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**A NEW GENUS OF NEOTROPICAL COCCINELLINI (COLEOPTERA:
COCCINELLIDAE) RELATED TO *OLLA* CASEY AND ALLIES**

NATALIA J. VANDENBERG AND ROBERT D. GORDON

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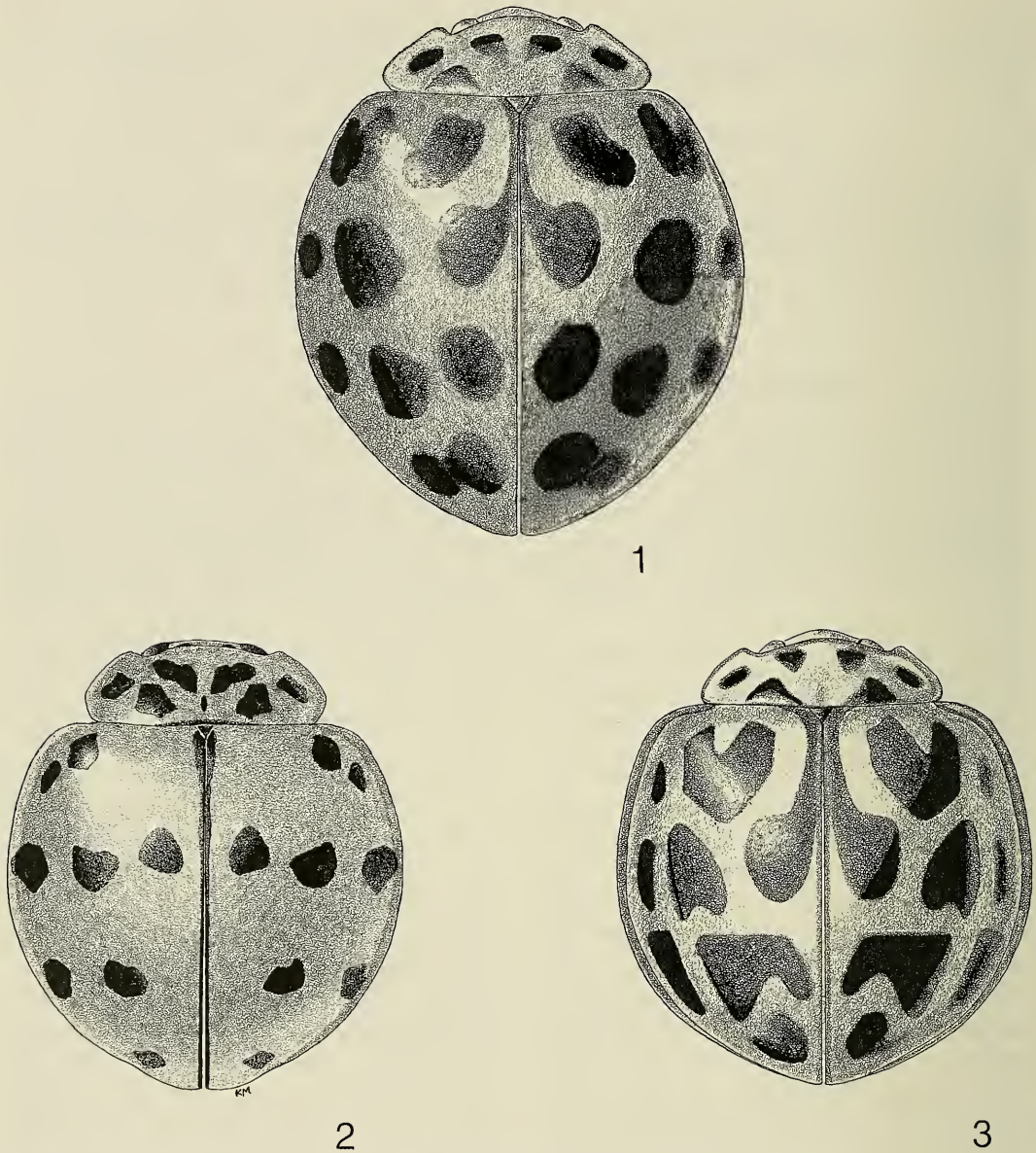
Abstract.—*Spilindolla*, a new genus of Neotropical Coccinellini, is proposed to accommodate the species *Cycloneda vigintiduonotata* (Mulsant), *C. darestei* (Mulsant) and *Egleis constellata* Mulsant. These three species constitute **new combinations** within *Spilindolla*. The new genus is most closely allied to *Spilonedea* Casey and belongs to a subgroup of nine other genera within the neotropical coccinelline fauna informally designated as “*Olla* and allies.” *Spilindolla* is compared to related as well as superficially similar genera. The species are described, keyed and illustrated and their distributions given.

Key Words: Coleoptera, Coccinellidae, predator, new genus, Neotropical

Although the Coccinellini constitute one of the better known tribes of lady beetles, the Neotropical components of the fauna are still poorly characterized. This is true despite the fact that coccinellines are often imported for use in the biological control of exotic Homoptera, and the Neotropics are a popular source area in the exploration for biological control agents. The present work proposes a new genus to accommodate three misclassified species of Neotropical Coccinellini: *Cycloneda vigintiduonotata* (Mulsant) (Fig. 1), *C. darestei* (Mulsant) (Fig. 3) and *Egleis constellata* Mulsant (Fig. 2). Vandenberg (1987) discovered the new taxon while studying type material of *Cycloneda* as part of a doctoral thesis project. *Egleis constellata* is reassigned to the new genus on the basis of notes and sketches made by the second author from type material in the Paris museum. The new genus falls within the lineage of “*Olla* and allies” (Vandenberg 1992), regarded as a monophyletic assemblage of primarily Neo-

tropical Coccinellini comprising *Olla* Casey, *Cirocolla* Vandenberg, *Spilonedea* Casey, *Paraneda* Timberlake, *Clynis* Mulsant, *Neda* Mulsant, *Mononeda* Crotch, *Neoharmonia* Crotch and *Procula* Mulsant. This group is united by the following genital characteristics: Male with siphonal apex tubular or tapered, lacking a membranous pouch and spicules, but often with preapical projections or lobes (Figs. 22–24); siphonal capsule with inner and outer arms dissimilar in size and or shape (Figs. 7–9); basal lobe generally apically bifurcate (Figs. 19–21); basal piece often highly elongate. Female genitalia with sperm duct unmodified or with a portion forming a simple tubular sheath (Figs. 11–13).

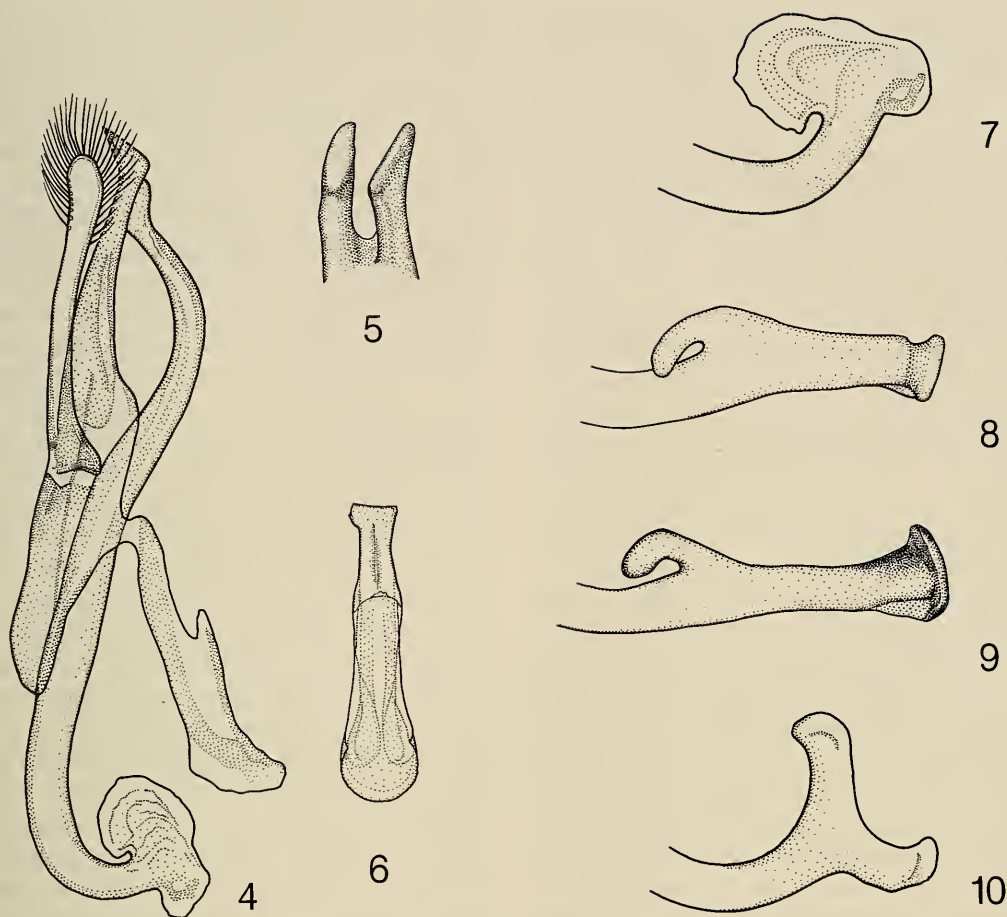
Members of the new genus can be distinguished from related genera by certain unusual features of the male genitalia, in particular the ventrally keeled apex of the basal lobe (Fig 5), and the recurved siphon (Figs. 4, 22–24) with a laterally warped siphonal capsule bearing a reduced outer arm (Fig.



Figs. 1-3. Adult habitus. 1, *Spilindolla vigintiduonotata*. 2, *S. constellata*. 3, *S. darestei*.

7). The female genitalia (Fig. 11) are distinguished by the combined characteristics of a very short sperm duct arising distally from a robust plicate bursa, and paddle shaped genital plates with a highly elongated inner "handle". The adult beetles have a very compact, "broad-shouldered" look (Figs. 1-3) which is fairly distinctive (width of elytral base much greater than

pronotal width). In addition, they can be recognized (Fig. 15) by the straight to weakly curved posterior margins of abdominal segments 1-4, the configuration of the postcoxal line (with linear conjoined oblique line) and the notched apex of abdominal segment 6 in males. The presence of a pair of tibial spurs on the middle and hind legs is also useful for distinguishing



Figs. 4–10. Male genitalia. 4–6, *Spilindolla vigintiduo-notata*. 4, Whole dissection, lateral view. 5, Apex of basal lobe ventrolateral view. 6, Trabes, ventral view. 7–10, Siphonal capsules, lateral view. 7, *S. vigintiduo-notata*. 8, *Spiloneda* sp. 9, *Mononeda* sp. (*Neda* group). 10, Undescribed species (*Egleis* and allies).

this genus from the similar appearing *Egleis*.

Label data are quoted verbatim for all available type specimens, but locality records only are cited for nontype material examined during the study. The known distribution of the new genus includes Panama, northern South America and southern Brazil. Specimens are rarely collected so that the actual distribution and species count may prove to be far greater than that presented here. Nothing is currently known of the habitat and prey preferences of the three species presently comprising the new genus, but the allied genus *Olla* contains species which are primarily psyllid and

aphid feeders, with a preference for arboreal habitats or shrubs (Vandenberg 1992). Depositories of type and other material examined are specified using the abbreviations listed in Acknowledgments.

***Spilindolla* Vandenberg, NEW GENUS**
(Figs. 1–6, 11, 15–24)

Type species.—*Daulis vigintiduo-notata* Mulsant

Description.—Length 4.0 to 6.5 mm. Form compact, broadly oval, pointed posteriorly, subhemispherical to suprahemispherical with weakly explanate lateral margins (Fig. 17). Punctuation on dorsal surface

dense and fine; coarser, more widely spaced punctures present just before and within translucent outer margin of elytron; surface between punctures distinctly shagreened. Dorsal color pattern of known species with background ivory to yellowish orange with many brown to black marks (Figs. 1–3). Venter ivory to dark brown, often marked with black or creamy white.

Eyes finely faceted, separated by slightly more than twice diameter of an eye; inner orbits parallel to weakly divergent dorsally. Pronotum convex, lateral margins narrowly reflexed; lateral and basal margins strongly rounded in outline (Fig. 17). Elytron with translucent outer margin explanate along entire length; width of explanate margin decreasing from near apical $\frac{1}{3}$ to apex; extreme outer margin with fine raised ridge along entire length; elytral base broad relative to pronotal base (Figs. 1–3). Antenna with length approximately equal to distance between eyes, terminating in a compact 3-segmented obtriangular club. Terminal segment of maxillary palpus small and robust. Intercoxal process of prosternum with pair of convergent carinae reaching $\frac{4}{5}$ distance to anterior margin. Mesosternum with small but distinct emargination at middle of anterior border. Elytral epipleuron (Fig. 18) strongly concave and steeply descending externally, faintly foveate for reception of hind femur, maximum width equal to approximately $\frac{1}{5}$ width of body at base of abdomen. Middle and hind tibiae each with 2 apical spurs. Tarsal claw moderately long, slender, with subquadrate basal tooth; claws of fore, middle and hind tarsus of approximately equal length. Abdomen (viewed from beneath) as in Fig. 15; widest near middle of 1st through 2nd segments; form shorter in male than in female. First abdominal segment approximately $1\frac{1}{2}$ times longer along midline than minimum distance between hind coxae; postcoxal line curved posterolaterad, closely paralleling posterior margin for much of its length, becoming less distinct as it reaches lateral margin; oblique line nearly linear, joined to main

curve of postcoxal line but less distinct at point of union than at middle of segment. Abdominal segments 1–4 with hind margins linear to weakly curved. Male with 5th abdominal segment truncate or shallowly, roundly emarginate, exposing 6th; 6th segment with small v-shaped emargination at middle of hind margin but often obscured by brush of golden setae. Female with hind margin of 5th abdominal segment rounded (Fig. 16), covering most of 6th; hind margin of 6th segment lacking emargination. Male genitalia with basal lobe divided at apex (Figs. 19–21); apical projections tapered, sharply upturned in lateral view, strongly keeled beneath (Fig. 4, 5); ventral membrane restricted to basal $\frac{1}{3}$. Paramere slightly shorter than basal lobe. Trabes robust (Fig. 4, 6), not laterally compressed. Siphon highly modified: main curve s-shaped in lateral view (Figs. 4, 22–24) with terminal gonopore; capsule (Fig. 7) irregularly obtriangular, bowed; outer arm of capsule short, difficult to differentiate from inner arm; inner arm large, forming main body of capsule; ejaculatory duct never extended beyond siphonal apex. Female genitalia (Fig. 11) with weakly curved cornu; distinct ramus with moderately small accessory gland; undifferentiated nodulus set into concavity in lower part of spermatheca; sperm duct very short, attached to distal end of bursa; bursa robust, horizontally plicate.

Etymology.—The generic name reflects the relationship between the new genus and *Olla*. Derived from a contraction of the terms “spilos” (spot) + “linda” (beautiful) + *Olla*. Gender feminine.

Remarks.—*Spilindolla* shows the greatest affinity to the monotypic genus *Spiloneda* (which will soon be expanded to include a half dozen additional species, Vandenberg, in prep.). The close relationship between *Spilindolla* and *Spiloneda* can be seen in the similar body shape, the slightly foveate elytral epipleuron (usually highlighted with a dark spot) (Fig. 18), the warped siphonal capsule of the male geni-

talia (Figs. 7, 8), and the very short sperm duct attached distally to the bursa in the female genitalia (Fig. 11). *Spilindolla* differs in possessing a more derived form of the male genitalia (Figs. 4–6), especially the recurved siphon, keeled basal lobe, reduced ventral membrane, and robust trabes. Externally *Spilindolla* differs from *Spiloneda* in the slightly larger body size, the shape and contours of the abdominal segments, the form of the postcoxal line (curved in *Spiloneda*), and in possessing more widely spaced eyes.

Olla and *Cirocolla* also share many affinities with *Spilindolla*, but they possess much longer sperm ducts in the female genitalia, which attach mediodorsally or basally rather than distally (Fig. 12).

The remaining genera comprising “*Olla* and allies” are more distantly related. Many species currently classified in *Cycloneda*, but more properly allied to *Neda*, bear a strong superficial resemblance to the three *Spilindolla* species, but the males show the more elongate, trumpet like configuration of the outer arm of the siphonal capsule (Fig. 9), and the females exhibit the greatly enlarged spermathecal accessory gland, pronounced development of the nodulus and more robust sperm duct (Fig. 13). These characteristics are shared by a subgroup of “*Olla* and allies” including *Neda*, *Mononeda*, *Neoharmonia*, and the misclassified *Cycloneda* species which constitute additional undescribed genera.

KEY TO SPECIES OF *SPILINDOLLA*

1. Elytral color pattern consisting of irregular angulate brown marks on a paler background (Fig. 3). Male genitalia with basal lobe broadest in distal ¼ (Fig. 21) *darestei* (Mulsant)
- Elytral color pattern consisting of oval to punctiform brown or black spots on a paler background (Figs. 1, 2). Male genitalia with basal lobe broadest near middle (Figs. 19, 20) 2
2. Dorsal surfaces yellowish orange. Fully maculate individuals with 11 elytral spots arranged in rows of 3-3-3-2 as shown (Fig. 1); some spots occasionally fused. Male genitalia as in Figs. 19, 22 . . . *vigintiduonotata* (Mulsant)

- Dorsal surfaces yellowish ivory. Fully maculate individuals with 8 elytral spots arranged 2-3-2-1 as shown (Fig. 2). Male genitalia as in Figs. 20 and 23 *constellata* (Mulsant)

***Spilindolla vigintiduonotata* (Mulsant),
NEW COMBINATION**
(Figs. 1, 4–7, 11, 15–19, 22)

Daulis vigintiduo-notata Mulsant 1850:307.

Leis vigintiduo-notata: Mulsant 1866:180.

Cycloneda vigintiduo-notata: Crotch 1871: 6; 1874:162.

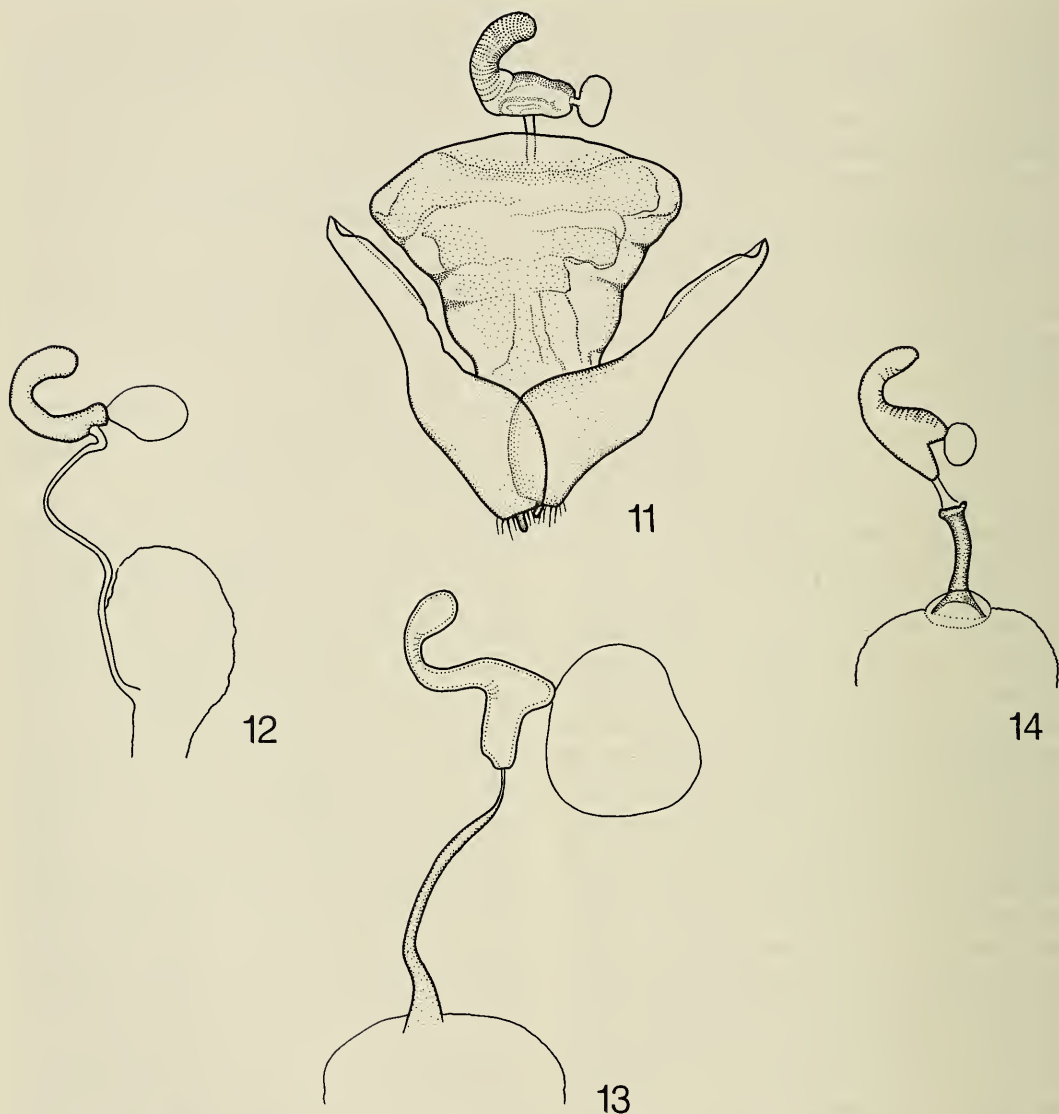
Cycloneda vigintiduonotata: Korchevsky 1932:287; Blackwelder 1945:453; Mader 1958:245; Gordon 1987:20.

Female (lectotype).—Length 5.6 mm, width 4.5 mm. Form slightly elongate, suprahemispherical. Dorsal color pattern as in Fig. 1. Ground color yellowish orange with dark brown marks. Head immaculate. Pronotum with 6 marks. Scutellum dark brown. Elytron with 11 marks arranged in rows of 3-3-3-2: in 1st row, humeral and humero-lateral marks confluent; in 2nd row, outer most mark touching lateral margin, inner most mark touching suture and extended anteriorly to basal margin as narrow border; in 4th row, marks weakly confluent. Sutural and lateral margins of elytron translucent amber. Venter, including legs, primarily light golden brown; metasternum and mesepisternum, median ½ of 1st through 3rd abdominal segments, and lateral mark on each side of 4th abdominal segment dark brown; elytral epipleuron pale yellowish with dark brown spot at fovea.

Female genitalia.—Fig. 11.

Male.—Same as female except for sexual characters. Genitalia (Figs. 4–6) with basal lobe broadest near middle, outline as shown (Fig. 19); siphon as in Fig. 22.

Variation.—Length 4.0 to 5.8 mm. Form often less elongate than in lectotype. Scutellum dark brown to yellowish orange. Dorsal marks light brown to dark brown; smaller or larger than in lectotype; confluent marks sometimes discrete; inner mark of 2nd row not always touching suture; out-



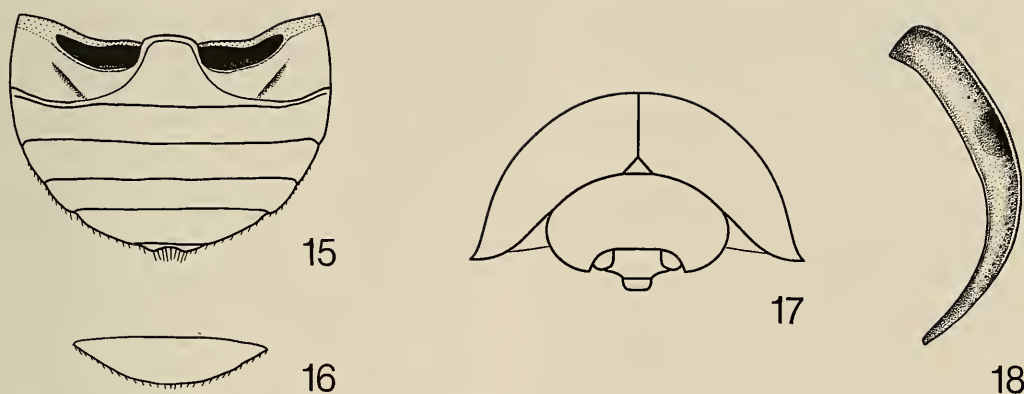
Figs. 11–14. Female genitalia. 11, *Spilindolla vigintiduonotata*. 12, *Olla* sp. 13, *Neda* sp. 14, *Cycloneda* sp.

er mark of 2nd row not always touching lateral margin. Venter with mesosternum light brown to blackish; pronotal hypomeron, pro- and mesosternum, mes- and metepimeron often creamy white; abdomen with dark brown areas greater or less than in lectotype, sometimes entire abdomen unicolorous dark brown.

Type material.—LECTOTYPE (by present designation)(DLM): female, “*Coccinella 22 notata. mihi./L. Cayennae* D. Banon

[green header label in box, not affixed to specimen].”

Remarks.—*Spilindolla vigintiduonotata* can be easily distinguished from its congeners by the species specific dorsal color pattern; it is most similar to *S. constellata*, but has the ground color more orange and has larger more numerous elytral spots. Males of *S. vigintiduonotata* can also be distinguished by the shape of the basal lobe (Fig. 19) and siphonal apex (Fig. 22). *Cy-*



Figs. 15–18. *Spilindolla vigintiduonotata*, external morphology of adult. 15, Ventral view of male abdomen. 16, Ventral view of female abdominal segment 5. 17, Frontal view of whole body. 18, Ventral view of elytral epipleuron.

cloneda sallei (Mulsant) somewhat resembles this species, but has a narrower base to the elytron, and differs in the arrangement of the dorsal marks, in the proportions and contours of the abdominal segments (base of 4th segment strongly bowed), and in the genitalia of both sexes. *Cycloneda sallei* is another misplaced species which shows a strong affinity to *Neda*.

Mulsant based his original description of *Daulis vigintiduo-notata* on material from the collections of Dejean and Chevrolat. The specimen designated as lectotype was located in the Dejean collection of the Museum d'Histoire Naturelle, Lyon, France; the header label (see above) specifies the locality of Cayenne given in the original description. A second specimen marked "Chevr." was found among the material acquired by Crotch and currently housed at the University of Cambridge. Mulsant specified that the material from the Chevrolat collection was from "Chili" and "Nouvelle Hollande" (= Suriname?), but the example in the Crotch collection does not specify a collection locality and therefore is not designated as a paralectotype. The locality "Chili" is in need of corroboration and may be the result of mislabeling or misassignment of localities.

Mulsant (1850) originally described *S. vigintiduonotata* in *Daulis* along with more

than thirty other named species. Subsequently (Mulsant 1866) he transferred this species to *Leis* Mulsant based on the contours of the elytra. Currently *Leis* is placed as a synonym of *Harmonia* Mulsant, a genus of Oriental and Australian lady beetles which bear little affinity to the species in question. Crotch (1871) and subsequent authors have all classified *vigintiduonotata* in *Cycloneda*, although most have recognized this genus as a composite of unrelated species. *Cycloneda*, sensu stricto, has a well developed infundibulum on the sperm duct of the female genitalia (Fig. 14) and the male genitalia terminate in a membranous pouch and spicules. More extensive diagnoses of *Cycloneda* and allied fauna can be found in Vandenberg and Gordon (1988), Vandenberg (1992) and Gordon and Vandenberg (1993) (larvae).

Locality data.—26 specimens examined. BOLIVIA: Guayaramerida: Beni, outskirts of town. BRASIL: Santa Catarina: Blumenau; Corupa (Hansa Humbolt). [CHILE: "Chili"?] COLOMBIA: Cauca: "Cauca." FRENCH GIUANA: Guyane: Cayenne. PANAMA: "Pacora." Canal Zone: Pipe Line rd. nr. Gamboa. SURINAME: Suriname: Paramaribo. VENEZUELA: Merida: Briceno; "Meride"; Zulia, 31 km SW Machiques. (BMNH) (DLM) (HNHM) (LSUC) (MNHP) (CUMZ) (USNM).

Spilindolla constellata (Mulsant),

NEW COMBINATION

(Figs. 2, 20, 23)

Egleis constellata Mulsant 1850:155; 1866:121; Crotch 1871:4.

Male (holotype).—Length 5.5 mm, width 4.8 mm. Form slightly elongate, subhemispherical. Dorsal color pattern as in Fig. 2. Ground color yellowish ivory with black marks. Head with pair of elongate black marks that converge slightly toward apex. Pronotum with 6 punctiform spots as shown, posterior margin narrowly piceous. Scutellum blackish. Elytron with 8 punctiform marks arranged in rows of 2-3-2-1; anterior and sutural margins narrowly piceous, lateral margins paler amber. Venter, including legs, primarily yellowish ivory, borders of sclerites amber to piceous; mes- and metepimera, metepisternum somewhat paler yellowish ivory; abdominal segments 1-3 with dark punctiform spot on each side; epipleuron immaculate. Genitalia with basal lobe broadest near middle, configuration as shown (Fig. 20); siphon as in Fig. 23.

Female.—Same as male except for sexual characters. Genitalia similar to those of *S. vigintiduonotata*.

Variation.—Length 5.0 to 5.7 mm, width 4.3 to 5.2 mm. Scutellum occasionally pale. Pronotum occasionally with additional short upright basomedial black mark. Elytron with inner mark of basal row sometimes transversely crescentiform, extended toward suture; outer mark of 2nd row sometimes reaching lateral margin. Venter often with additional dark marks on epipleural fovea, mes- and metepisterna, metasternum, each side of abdominal segment 4, and posterior margin of mes- and metacoxa.

Remarks.—This species is most closely related to *S. vigintiduonotata* (see discussion under the "remarks" section for the latter species). It has been misclassified in *Egleis* since Mulsant first described it in 1950, but the resemblance is a superficial one based on the pale, spotted habitus. *Egleis* and close allies lack tibial spurs on

the middle and hind leg, have even more finely faceted eyes, a less compact antennal club with terminal segment more oval shaped, and generally have the pronotum less convex and the prosternum more convex (lateral arms of T-shaped prosternum more strongly folded back from midline) given a prothorax of comparable thickness. The male genitalia of *Egleis* and allies (Vandenberg 1992) have an undivided basal lobe, a simple curve to the main body of the siphon, and a weakly s-shaped siphonal capsule with inner and outer arms subequal (Fig. 10). The female genitalia of *Egleis* have the genital plates more diamond shaped with a shorter inner "handle."

Type material.—HOLOTYPE (MNHP): male "Museum Paris, Matto-Grosso, de Castelnau 3-47/55/*Egleis constellata* Muls., auct. det."

Locality data.—21 specimens examined. BRASIL: Mato Grosso: Barre do Tapirape; "Matto-Grosso." Mato Grosso do Sul: Corumba. (CMP) (CAS) (IZPAN) (MNHP).

Spilindolla darestei (Mulsant),

NEW COMBINATION

(Figs. 3, 21, 24)

Daulis Darestei Mulsant 1866:228.*Cycloneda Darestei*: Crotch 1871:6; 1874:165; Korchefsky 1932:283; Mader 1958:243.*Cycloneda darestei*: Blackwelder 1945:452.

Male (lectotype).—Length 4.5 mm, width 4.5 mm. Form hemispherical. Dorsal color pattern as in Fig. 3. Ground color yellowish ivory with light brown marks. Head immaculate. Pronotum with 7 marks (Fig. 3); median basal mark indistinct. Scutellum light brown. Elytron with 8 irregular, angular marks as shown; inner most mark just before middle of elytron continued anteriorly to basal margin as sutural border. Sutural and lateral margins of elytron translucent amber. Venter, including legs, primarily light golden brown; prosternum, mes- and metepimeron, and metepisternum whitish cream with fine brown borders;



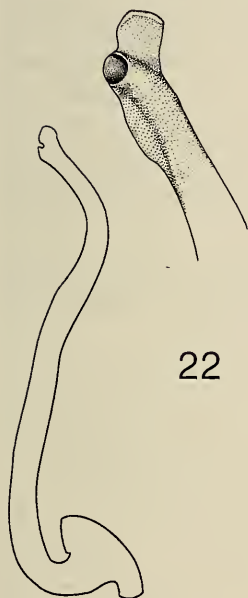
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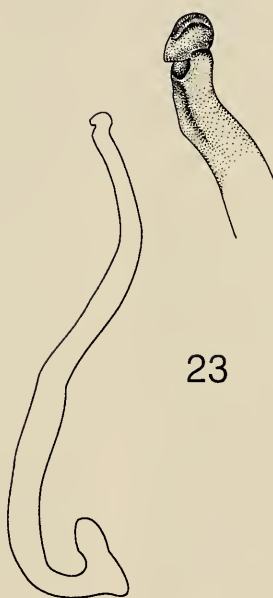
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21



22



23



24

Figs. 19–24. Male genitalia. 19–21, Basal lobe. 19, *Spilindolla vigintiduonotata*. 20, *S. constellata*. 21, *S. darestei*. 22–24, Lateral view of whole siphon (below) and detail of apex (above) (note: detail of apex rotated 90 degrees in Fig. 24 to provide homologous view). 22, *S. vigintiduonotata*. 23, *S. constellata*. 24, *S. darestei*.

pronotal hypomeron and elytral epipleuron same color as dorsal surface; fovea of elytral epipleuron marked with a brown spot. Genitalia as in Figs. 21, 24.

Female.—Same as male except for sexual characters. Genitalia not examined.

Type material.—LECTOTYPE (Gordon 1987) (CUMZ): male “type [blue label]/*Darestei* Ega Bates [green label]/type *Darestei* Backw”; PARALECTOTYPE (Gordon 1987) (CUMZ) “*Darestei* Ega Backw.”

Variation.—Length 4.3 to 4.8 mm, width 4.2 to 4.8 mm. Ground color of dorsal surface yellow ivory to light yellowish brown. Dorsal marks at middle of elytron sometimes confluent.

Remarks.—*Spilindolla darestei* can be easily distinguished from its two congeners on the basis of the dorsal color pattern (Fig. 3) and male genitalia (Figs. 21, 24). *Cycloneda graphiptera* (Mulsant) has a dorsal color pattern which is similar to *S. darestei*, but it can be distinguished by the absence

of a humerolateral mark on the elytron and slight differences in the shapes and positions of the other elytral marks. Also *C. graphiptera* has very different contours and proportions to the abdominal segments, with the hind margin of segment 4 strongly bowed. The genitalia of *C. graphiptera* reveal its close affinity to *Neda*.

Spilindolla darestei was originally described in the genus *Daulis* Mulsant. Crotch replaced *Daulis* Mulsant with *Cycloneda* Crotch because the old name was preoccupied by *Daulis* Erichson (1842). This species has remained in the genus *Cycloneda* up until the present revision.

Locality data.—2 Specimens examined. Known only from the type locality. BRA-SIL: Amazonas: Ega.

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