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Species of *Cassida* LINNÉ, 1758 described by THUNBERG and their present status (Coleoptera: Chrysomelidae: Cassidinae)

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ABSTRACT. All species of *Cassida* LINNÉ described by THUNBERG are listed and commented. Lectotype designations are given for all species in order to fix names. Following new synonym is proposed: *C. flaveola* THUNBERG, 1794 = *C. pallida* THUNBERG, 1794, **syn. nov.** Author and year of publication in *C. swartzii* is corrected.

Key words: taxonomy, entomology, Coleoptera, Chrysomelidae, Cassidinae, lectotype designation, new synonymy.

INTRODUCTION

THUNBERG as a pioneer entomologist described a large number of various insect species. Among them also twelve species under generic name *Cassida* LINNÉ, 1758. They are frequently mislabeled and disordered in his collection and is difficult to decide whether they represent type material or not. One species - *Cassida brunnea* THUNBERG, 1787 was incorrectly placed in Cassidinae, in fact it is *Thymalus limbatus* (FABRICIUS, 1787) member of Trogossitidae. The remaining are true cassids, however types were unknown to all following authors until now. During my studies in Naturhistoriska Riksmuseet I had an opportunity to visit Uppsala University Zoological Museum where THUNBERG's collection is housed. Alphabetical list of all species with my comments and suggestions is given below.

MATERIAL AND METHODS

All specimens studied here are housed in the Uppsala University Zoological Museum (Uppsala, Sweden). Individual species are listed in alphabetical order in the original combination with primary references only. Recent status is given after BOROWIEC (1999) and complete and most recent reference list is available from BOROWIEC & ŚWIĘTOJAŃSKA (2008).

Exact label data are cited for all type specimens; a double slash (//) divides data on different labels and a single slash (/) divides data in different rows. Type localities are cited in the original spelling. Other comments and remarks are placed in square brackets: [bb] - black border, [cb] – cardboard label, [hw] – data are handwritten, [p] – data are printed, [r] – red label; [rb] – red border, [s] – soft label, and [w] – white label.

Lectotype designations are given in order to preserve stability of nomenclature in this group, according to the Article 74.7.3 of the International Code of Zoological Nomenclature (ICZN 1999). All lectotypes are provided with following label: “LEC-TOTYPUS [or PARALECTOTYPUS] / genus / species / author and year / L. Sekerka des. 2008 [red, p, cb]”.

LIST OF SPECIES

***Cassida bimaculata* THUNBERG, 1789**

Cassida bimaculata THUNBERG, 1789: 86 (incl. fig.).

Basiprionota bimaculata: BOROWIEC, 1999: 67.

Material examined. LT, present designation, pinned: “Uppsala Univ. Zool. Mus. / Thunbergsaml. nr. 7374 / *Cassida bimaculata* / China. Thunb. TYP [red, p, cb] // 2maculata / 11 / China. Thunb. [w, hw, s, original Thunberg’s label in box above specimen]”.

Note. *Cassida bimaculata* is at present a member of the genus *Basiprionota* CHEVROLAT, 1837. The type is similar to specimens identified by BOHEMAN and SPAETH as this species.

***Cassida flaveola* THUNBERG, 1794**

Cassida flaveola THUNBERG, 1794: 103; BOROWIEC, 1999: 251.

Cassida pallida THUNBERG, 1794: 103; BOROWIEC, 1999: 270, **syn. nov.**

Material examined. *Cassida flaveola* - LT, present designation, pinned: “Uppsala Univ. Zool. Mus. / Thunbergsaml. nr. 7300 / *Cassida flaveola* / Westrog. TYP [red, p, cb] // flaveola 1 α . / Westrog. 6 [w, hw, s, original Thunberg’s label in box above specimen]”; PLT, pinned: “Uppsala Univ. Zool. Mus. / Thunbergsaml. nr. 7299 / *Cassida flaveola* / Westrog. TYP [red, p, cb] // flaveola 1 α . / Westrog. 6 [w, hw, s, original Thunberg’s label in box above specimen]”.

Cassida pallida - LT, present designation, pinned: "Uppsala Univ. Zool. Mus. / Thunbergsaml. nr. 7302 / *Cassida pallida* / TYP [red, p, cb] // *pallida*. / α . 18 [w, hw, s, original Thunberg's label in box above specimen]".

Note. There are several specimens identified as *C. flaveola* among THUNBERG's collection but only two above represent true types with correct locality. However, each type specimen belongs to a different species: one represents *C. flaveola* and the other *C. nobilis* LINNÉ, 1758. Moreover, almost all other specimens in his collection identified as *C. flaveola* actually belong to *C. nobilis*. In the same paper, Thunberg also described *C. pallida* unknown to all authors until now. I found that *C. pallida* sensu THUNBERG is conspecific with *C. flaveola* of the present sense and *C. flaveola* sensu THUNBERG is conspecific with *C. nobilis*. THUNBERG used as a main separation character between these two species size only: *C. pallida* is big and *C. flaveola* is small according to the descriptions. It is evident that THUNBERG used name *flaveola* mostly for *nobilis* specimens, but there is no discrimination character according to the description given by THUNBERG or figure of type between the two syntypes in front me. In order to preserve stability, I designated lectotype from specimen of *C. flaveola* of present sense used since SCHÖNHERR (1808) who synonymized it with *C. obsoleta* ILLIGER, 1798 but overlooked the priority rule. GEMMINGER & HAROLD (1876) corrected the priority and since that time *C. flaveola* is used as a valid name for a very common European species.

In addition, *C. pallida* is synonymized here with *C. flaveola*. Both species are described on the same page, but *C. flaveola* is mentioned first, and thus has the priority.

***Cassida furcata* THUNBERG, 1789**

Cassida furcata THUNBERG, 1789: 87 (incl. fig.).

Aspidimorpha furcata: BOROWIEC, 1999: 186.

Material examined. LT, present designation, pinned: "Uppsala Univ. Zool. Mus. / Thunbergsaml. nr. 7412 / *Cassida furcata* / Mus. Thunb. TYP [red, p, cb] // *furcata*. / 22 / Mus. Thunb. [w, hw, s, original Thunberg's label in box above specimen]".

Note. This species is now member of the genus *Aspidimorpha* HOPE, 1840. It is one of most common Oriental species of this genus and the name was fixed by neo-type designation of ŚWIETOJAŃSKA (2001) since the type was considered as lost. This designation now becomes invalid according to the Article 75.8 of the International Code of Zoological Nomenclature (ICZN 1999) but description and figures given by ŚWIETOJAŃSKA (2001) fully correspond with the type in front me.

***Cassida lunata* THUNBERG, 1789**

Cassida lunata THUNBERG, 1789: 88 (incl. fig.); SCHÖNHERR, 1808: 227 (as syn. of *C. inaequalis* LINNÉ, 1758).

Material examined. LT, present designation, pinned: "Uppsala Univ. Zool. Mus. / Thunbergsaml. nr. 7416 / *Cassida lunata* / Mus. Thunb. Ind. or. inaequ. F. TYP [red, p,

cb] // lunata / 26 / Mus. Thunb. / Ind. or. inaqu. L. [w, hw, s, original Thunberg's label in box above specimen]”.

Note. This specimen fully corresponds with specimens identified by BOHEMAN, WAGENER, SPAETH and BOROWIEC as *Stolas inaequalis* (LINNÉ, 1758).

***Cassida purpurea* THUNBERG, 1787**

Cassida purpurea THUNBERG, 1787: 40, 1789: 87 (incl. fig.).

Charideotella purpurea: BOROWIEC, 1999: 333.

Material examined. LT, present designation, pinned: “Uppsala Univ. Zool. Mus. / Thunbergsaml. nr. 7370 / *Cassida purpurea* / Mus. Thunb. annulus F. TYP [red, p, cb] // *purpurea* / 7 / Mus. Thunb. / annulus F. [w, hw, s, original Thunberg's label in box above specimen]”.

Note. There are two specimens in the collection, but in my opinion only the above mentioned represents the true type. The other specimen is labeled by museum researchers as type, however, it does not correspond with figure given by THUNBERG and is pinned in a different box. THUNBERG's collection has a quite strange system of organization and it seems that THUNBERG pinned specimens in order how they were published by him. The reasons above led me to exclude it from the type series and lectotype designation is given only for the specimen figured by THUNBERG.

***Cassida pallida* THUNBERG, 1794**

Cassida pallida THUNBERG, 1794: 103.

Note. See under *C. flaveola*.

***Cassida quadrimaculata* THUNBERG, 1789**

Cassida quadrimaculata THUNBERG, 1789: 86 (incl. fig.) nec. *C. quadrimaculata* DE GEER, 1775.

Laccoptera nepalensis: BOROWIEC, 1999: 219.

Material examined. LT, present designation, pinned: “Uppsala Univ. Zool. Mus. / Thunbergsaml. nr. 7375 / *Cassida quadrimaculata* / China. Thunb. TYP [red, p, cb] // 4maculata / 12 / China. Thunb. [w, hw, s, original Thunberg's label in box above specimen]”.

Note. The name is unavailable because of homonymy and instead of it *Laccoptera nepalensis* BOHEMAN, 1855 is now used. Both types represent the same species and thus synonymy is correct.

***Cassida reticulata* THUNBERG, 1789**

Cassida reticulata THUNBERG, 1789: 87 (incl. fig.).

Microctenochira reticularis: BOROWIEC, 1999: 391.

Material examined. LT, present designation, pinned: “Uppsala Univ. Zool. Mus. / Thunbergsaml. nr. 7372 / *Cassida reticulata* / Cayenne. Thunb. TYP [red, p, cb] // *reticulata* / 9. / Cayenne Thunb. [w, hw, s, original Thunberg’s label in box above specimen]”.

Note. The type specimen corresponds to specimens identified by BOHEMAN and SPAETH as present *Microctenochira reticularis* (DE GEER, 1775) so I keep it in synonymy. However, the situation is more complicated because the type of DE GEER’s *Cassida reticularis* has been destroyed by pests (pers. comm. Julio FERRER), and thus study of old collections and following neotype designation will be necessary to fix this name.

***Cassida swartzii* THUNBERG in SCHÖNHERR, 1808**

Cassida Swartzii THUNBERG in SCHÖNHERR, 1808: 229.

Stoiba swartzii: BOROWIEC, 1999: 131.

Material examined. Type is housed in Naturhistoriska Riksmuseet, Stockholm, Sweden after original description but was unavailable to me because was on loan.

Note. *Cassida swartzii* is at present member of the genus *Stoiba* SPAETH, 1909 and has been cited with SCHÖNHERR, 1817 as the author. However, both author and year are incorrect. The species was described in fact by THUNBERG as he is mentioned as the author under the description in the second part of the first volume of SCHÖNHERR’s ‘Synonymia Insectorum’ published in 1808 not 1817.

***Cassida vesicularis* THUNBERG, 1787**

Cassida vesicularis THUNBERG, 1787: 40, 1789: 88; BOROWIEC, 1999: 292.

Material examined. LT, present designation, pinned: “Uppsala Univ. Zool. Mus. / Thunbergsaml. nr. 7371 / *Cassida vesicularis* / Mus. Thunb. TYP [red, p, cb] // *vesicularis* / 8 / Mus. Thunb. [w, hw, s, original Thunberg’s label in box above specimen]”.

Note. *Cassida vesicularis* is the second THUNBERG’s species unknown to all authors until now. THUNBERG (1787) gave ‘Japan’ as the type locality but the only specimen in his collection does not have locality data. It is partly damaged and certainly misidentified specimen of *C. circumdatata* group. In my opinion it is co-specific with *C. catenata* BOHEMAN, 1855 because of irregular yellow pattern on black background. However, I do not propose new synonymy yet, because of unclear status of species within this group. Possibly, *C. catenata* is only an insular form of *C. circumdata* HERBST, 1799 and then there are several isolated populations with unknown status presently. In my opinion, *C. vesicularis* might be co-specific with *C. catenata*.

***Cassida vigintimaculata* THUNBERG, 1789**

Cassida vigintimaculata THUNBERG, 1789: 86 (incl. fig.).

Aethiopocassis vigintimaculata: BOROWIEC, 1999: 233.

Material examined. LT, present designation, pinned: "Uppsala Univ. Zool. Mus. / Thunbergsaml. nr. 7366 / *Cassida vigintimaculata* / Ind. or. Thunb. TYP [red, p, cb] // 20maculata / 3 / Ind. or. Thunb. [w, hw, s, original Thunberg's label in box above specimen]".

Note. The only specimen in THUNBERG's collection fully corresponding with specimens identified as this species by most following authors.

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