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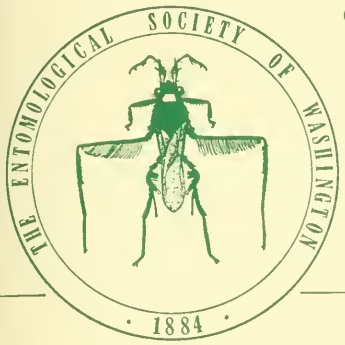

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THE

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NOTES ON NEOHARMONIA CROTCH (COLEOPTERA: COCCINELLIDAE) IN THE UNITED STATES AND MEXICO

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ABSTRACT—The genus *Harmoniaspis* Casey is placed as a junior synonym of *Neoharmonia* Crotch and *Neoharmonia cyanoptera* (Mulsant) is made a junior synonym of *Neoharmonia ampla* (Mulsant). *Neoharmonia ampla* is reduced to subspecific status as *N. venusta ampla*, n. comb. *Agrabia sicardi* Nunenmacher and *Agrabia sicardi* var. *complexa* Nunenmacher are placed as junior synonyms of *Anisocalvia 14-guttata* (L.) and a lectotype is designated for *A. sicardi*.

Examination of some Mexican Coccinellidae in the Canadian National Collection indicates that the taxonomic status of the genera and species related to the genus *Neoharmonia* Crotch is not completely clear. Crotch (1871) erected *Neoharmonia* for 12 Western Hemisphere species, but in his 1874 monograph he made no mention of *Neoharmonia* and included those species in the genus *Coccinella* as well as synonymizing *Harmonia* Mulsant under *Coccinella*. *Neoharmonia* seems to have been overlooked or ignored by subsequent authors until Timberlake (1943).

Casey (1899) described a new genus, *Neoharmonia* (junior homonym), which included *Coccinella venusta* Melsheimer and *Harmonia notulata* Mulsant. Casey (1899) also described the genus *Agrabia* for *Harmonia cyanoptera* Mulsant. Timberlake (1943) recognized *Agrabia* Casey and *Neoharmonia* Casey to be junior synonyms of *Neoharmonia* Crotch and selected *Coccinella venusta* Melsheimer as the type of *Neoharmonia* Casey. Rye (1873) had previously selected *Harmonia viridipennis* Mulsant as the type of *Neoharmonia* Crotch. Casey (1908) selected *Harmonia sommeri* Mulsant as the type-species of *Harmonia*. Mulsant (1850) described *sommeri* from specimens labeled "Bresil" and "Mozambique." Weise (1898) stated that *sommeri* did not occur in Brazil and that Mulsant's specimen or specimens must have been incorrectly labeled. This assumption has been born out in the course of the present study. *Harmonia*, therefore, is an Old World genus and *Neoharmonia* a New World genus as Crotch (1871) originally intended when he described *Neoharmonia*.

Casey (1908) erected the genus *Harmoniaspis* for the Mexican species *Harmonia luteipennis* Mulsant, *H. ampla* Mulsant, *Coccinella cyathigera* Gorham and *C. albopicta* Gorham. *Harmonia ampla* Mulsant is here selected as the type-species of *Harmoniaspis*. Korschefsky (1931) listed *Harmoniaspis* as a synonym of *Neohalyzia* Crotch and

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was followed in this by Blackwelder (1945). *Neohalyzia* is a monobasic genus and the type, *perroudi* (Mulsant), is not at all related to *Neoharmonia ampla* (Mulsant).

Present examination of specimens of *Agrabia* and *Neoharmonia* has confirmed Timberlake's findings and indicates that *Neoharmonia cyanoptera* is a junior synonym of *Neoharmonia ampla* (Mulsant) which is, at best, a subspecies of *N. venusta* (Melsheimer). *Agrabia sicardi* Nunenmacher and *Agrabia sicardi* var. *complexa* Nunenmacher are junior synonyms of *Anisocalvia 14-guttata* (L.).

Thanks are due John Smart, Department of Zoology, University of Cambridge, Cambridge, England, for the loan of the series of *Harmonia sommeri* and the types of *Harmonia ampla* and *H. soularyi* from the Crotch Collection, and H. B. Leech, California Academy of Sciences, for the loan of paratypes and other specimens. Miss Linda Heath prepared all the illustrations presented herein.

Genus *Neoharmonia* Crotch

Neoharmonia Crotch, 1871, p. 2. Type-species: *Harmonia viridipennis* Mulsant, by subsequent designation of Rye, 1873, p. 329.

Agrabia Casey, 1899, p. 87.—Timberlake, 1943, p. 20. Type-species: *Harmonia cyanoptera* Mulsant, monobasic.

Neoharmonia Casey, 1899, pp. 90–91 (junior homonym).—Timberlake, 1943, p. 20. Type-species: *Coccinella venusta* Melsheimer, by subsequent designation of Timberlake, 1943, p. 20.

Harmoniaspis Casey, 1908, p. 404.—Korschefsky, 1931, p. 575.—Blackwelder, 1945, p. 455. Type-species: *Harmonia ampla* Mulsant, by present designation. New Synonymy.

Coccinellini with form elongate-oval, depressed. Pronotum and elytron with lateral margins distinctly explanate, usually semi-transparent or at least pale in color. Anterior margin of mesosternum distinctly notched medially; intercoxal process of prosternum wide, flattened, with 2 indistinct, widely separated carinae extending anteriorly as far as anterior margin of coxa. Male genitalia with phallobase long, slender, basal piece flattened dorsoventrally, tapered toward posterior margin (fig. 9); sipho robust with large, median, membranous area, apex set off by a narrow, transverse, membranous area (fig. 10). Female genitalia with spermatheca slender, curved, base terminating in a well developed ramus, a long, sclerotized nodulus present between spermatheca and ductus receptaculum, bursa without sclerotized infundibulum (fig. 11).

The genera with which *Neoharmonia* is likely to be confused are *Coccinella* and *Adalia*. *Adalia* has the postcoxal line simply curved with no oblique, intersecting line as is present in *Neoharmonia*. *Coccinella* has the anterior margin of the mesosternum straight; *Neoharmonia* has the margin distinctly notched. In addition, the slender,

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Fig. 1–8. Habitus view of *Neoharmonia venusta venusta* and *N. venusta ampla*.


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L. Heath

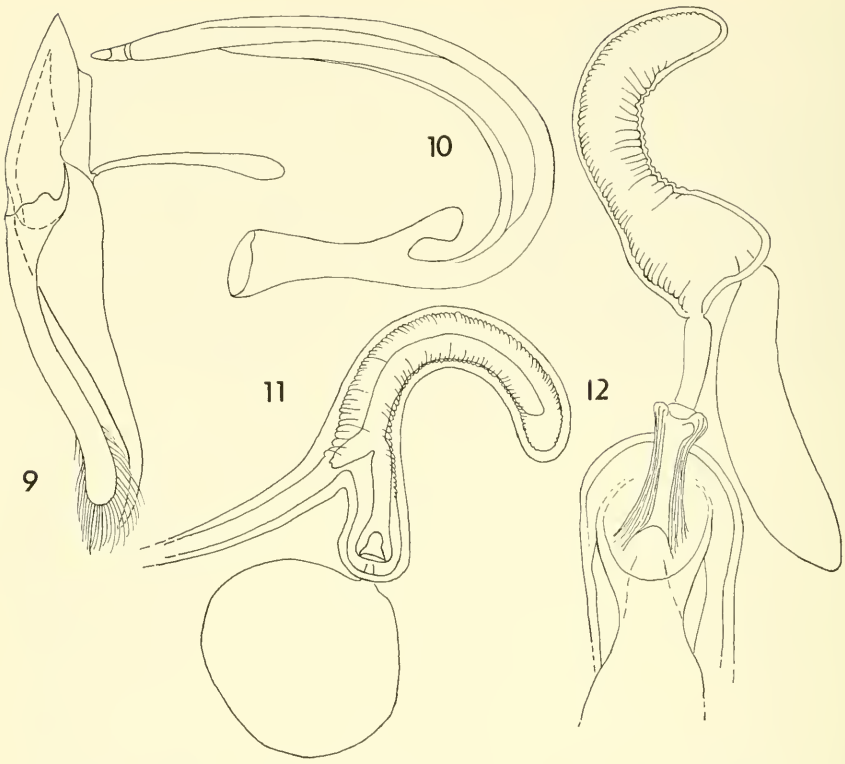

Fig. 9–12. Male and female genitalia. 9, lateral view of male phallobase, *N. venusta.* 10, male sipho, *N. venusta.* 11, female spermatheca, *N. venusta.* 12, female spermatheca and infundibulum, *Adalia* sp.

elongate phallobase and robust sipho of *Neoharmonia* are unlike anything observed in *Coccinella* or *Adalia.* The female genitalia of *Adalia* and *Coccinella* have a large, distinct infundibulum (fig. 12) and lack the long, tapered nodulus of *Neoharmonia.*

Key to Subspecies of *Neoharmonia venusta* (Melsheimer)

Color of pronotum either mostly black (fig. 5) or pale with 4 distinct black spots as in fig. 1; eastern U. S. to eastern Texas ... *venusta venusta* (Melsheimer)

Color of pronotum either entirely pale or pale with red or brown spots as in fig. 2, 3, 8; southwestern U. S. and northern Mexico .... *venusta ampla* (Mulsant)

Neoharmonia venusta venusta (Melsheimer)

Coccinella venusta Melsheimer, 1846, p. 175.—Crotch, 1874, p. 108.—Gorham, 1891, p. 156.—Blackwelder, 1945, p. 454.

Harmonia venusta: Mulsant, 1856, p. 141.—Mulsant, 1866, p. 61.

Neoharmonia venusta: Crotch, 1871, p. 2.—Casey, 1899, p. 71.—Leng, 1920, p. 216.
Coccinella (*Neoharmonia*) *venusta*: Korschefsky, 1931, p. 514.
Harmonia notulata Mulsant, 1850, p. 83.
Coccinella notulata: Crotch, 1874, p. 108.
Neoharmonia notulata: Crotch, 1871, p. 2.—Casey, 1899, p. 91.—Leng, 1920, p. 216.
Coccinella (*Neoharmonia*) *notulata*: Korschefsky, 1931, p. 514.
Neoharmonia venusta var. *dissimila* Blatchley, 1914, p. 65.—Leng, 1920, p. 216. New synonymy.
Coccinella (*Neoharmonia*) *venusta* ab. *dissimila*: Korschefsky, 1931, p. 514.
Neoharmonia venusta var. *fattigi* Blatchley, 1920, 43.—Leng and Mutchler, 1927, p. 33. New synonymy.
Coccinella (*Neoharmonia*) *venusta* ab. *fattigi*: Korschefsky, 1931, p. 514.
Neoharmonia venusta centralis Casey, 1924, p. 157.—Leng and Mutchler, 1937, p. 33. New synonymy.
Coccinella (*Neoharmonia*) *venusta* ab. *centralis*: Korschefsky, 1931, p. 514.

The extreme variability of the color pattern (fig. 1, 5, 6) in the subspecies has long been recognized. Except for Casey, most authors have considered the names listed in synonymy above as subspecies or varieties of *venusta*. In the course of this study color forms have been seen in series from each locality and it is apparent that geographic subspecies cannot be established based on color pattern. There being no apparent morphological differences, all of the names listed above are here considered to be junior synonyms of *venusta* (Melsheimer). *Neoharmonia venusta venusta* occurs from Maine and Florida west to Illinois, Kansas and eastern Texas. Specimens have been seen from as far west as Columbus, Texas.

Neoharmonia venusta ampla (Mulsant), n. comb.

Harmonia ampla Mulsant, 1850, p. 81.—Mulsant, 1866, p. 61.
Coccinella ampla: Crotch, 1874, p. 108.—Gorham, 1891, p. 156.—Blackwelder, 1945, p. 454.
Neoharmonia ampla: Leng, 1903, p. 202.—Leng, 1920, p. 216.
Coccinella (*Neoharmonia*) *ampla* Korschefsky, 1931, p. 509.
Harmonia soularyi Mulsant, 1866, p. 63.
Coccinella soularyi: Crotch, 1874, p. 109.—Gorham, 1891, p. 156.
Coccinella (*Neoharmonia*) *soularyi*: Korschefsky, 1931, p. 509.
Harmonia cyanoptera Mulsant, 1850, p. 82.—Mulsant, 1866, p. 61. New synonymy.
Coccinella cyanoptera: Crotch, 1874, p. 373.—Gorham, 1891, p. 155.
Agrabia cyanoptera: Casey, 1899, p. 87.—Leng, 1903, p. 196.—Leng, 1920, p. 216.—Korschefsky, 1931, p. 438.—Blackwelder, 1945, p. 454.
Harmonia virdipennis Mulsant, 1866, p. 60.
Coccinella virdipennis: Crotch, 1874, p. 108.
Agrabia cyanoptera ab. *virdipennis*: Korschefsky, 1931, p. 438.—Blackwelder, 1945, p. 454.
Coccinella ampla var. *rufa* Nunenmacher, 1944, p. 146. New synonymy.

As in the case of *venusta venusta*, we have here an extreme instance of color variation. Mulsant described *cyanoptera* from a form with entirely greenish or bluish-black elytra (fig. 7, 8) and *ampla* from a pale, somewhat spotted form (fig. 2, 3, 4). Crotch (1874) suspected they might be the same species but did not actually synonymize them. A series of specimens (12) in the Canadian National Collection, all with identical data, "5 mi. S. Monterrey, N. L., Mexico, VII-12-1963, H. F. Howden/on *Platanus*" is composed of examples of both typical *cyanoptera* and typical *ampla* and it is apparent that the 2 names apply to a single subspecies. *Neoharmonia venusta ampla* occurs from Brownsville, Texas, and central Texas west to southern California and south to Nuevo Leon, Mexico and Oaxaca, Mexico. *Neoharmonia virdipennis* (Mulsant) is simply a synonym of *ampla*.

The types of *Agrabia sicardi* Nunenmacher and *Agrabia sicardi* var. *complexa* Nunenmacher in the California Academy of Sciences collection have been examined, thanks to a loan by Hugh Leech, and have been found to be conspecific with *Anisocalvia 14-guttata* (L.). The male of *sicardi* bearing the labels "Hornbrook/Siskiyou Co., Cal., VI-1-11/coll'd by F. W. Nunenmacher/Agrabia sicardi Nun., Type" is here designated lectotype. The female bearing identical data is designated paralectotype. The female type of *complexa* is unique and also bears the same data as the lectotype of *sicardi*. Nunenmacher (1912) lists the type locality as "Hamburg" but the specimens are labeled "Hornbrook." It is apparently not possible to definitely establish which is correct, but, since the specimens are labeled "Hornbrook" and, as pointed out by Leech (personal comm.), Hornbrook is higher in altitude (14-guttata is a northern species), that locality is here considered to be the type locality.

A single female in the Crotch Collection, University of Cambridge, England, bearing the following labels "TYPE/TYPE ampla" is here considered to be a type of *H. ampla* and is here designated lectotype. A single male in the Crotch Collection, bearing the following labels, "Playa Vicente/Mexico, Salle Coll./Harmonia soulyari Muls., Type, and Salle" is here considered to be a type of *H. soularyi* and is here designated lectotype.

Five paratypes of *Coccinella ampla* var. *rufa* Nunenmacher have been examined and are simply intermediate color forms between typical *ampla* and *cyanoptera*.

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