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The Presence of *Weraubia nutans* in Mexico

Thorsten Krömer⁷, Adolfo Espejo⁸, Ana Rosa López-Ferrari⁸ &

Amparo Acebey⁷

Photographs by Thorsten Krömer

The genus *Weraubia* was described by Grant (1995a), for sixty-six taxa previously attributed to *Vriesea* section *Xiphion*. Most members of this genus have a nocturnal anthesis, a general lack of brilliant coloration, mostly fleshy frequently secund bracts and flowers, bilaterally symmetric and often zygomorphic corollas, dactyloid petal appendages, stigma with a cupulate-type morphology, and stout, dark colored capsules. Many species of *Weraubia* are known to be chiropterophilous, which means pollinated by bats (Grant 1995a, Benzing 2000, Krömer 2004). Their floral syndrome thus includes relatively large, bell-shaped (campanulate) flowers with brown or green bracts, greenish to whitish petals, and often a specific smell.

At this time *Weraubia* comprises ca. 93 species (see Grant 1995a, 1995b, 1995c, 2000; Luther 1998, 2002a, 2002b, 2002c; Pierce & Aranda 2000; Pierce 2001; Morales 2003a, 2005; Barfuss et al. 2004; The International Plant Names Index 2006). The distribution of *Weraubia* ranges from southern Mexico throughout Central America, the West Indies, Northeastern Brazil to Bolivia. However, its center of diversity is found in Costa Rica and Western Panama, where about 80 of these species are distributed (Morales 2005). For Mexico, Espejo et al. (2004) have reported six taxa: *Weraubia gladioliflora* (H. Wendl.) J.R. Grant, *W. nocturna* (Matuda) J.R. Grant, *W. pectinata* (L.B. Sm.) J.R. Grant, *W. pycnantha* (L.B. Sm.) J.R. Grant, *W. vanbyningii* (L.B. (L. B. Sm.) J.R. Grant, and *W. werckleana* (Mez) J.R. Grant.

During a field trip for a current research project, T. Krömer and A. Acebey collected two specimens of *Weraubia* on the slopes of the San Martín Tuxtla volcano, located in the northeastern region of Los Tuxtlas, in the state of Veracruz. This material could not be identified to any of the species of this genus reported from Mexico. After a careful revision of bibliography, bromeliad databases, type specimens, and Mexican and foreign collections, we concluded that these specimens pertain to *Weraubia nutans* (L.B. Sm.) J.R. Grant. This species was previously known as *Vriesea nutans* L.B. Sm. only from the type specimen collected in Costa Rica (Smith 1960; Smith & Downs 1977; Utley & Utley 1994; Luther 1995). Additionally, in Mexico there exist two further collections of the species, one from the area of Santa María Chimalapa, in the state of Oaxaca (*P. Tenorio* & *T. Wendt* 19335, depauperate) and another from the state of Chiapas (*E. Martínez S.* & *M.A. Soto A.* 18654).

In Mexico, *Weraubia nutans* co-occurs with other bromeliads such as *Catopsis sessiliflora*, *Tillandsia punctulata*, *T. viridiflora*, and a still unidentified

⁷ Estación de Biología Tropical Los Tuxtlas, Universidad Nacional Autónoma de México, Apartado Postal 94, San Andrés Tuxtla, Veracruz 95701, Mexico.

⁸ Herbario Metropolitano, Universidad Autónoma Metropolitana-Iztapalapa, Apdo. Postal 55-535, C. P. 09340 México, D.F.



Figure 24. View of the summit of the San Martín Tuxtla volcano and its mostly undisturbed humid montane forest at about 1000 m elevation.



Figure 26. The inconspicuous, arching inflorescence of *Werauhia nutans* is projected into the open air providing space for wing movements of the pollinating bat during hovering or feeding bouts.



Figure 25. Dense colonies of *Werauhia nutans* in the tree trunk area due to strong vegetative reproduction.



Figure 27. Bell-shaped night blooming flower of *Werauhia nutans*.

species of *Weraubia* in the lower montane forest of the San Martín Tuxtla volcano between 650-1400 m elevation. As most of the original forest extent of the region of Los Tuxtlas had been cleared by the year 1990, the lower slopes of the volcano are currently covered by a vegetation mosaic dominated by pastures, with small patches of remnant trees and different types of field crops surrounding the remaining forest fragments (FIGURE 24). At about 1000-1550 m elevation mostly undisturbed humid montane forest can be found, while the summit of the volcano is covered by dwarf cloud forest. A preliminary checklist of the bromeliads occurring in this area lists 32 species in 9 genera, including five species of *Weraubia* (Krömer & Acebey, in press), whereas *W. nutans* and *W. spec.* (T. Krömer & A. Acebey 2207, 2507) increase the number of species from Mexico reported for this genus to eight. A detailed description of these two species is published in the Bromeliaceae of The Flora of Veracruz (Espejo et al. 2005).

Although *Weraubia nutans* is so far only known from two records in the Los Tuxtlas region, it is a locally abundant species in some spots along trails below 1000 m elevation. It is epiphytic and due to its strong vegetative reproduction it forms dense colonies mainly on the trunks of trees in the understory level (FIGURE 25) where its inconspicuous, arching inflorescence is projected into the open air (FIGURE 26). The few (5-11) white flowers open on consecutive days at dawn (FIGURE 27). This species is likely pollinated by any one of the nine nectar-feeding bats (Phyllostomidae: Glossophaginae and Phyllostominae), that occur in this area (Estrada & Coates-Estrada 2001). Similar to *Weraubia gladioliflora*, a species co-occurring at 700 m elevation, the flowers of *Weraubia nutans* fit like a "head-mask" on the elongated rostrum of the nectar-feeding bat, while the exposure of the inflorescence provides space for wing movements of the bat during hovering or feeding bouts (Krömer 2004).

It should be mentioned, that Morales (2003b) in his treatment of Bromeliaceae for the Manual de Plantas de Costa Rica considered *Weraubia nutans* as a synonym of *Weraubia viridiflora*, although without giving a broader explication for his decision. *Weraubia viridiflora* itself is being accepted as quite a variable species with a wide geographical range, which probably represents a complex of several species. However, Utley & Burt-Utley (1994) in their treatment of *Vriesea* for the Flora Mesoamericana considered both as distinct species. As to our knowledge (J.E. Morales, pers. com.) the type of *Weraubia viridiflora* (*Pitcairnia viridiflora* Regel) is lost, it was not possible to make a specific revision to solve this unclear nomenclature. Furthermore, all specimens revised within this study without doubt corresponded to the type of *Vriesea nutans*, which was examined by A. Espejo and A.R. López-Ferrari at the National Herbarium of the United States (US). For these reasons, we prefer to use *Weraubia nutans* as scientific name for the Mexican specimens.

Werauhia nutans (L.B. Sm.) J.R. Grant, *Phytologia* 79: 255. 1995. — *Vriesea nutans* L.B. Sm., *Phytologia* 7: 175. 1960. Type: Costa Rica, San José, on tree, road from Turrialba to Moravia, *M.B. Foster 2717* (Holotype: US!).

DISTRIBUTION: Costa Rica (San José) and Mexico (Chiapas, Oaxaca, and Veracruz).

SPECIMENS EXAMINED: **Mexico.** **Chiapas:** Mun. Ocosingo, en Laguna Ocotalito, a 12 km al NE de Monte Líbano camino a Chancalá, *E. Martínez S. & M.A. Soto A. 18654* (MEXU); **Oaxaca:** Mun. Santa María Chimalapa, cabecera del río Solosúchil, arroyo Garrobo, sierra Tres Picos, *P. Tenorio & T. Wendt 19335* (MEXU, UAMIZ); **Veracruz:** Mun. San Andrés Tuxtla, colonia agrícola militar Montepío, rancho Pouchoulen, *T. Krömer & A. Acebey 2005* (EBT, MEXU, UAMIZ, XAL), Mun. San Andrés Tuxtla, ejido Ruíz Cortinez, falda del volcán San Martín Tuxtla, *T. Krömer & A. Acebey 2303* (EBT, MEXU, XAL).

HABITAT: A rare, but locally abundant epiphyte in tropical rain forest and cloud forest, 650-1400 m elevation.

PHENOLOGY: Flowering December to February. Cultivated flowering plants in the live collection of the "Los Tuxtlas" Biological Research Station (EBT) in April-May.

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