

**TRICHOGRAMMATOIDEA BRASILIENSIS (ASHMEAD)—NEW
COMBINATION FOR A SPECIES HISTORICALLY PLACED IN
TRICHOGRAMMA (HYMENOPTERA: TRICHOGRAMMATIDAE)**

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Abstract.—The species *brasiliensis* Ashmead is transferred from *Trichogramma* to *Trichogrammatoidea*. This **new combination** is based on the examination of the remounted holotype.

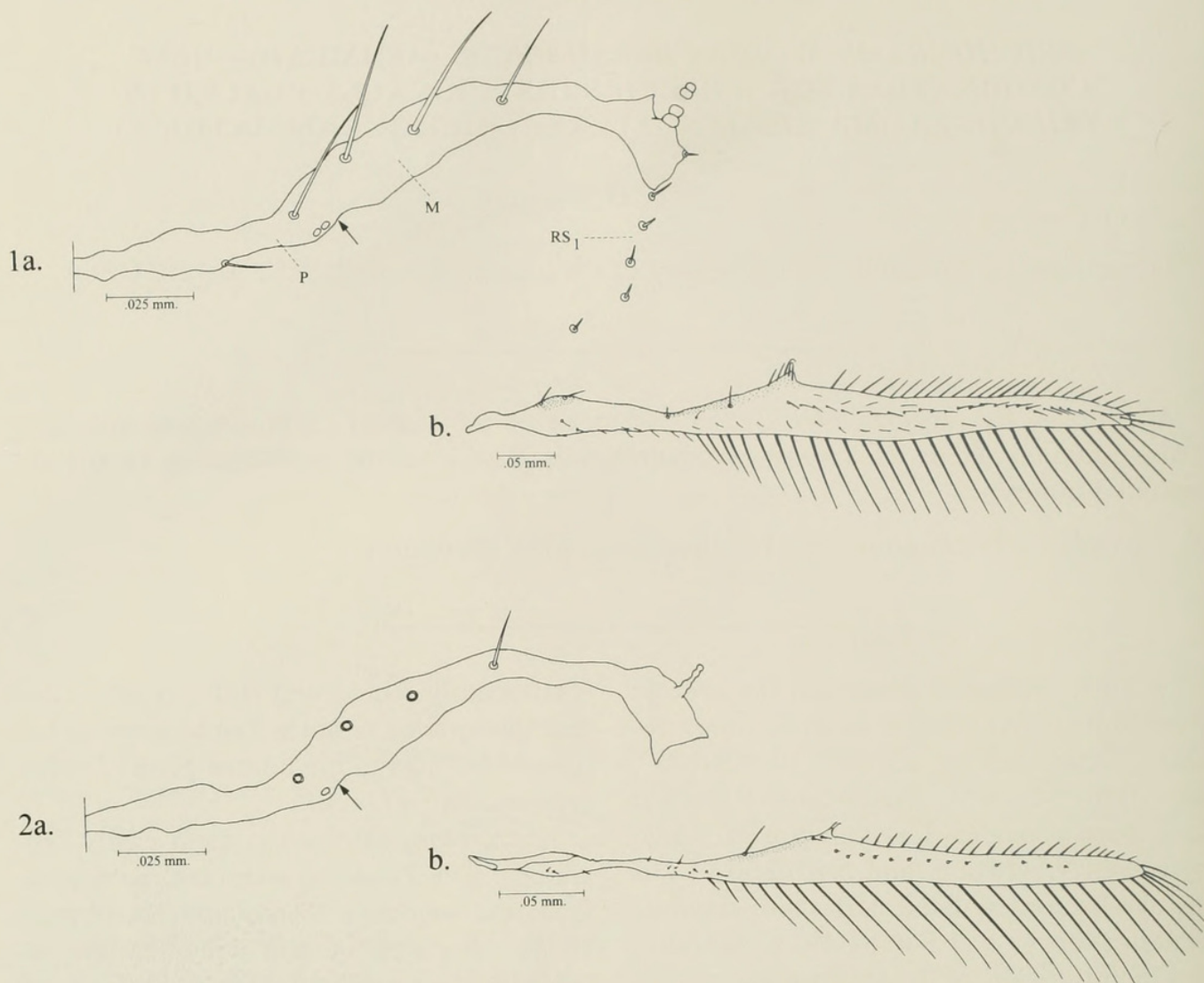
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In 1904 Ashmead described the species *Pentarthron brasiliensis* from a single female “collected on cotton” in “Bahia”, Brazil, in “Mar 83”. *Pentarthron* Riley has long been considered a synonym of *Trichogramma* Westwood, and *brasiliense*¹ has always been associated with these nominal genera (Zerova and Fursov 1989). Because the identification of *Trichogramma* species depends largely on male traits, it was pointed out by Pinto and Stouthamer (1994) that the definition of *Trichogramma brasiliense* was unresolved, notwithstanding its continued use in the biological control literature (see De Santis 1989 and below for references). Upon examining the female holotype in the National Museum of Natural History, Smithsonian Institution (Washington, D.C.) (USNM type no. 6596) the question arose as to whether *brasiliense* was correctly placed in *Trichogramma*. Unfortunately, the type was uncleared and poorly mounted, precluding examination of certain fore- and hind wing characters critical for positive generic placement. The specimen

was recently remounted and it is now clear that the species is not a *Trichogramma* but instead belongs to the related genus *Trichogrammatoidea* Girault.

Trichogrammatoidea is most easily separated from *Trichogramma* by male genitalia and antennae (Pinto and Stouthamer 1994). However, certain wing features allow either sex to be placed. *Trichogramma* (Fig. 1) is characterized as follows: Forewing (Fig. 1a) marginal vein with three robust and elongate setae on dorsal surface; premarginal vein with two such setae. Two suboval sensilla between the marginal and premarginal veins. RS₁ vein track present behind stigmal vein. Hind wing (Fig. 1b) usually with at least two setal tracks, a middle track which is always complete to the wing apex and a complete or partial posterior track; a third, anterior track is present or absent. In contrast, *Trichogrammatoidea* is characterized as follows: Forewing marginal vein with only two robust and elongate setae on the dorsal surface—the third (apical most) is considerably shorter; premarginal vein with only one seta. One suboval sensillum between marginal and premarginal veins. RS₁ vein track absent. Hind wing with only a middle setal track which is not complete to the wing apex. In addi-

¹ Because this specific name has been associated with generic names of different gender (*Penarthron*, *Trichogramma*, and *Trichogrammatoidea*), its ending varies in this paper depending on the one it is associated with in discussion.



Figs. 1–2. Wing characteristics. 1, *Trichogramma*: a, Forewing venation, dorsal; b, hind wing, anterior at top. 2, Holotype female of *Trichogrammatoidea brasiliensis*: a, forewing venation, dorsal; b, hind wing, anterior at top. Abbreviations: m = marginal vein; p = premarginal vein; arrow refers to boundary between marginal and premarginal veins.

tion, the forewing is generally broader in *Trichogramma* than in *Trichogrammatoidea* and it has denser setation and shorter fringe setae along its margin.

The holotype of *brasiliensis* is clearly assignable to *Trichogrammatoidea* based on wing characters. During remounting, one forewing and hind wing were placed together under a separate coverslip for optimal viewing and illustration (Fig. 2a, b). In this specimen the RS_1 vein track is absent; only a single setal socket occurs on the premarginal vein, and of the three setae on the marginal vein, the two basal ones are broken but the third, which is present, is rela-

tively short as in *Trichogrammatoidea*. The single suboval sensillum between the premarginal and marginal veins is not visible in the remounted forewing of the type, but it can be seen on the wing which remains attached to the body. Also, as is characteristic of *Trichogrammatoidea* but not *Trichogramma* there is only a single, incomplete setal track on the hind wing of the type. Although a single track occurs in two species of the primitive Lachesis Group of *Trichogramma* (Pinto 1992), it is complete to the wing apex in all species. In addition, the forewing of the type has relatively sparse setation and an elongate setal fringe

on its margin, both characteristic of *Trichogrammatoidea*. It is curious that Girault (1911b) upon redescribing this species did not recognize its incorrect generic placement considering that he described *Trichogrammatoidea* earlier in the same year (Girault 1911a) and noted the unique wing characteristics in his redescription (absence of an RS_1 and single setal track in hind wing) which he had incorporated into the definition of the new genus.

Because the holotype of *Trichogrammatoidea brasiliensis* (**new combination**) is a female and in poor condition I am unable to determine with confidence if it is distinct or a synonym of an already described species. It is possible that *Trichogrammatoidea annulata* De Santis, also associated with cotton in Brazil (De Santis 1972), is a synonym of *T. brasiliensis*. I have examined a paratype male and female of *T. annulata* and can find no differences in wing structure or ovipositor length. However, until the South American *Trichogrammatoidea* are better known I suggest continuing to use *T. annulata* as a valid name and treating *T. brasiliensis* as valid but as a *nomen dubium*, i.e. a name not certainly applicable to any known taxon.

The question arises as to what species of *Trichogramma* has/have been misidentified as *brasiliense* in the literature where the name continues to be associated with biological control efforts particularly against pyralid pests of sugarcane (Monje 1995). This is not possible to answer without examining voucher specimens associated with each study. However several years ago I received two cultures identified as *Trichogramma brasiliense*, one from the USDA Laboratory in Beltsville, Maryland, and the other from a *Trichogramma* production center in Torreon, Mexico. Both were *T. fuentesi* Torre, a species generally misidentified as *T. fasciatum* Perkins in the early literature. *Trichogramma fuentesi* was originally described from Cuba but it also occurs in the southeastern United States, Mexico and South America (Pinto et al., 1983).

The literature suggests that the name *brasiliense* has been applied to other species as well. For example, Ruiz and Korytkowski (1980) define it as a species which I would consider close to *T. pretiosum* based on their description and illustrations, and Kfir (1982) and others have applied the name to thelytokous populations. The latter usage may stem from Quednau (1961), and Nagaraja and Nagarkatti (1969) who considered *brasiliense* as a thelytokous form of *Trichogramma fasciatum*. The actual species studied by Kfir, Ruiz and Korytkowski, and several other authors, remain undetermined. One of the mysteries of *Trichogramma* taxonomy is how certain common New World species became misidentified as they did and how these misidentifications became so well established in the literature.

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