

NYMPHOIDES HUMBOLDTIANA (MENYANTHACEAE)
IN UVALDE COUNTY, TEXAS—A NEW RECORD FOR THE U.S.A.

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ABSTRACT

Nymphoides (Menyanthaceae) plants from the Nueces River, Uvalde County, Texas, previously identified as *N. indica* (L.) Kuntze, are determined genetically to be identical to *N. humboldtiana* (Kunth) Kuntze specimens. This report documents the first record of the species not only in Texas but also in the United States.

RESUMEN

Plantas de *Nymphoides* (Menyanthaceae) recolectadas en Río Nueces (Condado de Uvalde, Texas) previamente descritas como *N. indica* (L.) Kuntze, han sido identificadas genéticamente como idénticas a especímenes de *N. humboldtiana* (Kunth) Kuntze. En este artículo se documenta el primer registro de la especie no solo en Texas, sino también en los Estados Unidos de América.

Saunders (2005) previously reported the existence of an isolated population of *Nymphoides* from Uvalde County, Texas, which he identified as *N. indica* (L.) Kuntze following the broad species concept proposed by Ornduff (1969). Although Ornduff (1969) recommended the synonymy of the Old World tropical species *N. indica* and the morphologically similar New World *N. humboldtiana* (Kunth) Kuntze, a recent phylogenetic study by Tippery and Les (2011) argued that these taxa should be maintained as separate species.

The morphological similarity that other authors have noted between *N. humboldtiana* and *N. indica* reflects in part the spectrum of variation found within Old World *N. indica*. This species comprises plants from a wide geographical range that vary in diagnostic characters such as petal ornamentation and seed morphology (Tippery & Les 2011). Various *Nymphoides* species are grown in cultivation, and the specimens identified as *N. indica* by Saunders (2005) may have originated as escapes. Alternatively, the Texas specimens may represent the northern range extent of *N. humboldtiana*, a species that occurs naturally in México.

In order to confirm the identification of *N. indica* in Texas, we collected and analyzed material from the locality described by Saunders (2005). We extracted and sequenced genomic DNA for one nuclear (ITS) and one chloroplast (*matK/trnK*) region, following the methods reported by Tippery and Les (2011). Newly obtained DNA sequences were deposited in GenBank under the accession numbers JF930150 (ITS) and JF930151 (*matK/trnK*). As a result of this approach, we ascertained that the Texas plants did not match *N. indica* but instead were identical genetically to *N. humboldtiana* specimens at diagnostic sites in both nuclear and chloroplast gene regions (Tippery & Les 2011).

Consequently, the appropriate species name for the *Nymphoides* growing in Uvalde County is *N. humboldtiana*. This species occurs naturally in North and South America, from Uruguay north to southern Tamaulipas, México (Tropicos.org 2011), and it is quite reasonable to expect that it could persist in southern Texas also. The broad geographical range of *N. humboldtiana* was illustrated by Tippery and Les (2011), who determined that plants from Brazil, Ecuador, and México all were genetically attributable to this species. Prior to our study, however, the northernmost known population of *N. humboldtiana* was approximately 750 km south of the population reported here (Tropicos.org 2011). As a result of this study, we have identified the Nueces River plants as the only known instance of *N. humboldtiana* in the United States and also the northernmost locality for the species.

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Voucher specimens: U.S.A. TEXAS. Uvalde Co.: Uvalde, Nueces River, c. 200 m N of where CR-202 crosses river, in pond E of main water-course, in gently-flowing water of spring, 0.2–1.0 m deep, 29°11'08.9"N, 99°53'44.5"W, 13 Jul 2010, *Tippery 331 & Les 854* (CONN); Nueces River, in shaded side channel on eastern bank of river off of Highway 90, 5.68 mi W of Uvalde, left on county road which dead ends at river, 29°10'53.44"N, 99°53'44.80"W, 13 Jul 2010, *Williams 44* (SWT).

ACKNOWLEDGMENTS

We thank E.L. Peredo and J.C. Villarreal for translation assistance, and D.E. Lemke and J.C. Zech for their helpful comments. Field work for this project was funded in part by NSF grant DEB-0841658 to DHL.

REFERENCES

- ORNDUFF, R. 1969. Neotropical *Nymphoides* (Menyanthaceae): Meso-American and West Indian species. *Brittonia* 21:346–352.
- SAUNDERS, K. 2005. First record of *Nymphoides indica* (Menyanthaceae) in Texas. *Sida* 21:2441–2443.
- TIPPERY, N.P. AND D.H. LES. 2011. Phylogenetic relationships and morphological evolution in *Nymphoides* (Menyanthaceae). *Syst. Bot.* 36:1101–1113.
- TROPICOS.ORG. 2011. Database of the Missouri Botanical Garden. Accessed August 2011.