewes, VIII.08, 3500 ft., *M. nilgiriensis* Cam. Type, 777, *nilgiriensis* Cam., *Myrmecopora nilgiriensis* Cam. Holotypus det. R. Pace 1986 (BMNH).

Description:

Measurements (HT): TL: 2.95; AL: 1300; HL: 380; HW: 470; PL: 440; PW: 500; EL: 420; HT1L: 630; HTaL: 510; HT1L: 230; HT24L: 200.

Colour of body brown, with the elytra, legs and antennae lighter, yellowish to yellowish brown. Forebody without, abdomen with only indistinct microsculpture; punctation fine, rather dense on head, pronotum and elytra, even denser, more distinct and partly granulose on abdominal terga. Head 1.25x wider than long; temples short, subparallel behind eyes; dorsal surface centrally with small and shallow impression. Antenna with antennomeres 1 - 3 very elongate and subequal in length, 4 - 10 oblong, but increasing in relative width; antennomere 11 approximately as long as the combined length of 9 and 10.

Pronotum with weakly sulcate impression along median line; 1.14x wider than long and 1.05x wider than head.

Elytra clearly wider than and at suture 0.97x shorter than pronotum. Legs very slender, metatarsus 0.8x the length of hind tibia, first metatarsomere longer than the three following tarsomeres.

Abdominal tergum and sternum VIII densely pubescent.

♂: sternum VIII acutely pointed (Fig. 5f); aedeagus and paramere as in Figs 5 a - c.

Distribution:

The species is known only from the type locality in southern India (see above).

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Besprechungen

SUHLING, F. & MÜLLER, O.: **Die Flußjungfern Europas: Gomphidae**. - Magdeburg: Westarp-Wiss.; Heidelberg: Spektrum Akad. Verl., 1996. - 237 S.: 124 Abb. - (Die Neue Brehm-Bücherei; Bd. 628). - 46.- DM

Mit dem vorliegenden Band über die Gomphiden Europas und biogeographisch zugehöriger Gebiete (Kleinasien und Maghreb) liegt ein umfangreiches, abgeschlossenes, Sammler wie Ökologen ansprechendes Werk vor. Gerade der Neuling wird sich, dank gut verständlicher Texte und aussagekräftiger Abbildungen (Farbfotos, Zeichnungen und Karten), schnell in die Gruppe einarbeiten können. Schließlich wird der aufmerksame Leser hin und wieder durch humorvolle Einlagen belohnt.

Nach einem einleitenden Kapitel werden zunächst Lebenszyklus, Imaginalentwicklung und Verhaltensökologie der Larven beschrieben. Die dazu zusammengetragenen Daten, wie Entwicklungsdauer, Temperatur- und Substratansprüche oder Mortalitätsfaktoren, sind umfangreich und oft tabellarisch dargestellt. Dabei wird jedoch auch sichtbar, wie viele der Angaben einer experimentellen Bestätigung bedürfen und wie groß die Lücken unserer Kenntnis noch immer sind.

Den autökologisch orientierten Abschnitten folgen Kapitel über die Lebensräume, die Gefährdung und den Schutz der Flußjungfern.

Ein Bestimmungsschlüssel mit zahlreichen Zeichnungen und Farbfotos sowie einer knappen Artbeschreibung runden das Werk ab.

E. K. GROLL

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