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**CERCOPOIDEA TYPES OF SPECIES DESCRIBED BY
EDMUND SCHMIDT IN THE U.S. NATIONAL
MUSEUM OF NATURAL HISTORY, WITH
LECTOTYPE DESIGNATIONS
(HOMOPTERA: CERCOPOIDEA)¹**

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ABSTRACT: Syntypes and "cotypes" of 35 Cercopoidea species and subspecies described by E. Schmidt and recently found in the U.S. National Museum of Natural History are documented. Seventeen lectotypes are newly designated. *Colsa krügeri* (Schmidt) is emended as *C. kruegeri* and synonymized with *C. cavata* Walker. The following new combinations are established: *Liorhina affinis* (Schmidt), *L. flaviscutellata* (Schmidt), *L. pulchra* (Schmidt), *L. similis* (Schmidt), and *L. taeniaticollis* (Schmidt); all are transferred from *Clovia*.

Between 1906 and 1932, Edmund Schmidt described many new species and genera of Cercopoidea. The great majority of Schmidt's type specimens were formerly kept in the Stettiner Museum, but were removed in 1945, after the devastation of Stettiner during World War Two. They are now located in the Institute of Zoology of the Polish Academy of Sciences (IZPAS), in Warsaw.

Part of the type series of 32 species and subspecies described by Schmidt were recently found and examined in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. The depositories of these syntypes were never mentioned in Schmidt's original descriptions.

The USNM collection contains authentic Schmidt specimens as evidenced by Schmidt's handwritten determination and type labels. Their authenticity as syntypes was verified by comparing the label data on the specimens with the original descriptions.

The deposition of the Schmidt material in Washington might be the result of the acquisition of the C.F. Baker collection by the USNM. While he was a professor at the University of the Philippines, Baker sent specimens he collected in Singapore, Borneo, and the Philippines to Schmidt for identification. Part of the material was later returned to Baker, together with syntypes of species for which Schmidt had duplicate examples. Baker later donated all of his personal collection to the National Museum of Natural History. At present, one specimen among the series for each species or subspecies bears the species name handwritten on a large black-bordered red label. I attribute this labeling to C.F. Baker, as evidenced by the label format and handwriting.

The purpose of the present paper is to document fully the existing type

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material. Lectotype and paralectotype designations are made where appropriate. One incorrect original specific spelling is emended. Also, one new specific synonymy and four new species combinations are reported. Most species of Cercopoidea can be identified accurately only by using diagnostic characters in the males, particularly the structures of the male genitalia. Therefore, in most cases the male was designated as the lectotype when syntypes existed. The female was designated as the lectotype when no male was present among the known syntypes. Lectotype and paralectotype designations were not made for the female syntypes of 15 species and subspecies at this time because the male syntypes of these species and subspecies exist in the Institute of Zoology, Polish Academy of Sciences, Warsaw.

The list of types is arranged alphabetically by species name. Each name is followed by the original generic combination, author, date, page reference, and subsequent synonymy or different generic name combination. To document the historical status of the syntypes, information from each was recorded exactly as given on labels, with (1), (2), (3), and so forth, indicating the sequence of labels on the pin from top to bottom. Lastly, my hand printed red lectotype or yellow paralectotype label is attached to each specimen so designated.

***affinis, Clovia*, Schmidt, 1922a: 9. Here transferred to *Liorhina* Stål, New Combination.**

Lectotype ♂ - (1) ISOLE BATU 1896-97 H. Raa p. (2) (pink label) Typus; (3) E. Schmidt (4) *Clovia affinis* Schmidt ♂ Edm. Schmidt determ. 1921 (5) (black-bordered red label) *Clovia affinis* Schm.

***apicalis, Simeliria*, Schmidt, 1909c: 290.**

1 ♀ Syntype - (1) Goenoeng Sitoli, Nias, H. Rolle Berlin SW 11 (2) (pink label) Type (3) *Simeliria apicalis* Schmidt ♀ Edm. Schmidt determ. 1908 (4) (black-bordered red label) *Simeliria apicalis* Schm.

The male syntype of this species is in the IZPAS.

***borneensis, Leptataspis*, Schmidt, 1911: 90.**

Lectotype ♂ - (1) Nord-Borneo Waterstradt (2) (pink label) Type (3) *Leptataspis borneensis* Schmidt ♀ Edm. Schmidt determ. 1910 (4) (black-bordered red label) *Leptataspis borneensis* Schm.

***breddini, Trichoscarta*, Schmidt, 1910: 85.**

Lectotype ♀ - (1) Soekaranda, Januar 1894 Dohrn (2) (pink label) Type (3) *Trichoscarta Breddini* [sic] Schmidt ♀ Edm. Schmidt determ. 1910 (4) (black-bordered red label) *Trichoscarta breddini* Schm.

***camerunensis, Clovia*, Schmidt, 1922b: 176.**

1 ♀ Syntype - (1) Kamerun Barombi Conradt (2) (pink label) Typus (3) *Clovia camerunensis* Schmidt ♀ Edm. Schmidt determ. 1921 (4) (black-bordered red label) *Clovia camerunensis* Schm.

The male syntypes of this species are in the IZPAS.

***cochleatum, Ectemnonotum*, Schmidt, 1909c: 318.**

1 ♀ Syntype - (1) Sumatra, Soekaranda Dr. H. Dohrn S. (2) (pink label) Type (3) *Ectemnonotum cochleatum* Schmidt ♀ Edm. Schmidt determ. 1909 (4) (black-bordered red label) *Ectemnonotum cochleatum* Schm.

The male syntypes of this species are in the IZPAS.

dohrni, *Ectemnonotum*, Schmidt, 1909c: 304.

Lectotype ♂ - (1) Soekaranda Januar 1894 Dohrn (2) (pink label) Type (3) *Ectemnonotum dohrni* Schmidt ♂ Edm. Schmidt 1909 (4) (black-bordered red label) *Ectemnonotum dohrni* Schm.

excellens, *Ectemnonotum*, Schmidt, 1909c: 311.

1 ♀ Syntype - (1) Sumatra Soekaranda Dr. H. Dohrn S. (2) (pink label) Type (3) *Ectemnonotum excellus* [sic] Schmidt ♀ Edm. Schmidt determ. 1909 (4) (black-bordered red label) *Ectemnonotum excellens* Schm.

The male syntypes of this species are in the IZPAS.

flavipes, *Eoscarta*, Schmidt, 1925b: 40.

Lectotype ♂ - (1) Sandakan Borneo Baker (2) (pink label) Cotypus (3) *Eoscarta flavipes* Schmidt ♂ Edm. Schmidt determ. 1923 (4) (black-bordered red label) *Eoscarta flavipes* Schm.

Paralectotype ♂ - (1) Sandakan Borneo Baker (2) 17884 (3) (pink label) Cotypus (4) *Eoscarta flavipes* Schmidt ♂ Edm. Schmidt determ. 1923.

flaviscutellata, *Clovia*, Schmidt, 1922a: 4. Here transferred to *Liorhina* Stål, New Combination.

Lectotype ♀ - (1) Sumatra Soekaranda Dr. H. Dohrn S. (2) (pink label) Typus (3) *Clovia flaviscutellata* Schmidt ♀ Edm. Schmidt determ. 1921 (4) (black-bordered red label) *Clovia flaviscutellata* Schm.

formosula, *Leptaspis*, Schmidt, 1911: 98.

Lectotype ♂ - (1) Soekaranda Januar 1894 Dohrn (2) (pink label) Type (3) *Leptaspis formosula* Schmidt ♂ Edm. Schmidt determ. 1910 (4) (black-bordered red label) *Leptaspis formosula* Schm.

fornax, *Leptaspis*, Schmidt, 1911: 96.

Lectotype ♂ - (1) New Guinea (2) (pink label) Type (3) *Leptaspis fornax* Schmidt ♂ Edm. Schmidt determ. 1910 (4) (black-bordered red label) *Leptaspis fornax* Schm.

fruhstorferi, *Leptaspis*, Schmidt, 1927: 10.

1 ♀ Syntype - (1) Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer (2) (pink label) Typus (3) *Leptaspis fruhstorferi* Schmidt ♀ Edm. Schmidt determ. 1923 (4) (black-bordered red label) *Leptaspis fruhstorferi* Schm.

The male syntypes of this species are in the IZPAS.

haglundii, *Literna*, Schmidt, 1920: 107.

1 ♀ Syntype - (1) Kamerun Barombi Conradt (2) (pink label) Type (3) *Literna haglundii* Schmidt ♀ Edm. Schmidt determ. 1920 (4) (black-bordered red label) *Literna haglundii* Schm.

The male syntypes of this species are in the IZPAS.

krügeri, *Sialoscarta*, Schmidt, 1906: 279; *Colsa krügeri*, Lallemand, 1949: 91, pl. iv, fig. 8. A junior synonym of *Colsa cavata* Walker, 1858: 343, New Synonymy.

Lectotype ♂ - (1) Dohrn Sumatra Soekaranda (2) (pink label) Type (3) *Sialoscarta krügeri* Schmidt ♂ Edm. Schmidt determ. 1906 (4) (black-bordered red label) *Sialoscarta krügeri* Schm.

Schmidt's (1906) original spelling *krügeri* is here emended to *kruegeri* (ICZN, Art. 32c), Emendation.

This species was erroneously synonymized with *Colsa concinna* (Jacobi) by Lallemand (1912: 121).

lutea, *Mioscarta*, Schmidt, 1925a: 36.

Lectotype ♀ - (1) Mt Makiling Luzon Baker (2) 21179 (3) (pink label) Cotypus (4)

Mioscarta lutea Schmidt ♀ Edm. Schmidt determ. 1923 (5) (black-bordered red label)
Mioscarta lutea Schm.

***marginalis, Plinia*, Schmidt, 1919: 381.**

1 ♀ Syntype – (1) Sumatra, Soekaranda, Dr. H. Dohrn S. (2) (pink label) Cotypus (3)
Plinia marginalis Schmidt ♀ Edm. Schmidt determ. 1919 (4) (black-bordered red label)
Plinia marginalis Schm.

1 ♀ Syntype – (1) Sumatra, Soekaranda, Dr. H. Dohrn S. (2) (pink label) Cotypus (3)
Plinia marginalis Schmidt ♀ Edm. Schmidt determ. 1919.

The male syntypes of this species are in the IZPAS.

***marquardti, Clovia*, Schmidt, 1924: 289.**

1 ♀ Syntype – (1) Cambodja (Friedrich) (2) (pink label) Typus (3) *Clovia marquardti*
Schmidt ♀ Edm. Schmidt determ. 1924.

The male syntypes of this species are in the IZPAS. Lallemand (1940: 146) synonymized this species with *Lallemandia navigans* (Jacobi).

***nox, Clovia*, Schmidt, 1922a: 1.**

Lectotype ♂ – (1) Sumatra Soekaranda Dr. H. Dohrn. S. (2) (pink label) Typus (3)
Clovia nox Schmidt ♂ Edm. Schmidt determ. 1921 (4) (black-bordered red label) *Clovia nox* Schm.

***penskyi, Clovia*, Schmidt, 1922a: 5.**

1 ♀ Syntype – (1) Sumatra Soekaranda Dr. H. Dohrn. S. (2) (pink label) Typus (3)
Clovia penskyi Schmidt ♀ Edm. Schmidt determ. 1921 (4) (black-bordered red label) *Clovia penskyi* Schm.

The male syntypes of this species are in the IZPAS.

pulchra, Clovia*, Schmidt, 1922a: 3. Here transferred to *Liorhina* Stål, **New Combination.*

Lectotype ♂ – (1) SUMATRA SI-RAMBE XII.90-III.91 E. MODIGLIANI (2) (pink label) Typus (3) *Clovia pulchra* Schmidt ♂ Edm. Schmidt determ. 1921 (4) (black-bordered red label) *Clovia pulchra* Schm.

***punctipennis, Plinia*, Schmidt, 1919: 380.**

Lectotype ♂ – (1) Sumatra Soekaranda Dr. H. Dohrn S. (2) (pink label) Typus (3) *Plinia punctipennis* ♂ Schmidt Edm. Schmidt determ. 1919 (4) (black-bordered red label) *Plinia punctipennis* Schm.

***pygmaea, Eoscarta*, Schmidt, 1909b: 240.**

Lectotype ♀ – (1) Java (2) (pink label) Type (3) *Eoscarta pygmaea* Schmidt ♀ Edm. Schmidt determ. 1908 (4) (black-bordered red label) *Eoscarta pygmaea* Schm.

***roseinervis, Eoscarta*, Schmidt, 1925b: 39.**

Lectotype ♀ – (1) Singapore, Coll. Baker (2) (pink label) Cotypus (3) *Eoscarta roseinervis* Schmidt Edm. Schmidt determ. 1923.

Paralectotype ♀ – (1) Singapore Coll. Baker (2) 17885 (3) (pink label) Cotypus (4) *Eoscarta roseinervis* Schmidt ♀ Edm. Schmidt determ. 1923.

***rugosum, Ectemnonotum*, Schmidt, 1909c: 313.**

1 ♀ Syntype – (1) Sumatra Soekaranda Dr. H. Dohrn S. (2) (pink label) Type (3) *Ectemnonotum rugosum* Schmidt ♀ Edm. Schmidt determ. 1909 (4) (black-bordered red label) *Ectemnonotum rugosum* Schm.

The male syntypes of this species are in the IZPAS.

similis, Clovia*, Schmidt, 1922a: 12. Here transferred to *Liorhina* Stål, **New Combination.*

1 ♀ Syntype – (1) Java K. Fruhstorfer S. (2) (pink label) Typus (3) *Clovia similis* Schmidt ♀ Edm. Schmidt determ. 1921 (4) (black-bordered red label) *Clovia similis* Schm.

The male syntypes of this species are in the IZPAS.

***taeniaticollis, Clovia*, Schmidt, 1922a: 13.** Here transferred to *Liorhina* Stål, **New Combination.**

Lectotype ♀ – (1) Balabac (2) E. Schmidt (3) (pink label) Typus (4) *Clovia taeniaticollis* Schmidt ♀ Edm. Schmidt determ. 1921 (4) (black-bordered red label) *Clovia taeniaticollis* Schm.

***taeniatifrons, Clovia*, Schmidt, 1922b: 178.**

1 ♀ Syntype – (1) IS. S. THOME Agua-Ize XII.1900, 400-600 m. L. Fea (2) E. Schmidt (3) (pink label) Typus (4) *Clovia taeniatifrons* Schmidt ♀ Edm. Schmidt determ. 1921 (5) (black-bordered red label) *Clovia taeniatifrons* Schm.

The male syntypes of this species are in the IZPAS.

***testaceicollis, Leptataspis*, Schmidt, 1911: 88.**

1 ♀ Syntype – (1) Sumatra Soekaranda Dr. H. Dohrn S. (2) (pink label) Type (3) *Leptataspis testaceicollis* Schmidt ♀ Edm. Schmidt determ. 1910 (4) (black-bordered red label) *Leptataspis testaceicollis* Schm.

The male syntypes of this species are in the IZPAS.

***tricolor borneensis, Suracarta*, Schmidt, 1909a: 182.**

1 ♀ Syntype – (1) Nord-Borneo, Waterstradt (2) (pink label) Type (3) *S. Tricolor* [sic] subsp. *borneensis* Schmidt ♀ Edm. Schmidt determ. 1907 (4) (black-bordered red label) *Suracarta tricolor* subsp. *borneensis* Schm.

The male syntypes of this species are in the IZPAS.

***tricolor rubroplagiata, Suracarta*, Schmidt, 1909a: 177.**

Lectotype ♂ – (1) Sumatra Soekaranda Dr. H. Dohrn S. (2) (pink label) Type (3) *S. tricolor* subsp. *rubroplagiata* Schmidt ♂ Edm. Schmidt determ. 1907.

Paralectotype ♀ – (1) Sumatra Soekaranda Dr. H. Dohrn S. (2) (pink label) Type (3) *S. tricolor* subsp. *rubroplagiata* Schmidt ♀ Edm. Schmidt determ. 1907 (4) (black-bordered red label) *Suracarta tricolor rubroplagiata* Schm.

Paralectotype ♀ – (1) Sumatra Soekaranda Dr. H. Dohrn S. (2) (pink label) Type (3) *S. tri. rubroplagiata* var. *punctata* Schmidt ♀ Edm. Schmidt determ. 1907.

Paralectotype ♀ – (1) Sumatra Soekaranda Dr. H. Dohrn S. (2) (pink label) Type (3) *S. tri. rubroplagiata* var. 2 *punctata* ♀ Edm. Schmidt determ. 1907.

Paralectotype ♀ – (1) Sumatra Soekaranda Dr. H. Dohrn S. (2) (pink label) Type (3) *S. tri. rubroplagiata* var. 3 *punctata* ♀ Edm. Schmidt determ. 1907.

***trimaculata, Considia*, Schmidt, 1909b: 239.**

1 ♀ Syntype – (1) Sumatra Soekaranda Dr. H. Dohrn S. (2) (pink label) Type (3) *Considia trimaculata* Schmidt ♀ Edm. Schmidt determ. 1908 (4) (black-bordered red label) *Considia trimaculata* Schm.

The male syntypes of this species are in the IZPAS.

The following six specimens (representing three Schmidt species) labeled “cotypus” in the USNM are not designated as part of the type series, because the 1923 date on their determination labels suggests that Schmidt did not have these specimens when he described these species in 1911.

***costalis, Leptataspis*, Schmidt, 1911: 91.**

1 ♂ “Cotype” – (1) Sumatra Soekaranda Dr. H. Dohrn S. (2) (pink label) Cotypus (3) *Leptataspis costalis* Schmidt ♂ Edm. Schmidt determ. 1923 (4) (black-bordered red label) *Leptataspis costalis* Schm.

1 ♀ "Cotype" – (1) Sumatra Soekaranda Dr. H. Dohrn S. (2) (pink label) Cotypus (3) *Leptataspis costalis* Schmidt ♀ Edm. Schmidt determ. 1923.

***similis, Leptataspis*, Schmidt, 1911: 87.**

1 ♂ "Cotype" – (1) Sumatra Soekaranda Dr. H. Dohrn S. (2) (pink label) Cotypus (3) *Leptataspis similis* Schmidt ♂ Edm. Schmidt determ. 1923 (4) (black-bordered red label) *Leptataspis similis* Schm.

1 ♀ "Cotype" – (1) Sumatra Soekaranda Dr. H. Dohrn S. (2) (pink label) Cotypus (3) *Leptataspis similis* Schmidt ♀ Edm. Schmidt determ. 1923.

***sumatrana, Leptataspis*, Schmidt, 1911: 85.**

1 ♂ "Cotype" – (1) Sumatra Soekaranda Dr. H. Dohrn S. (2) (pink label) Cotypus (3) *Leptataspis sumatrensis* [sic] Schmidt ♂ Edm. Schmidt determ. 1923 (4) (black-bordered red label) *Leptataspis sumatrensis* [sic] Schm.

1 ♀ "Cotype" – (1) Sumatra Soekaranda Dr. H. Dohrn S. (2) (pink label) Cotypus (3) *Leptataspis sumatrensis* [sic] Schmidt ♀ Edm. Schmidt determ. 1923.

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BOOKS RECEIVED AND BRIEFLY NOTED

DROSOPHILA CELLS IN CULTURE. 1997. G. Echaliier. Academic Press. 702 pp. Hard \$135.00.

This volume summarizes some thirty years of experience in the handling of *in vitro* cultured cells of *Drosophila* cells. Its main emphasis is on gene transfer methodology, cell responses to heat shock, hormonal regulation of genes, and on the expression and mobility of transposable elements.

THE EVOLUTION OF SOCIAL BEHAVIOR IN INSECTS AND ARACHNIDS. 1997. J.C. Choe & B.J. Crespi. eds. Cambridge University Press. 541 pp. Hard \$105.00, Ppbk. \$47.95.

The purpose of this book is to explore the causes of the diversity of animal social systems from the viewpoint of behavioral ecology as well as the causes of the transitions between cooperation and competition, commensalism, or parasitism. In a series of twenty-four discourses, the many contributors seek to explain under what conditions such behavior as parental care, alloparental care, and other forms of altruism among adults have evolved from the individually selfish life histories so common in animals, and how such behavior, once evolved, can be lost.