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COMMUNICATION

Host plant use and possibly defensive horns in *Trichochermes magna* (Psilidae: Homoptera)

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Resumen: En un muestreo hecho de febrero a junio en Puntarenas, Costa Rica, cuatro de 20 árboles de *Psedolmedia oxphylaría* (Moraceae) tenían agallas del insecto *Trichochermes magma.* Un 7% de las agallas mostraban signos de parasitación o depredación. La mayoría de las agallas estaban en hojas jóvenes, pero no hubo correlación entre tamaño de hoja y número de agallas. La ninfa tiene una estructura en forma de cuerno que podría servirle de defensa.

Key words: Defense, host plant use, morphology, parasitoids.

The superfamily Psylloidea contains around 2000 species of Stenorrhyncha (Homoptera) that are characterized by rear legs adapted for jumping (Earstop 1978). The nymphs feed mainly on phloem, and some species induce the formation of galls in plants (Woodbum and Lewis 1973; Hodkinson 1973; Clark 1962). This group includes potential pests in forests and is particularly rich in species in neotropical forests. In Costa Rica, they feed on several native trees, such as *Alaroa, Cedrella, Haematoxylum, Hymenaea, Inga, Lonchocarpus, Pentaclethra* and *Virola* (Noyes and Hanson 1996).

The following note includes observations on the distribution, size and behavior of the nymphs of the gall-former *Trichochermes magna* on *Psedolmedia oxyphylaria.*

The galls were collected from February to June in the Monteverde Reserve Forest, Puntarenas, Costa Rica. All the new leaves with galls and a similar number of old leaves were collected. The number, size and distribution of the galls on the leaf were measured. The galls were dissected traversely so that the animal was observed dorsally. Voucher specimens were deposited in the Museo de Insectos, University of Costa Rica.

Only four of 20 host plant trees *Psedolmedia oxphylaría* (Moraceae) had developing galls; *Trichochermes magma* forms a rounded, hemispherical gall with thorn-like prolongation. Each gall had a single chamber that contained only one nymph. Developing galls were present on new leaves only. When the adult was ready to emerge, the gall expanded outward and opened like a flower. Opened galls were more abundant on old leaves. Of 257 galls examined 39. 7% showed perforations of various sizes that suggested mortality caused by predators and parasitoids. Three parasitoids, *Psyllaephagus ufens* (Encyrtidae) (Noyes and Hanson 1996) and two species of the family Eulophidae (subfamily Tetrasichinae), were reared.

There were an average of 33. 7 galls per leaf (n=54), and of those 65% were present on "new leaves" (38. 2±31. 6 galls per leaf, n =35) and 35% on "old" ones (18. 5±13. 4, n= 19, P<0. 01, t= 2. 77). The average diameter of galls on "young" leaves was 2. 2±1. 9 mm (n= 524) and on mature leaves 4. 1±0. 7 mm (n= 222) (P<O. 0l, t=5. 69). There was no correlation between size of the leaf and number of galls on it (P< 0. 01, r= 0. 0576). Of the developing galls 7% contained eggs, 13. 8% first instar nymphs, 20. 8% second instar, 25% third instar, 20.2% fourth and 13. 2% fifth instar nymph (n= 144).

The nymph, is robust and dorsoventrally flattened with dorsal sclerites of the thorax fused. The labium and the antennae are relatively short, and the legs are not functional. A horn projects from the head like a rhinoceros horn (Fig l.). In the fifth instar the thorax and head are yellow and the abdomen is intense light green.

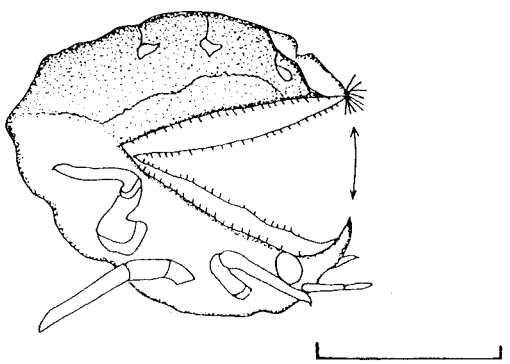

Fig 1. Nymph of *Trichochermes magna* in lateral view. Scale bar= 1mm.

Typically the nymph rested in the gall with its body curved and the horn oriented toward the apex of the gall. When the larva's head was experimentally stimulated with an insect pin, the horn was tossed quickly in the direction of the stimulus toward the opening of the gall (n=31, P<0. 01, x^2 test). Stimulation of the abdomen provoked the animal to curve quickly and swing it several times like a scorpion (n=35, P<0. 01, x^2 test). When the nymph was stimulated in the middle part (near the junction of the abdomen and the thorax), it responded by repeatedly flexing and closing both parts of the body on the pin (n=40, P<0. 01, x^2 test). When the animal was stimulated repeatedly it oriented the ventral part of the abdomen toward the opening of the gall. This behavior resembles that of *Trioza rulsellae* (Triozidae) on *Brosimun* sp. in which the nymph covers the opening of the gall with a sclerotized plate (P. Hanson, pers. comm.). However, in *T. magna* there is no plate rather the intense green colored abdomen is exposed.

Apparently this species is capable of developing a full nynfal cycle when a leaf is young. The high density of galls found on some of the leaves produced distortions in the growth that induce a severe corrugation.

The galls of psylids are through to protect them from extreme climatic conditions, particularly drying, and from parasitoids and predators (Hodkinson 1973). Many galls *of T. magna* however showed damage apparently occasioned by predators and/or parasitoids. Probably, the evolution of the horn and associated behaviors was evolved to aid in active defense during the nymphal stage against such enemies.

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