A new triozid pest (Hemiptera, Psylloidea, Triozidae) on ornamental Trumpet Trees (Tabebuia spp., Bignoniaceae) in Brazil

Dalva Luiz DE QUEIROZ SANTANA1,2 & Daniel H. BURCKHARDT3
1 Department of Zoology, Entomology, UFPR;
2 Embrapa Florestas, Estrada da Ribeira, Km 111, 83.411-000 Colombo, PR, Brazil.
E-mail: dalva@cnpf.embrapa.br
3 Naturhistorisches Museum, Augustinergasse 2, CH-4001 Basel, Switzerland.
E-mail: daniel.burckhardt@unibas.ch

A new triozid pest (Hemiptera, Psylloidea, Triozidae) on ornamental Trumpet Trees (Tabebuia spp., Bignoniaceae) in Brazil. - Triozà tabebuiae Burckhardt & Santana, sp. n. is described and illustrated from Brazil, Paraná State. It differs from other Triozidae in the absence of sclerotised apical tibial spurs. It is associated with Tabebuia spp. (Bignoniaceae), a new-world genus with several ornamental trees. This is the first neotropical record of a psyllid host within this plant family. The sucking of the larvae produces a characteristic deformation on the Tabebuia leaves. Leaves attacked by T. tabebuiae remain longer on the tree than unaffected ones.

Key-words: Psylloidea - Bignoniaceae - taxonomy - biology - pest.

INTRODUCTION

Trumpet trees or tecoma belong to the genus Tabebuia (Bignoniaceae) which consists of some 100 species of tropical American trees and shrubs. Several of the tree species provide much valued timber, in fact possibly the most durable American wood. Some 400 year-old beams in Panama are still in excellent condition (Mabberley, 1987). In addition the genus includes several members with very attractive flowers in white, yellow, rose or violet colours. For their beautiful flowers they are frequently planted in urban environments such as parks, streets, avenues, squares or gardens. In Brazil several species of the genus are known as “yellow ipê”. In Curitiba, PR, the most frequently planted ornamental is Tabebuia alba (Cham.) Sandw.

Tabebuia alba locally called “ipê-da-serra”, “ipê-amarelo”, “ipê-amarelo-dasaerra”, “ipê-mandioca”, “ipê-branco”, “ipê-tabaco” or “ipê-mamona” can grow up to 20-30 m in height, and possesses compound leaves, whose superior part is glabrous whereas its inferior part is densely silvery tomentous (fig. 17). It is a deciduous and heliophytic tree of the “Pinhais” forests and semideciduous forests of medium alti-

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tudes. It flowers profusely from July to September when leaves are completely absent. The fruits are ripe from October to November.

For cultivation the seeds are put in trays or pots for germination. With a rate of over 80%, germination of the seedlings generally occurs after 5-10 days (Lorenzi, 1992). Growing in urban environments where human vandalism is a frequent cause of destruction, the trees are planted after having reached a certain size. The cultivation is usually done in nurseries taking 2-3 years. The large number of plants which is together in the nurseries for long periods of time, creates ideal conditions for numerous pests.

In the last two years many *Tabebuia* plants showed at a first stage young leaves with wrinkled margins, and later shortened and completely coiled leaves. During a survey in September 1999 the cause of the damage could be attributed to the sucking of psylloid larvae. The species proved to be an undescribed member of the large and artificial genus *Trioza*. In March, June and September 2000, the same *Trioza* species was also found on other *Tabebuia* species which showed similarly damaged leaves.

The aim of the present paper is to describe and illustrate the new triozid and the damage on its host plants, to describe its biology and discuss some striking morphological and biological features.

**MATERIAL AND METHODS**

Psylloids were sampled at Colombo, PR on *Tabebuia alba*, and at the Forest Nursery, Curitiba City, PR on *Tabebuia alba*, *T. chrysotricha*, *T. heptaphylla* and *T. roseo-alba*. The former specimens were used for preparing the description, the latter for studying the population dynamics. In the nursery the plants, ranging from 0-3 years of age, were kept in plastic bags, separated by species. The plant material for the present study was taken between 24.ix.1999 and 24.xi.2000.

For each observation, 10 plants were randomly selected. A branchlet with 2 or 3 leaves showing the symptoms of psylloid attack was taken of each plant. These samples were conditioned in polypropylene bags, and stored in refrigerators at the entomology laboratory of Embrapa. Later they were examined under a dissecting microscope. The insects were counted and then conserved in 70% alcohol.

The morphological terminology follows Hollis (1984) and Ossiannilsson (1992). Type material is conserved in the Naturhistorisches Museum Basel, Switzerland (NHMB). For the drawings and measurements (1♂, 1♀, 2 larvae), specimens were cleared in KOH, dissected and mounted in Canada Balsam on microscopical slides.

**TAXONOMIC TREATMENT**

*Trioza tabebuiae* Burckhardt & Santana, sp. n.  

Holotype ♂, Brazil: Paraná State, Colombo, 25.x.1999 (D. L. Q. Santana), dry mounted (NHMB); ♀, 10♀, 30 larvae (paratypes), same data as holotype, dry and slide mounted, and preserved in 75% alcohol (NHMB).
DESCRIPTION


Head (fig. 1) slightly narrower than thorax, inclined from longitudinal body axis in an angle of 45°. Eyes hemispherical. Vertex subrectangular, weakly produced anteriorly; covered in more or less even microsculpture and a few setae anteriorly. Genal processes lying in a plane lower and more inclined than that of vertex, about half as long as vertex along mid-line, subacute; sparsely covered in a few moderately long setae. Antennae 10-segmented, 1.35-1.41 times as long as head width, bearing a subapical rhinaria on each of segments 4, 6, 8 and 9; segment 9 with a moderately long apical seta; segment 10 with two unequal terminal setae (fig. 3), one subacute, about as long as segment, and the other one truncate, about a quarter as long as segment. Clypeus elongate and slightly protruding, bearing two moderately long setae. Labium 0.52-0.55 times as long as head width. Thorax arched, pronotum medially with short posterior lobe. Forewing (fig. 2) oblong-oval, widest near the middle, 4.18-4.83 times as long as head width, 2.24-2.64 times as long as wide; fore margin strongly, hind margin weakly curved; vein Rs almost straight, long, branching of vein M proximal to Rs - Cu_{1a} line; m_{1} cell value 1.31-1.67, Cu_{1} cell value 1.45-1.73; wing apex weakly angular. Surface spinules irregularly moderately densely spaced, present in all cells leaving broad spinule-free stripes along the veins. Hindwing slightly shorter than forewing, membranous; costal setae grouped. Metacoxa with well-developed mericanthus. Metatibia 1.09-1.12 times as long as head width, slender, swollen basally with several small spines, bearing an apical crown of 18 densely spaced, yellowish spurs (fig. 4); apical spurs not black nor strongly sclerotised. Metabasitarsus without black spurs. Abdominal tergites 3 in male and 4 in female with lateral setae. Genitalia as in figs 5-7. Male proctiger 0.36 times as long as head width, with long posterior lobes which bear a few sclerotised peg setae apically. Male subgenital plate subglobular bearing lateral setae. Paramere, in profile, lamellar, rounded apically, bearing an inward directed apical sclerotised tooth. Proximal segment of aedeagus U-shaped, slightly expanded apically; distal portion with a weakly expanded, rounded apex; sclerotised end tube of ductus ejaculatorius short, weakly curved. Female genitalia cuneate; proctiger 1.09 times as long as head width, 4.16 times as long as circumanal ring, 1.00 times as long as subgenital plate; sparsely covered in setae in basal half, and in peg setae in apical half which forms a narrow projection. Subgenital plate narrowed in apical third, basally with long setae, apically with peg setae. Valvulae 1 and 2 straight lacking teeth; valvulae 1 cuneate; valvulae 3 membranous narrowly rounded apically.
Figs 1-7

*Trioza tabebuiae* sp. n. 1: head, dorsal view; 2: forewing; 3: antennal segments 9 and 10; 4: apex of metatibia; 5: male genitalia in profile; 6: paramere, inner face; 7: female genitalia, in profile. Scales lines: fig. 1 (scale A) = 0.2 mm, fig. 2 = 0.5 mm. figs 3-4 = 0.1 mm, figs 5-7 (scale B) = 0.2 mm.
A TRIOZID PEST ON TRUMPET TREES

Trioza tabebuiae sp. n., fifth instar larva. 8: dorsal view and detail of forewing pad; 9: apex of tarsus with arolium and claws; 10: circumanal ring. Scales lines: fig. 8 = 0.3 mm, fig. 9 = 0.05 mm, fig. 10 and detail of forewing pad of fig. 8 = 0.1 mm.

Measurements in mm (1♂, 1♀). Head width 0.48-0.50, antennal length 0.68, forewing length 2.01-2.42, male proctiger length 0.17, paramere length 0.15, length of distal segment of aedeagus 0.15, female proctiger length 0.55.

Fifth instar larva (figs 8, 14). Body colour whitish-yellowish with dark dots (fig. 14). Body out-line oval, 1.74-1.86 times as long as wide, flattened dorsally. Body sparsely covered in narrow sectasetae dorsally and marginally. Antenna 5 or 6-segmented, flagellar segmentation indistinct; bearing 4 rhinaria and 2 terminal setae. Forewing pad narrow, with very small humeral lobe, 2.07-2.15 times as long as antenna. Tarsus with claws and narrowly fan-shaped short arolium (fig. 9). Caudal plate 0.81-0.96 times as long as wide, narrowly rounded apically. Caudal plate 4.17-4.50 times as wide as outer circumanal ring, the latter consisting of a single row of pores anteriorly and posteriorly, and several rows laterally (fig. 10).
Measurements in mm (3 specimens). Body length 1.42-1.46; forewing pad length 0.61-0.65; caudal plate breadth 0.26-0.28.

Fifth instar larva (fig. 13). Differs from fifth instar in the smaller body dimensions the fused tibia and tarsus, and the reduced dark pattern.

Egg (fig. 15). Base wide, strongly narrowing to apex which ends in a long filament.

HOST PLANT, DAMAGE AND PHENOLOGY

*T. tabebuiae* was observed from September 1999 to March 2000 and September to October 2000. Larvae were found during the whole observation period except for August 2000 (tab. 1), when plants mostly lacked leaves or had leaves burnt by frost.

**Table 1**

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<td><em>T. alba</em></td>
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<td><em>T. chrysotricha</em></td>
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<td>16.0</td>
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<td>0</td>
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<td><em>T. heptaphylla</em></td>
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<td>4.2</td>
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<td><em>T. roseo-alba</em></td>
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The sucking of larvae induces in fresh young leaves the upwards curving of the margins producing open marginal rolls. These become closed in mature leaves forming a tubular structure. The growth of the nerves of the affected leaves seems to be less than that of the internerval tissue, resulting in a wrinkled aspect (figs 17-18). In heavy infestations all the leaves of the plant are distorted (figs 16, 19). When larger leaves are infested, the damage consists only of the marginal roll.

Among the examined *Tabebuia* spp., *T. alba* showed in average the highest *T. tabebuiae* density (tab. 1) and consequently the largest damage. In second place comes *T. chrysotricha* (fig. 18) and third *T. heptaphylla* (fig. 20). In both species the leaf damage is similar to that of *T. alba*. *T. roseo-alba*, sampled in the same area, did not host *T. tabebuiae* and, consequently did not show damaged leaves.

The leaves of *Tabebuia* plants drop in winter (May to August). In plants infested by *T. tabebuiae*, however, a great part of the attacked leaves remained on the plants. This suggests that feeding of *T. tabebuiae* inhibits leaf drop (fig. 21). Even after strong and repeated frosts, some leaves, burnt and dry, remained on the plants. No living triozids were found on leaves which were dry by the frost. Some larvae where found alive on the remaining green parts of the leaf.

DISCUSSION

*Trioza tabebuiae* is separated from other *Trioza* spp. by the absence of sclerotised spurs on the metatibia. The presence and number of sclerotised apical metatibial spurs is normally very constant in *Triozidae*. There are no other characters suggesting a close relationship to any of the currently known tropical American species.
**Trioza tabebuiae** sp. n. 11: adult, dorsal view; 12: adult, lateral view; 13: fourth instar larva; 14: fifth instar larva.
Figs 15-18

Another unusual feature of the species is its association with the family Bignoniaceae. Apart from the North American *Craspedolepta pulchella* (Crawford) which was questionnably reported from *Chilopsis* (Hodkinson, 1988), this is the first psylloid host record from this family in the new world.

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REFERENCES


