

## Notes on *Zonosemata* BENJAMIN (Diptera: Tephritidae) and the status of *Cryptodacus scutellatus* HENDEL (= *Z. ica* STEYSKAL syn. n.)

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### Abstract

Based on a reexamination of the holotype, *Cryptodacus scutellatus* HENDEL is found to be a valid Neotropical specific name, which is the senior synonym of *Zonosemata ica* STEYSKAL. It is transferred to *Zonosemata*, as *Z. scutellata* (HENDEL), comb. n. Additional diagnostic information for this species, and host data for it and four other species of *Zonosemata* are presented and discussed.

### Zusammenfassung

Aufgrund einer Überprüfung des Holotypus von *Cryptodacus scutellatus* HENDEL wird *scutellatus* als valider neotropischer Artname erachtet. *C. scutellatus* ist älteres Synonym von *Zonosemata ica* STEYSKAL und wird zu *Z. scutellata* (HENDEL) neu kombiniert. Zusätzliche diagnostische Angaben zu dieser Art und Wirts-Daten zu ihr und anderen *Zonosemata*-Arten werden präsentiert und diskutiert.

HENDEL (1936) described *Cryptodacus scutellatus* from a single male from "NO-Brasilien, Natal" from the collection of H. ZERNY. ACZÉL (1949) listed *scutellatus* in his catalog of Neotropical Tephritidae, but FOOTE (1967) stated that it was "not Neotropical", and that the type locality was an error, perhaps on the assumption that the type was from Natal, South Africa. As there are at least several localities in northeastern Brazil named Natal, and as no species fitting HENDEL's description has been reported from Africa, the current status of *scutellatus* appeared to me to be questionable.

During a visit to the Naturhistorisches Museum Wien, I therefore took the opportunity to study the holotype of *scutellatus*. It bears the following labels: "Nordost-Brasilien, Natal, 23. IX. 27, ZERNY", "Type [red]", and "*Cryptodacus scutellata* HEND. ♂ F. HENDEL det.", the last of which is mostly in HENDEL's writing. Upon examination, the type proved to be a species of *Zonosemata* BENJAMIN, in fact it is conspecific with *Z. ica* STEYSKAL, syn. n., described from Colombia (STEYSKAL 1974). The holotype female and paratype of uncertain sex of *ica*, in the U.S. National Museum of Natural History (USNM), differ only slightly from the *scutellata* type. The dark thoracic markings are more distinct in the *ica* types,

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probably because they were originally preserved in alcohol, and the wing bands are fainter in the *scutellata* type.

STEYSKAL (1974) correctly placed this species in *Zonosemata*; *Z. scutellata* (HENDEL), comb. n., possesses at least three derived characters found in *Zonosemata* but not in the two species of *Cryptodacus*, *obliquus* HENDEL and *silvai* LIMA. 1. The distiphallus is relatively simple, with the outside evenly sclerotized, appearing somewhat sack-like, and with little distinct internal sclerotization; 2. there are two large, elongate, weakly sclerotized spermathecae; and, 3. as stated by HENDEL (1936), the first flagellomere has a small, acute, dorsoapical lobe. The first two characters are autapomorphies of *Zonosemata*. The last apomorphy is also found in *Rhagoletis* LOEW, *Carpomya* COSTA, *Myiopardalis* BEZZI, *Haywardina* ACZÉL, and *Cryptoplagia* ACZÉL, and may be a synapomorphy for all of these taxa. The surstylus of *scutellata* also is short and shaped as in other *Zonosemata* (BUSH 1965), not elongate as in *Cryptodacus*, although the polarity of this character is unresolved. Finally, *scutellata* lacks the narrow, dark brown mark bordering  $Cu_1$  between  $bm-cu$  and the dark band covering  $r-m$ , a synapomorphy for *C. obliquus* and *silvai*.

In addition to the types, I examined four males and four females of *scutellata* from the collections of the Instituto de Zoología Agrícola, Universidad Central de Venezuela, Maracay and the USNM, collected by J. REQUENO from El Limon and Turmero, Estado de Aragua, Venezuela. Of these, two males and two females lack dark presutural scutal spots, and one male and one female have a katepisternal spot. Thus, the presence or absence of these spots does not appear to be a reliable diagnostic character for *scutellata* as suggested by STEYSKAL (1974). Specimens of *vittigera* (COQUILLET), which appear to always possess dark katepisternal and presutural scutal spots, can be distinguished from *scutellata* by antennal length. The ratio of the length of the first flagellomere (measured on the mesal side) to the height of the face (measured to the ventral margin of the antennal sockets) is 0.75–0.87 ( $n = 8$ ) in *scutellata* and 0.47–0.56 ( $n = 15$ ) in *vittigera*. Additionally, *scutellata* differs from all other species of *Zonosemata* in wing pattern. In *scutellata*, the following typical parts of the pattern are absent or very faint: most of the apical costal band, which is normally visible only between the apices of  $R_{4+5}$  and  $M$ ; the anterior part of the band through  $dm-cu$ ; and the accessory band. The apical costal band is sometimes weak in *vidrapennis* BUSH, but in that species, all the wing bands are very narrow and cells  $r_{4+5}$  and  $dm$  lack microtrichia between the bands (BUSH 1965). The transverse bands are broad in *scutellata* and cells  $r_{4+5}$  and  $dm$  are microtrichose.

The specimens of *scutellata* from Venezuela are labelled “en” or “ex fruto de huevo de gato”, which according to SCHNEE (1973) is a common name used in Venezuela for two species of *Solanum*, *hirtum* VAHL and *hyporrhodium* A. BRAUN & BOUCHÉ. It is unclear from the labels whether these specimens were reared or just collected on fruit, but it is likely that at least one of these *Solanum* species is a host for *scutellata*. *Solanum elaeagnifolium* CAV. is the only known host of *Zonosemata vittigera* (COQUILLET), and four species of *Solanum*, as well as

*Capsicum*, *Lycopersicon*, and *Physalis* species (all Solanaceae), have been reported as host plants for *Z. electa* (SAY) (WASBAUER 1972). There are also 3 males and 2 females of *electa* in the USNM collection that were reared from fruit of *Solanum melanocerasum* ALL., a new host record. These specimens are labelled: Mississippi, Oktibbeha Co., Osborn, viii. 1985 (emerged by 19. ix. 1985), G. WEATHERSBY. An undetermined *Rosa* species has also been reported as a host for *electa* (WASBAUER 1972), but this record seems questionable, especially because a number of *Rosa* species are hosts of *Rhagoletis basiola* (OSTEN SACKEN), which is superficially very similar to *Z. electa*. I have seen the following specimens which indicate that the other species of *Zonosemata* also probably breed in *Solanum*: *Z. cocoyoc* BUSH – Mexico, Morelos, Cuernavaca, 20. viii. 1983, T. H. ATKINSON, "Hosp. *Solanum* sp.", 1 male (USNM), 2 males (Estación de Biología Chamela); *Z. minuta* BUSH – Jamaica, St. Andrew, Long Mt., 26. vi. 1955, T. H. FARR, "at fruit of *Solanum verbascifolium*", 2 males (USNM); *Z. vidrapennis* BUSH – Mexico, Veracruz, Jalapa, vi. 1955, KRAUSS, "on fruit *Solanum*", 1 male (USNM); Mexico, Veracruz, Jilotepec, 18. vii. 1983, ATKINSON & EQUIHUA, "Hosp. *Solanum* sp.", 1 male (Estación de Biología Chamela).

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#### References

- ACZÉL, M. (1949): Catalogo de la familia "Trypetidae" (Dipt. Acalypt.) de la región neotropical. – Acta zool. Lilloana; **7**: 177–328.
- BUSH, G. L. (1965): The genus *Zonosemata*, with notes on the cytology of two species (Diptera-Tephritidae). – Psyche; **72**: 307–323.
- FOOTE, R. H. (1967): Family Tephritidae (Trypetidae, Trupaneidae). Fasc. 57, 91 pp. In: VANZOLINI, P. E. & N. PAPAVERO (eds.): A catalogue of the Diptera of the Americas south of the United States. – São Paulo.
- HENDEL, F. (1936): Ergebnisse einer zoologischen Sammelreise nach Brasilien, insbesondere in das Amazonasgebiet, ausgeführt von Dr. H. ZERNY. X Teil; Diptera: Muscidae acalyptratae (excl. Chloropidae). – Ann. Naturhist. Mus. Wien; **47**: 61–106.
- SCHNEE, L. (1973): Plantas comunes de Venezuela, 2nd ed. – Maracay (Universidad Central de Venezuela), 822 pp.
- STEYSKAL, G. C. (1974): A new species of *Zonosemata* BENJAMIN from Colombia (Diptera: Tephritidae). – J. Wash. Acad. Sci.; **64**: 234–235.
- WASBAUER, M. (1972): An annotated host catalog of the fruit flies of America north of Mexico (Diptera: Tephritidae). – Calif. Dept. Agric., Bur. Entomol., Occas. Papers; **19**: 1–172.