Brief Communication / Comunicación Breve

First host-plant record for *Leptodictya* (*Hanuala*) *leinahoni* (Kirkaldy, 1905) (Hemiptera: Heteroptera: Tingidae)

Primer registro de la planta hospedante de *Leptodictya* (*Hanuala*) *leinahoni* (Kirkaldy, 1905) (Hemiptera: Heteroptera: Tingidae)

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Abstract. *Guadua weberbaueri* Plig. [Poaceae] is recorded as the first host-plant record for *Leptodictya* (*Hanuala*) *leinahoni* (Kirkaldy). We observed eggs, nymphs, adults, and feeding injury on stands of *Guadua weberbaueri*, several kilometers north of the city of Caranavi, Bolivia.

Key words: Bamboo; Bolivia; distribution; *Guadua*; lace bug.

Resumen. *Guadua weberbaueri* Plig. [Poaceae] constituye el primer registro de planta huésped para *Leptodictya* (*Hanuala*) *leinahoni* (Kirkaldy). Se observaron huevos, ninfas, adultos y daños causados por alimentación en rodales de *Guadua weberbaueri*, a varios kilómetros al norte de la ciudad de Caranavi, Bolivia.

Palabras clave: Bambú; Bolivia; chinche de encaje; distribución; *Guadua.*

Lace bugs are found worldwide in diverse habitats, except in the Antarctic region (Drake and Ruhoff 1965). All species are phytophagous, many species are restricted to one host-plant species or one plant genus, and they usually spend their entire life cycles on the same host (Guidoti *et al.* 2015). Some species cause significant injury to their plant hosts and economic losses to crops including yuca, oil palm, sugar cane, and others (Neil and Schafer 2000).

Stål (1873) described the genus *Leptodictya* Stål, 1873, for *Monanthia* (*Physatocheila*) *approximata* Stål, 1858, *Monanthia* (*Physatocheila*) *dohrni* Stål, 1858, *Monanthia* (*Physatocheila*) *fuscocincta* Stål, 1858, *Monanthia* (*Physatocheila*) *lepida* Stål, 1858, and *Monanthia* (*Physatocheila*) *ochropa* Stål, 1858. Several entomologists have added species to the genus through time, and this genus is in desperate need of conscription. The only keys to species were provided by Stål (1873), Champion (1897, 1898), Blatchley (1926), and Knudson (2018). Drake (1931a) documented that there are two major divisions within *Leptodictya, Leptodictya* (*Leptodictya* Stål) *ochropa* (Stål) has the paranota reflexed against the lateral margin of the pronotum like *Dictyla* sp., and all other species of *Leptodictya* (*Hanuala* Kirkaldy, 1905) have the paranota basally explanate, and then reflexed onto themselves forming two layers of membrane which may be flat or slightly tumid.

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Leptodictya is one of the most diverse genera of Tingidae in the Neotropical region with 54 described species (Drake and Ruhoff 1965; Froeschner 1968, 1989), and many species remain undescribed. The genus *Leptodictya* is distributed in the Americas from the southern and eastern United States to Argentina and some Caribbean islands (Drake and Ruhoff 1965). It should be noted that three species, *Leptodictya* (*H.*) *nicholi* Drake, 1926, *Leptodictya* (*H.*) *plana* Heidemann, 1913, and *Leptodictya* (*H.*) *simulans* Heidemann, 1913, are known only from the Nearctic region. Over half of the *Leptodictya* species have been documented to feed on members of the plant family Poaceae. Only two species of *Leptodictya* were reported from non-Poaceae hosts, *Leptodictya* (*H.*) *colombiana* Drake, 1928 was reported from kidney bean [*Phaseolus vulgaris* L.] (Drake and Ruhoff 1965), although this catalog record may not be substantiated by evidence; while *Leptodictya* (*H.*) *sinaloana* Drake, 1954 has been intercepted on orchids [Orchidaceae] (Drake 1954) and *Tillandsia usneoides* (L.) L. [Bromeliaceae] (Drake and Ruhoff 1965). However, the majority of host-plant records for *Leptodictya* species are "bamboo" or "Poaceae" with only a few species having genus or species-level host records reported. This is likely due to the difficulties faced while identifying bamboo species. Leandro *et al.* (2016) suggested the long duration between flowering and bamboo's monocarpic life cycles provides additional identification challenges.

Seven species of *Leptodictya* have species-specific host records including *L.* (*H.*) *colombiana*. The xenic hosts of *Leptodictya* (*H.*) *bambusae* Drake, 1918 are currently undocumented, but this species has been recorded from the non-native hosts *Bambusa vulgaris* Schrad. ex J.C.Wendl. (Drake 1918), *Saccharum officnarum* L. (Bruner *et al.* 1945), *Dendrocalamus strictus* (Roxb.) Nees (Drake and Ruhoff 1965), and *Pleioblastus fortunei* (v. Houtte) Nakai (Streito *et al.* 2013), all native to Asia. *Leptodictya* (*H.*) *bambusae* has also been reported from *Zea mays* L. (Drake and Hambleton 1945). *Leptodictya* (*H.*) *litigiosa* Monte, 1940 was reported from *Phyllostachys castilloni* = *Phyllostachys bambusoides* Siebold and Zucc. (Silva 1956), which is also native to Asia. Moreover, *Leptodictya* (*H.*) *dola* Drake and Hambleton, 1939 was reported from *Panicum maximum* Jacq. = *Megathyrsus maximus* (Jacq.) B.K. Simon and Jacobs (2003), which is native to Africa. *Leptodictya* (*H.*) *tabida* (Herrich-Schaeffer, 1840) has also been reported from *B. vulgaris*, *S. officnarum,* and *Z. mays* (Heidemann 1913; Drake 1931a; Drake and Ruhoff 1965; Netherlands Plant Protection Service 2009). On the other hand, *Leptodictya* (*H.*) *olyrae* Drake, 1931 was reported from *Olyra latifolia* L. (Monte 1938) and remains the only Neotropical *Leptodictya* species heretofore recorded from an endemic non-agricultural plant host species. Wheeler (2008) reported *L.* (*H.*) *plana* from *Pennisetum ciliare* (L.) Link = *Cenchrus ciliaris* L. [native to Africa], *Eragrostis curvula* (Schrad.) Nees [native to Africa], *Setaria leucopila* K. Schum. [native to the southern Great Plains of the United States], and. *Zuloagaea bulbosa* (Kunth) Bess, which is native to the southwestern United States, Mexico, Central America, and Colombia (Bess *et al.* 2006). Shortly thereafter, Carr *et al.* (2011) reviewed the host-plant relationships of *L.* (*H.*) *plana* on different cultivars of *Pennisetum purpureum* = *Cenchrus purpureus* (Schumach.) Morrone, and other grass species.

Recently, Garay Martínez and Victoriano (2021) reported *L.* (*H.*) *plana* from two species of *Tripsacum* [Poaceae], *T. andersonii* J. R. Gray and *T. latifolium* Hitchc. They however, misidentified this *Leptodictya* species and these host records correspond to *L.* (*H.*) *tabida*. Garay Martínez and Victoriano (2021) also misinterpreted Wheeler's (2008) report of buffelgrass (*Cenchrus ciliaris*) as buffalograss, and substituted *Bouteloua dactyloides* (Nutt.) Columbus as one of Wheeler's reported hosts for *L.* (*H.*) *plana. Bouteloua dactyloides* may not support populations of *L.* (*H.*) *plana,* as all previous records for *L.* (*H.*) *plana* mentioned above are members of the Paniceae, whereas *B. dactyloides* is a member of the Andropogoneae.

It should be noted that Drake and Hambleton (1934) described *Leptodictya* (*H.*) *paspalli* Drake and Hambleton, 1934 from *Paspalum palmarum* [*fide* Drake and Hambleton, 1934], but this species epithet may represent a *nomen nudum* as it does not appear on the World Flora Online Plant List (2022) or other plant name lists. Furthermore, Drake and Ruhoff (1965) list *Paspalum* sp. [Poaceae] as the only recorded host-plant for *L.* (*H.*) *paspalli*. Drake and

Hambleton (1938, 1939) also described several species from *Olyra* sp. [Poaceae] and Monte (1941) reported *Leptodictya* (*H.*) *approximata (*Stal, 1858) from *Bambusa* sp. Lastly, Froeschner (1968) described *Leptodictya* (*H.*) *archiboldi* Froeschner, 1968 from a specimen collected in the base of *Euterpe globose* Gaertn. [Palmaceae], however, this may have been a sitting record.

During our visit to Bolivia in January 2017, we encountered several stands of *Guadua weberbaueri* Plig. [Poaceae] (Fig. 1) along a roadside, 4.2 km north of the city of Caranavi, La Paz, Bolivia (-15,801038 S, -67,552287 W). The bamboo had extensive feeding injury on higher leaves which were covered with exuviae and excreta. Further inspection allowed us to find eggs, nymphs, and adults of the insects that caused this injury, although nymphs were not photographed due to their high location on the plants. Some lower leaves had numerous adults, but little feeding injury (Fig. 2). The authors positively identified these insects as *Leptodictya* (*H.*) *leinahoni* (Kirkaldy, 1905) (Fig. 3). This species has been collected in Bolivia, Peru (Kirkaldy 1905), and Ecuador (Drake 1931b), but until this work, there are no reports of its hosts.

Figure 1. *Guadua weberbaueri* Plig. [Poaceae]. **1A.** General view. **1B.** Detail of leaves and feeding injury from *Leptodictya* (*Hanuala*) *leinahoni* (Kirkaldy), photos by VCT. / **1A.** Vista general. **1B.** Detalle de las hojas y daños causados por alimentación de *Leptodictya* (*Hanuala*) *leinahoni* (Kirkaldy), fotos de VCT.

Figure 2. Adults of *Leptodictya* (*Hanuala*) *leinahoni* (Kirkaldy) on bamboo leaf, photo by VCT. / Adultos de *Leptodictya* (*Hanuala*) *leinahoni* (Kirkaldy) en hoja de bambú, foto de VCT.

Guadua spp. are important in the construction of Latin American buildings and have many other uses. *Guadua weberbaueri* is used for making musical instruments, containers, and other handmade goods (Grandtner and Chevrette 2013). *Guadua weberbaueri* is widely distributed in the south-western Amazonian basin in Bolivia, Peru, and Brazil (Olivier and Poncy 2009), it is also commonly found along roadsides and near property boundaries in parts of Bolivia (personal observation).

***Leptodictya* (*Hanuala*) *leinahoni* (Kirkaldy, 1905)**
(Figs. 2, 3)

Hanuala leinahoni Kirkaldy, 1905: 217 (new genus, new species) [Bolivia, Peru].
Leptodictya leinahoni: Drake 1922: 42; Monte 1938: 131.
Leptodictya (*Hanuala*) *leinahoni*: Drake 1931a: 226 [resurrected (*Hanuala*) as subgenus], 1931b: 121. [Ecuador]; Drake and Davis 1960: 67, figure 61; Drake and Ruhoff 1960: 65, 1965: 264.

Diagnosis. *Leptodictya* (*Hanuala*) *leinahoni* can be separated from all other species of *Leptodictya* by the following combination of characters: cephalic spines slender and nearly as long as the length of the scape; pronotal hood slender, as long as head, and nearly less than half as wide as head; each paranotum basally explanate, folded over itself, but anterior margin not covered by itself with internal surface exposed in dorsal view; costal areas broad, with eight to twelve rows of areolae wide at widest, areolae increasing in size toward apices, some areolae and veins irregularly embrowned along margin with irregular transverse light brown markings; discoidal areas with six to eight rows of areolae at widest with several transverse light brown markings.

Specimens examined. Bolivia: Depart. La Paz: 4.2 Km NNE Caranavi, -15,801038, -67,552287, 6-I-2017, A. H. Knudson & V. Calles Torrez, ex. *Guadua weberbaueri* Plig. [1 male, 1 female UAC-CP, 1 male, 1 female ANCB]. Specimens will be deposited in the

collections of La Unidad Académica Campesina de Carmen Pampa [UAC-CP], a branch of La Universidad Católica Boliviana, and el Museo Nacional de Historia Natural [ANCB], La Paz, Bolivia.

Figure 3. Dorsal habitus of *Leptodictya* (*Hanuala*) *leinahoni* (Kirkaldy) on bamboo leaf, photo by VCT. / Vista dorsal de *Leptodictya* (*Hanuala*) *leinahoni* (Kirkaldy) en hoja de bambú, foto de VCT.

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