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A PECULIAR CASE HISTORY: *HEMISPHAERODELLA MIRABILIS* REUTER IS THE NYMPHAL STAGE OF *CYRTOCAPSUS CALIGINEUS* (STÅL) (HETEROPTERA: MIRIDAE: BRYOCORINAE)

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Abstract.—Based on fieldwork and study of collections, *Hemisphaerodella mirabilis* Reuter is shown to be the immature stage of *Cyrtocapsus caligineus* (Stål). The monotypic genus *Hemisphaerodella* Reuter, therefore, is considered a junior synonym of *Cyrtocapsus* Reuter, and *H. mirabilis,* a junior synonym of *C. caligineus.* A key to the species of *Cyrtocapsus* is provided to help workers recognize and associate adults with the respective nymphs.

The history of the monotypic genus *Hemisphaerodella* Reuter leading to the present paper represents one of the more peculiar stories in heteropterology. The species *Hemisphaerodella mirabilis* Reuter, 1908, originally described from Cuba and the Dominican Republic [as Santo Domingo], has since been recorded from Brazil, Puerto Rico, and Florida (USA). We have collected other examples in Mexico and additional states of Brazil. In this paper we show that *Hemisphaerodella mirabilis* and its junior synonym *Lopesiella mirabilis* Wygodzinsky, described from Brazil, are the immature stages of *Cyrtocapsus caligineus* (Stål) and, possibly, other species of *Cyrtocapsus.*

That *H. mirabilis* has puzzled previous workers is illustrated by the following accounts from the literature. Wygodzinsky (1946) said of *Lopesiella mirabilis* [the species epithet is a coincidence]: "Owing to the rather chaotic status of the classification of the groups in Cimicoidea, the systematic position of *Lopesiella* is difficult to fix. Considering the four-jointed rostrum, the absence of ostioles on the metapleura, the very short first joint of the two-jointed tarsi, the almost circular abdomen and the symetrical genitalia of the male, it is thought best to refer *Lopesiella* to the Microphysidae." Blatchley (1928) noted that Knight (in litt.) had identified several examples for him as "nymphs of *Halticus*" and later Van Duzee (in litt.) referred them to *H. mirabilis.* Although Reuter (1908) correctly placed *H. mirabilis* in the subfamily Bryocorinae, the strange appearance of this mirid caused Blatchley to comment that "In its form of body, peculiar elytra and presence of the so-called "metadorsum" it differs widely from any of our eastern [U.S.] Miridae, and the genus should probably be given subfamily rank." Maldonado (1969), in redescribing *H. mirabilis* from Puerto Rico, explained that this small, black, beetlelike mirid is "pedogenic, so, in the description that follows the sex is not mentioned."

Wygodzinsky (1946) provided detailed illustrations of *H. mirabilis* [as *L. mirabilis*]. Maldonado (1969) gave dorsal and lateral figures, listed sweet potato, *Ipomea batatas*

(L.) Lam. (Convolvulaceae), as the host, and included the genus in his key to the genera of Puerto Rico. Blatchley (1928) noted that "all stages" were taken on the foliage of moonvine, *Ipomea bonanox* L. and sweet potato.

Through personal collecting of *Cyrtocapsus* spp. in Brazil, study of nymphs and adults of *Cyrtocapsus caligineus* from the same host and locality in Texas [a new distribution record] in the USNM collection, and evaluation of the lectotype (USNM) and Wygodzinsky's (1946) and Maldonado's (1969) figures of *H. mirabilis* [both figures of the fifth instar], we can now say that the original description of *H. mirabilis* actually was based on the last nymphal stage [having large, beetlelike wing pads] of a species of *Cyrtocapsus*. Further evidence is interpreted from Maldonado (1969) who listed *I. batatas* as the host for both *C. caligineus* and *H. mirabilis*. Knight, as conveyed by Blatchley (1928), is the only worker to conclude that specimens of "*H. mirabilis*" were nymphs of some mirid species. Certainly the peculiar round body form and the beetlelike wing pads, that form a shell-like cover over the abdomen, are different enough from other more typical mirid nymphs to mislead workers.

The difficulty is associating all records of *H. mirabilis* with a specific *Cyrtocapsus* species is that at least five of the thirteen known species of *Cyrtocapsus* occur over the same range (Carvalho, 1954, 1985). In the United States and Puerto Rico, where the mirid fauna is reasonably well documented, only *Cyrtocapsus caligineus* is known, making all records of *H. mirabilis* from those localities simple to transfer. In Brazil there are at least three species of *Cyrtocapsus* known, including *C. caligineus,* which is also known from Cuba.

A major problem prior to this study was that only *C. haitianus* Carvalho, 1954, was recorded from the island of Hispaniola in Haiti, the approximate type [lectotype] locality of *H. mirabilis*. We now have examined material of *C. caligineus* [2♂♂, 1♀, 3 miles west of Haina, San Cristobal Prov., 18–19 Aug. 1967, J. C. Schaffner coll.; 6 miles north San Victor, Espaillat Prov., 22 Aug. 1967, J.C.S.] and *C. haitiensis* [4♂♂, 4♀♀, 3 miles west of Haina, San Cristobal Prov., 9–22 Aug. 1967, J.C.S.; San Cristobal, San Cristobal Prov., 19 Aug. 1967, J.C.S.; Jarabacoa, La Vega Prov., 9 Aug. 1967, J.C.S.] from the Dominican Republic.

Because the lectotype of *H. mirabilis* is from the Dominican Republic and only two species of *Cyrtocapsus* are known to occur in that country, we are convinced that *H. mirabilis* is a synonym of one of them. Although nymphs of *Cyrtocapsus* are impossible to identify at this time, we note that adults of *C. caligineus* have uniformly pale antennae, whereas those of *C. haitiensis* are black or dark reddish brown. Because the lectotype of *H. mirabilis* has pale antennae, we are reasonably certain this specimen belongs to *C. caligineus*. With this evidence and to maintain as much nomenclatural stability as possible, we are placing *H. mirabilis* as a junior synonym of *C. caligineus*. With this end, we realize that once nymphs are identifiable, specimens on which the description of *Lopesiella mirabilis* are based may eventually prove to represent a different species and certain published records for *H. mirabilis* will require referral to other *Cyrtocapsus* species.

Synonymy of the Genus *Cyrtocapsus* Reuter

Cyrtocapsus Reuter, 1876:70. Type-species: *Capsus caligineus* Stål, 1859.
Hemisphaerodella Reuter, 1908:297. Type-species: *Hemisphaerodella mirabilis* Reuter, 1908. **NEW SYNONYMY.**

Lopesiella Wygodzinsky, 1946:334. Type-species: *Lopesiella mirabilis* Wygodzinsky, 1946. Synonymized with *Hemisphaerodella* by Carvalho, 1955:223.

Synonymy of *Cyrtocapsus caligineus* (Stål)

Capsus caligineus Stål, 1859:158.
Cyrtocapsus caligineus: Reuter, 1876:78.
Perithous pallipes Distant, 1884:302. Synonymized by Reuter, 1892:392.
Hemisphaerodella mirabilis Reuter, 1908:297. Lectotype from the Dominican Republic designated by Carvalho, 1955:223. **NEW SYNONYMY.**
Lopesiella mirabilis Wygodzinsky, 1946:335. Synonymized with *H. mirabilis* by Carvalho, 1955:223.

Now with some of the past confusion solved, we urge workers to begin investigating the various species of *Cyrtocapsus,* with the eventual intention of publishing their findings accompanied by illustrations of the life stages, study of biology, and documentation of host plants. The feeding preference of *C. caligineus* for *Ipomea* spp. makes it and, possibly, other members of this genus potentially important in agricultural and ornamental situations.

To help in making proper nymphal associations, we offer the following key to adults of *Cyrtocapsus,* revised and updated from Carvalho (1954).

KEY TO THE SPECIES OF *CYRTOCAPSUS* REUTER

1. Femora, except base, and base of tibiae black; Mexico ..... *marginatus* (Distant)
– Femora and tibiae whitish or pale yellow, at most infuscated apically 2
2. Pronotum predominately black 3
– Pronotum predominately lemon yellow, yellowish brown, or reddish brown 10
3. All coxae whitish 4
– Only anterior pair of coxae at least partially whitish, posterior two pair reddish brown 8
4. First antennal segment black or reddish brown; femora infuscate at apex; Haiti .... *haitiensis* Carvalho
– First antennal segment whitish; femora not infuscate near apex 5
5. Head strongly produced below eyes, as seen from frontal view the anteocular part two-thirds longer than the ocular part; Chile ..... *rostratus* Reuter
– Anteocular part of head, as seen from the frontal view, about as long as or shorter than ocular part 6
6. Embolium and outer margin of cuneus dark reddish brown to rosy or rusty reddish brown; second antennal segment reddish at apex; Trinidad ..... *intermedius* Reuter
– Embolium black; second antennal segment whitish 7
7. Second antennal segment longer than first; South America ..... *femoralis* Reuter
– Second antennal segment as long as first segment; Panama, Trinidad ... *nanus* Carvalho
8. Anterior coxae entirely pale or whitish; North, Central, South America, and West Indies ..... *caligineus* (Stål)
– Anterior coxae infuscate or black at base 9
9. Second antennal segment 2.2 mm long; anterior coxae white only at apex; South America ..... *andinus* Carvalho
– Second antennal segment less than 2.0 mm long; anterior coxae white on apical half; Dominica, Grenada ..... *grenadensis* Carvalho

10. Pronotum lemon yellow to yellowish brown, at most narrowly fuscous between calli 11
– Pronotum reddish brown with a wide fuscous area across calli 12
11. Antennae pale; scutellum, clavus, and embolium dark fuscous; Guyana ..... *guianus* Carvalho
– Antennae, except segment I, black; scutellum and hemelytra uniformly yellowish brown; Brazil ..... *nordestinus* Carvalho
12. Antennal segment I and segment II, except apex, pale; cuneus dark brown or black; Brazil ..... *xinguanus* Carvalho
– Antennae uniformly pale; cuneus pale along outer margin; Paraguay ..... *paraguaiensis* Carvalho

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