

## **ELYTRARIA (ACANTHACEAE: NELSONIOIDEAE) IN TAMAULIPAS, MEXICO**

**THOMAS F. DANIEL**

Department of Botany, California Academy of Sciences  
Golden Gate Park, 55 Music Concourse Drive  
San Francisco, California 94118, U.S.A.  
tdaniel@calacademy.org

**ARTURO MORA-OLIVO**

Universidad Autónoma de Tamaulipas, Instituto de Ecología Aplicada  
División del Golfo 356, Col. Libertad  
Cd. Victoria, Tamaulipas, C.P. 87019, México  
amorao@docentes.uat.edu.mx

### **ABSTRACT**

A synopsis of the acanthaceous genus *Elytraria* occurring in Tamaulipas includes the two species (*E. bromoides* and *E. macrophylla*) previously known from that Mexican state, and a newly reported occurrence of *E. imbricata* there. A key to the three species, images of their habits and flowers, and a map showing their distributions in Tamaulipas are provided.

### **RESUMEN**

Una sinopsis del género *Elytraria* de Acanthaceae que ocurre en Tamaulipas incluye las dos especies (*E. bromoides* y *E. macrophylla*) previamente conocidas de ese estado mexicano, y una ocurrencia nueva reportada de *E. imbricata* en el mismo. Se proporciona una clave para las tres especies, imágenes de sus hábitos y flores, y un mapa que muestra sus distribuciones en Tamaulipas.

*Elytraria* Michx. consists of 21 species that occur in the tropics and subtropics of both the Old World and the New World (Daniel & McDade 2014). The genus pertains to the Acanthaceae subfam. Nelsonioideae and is characterized morphologically by the combination of clasping scales on the peduncles of inflorescences, capsules that lack retinacula, and touch-sensitive stigmas. Fourteen species are currently recognized as native to the New World, and four occur in Mexico (Daniel & McDade 2014). Two species of *Elytraria* (*E. bromoides* Oerst. and *E. macrophylla* Leonard) have been reported from Tamaulipas (Daniel et al. 2021), the northeasternmost state of Mexico. Below we document the occurrence of a third species there, *E. imbricata* (Vahl) Pers., where it attains the northeasternmost extent of its geographic distribution. Some updates to information summarized by Daniel et al. (2021) on species of *Elytraria* in Tamaulipas, a key to the three species, images of their habits and flowers, and a distribution map are also provided.

### **Key to the species of *Elytraria* in Tamaulipas**

1. Corollas pale to dark purple to blue-purple, usually with a patch of white and yellow coloration at base of lower lip; bracts 3-dentate at apex with lateral teeth large, winglike, and hyaline (at least distal bracts, usually all bracts thusly dentate); plants usually caulescent, not conspicuously silky pubescent at base or at base of leaf clusters (when present) ..... 2. ***Elytraria imbricata***
1. Corollas yellow or pinkish, sometimes fading to nearly white; bracts not 3-dentate at apex; plants acaulescent to subcaulescent, conspicuously silky pubescent at base of leaf clusters (especially prominent in *E. macrophylla*).

2. Leaves 4.5–25 mm wide; bracts lanceolate, 6–11 mm long; calyces 6–8 mm long; corollas pinkish ..... 1. ***Elytraria bromoides***  
 2. Leaves 27–112 mm wide; bracts broadly ovate, 3.8–5 mm long; calyces 4.5–5.2 mm long; corollas yellow ..... 3. ***Elytraria macrophylla***

### 1. **ELYTRARIA BROMOIDES** Oerst.

This is the most common and widely distributed species of *Elytraria* in Tamaulipas (Fig. 1). Daniel et al. (2021) listed 21 collections from the state, and Figure 1 includes locales for those plus for fourteen additional collections and documented observations. Recent descriptions of the species include those by Daniel (1995) and Daniel and Acosta C. (2003). Both *E. bromoides* and *E. macrophylla* are essentially acaulescent, but the accumulation of leaf bases over several years often forms an aerial stem-like structure (i.e., “subcaulescent”). *Elytraria bromoides* is distinctive among Tamaulipan species of the genus by its longer calyces (6–8 mm vs. 2.5–5.2 mm) and relatively large, pinkish corollas (Fig. 2). The species occurs from southern Texas, through much of eastern Mexico to the Yucatán Peninsula, and into Central America. In Tamaulipas *E. bromoides* flowers throughout the year and has been collected with fruit during May through August and in December. Occurrences in the state range in elevation from 210 to 1372 meters.

### 2. **ELYTRARIA IMBRICATA** (Vahl) Pers.

**MEXICO. Tamaulipas.** [Mpio. Aldama]: Dark lava rock along Río Tigres just above Aldama, [ca. 22°56'53.36"N, 098°05'03.21"W], ca. 260 m, 10 Dec 1959 (fl, frt), *Johnston 4939A* (TEX!).

This collection was originally identified as *Elytraria imbricata* and study of it verifies that identification. Recent descriptions of the species in Mexico include those by Daniel (1984, 1995, 1997, 1999, 2016) and Daniel & Acosta C. (2003). Of the 14 species of *Elytraria* in the New World, *E. imbricata* has the most extensive distribution. It occurs natively from the southwestern USA (Arizona, New Mexico, and trans-Pecos Texas) through Mexico and Central America to northern Argentina (Jujuy, Salta). Throughout its range, the species occurs in diverse plant communities (e.g., desertscrub, thornscrub, tropical dry forest, grassland, mesophytic montane forest, oak forest, pine forest) at elevations from seal level to 2200 meters. Although common in western and southern Mexico, the species occurs only sporadically in northeastern Mexico. Its nearest known occurrence to that reported here is ca. 225 km to the southwest in the state of Querétaro (ca. 21°10'28.15"N, 099°06'57.66"W; *Fernández N. 4274* at NY).

Tamaulipan plants occur in a region of low tropical dry forest (“bosque espinoso” of Rzedowski 1981) in the southeastern portion of the state (Fig. 1). Johnston’s collection was flowering and fruiting in December. Nearly all plants of *E. imbricata*, including *Johnston 4939A*, have the characteristic apically three-toothed bracts (Fig. 2); however, in some individuals occurring elsewhere in Mexico, the lateral teeth are rarely minute or absent (especially on immature inflorescences). Such plants typically have the purple corollas with a white patch (usually with a yellow center) at the base of the lower lip. White-flowered individuals (with the three-toothed bracts) are known and appear to represent either a rare albinic form (e.g., Daniel 2016; Arizona) or “an unusual local expression” of the species when occurring in significant numbers (e.g., Daniel 2005: 70; Honduras).

### 3. **ELYTRARIA MACROPHYLLA** Leonard

Daniel and Acosta C. (2003) provided a description of this uncommon species. It is endemic to northeastern Mexico (Hidalgo, Querétaro, San Luis Potosí, Tamaulipas) and remains known from only two collections in Tamaulipas (Fig. 1; see Daniel et al. 2021 for collection data), where it reaches

the northeasternmost extent of its geographic distribution. The species is characterized by its evergreen clusters of large leaves (up to 300 mm long and 140 mm wide) and lemon yellow flowers that sometimes turn whitish with age (Fig. 2).

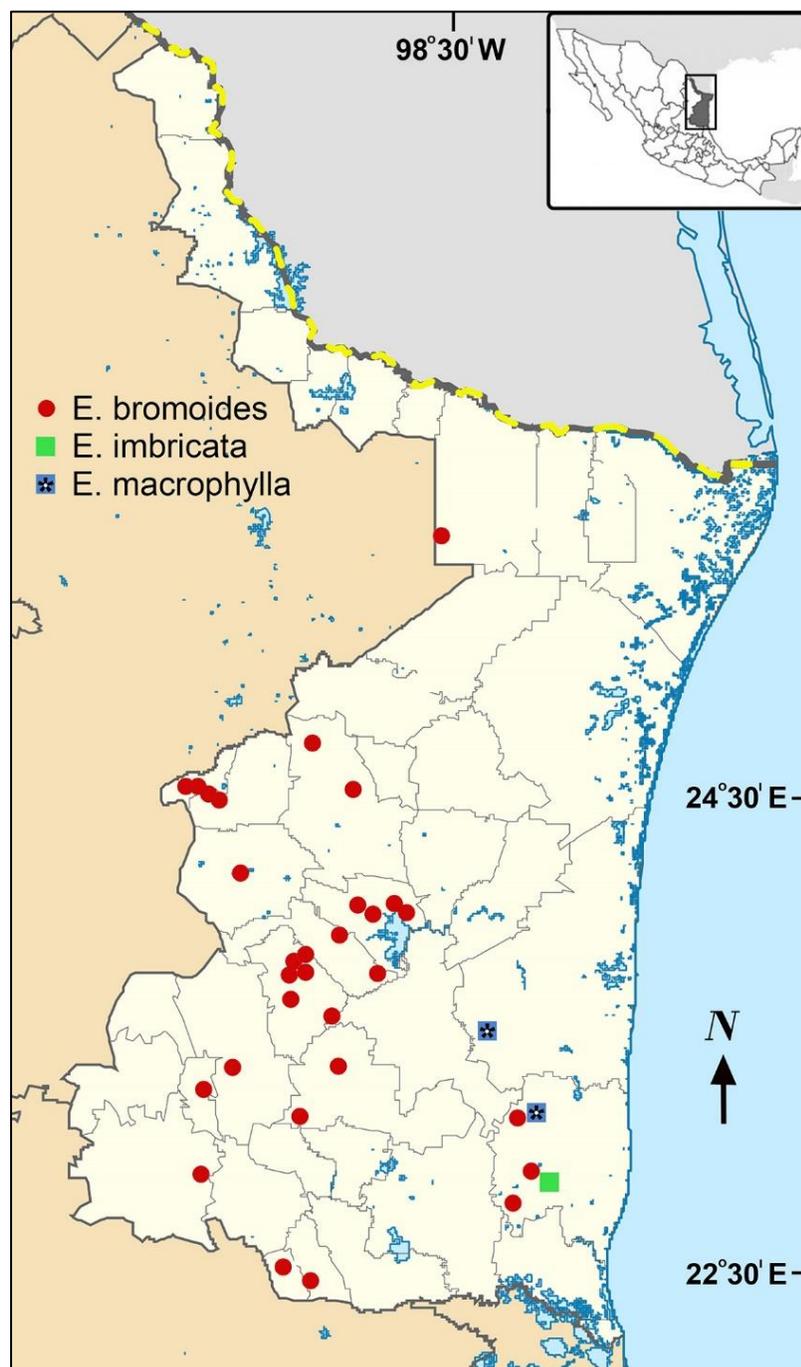


Figure 1. Map of Tamaulipas showing distributions of *Elytraria* based on specimens cited by Daniel et al. (2021), seven additional collections at TEX of *E. bromoides* from the state, seven occurrences of *E. bromoides* verified via photographs on the *naturalista.mx* website (iNaturalist network), and the occurrence of *E. imbricata* cited herein. Map by Addicted04, CC BY-SA 4.0; modified; herewith available under same license.

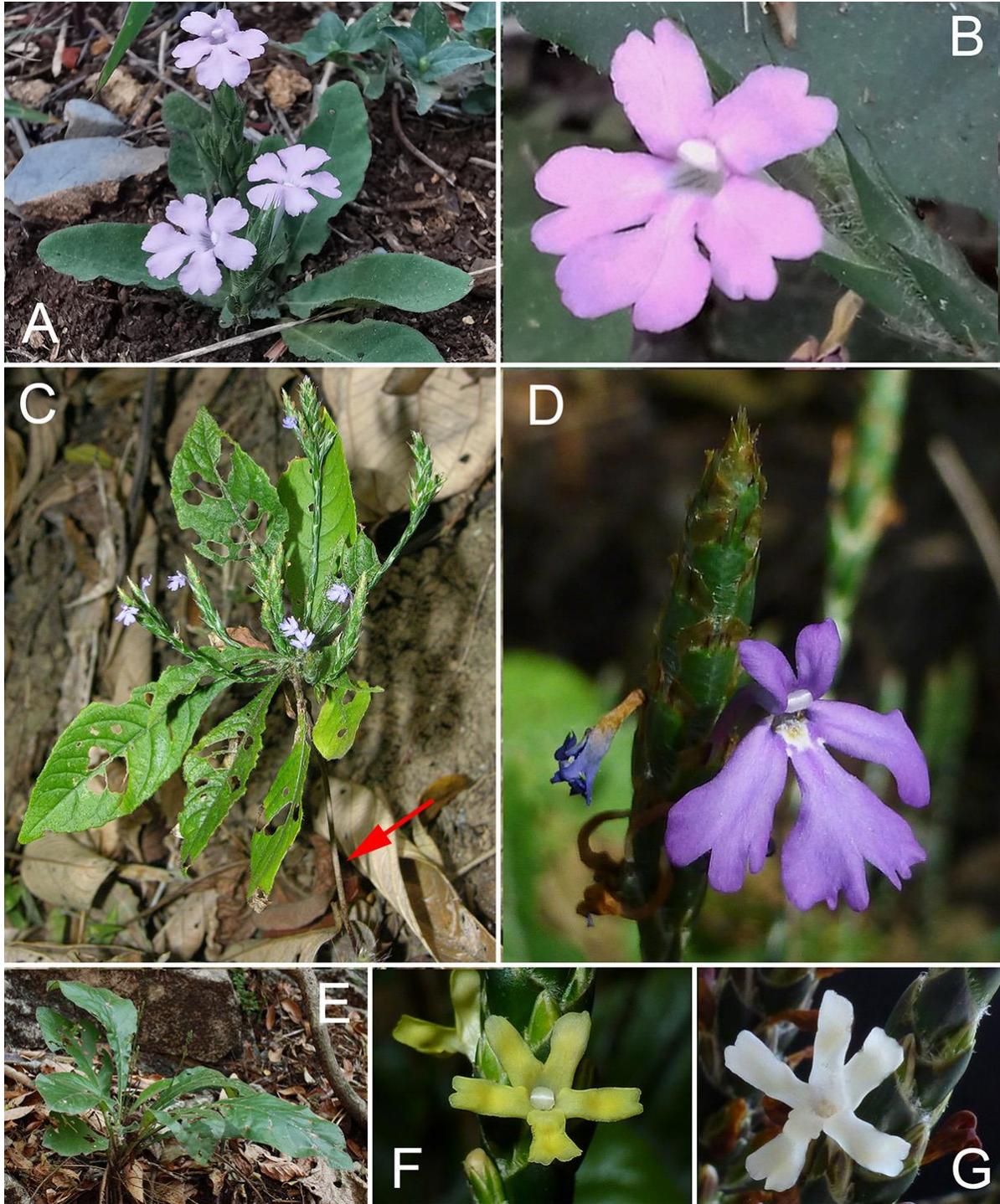


Figure 2. Photographs (by TFD except as noted) of habits and flowers of *Elytraria bromoides* (A, B), *E. imbricata* (C, D), and *E. macrophylla* (E–G). A. Habit (photo by Carlos G. Velazco-Macias-CC BY NC 4.0; cropped). B. Portion of inflorescence with flower (photo by estefaniafernandez; CC BY-NC 4.0; cropped). C. Habit with arrow indicating stem (photo by Ricardo Kriebel, used with permission). D. Inflorescence with flower. E. Habit. F. Yellow flower. G. Portion of inflorescence with flower turning white with age.

### ACKNOWLEDGEMENTS

We are grateful for a loan of specimens of *Elytraria* from TEX/LL and photographers E. Fernández, R. Kriebel, and C. Velazco-Macias for making their images available for reproduction. Georeferenced observations with photos on the NaturaLista Mexico (*naturalista.mx*) website by estefaniafernandez, L. García, B. Gómez Garza, T. Hernández Morales, S. de Jesús Calva, sergioniebla, and A. Wong were useful additions to Figure 1.

### LITERATURE CITED

- Daniel, T.F. 1984. The Acanthaceae of the southwestern United States. *Desert Pl.* 5: 162–179.
- Daniel, T.F. 1995. Acanthaceae. Pp. 1–158, in D.E. Breedlove (ed.). *Flora of Chiapas*, Part 4. California Academy of Sciences, San Francisco.
- Daniel, T.F. 1997. The Acanthaceae of California and the Peninsula of Baja California. *Proc. Calif. Acad. Sci.* 49: 309–403.
- Daniel, T.F. 1999. Acanthaceae A.L. Juss. Pp. 5–102, in P.D. Dávila Aranda, J.L. Villaseñor Ríos, R. Medina Lemos, and O. Téllez Valdés (eds.). *Flora del Valle de Tehuacán-Cuicatlán*, Fasc. 23. Univ. Nacional Autónoma de México, Cd. México.
- Daniel, T.F. 2005. Catalog of Honduran Acanthaceae with taxonomic and phytogeographic notes. *Contr. Univ. Michigan Herb.* 24: 51–108.
- Daniel, T.F. 2016. Vascular Plants of Arizona: Acanthaceae Acanthus or Shrimp-Plant Family. *Canotia* 12: 22–54.
- Daniel, T.F. and S. Acosta C. 2003. Acanthaceae. Pp. 1–173, in J. Rzedowski and G. Calderón de Rzedowski (eds.). *Flora del Bajío y de Regiones Adyacentes*, Fasc. 117. Instituto de Ecología, Pátzcuaro.
- Daniel, T.F. and L.A. McDade. 2014. Nelsonioideae (Lamiales: Acanthaceae): Revision of genera and catalog of species. *Aliso* 32: 1–45.
- Daniel, T.F., L.J. García-Morales, and A. Mora-Olivo. 2021. Taxonomic and photographic guide to the Acanthaceae of Tamaulipas, Mexico. *Proc. Calif. Acad. Sci.* 67: 185–228.
- Rzedowski, J. 1981. *Vegetación de México*. Editorial Limusa, Cd. México.