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IS *CALYPTOCARPUS VIALIS* (ASTERACEAE) NATIVE OR INTRODUCED IN TEXAS?

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ABSTRACT

Yes and no. *Calyptocarpus vialis* is native to eastern Mexico and to south and south-central Texas, apparently recently adventive (non-native, introduced) elsewhere in the state as well as in the USA and outside of North America. It characteristically grows in open and ruderal habitats over all of its range. One map shows the Texas county distribution, with symbols indicating the earliest date of collection in each county and suggesting the general pattern of native distribution within the state; another map shows the distribution of the species in Mexico.
KEY WORDS: *Calyptocarpus vialis*, Asteraceae, native, non-native, Texas, Mexico

Calyptocarpus vialis Less., the Straggler Daisy, is considered by the Lady Bird Johnson Wildflower Center (2011) to be **native** in Texas: "Depending on your point of view, Straggler Daisy is a pest or a welcome, shade-tolerant groundcover that tolerates moderate foot traffic. If you have a shady lawn anywhere within its range, you probably already have it. It gained in popularity during the growth in interest in native plants and is now occasionally available for sale at native plant nurseries (though it is so easy to propagate that you can easily grow it on your own)." It was considered by Strother (2006) to be **native** to Texas, Louisiana, Mississippi, Alabama, and Florida. In contrast, the Straggler Daisy is characterized without caveat in the PLANTS Database (USDA, NRCS 2011) as **introduced** in the "lower 48" states and in Hawaii. It apparently is not regarded anywhere in the USA as "invasive" or "noxious."

Characteristic habitats for the Straggler Daisy include roadsides, lawns, fields, vacant lots, and clearings and disturbances in woodlands. It grows abundantly in sandy as well as clay soils. The prevalence of ruderal habitats surely underlies the common perception of the species as a "weed," but insofar as that term has a perjorative flavor, it may be misapplied to Straggler Daisy at least in part of its range. It also occurs in open woods and on creek and river banks, which may be the habitats in which it evolved. Besides Straggler Daisy, other common names for *C. vialis* are lawnflower, horseherb, sprawling horseherb, and hierba del caballo.

This brief review documents the geographic distribution of the Straggler Daisy and the dates it has been collected from native and naturalized populations, concluding that an answer to the title's question is equivocal. The species is native to south and central Texas and eastern Mexico (Maps 1 and 2) but apparently recently adventive (non-native, introduced) elsewhere in the state as well as in the USA and outside of North America. Distribution points for maps and dates of collection are from various sources, including herbarium specimens studied first-hand as well as online resources (see Acknowledgements).

Two species constitute the genus *Calyptocarpus* Less. — they have allopatric distributions and the native ranges of both are mostly in Mexico and Central America. Distinctions in morphology were clarified by McVaugh and Smith (1967). Turner et al. (1961) reported chromosome numbers of $2n = 24$ (Oaxaca) and $2n = 72$ (Guatemala) for two populations identified as *Calyptocarpus vialis*, but reexamination of the vouchers by McVaugh and Smith found the hexaploid population to be *C.*

wendlandii. Counts by Solbrig et al. (1972) and Peng and Kao (1984) further confirmed the diploid (2*n* = 24) genome of *C. vialis*.

Calyptocarpus wendlandii Schultz-Bip. (Bot. Zeit. (Berlin) 24: 165. 1866) is native to southern Mexico (Chiapas; records from TEX-LL and XAL via CONABIO/REMIB 2011) and Central America (Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica; Nash & Williams 1976). The type of the species was collected in San José, Costa Rica.

Calyptocarpus vialis Less., Syn. Gen. Compos., 221. 1832. *Synedrella vialis* (Less.) A. Gray, Proc. Amer. Acad. Arts 17: 217. 1882. **TYPE**: **MEXICO**. **Veracruz**. "Ad vias pr. Jalapa," Jun 1829, *C.J.W. Schiede s.n.* (presumed holotype: HAL digital image!).

The 1832 protologue, to which publication of the genus and first species is generally attributed, referred to "CALYPTOCARPUS Linnaea VII. ined." and cited "*C. vialis* Linnaea l.c." Other than "Herba Mexicana," no other information about the type was provided. The allusion to "Linnaea VII" may have been in reference to pages 81-82 of editor Schlechtendal's "Litteratur-Bericht" for Linnaea vol. 7 — a brief notice of publication and review of Lessing's "Synopsis Generum Compositarum" — but there was no mention there of *Calyptocarpus*.

Two years later, in an enumeration and description of collections by Christian Julius Wilhelm Schiede from Mexico, Schlechtendal (1834, pp. 269-270) cited "Ad vias pr. Jalapam. Jun. 29." under "221. *Calyptocarpus vialis* Less." A specimen with these data is in Schlechtendal's herbarium at Martin Luther University Halle-Wittenberg and is presumed type material, probably the holotype.

Oligogyne tampicana DC., Prodr. 5: 629. 1836. *Blainvillea tampicana* (DC.) Hemsl., Biol. Cent.-Amer., Bot. 2: 169. 1881. *Calyptocarpus tampicana* (DC.) Small, Fl. S.E. U.S., 1274, 1340. 1903 [as "Calyptrocarpus" tampicanus]. **TYPE**: **MEXICO**. **Tamaulipas**. circa Tampico de Tamaulipas, 1827, *Berlandier 61* (presumed holotype: G).

Zexmenia hispidula Buckley, Proc. Acad. Nat. Sci. Philadelphia 1861[13]: 458. 1862. **TYPE**: **USA**. **Texas**. Specimen not located. The protologue cited only "Northern Texas. May." Buckley's description seems clearly to refer to *Calyptocarpus vialis* and this would be the oldest known collection of the species from Texas. Strother (1991) listed *Z. hispidula* as a synonym of *C. vialis* but did not provide details of typification.

Calyptocarpus blepharolepis B.L. Rob. (Proc. Amer. Acad. Arts 47: 214. 1911) has been cited as a synonym of *C. vialis* (e.g., Strother 2006) and *C. blepharolepis* was included in J.K. Small's Southeastern Flora (1933). Cronquist (1980), however, correctly observed that the identity of *C. blepharolepis* actually is *Sanvitalia ocymoides* DC. and that the type was collected in Brownsville, Texas — its putative origin from "Tensaw, Alabama" (Baldwin County) in the protologue by Robinson apparently reflecting a label mix-up. A digital image of an isotype of *C. blepharolepis* can be seen on the US type database website.

***Calyptocarpus vialis* in Texas**.

The distribution of early collections of Straggler Daisy in Texas (Map 1) suggests that it is native at least to the southernmost counties of the Rio Grande valley, where it is essentially continuous with the Mexican distribution, and possibly as far north as Austin (Travis County) along the eastern edge of the Edwards Plateau. Occurrences westward, eastward, and northward apparently are more recently adventive. Label observations for a 1930 collection from Bell County (*Wolff 2203*, TEX) note that the species was "gradually moving N from S Texas, possibly through transfer of sod." Shinners (1958) noted that it occurred in Dallas as a lawn weed in St. Augustine grass sod.

***Calyptocarpus vialis* in the USA outside of Texas**.

Outside of Texas, Straggler Daisy has been recorded from **New Mexico** (first report by Spellenberg & Mahrt 1991; Dona Ana Co., collected in 1988 and 2004) and **Arizona** (SEINet 2011; Maricopa Co., collected in 1984 and 2006). In both states, it grows as a lawn weed — it was noted as escaped in Arizona after being brought in with cultivated plants. Inclusion of California in its naturalized range apparently is based on an explicitly cultivated specimen from the University of California-Riverside Botanical Garden in Riverside County (see SEINet 2011).

Eastward from Texas, Straggler Daisy occurs across the Gulf states from **Louisiana** and **Arkansas** through **Mississippi**, **Alabama**, and **Georgia** to **Florida** and **South Carolina** (USDA, NRCS 2011; Weakley 2011; Wunderlin & Hansen 2011). Small (1933) knew it only from Texas and Louisiana, but by 1980 Cronquist (1980) described it as a "Tropical American weed, occasionally introduced in disturbed sites in our coastal states, as in SC, Fla, Ala, and La." Collections from 1931, 1936, and 1937 in Orleans, St. Mary, and Terrebonne parishes, respectively, of southeastern Louisiana indicate that it was established relatively early in that area. Whether it arrived there with horticultural stock from south Texas or from Mexican localities might potentially be determined by molecular study. Other Louisiana collections have been made after 1965. It was collected in Little Rock, Arkansas, as a lawn weed in 1971 (*H.R. Hurst s.n.*, UARK). The oldest collections from Florida were made in major urban areas (Leon Co. 1955, Miami-Dade Co. 1946, Palm Beach Co. 1962); others have been made since 1965. A record for South Carolina is shown by the PLANTS Database (USDA, NRCS 2011; based on the distribution statement by Cronquist 1980), but *Calyptocarpus vialis* is not included in the South Carolina Plant Atlas (A.C. Moore Herbarium 2011).

Straggler Daisy was documented by a 1972 collection in **Illinois** as an apparently naturalized introduction: DeKalb Co., adventive in perennial border in gardens of a DeKalb City residence, where 'it has persisted through 3 growing seasons,' 5 Oct 1972, *Sorensen 7264* (MOR digital image!, VPlants 2011).

***Calyptocarpus vialis* in Mexico and elsewhere**.

Calyptocarpus vialis apparently is native mostly to eastern states of Mexico — Oaxaca north of the Isthmus of Tehuantepec to Puebla, Veracruz, Hidalgo, Querétaro, Guanajuato, San Luis Potosi, Tamaulipas, Nuevo León, and Coahuila (Map 2). The species has apparently recently spread westward into Jalisco and Michoacan (McVaugh 1984) and sporadically into Durango and Sonora (CONABIO/REMIB 2011; SEINet 2011). The occurrence in Guerrero also may be adventive (Atoyac, 1937, *Hinton 10969*, MO digital image!).

The disjunct localities in Yucatan seem likely to be from naturalized plants, as well as those in the West Indies — in Cuba (Alain 1962), Hispaniola (Dominican Republic, Liogier 1966), the Bahamas (Turner 1982). As noted, however, by McVaugh and Smith (1967, p. 271): "We have not seen any Cuban collections collected before 1900, and it is conceivable that the species has been introduced into Cuba within historic time, but it should be remembered that numerous species in various plant families have similar (and presumably native) ranges that include eastern Mexico, Yucatan, and Cuba, but not the rest of the Antilles."

Further distant, *Calyptocarpus vialis* is naturalized in Australia, Taiwan, and Hawaii (Peng & Kao 1984; see Randall 2007 for other references).

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LITERATURE CITED

A.C. Moore Herbarium. 2011. South Carolina Plant Atlas. Department of Biological Sciences, University of South Carolina, Columbia. <http://cricket.biol.sc.edu/acmoore/scplantatlas.html>

Alain, Hno. [E.E. Liogier]. 1962. Flora de Cuba, Tomo V. Editorial Universitaria, Univ. de Puerto Rico, Rio Piedras.

CONABIO/REMIB. 2011. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad: Nuevo Portal, Biodiversidad Mexicana. The World Biodiversity Information Network (REMIB) <http://www.conabio.gob.mx/remib_ingles/doctos/remibnodosdb.html?>

Correll, D.S. and M.C. Johnston. 1970. Manual of the Vascular Plants of Texas. Texas Research Foundation, Renner, Texas.

Cronquist, A. 1980. Vascular Flora of the Southeastern United States. Volume 1, Asteraceae. Univ. of North Carolina Press, Chapel Hill.

Lady Bird Johnson Wildflower Center. 2011. Native Plant Database. Univ. of Texas, Austin. <http://www.wildflower.org/>

Liogier, A.H. 1966. La Flora de la Española VIII. San Pedro de Macorís, R. D.

McVaugh, R. 1984. Flora Novo-Galiciana. Volume 12, Compositae. Univ. of Michigan Press, Ann Arbor.

McVaugh, R. and N.J. Smith. 1967. *Calyptocarpus vialis* and *C. wendlandii* (Compositae). Brittonia 19: 268–272.

Nash, D.L. and L.O. Williams. 1976. Flora of Guatemala. Part XII. Vernonieae, Astereae, Inuleae, Heliantheae, Anthemideae, Cynareae, Mutisieae, Cichorieae. Fieldiana: Bot. 24, XII: 1–603.

Peng, C.I. & M.T. Kao. 1984. *Calyptocarpus vialis* Less. (Asteraceae), a newly naturalized weed in Taiwan. Bot. Bull. Acad. Sin. 25: 171–176.

Randall, R. 2007. Global Compendium of Weeds. Website. <http://www.hear.org/gcw/>

Schlechtendal, D.F.L. 1834. De plantis Mexicanis a G. Schiede M. Dre. collectis nuntium adfert D.F.L. de Schlechtendal. Linnaea 9: 262–272.

SEINET. 2011. Southwest Environmental Information Network. Managed at Arizona State Univ., Tempe. <http://swbiodiversity.org/seinet/index.php>

Shinners, L.H. 1958. Spring Flora of the Dallas-Fort Worth Area, Texas. Published by the author, Dallas, Texas.

Small, J.K. 1933. Manual of the Southeastern Flora. Univ. of North Carolina Press, Chapel Hill.

Solbrig, O.T., D.W. Kyhos, M. Powell, and P.H. Raven. 1972. Chromosome counts in the Compositae VIII: Heliantheae. Amer. J. Bot. 59: 869–878.

Spellenberg, R. and M. Mahrt. 1991. Noteworthy collections: New Mexico. Madrono 38: 298–301.

Strother, J.L. 1991. Taxonomy of *Complaya*, *Elaphandra*, *Iogeton*, *Jefea*, *Wamalchitamia*, *Wedelia*, *Zexmenia*, and *Zyzyxia* (Compositae–Heliantheae–Ecliptinae). Syst. Bot. Monogr. 33: 1–111.

Strother, J.L. 2006. *Calyptocarpus* (Asteraceae: Heliantheae). Pp. 133, *in* Flora of North America North of Mexico, Vol. 21. Oxford Univ. Press, New York.

Turner, B.L. 1982. Asteraceae. Pp. 1438–1553, *in* D.S. Correll and H.B. Correll. Flora of the Bahama Archipelago (Including the Turks and Caicos Islands). J. Cramer, Vaduz.

Turner, B.L., W.L. Ellison, and R. King. 1961. Chromosome counts in the Compositae IV. North American species with phyletic interpretations. Amer. J. Bot. 48: 216–223.

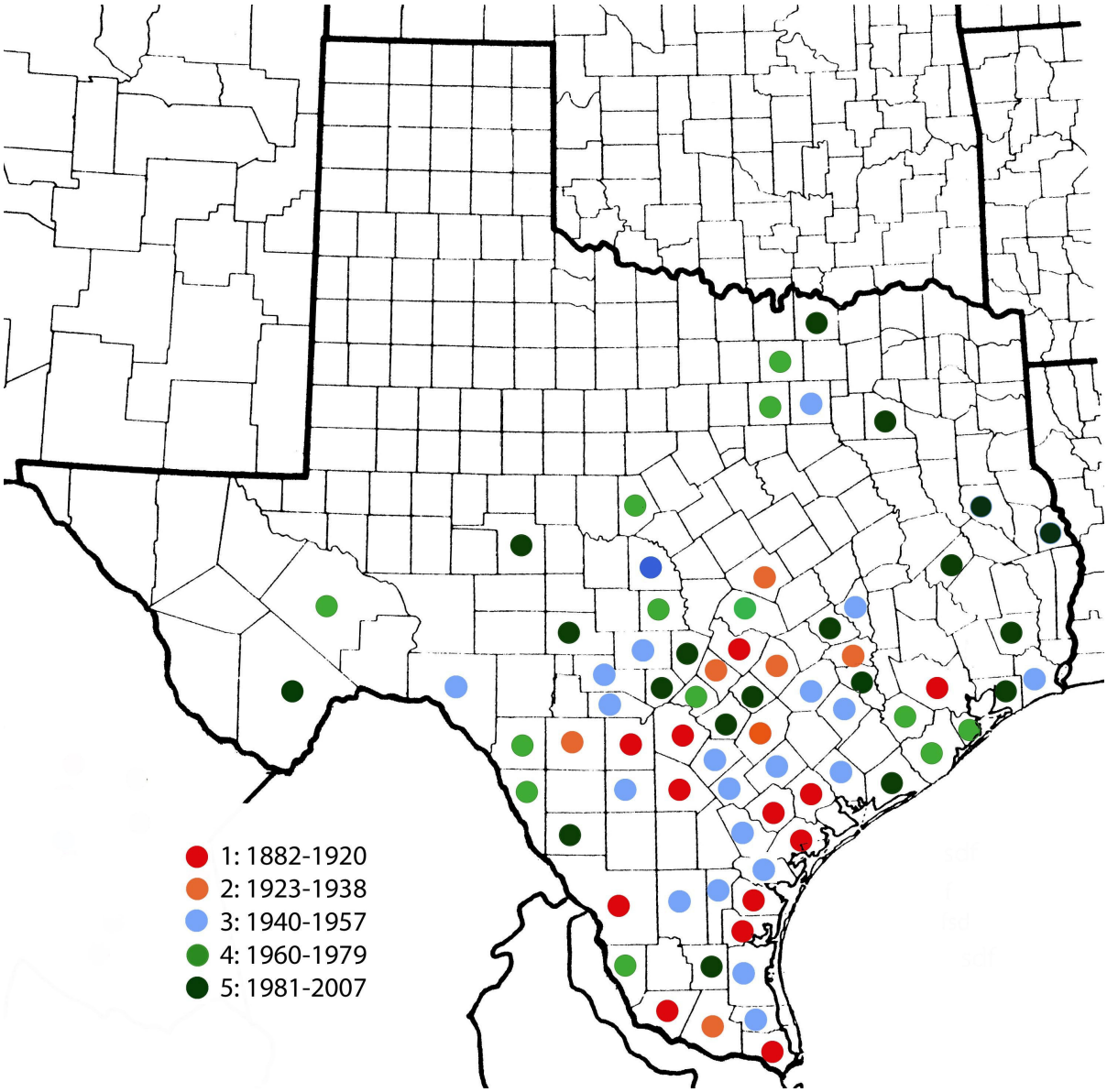
Turner, B.L., H. Nichols, G. Denny, and O. Doron. 2003. Atlas of the Vascular Plants of Texas. Vol. I–Dicots. Sida, Bot. Misc. 24, 1 and 2.

USDA, NRCS. 2011. The PLANTS Database. National Plant Data Team, Greensboro, North Carolina. <http://plants.usda.gov> Accessed June 2011.

VPlants. 2011. The vPlants Project. A Virtual Herbarium of the Chicago Region. <http://www.vplants.org>

Weakley, A.S. 2011. Flora of the Southern and Mid-Atlantic States. Working draft of 15 May 2011. Univ. of North Carolina Herbarium (NCU), Chapel Hill. <http://www.herbarium.unc.edu/WeakleyFlora2010Mar.pdf>

Wunderlin, R.P. and B.F. Hansen. 2010. Atlas of Florida Vascular Plants. [S.M. Landry and K.N. Campbell (application development), Florida Center for Community Design and Research] Inst. for Systematic Botany, Univ. of South Florida, Tampa. <http://www.plantatlas.usf.edu/>



Map 1. Distribution of *Calyptocarpus vialis* in Texas, indicating the date of earliest collection in each county. Ranking of dates is as shown in Table 1. Early collections from Rio Grande counties north to at least Travis County and the apparently continuous distribution northward from Mexico (Map 2) suggest that southern to central Texas is part of the native range of the species.

Table 1. USA counties in which *Calyoptocarpus vialis* has been documented, with the earliest date of collection for each county and ranking (1–5) of date (see Map 1).

TEXAS

Atascosa 1916	1	Fort Bend 1965	4	Matagorda 1983	5
Austin 2005	5	Frio 1944	3	Maverick 1964	4
Bandera 1953	3	Galveston 1974	4	Medina 1884	1
Bastrop 1928	2	Goliad 1900	1	Nacogdoches 2011	5
Bee 1948	3	Gonzales 1926	2	Nueces 1905	1
Bell 1930	2	Grayson 1982	5	Pecos 1974	4
Bexar 1882	1	Grimes 2005	5	Refugio 1915	1
Blanco 1995	5	Guadalupe 1991	5	Sabine 2001	5
Brazoria 1968	4	Hardin 2004	5	San Patricio 1950	3
Brazos 1949	3	Harris 1915	1	San Saba 1950	3
Brewster 1968	5	Hays 1930	2	Starr 1905	1
Brooks 1994	5	Hidalgo 1932	2	Tarrant 1979	4
Brown 1965	4	Jackson 1943	3	Tom Green 1994	5
Burleson 1979	4	Jefferson 1945	3	Travis 1914	1
Caldwell 1983	5	Jim Wells 1943	3	Trinity 2002	5
Cameron 1904	1	Karnes 1952	3	Uvalde 1934	2
Chambers 1990	5	Kendall 1986	5	Val Verde 1947	3
Colorado 1953	3	Kenedy 1953	3	Van Zandt 2000	5
Comal 1974	4	Kerr 1945	3	Victoria 1901	1
Dallas 1952	3	Kimble 2007	5	Washington 1938	2
Denton 1976	4	Kinney 1961	4	Webb 1913	1
DeWitt 1957	3	Kleberg 1920	1	Willacy 1951	3
Dimmit 2001	5	Llano 1973	4	Williamson 1966	4
Duval 1944	3	McLennan 1972	4	Wilson 1949	3
Fayette 1950	3	Madison 1998	5	Zapata 1963	4

ALABAMA

Houston 1994	5
Mobile 1974	4
Tuscaloosa 1955	3

ARKANSAS

Pulaski 1971	4

FLORIDA

Alachua 1965	4	Highlands 1996	5	Miami-Dade 1946	3
Broward 1999	5	Hillsborough 1985	5	Monroe 2003	5
Citrus 1972	4	Indian River 2001	5	Palm Beach 1962	4
Collier 2000	5	Jefferson 2006	5	Pasco 2001	5
Escambia 1969	4	Lake 1981	5	Pinellas 1979	4
Franklin 1986	5	Lee 1985	5	Polk 1955	3
Gadsden 1969	4	Leon 1955	3	Sarasota 2003	5
Hendry 2006	5	Manatee 1977	4	Volusia 1990	5
Hernando 1979	4	Marion 1985	5		

GEORGIA

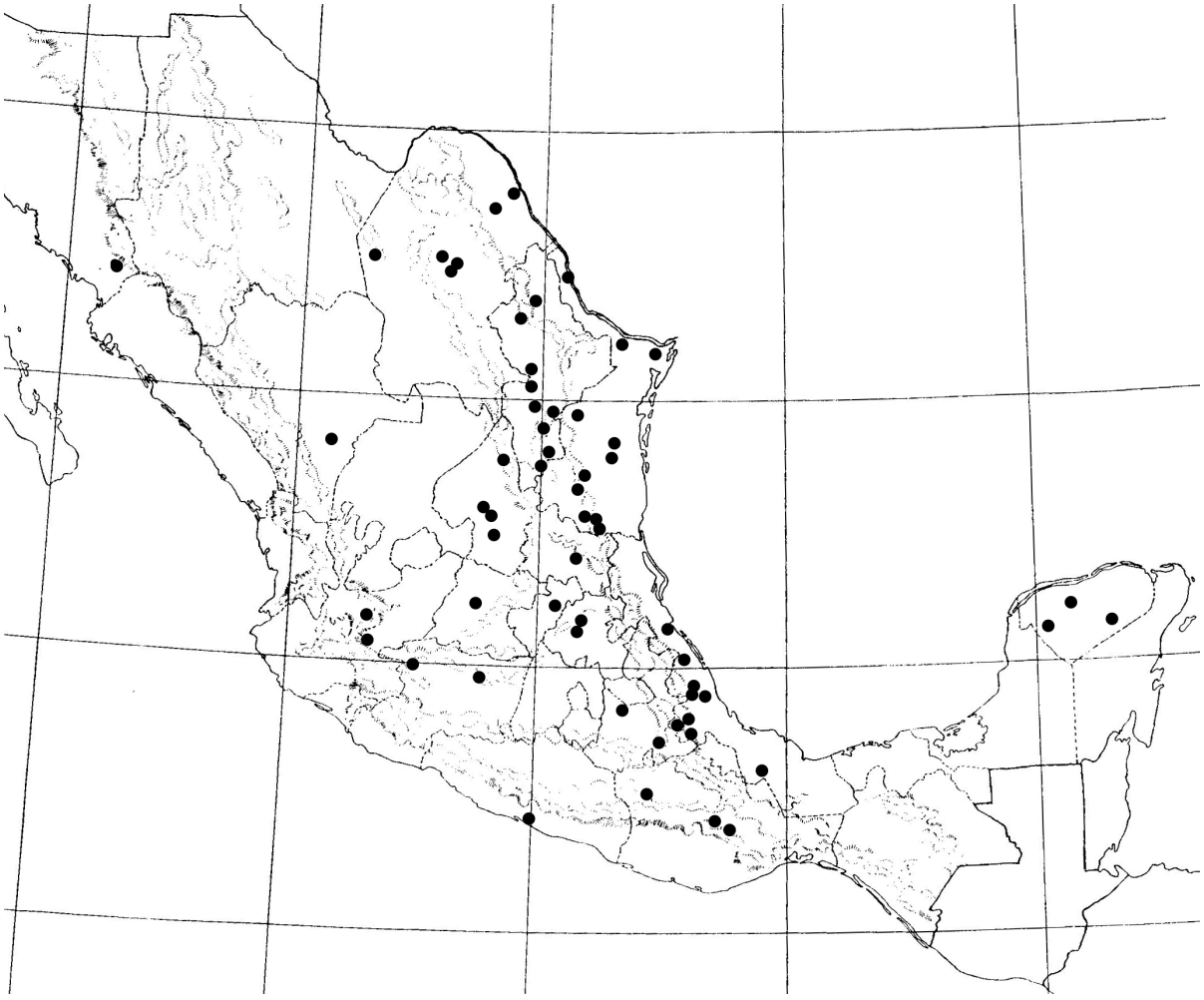
Grady 1969	4

LOUISIANA

Allen 1982	5	Jefferson Davis 1986	5	St. Landry 1971	4
Assumption 1966	4	Lafayette 1957	3	St. Mary 1936	2
Caddo 1973	4	Livingston 1974	4	St. Tammany 1969	4
Calcasieu 1966	4	Ouachita 1973	4	Terrebonne 1937	2
East Baton Rouge 1970	4	Orleans 1931	2	Washington 1972	4
Iberia 1962	4	St. Charles 1969	4		
Iberville 2004	5	St. John the Baptist 1992	5		

MISSISSIPPI

Forrest 1969	4	Harrison 1966	4	Stone 1972	4
Hancock 1994	5	Pike 1966	4	Wilkinson 1989	5



Map 2. Distribution of *Calyptocarpus vialis* in Mexico, based mostly on records from TEX-LL and XAL (via CONABIO/REMIB 2011). Localities in Sonora, Durango, Jalisco, Michoacan, Yucatan, and perhaps Guerrero probably are from plants naturalized outside of their native range (see comments in text).