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Sphenoclea zeylanica (Sphenocleaceae) in North America—Dispersal, Ecology, and Morphology

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ABSTRACT *Sphenoclea zeylanica* is described and its phenology, habitat, and distribution documented in North America, based upon data from voucher specimens and original field observations. The species, an exotic native to Asia, has been in the United States since the mid-1800s, with the earliest records from Louisiana where it was most likely introduced as a contaminant of rice seed. Its distribution and spread are linked strongly with cultivation of rice, and we document its dispersal in the United States over the past 150 years with the postbellum expansion of rice agriculture in the Mississippi River Valley. Photographs and scanning electron micrographs illustrate structural details of inflorescence, flower, fruit, and seed.

Key words: Dispersal, gooseweed, morphology, *Sphenoclea*, Sphenocleaceae, taxonomy.

INTRODUCTION *Sphenoclea zeylanica* Gaertner is widely distributed aquatic weed in tropical to warm temperate areas around the world. The species is native to the Eastern Hemisphere, ranging from China southward into Indonesia, the Philippines, Malaysia, westward into India, Pakistan, Sri Lanka, Africa, and Madagascar (Holm et al. 1977, Cramer 1983, Jafri 2001, Hong Deyuan and Turland 2011). It has been introduced to northern South America, Central America, the Caribbean Islands, and the southeastern United States (Holm et al. 1977, 1979, Liogier 1995, Wilbur 2001, Tropicos.org 2013).

The systematic placement of *Sphenoclea* has long been problematic. Many authors have included the genus within Campanulaceae (e.g., Small 1933, Radford et al. 1968, Correll and Johnston 1970, Thorn 1976, Ward 1978, Godfrey and Wooten 1981, Hatch et al. 1990, Wunderlin and Hansen 2011). De Candolle (1839) contrasted Sphenocleaceae with Campanulaceae, citing the beardless stigma, the anthers inserted on the corolla, and the reduced fruit “œconomia fructus” of Sphenocleaceae; he also suggested a possible relationship with Portulacaceae or with *Samolus* (Primulaceae). The protologue of *Sphenoclea dalzielii* N.E. Brown (Bull. Misc.

Inform. Kew 1912: 276–277, 1912) placed the species in Campanulaceae and includes comments suggesting a closer resemblance of *Sphenoclea* to *Phytolacca* than to Campanulaceae. In their description of its anther development and embryology, Kausik and Subramanyam (1946) put *S. zeylanica* in Campanulaceae. Airy Shaw (1948), noting similarities with both Phytolaccaceae (habit, anatomy) and Primulaceae, treated *Sphenoclea* in monogeneric Sphenocleaceae. Cronquist (1981), citing similarities with Campanulaceae in embryology and palynology, maintained Sphenocleaceae while placing it in Campanulales. Rosatti (1986) provided an extensive summary of the taxonomic history of *Sphenoclea* and opted for Sphenocleaceae, citing numerous differences between *Sphenoclea* and Campanulaceae (e.g., presence of spicate inflorescences, circumscissile capsules, tetracyclic stomata, pericyclic stem sclerenchyma, cluster crystals, and absence of laticiferous phloem canals). Erbar (1995) provided an analysis of its floral development and noted the absence of a specialized mechanism for secondary pollen presentation in *S. zeylanica*—the presence of which is characteristic of the Campanulales–Asterales complex. Molecular data (Bremer et al. 2002) support treatment in Sphenocleaceae in Solanales of the Lamiiid clade (Angiosperm Phylogeny Group III [APG III] 2009).

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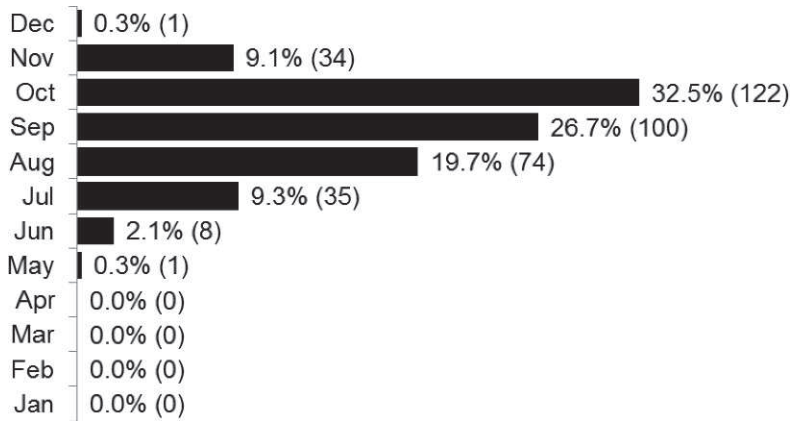


Figure 1. *Sphenoclea zeylanica* collecting events by month in the United States based on label data from voucher specimens (N = 375).

In the United States, *S. zeylanica* is commonly known as gooseweed, chickenspike, or piefruit (Godfrey and Wooten 1981, Diggs et al. 1999, Bryson and DeFelice 2009); see other vernacular names in Holm et al. (1977). It is an agricultural weed of rice (*Oryza sativa* L.) throughout the world (Holm et al. 1977, 1979, Rosatti 1986, Bryson and DeFelice 2009), and Cramer (1983) described it as a halophile. It causes yield losses as high as 45% (Ampong-Nyarko and De Datta 1991), and herbicide resistant biotypes of *S. zeylanica* have been reported in Asia (Itoh and Ito 1994). Although submergence reduced seed germination in *S. zeylanica*, a rate of >25% was observed in seeds submerged 20 cm (Pons 1982). Allelopathic compounds have been isolated (Hirai et al. 2000), and a root exudate is an

effective nematocide (Mohandas et al. 1981). Nascent shoots of *S. zeylanica* are consumed as a condiment of rice in Java, imparting a bitter flavor (Airy Shaw 1948).

Our purpose is to describe *S. zeylanica* based upon data from voucher specimens from throughout its range in the United States and from living plants observed in situ, and to document its distribution, naturalization, and dispersal in the United States, preliminary to its treatment in *Flora of North America* (Carter and Jones, forthcoming).

MATERIALS AND METHODS More than 600 voucher specimens of *S. zeylanica* were examined from the following herbaria: APCR, AUA, BAYLU, BRIT, CLEMS, ECON,

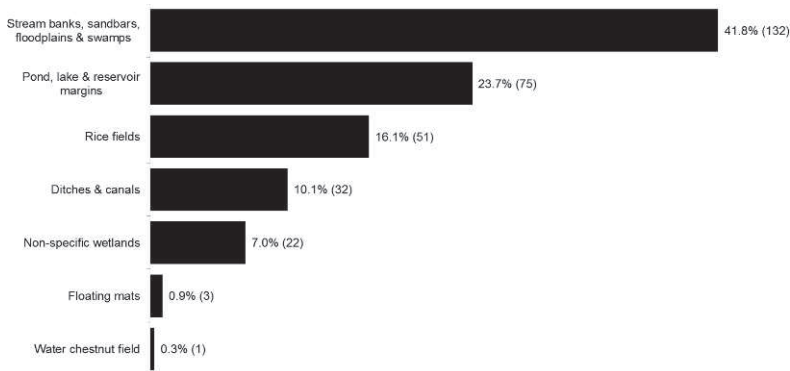


Figure 2. Percentages of *Sphenoclea zeylanica* habitats in the United States based on label data from voucher specimens (N = 316).

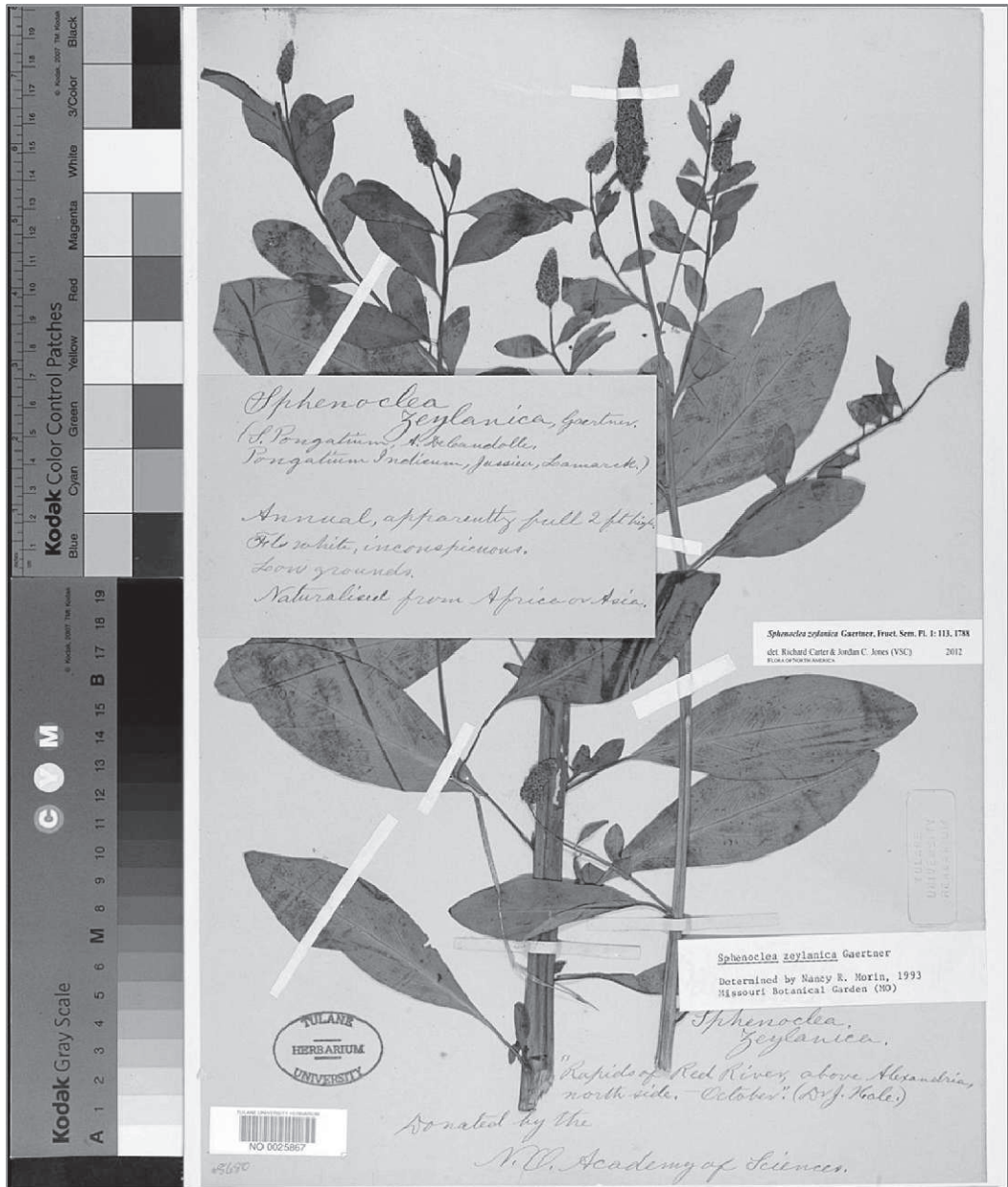


Figure 3. Earliest herbarium specimen of *Sphenoclea zeylanica* from the United States: Rapides Parish, Louisiana, ca. 1850, *J. Hale s.n.* (NO).

FLAS, FSU, GA, GH, HEND, LAF, LAMU, LL, LSU, LSUS, MCN, MISS, MMNS, MO, NCSC, NCU*, NLU*, NO, NY, ODU, OKL, SAT, SMU, STAR*, TAES, TEX, TROY, UARK, UNA, US, USCH, USMS, VDB, and VSC (*virtual loan of specimen images). Herbarium acronyms follow Thiers (2013). Morphometric data were taken

from specimens to describe the species, and geographical, habitat, and phenological data were transcribed from labels. Field observations, photographs, and voucher specimens were made by R. Carter in Louisiana and Texas during summer 2012.

Phenology and Habitat

In order to quantify timing of flowering and fruiting in *S. zeylanica*, voucher–specimen-collecting events were grouped by month. Nearly all vouchers were collected in fertile condition and, because of the acropetal development of the indeterminate inflorescence, nearly all had both flowers and fruits. Therefore, it was not practical to distinguish individuals as either flowering or fruiting. Habitat data from voucher specimens were classified and graphed to determine relative proportions of specimens per habitat type.

Introduction, Dispersal, and Distribution

To determine the earliest date of discovery and patterns of dispersal, collection dates from specimen labels were grouped into classes and used to map county distributions at 25-year intervals. Historical data on annual rice production by US county (USDA 2013) were used to investigate the relationship between dispersal patterns of *S. zeylanica* and the expansion of rice agriculture.

Morphology

Observations and measurements of anatomical features were made from North American herbarium specimens of *S. zeylanica*. Light microscopy and scanning electron microscopy (SEM) were used to analyze finer details of inflorescence morphology, including relationships of floral buds, bracts, and bracteoles, and structure of fruits and seeds. A representative portion of an air dried inflorescence was excised from *Carter 20525* (VSC) and mounted directly on a SEM stub. The sample was viewed directly on a JEOL 6480LV Scanning Electron Microscope (JEOL USA, Inc., Peabody, MA), using an accelerating voltage between 1.8 and 2.3 kV. After initial observation, further dissection was made to reveal the inner capsule morphology and contents. All floral tissue was examined uncoated at low kV. Seeds were mounted and coated with Au/Pd in a Denton Desk IV Sputter Coater (Denton Vacuum, LLC, Moorestown, NJ) and viewed at 10kV accelerating voltage.

RESULTS AND DISCUSSION

Phenology

The flowering/fruiting period of *S. zeylanica* in the United States lasts for a period of six months until plants are killed by frost. Percentages of

collecting events by month exhibit a normal distribution (Figure 1). October has the greatest percentage of collecting events (32.5%, N = 122), and May and December the lowest (0.3%, N = 1). The earliest flowering date recorded for the United States is May 25, and the latest fruiting date is December 1. Collection dates of flowering and fruiting specimens of *S. zeylanica* from tropical regions were distributed more or less uniformly throughout the year.

Habitat

Specimens represented 384 distinct collecting events. About 84% (N = 321) had informative data with regard to wetland habitats. Some specimens lacked habitat descriptions, and others had only very general descriptions (e.g., “roadside”) that were uninformative. We did not assume that specimens from roadsides were collected in ditches, and these specimens were excluded from our analysis. However, if the label explicitly indicated the specimen was collected at the intersection of a road and stream, then we assumed it was collected in the floodplain of the stream.

Consistent with descriptions by others (e.g., Holm et al. 1977, Godfrey and Wooten 1981, Rosatti 1986), nearly all of the voucher specimens were collected in wetlands. The association of *S. zeylanica* as a weed of rice agriculture is well documented (e.g., Holm et al. 1977, Bryson and DeFelice 2009), and about 16% of the specimens we examined were from rice fields (Figure 2). However, most of the remaining specimens were from natural and disturbed wetland habitats. Thus, rice agriculture seems to have had a major influence on the distribution and dispersal of this aquatic weed in the United States, but other factors have also been important, for example, the use of rice to enhance wildlife habitat, transport by migrating waterfowl and other birds, and anthropogenic effects such as modification of natural wetlands and construction of roads and ditches. The pattern of seed germination (Pons 1982) and habitat indicate periodic inundation and recession are essential for *S. zeylanica* to thrive.

We document the following habitat types in Figure 2 in order from most common to least common: (a) stream banks, sandbars, floodplains and swamps; (b) pond, lake, and reservoir margins; (c) rice fields; (d) ditches and canals; (e) nonspecific wetlands; (f) floating mats; and

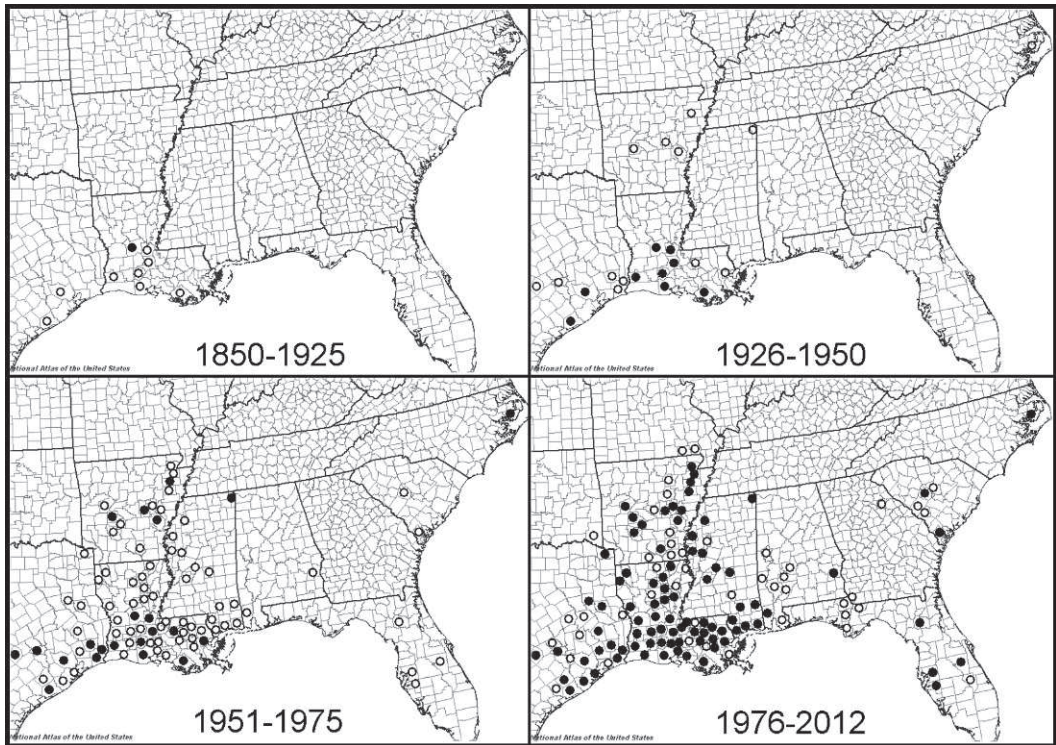


Figure 4. Incremental range expansion of *Sphenoclea zeylanica* in the southeastern United States after 1850, based on collection dates of herbarium voucher specimens: symbols represent earliest record from county or parish; closed circles show records at start of period; open circles show records added during period.

(g) water-chestnut fields. Percentages of the three most common habitat types are 42% (stream banks, sandbars, floodplains, and swamps); 24% (pond, lake, and reservoir margins); and 16% (rice fields).

Introduction, Dispersal, and Distribution

The earliest specimens of *S. zeylanica* from the United States were collected by Dr. Josiah Hale in central Louisiana along the Red River near

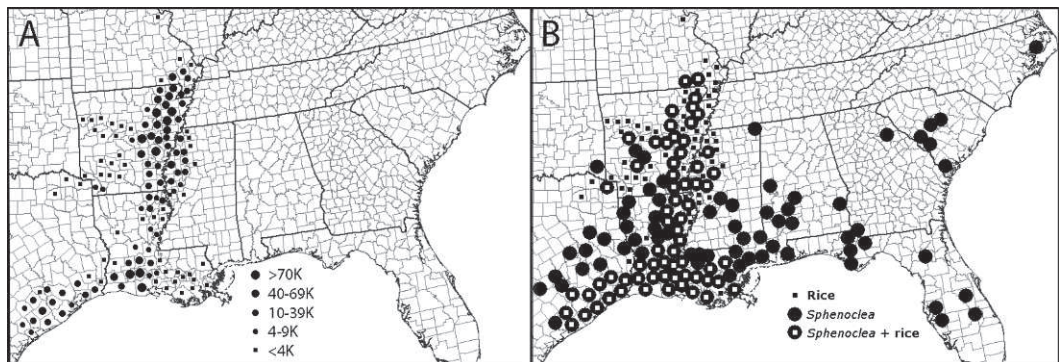


Figure 5. Rice agriculture and *Sphenoclea zeylanica*: A. Mean annual rice acreage by county based on USDA statistics 1954–2011 (USDA 2013). B. Distribution by county of rice agriculture based on USDA statistics 1954–2011 (USDA 2013) and *S. zeylanica* based on herbarium vouchers.

Table 1. Summary of major events, by state, relating to the dispersal of *Sphenoclea zeylanica* (*Sz*) and the establishment of rice agriculture

State	Earliest Voucher of <i>Sphenoclea zeylanica</i> (<i>Sz</i>)	Advent of Rice Agriculture	Notes
Louisiana	ca. 1850 <i>J. Hale s.n.</i> (NO)	1718 (Babineaux 1967)	1st United States <i>Sz</i> record; <i>Sz</i> likely dispersed as rice seed contaminant; subsequent dispersal by waterfowl and expansion of rice agriculture.
Texas	1918 <i>G.L. Fisher 160</i> (US)	1860 (Dethloff 2013)	Earliest <i>Sz</i> record from Matagorda County in major rice-producing area; <i>Sz</i> likely dispersed from Louisiana as rice seed contaminant.
Arkansas	1923 <i>V.H. Young s.n.</i> (UARK)	1904 (Gates 2005)	Earliest <i>Sz</i> record from Lonoke County rice field; <i>Sz</i> likely dispersed from Louisiana as rice seed contaminant.
Mississippi	1944 <i>E.A. Philen & W.B. Reeves s.n.</i> (NCSC, NY, SMU)	1948 (Miller et al. 2008)	Earliest <i>Sz</i> record from Pickwick Reservoir completed in 1938 (TVA 2013), in NE Mississippi, well outside of rice-growing region in Delta counties along Mississippi River; initial <i>Sz</i> dispersal likely associated with (a) construction of reservoir, (b) postconstruction use of rice along reservoir to enhance wildlife habitat, or (c) transport by waterfowl; <i>Sz</i> records dating to 1960 (<i>H.J. Jacob 1390</i> , NCU), from Delta counties of northwest Mississippi, likely associated with expansion of rice agriculture.
North Carolina	1948 <i>R.R. Rudolph s.n.</i> (US)	1709 (Carney 2002)	Earliest <i>Sz</i> record from Mattamuskeet National Wildlife Refuge (NWR), long after postbellum decline in rice agriculture on Eastern Seaboard; plausibly, <i>Sz</i> dispersed as rice seed contaminant associated with enhancement of waterfowl habitat (cf. Savannah River NWR, South Carolina).
South Carolina	1956 <i>H.E. Ahles 18175</i> (GA, GH, NCU, NY)	1690 (Carney 2002)	Earliest <i>Sz</i> record from rice field, Savannah River NWR, nearly a century after rapid postbellum decline in rice agriculture; <i>Sz</i> likely dispersed as contaminant of rice seed from Mid-South.
Florida	1958 <i>A. Laessle & E. West s.n.</i> (FLAS, FSU, US)	1951 (Green 1953)	Earliest <i>Sz</i> record from Everglades region of south Florida; <i>Sz</i> likely dispersed as contaminant of rice seed from Mid-South; later <i>Sz</i> records dating to 1977, from Apalachicola River and Lake Seminole in north Florida (Calhoun, Gadsden, Jackson counties), likely dispersed by waterfowl from peninsular Florida, Alabama, Mississippi, or Louisiana.
Alabama	1972 <i>J.H. Hagan 120</i> (AUA, VDB)	Not applicable	Earliest <i>Sz</i> record from Eufaula NWR along Lake Seminole; most vouchers from reservoirs of Alabama and Tombigbee rivers; <i>Sz</i> likely dispersed by waterfowl or as rice seed contaminant associated with enhancement of waterfowl habitat.
Georgia	1981 <i>S.B. Jones 23671</i> (GA)	1750 (Smith 1985, Carney 2002)	Earliest <i>Sz</i> record from water chestnut field, more than a century after postbellum decline in rice agriculture; <i>Sz</i> likely dispersed by waterfowl from nearby populations in South Carolina or with water chestnut agriculture.
Oklahoma	1983 <i>M. Cooper 1521</i> (SMU)	Not applicable	Earliest <i>Sz</i> record from southeastern Oklahoma along Red River; <i>Sz</i> likely dispersed by migrating waterfowl from adjacent rice-growing counties of northeast Texas.

Table 1. Continued

State	Earliest Voucher of <i>Sphenoclea zeylanica</i> (Sz)	Advent of Rice Agriculture	Notes
Missouri	1992 <i>S. Hudson s.n.</i> (MO)	1911 (Guethle 2004)	Earliest Sz record from southeast Missouri; Sz likely dispersed with expansion of rice agriculture from adjacent northeast Arkansas; although rice agriculture was established much earlier (1911), the total area was only a few thousand acres until 1973 (Guethle 2004).

Alexandria. These undated specimens (NO-0025867, US-721672 *ex* Herb. C. Mohr, probable duplicates at GH and NY; Figure 3) were in Hale's possession before he died in 1856 (Ewan 1977, A. Bradburn, pers. comm.). Since its initial detection in Louisiana ca. 1850, *S. zeylanica* has spread from Louisiana westward into southeastern Texas, northward through Arkansas and into southeastern Missouri, and sporadically eastward into Florida, Georgia, and the Carolinas. When mapped incrementally from 1850 to present and compared with the distribution of rice cultivation, the dispersal pattern of *S. zeylanica* suggests a correlation with the expansion of rice agriculture in the Mid-South (Figures 4 and 5). Prior to our research, the earliest record of *S. zeylanica* in the United States was cited as 1898 (Rossati 1986). The date of initial detection of *S. zeylanica* in the United States is now known to be about 50 years earlier than previously thought.

Table 1 summarizes the major events (by state) that relate to the establishment of rice agriculture and the dispersal of *S. zeylanica*. Data in Table 1 on the initial introduction of rice agriculture are derived from a variety of published sources and are not always consistent with USDA (1923), the latter indicating rice production in 1859 on a limited scale (<1 million lbs) in Mississippi, Alabama, Florida, Tennessee, Texas, and Arkansas, in addition to substantial production in South Carolina (>119 million lbs), Georgia (>52 million lbs), North Carolina (>7 million lbs), and Louisiana (>6 million lbs). The more specific published records are likely more reliable indicators of sustained rice production at a relatively high level.

Sphenoclea zeylanica is an occasional-to-common weed of rice fields and other wet disturbed sites in southern Louisiana and southeastern Texas, and it occurs sporadically in other southeastern states. The unintentional

dispersal of small seeds of many other species as contaminants of cereal grains and other agricultural seeds is well documented (Ridley 1930). Given its tiny seeds and frequent association with rice agriculture, *S. zeylanica* was probably first introduced into Louisiana from Asia as a contaminant of rice seed, as has been the case with many other weeds of Asian origin that are now established in the southeastern United States (e.g., Bryson and Carter 2008). Alternatively, it could have been dispersed to North America by migratory birds from South America where rice agriculture was introduced from West Africa nearly a century earlier (Carney 1998).

Label data on several specimens at US indicate *S. zeylanica* was first officially recognized as a weed of rice agriculture in Louisiana about 1903 (e.g., "a recently introduced, threatening weed in rice fields in ... southwestern Louisiana"; Aug 1903, *W.R. Dodson s.n.*, US-434993). Rice was cultivated in Louisiana in the lowlands along the Mississippi River as early as 1718 and was subsequently grown for "home use" by Acadian (Cajun) settlers (Babineaux 1967). *Sphenoclea zeylanica* was likely introduced in Louisiana as a contaminant of rice seed early in the 18th century. The expansion of rice agriculture and zoochory via migrating waterfowl and other birds probably account for the subsequent dispersal of *S. zeylanica* in the southeastern United States. Figure 4 traces the dispersal of *S. zeylanica* in the United States, from its introduction in the mid-19th century to present, and its distribution parallels rice agriculture as documented in Figure 5. Rice agriculture was first established in the American Colonies in 1690 in South Carolina and soon spread to Georgia and North Carolina (Smith 1985, Carney 2002); however, the earliest herbarium records of *S. zeylanica* from the Eastern Seaboard date to the mid-1900s. The possibility

that *S. zeylanica* was introduced there during the Colonial Period and went undetected is unlikely given (a) the absence of vouchers, despite the early history of botanical exploration, and (b) the absence of any reference to it by Elliott (1821–1824) in his early flora of South Carolina and Georgia that included 16 citations of weeds and associates of rice agriculture.

Although Holm et al. (1977, 1979) mapped *S. zeylanica* as a rice weed in California, no voucher specimen has been found to support this distribution, nor was the species included in the California flora (Baldwin et al. 2012), and agricultural scientists specializing in rice production in California have confirmed the apparent absence of *S. zeylanica* there (James Hill, Don Seaman, Albert Fischer, pers. comm.).

Hypothetical Dispersal Pathways

Although we cannot rule out multiple introduction events of *S. zeylanica* into the United States from Asia or tropical America, we think the probability of this is low. Thus, we assume *S. zeylanica* dispersal events within the United States are intrinsic, since the founding one in Louisiana ca. 1850. We recognize three phases in the dispersal of *S. zeylanica* in the United States, following its introduction.

Phase I: Pre-1945, Mid-South. Phase I is primarily centered on the expansion of rice agriculture in the Mid-South. The first *S. zeylanica* record from Texas (6 Aug 1918, *G.L. Fisher 160*, US) follows the expansion of rice agriculture from Louisiana (1860). Likewise, the first *S. zeylanica* record from Arkansas (*V.H. Young s.n.*, UARK) was collected in a rice field, following the introduction of rice agriculture from adjacent Louisiana (1904). In Mississippi, the pattern of introduction of *S. zeylanica* is complex, with the first record (1944) from the Pickwick Reservoir in northeastern Mississippi, not from the Delta region along the Mississippi River where rice agriculture was introduced in 1948.

Phase II: Post-1945 Eastern Seaboard.

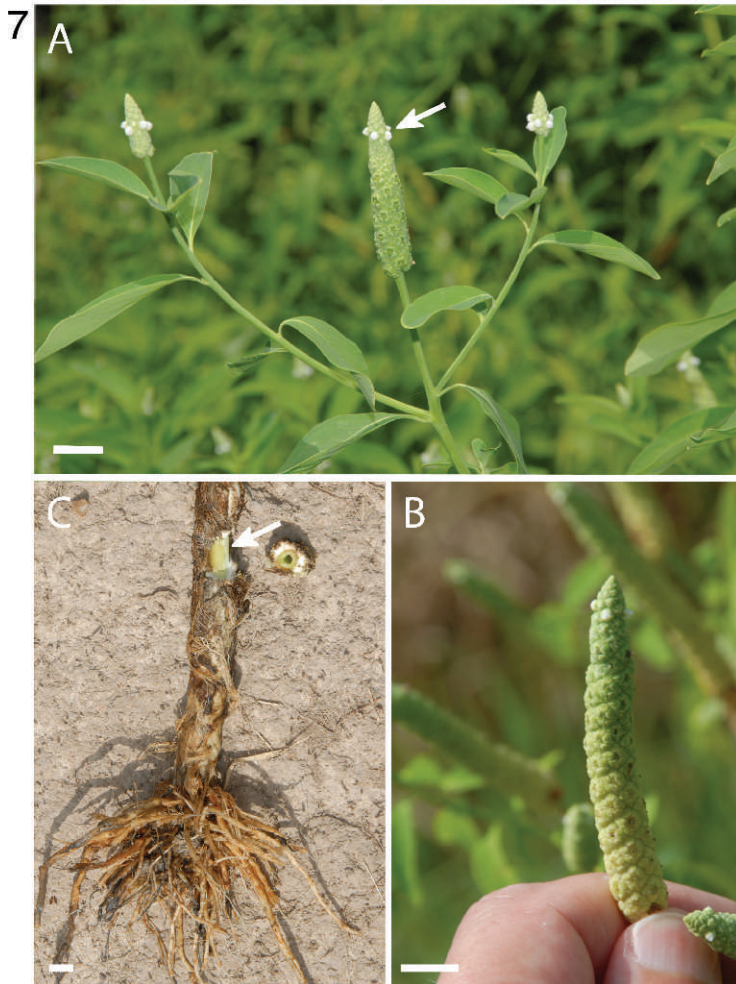
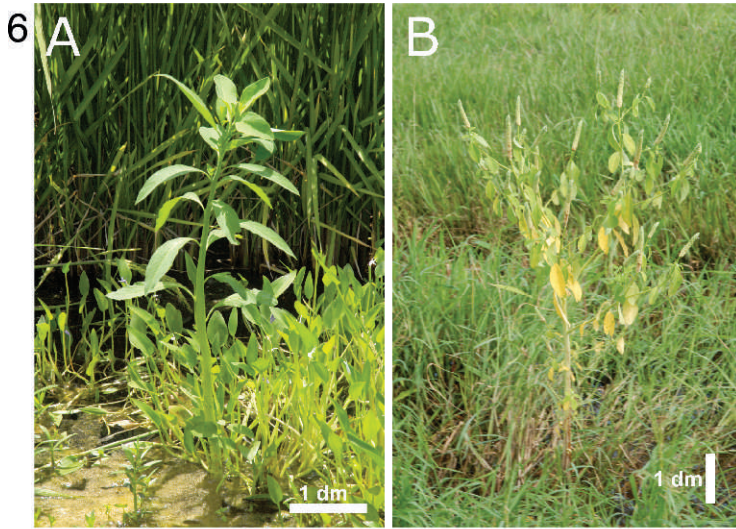
Phase II involves long-distance dispersal events from the Mid-South to the Eastern Seaboard related to use of rice in waterfowl enhancement projects at wildlife refuges. Although evidence about the use of rice to enhance waterfowl habitat is lacking, the first North Carolina *S. zeylanica* record (1944) at Mattamuskeet NWR likely resulted from the post-Colonial introduction and use of rice seed from the Mid-South for habitat enhancement (cf. following discussion on South Carolina). The first South Carolina record (1956) is from a rice field at Savannah River NWR, which is likely associated with the post-Colonial introduction of rice from the Mid-South to enhance waterfowl habitat. The first Florida record (1958) follows the establishment of rice agriculture in the Everglades region (1951).

Phase III: Post-1970, Alabama, Georgia, Oklahoma, Missouri.

Phase III involves mostly short-distance dispersal events: dispersal by waterfowl or other birds, the introduction of rice seed from the Mid-South for habitat enhancement at wildlife refuges, and the expansion of rice agriculture in the Mid-South. Most specimens from Alabama are from reservoirs along the Alabama and Tombigbee rivers, and the earliest report (1972) is from Eufaula NWR. Thus, two possibilities explain the dispersal of *S. zeylanica* there: (a) use of rice seed from the Mid-South to enhance wildlife habitat or (b) epizoid dispersal from populations in the Mid-South. The earliest *S. zeylanica* report from Georgia (1981) is from a water chestnut field in the northeastern part of the state, which suggests (a) contamination of water chestnut stock with *S. zeylanica* seeds or (b) epizoid transport by waterfowl from populations in adjacent South Carolina. The earliest Oklahoma *S. zeylanica* report (1983) is from southeastern Oklahoma across the Red River from rice-growing counties in adjacent northeastern Texas. Since little, if any, rice has been cultivated in Oklahoma, transport by waterfowl is the most likely explanation. Finally, the earliest Missouri

Figure 6. *Sphenoclea zeylanica* habitat and habit: A. Young plant in rice field, rice in background, *Heteranthera limosa* (Sw.) Willd. in foreground (*Carter 20641* [VSC], Chambers County, Texas). B. Mature plant with fruiting spikes, roadside ditch (*Carter 20525* [VSC], Acadia Parish, Louisiana).

Figure 7. *Sphenoclea zeylanica*: A. Inflorescence habit; flowers (arrow). B. Spike. C. Plant base, showing stem c.s. and portion of stem with spongy cortex removed (arrow). Scale bars: 1 cm. *Carter 20643* (VSC), Chambers County, Texas (A); *Carter 20525* (VSC), Acadia Parish, Louisiana (B, C).



report (1992) is from a rice-growing county in southeastern Missouri adjacent to the Arkansas Rice Belt. Although rice agriculture was first introduced to Missouri in 1911, much earlier than *S. zeylanica* was detected there, the acreage devoted to rice production was very small (3,000–6,000 acres annually) before 1973 (Guethle 2004).

Sphenoclea zeylanica was likely introduced as a contaminant of rice seed well before its detection in the mid-1800s and is now widely established in the southeastern United States. Its dispersal is related, at least in part, to the postbellum expansion of rice agriculture in the Mid-South, and its occurrence in a variety of wetland habitats implicates other dispersal agents, including use of rice to enhance waterfowl habitat (cf. Ringelman 1990, Anonymous 2013a, 2013b), migration of waterfowl, and human activities such as dredging and road construction.

TAXONOMIC TREATMENT

Sphenoclea zeylanica Gaertner, Fruct. Sem. Pl. 1: 113. 1788.

TYPE: Sri Lanka "zeylonens", Tab. 24, Fig. 5 in Gaertner, Fruct. Sem. Pl. I (holotype).

Herbs annual, glabrous, 1.85–18.6 dm tall. **Roots** coarse, usually \pm white. **Stems** green, erect, mostly branched, hollow, flaccid, \pm terete, 2–10 mm wide at mid-stem, thicker below, often proximally spongy and rooting from the lower nodes where submerged. **Leaves** alternate, estipulate, petiolate, simple, venation pinnate; petioles 0.3–2.7 cm; blades elliptic to oblanceolate, 1.0–13.8 \times 0.3–5.7 cm, base cuneate, decurrent nearly to base of petiole, margins entire, often undulate, apex acute to rounded, sometimes mucronate. **Inflorescences** terminal or lateral spikes, dense (rachis hidden by flowers and fruits), acropetal, narrowly ovoid to cylindrical, 0.5–10.5 \times 0.3–1.3 cm, pedunculate; peduncles 0.4–10.3 cm; 1 small bract and 2 slightly smaller bracteoles subtending each flower; bracts greenish white, spatulate, base carinate, apex incurved, acuminate, \pm erose; bracteoles greenish white, spatulate, apex incurved, acute to rounded, \pm erose. **Flowers** sessile, epigynous, actinomorphic, bisexual. **Calyx** persistent, proximally connate, lobes 5, dark green with whitish margins, imbricate, connivent, broadly ovate to deltoid, 1.2–1.5 \times 1.5–1.8 mm, enlarging with fruit, obtuse to rounded, \pm erose. **Corolla**

caducous, proximally connate, white, short-tubular, 1.8–2.3 mm high, lobes 5, alternate with calyx lobes, oblong, 1–2 \times as long as the tube, obtuse to acute, \pm erose. **Stamens** 5, alternate with corolla lobes, adnate to corolla tube; filaments 0.1–0.2 mm; anthers \pm quadrate, ca. 0.5 \times 0.6 mm, 2-locular. **Gynoecium** syncarpous, carpels 2; ovary inferior, 2-locular; ovules numerous, anatropous, placentation axile; styles 0.3–0.4 mm; stigmas discoid-capitate, ca. 0.4 mm wide, depressed. **Capsule** circumscissile (pyxis), sessile, \pm obconic, proximally laterally compressed and wedge-shaped, 2–3 \times 3–4 mm, chartaceous, lustrous; lid (operculum) discoid, \pm flat, 3–4 mm wide, subcartilaginous, covered by persistent, \pm connivent, appressed calyx lobes. **Seeds** numerous, oblong, 0.4–0.5 mm, tan, \pm lustrous, longitudinally striate, alveolate; endosperm cellular; embryos straight, filling the seed. **n** = 12 (Lewis et al. 1962), **2n** = 24 (Rosatti 1986). Figures 6–8.

Phenology. Flowering and fruiting (late May) June through November (early December) in the United States.

Habitat. Rice fields, ditches, shallow margins of ponds and lakes, stream banks, sandbars, wet disturbed soils, often emergent, 0–300 m.

Distribution. Tropical, subtropical, and warm temperate regions around the world, in Asia, Africa, South America, Central America, Mexico, West Indies, and southeastern North America; in the United States primarily in the Gulf and Atlantic coastal plains from southeastern Texas eastward into northern Florida and southern Georgia and northward into southeastern Missouri and eastern North Carolina. Figure 4.

Joseph Gaertner (1788) did not cite a specimen in the protologue of *S. zeylanica*, but he did note the locality "zeylonens" (Sri Lanka) and "e collect. sem. hort. lugdb." after the citation of the illustration "Tab. 24, fig. 5". Joseph Gaertner's seed and fruit collection is curated at the Herbarium of the Universität Tübingen (TUB) (Stafleu and Cowan 1976), and according to Tropicos (Tropicos.org 2013), the holotype of *S. zeylanica* Gaertner resides at L. Our attempts to locate type or other authentic material at L and TUB were unsuccessful (G. Thijsse-L, pers. comm.; C. Dilger-Endrulat-TUB, pers. comm.), although TUB has a specimen from Carl Frie-

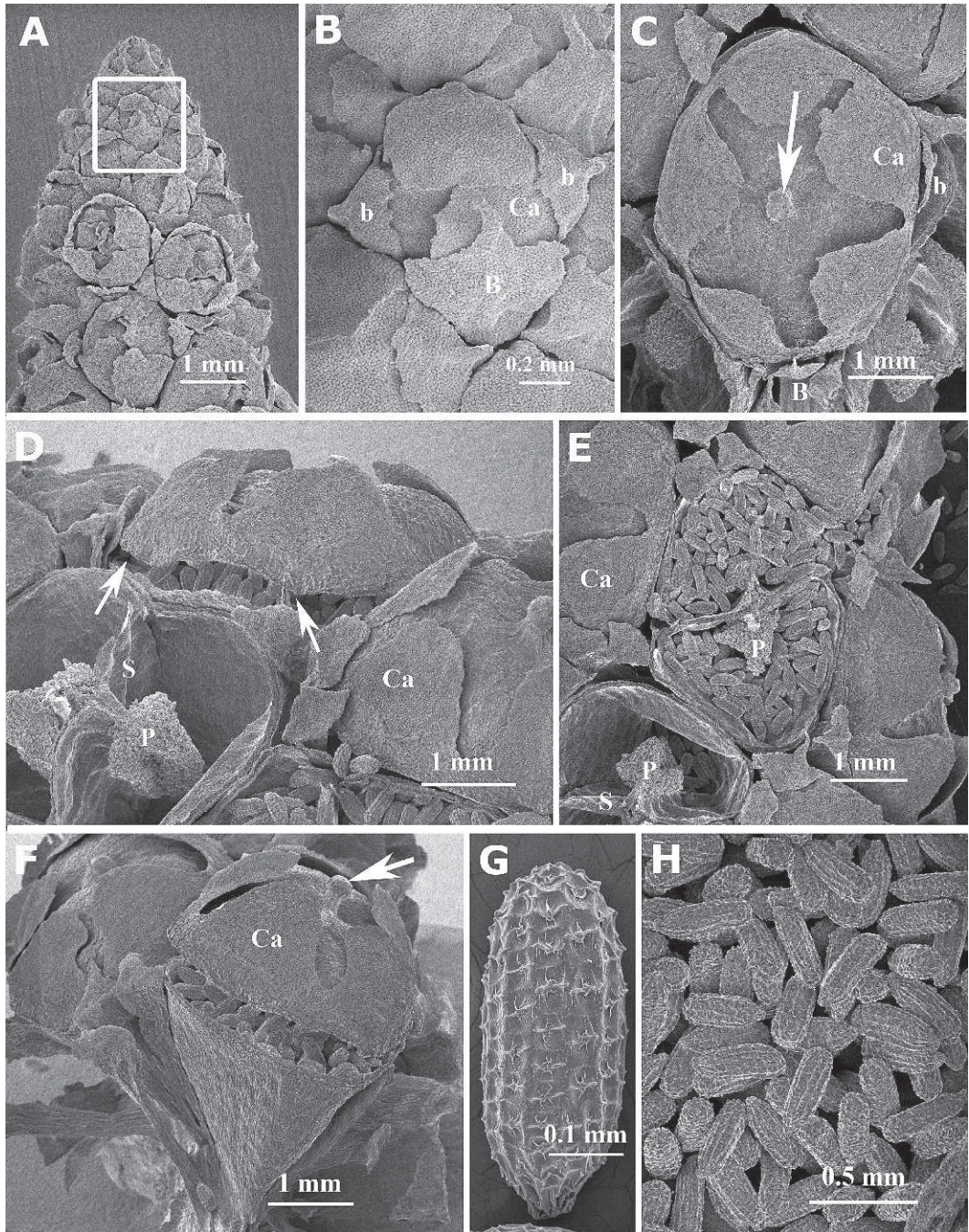


Figure 8. *Sphenoclea zeylanica*: Scanning electron micrographs from herbarium specimen (Carter 20525 [VSC], Acadia Parish, Louisiana) showing details of inflorescence, floral buds, fruits, and seeds. A. Spike apex with developing flower buds. B. Inset of A, floral bud: bract (B), bracteole (b), and calyx (Ca) with imbricate sepals visible. C. Flower, postanthesis: bract, bracteole, calyx, and stigma (arrow) visible. D. Lateral view of mature fruits: dehiscing lid separating (arrows) from capsule; calyx of intact capsule; and placenta (P) and septum (S) of empty dehiscing capsule. E. Dorsal view of mature fruits: dehiscing fruits (center and lower left) showing placenta and septum; mature fruit with intact calyx. F. Lateral view of dehiscing fruit showing wedge-shaped base of capsule and lid separating with calyx and stigma (arrow) intact. G. Isolated seed. H. Seeds.

drich Gaertner collected by Alire Delile in Egypt (C. Dilger-Endrulat, pers. comm.). Fortunately, Gaertner's protologue includes a good illustration (Tab. XXIV) depicting spike, flower, fruit, and seed of *S. zeylanica*, which we interpret as the holotype in accord with articles 8.1 and 40.4 of the *International Code of Botanical Nomenclature* (McNeill et al. 2012).

The common name "gooseweed," used by rice farmers in Louisiana and eastern Texas, refers to the fancied resemblance of the decaying spikes to goose feces. The common name "sea weed" was noted on specimens from Arkansas, *D. Marsh 3592* (BRIT, UARK), and the notation "a favorite forage plant of cattle" appears on the label of *V.L. Cory 50767* (US).

Abbreviated label data from *S. zeylanica* voucher specimens examined are included in Appendix A. Complete label data are available at <http://dx.doi.org/10.2179/13-036>.

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APPENDIX A

Voucher specimens of *Sphenoclea zeylanica* examined.

USA, Alabama: Baldwin Co.: 6 Aug 1976, *M.G. LeLong 9355* (MO); 7 Aug 1980, *B. Lott 093* (MO); 9 Jul 2000, *D.D. Spaulding 10770*, *G. Lein & L. Lein* (VDB). **Barbour Co.:** 5 Oct 1972, *J.H. Hagan 120* (AUA, VDB). **Choctaw Co.:** 15 Aug

2002, *A. Schotz 1881* (UNA). **Clarke Co.:** 13 Sep 1997, *R.D. Whelstone 18859* (VDB). **Dallas Co.:** 5 Aug 1978, *J.H. Wiersema 411* (UNA). **Greene Co.:** 24 Aug 2009, *B.R. Keener 5577 with R. Buckner* (TROY). **Mobile Co.:** 20 Sep 1975, *R. Kral 56609* (VDB); 2 Sep 1976, *D.R. Bayne s.n.* (AUA). **Monroe Co.:** 20 Aug 1978, *L.J. Davenport 773* (UNA); 15 Aug 1979, *R. Suttikus 79-14-1* (NO, UNA, USCH). **Wilcox Co.:** 22 Oct 1977, *R.R. Haynes 6392* (UNA); 4 Aug 1978, *J.H. Wiersema 406* (UNA); 29 Oct 1981, *Lynch 67* (NO); 29 Oct 1981, *Ireland 47* (NO); 10 Sep 1988, *K.S. Frazer 063* (UNA); 26 Oct 1996, *S. Ginzburg 1042* (UNA); 17 Sep 2007, *A.R. Diamond 18118* (TROY). **Arkansas: Sine loc.:** 15 Oct 1923, *Dr. Young s.n.* (MO). **Arkansas Co.:** 29 Jul 1932, *D.M. Moore 32754* (UARK-2 sheets); 15 Sep 1934, *F.M. Uhler & W.F. Kubichek s.n.* (US-2 sheets); 12 Sep 1937, *Smith 12* (US); Jun 1939, *D.M. Moore s.n.* (SMU); 13 Aug 1948, *D.M. Moore 480690* (TEX, UARK); 2 Aug 1952, *R. Toler 37* (UARK). **Ashley Co.:** 2 Aug 1985, *R.D. Thomas 93116 & S. Hooks 1122* (NLU); 1 Sep 1986, *R.D. Thomas 97839* (AUA, FLAS, GA, LSU, MO, NO, NY, UARK, VDB). **Bradley Co.:** 27 Aug 1974, *L.R. Raymond & C. W Painter 105* (UARK). **Chicot Co.:** 19 Oct 1999, *R.D. Thomas 164188* (NLU); 19 Oct 1999, *R.D. Thomas 164292* (NLU); 1 Oct 1999, *R.D. Thomas 163704* (NLU). **Clark Co.:** 16 Oct 1960, *D. Demaree 43194* (GH, SMU); 5 Nov 1973, *R. Floyd 139* (HEND); 15 Sep 2004, *S. Nunn 10376* (UARK); 17 Oct 2006, *B.E. Serviss & R. Tumilson 7081* (HEND, VSC). **Craighead Co.:** 1 Nov 1951, *D. Demaree 31659* (GA, GH, NCU, NO, OKL, SMU); 15 Oct 1955, *D. Marsh s.n.* (UARK); Oct 1955, *D. Marsh 3592* (BRIT); 01 Aug 1966, *E.L. Richards 4934* (STAR). **Cross Co.:** 07 Oct 1962, *D. Demaree 46733* (SMU). **Drew Co.:** 26 Sep 1989, *E. Sundell & D. Etheridge 9229* (BRIT, UARK); 18 Sep 1998, *R.D. Thomas 158038 with E. Sundell & C. Amason* (BRIT, NY). **Garland Co.:** 08 Sep 1934, *Gregg 326* (US). **Greene Co.:** 01 Oct 1965, *E.L. Richards 4486* (STAR). **Hot Spring Co.:** 5 Oct 1962, *D. Demaree 46689* (MISS, SMU, VDB). **Independence Co.:** 26 Sep 1987, *L. Timmerman 25* (STAR); 30 Sep 1992, *V.V. Board s.n.* (UARK). **Lincoln Co.:** 15 Sep 2000, *R.D. Thomas 167526 with E. Sundell* (NLU). **Lonoke Co.:** 12 Oct 1923, *V.H. Young s.n.* (UARK); 3 Sep 1942, *D.M. Moore 420351* (SMU, TEX, UARK); 17 Aug 1955, *D. Demaree 37989* (GA, NCU, OKL, SMU). **Monroe Co.:** 30 Sep 1962, *D. Demaree 46587* (MISS, NO, VDB). **Poinsett Co.:** 15 Oct 1950, *D. Demaree 30225* (OKL, SMU, TEX, UARK, UNA, US). **Prairie Co.:** 13 Aug 1955, *D. Demaree 37915* (GH, NCU, OKL, SMU); 18 Sep 1982, *B.A. Wilds 82-111* (HEND); 24 Sep 1982, *K. Graves 37* (HEND); 11 Sep 1982, *B. Leonard 59* (HEND); 8 Aug 2000, *C. Reid 1352 & D. Williams* (UARK). **Pulaski Co.:** 28 Jul 2007, *J.H. Peck 07-1671* (HEND). **Union Co.:** 11 Oct 1987, *R.D. Thomas 102688* (NLU); 16 Sep 1993, *R.D. Thomas 137637 & C. Amason* (NLU); 6 Sep 1996, *R.D. Thomas 151755 with C. Amason* (UARK). **White Co.:** 9 Aug 1989, *E.B. Smith 4078* (UARK). **Yell Co.:** 5 Jun 1962, *D. Demaree 45850* (MISS); 3 Oct 1962, *D. Demaree 46648* (NO, SMU, VDB); 4 Oct 1965, *D. Demaree 53079* (APCR, BRIT, HEND, UARK); 21 Sep 1967, *D. Demaree 57467* (NCU, VDB); 4 Oct 1967, *G.E. Tucker 6801* (APCR, CLEMS, FLAS, GA, HEND, LSF, LSU, NCU, NY, SMU, UARK, UNA, USCH, VSC). **Florida: Alachua Co.:** 18 Aug 1958, *A. Laessle & E. West s.n.* (FLAS, FSU, US). **Calhoun Co.:** 14 Oct 1977, *S.W. Leonard 6999* (FSU, NCU). **Gadsden Co.:** 6 Aug 1977, *H. McIntyre s.n.* (VSC); 5 Sep 1979, *S.B. Jones 23598, J. Stutts & A. Gholson* (CLEMS, GA, NCU, NY, TEX); 5 Oct 1987, *Howel 0958* (GA). **Gulf Co.:** 1 Aug 1986, *L.C. Anderson 9836* (FSU, MO). **Hillsborough Co.:** 3 Sep 1958, *S. Clawson s.n.* (FSU). **Jackson Co.:** 10 Oct 1981, *Knight 277* (FSU); 3 Oct 1989, *Crook 199* (GA); 10 Sep 1992, *L.C. Anderson 13975* (FSU); 19 Oct 1995, *G. Jubinsky with J. van Dyke s.n.* (FSU); 15 Nov 1995, *L.C. Anderson 16094* (FSU-2 sheets). **Manatee Co.:** 7 Nov 1974, *A.G. Shuey s.n.* (MO); **Okeechobee Co.:** Aug 1979, *M. Olinde s.n.* (FLAS). **Osceola Co.:** 12 Oct 1971, *W. Wegener s.n.* (FLAS). **Georgia: Oglethorpe Co.:** 2 Sep 1981, *S.B. Jones 23671 with Ateyo* (GA). **Seminole Co.:** 5 Sep 1990, *A.K. Gholson, R.K. Godfrey, J. Kight, J. Weis & M.O. Moore 1118* (GA, NLU). **Louisiana: Sine loc.:** *Dr. Hale s.n.* (GH, NY-2 sheets); *W. La., Dr. Hale s.n.* (NY); Aug 1903, *W.R. Dodson s.n.* (US). **Acadia Par.:** *M.A. Aldrich s.n.*, 19 Sep 1903 (US); 2 Oct 1915, *C.E. Chambliss s.n.* (NO); 17 Sep 1917, *E.C. Wurzlów s.n.* (LSU-2 sheets); 17 Sep 1928, *C.E. Chambliss s.n.* (GH, NO); 10 Jul 1969, *S.D. Thibodeaux 166* (LSU); 23 Sep 1972, *B.B. Mabbayad 1* (NLU); 5 Oct 1972, *S.S. Nilakhe 12* (NLU); 14 Sep 1974, *R.M. Young 71* (LSU); 18 Oct 1975, *R.D. Thomas, C. Allen and Bot 403*

- class 47782 (BRIT); 20 Aug 1979, *R.D. Thomas 66590*, *P. Pias*, *N. Rich* (NLU); 20 Aug 1979, *P. Pias et al. 4403* (LSU); 22 Aug 1979, *R.D. Thomas 66812 & N. Rich* (NLU); 27 Jul 2012, *R. Carter 20525* (VSC, others to be distributed).
- Allen Par.:** 23 Oct 1964, *J.W. Thieret 18696* (LAF); 28 Jun 1981, *C.M. Allen 11003* (LSU, NLU); 24 Oct 1981, *R.D. Thomas 79385 & C.M. Allen* (NLU).
- Ascension Par.:** 12 Oct 1974, *A.M. Mohd Mokhtar 69* (LSU); without date, *R.J. Hoar 249* (BRIT).
- Avoyelles Par.:** 12 Sep 1912, *W.L. McAtee 2194* (NY, US); 1 Oct 1966, *J.W. Thieret 24920* (LAF); 8 Nov 1968, *R.D. Thomas 11944* (NLU); 11 Oct 1985, *R.D. Thomas 94111*, *C.M. Allen 13317*, *R. Bordelon & D. Lee* (NLU).
- Beauregard Par.:** 30 Sep 1967, *J.W. Thieret 28059* (LAF); 03 Aug 1974, *R.D. Thomas 41020* (BRIT, NCU, NLU); 13 Nov 1986, *G. Landry 8160.5 & Waters* (LAF-2 sheets).
- Bossier Par.:** 13 Oct 1974, *L.M. Hardy 6708* (LSUS); 28 Oct 1979, *R.D. Thomas 69330 & S. Thomas* (NLU).
- Caddo Par.:** 20 Sep 1973, *R.D. Thomas 36943 & R. Overby* (NCU, NLU); 29 Sep 1975, *D.T. MacRoberts 1519* (LSUS); 9 Oct 1976, *D.T. MacRoberts 2023* (LSUS); 24 Oct 1977, *B.R. & M.H. MacRoberts 290* (LSUS-2 sheets).
- Calcasieu Par.:** 1889, from *Coulter* (GH); 25 Aug – 10 Sep 1898, *K.K. Mackenzie 552* (MO, NCU, NY); Sep 1906, *R.S. Cocks 3128* (GH); Sep 1910, *R.S. Cocks s.n.* (NO-0011134); 21 Jul 1938, *J.J. Lynch s.n.* (LAF); 16 Jul 1969, *J.H. Brooks 390* (LSU); 4 Oct 1969, *S.D. Thibodeaux 269* (LSU); 18 Aug 1975, *D. Hendershot 64* (NLU); 6 Aug 1983, *R.D. Thomas 84867* (NLU); 14 Aug 1995, *R. Neyland 343* (MCN); 27 Jul 2012, *R. Carter 20527* (VSC, others to be distributed).
- Caldwell Par.:** 6 Sep 1965, *J.W. Thieret 20297* (LAF); 22 Jun 1974, *R.D. Thomas 39909*, *P.S. Marx 2201* (NLU); 5 Jul 1974, *R.D. Thomas 40023* (NLU); 16 Oct 1983, *R.D. Thomas 86290 & S. Cheatham* (NLU); 14 Nov 1989, *R.D. Thomas 114557* (NLU); 21 Nov 1989, *R.D. Thomas 114741* (AUA, GA, MO, NLU); 28 Nov 1989, *R.D. Thomas 114956* (NLU); 26 Oct 1991, *R.D. Thomas 126683* (NLU); 25 Sep 1993, *R.D. Thomas 137886* (NLU); 9 Jul 1998, *R.D. Thomas 156971* (NLU).
- Cameron Par.:** 14 Oct 1962, *E.L. McWilliams & G.D. Davis 101462-15* (LAF); 1 Jul 1969, *S.D. Thibodeaux 15* (LSU); 7 Nov 1969, *S.D. Thibodeaux 214* (LSU); 26 Nov 1980, *M. Materne s.n.* (LSU); 24 Oct 1981, *A. Ouchley s.n.* (FLAS, NLU); 18 Nov 1983, *R.D. Thomas 86881*, *B.E. Dutton 828 & D.D. Taylor 6302* (NLU); 5 Aug 1983, *R.D. Thomas 84715* (NLU); 18 Nov 1987, *G. Landry s.n.* (LAF); 15 Jul 1988, *R.D. Thomas 105790* (NLU); 20 Aug 1988, *F.M. Givens, W. Harrison & C.R. Givens 5491* (LSU); 19 Aug 2001, *D.J. Rosen 1608* (SAT, TAES).
- Catahoula Par.:** 21 Aug 1974, *R.D. Thomas 41211*, *K. French 332* (NLU); 21 Nov 1989, *R.D. Thomas 114656* (NLU); 21 Nov 1989, *R.D. Thomas 114690* (NLU).
- Concordia Par.:** 7 Aug 1988, *R.D. Thomas 106678*, *S. Martin, P. Scarborough & C. Slaughter* (NLU, NY); 7 Aug 1988, *R.D. Thomas 106729*, *S. Martin, P. Scarborough & C. Slaughter* (NLU).
- Desoto Par.:** 3 Oct 1980, *R.D. Thomas 73607*, *D. Dixon 4518* (NLU).
- East Baton Rouge Par.:** 1 Nov 1933, *C.A. Brown 5139* (LSU); 25 Oct 1934, *C.A. Brown 5441* (LSU); 30 Sep 1977, *L.M. Green 525* (LSU); 8 Oct 1986, *L.E. Urbatsch 6279* (LSU).
- East Carroll Par.:** 2 Aug 1988, *R.D. Thomas 106448* (NLU).
- East Feliciana Par.:** 4 Oct 1981, *R.D. Thomas 78738* (NLU).
- Evangeline Par.:** 19 Oct 1965, *J.W. Thieret 21419* (LAF); 8 Jul 1969, *S.D. Thibodeaux 140* (LSU); 07 Aug 1973, *V.I. Sullivan 1489* (FLAS); 15 Sep 1978, *R.D. Thomas 60899*, *K. Cormier 1033* (NLU); 4 Oct 1986, *R.D. Thomas 98541 & C.M. Allen* (NLU); 1 Oct 2000, *D.M. Ferguson 220* (LSU); 1 Oct 2000, *Dugas 15* (TAES).
- Franklin Par.:** 17 Sep 1981, *R.D. Thomas 78541 & G. Joye 1996* (NLU); 16 Oct 1981, *G. Joye 2368* (NLU, USCH).
- Grant Par.:** 14 Oct 1972, *R.D. Thomas 33368* (NLU).
- Iberville Par.:** 29 Oct 1979, *G.P. Landry & B. Bell s.n.* (LAF).
- Iberia Par.:** 19 Oct 1974, *H.P. Naquin 199* (LSU).
- Jackson Par.:** 22 Oct 1962, *R. Kral 16089* (VDB).
- Jefferson Par.:** 23 Sep 1978, *Swenson 115* (NO).
- Jefferson Davis Par.:** 14 Oct 1962, *J.W. Thieret 9664* (LAF, NCU, VDB); 23 Sep 1967, *J.W. Thieret 27933* (LAF-2 sheets); 11 Jul 1969, *S.D. Thibodeaux 205* (LSU); 1 Nov 1981, *R.D. Thomas 80162* (NLU); 23 Jun 1982, *R.D. Thomas 81798 and J. Kessler* (NLU); 4 Oct 1986, *R.D. Thomas & C.M. Allen 98192* (NLU, VDB); 15 Oct 1988, *A.W. Lievens et al. 3278* (LSU); 6 Oct 1989, *L.E. Urbatsch et al. 6059* (LSU); 6 Sep 1992, *R. Carter 10514* (VDB, VSC).
- Lafayette Par.:** 22 Sep 1962, *J.W. Thieret 9548* (LAF, VDB); 2 Oct 1963, *J.W. Thieret 16446* (GA, US); 6 Jul 1969, *S.D. Thibodeaux 101* (LSU); 6 Jul 1969, *S.D. Thibodeaux 121* (LSU); 20 Nov 1969, *J.W. Thieret 32007* (ECON); 12 Sep 1979, *R. Quinn s.n.* (LAF).
- LaSalle Par.:** 29 Sep 1966, *C.E. DePoe s.n.* (NLU); 23 Sep 1967, *R.D. Thomas 4598* (NLU); 9 Nov 1969, *R.D.*

Thomas 17372 and K.E. Rogers (NLU); 20 Nov 1971, *H.T. Hall 43* (LSU); 12 Oct 1972, *R.D. Thomas 33177* (MISS, NCU, NLU-2 sheets, SMU, VDB); 26 Aug 2009, *S.L. Hatch 11048* (TAES). **Livingston Par.:** 22 Oct 1972, *A.M.B. Rekas 59* (LSU); 25 May 1985, *G.F. Joye 707* (NLU). **Morehouse Par.:** 7 Sep 1965, *J.W. Thieret 20421* (LAF); 20 Sep 1970, *R.D. Thomas 21316* (AUA, GH, MISS, MO, NLU-2 sheets, NY, OKL, SAT, SMU, USCH); 29 Sep 1975, *R.D. Thomas 47417* (NLU); 2 Jul 1976, *R.D. Thomas 49738, P. Pias 218* (NLU); 16 Sep 1976, *R.D. Thomas 50330, P. Pias 490* (NLU); 26 Oct 1978, *R.D. Thomas 61884, P. Pias 4033* (NLU); 24 Jul 1985, *R.D. Thomas 92958* (NLU); 31 Jul 1990, *R.D. Thomas 119891* (NLU); 26 Aug 1990, *R.D. Thomas 120790* (NLU); 7 Sep 1990, *R.D. Thomas 120983* (NLU). **Orleans Par.:** 20 Nov 1949, *J. Ewan 18276* (NO); 5 Nov 1950, *J. Ewan 18305* (GH, NO). **Ouachita Par.:** 23 Sep 1965, *J.W. Thieret 20831* (LAF); 26 Jul 1967, *R.D. Thomas, E.R. Barrett, P.M. Cicala & G.B. Montgomery 3752* (BRIT); 05 Oct 1968, *R.D. Thomas 12575 & S. Thomas* (NCU, SMU); 28 Jul 1982, *G. Joye s.n.* (FLAS); 05 Aug 1982, *R.D. Thomas 82059* (FLAS, NY); 23 Oct 1983, *R.D. Thomas 86449* (US); 2 Sep 1987, *R.D. Thomas 101298* (NY, MO, OKL, TAES); 2 Dec 1989, *R.D. Thomas 115075* (VSC); 23 Jun 2004, *C. Reid 5041* (LSU). **Plaquemines Par.:** 4 Aug 1993, *K. Westphal P-8* (LSU); 29 Sep 1979, *R. Suttikus 79-23-05* (NO); 8 Sep 1979, *R. Suttikus 79-17-23* (NO); 8 Sep 1985, *White 450* (NO); 28 Aug 1985, *Pascal 245* (NO); 10 Sep 2004, *C. Reid 5247 with P.L. Faulkner* (LSU). **Pointe Coupee Par.:** 1 Aug 1964, *J.W. Thieret 18096* (LAF, SMU). **Rapides Par.:** Oct (without year), *Dr. J. Hale s.n.* (NO-0025867); Oct-Nov (without year), *J. Hale s.n.* (US-721672 ex Herb. C. Mohr); 12 Sep 1962, *R. Kral 15847* (VDB-2 sheets); 21 Oct 1966, *J.W. Thieret 25007* (LAF); 28 Sep 1978, *R. Suttikus 78-43-1* (NO, USCH); 4 Oct 1993, *J. Bruser 307* (LSU). **Sabine Par.:** 2 Jul 1969, *J.W. Thieret 31581* (LAF). **St. Charles Par.:** 18 Aug 1973, *G.N. Montz 2725* (NO); 20 Aug 1973, *G.N. Montz 2744 & J. Weber* (LSU); 18 Oct 1973, *G.N. Montz 2900* (LSU, NO); 27 Jul 1978, *G.N. Montz 4598* (LSU, NO); 29 Aug 1997, *G.N. Montz 8808* (LSU). **St. Helena Par.:** 25 Sep 1971, *C.M. Allen 1576* (LSU). **St. James Par.:** 21 Aug 1999, *C.T. Everton 33-B* (LSU). **St. John the Baptist Par.:** 12 Jul 1975, *B.L. Shiflet s.n.* (LSU). **St. Landry Par.:** Oct 1913, *R.S. Cocks s.n.* (NO); 24 Oct 1960, *G. Kidder 158* (LAF-2 sheets); 14 Oct 1972, *T. Zainuddin s.n.* (LSU). **St. Martin Par.:** 29 Sep 1960, *W.D. Reese 3858* (LAF-2 sheets); 5 Oct 1960, *W.D. Reese 3861* (GH, NCU, VDB); 15–16 Sep 1962, *R. Kral 15903* (VDB-2 sheets); 14 Jul 1967, *A. Lasseigne 445* (LAF, SMU, USMS); 15 Oct 1987, *G.P. Landry s.n.* (LAF); 17 Sep 2004, *C. Reid 5287* (LSU). **St. Mary Par.:** 20 Jul 1959, *J. Ewan 19850* (GH, NO); 21 Oct 1963, *C.A. Brown 17844* (LSU, MO); 9 Oct 1966, *C.A. Brown 19546* (LSU); 27 Oct 1973, *S.M. Kennedy 34* (LSU); 18 Aug 1975, *G.N. Montz 3453* (LSU); 19 Aug 1975, *G.N. Montz 3475* (LAF, NO, LSU); 5 Sep 1975, *J. Horst B-3* (LSU); 11 Oct 1986, *P. Cox 4912 & M. Cox, Jr.* (ECON). **St. Tammany Par.:** 27 Oct 1966, *F.H. Sargent 9060* (GA, MISS, MO, SMU); 14 Oct 1978, *White 48* (NO); 1979, *White* (NO); 16 Oct 1999, *R.D. Thomas 164025 with D. Moreland & M. Bible* (NY); 18 Oct 2003, *P. Douglas 735 with M. Arnett & N. Hastings* (LSU). **Tangipahoa Par.:** 22 Jul 1966, *E.R. Wascom 465* (LSU); 27 Sep 1968, *R.D. Thomas 12333* (NCU, SMU); 2 Aug 1973, *G.N. Montz 2670 & L. Cutrer* (LAF, LSU, NO); 5 Oct 1979, *J.R. Pruski 1247* (LSU, NY); 3 Nov 1979, *E. Cruz & G. Landry s.n.* (LAF); 11 Nov 1990, *L.E. Urbatsch 6897 with E.A. Rossi & A.W. Lievens* (LSU). **Terrebonne Par.:** Sep 1917, *E.C. Wurzelow s.n.* (NY); 5 Nov 2008, *C. Reid 6891 with Lejeune* (LSU). **Union Par.:** 19 Sep 1997, *R.D. Thomas 155275 with S. Cheatham & L. Marshall* (BRIT, GA, NY, TEX). **Vermilion Par.:** 15 Sep 1903, *S.A. Pipes s.n.* (US-2 sheets); Sep 1903, *S.A. Pipes s.n.* (GH, MO, NY); 18 Oct 1957, *W.D. Reese 1440 & V.T. Harris* (GH, LAF, NO); 4 Jul 1969, *S.D. Thibodeaux 71* (LSU); 5 Oct 1969, *S.D. Thibodeaux 282* (LSU); 5 Sep 1988, *C.M. Allen 16253* (LAF); 6 Oct 1994, *P. Majestyk 1017* (HEND). **Vernon Par.:** 8 Oct 1965, *J.W. Thieret 21238* (LAF). **West Feliciana Par.:** 9 Sep 1973, *C.M. Allen 5213* (LAF); 14 Oct 1973, *J.C. Leak 65* (LSU); 28 Aug 1984, *F.M. Givens 3960* (BRIT-2 sheets, LSU). **Winn Par.:** 25 Jul 1987, *R.D. Thomas et al. 101035* (NY, USCH). **Mississippi: Bolivar Co.:** 8 Sep 1960, *H.J. Jacob 1390* (NCU); 29 Aug 1982, *S. McDaniel 26443* (MMNS, VSC). **Covington Co.:** 7 Oct 2006, *S.W. Leonard 12332* (NCU); **Forrest Co.:** 24 Jul 1965, *S.B. Jones 3384* (MISS); 9 Nov 1999, *C.T. Bryson 17713 & Usnick* (VDB); 8 Oct 2004, *C.T. Bryson 20392* (MMNS). **Greene Co.:** 4 Oct 1969, *K.E. Rogers 1816* (MISS, NCU, VDB). **Hancock Co.:** 30 Aug 1975, *S. McDaniel 20124* (FLAS, MMNS, UNA,

- US, VDB); 14 Aug 1991, *J.W. Wooten s.n.* (USMS). **Harrison Co.:** 29 Aug 1953, *R.L. Diener 1343* (GH, NO). **Humphreys Co.:** 30 Jul 1969, *T.M. Pullen 69953* (MISS). **Hinds Co.:** Nov 1974, *B. Snow 2513* (USMS). **Jackson Co.:** 16 Sep 1972, *K.E. Rogers 8657* (GH, MO, NCU, SMU, VDB). **Leflore Co.:** 19 Oct 1998, *C.T. Bryson 16814, J. MacDonald & R. Warren* (MISS, MMNS-2 sheets, NLU, VDB-2 sheets); 5 Aug 1999, *C.T. Bryson 17506 & P. Goodlett* (MISS). **Madison Co.:** 10 Sep 1969, *S.B. Jones 17972* (FLAS, GA, MISS, NCSC); 7 Oct 1972, *K.E. Rogers 8686-B* (NCU), *8786-A* (MO). **Pearl River Co.:** 10 Sep 1968, *F.H. Sargent 9756* (GA, MISS, MO, SMU); 6 Nov 2010, *S.W. Leonard 12398* (ODU). **Quitman Co.:** 14 Sep 1967, *S. McDaniel 9759* (MO-2 sheets). **Scott Co.:** 6 Oct 1974, *C.M. Cooper 456* (MISS); 6 Oct 1974, *J.W. Burris 74387* (MMNS). **Tishomingo Co.:** 24 Aug 1944, *E.A. Philen & W.B. Reeves s.n.* (NCSC, NY, SMU). **Washington Co.:** 5–12 Aug 1975, *C.R. Gunn 11001* (MISS). **Missouri: Butler Co.:** 22 Aug 1992, *S. Hudson s.n.* (MO); 25 Aug 1992, *S. Hudson s.n.* (MO); 9 Sep 1992, *S. Hudson s.n.* (MO); 30 Oct 1992, *S. Hudson s.n.* (MO); 31 Jul 1993, *S. Hudson s.n.* (MO); 24 Aug 1993, *S. Hudson s.n.* (MO); 29 Sep 1994, *G. Yatskievych, S. Hudson, C. Horn & S. Hill 94–211* (MO), 29 Sep 1994, *C.N. Horn et al. 8836* (USCH); 29 Sep 1994, *S.R. Hill 26179 with C.N. Horn, G. Yatskievych* (BRIT, GH, NY, TEX). **Ripley Co.:** 16 Oct 1992, *S. Hudson s.n.* (MO). **North Carolina: Hyde Co.:** 4 Sep 1948, *R.R. Rudolph s.n.* (US); 9 Sep 1948, *R.R. Rudolph 1–110* (NCSC, NCU). **Oklahoma: McCurtain Co.:** 02 Oct 1983, *M. Cooper 1521* (SMU); 19 Aug 2010, *A. Buthod & B. Hoagland RS-273* (OKL-2 sheets). **South Carolina: Aiken Co.:** 3 Nov 2007, *D. Damrel 4441* (CLEMS, GA). **Barnwell Co.:** 14 Oct 1987, *J.S. Angerman s.n.* (CLEMS, NCU, USCH); 8 Jul 1982, *A.E. Hodge 300* (CLEMS). **Jasper Co.:** 8 Sep 1956, *H.E. Ahles 18175 with C.R. Bell* (GA, GH, NCU, NY); 9 Jul 1959, *E.O. Mellinger s.n.* (NCU); 9 Sep 1968, *S.W. Leonard 1949 & A.E. Radford* (NCU); 28 Sep 1968, *J.R. Bozeman 11786* (AUA, FLAS, LAF, MISS, NCU, NO, NY, OKL, SMU, STAR, TEX, UNA, USCH, USMS, VDB, VSC); Oct 1957, *E.O. Mellinger s.n.* (US); 29 Oct 1980, *C. Aulbach-Smith 1297 with Kowalczyk* (CLEMS, USCH). **Lexington Co.:** 7 Aug 1975, *S. Mitchell s.n.* (USCH). **Richland Co.:** 6 Aug 1986, *D. Rayner 2617* (USCH). **Texas: Bastrop Co.:** Oct 1933, *H.H. Duval 703* (TEX). **Bowie Co.:** 18 Oct 1974, *J. Taylor 17189* (BRIT, LSU, NLU, NY, OKL, VDB). **Brazoria Co.:** 6 Sep 1968, *R. Fleetwood 9292* (LL); 26 Sep 1968, *R. Fleetwood 9353* (LL); 11 Aug 1969, *R.J. Fleetwood 9511* (TEX); 25 Oct 2000, *W.R. Carr 19300* (TEX). **Burleson Co.:** 21 Jul 1997, *D.J. Rosen 431 with S.D. Jones* (NO). **Chambers Co.:** 30 Jul 2012, *R. Carter 20641, 20643* (VSC, others to be distributed). **Cherokee Co.:** 30 Sep 1967, *D.S. Correll 35025* (LL). **Colorado Co.:** 24 Aug 2006, *D.J. Rosen 3898* (TEX). **Galveston Co.:** 27 Aug 1974, *F.R. Waller 2995 with J. Bauml* (GH, TAES, TEX). **Hardin Co.:** 13 Nov 1945, *V.L. Cory 50767* (NY, SMU, TEX, US); 29 Sep 1948, *V.L. Cory 54947* (SMU); 1 Sep 1971, *P.A. Amerson 672 & G. Watson* (SMU); 12 Sep 1971, *G. Watson 709* (LAMU); 4 Nov 1978, *T. Fahey 10* (LAMU); 13 Jun 1998, *S.D. Jones 13764BT* (SAT). **Harris Co.:** 6 Aug 1923, *Thurrow 19* (US); 12 Aug 1923, *G.L. Fisher 59* (SMU, US); 20 Jul 1965, *R.J. Fleetwood 77* (SMU, TEX); 6 Oct 1965, *D.S. Correll 31890* (GH, LAF, LL); 21 Sep 1993, *W.R. Carr 13022* (TEX). **Houston Co.:** 27 Sep 1995, *J. Singhurst 3940* (BAYLU). **Jackson Co.:** 14 Oct 1977, *R.W. Neck 77–201* (BRIT). **Jefferson Co.:** 5 Oct 1934, *Parles 11099* (TAES); 5 Oct 1934, *Parles 11100* (TAES); Sep 1939, *Lay 12* (TAES); Sep 1943, *Higinbotham 20* (TAES); 16 Aug 1966, *K. Benad 131* (TEX); 14 Oct 1980, *S. Cheatham s.n.* (TEX). **Lee Co.:** 28 Jul 1984, *J. Larke, M.D. Wilson & E. Kutac s.n.* (TEX). **Leon Co.:** 02 Oct 1992, *E.S. Nixon 18571* (BRIT); 14 Sep 2004, *J. Singhurst & E. Bridges 13360* (BAYLU, TEX). **Liberty Co.:** 15 Oct 1967, *D.S. Correll 35124* (GH, LAF, LL, NCU); 26 Sep 1990, *J.A. Churchill 90–1039* (NLU). **Matagorda Co.:** 06 Aug 1918, *G.L. Fisher 160* (US); 11 Sep 1922, *B.C. Tharp 1596* (TEX, US); 5 Oct 2007, *W.R. Carr 26478* (TEX). **Maverick Co.:** 1929, *B.C. Tharp s.n.* (NY). **Nacogdoches Co.:** 20 Aug 1961, *R.L. Oliver 357* (SMU, TEX). **Orange Co.:** 15 Nov 1948, *V.L. Cory 50841* (GH, NY, SMU); 13 Sep 1968, *D.S. Correll 36511* (LL). **Polk Co.:** 18 Sep 1972, *E.S. Nixon 5368, C. Burandt & L. Burrett* (NCU). **Sabine Co.:** 1 Oct 1986, *E.S. Nixon 15767 with S. & G. Jones* (SMU, TAES). **Walker Co.:** 24 Oct 1987, *S.D. Jones 641* (TAES); 22 Oct 1988, *S.D. Jones 2161* (TAES). **Waller Co.:** 6 Jun 1980, *T.J. Ayers 36* (TEX). **Washington Co.:** 22 Oct 1938, *E. Brackett 275A* (TEX). **Wharton Co.:** 14 Aug 1968, *J.J. Sperry & T.C. Bowers s.n.* (BRIT).

Supplemental Data: Voucher Specimens of *Sphenoclea zeylanica* Gaertner Examined

USA, Alabama: Baldwin Co.: roadside and adjacent marshy area N of Battleship Pkwy (Hwy. 90), Lower Mobile Delta, 6 Aug 1976, *M.G. LeLong 9355* (MO); Chacaloochee Bay, T4S R1E, sand flat in NW area of the bay, 50 yds N of cut to Tensaw River, thick stands adjacent to water, 7 Sep 1980, *B. Lott 093* (MO); muddy banks of Little Lizard Creek in the Mobile/Tensaw Delta, Alluvial-deltaic Plain of the East Gulf Coastal Plain, 9 Jul 2000, *D.D. Spaulding 10770, G. & L. Lein* (VDB). **Barbour Co.:** Eufaula National Wildlife Refuge, off Hwy. US 431, 7 mi N Eufaula, aquatic, sandy loam soil, 5 Oct 1972, *Hagan 120* (AUA, VDB). **Choctaw Co.:** Choctaw National Wildlife Refuge, margin of slough ca. 500 ft N of public boat launch, ca. 1.6 air mi SE jct. Barrytown and Red Spring Rd. at Womack Hill, SW ¼ of NE ¼ of Sec. 15, T10N R2W, 15 Aug 2002, *A. Schotz 1881* (UNA). **Clarke Co.:** Gainestown landing, 33 24 261 N, 87 41 506 W, alluvial woods along Alabama River, 13 Sep 1997, *Whetstone 18859* (VDB). **Dallas Co.:** common along banks at mile 158.3 of Alabama River in Millers Ferry Reservoir at Chilachee Creek, T14N R8E E½ S34, 5 Aug 1978, *J.H. Wiersema 411* (UNA). **Greene Co.:** 5.0 air mi SE Eutaw, along Tombigbee River ca. 0.25 mi S Armistead Seldon Lock and Dam, 32 46 43N 87 50 44W, sandy shore of river, 24 Aug 2009, *B. Keener 5577 with R. Buckner* (TROY). **Mobile Co.:** moist sands in river across from Mobile in dock area off truck bypass US 90-98, 20 Sep 1975, *R. Kral 56609* (VDB); Mobile River near heated water discharge canal from Barry Steam Plant, stand growing on wet mud on river bank, 2 Sep 1976, *D.R. Bayne s.n.* (AUA). **Monroe Co.:** W bank Alabama River, ca. mile 74, ca. 1 mi N Claiborne Lock and Dam, E½ S27 T8N R5E, common on sandy bank, 20 Aug 1978, *L.J. Davenport 773* (UNA); Alabama River, left bank at river mile 105.7, 15 Aug 1979, *R. Suttikus79-14-1* (NO, UNA, USCH). **Wilcox Co.:** Alabama River, ca. 9.5 mi NNW of Camden, S1 T13N R7E, rare, 22 Oct 1977, *R.R. Haynes 6392* (UNA); common in plant beds in middle of Millers Ferry Reservoir, ca. 1.5-2.0 mi upstream from Millers Ferry Bridge of AL 28, T14N R7E Sec 32, 4 Aug 1978, *J.H. Wiersema 406* (UNA); Millers Ferry Reservoir, Sec 32 T14N R7E, 3 Nov 1979, *Nieland 59* (GA); common on mud flat in Miller's Ferry Reservoir in ca. 6" of water, T13N, R7E, Sec 5, 29 Oct 1981, *Lynch 67* (NO); abundant along shore of Miller's Ferry reservoir in water ca. 1.5 dm deep, heavily vegetated area, T13N R7E Sec 5, 29 Oct 1981, *Ireland 47* (NO); small island on William "Bill" Dannelly Reservoir upriver from St. Hwy. 28 bridge, R7E T14N S32, uncommon emergent from shallow water along margin, 10 Sep 1988, *K.S. Frazer 063* (UNA); William "Bill" Dannelly Reservoir on Alabama River ca. 10.5 mi NW downtown Camden on AL 28, upstream of bridge, T13N R7E S8, 32 7 12 N 87 24 1 W, elev. 80 ft, 26 Oct 1996, *S. Ginzburg 1042* (UNA); E bank Alabama River ca. 0.2 mi N US Hwy. 84, 31 32 59N 87 30 50W, 17 Sep 2007, *A.R. Diamond 18118* (TROY). **Arkansas. Sine loc.:** Eastern Arkansas, common weed in rice fields, 15 Oct 1923, *Dr. Young s.n.* (MO). **Arkansas Co.:** Stuttgart, 29 Jul 1932, *D.M. Moore 32754* (UARK-2 sheets); rice field near Stuttgart, King Bayou Ditch, 15 Sep 1934, *F.M. Uhler & W.F. Kubichek s.n.* (US-2 sheets); White River Refuge, borrow pit, St. Charles, 12 Sep 1937, *Smith 12* (US); University of Arkansas, Rice Branch Experiment Station, 8 mi E Stuttgart, elev. 200 ft, Jun 1939, *D.M. Moore s.n.* (SMU); around rice fields, 13 Aug 1948, *D.M. Moore 480690* (TEX, UARK); P.O. DeWitt, elev. 170, irrigation ditch banks, 21 Sep 1940, *D. Demaree 21635* (SMU); Rice Branch Experiment Station, 8 mi E Stuttgart, elev. 200 ft, 2 Aug 1952, *R. Toler 37* (UARK). **Ashley Co.:** edge of Mossy Lake E of Ouachita River and W of AR 133 E of Lock No. 6 SW of Crossett, Sec. 29 T19S R9W, 2 Aug 1985, *R.D. Thomas 93116 & S. Hooks 1122* (NLU); along road to the Ouachita River 1.5 mi west of tram road west of Meridian, bottomland hardwoods forest, Sec 33, T19S, R9W, 1 Sep 1986, *R.D. Thomas 97839* (AUA, FLAS, GA, LSU, MO, NO, NY, UARK, VDB). **Bradley Co.:** beside Ouachita River at Moro Bay about ¼ mi E of Free Ferry, Sec. 26 T16S R12W, 27 Aug 1974, *L.R. Raymond & C.W. Painter 105* (UARK). **Chicot Co.:** weed in edge of rice field on S side AR 8, 0.9 mi W Boeuf River W of Eudora, Sec. 24, 19 Oct 1999, *R.D. Thomas 164188* (NLU); clearcut baldcypress woods beside CR W of RR tracks and US 65 and 3.5 mi N AR 8 and Eudora, Sec. 2, 19 Oct 1999, *R.D. Thomas 164292* (NLU); open area along Mississippi River at US 82 bridge E of Lake Village, Secs. 22&23, 1 Oct 1999, *R.D. Thomas 163704* (NLU). **Clark Co.:** P.O. Arkadelphia, elev. 300 ft, margins of ricefields, low wet, Joan, 16 Oct 1960, *D. Demaree 43194* (GH, SMU); Ouachita R. valley, E side river ca. 2 mi NE Arkadelphia, along co. rd., by rice field, ca. 34 09 N 93 02W, irrigated alluvial soil, abundant in patches, ditches, 5 Nov 1973, *R. Floyd 139* (HEND); Tupelo Creek at intersection with Hwy. 51, 3 mi E Arkadelphia, UTM 15S/499369/3775135, Dalark Quad T7S R19W S12 SW4, Tupelo swamp on open edge of creek with wetland of *Nymphaea* (sic) *odorata*, 15 Sep 2004, *S. Nunn 10376* (UARK); Saline Bayou, ca. 1-2 mi SSE of Arkadelphia on Hwy. 7, saline stream and surrounding area, 17 Oct 2006, *B.E. Serviss & R. Tumlison 7081* (HEND, VSC). **Craighead Co.:** P.O. Otwell, shallow water in low area, 1 Nov 1951, *D. Demaree 31659* (GA, GH, NCU, NO, OKL, SMU); 8 mi W Jonesboro, marshy area, "Sea Weed," Oct 1955, *D. Marsh 3592* (BRIT), *D. Marsh s.n.* (UARK); 2 miles E and 1 mile N Jonesboro, T14N R4E S3, in water or wet area with *Panicum*, 01 Aug 1966, *E.L. Richards 4934* (STAR). **Cross Co.:** P.O. Cherry Valley, elev. 260, drainage and irrigation ditches in rice region, 07 Oct 1962, *D. Demaree 46733* (SMU). **Drew Co.:** 15 mi E of Monticello, Mississippi River alluvial plain

below Collins, vic. Cut Off Creek, road ditch and bank, 26 Sep 1989, *E. Sundell & D. Etheridge* 9229 (BRIT, UARK); weed in the edge of a rice field on S side AR 35, E Bayou Bartholomew E of Baxter, Sec. 35, 18 Sep 1998, *R.D. Thomas* 158038 with *E. Sundell & C. Amason* (BRIT, NY). **Garland Co.:** 4 mi W of Hot Springs, overflow flat by Bull Bayou just above Hwy. 270 bridge, Hot Springs National Park, elev. 450 ft., 08 Sep 1934, *Gregg* 326 (US). **Greene Co.:** Crowley's Ridge State Park, T16N R4E S4, in water of pond, 01 Oct 1965, *E.L. Richards* 4486 (STAR). **Hot Spring Co.:** P.O. Friendship, low wet areas in roadside ditches thru wet woods, common, elev. 225 ft, 05 Oct 1962, *D. Demaree* 46689 (MISS, SMU, VDB). **Independence Co.:** 1 ¼ mi N Newark, T13N R4W S32, near pond in old field, 26 Sep 1987, *L. Timmerman* 25 (STAR); T14N R3W Sec. 25, Black River bottoms, cypress tupelo swamp, 30 Sep 1992, *V.V. Board s.n.* (UARK). **Lincoln Co.:** along S bank of Bayou Bartholomew at bridge on AR 293, 1 mi S of Meroney and AR 11 E of Star City, Secs. 8&9, 15 Sep 2000, *R.D. Thomas* 167526 with *E. Sundell* (NLU). **Lonoke Co.:** Lonoke, rice fields, 12 Oct 1923, *V.H. Young s.n.* (UARK); W. Lonoke, 3 Sep 1942, *D.M. Moore* 420351 (SMU, TEX, UARK); P.O. Carlisle, elev. 220 ft, low wet areas in prairies, 17 Aug 1955, *D. Demaree* 37987 (GH), *D. Demaree* 37989 (GA, NCU, OKL, SMU). **Monroe Co.:** P.O. Roe, low areas in rice region, elev. 200 ft., 30 Sep 1962, *D. Demaree* 46587 (MISS, NO, VDB). **Poinsett Co.:** in water around old gravel pit, Crowley's Ridge, P.O. Harrisburg, elev. 360 ft., 15 Oct 1950, *D. Demaree* 30225 (OKL, SMU, TEX, UARK, UNA, US). **Prairie Co.:** P.O. Hazen, elev. 235 ft, low wet areas in rice region, 13 Aug 1955, *D. Demaree* 37915 (GH, NCU, OKL, SMU); T3N R6W, Greenwalt wetland area surrounded by rice and soybean fields, 18 Sep 1982, *B.A. Wilds* 82-111 (HEND); T2N R6W S12, moist areas along creeks and fallow fields, 24 Sep 1982, *K. Graves* 37 (HEND); 4 mi W of Hazen, T3N R6W, Greenwalt Wetlands, 11 Sep 1982, *B. Leonard* 59 (HEND); shore of Peckerwood Lake via private farm road, E of AR 11, 5 mi N of Stuttgart Airport, N ½ S33 T1N R5W, 8 Aug 2000, *C. Reid* 1352 & *D. Williams* (UARK). **Pulaski Co.:** City of Little Rock, Twin Rivers Park, sandy soils, along Arkansas River floodplain, 28 Jul 2007, *J.H. Peck* 07-1671 (HEND). **Union Co.:** low sandy area between road and Ouachita River just N of Felsenthal Dam, Sec. 15 T19S R10W, 11 Oct 1987, *R.D. Thomas* 102688 (NLU); woods along old Lock and Dam No. 8 Road W of H.A. Thatcher Lock and Dam Public Access Area W of Ouachita River, Sec. 29 T16S R13W, 16 Sep 1993, *R.D. Thomas* 137637 & *C. Amason* (NLU); beside canal at Felsenthal Recreational Area E of Felsenthal NE of Huttig, S16 T19S R10W, 6 Sep 1996, *R.D. Thomas* 151755 with *C. Amason* (UARK). **White Co.:** 0.6 mi E jct. Hwy. 267 and Hwy. 31, N of town of Beebe, few, in wet ditch, 9 Aug 1989, *E.B. Smith* 4078 (UARK). **Yell Co.:** P.O. Plainview, below dam at the Duck Pond, by the thousands, elev. 480 ft, 5 Jun 1962, *D. Demaree* 45850 (MISS); P.O. Plainview, below dam at duck pond, elev. ft. 400, 3 Oct 1962, *D. Demaree* 46648 (NO, SMU, VDB); P.O. Plainview, Duck Pond below dam, elev. 400 ft, seldom found in Arkansas, 4 Oct 1965, *D. Demaree* 53079 (APCR, BRIT, HEND, UARK); P.O. Plainview, shallow water below duck pond, elev. ft. 350, 21 Sep 1967, *D. Demaree* 57467 (NCU, VDB); Arkansas Fish and Game Commission duck pond above Lake Nimrod, near Plainview, 4 Oct 1967, *G.E. Tucker* 6801 (APCR, CLEMS, FLAS, GA, HEND, LSF, LSU, NCU, NY, SMU, UARK, UNA, USCH, VSC). **Florida. Alachua Co.:** banks of Hogtown Creek, Gainesville, 18 Aug 1958, *A. Laessle & E. West s.n.* (FLAS, FSU, US). **Calhoun Co.:** infrequent on mud near boat ramp, Ocheese Landing on Apalachicola River, 14 Oct 1977, *S.W. Leonard* 6999 (FSU, NCU). **Gadsden Co.:** Lake Seminole, below dam, 06 Aug 1977, *H. McIntyre s.n.* (VSC); Chattahoochee, small pond below Jim Woodruff Dam under powerline, 5 Sep 1979, *S.B. Jones* 23598, *J. Stutts & A. Gholson* (CLEMS, GA, NCU, NY, TEX); ca. 1200 ft S Jim Woodruff Dam, 5 Oct 1987, *Howel* 0958 (GA). **Gulf Co.:** M & K tract, W of Saul Creek, general 6.5 air mi NW of Apalachicola, infrequent herb 1.5 m tall in drying mud with *Xyris* on dry pond bottom (exceptionally dry year) in pasture area just W of M & K road, NE ¼ Sec 6 T8S R8W, 01 Aug 1986, *L.C. Anderson* 9836 (FSU, MO). **Hillsborough Co.:** drainage ditch along Hwy. 301, near entrance to Hillsborough River State Park, rooted in mud in 8" of water, 03 Sep 1958, *S. Clawson s.n.* (FSU). **Jackson Co.:** Apalachee Game Management Area, 1.5 mi N of entrance to Three Rivers State Recreation Area on CR 271, infrequent in wet sandy muck along shores of Lake Seminole, 10 Oct 1981, *Knight* 277 (FSU); FL 271, Charles Patrick Property, 3 Oct 1989, *Crook* 199 (GA); locally common in wet sand of disturbed site at water's edge along Chattahoochee River side-slough at Parramore Landing (E of rte 271, N of Sneads), T6N R7W SE ¼ of SE ¼ Sec 32, 10 Sep 1992, *L.C. Anderson* 13975 (FSU); small colony on spoil island off W side of main channel, Lake Seminole, S of Chattahoochee River, just NE of Three Rivers Recreation Area, T4N R7W, 19 Oct 1995, *G. Jubinsky with J. van Dyke s.n.* (FSU); common in shallow water (emergent & much branched above) along edge of Chattahoochee River at Buena Vista Landing (E of Rte 271), 12.5 air mi N of Sneads, T6N R7W S ½ of SE ¼ of NE ¼ Sec 19, 15 Nov 1995, *L.C. Anderson* 16094 (FSU-2 sheets). **Manatee Co.:** N bank of Frog Creek, E of Bishop's Harbor Rd, NW of Rubonia, wet, rich soil, herb to 6 ft, flowers white, 7 Nov 1974, *A.G. Shuey s.n.* (MO). **Okeechobee Co.:** 4 mi S Osceola County line, Aug 1979, *M. Olinde s.n.* (FLAS). **Osceola Co.:** lake in 10-30 cm of water, 12 Oct 1971, *W. Wegener s.n.* (FLAS). **Georgia. Oglethorpe Co.:** off Sandy Cross Rd. at McCannon Well Drillers, weed in water chestnuts, 2 Sep 1981, *S.B. Jones* 23671 with *Ateyo* (GA). **Seminole Co.:** rooted emergent aquatic growing in shallow water at margins of lake, Lake

Seminole, Corps of Engineers Ranger Station, 5 Sep 1990, A.K. Gholson, R.K. Godfrey, J. Kight, J. Weis & M.O. Moore 1118 (GA, NLU). **Louisiana. Sine loc.:** *Dr. Hale s.n.* (GH, NY-2 sheets); W. La., *Dr. Hale s.n.* (NY); a recently introduced, threatening weed in rice fields in Louisiana, southwestern Louisiana, Aug 1903, W.R. Dodson *s.n.* (US). **Acadia Par.:** Crowley, a threatening weed in rice fields, M.A. Aldrich *s.n.*, 19 Sep 1903 (US); Crowley Rice Station, open place in field, also on levee, 2 Oct 1915, C.E. Chambliss *s.n.* (NO); wet ditch, edge of rice field, near Crowley, 17 Sep 1917, E.C. Wurzlow *s.n.* (LSU-2 sheets); Crowley, rice station, aquatic, 17 Sep 1928, C.E. Chambliss *s.n.* (GH, NO); Hwy. 115, 8 mi S of Crowley, 10 Jul 1969, S.D. Thibodeaux 166 (LSU); flooded rice field at Crowley Rice Experiment Station, Crowley, 23 Sep 1972, B.B. Mabbayad 1 (NLU); water canals, Rice Expt. Sta. Crowley, Sec. 5 T9S R1E, 5 Oct 1972, S.S. Nilakhe 12 (NLU); in rice field along LA 1123, 0.6 mi from the northern jct. of LA 1123 and LA 97, S of Basile, 14 Sep 1974, R.M. Young 71 (LSU); LSU Rice Experiment Station E of LA 1111, N of I-10 and Crowley, Sec 22 T9S R1E, 18 Oct 1975, R.D. Thomas 47782, C.M. Allen (BRIT); weed in rice field at LSU Rice Experiment Station E of LA 1111 and N of I-10, E of Crowley, Sec. 27 T9S R1E, 20 Aug 1979, R.D. Thomas 66590, P. Pias, N. Rich (NLU); LSU Rice Experiment Station off LA 1111 N of Crowley, 20 Aug 1979, Pias et al. 4403 (LSU); beside Southern Pacific RR tracks N of US 90 at LA 35 in Rayne, Sec. 26 T9S R2E, 22 Aug 1979, R.D. Thomas 66812 & N. Rich (NLU). **Allen Par.:** ca. 2 mi SW of Kinder, moist sand along shore of Calcasieu River, 23 Oct 1964, J.W. Thieret 18696 (LAF); abundant in rice fields, ca. 3 mi N of Oberlin, Sec 34 T4S R4W, 28 Jun 1981, C.M. Allen 11003 (LSU, NLU); woods and/or highway right-of-way beside US 190 W of Calcasieu River W of Kinder, Sec. 30 T6S R5W, 24 Oct 1981, R.D. Thomas 79385 & C.M. Allen (NLU). **Ascension Par.:** jct. LA 22 and Bayou Pierre, 5.7 mi NE jct. W LA 429, 6.7 mi NE of St. Amant, 12 Oct 1974, A.M. Mohd Mokhtar 69 (LSU); water edge in Bayou Pierre near LA 22 bridge, 6.7 road mi NE of St. Amant, no date, R.J. Hoar 249 (BRIT). **Avoyelles Par.:** Marksville, 12 Sep 1912, W.L. McAtee 2194 (NY, US); ca. 1 mi NE of Hessmer, roadside ditch, 1 Oct 1966, J.W. Thieret 24920 (LAF); in area of prehistoric Indian Mounds, Marksville, 8 Nov 1968, R.D. Thomas 11944 (NLU); along S bank of Red River beside LA 107 and LA 115 S of Effie and N of Marksville, Sec. 61 T3N R3E, 11 Oct 1985, R.D. Thomas 94111, C.M. Allen 13317, R. Bordelon & D. Lee (NLU). **Beauregard Par.:** Hwy. 190 and Barnes Creek, Sect. 25, ca. 5.5 mi E Ragley, 30 Sep 1967, J.W. Thieret 28059 (LAF); swampy and seepage area W US 171, 1 ½ mi S Ragley and US 190, open area, Sec 1 T7S R9W, 03 Aug 1974, R.D. Thomas 41020 (BRIT, NCU, NLU); Hwy. 190 S of DeRidder, wet roadside ditch, locally abundant, 13 Nov 1986, G.P. Landry 8160.5 & D. Waters (LAF-2 sheets). **Bossier Par.:** E bank of Red River ca. 1.1 mi E, 1.9 mi S LSU-S campus, 13 Oct 1974, L.M. Hardy 6708 (LSUS); sandbar along E bank of Red River at I-220 bridge N of Bossier City, Sec. 14 T18N R14W, 28 Oct 1979, R.D. Thomas 69330 & S. Thomas (NLU). **Caddo Par.:** vacant lot W of US 171, N of Southside Village Shopping Center, called "The Fabulous Hole," 20 Sep 1973, R.D. Thomas 36943 & R. Overby (NCU, NLU). Shreveport, along Red River by 70th St. bridge, common near water in low lying land, 29 Sep 1975, D.T. MacRoberts 1519 (LSUS); Shreveport, along banks of Red River just above water line, near Barksdale Bridge, uncommon, 9 Oct 1976, D.T. MacRoberts 2023 (LSUS); Shreveport, common on sand bars in Red River off Clyde Fant Parkway at end of Stoner Ave., 24 Oct 1977, B.R. & M.H. MacRoberts 290 (LSUS-2 sheets). **Calcasieu Par.:** Lake Charles, 1887, "from Coulter" (GH); vic. Lake Charles, shallow portions of Lake Charles, 25 Aug – 10 Sep 1898, K.K. Mackenzie 552 (MO, NCU, NY); very abundant in rice fields, Lake Charles, Sep 1906, R.S. Cocks 3128 (GH); Lake Charles, rice fields, Sep 1910, R.S. Cocks *s.n.* (NO-0011134); rice fields 3 mi W of Sulphur, 21 Jul 1938, J.J. Lynch *s.n.* (LAF); 3 mi NE of Lake Charles in sand pit, 16 Jul 1969, J.H. Brooks 390 (LSU); on levee of rice field, Hwy. 101, 2 mi N of Hayes, 4 Oct 1969, S.D. Thibodeaux 269 (LSU); ditch bank beside LA 27, 0.4 mi S int. LA 27 and LA 108, Sec. 3 T11S R10W, 18 Aug 1975, D. Hendershot 64 (NLU); beside LA 14 E of Holmwood and 3.6 mi W of Bell City, Sec. 6 T11S R6W, 6 Aug 1983, R.D. Thomas 84867 (NLU); wet disturbed area near 5th Ave, Lake Charles, 14 Aug 1995, R. Neyland 343 (MCN). **Caldwell Par.:** along Ouachita River ca. 9 mi SE of Columbia, river bank, 6 Sep 1965, J.W. Thieret 20297 (LAF); swampy area and stagnant water beside S edge of road over Davis Lake, N of Columbia, Sec. 38 T13N R4E, 22 Jun 1974, R.D. Thomas 39909, P.S. Marx 2201 (NLU); waste area graded during construction of Columbia Lock and Dam on W bank of Ouachita River and bank of small stream at river, Secs. 19&20 T14N R4E, 5 Jul 1974, R.D. Thomas 40023 (NLU); along S bank of Ouachita River E of Copenhagen and LA 849, Sec. 13 T22N R4E, 16 Oct 1983, R.D. Thomas 86290 & S. Cheatham (NLU); along N bank of Ouachita River at US 165 bridge at Columbia, Sec. 17 T13N R6W, 14 Nov 1989, R.D. Thomas 114557 (NLU); along W bank of Ouachita River at Columbia Recreation Area W of US 165 at Columbia, Sec. 17, T13N R4W, 21 Nov 1989, R.D. Thomas 114741 (AUA, GA, MO, NLU); along E bank of Ouachita River at Columbia Lock and Dam, W of US 165 at Riverton, Sec. 36 T14N R3E, 28 Nov 1989, R.D. Thomas 114956 (NLU); along Ouachita River E of Copenhagen and LA 84, SE of Columbia, Sec. 13 T12N R4E, 26 Oct 1991, R.D. Thomas 126683 (NLU); along W bank of Ouachita River at boat landing in Corps of Engineers Recreation Area, W of US 165, Columbia, Sec. 17 T13N R4E, 25 Sep 1993, R.D. Thomas 137886 (NLU); bottomland woods and riverbank on Dr. Winters' property beside Ouachita River, S of Columbia, E of

Fisher Road, Sec. 28 T13N R4W, 9 Jul 1998, *R.D. Thomas 156971* (NLU). **Cameron Par.:** 5 mi SSE of Lake Arthur along irrigation canal, 14 Oct 1962, *E.L. McWilliams & G.D. Davis 101462-15* (LAF); 1 mi S of Hwy. 384, 13 mi S of Holmwood, 7 Nov 1969, *S.D. Thibodeaux 214* (LSU); parking area below intercoastal bridge on LA Rt. 27, 20 Aug 1988, *F.M. Givens, W. Harrison & C.R. Givens 5491* (LSU); 1 mi S of Hwy. 384, 13 mi S of Holmwood, 1 Jul 1969, *S.D. Thibodeaux 15* (LSU); Hwy. 27 ca 2 mi S of Intracoastal Waterway Bridge, 26 Nov 1980, *M. Materne s.n.* (LSU); small pond beside Mermentau River at Lacassine NWR headquarters at end of LA 3056, Lowry, Sec. 16 T12S R4W, 24 Oct 1981, *A. Ouchley s.n.* (FLAS, NLU); roadbank and pastured wetland along LA 384 at Grangerville Rd. E of Hacketts Corner and 1.5 mi E of LA 27, Sec. 14 T12S R7W, 18 Nov 1983, *R.D. Thomas 86881, B.E. Dutton 828 & D.D. Taylor 6302* (NLU); along road on N levee of Lacassine Pond, Lacassine NWR, Sec. 16 T12S R5W, 5 Aug 1983, *R.D. Thomas 84715* (NLU); Lacassine Wildlife Refuge, impoundment area, common on floating mats of vegetation in Lacassine Poole, plants to 2 ft tall, 18 Nov 1987, *G.P. Landry s.n.* (LAF); along E levee and E side Lacassine Pool from NE corner to Intercoastal Canal, S of LA 14, W of Mermentau River, T12S R5W, 15 Jul 1988, *R.D. Thomas 105790* (NLU); S of Holmwood, roadside E of State Hwy. 27, 3.9 mi S of Parish Rd. 397, 19 Aug 2001, *D.J. Rosen 1608* (SAT, TAES). **Catahoula Par.:** roadside ditch in soybean field on Louisiana Delta Plantation, 3 mi W LA 124, Sec. 12 T6N R5E, 21 Aug 1974, *R.D. Thomas 41211, K. French 332* (NLU); along E bank of Ouachita River on both sides of LA 8 at Harrisonburg, Sec. 12 T9N R6E, 21 Nov 1989, *R.D. Thomas 114656* (NLU); beside E bank of Ouachita River at Harrisonburg Recreation Area, N end of LA 922, N of LA 8 at Harrisonburg, Sec. 12 T9N R6E, 21 Nov 1989, *R.D. Thomas 114690* (NLU). **Concordia Par.:** wooded area between LA 566 and levee and the bank of Tensas River about 3 mi S LA 15 and Clayton, Sec. 29 T19N R9E, 7 Aug 1988, *R.D. Thomas 106678, S. Martin, P. Scarborough & C. Slaughter* (NLU, NY); W bank Mississippi River E of LA 15, 3.0 mi S LA 131, NE Deer Park, SW Vidalia, Sec. 9 T6N R9E, 7 Aug 1988, *R.D. Thomas 106729, S. Martin, P. Scarborough & C. Slaughter* (NLU). **Desoto Par.:** edge of lake and woods at Garland Boy Scout Ranch W of US 171, 0.9 mi N LA 5 in Kickapoo, Sec. 18 T14N R14W, 3 Oct 1980, *R.D. Thomas 73607, D. Dixon 4518* (NLU). **East Baton Rouge Par.:** swamp, 1 Nov 1933, *C.A. Brown 5139* (LSU); Collegetown swamp, 25 Oct 1934, *C.A. Brown 5441* (LSU); LSU Ben Hur Farm, at water's edge in a mostly drained T-series aquaculture research pond, 30 Sep 1977, *L.M. Green 525* (LSU); agriculture ponds at Ben Hur Farm in Baton Rouge, 8 Oct 1986, *L.E. Urbatsch 6279* (LSU). **East Carroll Par.:** sandbars just W of Mississippi River at a hunting camp E of levee road NE of Lake Providence and SE of Pittman Island, Secs. 49-52 T22N R14E, 2 Aug 1988, *R.D. Thomas 106448* (NLU). **East Feliciana Par.:** gravel pits and sand bars along E bank of Thompson Creek at US 61, S of St. Francisville, Sec. 74 T3S R2W, 4 Oct 1981, *R.D. Thomas 78738* (NLU). **Evangeline Par.:** campground and lake shore, Chicot State Park, ca. 8 mi N of Ville Platte, low grassy area at lake shore, 4 ft tall, branched herb, 19 Oct 1965, *J.W. Thieret 21419* (LAF); rice field, Hwy. 1160, 2.5 mi W of Mamou, 8 Jul 1969, *S.D. Thibodeaux 140* (LSU); floodplain of bayou crossing under LA 106, 07 Aug 1973, *V.I. Sullivan 1489* (FLAS); along banks of Lake Chicot in Chicot State Park, Sec. 16 T3S R2E, *R.D. Thomas 60899, K. Cormier 1033* (NLU); dry bed of drained Lake Chicot at bridge on N-S road N of LA 375, Chicot State Park, N of Ville Platte, Sec. 8 T3S R2E, 4 Oct 1986, *R.D. Thomas 98541 & C.M. Allen* (NLU); LA 3042, ca. 4 mi S of main (west) entrance to Chicot State Park, plants growing in wet ditch along road, 1 Oct 2000, *Ferguson 220* (LSU); Chicot State Park on land around the south boat launch, 30 47 432 N, 92 16 202 W, 1 Oct 2000, *Dugas 15* (TAES). **Franklin Par.:** along Boeuf River in SW corner of the parish S of Turkey Creek Lake and 6 mi SW of Holly Grove, Sec. 32 T11N R7E, *R.D. Thomas 78541 & G. Joye 1996* (NLU); Fools River, 0.5 mi W of end of gravel road W of LA 562, 2.5 mi SW of Extension, Sec 10 T11N R6E, 16 Oct 1981, *G. Joye 2368* (NLU, USCH). **Grant Par.:** woods and bank of Little River N of Georgetown between old and new US 165, 14 Oct 1972, *R.D. Thomas 33368* (NLU). **Iberville Par.:** Indigo Island, 1 mi S of Pigeon, 29 Oct 1979, *G.P. Landry & R. Bell s.n.* (LAF). **Iberia Par.:** dry rice field 2.4 mi SW of Patoutville on Bayard Rd, intersecting with 80 Arpent Rd. 1.2 mi SW of Patoutville, 19 Oct 1974, *H.P. Naquin 199* (LSU). **Jackson Par.:** Chatham Lake, on mucky shoreline, 22 Oct 1962, *R. Kral 16089* (VDB). **Jefferson Par.:** on sandy soil, 23 Sep 1978, *Swenson 115* (NO). **Jefferson Davis Par.:** Lake Arthur, roadside, 14 Oct 1962, *J.W. Thieret 9664* (LAF, NCU, VDB); 3 mi SSE of Lacassine, Sect. 8, roadside ditch, 23 Sep 1967, *J.W. Thieret 27933* (LAF-2 sheets); rice field, N of LA 1126, 2 mi SW of Jennings, 11 Jul 1969, *S.D. Thibodeaux 205* (LSU); waste area beside LA 26 just N of Hathaway N of Jennings, Sec. 15 T8S R3W, 1 Nov 1981, *R.D. Thomas 80162* (NLU); rice field W of US 165, 1.5 mi S Fenton near Little Bayou, Sec. 19 T8S R5W, 23 Jun 1982, *R.D. Thomas 81798 and J. Kessler* (NLU); rice field 0.5 mi N of I-10, 2 mi W of Roanoke exit W of Jennings, Sec. 22 T9S R4W, 04 Oct 1986, *R.D. Thomas & C.M. Allen 98192* (NLU, VDB); railroad crossing along US 90, several hundred yards E of the Jefferson Davis-Calcasieu parish line, growing in ditch, 15 Oct 1988, *A.W. Lievens et al. 3278* (LSU); between hwy. and railroad tracks along US 190, 2 mi E of the jct. of LA 99 and US 190, W of Elton, 06 Oct 1989, *L.E. Urbatsch et al. 6059* (LSU); 2.1 mi E of jct. Hwys. US 90 and LA 99 in Lauderdale, ditch between Hwy. US 190 and railroad, at jct. of Hwy. US 190 and Parish Rd. 4-43, common in clay at edge of ditch, 06 Sep 1992, *R. Carter 10514* (VDB),

VSC). **Lafayette Par.:** in mud in coulee near Kingswood Park subdivision, SW side of Lafayette, 22 Sep 1962, *J.W. Thieret 9548* (LAF, VDB); locally common in roadside ditches, southwest side of Lafayette, 02 Oct 1963, *J.W. Thieret 16446* (GA, GH, US); rice field, E of Hwy. 167, 3 mi S of Lafayette, 6 Jul 1969, *S.D. Thibodeaux 121* (LSU); rice field, W of Hwy. 339, 2 mi S of Lafayette, 6 Jul 1969, *S.D. Thibodeaux 101* (LSU); roadside ditch, SW side of Lafayette, at edge of Edgar Martin school grounds, 20 Nov 1969, *J.W. Thieret 32007* (ECON); open field and roadside ditch along LA 342, approx. 3.5 mi W of Ridge, 12 Sep 1979, *R. Quinn s.n.* (LAF). **LaSalle Par.:** Old River, at US 84, SE of Jena, open shallow sluggish river with grazed edges, 29 Sep 1966, *C.E. DePoe s.n.* (NLU); beside US 84, 1 mi S Whitehall, in bed of Old River, SE corner Sec. 2 T7N R4E, 23 Sep 1967, *R.D. Thomas 4598* (NLU); beside Old River and US 84, 1 mi SE Whitehall, 9 Nov 1969, *R.D. Thomas 17372 and K.E. Rogers* (NLU); moist area around edge of fresh water lake, SW end of Catahoula Lake, 20 Nov 1971, *H.T. Hall 43* (LSU); open water of Catahoula Lake at Indian Creek, 12 Oct 1972, *R.D. Thomas 33177* (MISS, NCU, NLU-2 sheets, SMU, VDB); Catahoula Basin, grass zone, SE side in sandy soils, 26 Aug 2009, *S.L. Hatch 11048* (TAES). **Livingston Par.:** open sand pit on E side of Amite River; ¼ mi S of I-12, 1 mi W of overpass of I-12 over LA 1032, Sec 42 T7S R2E, 22 Oct 1972, *A.M.B. Rekas 59* (LSU); hardwood forest along powerline from the end of LA 1032 to the Amite River on N side I-12, Sec. 11 T7S R2E, 25 May 1985, *G.F. Joye 707* (NLU). **Morehouse Par.:** along Vayou Chemin-a-haut, drying disturbed area on floodplain, pond margin, a few small muddy ponds, soil very dry, mostly without plant cover, 7 Sep 1965, *J.W. Thieret 20421* (LAF); wet area beside LA 590 at Chemin-a-Haut Bayou, Sec. 13 T23N R6E, 20 Sep 1970, *R.D. Thomas 21316* (AUA, GH, MISS, MO, NLU-2 sheets, NY, OKL, SAT, SMU, USCH); cleared areas in bottomland hardwoods forest S of LA 134 on George Franklin's Hunting Club, Sec. 1 & 6 R5&6 T18N, 29 Sep 1975, *R.D. Thomas 47417* (NLU); Spyker Estate W LA 139, E Stalking-head Creek S of Bastrop, Secs. 8&9 T20N R5E, 2 Jul 1976, *R.D. Thomas 49738, P. Pias 218* (NLU); roadbank and ditch beside US 165, 5 mi S Bonita near Bayou Calion, Sec. 22 T22N R7E, 16 Sep 1976, *R.D. Thomas 50330, P. Pias 490* (NLU); along base of bank beside Bayou Bartholomew at Chemin-a-Haupt State Park E of LA 139, Sec. 10 T22N R6E, 26 Oct 1978, *R.D. Thomas 61884, P. Pias 4033*, 26 Oct 1978 (NLU); disturbed areas beside LA 550 at bridges being rebuilt over Chemin-a-Haut Bayou E of LA 139 and W of LA 591 N of Bastrop, Sec. 13 T23N R6E, 24 Jul 1985, *R.D. Thomas 92958* (NLU); beside LA 590 at Chemin-a-Haut Bayou N of Bastrop and E of LA 139, Sec. 13 T23N R6E, 31 Jul 1990, *R.D. Thomas 119891* (NLU); bottomland hardwoods forest between Irvine Lake and Gilliam Sough NW of Vaugh, Secs. 11 & 14, T23N R4E, 26 Aug 1990, *R.D. Thomas 120790* (NLU); clearcut bottomland hardwoods W of US 165 about 2 mi N Ouachita Parish Line, S of Bastrop, Sec. 44(7) T20N R5E, 7 Sep 1990, *R.D. Thomas 120983* (NLU). **Orleans Par.:** in riverside clay at low water, Mississippi River at foot of Carrolton Avenue, 20 Nov 1949, *J. Ewan 18276* (NO); in rubble of city dump on batture behind Audubon Park, 5 Nov 1950, *J. Ewan 18305* (GH, NO). **Ouachita Par.:** along Ouachita River ca. 3 mi due N of Monroe, 23 Sep 1965, *J.W. Thieret 20831* (LAF); cleared lots in new Waterside Park Subdivision, E of Monroe, 26 Jul 1967, *R.D. Thomas, E.R. Barrett, P.M. Cicala & G.B. Montgomery 3752* (BRIT); woods near Waterside Park Subdivision E of Monroe, 05 Oct 1968, *R.D. Thomas 12575 & S. Thomas* (NCU, SMU); around Wall Lake, 28 Jul 1982, *G. Joye s.n.* (FLAS); Monroe, alluvial area along E bank of Ouachita River at Louisville Ave. bridge, 05 Aug 1982, *R.D. Thomas 82059* (FLAS, NY); waste areas between levee and east bank of Ouachita River north of U.S. 80 (Louisville Ave.) bridge in Monroe, 23 Oct 1983, *R.D. Thomas 86449* (US); old fields on Ouachita WMA, S of LA 15 near Richland Parish Line SE of Monroe, Sec 1 T16N R4E, 2 Sep 1987, *R.D. Thomas 101298* (MO, NY, OKL, TAES); along E bank of Ouachita River S of US 80 bridge and N of railroad bridge in Monroe, Sec 52 T18N R3E, 02 Dec 1989, *R.D. Thomas 115075* (VSC); Ouachita WMA, ca. 2 air mi SE of Richwood, S of LA 15, SE1/4 S1 & NE1/4 S12 T16N R4E, moist soil, 23 Jun 2004, *C. Reid 5041* (LSU). **Plaquemines Par.:** Baptiste Collette Pass area of the mouths of the Mississippi River, North Spit, dredge spoil islands, 4 Aug 1993, *K. Westphal P-8* (LSU); Mississippi River batture S of Tulane research facility at English Turn; SW corner of S6 T14S R25E, UTM 15R N3309980 E793319, 10 Sep 2004, *C. Reid 5247 with P.L. Faulkner* (LSU); Tulane University Riverside Research Laboratories, 29 Sep 1979, *R. Suttkus79-23-05* (NO); Tulane University Riverside Research Laboratories, 8 Sep 1979, *R. Suttkus79-17-23* (NO); Mississippi River delta S of Octave Pass and Brant Bayou, inner delta mud splays, 8 Sep 1985, *White 450* (NO); west bank of Dennis Pass ca. 2 km above mouth of Gulf of Mexico, near Texaco rig, roots submerged in water, 28 Aug 1985, *Pascal 245* (NO). **Pointe Coupee Par.:** along E shore of Atchafalaya River, vic. hwy. and railroad bridges, opposite Krotz Springs, 1 Aug 1964, *J.W. Thieret 18096* (LAF, SMU). **Rapides Par.:** rapids of the Red River, above Alexandria, north side, low grounds, donated by N.O. Academy of Sciences, Oct (without year), *Dr. J. Hale s.n.* (NO-0025867); muddy bank of R. river, opposite the rapids, Oct-Nov (without year), *J. Hale s.n.* (US-721672 ex Herb. C. Mohr); just N of Alexandria, peat shore of Buhlow Lake, 12 Sep 1962, *R. Kral 15847* (VDB-2 sheets); Fort Buhlow Lake, Sect. 16, Pineville, just W of Red River Bridge, 21 Oct 1966, *J.W. Thieret 25007* (LAF); sand and silt bar along Red River, river mile 97, 28 Sep 1978, *R. Suttkus78-43-1* (NO, USCH); Catahoula Lake, open lakebed, 4 Oct 1993, *J. Bruser 307* (LSU). **Sabine Par.:** ca. 6.5 mi NW of Toro, Sect. 4,

Toledo Bend at “Boone’s Landing,” sandy shore of lake and in water, 2 Jul 1969, *J.W. Thieret 31581* (LAF). **St. Charles Par.:** Bonnet Carre Spillway near East Guide Levee between river road and first railroad from river, 18 Aug 1973, *G.N. Montz 2725* (NO); 1 mi N of Airline Hwy. near East Guide Levee, 20 Aug 1973, *G.N. Montz 2744 & J. Weber* (LSU); center of floodway just N of river road, 18 Oct 1973, *G.N. Montz 2900* (LSU, NO); common near Airline Hwy. and East Guide Levee, 27 Jul 1978, *G.N. Montz 4598* (LSU, NO); common in center of floodway between river road and IC railroad, 29 Aug 1997, *G.N. Montz 8808* (LSU). **St. Helena Par.:** in standing water in old gravel pit ca. 7.5 mi SW of Pine Grove, Sec 47 T4S R3E, 25 Sep 1971, *C.M. Allen 1576* (LSU). **St. James Par.:** off LA 61 on edge of woods, 21 Aug 1999, *C.T. Everton 33-B* (LSU). **St. John the Baptist Par.:** south bank of Pass Manchac, 12 Jul 1975, *B.L. Shiflet s.n.* (LSU). **St. Landry Par.:** Oct 1913, *R.S. Cocks s.n.* (NO); 5 mi E of Opelousas, G. Guillory farm, just outside rice field in ca. 6 in water, 24 Oct 1960, *G. Kidder 158* (LAF-2 sheets); rice fields, rice field along Hwy. 71, 5 mi NW of Krotz Spring, 14 Oct 1972, *T. Zainuddin s.n.* (LSU). **St. Martin Par.:** ca. 6 mi S of Breaux Bridge, plants few, growing in a floating mat in weedy portion along SE shore of Lake Martin, 29 Sep 1960, *W.D. Reese 3858* (LAF-2 sheets); small colony in floating mat with other species, NE Lake Martin, ca. 5 mi S Breaux Bridge, 5 Oct 1960, *W.D. Reese 3861* (GH, NCU, VDB); Duck Lake, very abundant locally on recent alluvium, 15-16 Sep 1962, *R. Kral 15903* (VDB-2 sheets); 15 ½ mi N Morgan City, Sect. 26, disturbed soil along roadside, 3 ft tall, corolla white, 14 Jul 1967, *A. Lasseigne 445* (LAF, SMU, USMS); levee near Henderson, common plant on mud flats and along waterways in Atchafalaya Basin, plants to 2 ft in height, 15 Oct 1987, *G.P. Landry s.n.* (LAF); along Whiskey Bay Pilot Channel, E of LA 975, ca 1 mi N of jct. I-10, open river bank, below bluff, 17 Sep 2004, *C. Reid 5287* (LSU). **St. Mary Par.:** in mud of spoil bank, full sun, Six Mile Lake, 20 Jul 1959, *J. Ewan 19850* (GH, NO); common on recently exposed silt and Mud Islands in Grand Lake, near Charenton Beach, 21 Oct 1963, *C.A. Brown 17844* (LSU); newly exposed sandy margin to island in Grand Lake, opposite Wax Lake Canal outlet, 9 Oct 1966, *C.A. Brown 19546* (LSU); on bank of Atchafalaya Intracoastal Waterway, on LA 70 about 17 road mi S of LA 997-LA 70 jct. (Sec 36 R12E T155), 27 Oct 1973, *S.M. Kennedy 34* (LSU); Atchafalaya Bay on dredged material near buoy 53 about 3 mi south of land’s end, 18 Aug 1975, *G.N. Montz 3453* (LSU); Atchafalaya Bay on dredged material near buoy 53 about 3 mi S of land’s end, 19 Aug 1975, *G.N. Montz 3475* (LAF, NO, LSU); Berwick boat ramp on intracoastal canal, mud and silt spoil bank, 5 Sep 1975, *J. Horst B-3* (LSU); ditch in a sugar cane field on US 90 E of Franklin, 11 Oct 1986, *P. Cox 4912 & M. Cox, Jr.* (ECON). **St. Tammany Par.:** 1 mi S Nicholson, Miss., 27 Oct 1966, *F.H. Sargent 9060* (GA, MISS, MO, SMU); 2 mi N of Hwy. I-10, Perch Lake Bayou, 14 Oct 1978, *White 48* (NO); East Pearl River, 1 mi S of Hwy. I-10, 1979, *White* (NO); edge of woods and marsh along W Pearl River S of I-10 in Pearl River WMA E of Slidell, 16 Oct 1999, *R.D. Thomas 164025 with D. Moreland & M. Bible* (NY); helicopter landing area, ca. 3.3 km E of Liberty Bayou, ca. 2.5 km NW of Bonfouca Bayou, 18 Oct 2003, *P. Douglas 735 with M. Arnett & N. Hastings* (LSU). **Tangipahoa Par.:** 3 mi S Ponchatoula on I 55, recent formation, spoil bank running through a fresh water marsh, 22 Jul 1966, *E.R. Wascom 465* (LSU); beside Tangipahoa River at LA 40, 27 Sep 1968, *R.D. Thomas 12333* (NCU, SMU); along ridge of Lake Pontchartrain, near electric power line from lake inland, ca. 1 ½ mi N of Pass Manchac, common along shoreline, 2 Aug 1973, *G.N. Montz 2670 & L. Cutrer* (LAF, LSU, NO); along I-55 near jct. with US 51 just W of Ponchatoula, LA, 5 Oct 1979, *J.R. Pruski 1247* (LSU, NY); I-55 near jct. Hwy. 51, S of Ponchatoula, 3 Nov 1979, *E. Cruz & G. Landry s.n.* (LAF); in water near the parking area in Joyce WMA, 11 Nov 1990, *L.E. Urbatsch 6897 with E.A. Rossi & A.W. Lievens* (LSU). **Terrebonne Par.:** Houma, Sep 1917, *E.C. Wurzlow s.n.* (NY); sandbar near E side of Atchafalaya River at Sword Point, ca. 7 mi downstream from jct. intracoastal canal, ca. 8 air mi SSW of Berwick, 29 34 17 N, 91 13 23.4 W, 5 Nov 2008, *C. Reid 6891 with Lejeune* (LSU). **Union Par.:** along W bank of Ouachita River and edge of slough at Ouachita City Landing N of LA 2 and Sterlington, Sec. 16 T20N R4E, 19 Sep 1997, *R.D. Thomas 155275 with S. Cheatham & L. Marshall* (BRIT, GA, NY, TEX). **Vermilion Par.:** Gueydan, a threatening weed in rice fields, 15 Sep 1903, *S.A. Pipes s.n.* (US-2 sheets); Gueydan, Sep 1903, *S.A. Pipes s.n.* (GH, MO, NY); plants locally abundant in a dense stand, growing on muck at edge of water, NE corner White Lake, 18 Oct 1957, *W.D. Reese 1440 & V.T. Harris* (GH, LAF, NO); rice field, 2 mi S of Hwy. 13, 6 mi NW of Kaplan, 4 Jul 1969, *S.D. Thibodeaux 71* (LSU); on levee of rice field, 2 mi S of Hwy. 13, 6 mi NW of Kaplan, 5 Oct 1969, *S.D. Thibodeaux 282* (LSU); 3.2 mi S LA 14 and 5.9 mi W Gueydan, wet roadside ditch off Parish Rd. 8-16, 5 Sep 1988, *C.M. Allen 16253* (LAF); Hwy. 82 ca. 2 mi E of Hwy. 82/35 jct., old rice field, 6 Oct 1994, *P. Majestyk 1017* (HEND). **Vernon Par.:** ca. 5 mi NW Pitkin, Sect. 4, Fullerton Lake Recreation Area, Kisatchie National Forest, 8 Oct 1965, *J.W. Thieret 21238* (LAF). **West Feliciana Par.:** 6 mi SE of St. Francisville off Hwy. 61, sandy soil along Thompsons Creek, 9 Sep 1973, *C.M. Allen 5213* (LAF); sandy stream bank, intersection of Bayou Sara and LA 66 (Sec 49 T25 R3W), 14 Oct 1973, *J.C. Leak 65* (LSU); low wet woods between lake and river, off Hwy. US 61 at Thompson Creek, 28 Aug 1984, *F.M. Givens 3960* (BRIT-2 sheets, LSU). **Winn Par.:** along edge of woods beside gas line right-of-way S of LA 156 just E of Saline Bayou E of Goldonna, Secs 28&29 T12N R5W, 25 Jul 1987, *R.D. Thomas et al. 101035* (NY, USCH). **Mississippi. Bolivar**

Co.: roadside ditch, 3 mi west of Cleveland on old Pace Road, 8 Sep 1960, *H.J. Jacob 1390* (NCU); ca. 3.5 mi SW of Mound Bayou, ditch edge of ricefield, SW4 S7, Delta Region, to 1.2 m, fls. white, 29 Aug 1982, *S. McDaniel 26443* (MMNS, VSC). **Covington Co.:** Abundant in drying-out ditch on the west side of US Hwy. 49, 1.2 mi. S of jct. of MS Hwy. 589 near Seminary, T7N, R15W, Sec. 27, 7 Oct 2006, *S.W. Leonard 12332* (NCU). **Forrest Co.:** 4 mi W Hattiesburg, edge of lake, 24 Jul 1965, *S.B. Jones 3384* (MISS); Hattiesburg, Hattiesburg Convention Center, NE jct. Hwys I-59 and US 98, in and around lake behind convention center, sandy soil, 9 Nov 1999, *C.T. Bryson 17713 & Usnick* (VDB); Hattiesburg, NE jct. Hwy. I-59 and US 49 at Hattiesburg Convention Center, lake behind center, open area, on sandy soil at edge of lake, 8 Oct 2004, *C.T. Bryson 20392* (MMNS). **Greene Co.:** Leaf River ca. 1 mi E of McLain, floodplain, 4 Oct 1969, *K.E. Rogers 1816* (MISS, NCU, VDB). **Hancock Co.:** just N of I-10, low cypress-sweetgum-water hickory woods near Pearl River, to ca. 1.5 m, fls. white, 30 Aug 1975, *S. McDaniel 20124* (FLAS, MMNS, UNA, US, VDB); Stennis Space Center, NASA, 13 km SE of Picayune, Logtown Quadr., R16 T8 Sec10, Transect 28, Road P beyond Building 4325, 14 Aug 1991, *J.W. Wooten s.n.* (USMS). **Harrison Co.:** along Tchouticabouffa River at Hwy. 55, 29 Aug 1953, *R.L. Diener 1343* (GH, NO). **Hinds Co.:** W of Jackson, small pond, Nov 1974, *B. Snow 2513* (USMS). **Humphreys Co.:** disturbed area around Yazoo River bridge at Belzona, Hwy. 12, 30 Jul 1969, *T.M. Pullen 69953* (MISS). **Jackson Co.:** vic. Fitzgerald Camp at Johns Bayou, along Bluff Creek, infrequent, 16 Sep 1972, *K.E. Rogers 8657* (GH, MO, NCU, SMU, VDB). **Leflore Co.:** NW of Sidon, between Sidon cut-off and old Yazoo River run, T18N R1E Sec 19, MSEA Project Area, wet sandy soil, above lake, 19 Oct 1998, *C.T. Bryson 16814, J. MacDonald & R. Warren* (MISS, MMNS-2 sheets, NLU, VDB-2 sheets); NW Sidon, between Sidon cut-off and old Yazoo River run, T18N R1E S19, MSEA Project Area, around lake, Delta Region, 5 Aug 1999, *C.T. Bryson 17506 & P. Goodlett* (MISS). **Madison Co.:** SE of Canton, hwy. 43 and Ross Barnett Res., muddy lake shore, 10 Sep 1969, *S.B. Jones 17972* (FLAS, GA, MISS, NCSC); Barnett Reservoir, W of Safe Harbor Marina, Hwy. 43, at Pearl River Waterfowl Refuge, 7 Oct 1972, *K.E. Rogers 8686-B* (NCU), *8786-A* (MO). **Pearl River Co.:** ca. 8 mi NW of Picayune, damp open river-bank, 10 Sep 1968, *F.H. Sargent 9756* (GA, MISS, MO, SMU); frequent in shallow water and freshwater marsh N of new bridge over Lotts Creek, Walkiah Bluff Rd., ca. 6-7 mi W Hwy. US 11 in North Picayune, 6 Nov 2010, *S.W. Leonard 12398* (ODU). **Quitman Co.:** 7 mi S Crowder, vic. cleared slough, Delta Region, to 1.5 m tall, 14 Sep 1967, *S. McDaniel 9759* (MO-2 sheets). **Scott Co.:** Roosevelt State Park, low marshy area at upper end of lake, 6 Oct 1974, *C.M. Cooper 456* (MISS); lakeshore and mudflats in Roosevelt St. Park, 6 Oct 1974, *J.W. Burris 74387* (MMNS). **Tishomingo Co.:** Yellow Creek, Pickwick reservoir, 24 Aug 1944, *E.A. Philen & W.B. Reeves s.n.* (NCSC, NY, SMU). **Washington Co.:** 5.5 mi E Priscilla, R7W T19N S6, rare in ditches where 3 ft tall specimens form colonies, 5-12 Aug 1975, *C.R. Gunn 11001* (MISS). **Missouri. Butler Co.:** N side of Co. Rd. #320, ¼ mi E of State Hwy. 142, S of Poplar Bluff, T24N R6E S33 SE¼, drain corner of rice field, in up to 30 cm of water, plants to 1.5 m tall, 22 Aug 1992, *S. Hudson s.n.* (MO); Co. Rd. 320, ¼ mi E Hwy. 142, rice field drain corner beside rd., T24N R6E S34 SW4, 25 Aug 1992, *S. Hudson s.n.* (MO); Co. Rd. 320, ¼ mi E Hwy. 142, rice field beside rd., 9 Sep 1992, *S. Hudson s.n.* (MO); Hwy. HH, at midpoint, E line of S36 R6E T23N, swale between hwy. and milo field, 30 Oct 1992, *S. Hudson s.n.* (MO); Hwy. MM, 0.65 mi from Hwy. 67, drying sand of depression pond, T23N R05E S32, 31 Jul 1993, *S. Hudson 93* (MO); NW quarter of intersection Hwy. 67 and Co. Rd. 340, rice field, T23N R05E S21 SE4, 24 Aug 1993, *S. Hudson 184* (MO); S side Hwy. 142, ca. ½ mi W jct. CR 341, ca. 3 ½ mi E Hwy. US 67 in Neelyville, levee ditch along edge rice field, scattered, T22N R06E S16 NE4, 29 Sep 1994, *G. Yatskievych, S. Hudson, C. Horn, S. Hill 94-211* (MO); roadside ditch and edge of rice field along MO 142 just W of jct. with CR 341, ca. 3 mi E of Neelyville, T22N R6E Sec 16, 29 Sep 1994, *C.N. Horn et al. 8836* (USCH); MO Rt. 142, just W jct. CR 341, 3 mi E Neelyville, T22N R6E NE ¼ S16, roadside ditch and rice fields, mud and shallow water, 29 Sep 1994, *S.R. Hill 26179 with C.N. Horn, G. Yatskievych* (BRIT, GH, NY, TEX). **Ripley Co.:** Hwy. 142 and Co. Rd. 142E-44, a mile or more W of Butler Co. line, 16 Oct 1992, *S. Hudson s.n.* (MO). **North Carolina. Hyde Co.:** mucky exposed bottom of Lake Mattamuskeet, 04 Sep 1948, *R.R. Rudolph s.n.* (US); Lake Mattamuskeet, mudflat, 09 Sep 1948, *R.R. Rudolph 1-110* (NCSC, NCU). **Oklahoma. McCurtain Co.:** water filled drainage ditch 1 mi S and 2.25 mi W of Tom, 02 Oct 1983, *M. Cooper 1521* (SMU); Red Slough Wildlife Management Area, W of Harris, 19 Aug 2010, *A. Buthod & B. Hoagland RS-273* (OKL-2 sheets). **South Carolina. Aiken Co.:** shore E of boat landing off Savannah River, N33 18.645 W81 51.347, 3 Nov 2007, *D. Damrel 4441 with Damrel* (CLEMS, GA). **Barnwell Co.:** Road A-13 at Pen Branch delta, Savannah River Site, 14 Oct 1987, *J.S. Angerman s.n.* (CLEMS, NCU, USCH); in thermal effluent at delta of 4-mile Creek, infrequent through delta, Savannah River Plant, 8 Jul 1982, *A.E. Hodges 300* (CLEMS). **Jasper Co.:** weed in rice field, Savannah River Wildlife Refuge, 1.3 mi W jct. US Rt. 17 and 7A, N of levee, 8 Sep 1956, *H.E. Ahles 18175 with C.R. Bell* (GA, GH, NCU, NY); new aquatic pool, Savannah National Wildlife Refuge, Oct 1957, *E.O. Mellinger s.n.* (US); Savannah N.W. Refuge, 9 Jul 1959, *E.O. Mellinger s.n.* (NCU); weed in rice field in SRWR [Savannah National Wildlife Refuge], 1.3 mi. SW of jct. of US 17-US 17A, 9 Sep 1968, *S.W. Leonard 1949 & A.E. Radford* (NCU); plants growing in 1 ft. of water in canal

through rice fields, Savannah NWR, 28 Sep 1968, *J.R. Bozeman 11786* (AUA, FLAS, LAF, MISS, NCU, NO, NY, OKL, SMU, STAR, TEX, UNA, USCH, USMS, VDB, VSC); 0.6 mi west of jct. of SC 119 and lower portion of secondary road 27-119, 29 Oct 1980, *C. Aulbach-Smith 1297 with Kowalczyk* (CLEMS, USCH). **Lexington Co.:** Wolf Lake, low wet woods, 7 Aug 1975, *S. Mitchell s.n.* (USCH). **Richland Co.:** NE of jct. of railroad and Congaree River, Wateree Quad, 6 Aug 1986, *D. Rayner 2617* (USCH). **Texas. Bastrop Co.:** Bastrop, Duval's Tank, Oct 1933, *H.H. Duval 703* (TEX). **Bowie Co.:** wet roadside ca. 1.5 mi N of DeKalb, 18 Oct 1974, *J. Taylor 17189* (BRIT, LSU, NLU, NY, OKL, VDB); Brazoria County: Brazoria Wildlife Refuge, Olneyi Pond, 6 Sep 1968, *R. Fleetwood 9292* (LL); Brazoria WMA, Gatornest Pond, 26 Sep 1968, *R. Fleetwood 9353* (LL); San Bernard Refuge, Cedar Lane Creek, 11 Aug 1969, *R.J. Fleetwood 9511* (TEX); Buffalo Camp Bayou, toward E shoreline ca. 1500 ft. S of FM 332 bridge, W edge of city of Lake Jackson, on Gulf Coast Bird Observatory, Lake Jackson Quad., 29 Oct 1992, 44N 95 28 35W, elev. 10 ft, 25 Oct 2000, *W.R. Carr 19300* (TEX). **Burleson Co.:** W of roadside, Hwy. 36, 3.1 mi N of jct. TX 21, Caldwell, N303401 W964400, 21 Jul 1997, *D.J. Rosen 431 with S.D. Jones* (NO). **Cherokee Co.:** near Pinehill, in mud on edge of lake, at head of Striker Creek Reservoir, 30 Sep 1967, *D.S. Correll 35025* (LL); Colorado County: near Eagle Lake, Aug 1929, *B.C. Tharp s.n.* (TEX); Fort Bend County: Giese Ranch Unit of San Bernard NWR, on and S of FM 442, 7.2 km W of jct. with Hwy. 36, between Boling and Needville, infrequent in wetlands in disturbed coastal prairie, N29 19 55.1 W95 51 49.3, 24 Aug 2006, *D.J. Rosen 3898* (TEX). **Galveston Co.:** banks of Dickinson Bayou tributary at FM 517 (Pine Drive) and Lobit Drive, 27 Aug 1974, *F.R. Waller 2995 with J. Bauml* (GH, TAES, TEX). **Hardin Co.:** 2 mi SW of Saratoga, in shallow ditch, a favorite forage of cattle, 13 Nov 1945, *V.L. Cory 50767* (NY, SMU, TEX, US); 3½ mi NE of Sour Lake, infrequent in shallow water or mud along Little Pine Island Bayou, 29 Sep 1948, *V.L. Cory 54947* (SMU); along banks of Neches River at Evadale Bridge, N Hwy. 96, 1 Sep 1971, *P.A. Amerson 672 & G. Watson* (SMU); sandbar on Neches R. at Hwy. 96, in shallow water, sandbars, 12 Sep 1971, *G. Watson 709* (LAMU); Pinewood area, shallow clearing, 4 Nov 1978, *T. Fahey 10* (LAMU); Big Thicket National Preserve, Beaumont Unit, ca. 9 mi N along Neches River from the public boat ramp near the Beaumont Country Club (Colliers Ferry Site), sand bar and ridges and swale, occasional, 13 Jun 1998, *S.D. Jones 13764BT* (SAT). **Harris Co.:** Houston, 06 Aug 1923, *Thurow 19* (US); Crosby, 12 Aug 1923, *G.L. Fisher 59 (77-201, US)*; Sheldon WMA NE of Houston, near water of experimental ponds, 20 Jul 1965, *R.J. Fleetwood 77* (SMU, TEX); ca. 11 mi N Addicks, in water of roadside freshwater canal stream, 6 Oct 1965, *D.S. Correll 31890* (GH, LAF, LL); ca. ½ mi W of SR 6, ca. 1.9 airmi S to SSW of I-10 and SR 6 interchange, Addicks Quad., 29 45 21 N 95 39 23 W, elev. ca. 90 ft, mudflat around pond in barrow pit, 21 Sep 1993, *W.R. Carr 13022* (TEX). **Houston Co.:** Mission Tejas State Park, 27 Sep 1995, *J. Singhurst 3940* (BAYLU); **Jackson Co.:** Palmetto Bend (Texana) State Park, around stock tank in water oak (*Quercus nigra*) woodland, near Navidad River, 14 Oct 1977, *R.W. Neck 77-201* (BRIT). **Jefferson Co.:** without locality, 05 Oct 1934, *Parles 11099* (TAES); without locality, 05 Oct 1934, *Parles 11100* (TAES); 6 mi SW of Beaumont, Sep 1939, *Lay 12* (TAES); rice field, Sep 1943, *Higinbotham 20* (TAES); J.D. Murphree WMA, 1-10 mi SW Port Arthur, levee spoil bank, 16 Aug 1966, *K. Benad 131* (TEX); N Port Arthur, roadside swales, adj. to jct. US 96 and canals, 14 Oct 1980, *S. Cheatham s.n.* (TEX); Lee County: Somerville Lake ENE of Giddings, elev. ca. 300', 28 Jul 1984, *J. Larke, M.D. Wilson & E. Kutac s.n.* (TEX). **Leon Co.:** Fort Boggy State Park, 4 mi S Centerville, Hwy. 75, open wet area, rare, 02 Oct 1992, *E.S. Nixon 18571* (BRIT); Jason Hardin Ranch, 14 Sep 2004, *J. Singhurst & E. Bridges 13360* (BAYLU, TEX). **Liberty Co.:** ca. 12 mi SE Cleveland, along Rt. 321, plant up to 4 ft tall, fls white, 15 Oct 1967, *D.S. Correll 35124* (GH, LAF, LL, NCU); Moss Hill, slough edge on Rte. 105, 3 km W of town, 26 Sep 1990, *J.A. Churchill 90-1039* (NLU). **Matagorda Co.:** Bay City, 06 Aug 1918, *G.L. Fisher 160* (US); Matagorda, 11 Sep 1922, *B.C. Tharp 1596* (TEX, US); unshaded margin of freshwater impoundment on nameless creek entering Mad Island Lake from NE, level former coastal prairie on NW side of road to HQ of Mad Island Marsh Preserve, ca. 0.9 airmi NE of HQ complex, at N28 39 24.5 W96 05 45.1, Palacios NE Quad., elev. 2-3 ft, wet loamy clay, 5 Oct 2007, *W.R. Carr 26478* (TEX). **Maverick Co.:** Eagle Pass, 1929, *B.C. Tharp s.n.* (NY). **Nacogdoches Co.:** Angelina River and Hwy. 59, 20 Aug 1961, *R.L. Oliver 357* (SMU, TEX). **Orange Co.:** Rte. 105, 1 mi W Orangefield, in water of barrow pits bordering rice fields, 13 Sep 1968, *D.S. Correll 36511* (LL); Adams Bayou, Orange, leafy plant, up to 7dm tall, growing in shallow water or in mud, 15 Nov 1948, *V.L. Cory 50841* (GH, NY, SMU). **Polk Co.:** McCordell Lake, E. of Highway 59, 18 Sep 1972, *E.S. Nixon 5368, C. Burandt & L. Burrett* (NCU). **Sabine Co.:** Lowe's Marina on Hwy. 83, E of Hemphill, lakeside of Toledo Bend, 1 Oct 1986, *E.S. Nixon 15767 with S. & G. Jones* (SMU, TAES). **Walker Co.:** S side of Trinity River at Hwy. 19, mesic to hydric river side, 24 Oct 1987, *S.D. Jones 641* (TAES); Nelson Creek at FM 247, limestone and blueshale bottom, hydric to xeric creek side, 22 Oct 1988, *Jones 2161* (TAES). **Waller Co.:** 3 mi S of Brookshire on TX 1489, along Bessie's Creek, 6 Jun 1980, *T.J. Ayers 36* (TEX). **Washington Co.:** 22 Oct 1938, *E. Brackett 275A* (TEX). **Wharton Co.:** infrequent in heavy dark clay near farm road 442, 2.1 mi N Lane City, 14 Aug 1968, *J.J. Sperry and T.C. Bowers s.n.* (BRIT).