

A Morphometric Analysis of the *Cyperus squarrosus*-*Cyperus granitophilus* Complex in North America, with the Description of a New Variety of *Cyperus squarrosus*

Phillip D. Lowe and J. Richard Carter*

Herbarium (VSC), Biology Department, Valdosta State University, Valdosta, GA 31698

ABSTRACT

Morphometric data were used to investigate the relationship between *Cyperus squarrosus* and related *C. granitophilus*, with particular attention to populations of *C. granitophilus* recently reported from granite outcrops in Texas and Oklahoma. Data for 23 characters (variables) taken from 406 voucher specimens were analyzed using principal component analysis (PCA), discriminate analysis (DA), multivariate analysis of variance (MANOVA), and a Euclidian distance dendrogram. Results (1) strongly support the treatment of *C. granitophilus* and *C. squarrosus* as separate species but (2) provide at best weak evidence for formal recognition of *C. squarrosus* var. *runyonii* and (3) indicate that the Texas and Oklahoma populations recently reported as *C. granitophilus* are more closely related to *C. squarrosus* than *C. granitophilus*.

Key words: Cyperaceae, *Cyperus*, granite outcrop, morphometric analysis, new species

INTRODUCTION

The granite outcrops of the southeastern United States are characterized by highly exfoliated rock surfaces with little to no soil and communities comprising crustose lichens, mosses, and specialized plants that occur around ephemeral pools and shallow soil pockets formed on the otherwise harsh, inhospitable rock (Burbanck and Platt 1964). Such systems give rise to unique plant communities, and their high potential for endemism has attracted the attention of botanists and ecologists. One such endemic is *Cyperus granitophilus* McVaugh, a relative of the generalist *C. squarrosus* L. Both *C. granitophilus* and *C. squarrosus* are diminutive heliophytic annual sedges with the characteristic odor of fenugreek and are sympatric in these granite outcrop communities. Noticing two strikingly different size classes on the rocky outcrops, McVaugh (1937) postulated that *C. granitophilus* was an undescribed species related to, but distinct from, *C. squarrosus* [as *C. inflexus* Muhlenberg]. McVaugh also highlighted other characters, such as spikelet length and width, scale number, scale length, scale nerve number, and presence of an achene stipe as important in distinguishing between the two species. Kral (1983) noted the longer anther of *C. granitophilus* as an additional diagnostic feature. Based upon their evidence that *C. granitophilus* was a polyploid derivative of *C. squarrosus* [as *C. inflexus*], Garoni and Murdy (1964) argued against species rank for *C. granitophilus*. However, the current treatment in the *Flora of North America* (Tucker et al. 2002) and Weakley (2020) maintain them as distinct species, distinguished by scale width, nerve number, anther length, and filament length. Kral (1983) and Weakley (2020) expanded the habitat description to include seasonally wet pools, seeps, and banks of intermittent streams on a variety of rock substrates in addition to granite, including sandstone and limestone in middle Tennessee, diabase flatrock in the Piedmont, and

*email address: rcarter@valdosta.edu

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Altamaha Grit glade outcrops in southcentral Georgia. We have not seen vouchers from Georgia Altamaha Grit outcrops.

Recently, disjunct populations of *Cyperus granitophilus* were reported from the Llano Uplift of central Texas and the Wichita Mountains and Arbuckle Uplift of Oklahoma (O'Kennon and Taylor 2015). The Texas, Oklahoma, and southeastern piedmont plants identified as *C. granitophilus* share markedly similar habitats, plant communities, and geology (O'Kennon and Taylor 2015; Taff 1928), and O'Kennon and Taylor (2015) argue that these plants have been consistently misidentified as *C. squarrosus* due to the absence of *C. granitophilus* from regional floras and suggest that they may represent relictual populations from the cooler and moister Pleistocene conditions.

Our interest in this problem dates to 1989 when the second author vouchered similar plants [Carter 8214 (BRIT-VDB, VSC)] from a granite outcrop in Mason County, Texas, and called them *Cyperus granitophilus*. However, because of certain ambiguities in these vouchers, he chose not to report them until a more thorough study could be conducted, hence our present endeavor. Results from a preliminary analysis of the *Cyperus squarrosus*-*C. granitophilus* complex in Georgia were presented by Lowe and Carter (2016).

The objectives of this research are (1) to examine critically the relationship between *Cyperus squarrosus* and *C. granitophilus* to determine whether they are morphologically distinct, using a broader suite of characters, (2) to include recently reported records of *C. granitophilus* from Texas and Oklahoma to assess their relationship with southeastern material of *C. granitophilus*, and (3) to evaluate the relationship of an obscure, narrowly endemic taxon from Texas, *C. squarrosus* var. *runyonii* (O'Neill) S.D. Jones & Wipff, to both the *C. squarrosus* and *C. granitophilus*.

MATERIALS AND METHODS

We examined 406 specimens from the following herbaria: BRIT, GA, NY, SMU, VDB, TAES, VSC (Thiers 2018). Three-hundred thirty-one specimens had been identified *a posteriori* as *C. squarrosus* and 75 as *C. granitophilus*, including Texas and Oklahoma specimens cited as *C. granitophilus* by O'Kennon and Taylor (2015). These source specimens for our morphometric analysis are identified in the appendix by citing the herbarium in bold font where each resides. A critical study of vouchers and the literature (McVaugh 1937; Radford et al. 1968; Kral 1983; Carter et al. 1999; Carter and Bryson 2000; Tucker et al. 2002; O'Kennon and Taylor 2015) revealed 24 potentially informative characters (i.e., variables) for analysis (Table 1), although one variable, distance from achene base to point of its maximum width [ACHMX], was only used in the calculation of the ratio of the distance from achene base to its point of maximum width:achene length [ACHMX/ACHL], a proxy for achene outline (cf. Carter and Bryson 2000). The measurements for all 24 characters were recorded in an Excel spreadsheet along with a unique identifier [collector name in combination with collection number (or date) and source herbarium] linked to each source specimen. Each character was measured on each of the source specimens. Fine details were measured to the nearest 0.1 mm using an Olympus SZ 51 stereo dissecting microscope and a Minitool Micro-Scale (minitool, Inc., Campbell, California). The resulting measurements were recorded in an Excel spreadsheet. The data were subjected to principal component analysis (PCA), discriminate analysis (DA), multivariate analysis of variance (MANOVA), and a Euclidian distance dendrogram using Minitab 17 (2010). Raw data are available at [https://castaneajournal.com/supplemental_data/CAST88\(1\)_Carter_Supplement.xlsx](https://castaneajournal.com/supplemental_data/CAST88(1)_Carter_Supplement.xlsx).

The initial PCA scatter plot grouped by the *a priori* determinations, formed two distinct clusters, and the PCA highlighted variables significant as to variance between the taxa. Our data were then subjected to DA to identify specimens that may have been misclassified, and any such specimens were reexamined and reclassified as necessary. These determinations were then checked against MANOVA of all variables with the specimen determination as the model, and the variance between the variables was analyzed using ANOVA to examine the relationship of the variances within and among the taxa for a given variable. Ranges, means, and standard deviation for each variable are depicted as box plots with outliers (specimens outside the second standard deviation from the mean) shown.

Table 1. Variables, eigenvalues, and coefficients of the PCA.

| | PC1 | PC2 | PC3 | PC4 | PC5 | PC6 |
|-------------------|----------|----------|----------|----------|----------|----------|
| Eigenvalue | 7.61718 | 3.43459 | 2.56421 | 1.25241 | 1.0762 | 0.91679 |
| Proportion | 0.331182 | 0.14933 | 0.111487 | 0.054453 | 0.046791 | 0.03986 |
| Cumulative | 0.331182 | 0.480512 | 0.591999 | 0.646452 | 0.693243 | 0.733104 |
| Variable | | | | | | |
| ACHL | 0.244538 | 0.140202 | -0.05881 | 0.021725 | 0.089444 | 0.320965 |
| ACHMX/ACHL | -0.11113 | -0.14934 | 0.039157 | 0.146714 | -0.57642 | 0.414989 |
| | | | | | | |
| ACHST | -0.25372 | -0.25842 | -0.16336 | 0.014359 | 0.153072 | 0.033351 |
| ACHW | 0.265686 | 0.18409 | 0.02263 | -0.15667 | -0.00295 | 0.064874 |
| ANTHL | 0.290123 | 0.224413 | 0.092268 | -0.06966 | -0.08602 | 0.068461 |
| AWN | 0.274456 | 0.170162 | 0.071791 | -0.16632 | 0.045378 | -0.06204 |
| BRC1L | 0.164061 | -0.32687 | 0.196322 | -0.05765 | -0.09663 | -0.28776 |
| BRC1N | 0.134698 | -0.1226 | 0.184931 | 0.491545 | -0.02163 | 0.025683 |
| BRC1NL | 0.092946 | 0.004401 | 0.259582 | 0.605963 | -0.10454 | -0.36922 |
| BRC1TW | 0.211989 | -0.1551 | 0.113815 | 0.164291 | 0.47015 | 0.147371 |
| CULML | 0.173511 | -0.31786 | 0.000866 | -0.34144 | -0.19046 | -0.24017 |
| LEAFL | 0.211611 | -0.28012 | 0.131193 | -0.23618 | -0.1394 | -0.2942 |
| LEAFW | 0.231862 | -0.14852 | 0.081915 | 0.059054 | 0.397752 | 0.148705 |
| NRVN | 0.21324 | 0.162073 | 0.08288 | -0.04041 | -0.01459 | 0.093175 |
| RAYL | 0.10647 | -0.42085 | -0.00959 | -0.14303 | 0.058492 | 0.256266 |
| RAYN | 0.062612 | -0.38703 | 0.130339 | 0.030312 | -0.00183 | 0.384154 |
| SCALL | 0.253473 | 0.023966 | -0.00571 | 0.076507 | -0.37682 | 0.157841 |
| SCALN | 0.061439 | -0.04722 | -0.53778 | 0.092114 | 0.001633 | -0.07794 |
| SCALW | 0.268416 | 0.117006 | 0.100135 | -0.05223 | 0.032161 | -0.08245 |
| SPK1L | 0.170488 | -0.22167 | -0.28587 | 0.110864 | 0.044622 | -0.16081 |
| SPK1LTL | 0.210814 | 0.011375 | -0.45237 | 0.081616 | -0.04401 | -0.01485 |
| SPK1LW | 0.29253 | 0.074682 | -0.08087 | 0.010555 | -0.1349 | 0.107796 |
| SPKW | 0.195421 | -0.07764 | -0.40128 | 0.215929 | -0.04861 | -0.07506 |

Electron micrographs were made using a JEOL JSM-6480LV (JEOL, Peabody, Massachusetts) scanning electron microscope. Representative achenes were harvested from specimens and mounted to glass cover slips with double-stick carbon tape on aluminum stubs. The stubs were then imaged on low magnification (85X) using a secondary electron detector. The resulting images were edited for contrast.

To map the distribution of *C. squarrosus* and *C. granitophilus* in the United States, data were taken from labels of physical specimens and from digital images accessed through the SERNEC portal (2018). Physical vouchers were borrowed from BRIT, GA, NY, SMU, VDB, TAES, and VSC, and digital data were taken from records in ARIZ, ASC, ASU, BOON, BRY, BUT, CLEMS, CM, COLO, CS, DBG, DES, DUKE, EIU, EKY, EMC, F, FARM, FLAS, FSU, FUGR, GEO, GMUF, GSW, HUNT, HWBA, IBE, ILLS, IND, KNK, LL, LSU, MARY, MCA, MICH, MISS, MISSA, MMNS, MO, MOR, MSUB, MUR, MWI, NCSC, NCU, NMC, NO, SRSC, TENN, TEX, TROY, TTRS, UARK, UCAC, UCR, UNCC, URV, USCH, USCS, USFS, USMS, USU, UT, UTM, UWFP, VPI and WIS (Thiers 2018). Identifications of all specimen records from which data were derived virtually were checked via their associated images. Virtual records are indicated by an asterisk next to the herbarium code in the appendix. Maps were generated in ESRI's ArcMap (ESRI 2021) using county level data from the herbarium records. All base maps were obtained from the United States Geological Survey (Georgia GIS Clearinghouse, USGS, Savannah, Georgia).

RESULTS

Results of PCA (Table 1, Figures 1 and 2) support the recognition of *C. granitophilus* as a species distinct from *C. squarrosus*. The eigenvalues indicate principal components (PC) 1 and 2 accounted for 58.9% of the total variance. The variables floral scale length [SCALL], width of widest spikelet [SPKLTW], anther length [ANTHL], and achene width [ACHW] affected variance of PC1 most (Table 1), whereas the most impactful variables of PC2 were length of longest ray [RAYL], number of rays [RAYN], length of longest primary inflorescence bract [BRCTL], and culm length [CULML] (Table 1). The most informative variables of PC3 were number of floral scales per spikelet [SCLN], length of longest spikelet [SPKLTL], width of widest spike [SPKW], and length of longest spike [SPKL] (Table 1). The results of the DA (Table 2) generally supported the PCA groupings (Figures 1 and 2), highlighting only seven outlier specimens of *C. squarrosus*, all from tropical regions. The dendrograph (Figures 3–6) further confirmed this, separating the two taxa with only 4 tropical outliers. Both sets of outliers were reexamined and their determinations confirmed. The results of the MANOVA (Table 3) showed that the differences between the taxa were significant (p -value < 0.001).

The PCA also shows that specimens from Texas and Oklahoma identified as *C. granitophilus* by O'Kennon and Taylor (2015) do not group with *C. granitophilus* specimens from rock outcrops mostly from the piedmont region of the southeastern United States. In the scatter plot of PC1 and PC2 (Figure 1), these Texas and Oklahoma specimens cluster primarily with *C. squarrosus* with a few individuals appearing possibly intermediate between *C. squarrosus* and *C. granitophilus*. Moreover, when PC3 was included with PC1 and PC2 in a three-dimensional scatter plot (Figure 2), this group from Texas and Oklahoma diverged strongly from southeastern *C. granitophilus* specimens (Figures 3 and 5), based primarily on differences in number of floral scales per spikelet [SCALN]. Boxplots (Figures 7 and 8) and integral plots (Figures 9 and 10) further confirmed the disparity in the variance of these characters, showing that the characters of the disjunct putative *C. granitophilus* populations from Texas and Oklahoma did not exhibit many similarities in diagnostic characters.

DISCUSSION

Are *Cyperus squarrosus* and *C. granitophilus* distinct species?

Scatter plots show two distinct groups (Figures 1 and 2). Thus, our results support recognition of *C. granitophilus* and *C. squarrosus* as distinct species and indicate floral scale length [SCALL], width of widest spikelet [SPKLTW], and anther length [ANTHL] are most reliable characters for

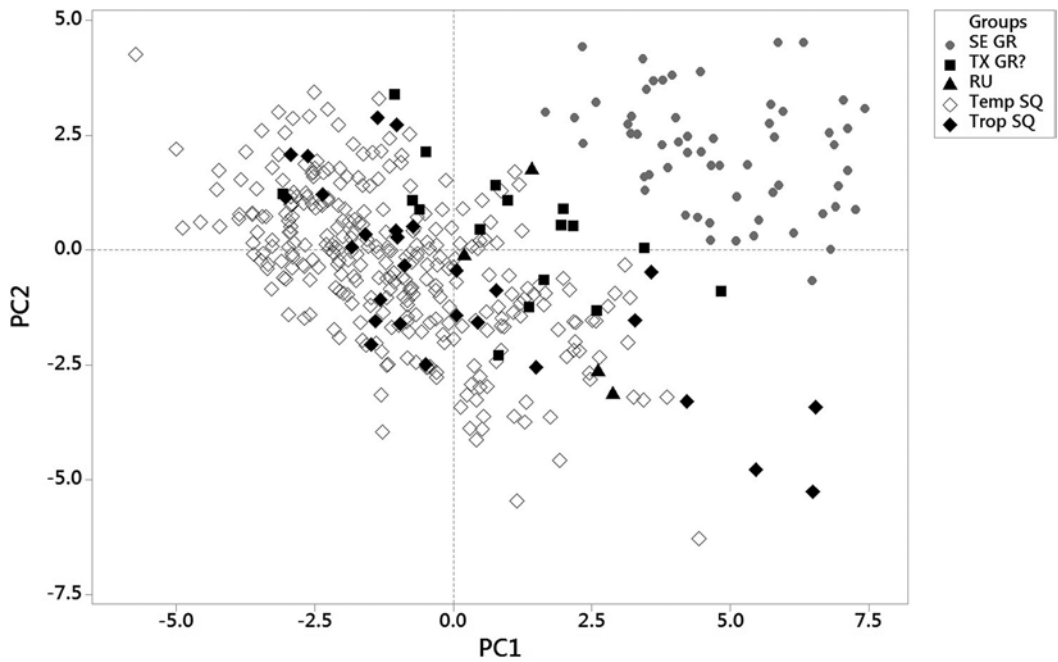


Figure 1. Scatter plot of principal components 1 and 2, with southeastern piedmont *C. granitophilus* (SE GR), putative Texas and Oklahoma *C. granitophilus* (TX GR?), *C. squarrosus* var. *runyonii* (RU), and *Cyperus squarrosus* var. *squarrosus* separated by temperate (Temp SQ) or tropical (Trop SQ) origin.

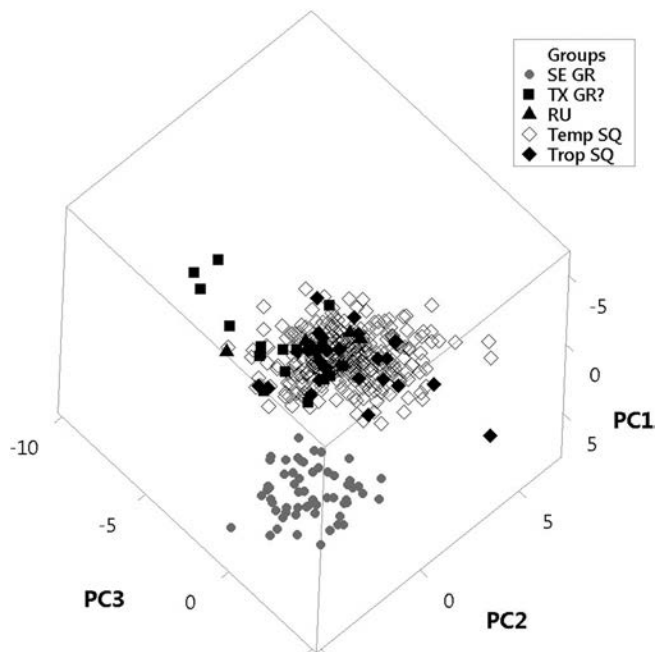


Figure 2. Scatter plot of principal components 1, 2, and 3 showing southeastern piedmont *C. granitophilus* (SE GR), putative Texas and Oklahoma *C. granitophilus* (TX GR?), *C. squarrosus* var. *runyonii* (RU), and *Cyperus squarrosus* var. *squarrosus* separated by temperate (Temp SQ) and tropical (Trop SQ) origin.

Table 2. Results of discriminate analysis.

| <i>A priori</i> group | True Group | |
|-------------------------|-------------------------|----------------------|
| | <i>C. granitophilus</i> | <i>C. squarrosus</i> |
| <i>C. granitophilus</i> | 58 | 7 |
| <i>C. squarrosus</i> | 0 | 341 |
| Total N | 58 | 348 |
| N Correct | 58 | 341 |
| Proportion | 1.000 | 0.980 |

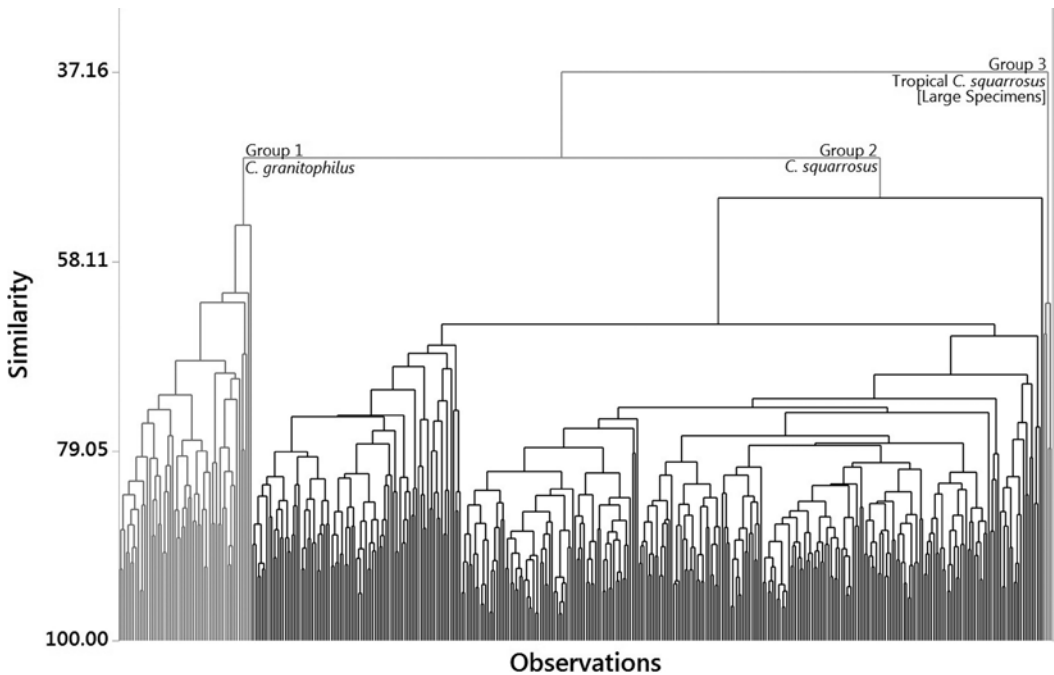


Figure 3. Complete Euclidian distance dendrogram based on diagnostic characters for PC1 and PC2.

separating them. Anther length [ANTHL], first noted by Kral (1983), is the most important diagnostic character, showing almost no overlap between the two species (Figures 7c and 9c). McVaugh (1937) and Weakley (2020) cite the short-stipitate achene base as diagnostic: present in *C. squarrosus* (Figure 11a) and absent in *C. granitophilus* (Figure 11b). Except for a few individuals, this trait was a reliable diagnostic character for distinguishing between the two species. The seven specimens highlighted by the DA were all *C. squarrosus* outliers from the tropics, which were nearly twice the average size of most temperate North American *C. squarrosus* plants (Table 4). The largest of these were isolated by the dendrogram (Figures 3 and 6) and grouped together, but not with *C. granitophilus*. Other than their larger overall height, these specimens lack any diagnostic characters of *C. granitophilus*, and apparently none were collected from granite outcrops. *Cyperus squarrosus* showed a high degree of morphological variability, and additional investigation is needed to develop a better understanding of its variation on a worldwide basis with a special emphasis on the large tropical specimens that differ greatly from the expected morphological bounds of the species, as it is expressed in temperate North America.

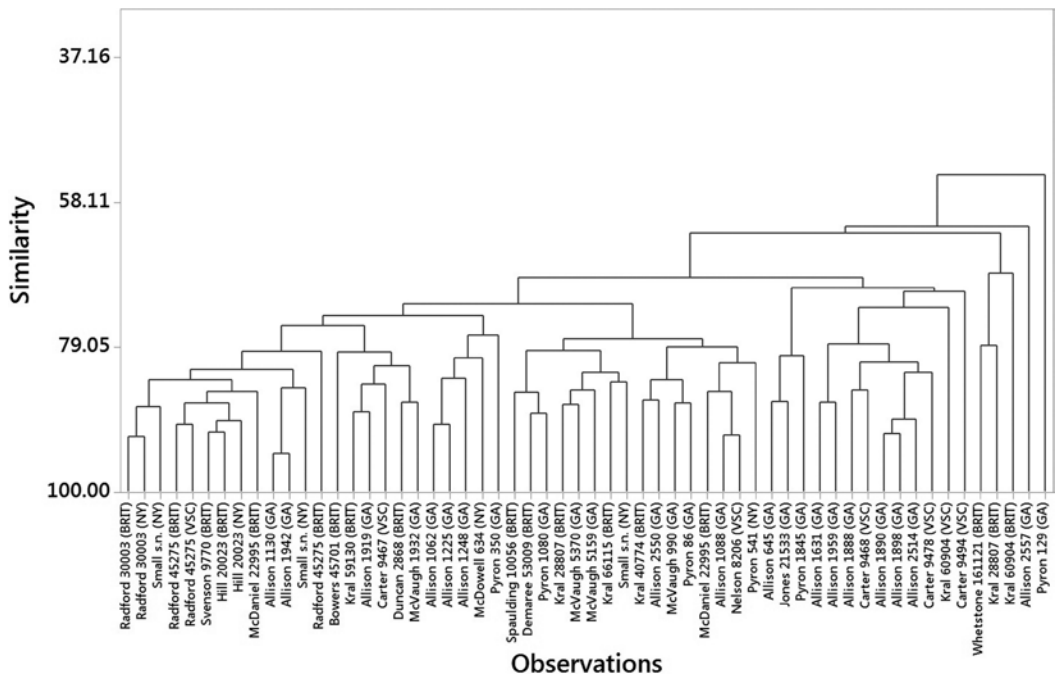


Figure 4. Group 1, *Cyperus granitophilus* portion of the Euclidian dendrogram.

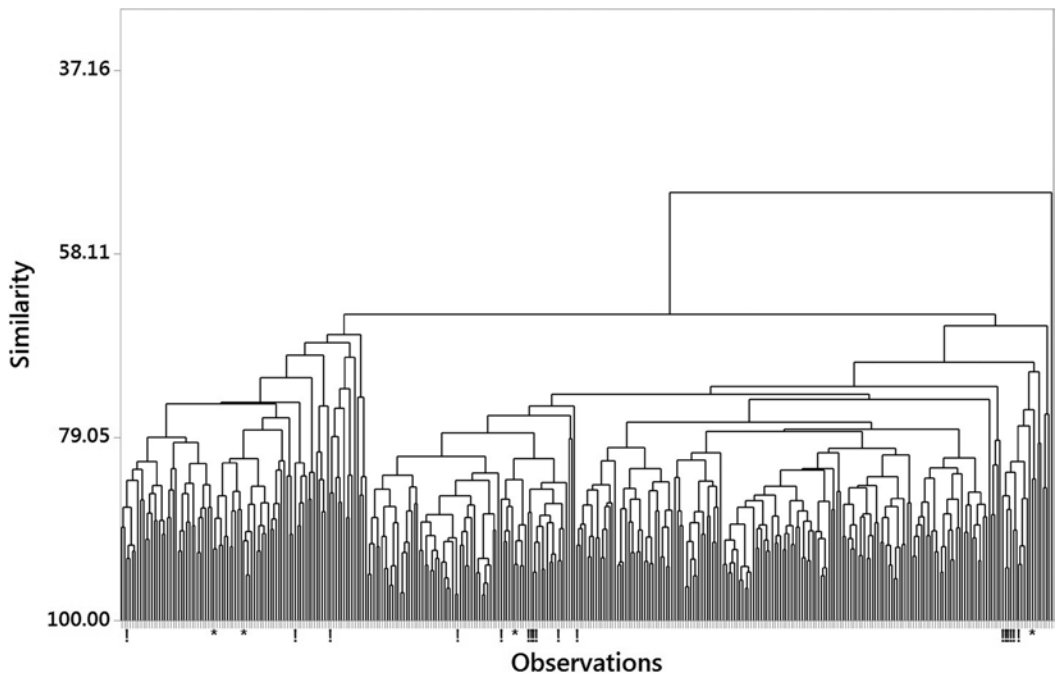


Figure 5. Group 2, *Cyperus squarrosus* var. *squarrosus* portion of the Euclidean dendrogram; putative Texas and Oklahoma *C. granitophilus* specimens marked with an exclamation point (!) and *C. squarrosus* var. *runyonii* specimens marked with an asterisk (*).

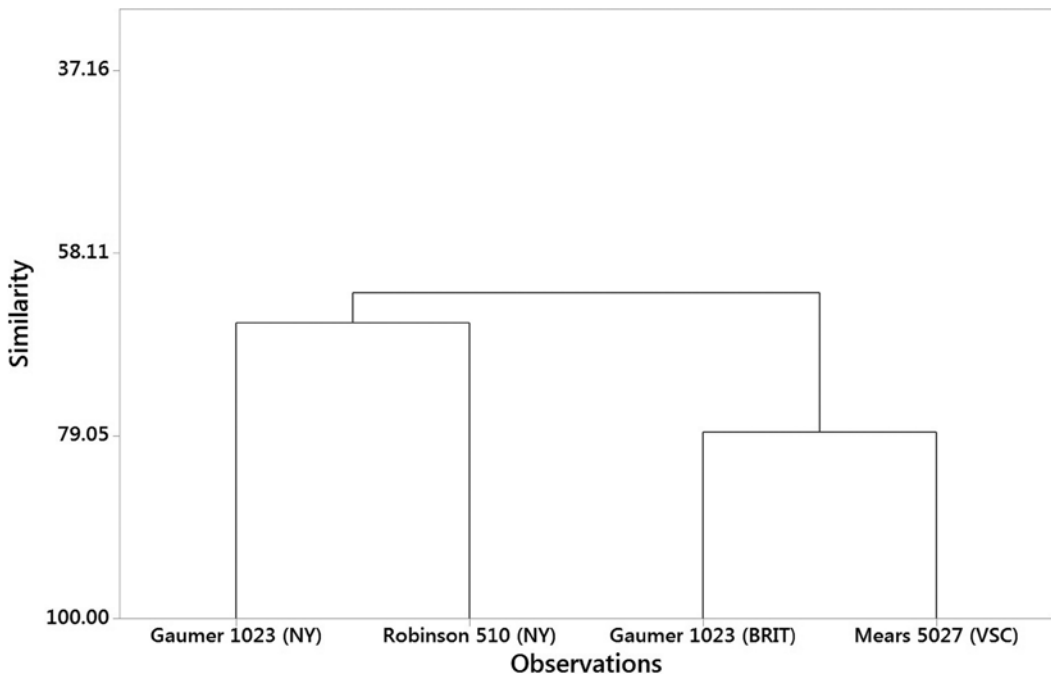


Figure 6. Group 3, *Cyperus squarrosus* var. *squarrosus* large tropical specimens from the Yucatan Peninsula, Mexico [Gaumer and Mears] and Zambia [Robinson] portion of the Euclidean dendrogram.

Table 3. Results of MANOVA for all 24 characters between all four taxa.

| MANOVA for TAXA | | | | | |
|------------------|----------------|-----------|--------------|----------------|--------|
| Criterion | Test Statistic | F | DF Numerator | DF Denominator | P |
| Wilks' | 0.04912 | 28.685 | 69 | 1136 | <0.001 |
| Lawley-Hotelling | 12.56434 | 68.952 | 69 | 1136 | <0.001 |
| Pillai's | 1.31080 | 12.888 | 69 | 1146 | <0.001 |
| Roy's | 12.04812 | | | | |
| s = 3 | m = 9.5 | n = 189.0 | | | |

What is the status of *Cyperus squarrosus* var. *runyonii*?

In Figure 1, *C. squarrosus* var. *runyonii* specimens are scattered within the *C. squarrosus* var. *squarrosus* cloud, indicating a close affinity with this taxon (Figure 1). The spatuloid achene (Figure 11d) appears to be the only character that distinguishes *Cyperus squarrosus* var. *runyonii* from *C. squarrosus* var. *squarrosus*, and all other characters of *C. squarrosus* var. *runyonii* fall within the ranges of *C. squarrosus* var. *squarrosus*. The dendrogram nests *C. squarrosus* var. *runyonii* within the broader *C. squarrosus* group; however, specimens of *C. squarrosus* var. *runyonii* do not form a distinct cluster (Figure 5). The paucity of specimens of *C. squarrosus* var. *runyonii* suggests it occurs only sporadically within the range of *C. squarrosus* var. *squarrosus*. However, given its odd achene morphology, varietal status for *C. squarrosus* var. *runyonii* remains useful, if for no other reason than to bring it to the attention of field botanists who are likely to find additional populations that would provide the basis for a better understanding of this enigmatic taxon.

Does *Cyperus granitophilus* occur in Texas and Oklahoma?

Texas and Oklahoma specimens recently reported as *Cyperus granitophilus* by O'Kennon and Taylor (2015) fall within the *C. squarrosus* cloud in the two-dimensional score plot (Figure 1).

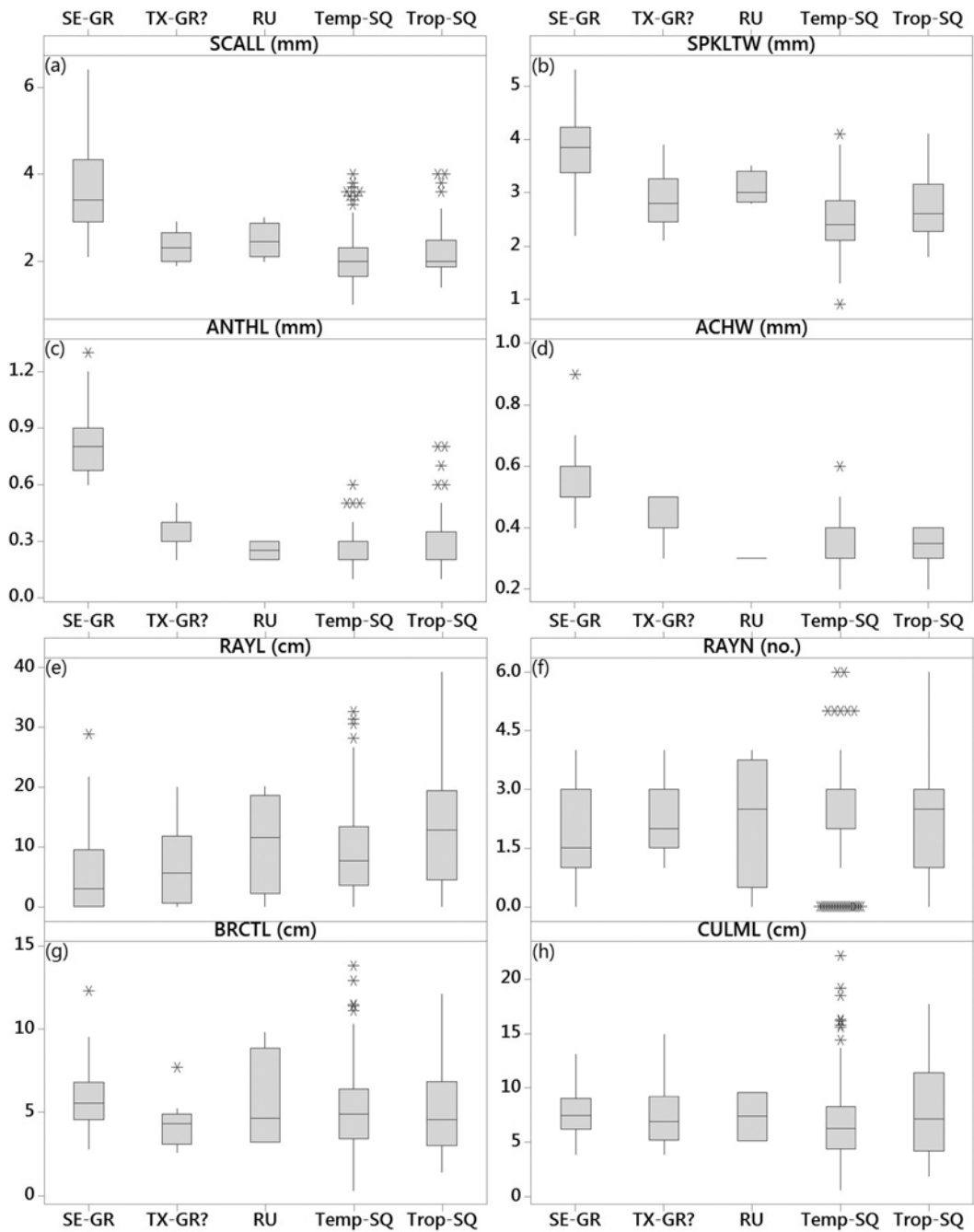


Figure 7. Boxplot of four most important characters of PC 1 (a–d) and PC 2 (e–h) for southeastern *C. granitophilus* (SE-GR), putative Texas and Oklahoma *C. granitophilus* (TX-GR?), *C. squarrosus* var. *runyonii* (RU), and *Cyperus squarrosus* var. *squarrosus* separated between temperate (Temp SQ) and tropical (Trop SQ).

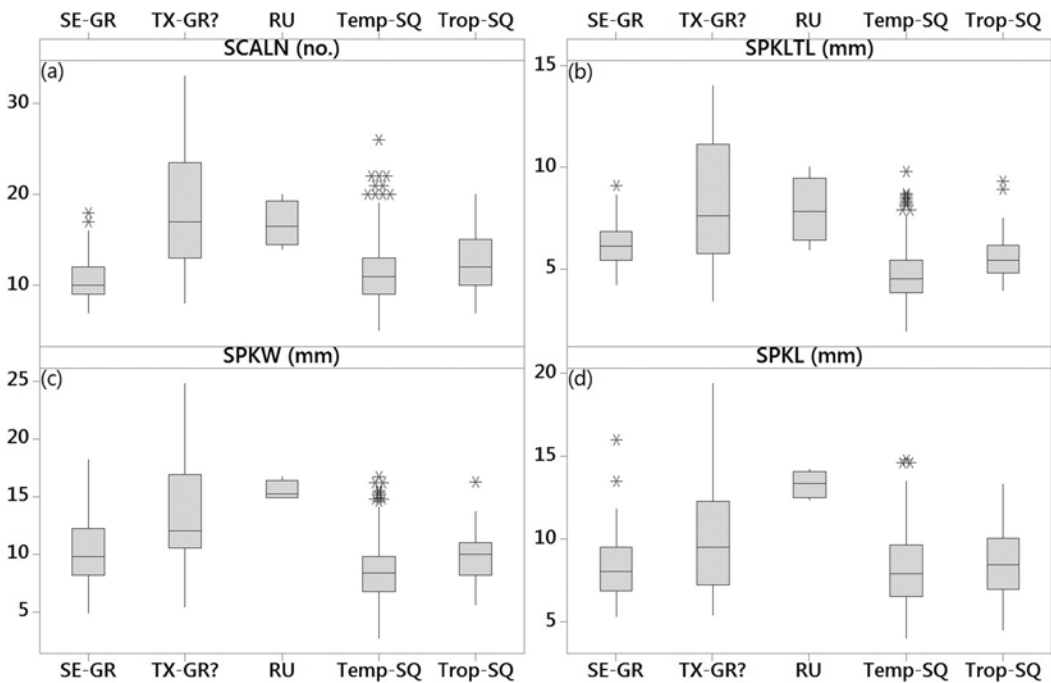


Figure 8. Boxplot of four most important characters of PC3 for southeastern *C. granitophilus* (SE-GR), putative Texas and Oklahoma *C. granitophilus* (TX-GR?), *C. squarrosus* var. *runyonii* (RU), and *Cyperus squarrosus* var. *squarrosus* separated between temperate (Temp SQ) and tropical (Trop SQ).

Several of these specimens form the edge of this cluster, and one was highlighted as a possible intermediate between *C. squarrosus* and *C. granitophilus*. All of these peripheral specimens were carefully reexamined and found to lack the critical diagnostic features of *C. granitophilus*, i.e., longer anthers, longer floral scales, and estipitate achenes. Thus, we interpret them as unusually large *C. squarrosus* plants. The three-dimensional scatter diagram incorporating PC1, PC2, and PC3 (Figure 2) shows a clear separation of these Texas and Oklahoma plants from *C. granitophilus*. The most informative characters in PC3 are number of floral scales per spikelet [SCALN] and length of longest spikelet [SPKLT], which differ consistently between *C. squarrosus* and *C. granitophilus*, with *C. granitophilus* having fewer but larger floral scales on relatively short spikelets, and the Texas and Oklahoma specimens having a greater number of smaller floral scales.

Although these granite outcrop plants of Texas and Oklahoma share some similarities (e.g., culm length, achene shape) with *C. granitophilus* from the southeastern piedmont and adjacent physiographic provinces, most of the diagnostic characters fall within the range of *C. squarrosus* or between *C. squarrosus* and *C. granitophilus* (Table 4). The Texas and Oklahoma plants have longer spikelets and larger spikes more characteristic of southeastern *C. granitophilus*; however, the greater length of their spikelets is due to a greater number of smaller floral scales (Figures 7a, 8a, 9a and 10a). These specimens also lack the longer anthers and estipitate achenes diagnostic of *C. granitophilus*. Although the Texas and Oklahoma plants are generally taller than typical *C. squarrosus*, it is not unusual for plants of *C. squarrosus* from the tropics to exhibit culms exceeding even those of *C. granitophilus*. Interestingly, the three-dimensional scatter plot of PC1, PC2, and PC3 (Figure 2) shows these specimens dispersed along a different vector from the rest of *C. squarrosus*, which suggests that these Texas and Oklahoma plants represent an incipient convergent ecotype arising out of the local populations of *C. squarrosus*, perhaps adapting to similar environmental conditions as *C. granitophilus* in granite and other rock outcrops east of the

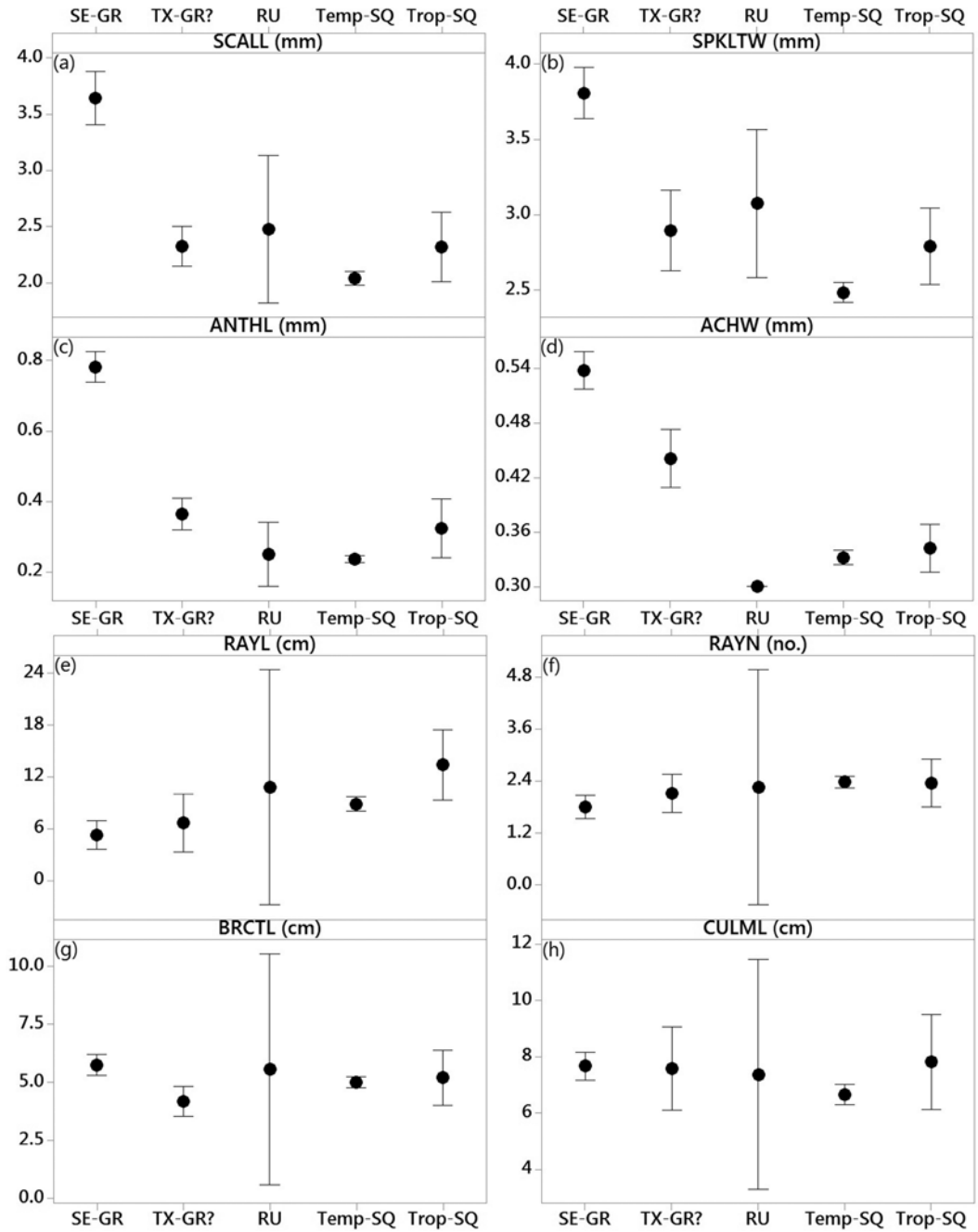


Figure 9. Integral plot of four most important characters of PC 1 and 2 for southeastern *C. granitophilus* (SE-GR), putative Texas and Oklahoma *C. granitophilus* (TX-GR?), *C. squarrosus* var. *runyonii* (RU), and *Cyperus squarrosus* var. *squarrosus* separated between temperate (Temp SQ) and tropical (Trop SQ).

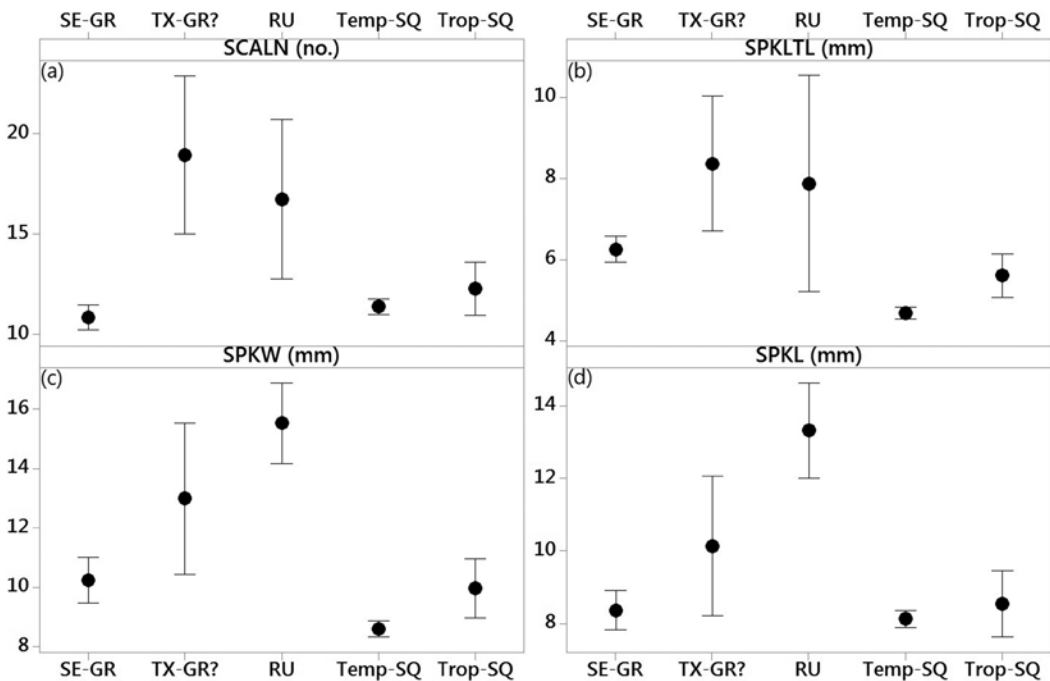


Figure 10. Integral Plot of four most important characters of PC3 for southeastern *C. granitophilus* (SE-GR), putative Texas and Oklahoma *C. granitophilus* (TX-GR?), *C. squarrosus* var. *runyonii* (RU), and *Cyperus squarrosus* var. *squarrosus* separated between temperate (Temp-SQ) and tropical (Trop-SQ).

Mississippi River. Thus, we conclude the Texas and Oklahoma specimens assigned to *C. granitophilus* by O'Kennon and Taylor (2015) fall within the range of variation of *C. squarrosus* and are better treated as a variety of this species, as follows.

Cyperus squarrosus* var. *graniticus P.D. Lowe, var. nov. Type: U.S.A. Texas. Burnet Co.: Granite Mountain, 16 Jun 1946, *D.S. Correll 12729* (Holotype: BRIT!; Isotype: SMU!)

Paratypes: **U.S.A. OKLAHOMA. Comanche Co.:** Wichita Mountains Wildlife Refuge. ca. 15 mi NW of Lawton, trail to summit of Elk Mountain, 34.729786°N, -98.7202174°W, WGS 1984, 19 Jun 2015, *K.N. Taylor 3026* (BRIT). **TEXAS. Burnet Co.:** Granite Mountain, 16 Jun 1946, *D.S. Correll 12729* (BRIT, SMU); Granite Mountain along Farm Road 1431, 1.8 mi W of jct of Farm Road 1431 and US 281, W of Marble Falls, 7 Jun 1988, *L.E. Urbatsch 4791* (BRIT-2). **Llano Co.:** 5 Aug 1931, *S.E. Wolff 3157* (BRIT, SMU); Enchanted Rock, 20 Aug 1936, *B.C. Tharp s.n.* (BRIT, SMU); Enchanted Rock SNA, Moss Lake on N side of park, DD 30.5092 -98.8255, 4 Oct 1990, *R.J. O'Kennon 8128* (BRIT-2); Enchanted Rock SNA, FM 965, ca. 16.8 mi N of Main St, Fredericksburg, 30.50025762°N, -98.8171891°W, WGS 1984, 15 Jul 2014, *K.N. Taylor 2776* (BRIT); *R.J. O'Kennon 26143* (BRIT); *R.J. O'Kennon 26145a* (BRIT); Enchanted Rock SNA, 30.499982 N, -98.817119W, WGS 1984, 16 Jul 2014, *R.J. O'Kennon 26142* (BRIT); Enchanted Rock SNA, FM 965, ca. 16.8 mi N of Main St, Fredericksburg, 30.5000572°N, -98.82287324°W, WGS 1984, 17 Sep 2014, *K.N. Taylor 2860* (BRIT); Enchanted Rock SNA, FM 965, ca. 16.8 mi N of Main St, Fredericksburg, 30.51246871°N, -98.80255673°W, WGS 1984, 19 Sep 2014, *K.N. Taylor 2908* (BRIT). **Mason Co.:** 14.2 mi E of Mason by Hwy TX 29, 16 Aug 1989, *R. Carter 8214* (NY, VDB, VSC); Mason Mountain Wildlife Refuge, 30.826460°N, -99.220047°W, WGS 1984, 14 Aug 2012, *R.J. O'Kennon 25348* (BRIT).

Diagnosis—*Cyperus squarrosus* var. *graniticus* differs from *C. squarrosus* var. *squarrosus* in the following ways: *C. squarrosus* var. *graniticus* is a larger plant than most temperate zone plants of

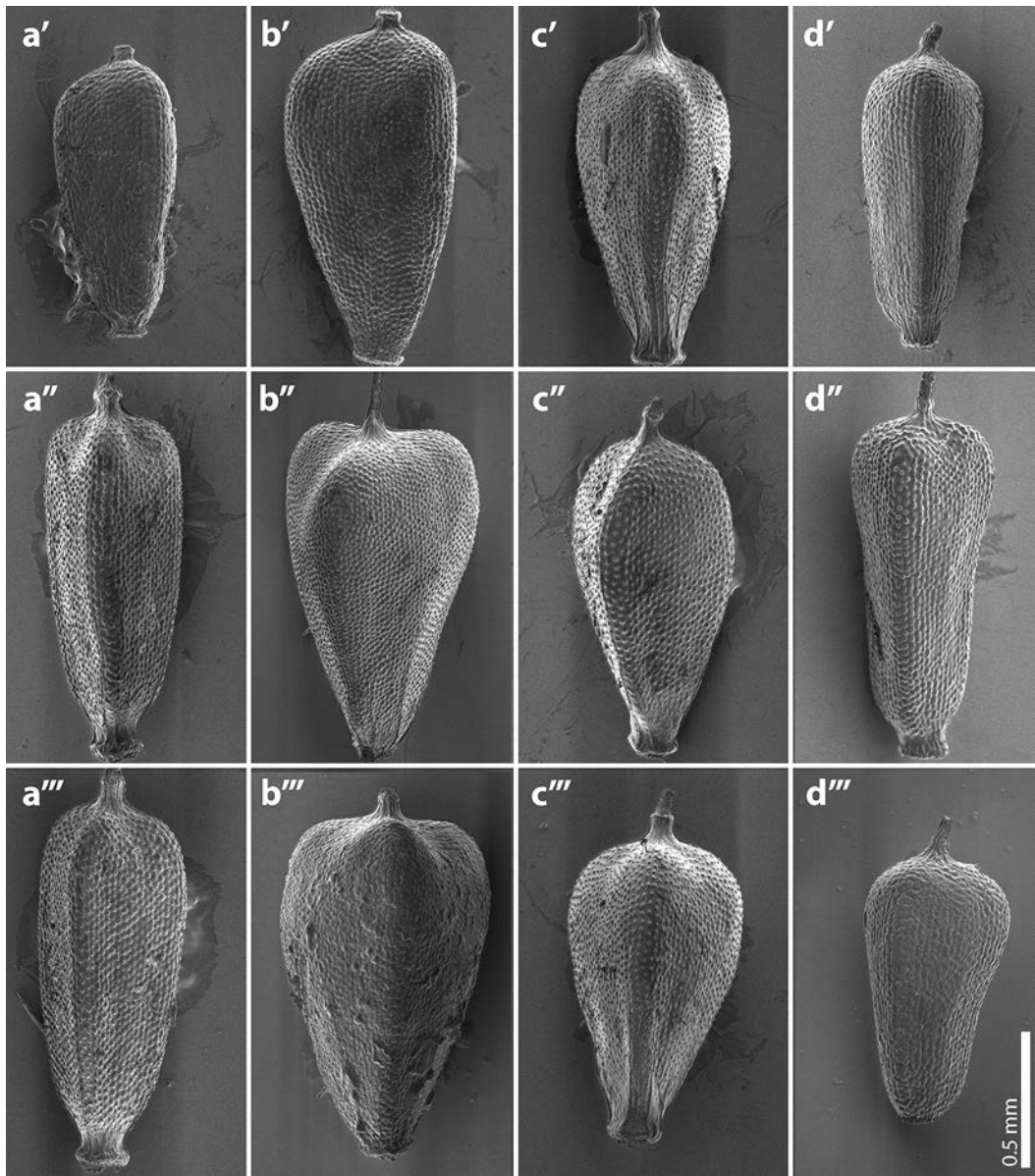


Figure 11. Scanning electron micrographs of achenes. (a) *Cyperus squarrosus* var. *squarrosus*—a' Carter 8007 (VSC), a'' McDonald 7656 (VSC), a''' Gaumer 1023 (NY); (b) southeastern piedmont *C. granitophilus*—b' Radford 45275 (VDB), b'' Kral 60904 (VSC), b''' Kral 59130 (VDB); (c) *C. squarrosus* var. *graniticus*—c' O'Kennon 26142 (BRIT), c'' Taylor 2776 (BRIT), c''' O'Kennon 26145a (BRIT); (d) *C. squarrosus* var. *runyonii*—d' Gould 8525 (SMU), d'' Lott 5105 (BRIT), d''' Jones 1470 (SMU).

Table 4. Comparison of six diagnostic characters among *Cyperus granitophilus*, *C. squarrosus* var. *squarrosus*, *C. squarrosus* var. *runyonii*, and *C. squarrosus* var. *graniticus*.

| | <i>C. granitophilus</i> var. <i>squarrosus</i> | <i>C. squarrosus</i> var. <i>runyonii</i> | <i>C. squarrosus</i> var. <i>graniticus</i> | <i>C. squarrosus</i> |
|---|---|--|--|-------------------------|
| Spikelet length | 5.4–6.9 | 3.7–5.3 | 5.9–7.8 | 5.8–9.7 |
| Mean number of floral scales per mm of spikelet length | 1.5–2 | 2–3 | 2–2.5 | 2–2.5 |
| Floral scale length (mm) | 1.6–3.3 | 1–1.6 | 1.2–1.3 | 1.2–1.5 |
| Achene shape | Obpyramidal | Oblong to narrowly obovoid | Spatuloid | Obovoid to ±obpyramidal |
| Achene stipe | Absent | Present | Present | Present |
| Anther length (mm) | 0.7–0.9 | 0.2–0.3 | 0.2–0.3 | 0.3–0.4 |

C. squarrosus var. *squarrosus* and has longer spikelets than *C. squarrosus* var. *squarrosus*—the greater spikelet length resulting from a greater number of floral scales per spikelet, not from larger scales. The achenes of *C. squarrosus* var. *graniticus* have the diagnostic short stipe of *C. squarrosus* and generally exhibit a lower length to width ratio that *C. squarrosus* var. *squarrosus*, with a more strongly obovoid outline. In contrast with *C. granitophilus*, the achenes of *C. squarrosus* var. *graniticus* are smaller and only weakly obpyramidal and have stipitate bases. *Cyperus squarrosus* var. *graniticus* also lacks the diagnostic long anther of *C. granitophilus*.

Ecology and Distribution—*Cyperus squarrosus* var. *graniticus* inhabits granitic uplifts in Oklahoma and Texas, characterized by harsh exfoliated rock, shallow soils, and seasonal, ephemeral pools. Figures 12, 13, and 14 show the distributions of *C. squarrosus* var. *squarrosus*, *C. squarrosus* var. *graniticus*, *C. squarrosus* var. *runyonii*, and *C. granitophilus*, as interpreted by us.

Etymology—The name *graniticus* refers to the granitic substrate characteristic of this new variety.

DICHOTOMOUS KEY TO THE CYPERUS SQUARROSUS COMPLEX IN NORTH AMERICA

- 1a. Anthers 0.7–0.9 (–1.0) mm long; spikelets (2–) 3–5 mm wide; scales 2–4 mm long; achene estipitate; plants of seasonally wet granitic and other rock outcrops in the piedmont and other upland physiographic provinces of the southeastern United States, east of the Mississippi River
..... *C. granitophilus*
- 1b. Anthers 0.1–0.3 (–0.6) mm long; spikelets 1–3 (–4) mm wide; scales 1–2 (–3) mm long; achene stipitate; plants widely or otherwise distributed. 2
- 2a. Achene oblong to narrowly obovoid; spikelets 3.7–5.3 mm long; plants widely distributed
..... *C. squarrosus* var. *squarrosus*
- 2b. Achene spatuloid to obpyramidal to obovoid; spikelets 5.8–9.7 mm long; plants narrowly distributed west of the Mississippi River. 3
- 3a. Achene spatuloid, abruptly wider at the apex; plants restricted to southern Texas
..... *C. squarrosus* var. *runyonii*
- 3b. Achene weakly obpyramidal to obovoid; plants restricted to granite outcrops west of the Mississippi River (Texas and Oklahoma) *C. squarrosus* var. *graniticus*

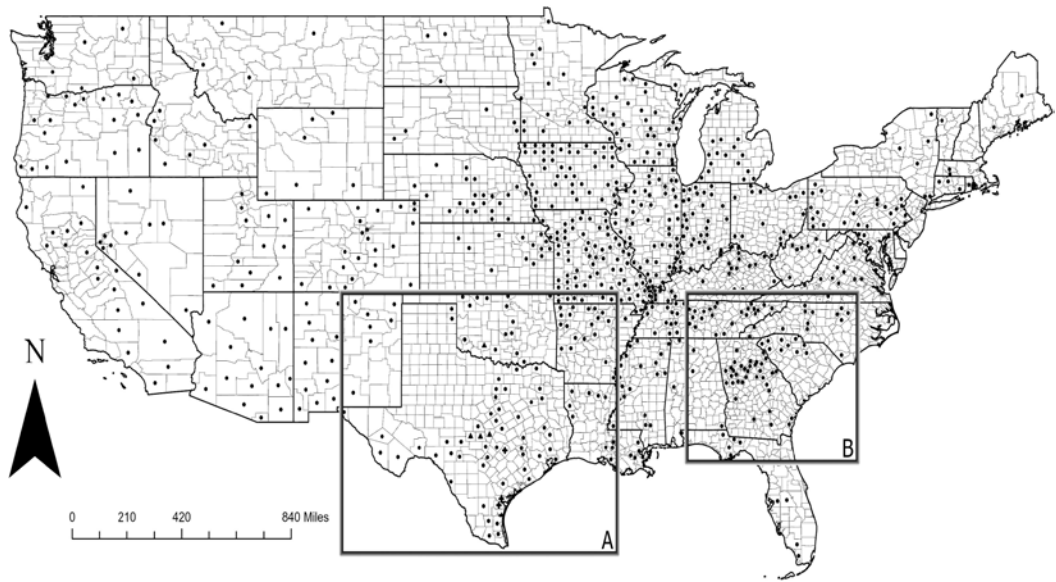


Figure 12. County-level distribution in the United States of *Cyperus squarrosus*-*Cyperus squarrosus* var. *squarrosus* (closed circles), *C. s.* var. *runyonii* (crosses), and *C. squarrosus* var. *graniticus* (closed triangles). Large-scale maps corresponding with boxed areas are provided in figures 13 (A) and 14 (B).

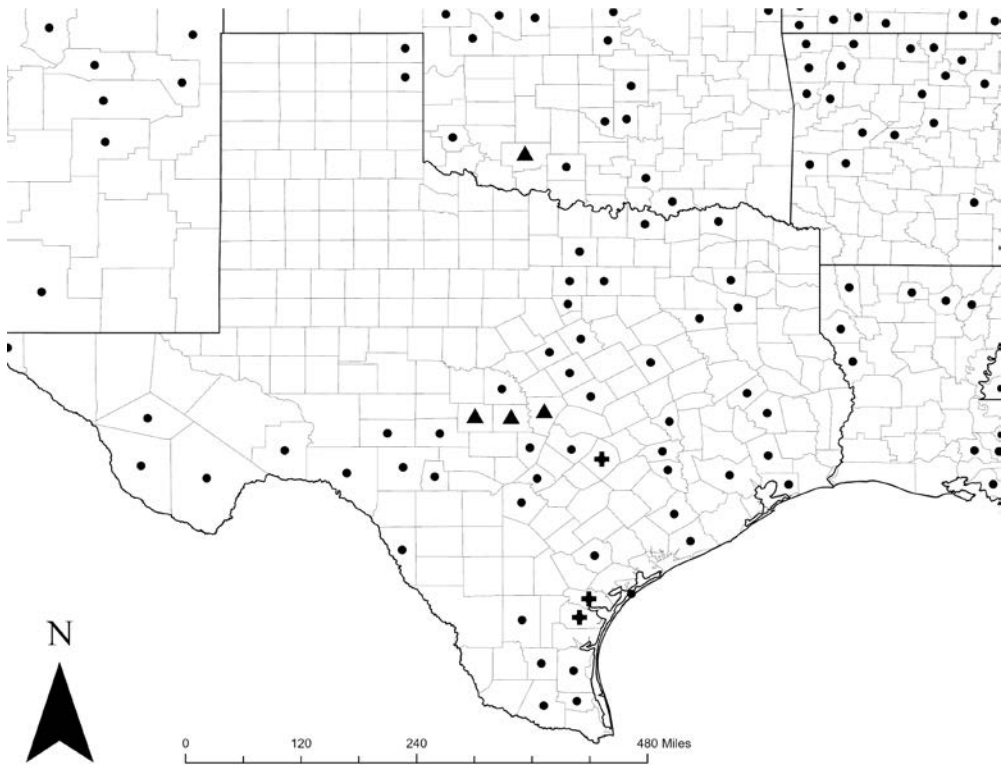


Figure 13. County-level distribution in the south-central United States of *Cyperus squarrosus* var. *squarrosus* (closed circles), *C. s.* var. *graniticus* (closed triangles), and *C. s.* var. *runyonii* (crosses).

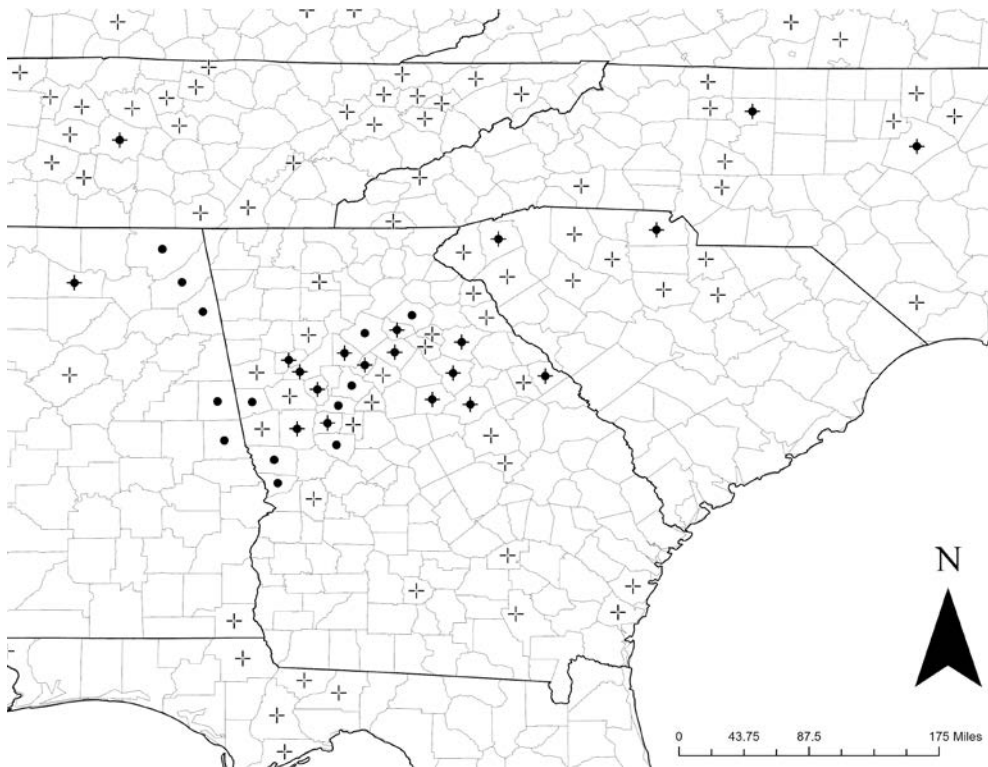


Figure 14. County-level distribution in the southeastern United States of *Cyperus granitophilus* (closed circles) and *C. squarrosus* var. *squarrosus* (crosses); counties with both taxa are indicated by closed circles superimposed on crosses.

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APPENDIX

Vouchers examined physically and digitally

Bold = Vouchers used in statistical analysis

* = Vouchers examined digitally

Cyperus granitophilus

NORTH AMERICA. U.S.A. ALABAMA. Chambers Co.: Ala. 77, just N of Penton, 23 Aug 1977, *R. Kral 60904* (**VDB, VSC**). **Cherokee Co.:** ca. 5 mi NE Sand Rock, 28 Aug 1970, *R. Kral 40774* (**VDB**). **Dekalb Co.:** Little River Canyon area, ca. 8 mi S jct. Ala. 275 & 35, NE4, S10, 14 Oct 1979, *S. McDaniel 22995* (**BRIT, VDB**). **Jackson Co.:** just N of Flat Rock, 16 Aug 1980, *R. Kral 66115* (**VDB-2**); adjacent to Flat Rock Creek located east of Alabama Hwy 117 in community of Flat Rock, 21 Sep 1997, *D.D. Spaulding 10056* (**VDB**). **Morgan Co.:** McKendry, Cedar Grove Church Rd, .3 mi N of Co Rd 55, 23 Aug 1966, *J. Baskin 521* (**VDB**); Hartsville, by US 31, 6 Oct 1974, *R. Kral 54412* (**VDB-2**). **Randolf Co.:** Almond, 3 Aug 1938, *H. K. Svenson 9770* (**VDB**); ca. 3 mi WNW Wadley on ALA 77, 30 Jul 1967, *R. Kral 28807* (**VDB-2**); NE of Cragford, along Tallapoosa River, impoundment by Harris Dam, 7 Sep 1991, *R.D. Whetstone 161121* (**VDB**). **GEORGIA. Barrow Co.:** 1 mi W of Windler, 10 Oct 1936, *J. Pyron 990* (**UGA**); Winder, along E side of GA hwy 81, about 0.3 mi S of jct of US hwy 29 and just S of jct of Patrick Mill Rd, 10 Oct 1983, *J. Allison 1888* (**UGA**). **Columbia Co.:** Hoggie's Rock, 11 Nov 1938, *J. Pyron 86* (**UGA**). **DeKalb Co.:** Stone Mountain, 1 Aug 1900, *C.L. Pollard 500* (**NY**); Mt. Arabia, 16 Jul 1971, *A.M. Evans 45701* (**VDB**); Mt. Arabia, S of Lithonia, 29 Sep 1976, *R. Kral 59130* (**VDB**); 1.6 mi SE of Lithonia, Hyden Quarry Rd, 0.3 mi W of jct with Turner Mill Rd, 9 Sep 1978, *J. Allison 645* (**UGA**); by GA 155, 0.4 mi N of Henry McDonough, 1 Aug 1989, *R. Carter 8007* (**BRIT, UGA, VDB, VSC-4**); Klondike Rd. 2-9 mi S of Covington Rd. in Lithonia, 11 Oct 1991, *R. Carter 9467* (**VSC**); Loganville, jct of US 78 and State Road 81, 12 Oct 1991, *R. Carter 9468* (**VSC**); 3.5 mi N of Lithonia, W of Hwy GA 124, near corner of Stephenson Rd, 13 Oct 1991, *R. Carter 9494* (**VSC**); Stone Mountain Park, Stonemont Golf Course, E side of Stonewall Jackson Dr, 9 Sep 1996, *M. Moore 2558* (**UGA**); Stone Mountain, 6 Sep 1894, *J.K. Small s.n.* (**NY**); summit of Stone Mountain, Georgia, 9 Sep 1897, *J.K. Small 5062b* (**NY**). **Douglas Co.:** Lithia Springs, jct of Slater's Mill and Pope Rds, 8 Aug 1980, *J. Allison 1631* (**UGA**). **Fayette Co.:** about 3 mi N of Tyrone, E of Edwards Lake and N of The Rock Church, 11 Nov 1979, *J. Allison 1062* (**UGA**); between Fayetteville and Tyrone, Scott Boulevard, between Tyrone Rd and Ellindon Rd, 10 Oct 1983, *J. Allison 1898* (**UGA**). **Fulton Co.:** W of Palmetto, Old Rico Rd, about 0.4 mi NW of jct of Atlanta-Newnan Rd, *J. Allison 1890* (**UGA**). **Greene Co.:** 19 mi S of Greensboro, 9 Sep 1937, *J. Pyron 1845* (**UGA**); 9 mi SE of Greensboro, 1 Jul 1939, *J.H. Pyron 541* (**NY**); 5-6 mi SSE of Greensboro, 9 Sep 1971, *S. Jones 21533* (**UGA**). **Gwinnett Co.:** between Snellville and Loganville, S side of US hwy T8 just W of jct with Rosebud Rd, 3 Mar 1980, *J. Allison 1248* (**UGA**). **Hancock Co.:** by Ga. 15, 2.4 mi S Sparta, 7 Aug 1975, *R. Kral 56188* (**VDB**). **Harris Co.:** about 10.5 mi S of Hamilton, W side of Bonacre Rd, ca. 1.5 mi E of jct with US 27, 3 Mar 1980, *J. Allison 1225* (**UGA**); SSW of Cataula, E of Lake Kokoloe, E of Bonacre Rd (county rd 148), 1.2 mi by car NW of jct with Ripahin Rd (county rd 152), 9 Sep 1985, *J. Allison 2557* (**UGA**). **Heard Co.:** SW of Franklin, 2.3 mi SW of Viola, about rd 139, ca. 0.4 mi N of jct of county road 138, 8 Aug 1985, *J. Allison 2514* (**UGA**). **Henry Co.:** NE corner of county, S of GA hwy 155 and Panola Mountain, 10 Oct 1983, *J. Allison 1919* (**UGA**). **Jackson Co.:** 2 mi SW of Pondergrass, 10 Oct 1936, *J. Pyron 1080* (**UGA**). **Meriwether Co.:** 4.5 mi W4°N of Woodburr, 7 Jul 1953, *W. Duncan 16808* (**UGA**); about 4.2 mi SW of Greenville, on Jessie Porch Rd about 0.2 mi N of jct of Cedar Rock Church Rd, 11 Nov 1983, *J. Allison 1942* (**UGA**). **Muscogee Co.:** Columbus, Flatrock Park, Warm Springs Rd at Flatrock Creek, 8 Aug 1985, *J. Allison 2550* (**UGA**). **Ogelthorpe Co.:** 25 Sep 1965, *D. Demaree 53009* (**VDB**). Echols Mill, 13 mi NE of Lexington, 8 Aug 1940, *R. McVaugh 5370* (**UGA**). **Pike Co.:** 4 mi NW of Concord, 10 Oct 1937, *J. Pyron 1932* (**UGA**). **Putnam Co.:** 13 mi E of Latonton, 8 Aug 1940, *R. McVaugh 5159* (**UGA**); 0.8 mi W of jct of Putnam, Greene and Ealcock Counties, 11 Nov 1979, *J. Allison 1130* (**UGA**). **Rockdale Co.:** granite glade just W of Conyers by I-20, 17 Aug 1980, *R. Kral 66119* (**VDB**); NE of Milstead, Hi-Roc Shores subdivision, Hi-Roc Circle, 0.1 mi S of jct with Hi-View Dr, 11 Nov 1983, *J. Allison 1959* (**UGA**); NE of Milstead, 1.2 mi N of Hwy GA 138 by Hi-Roc Rd, 12 Oct 1991, *R. Carter 9478* (**VSC**). **Spalding Co.:** S of Griffin, County Line Road, just W of jct. of US 41, 11 Nov 1979, *J. Allison 1088* (**UGA**). **Upson Co.:** 12 mi S of Thomaston, 2 Feb 1939, *J. Pyron 129* (**UGA**). **Walton Co.:** 1 mi E of Logansville, 12 Dec 1935, *J. Pyron 350* (**UGA**); 10 Oct 1936, *R. McVaugh 971* (**UGA**); 30 Aug 1940, *W.H. Duncan 2868* (**SMU**). **NORTH CAROLINA. Forsyth Co.:** 7 mi SW of Winston-Salem, 16 Sep 1934, *J.E. Benedict 2956* (**VDB**). **Rowan Co.:** summit of Dunn's Mountain, 2 Sep 1897, *H. O'Neill 5062a* (**NY**). **Wake Co.:** Michells Mill, 2 mi NE of Rolesville, 22 Sep 1966, *A. Radford 45275* (**BRIT, VDB, VSC**); outcrop located along the western side of SR 2227 0.8 km S of SR 2227-SR 2217 intersection, 2 Sep 1992, *R. Ingle 436* (**VDB**). **SOUTH CAROLINA. Pickens Co.:** Boggs Rock, Rte. 178, N town line of Liberty, 1 Oct 1988, *S.R. Hill 20023* (**BRIT, NY**). **York Co.:** SE side of town of Clover, 31 Jul 1989, *J. Nelson 8206* (**VSC**). **TENNESSEE. Rutherford Co.:** cedar glade 2.4 mi N of La Vergne near Hurricane Landing at Percy Priest Lake, 1 Aug 1989, *R. Carter 7986* (**VDB, VSC-2**).

Cyperus squarrosus var. *squarrosus*

AFRICA. GHANA. Krachi West Dist.: 19 Jul 1969, *J.B. Hall GC39601* (NY). **Republic of Burundi:** Broad Bujumbura-Rumonge, km 36, 30 Mar 1980, *A. Caljon s.n.* (VSC). **RHODESIA:** Mapanza, 7 Feb 1954, *E.A. Robinson 510* (NY). **RHODESIA [ZAMBIA]:** Lusaka West, Old Mumbwa Rd., 29 Mar 1963, *J.D.E.F. Vesey-FitzGerald 4046* (NY). **ASIA. NEPAL. Karnali Zone:** Jumla-Garjankot, Junula, 8 Aug 1979, *K.R. Rajbhandari 4392* (NY). **SRI LANKA. Eastern Prov. Trincomalee Dist.:** Trincomalee-Kandy Rd., 86/2 mi post, *F. Ballard 1498* (NY-2). **Uva Prov. Monaragala Dist.:** a few mi from Ritigala, 14 Jan 1951, *F. Ballard 1451* (NY). Ruhuna National Park, Gonalabba, 23 Nov 1969, *R.G. Cooray 69112401R* (NY); Ruhuna National Park, 2 Dec 1969, *R.G. Cooray 69120205R* (NY); Ruhuna National Park Block 1 Plot R36, 22 Mar 1970, *R.G. Cooray 70032204R* (NY). **Hambantota Dist.:** in plot R39 at Kohombagaswala, *R.G. Cooray 69012205R* (NY). **Jaffna District:** N shore of Jaffna Lagoon, ca. 10 mi SE of Navatkuli, 18 Feb 1971, *T. Koyama 14037* (NY). **Mannar District:** Aruvi Aru, mile 125 on rd. A 14, 8 Jan 1971, *T. Koyama 13934* (NY). **NORTH AMERICA. BRITISH VIRGIN ISLANDS. Anegada. :** 19 Feb 1913, *N.L. Britton 1006* (NY). **CUBA. Camagüey Prov.:** 8 Mar 1909, *J.A. Shafer 697* (NY); 20 Oct 1909, *J.A. Shafer 2624* (NY). **Ciego de Ávila Prov.:** 6 mi from NW end of Cayo Coco, Camaguey, 23 Oct 1909, *J.A. Shafer 2713* (NY); *C. Wright 3355* (NY). **HAITI. Nord-Ouest Dept.:** vicinity of La Vallée, Tortue Island, west of La Vallée harbor, 28 Dec 1928, *E.C. Leonard 11404* (NY). **MEXICO. Baja California:** near San Antonio Mine, El Valle Perdido, Lat 23°42'N, Long 110°7'W, 7 Nov 1959, *I.L. Wiggins 15348* (NY); Arroyo Colorado, 2 mi N of El Pilar, about Lat 24°31'N, Long 110°59'W, 13 Nov 1959, *I.L. Wiggins 15433* (NY); at edge of pool with Bacopa monniera, 5 Oct 1970, *R. Moran 5568* (NY). **Chiapas:** 14.7 mi W of Tuxtla Gutierrez along Mex 190, 24 Aug 1966, *R. Kral 27760* (VDB). **COAHUILA. Villa Acuña:** Sierra del Carmen, Canyon de Sentenela on Hacienda Piedra Blanca, 6 Jul 1936, *F.L. Wynd 516* (NY). 24 mi NE by N from Monclova, 1 Sep 1880, *E. Palmer 1330* (NY). **Jalisco:** Taquila, 10 Oct 3793, *C.G. Pringle s.n.* (SMU); Tequila, 1 Oct 1893, *C.G. Pringle s.n.* (NY). **Michoacan:** vicinity of Morelia, 15 Sep 1910, *G. Arsene 5990* (NY); ca. 1 km. S of Tuxpan at Km. 119 on Hwy 15 to Morelia, 15 Sep 1977, *H.H. Iltis 44* (VDB). **Oaxaca:** about 5 mi W of Oaxaca on Rt. 175 towards Xaachila, 5 Aug 1984, *R.L. Wilbur 36323* (NY). **SONORA. Soyopa:** Near Arroyo Garambullo on NE side of Rio Yaqui Bridge on MEX 16 just S of Tonichi, 14 Aug 1998, *A.L. Reina 98-830* (NY). about 2 mi NW of Rancho San Charlos, about 40 mi W of Hermosillo on the rd. to Kino Bay, 30 Aug 1941, *I.L. Wiggins 182* (NY); Isla San Pedro Nolasco, Canyon de Mellink, NW side of the island, N branch of the canyon, NW-facing slope, 29 Sep 2008, *R.S. Felger 08-147* (BRIT). **Tamaulipas:** 23.5 mi N Ciudad Valles by Mex 85, 16 Jul 1965, *R. Kral 24869* (VDB). **Veracruz:** 1 Sep 1912, *C.A. Purpus 6245* (NY). **Yucatan:** Izamal, Jan 1900 *G.F. Gaumer 1023* (NY-2, SMU, VDB); San Anselmo, 1 Jan 1935, *P.C. Standley s.n.* (SMU); NW corner of jct Mex hwy 180 and Mex 295 just E of Ebtum, N 20 39.878°, W 88 15.994°, 19 Aug 2006, *R. Mears 5027* (VSC). **THE BAHAMAS. Acklin's Island:** Spring Point, 21 Dec 1905, *L.J.K. Brace 4272* (NY). **Cat Island:** along trail to The Hermitage, Mt. Alverina, from Old Bight, 20 Nov 1975, *D.S. Correll 46136* (NY). **Great Exuma:** near Moss Town, 16 Dec 1976, *D.S. Correll 47956* (NY). **Great Inagua:** Mathew Farm, 31 Oct 1904, *G.V. Nash 1383* (NY). **Long Cay:** 7 Dec 1905, *L.J.K. Brace 4094* (NY). **Long Island:** on S edge of Clarence Town, 20 Nov 1977, *D.S. Correll 49167* (NY). **New Providence:** Southwest Bay, 2 Sep 1904, *N.L. Britton 457* (NY); along Farrington Rd., 2 Jun 1909, *P. Wilson 8336* (NY). **South Andros:** S edge of Driggs Hill, 24 Sep 1978, *D.S. Correll 50283* (NY). **South Caicos:** 14 Dec 1907, *P. Wilson 7622* (NY). **THE WEST INDIES. Grand Turk:** North Wells, 19 Dec 1975, *D.S. Correll 46495* (NY). **South Caicos:** between Cockburn Harbour and airport, 11 Feb 1978, *D.S. Correll 49443* (NY). **U.S.A. ALABAMA. Franklin Co.:** about 2 mi NE of Russellville, 4 Oct 1948, *R.M. Harper 4097c* (NY). **Greene Co.:** East of Tombigbee River, near Miller, 6 miles SW of Boligee, 14 Jul 1968, *H.L. Clark 3285* (BRIT); Boligee, center of historic downtown, 7 Dec 2010, *B.R. Keener 6281* (MISS*). **Houston Co.:** Dothan, Dothan Nurseries, along Hwy 231 at ca. 0.5 mi W of jct Hwy 431, 10 Sep 1994, *J. MacDonald 7656* (IBE*, USMS*, VSC). **Limestone Co.:** Port Dekatur, 6 Oct 1974, *R. Kral 54430* (VSC). **Morgan Co.:** Hartselle, *R. Kral 54412* (VSC); along Cotaco Creek on Wheeler Reservoir just downstream of Sharps Ford Bridge, ca. 2.5 mi SW of Triana, 15 Oct 1980, *D.H. Webb 3629* (TENN*). **ARIZONA. Cochise Co.:** ca. 0.25 mi SE of Turkey Creek Ranger Station adjacent to Turkey Creek, Chiricahua Mts., 31 Aug 1980, *Hodgson s.n.* (COLO*); Mule Mountains, Banning Creek Canyon, ca. 2.5 mi NW of the tunnel at Bisbee on Hwy 80, 31 Aug 1984, *A.C. Sanders 5218* (COLO*); Laundry Ridge 11th Brigade Signal Corps site, 1.0 km N of the mouth of Huachuca Canyon, 22 Jul 1992, *Krohn 3065B* (DES*); San Bernardino Ranch, 18 mi E of Douglas, 21 Aug 1981, *G. Marrs-Smith 853* (ASU*); 23 Aug 1981, *G. Marrs-Smith 1105* (ASU*); ca. 1/4 mi SE of Turkey Creek Ranger Station adjacent to Turkey Creek, Chiricahua Mountains, 31 Aug 1980, *Holler H-997* (DES*); Chiricahua National Monument, Echo Canyon Parking lot and down Echo Canyon trail ca. 1 mile from 6500 down, 2 Sep 1977, *R.F. Thorne 59203* (ASU*); Entrance road to Chiricahua National Monument, 0.3 mi inside Monument, 8 Sep 1974, *T. Reeves R-1690* (ASU*); Dragoon Mountains, rd to Abril Mine, 0.9 mi NW Sorin Camp, Pearce 15' Quad, 8 Sep 1983, *T.F. Daniel 3087* (ASU*); 1 Sep 1931, *S.W. Hutchinson 6804* (NO*); Cave Creek Canyon, Chiricahua Mountains, 21 Sep 1929, *G.J. Harrison 6168* (ARIZ*); Pat Hills, ca. 30 km SE of Willcox., Sulphur Springs Valley, 26 Sep 2015, *C.M. Roll 1255* (ARIZ*); NE drainage slope of Dragoon Mountains NW of Pearce, near Cochise Stronghold. NE of jctn Treasure Rd and Cochise Stronghold Rd, 1 Oct 1996, *L.A. McGill 6868* (ASU*); Below nose of Cochise Head, Chiricahua Mts, 9

Oct 1980, *V. Roth s.n.* (USU*); Dragoon Mountains, Stronghold Canyon East, 23 Oct 1992, *W. Hodgson 6947* (DES*). **Cocconino Co.:** shore of Lake Mary, near Flagstaff, 27 Aug 1923, *H.C. Hanson A911* (NY); Lee's Ferry, 21 Jul 1926, *D.V. Baxter s.n.* (MICH*); Flagstaff, 7 Aug 1884, *M.E. Jones 4018* (USU*); Rim Road, 2 miles N of AZ 160, 14 Sep 1964, *E. Lehto 4207* (ASU*); Paria Plateau, Vermillion Cliffs National Monument, 16 Sep 2003, *N.D. Atwood 29797* (DBG*); Lake #1, E of Woods Canyon Lake, 23 Sep 1967, *Taylor 4619* (ASU*). **Gila Co.:** Natural Drainages, Sierra Ancha Forest, 24 Aug 1961, *C.P. Pase 1294* (ARIZ*); Payson, 29 Aug 1968, *D.J. Keil 3733* (ASU*); 0.1 mile S of Payson on Beeline Hwy, *D.J. Keil 3759* (ASU*-2, DES*); Salt River and Salt River Draw, ca. 6 miles W of Salt River Canyon Bridge, 27 Sep 1968, *E. Lehto 14221* (ASU*); Christopher Creek, 1 Oct 1966, *E. Lehto 7289* (ASU*); Sierra Ancha Wilderness Area in Tonto National Forest, along intermittent stream along trail 124, on N side of Coon Creek Butte, 3 Oct 1992, *G.J. Imdorf 1080* (ASU*); Reynolds Creek Ranger Station, Sierra Ancha, 9 Oct 1931, *G.J. Harrison 8327* (ARIZ*). **Graham Co.:** Santa Teresa Mountains, BLM Wilderness, Spnazuma Masonry Dam. T6S R21E S2 NW4. along trail., 15 Aug 1998, *J.J. Buegge 493* (ASU*); E side of Galiuro Mountains, 24 Aug 1945, *L.M. Pultz 1824* (ARIZ*); Swift Trail (#366), 15.9 mi from junction with Hwy 666, 5 Sep 1967, *E. Lehto 10246* (ASU*-2); Santa Teresa Mountains, Coronado National Forest, Laurel Canyon, 6 Sep 1998, *J.J. Buegge 537* (ASU*). **Maricopa Co.:** Tonto National Forest, Superstition Wilderness Area, Tortilla Creek, just off Hwy 88 ca. 1 mile E of Tortilla Flat, 30 Jun 1992, *K.C. Rice 1352* (ASU*); Fish Creek, 12 Jul 1926, *R.H. Peebles 2412* (ARIZ*); Tonto National Forest, wash on S side of Humboldt Mountain Road, ca. 0.1 mi from intersection with Seven Springs Rd, 21 Aug 2001, *S. Doan 977* (ASU*). **Mohave Co.:** volcanic domes just S of Knight Creek Rd, 5.5 mi S of Interstate 40, approx 35 mi E of Kingman, 20 Sep 2013, *J.M. Andre 28980* (ASU*). **Navajo Co.:** Heber area plants, approx. 5 miles NW of Heber, near plot 16, 11 Sep 1990, *T. Tharalson s.n.* (ASU*); Navajo Reservation, Skeleton Mesa, bedrock basins, 27 Sep 2003, *G. Rink 2904* (ASC*). **Pima Co.:** Soldier's Canyon, Oak Camp, Santa Catalina Mountains, 1 Aug 1908, *J.J. Thornber 2722* (NY); Tahylor Ranch, Rincon Mts., 1 Oct 1941, *L. Naegle s.n.* (COLO*); Sabino Canyon, Santa Catalina Mountains, 19 Sep 1945, *F.W. Gould 3312* (ASU*, **SMU, TAES**); 2 mi below Molino Basin, Santa Catalina Mts., 1 Oct 1951, *K.F. Parker s.n.* (COLO*); 14.3 mi E & N of Sells on AZ 86, 18 Sep 1966, *F.C. Vasek 660918-69* (COLO*); Coronado National Forest, Santa Catalina Mountains, General Hitchcock Campground, 11 Sep 2008, *R. Gutierrez 2241* (ASU*); Cienega Creek Natural Preserve, confluence of Cienega Creek and Agua Verde Creek, 16 Sep 2004, *J. Cowles s.n.* (SEINet*); 0.5 mile above dam in Box Canyon, Santa Rita Mts., 19 Sep 1963, *E.R. Blakley 6205* (DES*); Bobquivari Mountains, Thomas Canyon near Max Seep and Broken Trough Spring., 22 Sep 1982, *M. Mittleman 552* (ASU*); Rincon Mountains, Posta Quemada Canyon, 20 km SE of the edge of Tucson, 2.5 km WSW of Papago Spring, 28 Sep 2006, *M.A. Baker 16398* (ASU*); Tortolita Mountains, Tortolita Mountain Park, Rail X Ranch Rd access, 28 Sep 2013, *R. Lindley 290* (ASU, DES*); Taylor Ranch, Rincon Mountains, 1 Oct 1941, *A. Brown s.n.* (USU*); Rincon Basin, *S.C. Martin 128* (DES*); Sabino Canyon, Santa Catalina Mountains, 2 Oct 1940, *M.H. Buehler s.n.* (ASU*); Chimney Creek, Rincon Mountains, 6 Oct 1934, *T.H. Kearney 10477* (ARIZ*); Madera Canyon, Santa Rita Mts., 7 Oct 1934, *T.H. Kearney 10558* (ARIZ*). **Pinal Co.:** San Pedro River floodplain S of San Manuel, 3 Sep 2000, *K. Bagstad 197* (ASU*); Summit, Superior-Miami Hwy, 8 Sep 1929, *T.H. Kearney 6014* (ARIZ*); Superstition Wilderness Area. Heiroglyphic Spring, 2 mi N of US Hwy 60 at Gold Canyon Ranch turnout, 12 Oct 1991, *K.C. Rice 848* (ASU*). **Santa Cruz Co.:** Pena Blanca Canyon, 17 Aug 1966, *H. Tate 385* (ASU*); Salero Ranch: Unit 1, Poorwill Canyon Ct, ~8.5mi E of Tubac, 22 Aug 2016, *S. Carnahan 1894* (SEINet*); Calabasas Canyon Camp Ground, 26 Aug 1971, *McLeod 770* (ASU*); Salero Ranch: N end of Fresno Canyon, 7 km WNW of Patagonia Lake, 26 Aug 2015, *S. Carnahan 1383* (ARIZ*); Pena Blanca Canyon, 1/2 mile S of Lake, 29 Aug 1966, *H. Tate 524* (ASU*); 9 miles E of Parker Lake, 1 Sep 1964, *E. Lehto 4075* (ASU*); Sycamore Canyon, 5 Sep 1955, *E. Lehto B1962* (DES*); Pena Blanca Canyon, 5 Sep 1966, *H. Tate 601* (ASU*); *H. Tate 610* (ASU*); Az 289 S of Pena Blanca, Rec. Area, 8 Sep 1976, *E. Lehto 20617* (ASU*); Pena Blanca Rd (AZ 289), 7 miles W of I-19, *E. Lehto L-20341* (ASU*); 2.5 miles W of Pena Blanca, Lake, 6 Oct 1967, *E. Lehto 9720* (ASU*); Sycamore Canyon, *E. Lehto 9924* (ASU*). **Yavapai Co.:** Apache Creek Wilderness Area, 28 Aug 1992, *M.A. Baker 10097* (COLO*); Prescott, 9 Aug 1930, *C.J. King 7261* (ARIZ*); Apache Creek Wilderness Area, ca. 600m SE of Granite Knob, T17N R6W NW1/4 SE1/4 s16, N 38 58 400, E 3 26 150, 28 Aug 1991, *M.A. Baker 10097* (ASU*, DES*); Crown King USGS 7.5' topographic quadrangle, Bradshaw Mountains, Horsethief Basin, 670 m ENE of Horsethief Tower, 800m W of E Fort, 8.5 km SW of Crown King, 28 Aug 2002, *M.A. Baker 14828* (ASU*); NW of Prescott, 1.2k NE of Jones Pass, 650m SW of Eagle Peak, TRS: T16N R5W S34 NE4 NW4, 30 Aug 1993, *M.A. Baker 11072* (ASU*); near Bull Basin Tank, ca. 9.5mi SE of Paulden and 1.5 mi SW of Duff spring on the Verde River, 2 Sep 2012, *F.S. Coburn 1152* (ASU*); Granite Basin Lake, 28 Oct 1968, *D.J. Keil 2789* (ASU*). **Yuma Co.:** Cabeza Prieta National Wildlife Refuge, Las Playas (USGS digital 7.5' map, NAD 27), 28 Nov 2001, *R.S. Felger 01-576* (ASU*). Rillita River, near Camp Lowell, 16 Jan 3871, *C.G. Pringle s.n.* (SMU). **ARKANSAS. Baxter Co.:** 2 mi SW of Mt. Home, 15 Sep 1974, *B. Lipscomb 242* (UARK*). **Benton Co.:** 16 Sep 1928, *H.R. Pyle s.n.* (UARK*); 22 Sep 1928, *D. Demaree 5460* (UARK*); Ozark Plateau, 14 mi NE of Fayetteville, 8 Aug 1940, *D.M. Moore 400280* (UARK*); 6 Aug 1986, *E.B. Smith 3943* (UARK*); 1940, *D.M. Moore 400319* (UARK*). **Chicot Co.:**

W of Greenville, MS across Lake Furguson and SW Archer Island, 21 Sep 1990, *C.T. Bryson 10440* (IBE*, UARK*, **VDB**); Lake Chicot, across from jct hwy AR 144 & 257, 19 Sep 1994, *C. Bryson 14414* (FSU*, IBE*-2, MICH*, TENN*, **VDB**, **VSC**); open area along Mississippi River at the US 82 bridge E of Lake Village, 1 Oct 1999, *R.D. Thomas 163680* (NY, TENN*); 14 Sep 2000, *R.D. Thomas 167186* (UARK*); Chicot Lake County Park, N side of Lake Chicot (33°16.782'N, 91°13.431'W), 15 Oct 2004, *C. Bryson 20413* (LSU*, **VSC**). **Craighead Co.:** 14 Jun 1927, *D. Demaree 3366* (UARK*); *D. Demaree 3367* (NY). **Crawford Co.:** 26 Jul 1990, *D. Sadler 446* (UARK*). **Cross Co.:** Leverpine, 2 Aug 1927, *D. Demaree 3913* (NY). **Faulkner Co.:** 9 Jun 2005, *R. McElderberry 1539A* (UARK*). **Franklin Co.:** 3 Aug 1978, *G. Barber 1187* (UARK*). **Independence Co.:** E bank of White River at Lock & Dam #2, N of Batesville, 29 Jul 1969, *R.D. Thomas 15914* (VDB); 7 Aug 1975, *V. Board s.n.* (UARK*); 28 Sep 1991, *R.D. Thomas 125739* (TENN*). **Izard Co.:** 13 Aug 1942, *D. Demaree 23747* (SMU); 22 Jun 1945, *D.M. Moore 450690* (UARK*); 14 Oct 1967, *G.E. Tucker 6810* (NCU*). **Lincoln Co.:** 18 Aug 2005, *R. McElderberry 2953* (UARK*). **Madison Co.:** 16 Oct 1988, *M. Stewart 88-341* (UARK*). **Marion Co.:** 31 May 1941, *D.M. Moore 410508a* (UARK*). **Montgomery Co.:** Lake Ouachita, 1 Oct 1962, *D. Demaree 46630* (SMU); Lake Ouachita, Joplin, 12 Sep 1971, *D. Demaree 64226* (VDB); 6 Jul 1993, *E. Sundell 10606* (UARK*). **Ozark Co.:** above Calico Rock, 10 Sep 1969, *D. Demaree 60975* (VDB-2). **Perry Co.:** 9 Jun 2005, *R. McElderberry 1556* (UARK*); by the Arkansas River, about 7 mi S of Conway, by Hwy 60 in Toad Suck W Park, Arkansas River, 23 Sep 1978, *E.B. Smith 3473* (LSU*, UARK*); 24 Sep 2001, *D. Walter 31* (UCAC*); *W. McFall 37* (UCAC*). **Phillips Co.:** Mariana-Helena Recreational Area, 17 Jul 1955, *D. Demaree 37457* (SMU). **Polk Co.:** 4 Oct 1992, *R.D. Thomas 131997* (TENN*). **Pope Co.:** Russellville, at Marriott Hotel along Interstate hwy 40 at AK Hwy 7 at 120 E Hamell St, 8 Sep 2006, *P. Hyatt 12086* (VSC). **Pulaski Co.:** North Little Rock, Burns Park, 16 Aug 1979, *J. Kessler 3094* (SMU, TAES); SW 1/4, S 34, T1N, R12W, 6 Jun 1982, *J. Rettig 651* (VDB). **Searcy Co.:** 1 Oct 1944, *D. Demaree 25294* (SMU). **Stone Co.:** 9 Sep 1993, *M.A. Beer 93-245* (UARK*). **Van Buren Co.:** 6 Sep 1993, *M.A. Beer 93-243* (UARK*). **Washington Co.:** 29 Aug 1967, *G.E. Tucker 6328* (NCU*); 1 Oct 1994, *E.B. Smith 4314* (UARK*). **Yell Co.:** 26 Sep 2003, *S. Nunn 9247B* (UARK*); 24 Sep 1970, *D. Demaree 62990A* (IBE*). **CALIFORNIA. Butte Co.:** N Chico, 0.3 mi N jct. Nord Hwy and Esplanade, btwn Explanade and Hwy CA 99, 30 Jul 2006, *R. Carter 17097* (VSC); Jonesville, 17 Jul 1931, *E.B. Copeland 612* (MICH*, NY); Chico, 27 Jul 1903, *E.B. Copeland 3489* (MICH*). **Fresno Co.:** 17 Aug 1948, *H.L. Mason 8342* (FSU*); Sierra Nevada Mountains, Tehipite Valley, Jul 1900, *H.M. Hall 510* (CM*). **Glenn Co.:** ca. 0.4 mi SSW of Butte City, edge of W side of Sacramento River, ca. 0.4 mi N of it's crossing by route 162, 29 Jul 2006, *R.F.C. Naczi 11371* (NY); ca. 0.4 mi SSW of Butte City, edge of W side of Sacramento River, ca. 0.4 mi N of its crossing by route 162, 29 Jul 2006, *R.F.C. Naczi 11371* (MICH*). **Kern Co.:** Kern River, Kernville, 10 Oct 1990, *M.J. Oldham 12087* (MICH*). **Lake Co.:** Bog Lake, 5 Aug 1948, *M.S. Jussel 24736* (SMU); 31 Jul 1974, *R.F. Thorne 44952* (FSU*). **Los Angeles Co.:** 10 Aug 1931, *F.R. Fosberg 4902* (NO*); 22 Oct 1933, *L.C. Wheeler 2193* (NO*). **Mariposa Co.:** 17 Aug 1930, *F.W. Peirson 9241* (NO*). **Plumas Co.:** 15 Aug 1959, *P. Rubtzoff 4220* (NO*); along Feather River, 1 mi SW of Beckwourth, 6 Sep 1969, *R.F. Thorne 39231* (MICH*). **Riverside Co.:** Peninsular Range: Gavilan Hills, ca. 0.75 mile SSE of Stelle Peak, 0.6 mile E of Hammack Ranch, and 5 miles NNE of Lake Elsinore (Lake Elsinore 7.5' Q.), 6 Jun 2005, *T.B. Salvato 1420* (ARIZ*); San Jacinto Mountains State Park, Hidden Lake area, NE of Hidden Divide, SE of Long Valley, near head of Hidden Fork of Tahquitz Creek, 30 Jul 2005, *S. Boyd 11649* (UCR*); 31 Aug 1930, *J. Ewan 2143* (NO*). **Siskiyou Co.:** 3 mi SW of Scott Bar on Hwy 7F-01 towards Kelsey Creek along Scott River, 41°43'39.5"N, 123°0'34.7"W, 8 Aug 2006, *P.M. Paterson 19737* (NY); 16 Aug 1881, *C.G. Pringle s.n.* (NY, SMU). **Tulare Co.:** Sierra Nevada, Kern River Drainage, 1/2 mile E of the R.M. Pyles Boys Camp, Lloyd Meadows Basin, Sequoia National Forest, 13 Jul 1973, *J.R. Shevock 2937* (MICH*). **Tuolumne Co.:** Miguel Meadow, W of Hetch-Hetchy, 10 Jul 1938, *H.L. Mason 11903* (MICH*, NO*, SMU). **COLORADO. Alamosa Co.:** San Luis Valley. Bank of the Rio Grande, 30 Jul 1936, *F. Ramaley 15762* (COLO*); San Luis Valley, edge of Rio Grande River, 28 Aug 1967, *J. Lewis s.n.* (ASU*); Alamosa, 7 Sep 1930, *F. Ramaley 12694* (COLO*); 10 miles SW of Alamosa, 9 Sep 1934, *F. Ramaley 14508* (COLO*). **Boulder Co.:** 3 Aug 1949, *W.A. Weber 5014* (NCSC*); University of Colorado Campus, parking area at Wardenburg Health center, 14 Jul 2001, *W.A. Weber 19452* (COLO*); Marshall, 24 Jul 1935, *F. Ramaley 15166* (COLO*-2); Between Boulder and Marshall, 3 Aug 1949, *W.A. Weber 5014* (COLO*); Boulder, 7 Aug 1915, *A.J. Evans 240* (COLO*); along ditches, Arapahoe Road, Boulder, 16 Aug 1906, *F. Daniels 253* (COLO*); Stapp's Lake, 19 Aug 1908, *W.W. Robbins 5996* (COLO*); Boulder Mt. Parks, Lower Enchanted Mesa, 29 Aug 1992, *T. Hogan 1992* (COLO*); Temporary pool, filled in early summer by overflow from Baseline Lake, W of Cherryvale Road and the Lake, 4 mi E of Boulder, 1 Oct 1979, *R. Wittmann 868* (COLO*). **Denver Co.:** 21 Aug 1964, *R.K. Godfrey 64599* (FSU*); Bear Valley Subdivision, Traylor Middle School, Bates Hobart Park, by sidewalk and street along Columbia Pl, near Gray St, 27 Jul 2013, *J.L. Wingate 9884* (DBG*); along the Platte River, Denver, 13 Aug 1878, *M.E. Jones 601* (MISSA*); Kennedy High School between Sheridan and Wadsworth Blvds at Bear Creek, 25 Aug 1995, *J.L. Wingate 5826* (DBG*). **Douglas Co.:** W Plum Creek, 1.5 miles S of Sedalia, 17 Aug 1993, *R. Brune s.n.* (COLO*, DBG*); Plum Creek, between Sedalia and Louviers, Cross section 2L, 27 Aug 1991, *Friedman 25* (COLO*); Duncan Ranch, ca. 1 mile SW of Sedalia, along E Plum Creek, 14 Sep 1999, *K. Lucero 99-54* (COLO*). **El Paso Co.:** Black Forest,

Pineries Open Space, ca. 17 miles NE of Colorado Springs, 17 Jul 2015, *P. Regensberg 2268* (DBG*). **Fremont Co.:** Above flood plain of 8 Mi Creek, Upper Beaver Cr drainage, near intersection 132 Rd, 24 Jun 2000, *T. Kelso 00-57* (COLO*). **Jefferson Co.:** S Table Mountain, W side of pond, 12 Jul 1983, *J.L. Wingate 2518* (DBG*); Front Range, S Table Mt, 10 Aug 1991, *L. Yeatts 3092* (COLO*, DBG*). **Larimer Co.:** Fort Collins, 12 Aug 1995, *E.C. Wheeling s.n.* (COLO*); Roosevelt Forest, Cottonwood Creek, 14 Aug 1941, *P.F. Gilbert 5G* (DBG*); near Quarry Cove on the W side of Horsetooth Reservoir, 20 Sep 1996, *J. Sanderson 1460* (COLO*). **Lincoln Co.:** Hugo, 14 mi S, 1 mi E Hugo State Wildlife Management Area, N part, 23 Aug 2000, *C.C. Freeman 16476* (COLO*). **Logan Co.:** Edge of S Platte River, 2 Sep 1971, *J. Taylor 9001* (BRIT). **Montezuma Co.:** Summit Reservoir, near Mancos, 19 Aug 2012, *M. Licher 3624* (COLO*). **Pueblo Co.:** Pueblo Chemical Depot, 31 Aug 1998, *S. Kettler s.n.* (COLO*). **Saguache Co.:** Baca National Wildlife Refuge, San Luis Valley, ca. 1.5 air miles SW of Crestone, about 1/2 mile S of Co. Rd T where refuge road to headquarters crosses Crestone Creek., 19 Jun 2012, *M. Islam 12-256* (DBG*). **Sedgwick Co.:** 1 mi S Julesburg, 16 Sep 1946, *H.D. Harrington 2332* (DBG*). **Weld Co.:** Roggen, 18 Jul 1935, *F. Ramaley 15157* (COLO*); 3 miles W of Roggen near US highway 76, 18 Jul 1985, *J.L. Wingate 4089* (DBG*); Roggen, 26 Jul 1930, *F. Ramaley 12415* (COLO*); along Lone Tree Ck near Hwy 85 ca. 4 mi N of Nunn, 15 Aug 1984, *E. Neese s.n.* (CS*). **Yuma Co.:** approx. 12 mi NW of Idalia, along the S side of Arikaree River, E of county rd, 14 Aug 2008, *D. Clark 2770* (COLO*, DBG*); Arikaree River, 11 miles NW of Idalia on W side of DD Rd, 21 Aug 2014, *D. Clark 4177* (COLO*); Arikaree River State Natural Area, approx. 6 miles NNW of Idalia, Arikaree River below bridge along CR DD, 10 Sep 2012, *D. Clark 3585* (COLO*); Bonny Reservoir, E shore of N Cove, just S of campground, 14 Sep 1999, *J.L. Wingate 6688* (DBG*). **CONNECTICUT. Hartford Co.:** E Windsor, 17 Sep 1899, *C.H. Bissell s.n.* (IND*); Glastonbury, on N side of Great Pond, 29 Sep 1989, *L.J. Mehrhoff 13093* (MICH*). **Litchfield Co.:** Gaylordsville, Connecticut, 29 Aug 1904, *E.H. Eames 5081* (IND*). **New London Co.:** Lyme, 25 Aug 1935, *K.P. Jansson s.n.* (DBG*). **Tolland Co.:** Strand of Hop River, 30 Aug 1957, *F.C. Seymour 17620* (SMU). **DELAWARE. Iowa Co.:** Delhi Twp. Sec. 21 Silver Lake Park, 10 Sep 1963, *M.D. Rickey 2415* (BRIT). **FLORIDA. Collier Co.:** S of US 92 jct FLA 951 near Caxambas Pass, 6 Oct 1965, *O. Lakela 29238* (NY). **Duval Co.:** cultivated ground near Jacksonville, 14 Oct 1898, *A.H. Curtiss 6269* (NY). **Franklin Co.:** Frequent in shallow water of ephemeral pool on much disturbed area, sandy-peaty soil, by Apalachicola Bay, Apalachicola, 25 Sep 1975, *R.K. Godfrey 74511* (TTRS*). **Gadsden Co.:** 7 Oct 1976, *S.W. Leonard 6641* (NCU*); Lake Seminole, 6 Aug 1977, *H. McIntyre s.n.* (VSC); Apalachicola River, at Chattahoochee, 3 Sep 1990, *R. Godfrey 83970* (VSC); 22 Jun 1975, *R.K. Godfrey 74364* (IBE*); Abundant in mud, in and out of shallow water of temporary pools, open area of floodplain of Apalachicola River, just below Jim Woodruff Dam, (TTRS*); Very abundant in shallow soil over exposed limerock (exposed because river at very low water level), Apalachicola River, below US 90 bridge, Chattahoochee, 19 Jul 1986, *R.K. Godfrey 82048* (TTRS*). **Hillsborough Co.:** 13 Sep 1989, *R. Mears 20* (FLAS*). **Jackson Co.:** W bank Apalachicola River at river mile 96.5, 25 Oct 1984, *G. Jr. 11154* (TTRS*). **Leon Co.:** Elinor Klapp-Phipps Park (S of Miller Landing Rd, N side of Tallahassee), 28 Aug 2014, *L. Anderson 28364* (VSC). **Liberty Co.:** 29 Oct 1973, *J.W. Wooten 2314* (FLAS*); NW of C-333, ca. 1.5 mi W of Rte 12, 9 air mi SSW of Bristol, T2S, R8W, NW 1/4 Sec 16, 13 Sep 2001, *L.C. Anderson 19952* (VDB); common on alluvial sand/gravel, shores of the Apalachicola River after river level has been down for some time, Torreya State Park, 28 Oct 1973, *R.K. Godfrey 73087* (TTRS*). **Monroe Co.:** 25 Aug 1949, *C.R. Jackson s.n.* (DUKE*); 1 Sep 1954, *R.F. Thorne 14993* (NCSC*); 18 Nov 1971, *G.N. Avery 1074* (FLAS*); along N edge of Watson Hammock, Big Pine Key, 18 Feb 1988, *A. Herndon 1827* (LSU*); SE Hammock, Big Pine Key, 24 Nov 1951, *E.P. Killip 41451* (MICH*). **Polk Co.:** about 3 mi S of Eagle Lake, vicinity of Winter Haven, 29 Nov 1930, *J.B. McFarlin 3907* (MICH*). **GEORGIA. Barrow Co.:** Winder, Lilly Dr, about 0.25 mi E of jct of Horton Rd, 10 Oct 1983, *J. Allison 1883* (UGA). **Butts Co.:** about 3.5 mi NNE of Jackson, 0.4 mi SW of Cedar Rock Church, ca. 0.05 mi E through woods from GA hwy 36, 10 Oct 1986, *J. Allison 2803* (UGA). **Carroll Co.:** ca. 4 mi S Carrolltown on US 27, 30 Jul 1967, *R. Kral 28837* (BRIT); about 2.75 mi WNW of Villa Rica, just N of US hwy 78, between jct of county rd 677 and Little Tallapoosa River, 8 Aug 1987, *J. Allison 2932* (UGA). **Clarke Co.:** along Oconee R., behind U. campus, Athens, 20 Sep 1946, *A. Cronquist 4151* (SMU); Athens, E side of Oconee River, just S of US hwy 78, 9 Sep 1978, *J. Allison 587* (UGA); 29 Sep 1979, *J.R. Manhart 13* (MARY*, NCSC*); *M.D. Tomalski 8* (IBE*, NCU*); 29 Sep 1979, *J.R. Manhart 13* (IBE*). **Cobb Co.:** Kennesaw Mountain National Military Park, S side of Little Kennesaw Mountain, 8 Aug 1980, *J. Allison 1529* (CLEMS*, UGA). **Columbia Co.:** 8 mi E of Appling, 10 Oct 1936, *J. Pyron 1038* (UGA). **Coweta Co.:** NW corner of county, ca. 2.5 mi NNW of Handy, ca. 1.3 mi NNE of New Elim Church, 11 Nov 1979, *J. Allison 1118* (UGA). **DeKalb Co.:** 10 Sep 1937, *D.S. Correll 8380* (DUKE*); outcrop of granite gneiss, 2 mi N of Lithonia, 20 Aug 1950, *G.W. McDowell 634* (NY); by hwy GA 155, 0.4 mi N of Henry Co. line and 14.9 mi N of McDonough, 1 Aug 1989, *R. Carter 8007* (NY); Stone Mountain, 8 Sep 1964, *W.H. Murdy s.n.* (GEO*); Little Stone Mountain, 18 Mar 1883, *J.K. Small s.n.* (SMU); Jun 1896, *W.W. Ache* (NCU*); 25 Jul 1893, *J.K. Small 7923* (FSU*); Little Vine Rd, 7 Jul 1793, *J. Small s.n.* (UGA); 7 Jul 1893, *J.K. Small 7886* (FSU*). **Douglas Co.:** About 6.5 mi WNW of Douglasville, ca. 2.4 mi NW of Winston, about 800 ft N of Brewer Rd (county rd 286) at a point ca. 0.25 mi E of crossing of Town Branch, 8 Aug 1987, *J. Allison 2930* (UGA). **Douglass Co.:** 3 mi SE

Douglasville on Interstate 20, 29 Jul 1967, *R. Kral 28783* (BRIT). **Elbert Co.:** 2.5 mi S 14°E of Elberton, 7 Jul 1950, *W. Duncan 11518* (UGA); 26 Jul 1950, *W.H. Duncan 11518* (NY); 28 Aug 1955, *G.W. McDowell s.n.* (DUKE*); 6.5 mi SSW of Elberton, 5.5 mi SE of Oglesby, Above E bank of Cedar Creek, at a point ca. 0.5 mi N of county rd 67, 4 Apr 1986, *J. Allison 2634* (UGA). **Fayette Co.:** Lees Lake Rd, about 1.5 mi S of jct of River Rd, 10 Oct 1983, *J. Allison 1905* (UGA). **Fulton Co.:** W of Palmetto, Old Rico Rd, about 0.4 mi NW of jct of Atlanta-Newnan Rd, *J. Allison 1891* (UGA). **Glynn Co.:** Brunswick, port area on S side of town, along Shipyard Road, 21 Sep 1991, *R. Carter 9253* (VSC); 10 Dec 1991, *R. Carter 9560* (VSC). **Greene Co.:** 26 Sep 1971, *S.B. Jones 21533* (NCU*). **Hancock Co.:** 5.25 mi ESE of Sparta, 3.6 mi SSE of Culverton, County Rd 216, ca. 0.25 mi W of jct with county rd 52, 9 Sep 1986, *J. Allison 2751* (UGA). **Hart Co.:** 5.3 mi NNE of Vanna, 1.5 mi NNE of Goldmine, About 0.2 mi E of county rd 141 at a point ca. 0.45 mi NW of jct with county rd 140, 10 Oct 1986, *J. Allison 2797* (UGA). **Jeff Davis Co.:** Bullard Creek WMA, 1st left off 15S after cross Altamaha River, 7 Jul 2000, *H. Holland 605* (UGA); Bullard Creek WMA, left off 29S after cross Altamaha River, 10 Oct 2001, *H. Holland 702* (UGA). **Johnson Co.:** 3 mi E of Wrightsville, 6 Jun 1938, *J. Pyron 3072* (UGA). **Lamar Co.:** 0.1 mi S of the confluence of Tobesofkee and Reeves Creeks, about 4.5 mi SE of Barnesville, 11 Nov 1979, *J. Allison 1097* (UGA). **McDuffie Co.:** about 1.8 mi SSW of Raysville, about 0.1 mi W of GA hwy 43, just N of jct with county rd 233, 9 Sep 1986, *J. Allison 2763* (UGA); Area of the Fall Line Sand-hills, vicinity of Thomson, 29 Aug 1907, *H.H. Bartlett 966* (IND*, MICH*). **McIntosh Co.:** Darien, bank of Darien R. at foot of Screven St, 21 Sep 1991, *R. Carter 9275* (VSC); 10 Dec 1991, *R. Carter 9559* (VSC). **Meriwether Co.:** about 4.5 mi SE of Greenville, N side of GA hwy 18, 11 Nov 1983, *J. Allison 1947* (UGA). **Newton Co.:** about 4.4 mi NE of Covington, Cornish Mountain Rd (county rd 80), ca. 0.3 mi S of jct with Flat Rock Rd (county rd 509), 10 Oct 1987, *J. Allison 3001* (UGA). **Oconee Co.:** Near jct of Oconee, Morgan and Walton Counties, Hight Shoals on Apalachee River, 10 Oct 1986, *J. Allison 2805* (UGA); GA hwy 186 and High Shoals on Alalachee River, 7 Jul 1991, *J. Seward 428* (UGA). **Oglethorpe Co.:** 0.5 mi S of Lexington, 9 Sep 1937, *J. Pyron 1857* (UGA); 4 Aug 1941, *W.H. Duncan 3806* (CLEMS*); Echols mill Rock Outcrop SE of Point Peter, 8 Aug 1941, *W. Duncan 3824* (UGA). **Pickens Co.:** disturbed bottom at Talking Rock Creek just N of and along Hwy GA 5, 0.4 mi SE of jct, with Hwy GA 136 in Talking Rock, 14 Sep 1991, *R. Carter 9136* (VSC). **Pike Co.:** 7 mi W of Concord, 8 Aug 1937, *J. Pyron 1830* (UGA). **Rockdale Co.:** 6 mi SW of Logansville, 10 Oct 1936, *J. Pyron 1132* (UGA); NE of Milstead, Hi-Roc Shores subdivision, Hi-Roc Circle, 0.1 mi S of jct with Hi-View Dr, 11 Nov 1983, *J. Allison 1961* (UGA). **Tift Co.:** Tifton, 0.2 mi. W jct of hwy I-75 and US 82, S of Hwy US 82, 1 Aug 2001, *C. Bryson 18978* (VSC). **Walton Co.:** 1 mi E of Loganville, 8 Aug 1940, *W. Duncan 2868a* (UGA). **Ware Co.:** Waycross, jct Blackshear St and State St (hwy US 1), 18 Aug 1988, *R. Carter 7328* (VSC). **Washington Co.:** 3 mi N of Harrison, 6 Jun 1938, *J. Pyron 3096* (UGA); **IDAHO. Washington Co.:** 18 Aug 1966, *R. Spellenberg s.n.* (COLO*). **ILLINOIS. Adams Co.:** in Burton Creek, 20 Jul 1944, *R.R. Brinker 3567* (ILLS*); NW of Quincy, 8 Sep 1960, *R.A. Evers s.n.* (ILLS*); Mississippi River, at ferry landing S of Meyer, 8 Oct 1963, *R.A. Evers 78408* (ILLS*); S of Meyer, 8 Oct 1968, *R.A. Evers 98095* (ILLS*); NW of Quincy, 9 Oct 1963, *R.A. Evers 78436* (ILLS*); Mississippi River, NW of Quincy, *R.A. Evers 78455* (ILLS*). **Alexander Co.:** Common at dump site in compacted soil at Horseshoe Lake Conservation Area, 26 Jun 1996, *M.A. Basinger 10862* (ILLS*); Illinois Route 3 (FAP 312), McClure, SE side, periodically ponded area, N of the east-W Devil's Island Road (508E), just N of town line. Opposite abandoned barn, McClure 7.5 minute USGS quadrangle, 28 Aug 2001, *S.R. Hill 34239* (ILLS*, MICH*); Degraded floodplain forest with open sandy habitat along a ditch bordering a soybean field, 8.2 mi S of IL 3 & IL 146 junction, W side of IL 3, McClure 7.5 minute Quadrangle, 29 Aug 2001, *J.A. Kootz 199* (ILLS*); 19 Sep 1951, *R.A. Evers 32832* (ILLS*); 1 mile N of Gale, 23 Sep 1953, *R.A. Evers 41507* (ILLS*); Mississippi River, 2.5 miles S of Thebes, 14 Oct 1958, *R.A. Evers 59374* (ILLS*); Mississippi River, SW of McClure, 21 Oct 1958, *R.A. Evers 59702* (ILLS*); at Fayville, 24 Oct 1957, *R.A. Evers 55783* (ILLS*). **Bureau Co.:** in Bureau Creek, N of Princeton, 3 Oct 1969, *R.A. Evers 101608* (ILLS*). **Calhoun Co.:** W Point Landing, S of Batchtown, 27 Jul 1960, *R.A. Evers 65936* (ILLS*); S of W Point Landing, 16 Sep 1959, *R.A. Evers 62126* (ILLS*); W Point Landing, *R.A. Evers 62213* (ILLS*); Calhoun Landing, SE of Brussels, 17 Sep 1959, *R.A. Evers 62234* (ILLS*); W Point Landing, S of Batchtown, 26 Sep 1963, *R.A. Evers 77903* (ILLS*); Mississippi River mi 222.7, 4 Oct 1980, *M.C. Reese 2039* (ILLS*); Mississippi River, Cap au Gris bluff, SW of Batchtown, 13 Oct 1966, *R.A. Evers 89685* (ILLS*); *R.A. Evers 89702* (ILLS*). **Cass Co.:** 40.00433°N Lat, 90.44167°W long, Illinois River floodplain, NW of shopping center and Wal-Mart store, N of Carp Ln., Beardstown, 23 Aug 2006, *S.R. Hill 37030* (ILLS*, MICH*, NY); W side of US Rt. 67, 13.0 kilometers SSW of Beardstown, S of Indian Creek, Hobrock farm, 23 Jul 2008, *S.R. Hill 37856* (ILLS*); along "six mile road", E of junction with Clayton Road, 5 miles SE of Beardstown, 1 Sep 1987, *K.R. Robertson 4538* (ILLS*); Beardstown, vicinity of dug out sand pond W of WalMart shopping center, Beardstown 7.5 minute quadrangle, 5 Sep 1996, *S.R. Hill 28689* (ILLS*); E of Beardstown, 21 Sep 1964, *R.A. Evers 81732* (ILLS*); in the vicinity of Chandlerville, Clear Lake 7.5 minute topographic map, 24 Sep 1996, *M.G. Harper 197* (ILLS*). **Champaign Co.:** Salt Fork, near Penfield, 19 Sep 1952, *F.B. Buser 2732* (IND*). **Clark Co.:** SW of Clark Center, 2 Aug 1973, *R.A. Evers 111154* (ILLS*). **Coles Co.:** Charleston: EIU campus, at Carman Pond, 29 Aug 2002, *G.C. Tucker 13165*

(EIU*); Fox Ridge State Park, between the Embarras River and IL 130, ca. 8 miles S of Charleston, E of the parking area at end of S-most road, along river, 4 Oct 2010, *J.R. Abbott 25862* (FLAS*). **Cook Co.:** Chicago, 8 Aug 1998, *T.G. Lammers 10713* (F*); Riverside, 14 Aug 1884, *W.C. Ohlendorf s.n.* (F*); S Chicago, 15 Aug 1901, *A. Chase 1688* (F*); Chicago, 6 Sep 1902, *A. Chase 1996* (F*); 10 Sep 1900, *L.J.R. Wessin s.n.* (F*); 22 Sep 1902, *H.W. Clark 34* (F*). **Crawford Co.:** 4 miles N of Palestine, 1 Oct 1959, *R.A. Evers 62683* (ILLS*). **DeKalb Co.:** Clinton Township, near Waterman, 6 Sep 1896, *G. Greeley s.n.* (MOR*). **Du Page Co.:** parking lot 19, W of arboretum, Morton Arboretum, Lisle, 30 Jun 1991, *C.J. Way 45* (EKY*). **Dupage Co.:** Morton Arboretum, Thornhill Parking Lot #19, 6 Jul 1991, *L. Skizas* (MOR*); Hinsdale, 1 Oct 1902, *E.C. Smith 657* (F*). **Effingham Co.:** SW of Mason, 28 Aug 1958, *R.A. Evers 58242* (ILLS*). **Fayette Co.:** EX Western Illinois University, R.M. Myers Herbarium (MWD), Accession #19882, 10 Sep 1978, *P. Shildneck 10310* (ILLS*); S of Ramsey, E shoulder of route 51 SE of route 51 bridge over Ramsey Creek, *P. Shildneck C10310* (MWI*). **Fulton Co.:** Illinois River, 7 Sep 2006, *M.J.C. Murphy 1753* (ILLS*). **Gallatin Co.:** at Shawneetown, 19 Jun 1962, *R.A. Evers 74208* (ILLS*); NNE end of Round Pond (Oxbow lake of the Ohio River), 10 Aug 1988, *L.R. Phillippe 13542* (ILLS*); Round Pond, N of Shawneetown, 10 Sep 1965, *R.A. Evers 85360* (ILLS*); at Shawneetown, 17 Sep 1964, *R.A. Evers 81706* (ILLS*); Ohio River, at Old Shawneetown, 6 Oct 1959, *R.A. Evers 62854* (ILLS*). **Greene Co.:** N of Eldred, 29 Oct 1963, *R.A. Evers 78681* (ILLS*). **Grundy Co.:** W side IL Rt. 47, 1.6 mi S of Illinois River bank, Morris, 18 Sep 1966, *S.R. Hill 28766* (BRIT, TAES). **Hancock Co.:** NE of Nauvoo, 8 Sep 1960, *R.A. Evers 67649* (ILLS*); Mississippi River, at Warsaw, 8 Oct 1963, *R.A. Evers 78378* (ILLS*). **Henry Co.:** Few feet N of Penny slough, 1 Aug 1936, *R.J. Dobbs s.n.* (ILLS*); N of W Penny Slough, Rock River region, 1 Aug 1936, *R.J. Dobbs s.n.* (ILLS*); along the N side of Penny Slough, Rock River region, 15 Aug 1936, *R.J. Dobbs* (ILLS*); N side of Penny Slough, (ILLS*). **Iroquois Co.:** NE of Beaverville, 21 Aug 1951, *R.A. Evers 32096* (ILLS*); Conservation Area, NE of Beaverville, 7 Sep 1965, *R.A. Evers 85029* (ILLS*); NE of Beaverville, 10 Sep 1970, *R.A. Evers 103692* (ILLS*); *R.A. Evers 103709* (ILLS*); 3 miles NE of Beaverville, 4 Oct 1962, *R.A. Evers 75495* (ILLS*). **Jackson Co.:** bank of Mississippi R. 1.4 mi SW of Cora, 31 Jul 1989, *R. Carter 7971* (VSC); Big Bayou, E of Howardton, 21 Oct 1952, *R.A. Evers 36378* (ILLS*). **Jasper Co.:** Prairie Ridge State Natural Area: CIPS Management Area, shore of Newton Lake, 7 Sep 2007, *G.C. Tucker 15167* (EIU*); Embarras River, W of Falmouth, 4 Oct 1963, *R.A. Evers 78297* (ILLS*). **Kankakee Co.:** Liebert (The Nature Conservancy Property), St. Anne Township, St. Anne 7.5 minute topographic map, 25 Jul 2002, *D.T. Busemeyer 980* (ILLS*); Kankakee, 10 Aug 1913, *A.W. Deselm 517* (F*); 23 Aug 1916, *E.E. Sherff 10* (F*); Altorf Island in the Kankakee River, W side, 23 Aug 1916, *O.E. Lansing 10* (MICH*); 24 Aug 1947, *J.A. Steyermark 64874* (F*); Kankakee Sands Area Section of the Grand Prairie Natural Division of Illinois, Momenca Wetlands Nature Preserve, floodplain on the S shore of the Kankakee River, about 9 mile E of Momenca, 24 Sep 1998, *L.R. Phillippe 29882* (ILLS*); Kankakee River State Park, 29 Sep 1966, *R.A. Evers 89516* (ILLS*). **Kendall Co.:** W long, S margin of Fox River, North of Fox Rd, 3 mi W of Yorkville, 26 Aug 2005, *S.R. Hill 36656* (ILLS*, MICH*, NY); in S side of Fox River, at W tip of island in middle of river, N of Sundown Lane, W end of town/county forest reserve [Oswego Park District land] E of residential area, Oswego, E of Yorkville, 4 Aug 2005, *S.R. Hill 36549* (ILLS*); On island in Fox River, just S of the U.S. 30 bridge, 19 Sep 1973, *R. Schulenberg 73-442* (MOR*). **Knox Co.:** Nursery, W, jct of US Rt 34 & St Rt 134, W of Galesburg, 14 Jul 2000, *A.W. Cusick 35544* (MICH*). **La Salle Co.:** SW of Naplate, 9 Jul 1975, *R.A. Evers 114800* (ILLS*). **Lake Co.:** Des Plaines River Wetlands Demonstration Project, Wadsworth, SE of Wadsworth Rd and Route 41 jct., 28 Jul 1987, *J. Mengler 446* (MOR*). **Lawrence Co.:** Roadside, along Sand Ridge, about 4 mi E of Lawrenceville, 22 Jul 1966, *N.C. Henderson 66-621* (MO*); Chauncey Marsh, Chauncey 7.5 minute quadrangle, 4 Aug 1995, *L.R. Phillippe 26738* (ILLS*); Wabash River, at Russellville, 3 Oct 1963, *R.A. Evers 78196* (ILLS*); Wabash River, at St. Francisville, 25 Oct 1960, *R.A. Evers 68179* (ILLS*); 31 Jul 1950, *N.C. Henderson 1752* (HUNT*). **Lee Co.:** The Green River State Wildlife Area is in the Green River Lowland Section of the Grand Prairie Natural Division of Illinois, 14 Aug 2002, *L.R. Phillippe 34699* (ILLS*); Green River Lowland Section of the Grand Prairie Natural Division of Illinois. Richardson Wildlife Foundation. Located about 1.5 mile N and 3.6 mile W of Brooklyn, 27 Aug 1997, *L.R. Phillippe 29271* (ILLS*). **Macon Co.:** E of Decatur, 16 Sep 1959, *R.A. Evers 62053* (ILLS*). **Macoupin Co.:** Carlinville, 1 Jul 1882, *C. Robertson s.n.* (ILLS*). **Marion Co.:** IDOT U.S. Route 51 Project Area, Clinton, Fayette, Jefferson, Marion, Shelby, and Washington Counties, 16 Jul 2008, *M.J.C. Murphy 3026* (ILLS*). **Marshall Co.:** N of Lacon, 29 Aug 1966, *R.A. Evers 88033* (ILLS*); at Lacon, 9 Sep 1959, *R.A. Evers 61636* (ILLS*). **Mason Co.:** Chautauqua Lake, NW of Topeka, 9 Sep 1960, *R.A. Evers 67773* (ILLS*); NW side of Illinois Route 78, S of Havana, 0.4 mile N of Sangamon River crossing, 24 Sep 1996, *S.R. Hill 28812* (ILLS*); near Eon, 5 Oct 1946, *R.M. Myers 205* (MWI*). **Massac Co.:** W of Midway, 25 Aug 1960, *R.A. Evers 67068* (ILLS*); Ohio River, Fort Massac State Park, 15 Oct 1963, *R.A. Evers 78505* (ILLS*); Ohio River, at Hillerman Landing, W of Joppa, 21 Oct 1958, *R.A. Evers 59638* (ILLS*). **Monroe Co.:** Moredock Lake, NE of Valmeyer, 14 Jul 1960, *R.A. Evers 65815* (ILLS*); W of Columbia, 14 Oct 1966, *R.A. Evers 89822* (ILLS*); 3 miles S of Harrisonville, 1 Nov 1960, *R.A. Evers 68239* (ILLS*). **Peoria Co.:** Peoria, sandy shores of Illinois river, Aug 1893, *F.E. McDonald s.n.* (NMC*); W side of Illinois River, 28 Aug 1996, *S.R. Hill 28575* (ILLS*); W bank of Illinois River, Mossville, 8 Sep

1995, *S.R. Hill 27436* (GSW*, ILLS*, TAES). **Pike Co.:** E Hannibal, 21 Aug 1918, *J. Davis 9174* (MICH*); Illinois River, N of Florence, 1 Sep 1949, *R.A. Evers 21269* (ILLS*); Mississippi River, at Clarksville, 24 Oct 1966, *R.A. Evers 89865* (ILLS*). **Pope Co.:** Jackson Hollow Natural Area, 13 Aug 1986, *R. Smith 1134* (ILLS*); Jackson Hollow, 23 Aug 1981, *R.C. Moran 1653* (ILLS*); Ohio River, at Bay City, 20 Oct 1958, *R.A. Evers 59547* (ILLS*); Jackson Hollow, SW of McCormick, 13 Nov 1962, *R.A. Evers 75667* (ILLS*). **Pulaski Co.:** at Backus Landing, E of Grand Chain, 11 Sep 1956, *R.A. Evers 52503* (ILLS*); Ohio River, Grand Chain Landing, SE of Grand Chain, 16 Oct 1963, *R.A. Evers 78555* (ILLS*). **Putnam Co.:** Sawmill Lake, 7 miles W of Magnolia, 31 Aug 1973, *R.A. Evers 111934* (ILLS*); Sawmill Lake, S of Hennepin, 8 Oct 1964, *R.A. Evers 82026* (ILLS*). **Randolph Co.:** S of Kellogg, 25 Sep 1963, *R.A. Evers 77794* (ILLS*); Mississippi River, SE of Chester, 19 Oct 1964, *R.A. Evers 82091-B* (ILLS*); Kaskaskia Island, N of Kaskaskia, 2 Nov 1960, *R.A. Evers 68306* (ILLS*); Kaskaskia Island, S of Kaskaskia, *R.A. Evers 68313* (ILLS*). **Rock Island Co.:** Davenport E 7.5 min. quad. Rock Island, SW tip of Rock Island (Arsenal Island) S of RR bridge and Rodman Avenue, SE of Lock and Dam No. 15 of the Mississippi River, flats below reconstructed fort, 20 Sep 2000, *S.R. Hill 33223* (MICH*). **St. Clair Co.:** Hump, 3 Jul 1958, *J.O. Neill 8952* (ILLS*); at railroad, near French Village, 12 Aug 1950, *J.O. Neill 4583* (ILLS*); E bank of Kaskaskia R. just E of Fayetteville, and S of Hwy IL 15, 31 Jul 1989, *R. Carter 7960* (VSC); Marshy area at the exit of IL 15 onto INT 255, 20 Aug 1992, *M.A. Basinger 4073* (ILLS*); Under MacArthur Bridge, 21 Aug 1949, *J.O. Neill 3879* (ILLS*); Vicinity of E St. Louis, 24 Aug 1949, *J.O. Neill 3915* (ILLS*); Vicinity of McArthur Bridge, 1 Sep 1957, *J.O. Neill 8538* (ILLS*); Lake #1, Grand Marais State Park, 6 Sep 1954, *J.O. Neill 6516* (ILLS*); Davis Street Ferry Landing, E Carondelet, 18 Sep 1959, *R.A. Evers 62427* (ILLS*). **Schuyler Co.:** Sugar Creek, W of Browning, 8 Oct 1963, *R.A. Evers 78340* (ILLS*). **Union Co.:** State Forest, 8 Jul 1941, *G.D. Fuller 797* (ILLS*); Crab Orchard National Wildlife Refuge, Devil's Kitchen Lake Research Natural Area, 27 Jul 1984, *E.F. Ulaszek 730* (ILLS*); State Forest, 8 Aug 1941, *G.D. Fuller 797* (ILLS*); Mississippi River, NW of Ware, 19 Oct 1964, *R.A. Evers 82197* (ILLS*); Mississippi River, 3 miles SW of Wolf Lake, 20 Oct 1971, *R.A. Evers 107338* (ILLS*); in the Mississippi River, NW of Ware, 23 Oct 1974, *R.A. Evers 114101* (ILLS*). **Vermilion Co.:** Middle Fork Woods Nature Preserve at Kickapoo State Park, W of and adjacent to the Middle Fork River. Danville NW 7.5 minute quadrangle, 28 Aug 1999, *R.L. Larimore RL299* (ILLS*). **Wabash Co.:** at Rochester, 1 Oct 1959, *R.A. Evers 62738* (ILLS*); Hanging Rock, N of Mt. Carmel, 3 Oct 1963, *R.A. Evers 78221* (ILLS*). **Washington Co.:** E of Venedy Station, 10 Aug 1973, *R.A. Evers 111398* (ILLS*). **White Co.:** Webb's Ferry, S of Grayville, 17 Sep 1964, *R.A. Evers 81713* (ILLS*); Wabash River, 5 miles S of Grayville, 4 Oct 1963, *R.A. Evers 78233* (ILLS*); at Webbs Ferry, S of Grayville, 6 Oct 1959, *R.A. Evers 62783* (ILLS*); Wabash River, SE of Emma, *R.A. Evers 72803* (ILLS*). **Will Co.:** Channahon, Exxon-Mobil Oil Refinery, Back 40 Area S of old Drummond Road, S of dug-out marsh, E of frontage road of Interstate Route 55, W of BNSF railroad, Mobil Dolomite Prairie, 28 Jun 2007, *S.R. Hill 37495* (ILLS*); Exxon Mobil Refinery property, S of Drummond Road, E of Route Interstate 55, 26 Aug 2003, *S.R. Hill 35416* (ILLS*); Channahon, ExxonMobil Refinery property, S of Drummond Road, E of Route I-55, Channahon, IL 7.5 min quad, (MICH*); Midewin National Tallgrass Prairie, Exxon Mobil Dolomite Prairie Natural Area, in the Grand Prairie Section of the Grand Prairie Natural Division, 26 Aug 2008, *L.R. Phillippe 41087* (ILLS*); in the Grand Prairie Section of the Grand Prairie Natural Division, Blodgett Road Dolomite Prairie on the Des Plaines Wildlife Conservation Area, about 6 mile NW of Wilmington and along W side of Interstate 55, 14 Sep 2005, *L.R. Phillippe 38156* (ILLS*). **Williamson Co.:** along abandoned railroad grade (and powerline right-of-way), S side of E Herrin Rd, E corporate limits of Herrin, 5 Jun 2002, *S.R. Hill 34672* (ILLS*); along abandoned railroad grade (and powerline right-of-way), S side of E Herrin Road, E corporate limits of Herrin, 11 Jul 2008, *S.R. Hill 37830A* (ILLS*); Crab Orchard National Wildlife Refuge, 11 Aug 1985, *E.F. Ulaszek 1181* (ILLS*); Crab Orchard National Wildlife Refuge, above Devil's Kitchen Lake, 3 Sep 1994, *E.F. Ulaszek 2233* (ILLS*). **Winnebago Co.:** Rock River, near Rockford, 23 Sep 1947, *E.W. Fell 47306* (MWI*). **Woodford Co.:** Spring Bay Fen Nature Preserve, 28 Jul 2008, *M.J.C. Murphy 3094* (ILLS*); ParkLands Foundation's Chiquapin Bluffs Preserve, located approximately 5 miles N of Carlock, 22 Aug 2008, *P.B. Marcum 5325* (ILLS*); Spring Bay Fen Nature Preserve, 3 Sep 2008, *M.J.C. Murphy 3330* (ILLS*); near Spring Bay, 15 Sep 1959, *V.H. Chase 15898* (ILLS*). **INDIANA. Brown Co.:** near Nashville, 26 Sep 1925, *F. Anderson 5661* (IND*). **Cass Co.:** Lake Cicott, 2 Oct 1936, *F.J. Hermann 8414* (MICH*). **Elkhart Co.:** Nursery, old Rt 20, E of Goshen Ave, Elkhart, 27 Aug 2000, *A.W. Cusick 35633* (MICH*). **Fountain Co.:** 0.5 miles NW of Covington, 1 Aug 1953, *F.B. Buser 2892* (IND*). **Gibson Co.:** White River near its mouth, 23 Sep 1923, *C.C. Deam 39882* (IND*). **Greene Co.:** 2 miles S of Worthington, 13 Sep 1938, *R.M. Kriebel 5855* (SMU); 29 Aug 1940, *S. McCoy 5337* (FSU*); along Rd. 67, 2 mi S of Worthington, (NY); along White River about 2.5 miles SW of Bloomfield, 25 Sep 1927, *C.C. Deam 45516* (IND*). **Hamilton Co.:** Indianapolis, 23 Aug 1890, *S.M. Tracy s.n.* (MISSA*, TAES). **Jackson Co.:** 3 miles W of Brownstown just S of Rd. 50, 13 Aug 1959, *H. Starcs 2173* (IND*); White River 2 miles SE of Brownstown, 20 Sep 1922, *C.C. Deam 38078* (IND*). **Jefferson Co.:** 1/4 mile N of N Madison Station, Madison, 1 Aug 1935, *E. Banta s.n.* (IND*); N of N Madison, 3 Aug 1935, *E. Banta 56482* (IND*); Hanover, Sep 1875, *A.H. Young 10289* (IND*); Sep 1876, *A.H. Young 1234* (NY). **Knox Co.:** through a swamp about 3 miles S of Vincennes, 4 Oct 1917, *C.C. Deam 24129*

(IND*). **Kosciusko Co.:** Shore Lake about 2.5 miles SE of Oswego, 29 Jul 1934, *C.C. Deam 55321* (IND*). **Lake Co.:** the N side of Cedar Lake, 29 Aug 1916, *C.C. Deam 21388* (IND*). **Laporte Co.:** Mud flat on the Kankakee River about 1/4 mile S of the Yellow River, 6 Sep 1970, *R. Read 1056* (MOR*). **Marion Co.:** 7 Sep 2013, *P.E. Rothrock 4948* (IND*). **Marshall Co.:** E side of Lake of the Woods, 21 Aug 1916, *C.C. Deam 21005* (IND*). **Monroe Co.:** 6.7 mi S, 3.2 mi E junction of Hwys 46 and 446 in Bloomington (7.8 road mi S junction along Hwy 446), S side of Monroe Lake, near boat ramps just W Hwy 446, Cutright State Recreation Area, 16 Aug 1999, *C.A. Morse 3708* (MICH*). **Montgomery Co.:** Sugar Creek, W. of Darlington bridge, 30 Aug 1933, *A.R. Bechtel 13562* (NY); abandoned farm land, Lye Creek Prairie, 8 mi NE of Crawfordsville, 25 Oct 1946, *A.R. Bechtel 17241* (NY). **Morgan Co.:** Bradford estate on Highway 67, 27 mi. N. of Bloomington, 9 Jul 1953, *R. Overstreet 194* (IND*). **Newton Co.:** Edge of sand pit next to I-65, W side, 1 Aug 1986, *T. Post 390* (MOR*). **Owen Co.:** White River opposite of Freedom, 22 Sep 1917, *C.C. Deam 23887* (IND*). **Parke Co.:** Sugar Creek just E of Turkey Run State Park, 17 Sep 1920, *C.C. Deam 32848* (IND*). **Porter Co.:** Dune Park on Lake Michigan (7mi E of Gary Ind., SE of Chicago), 25 Jul 1906, *L.M. Umbach 1224* (SMU); Dunes State Park, 8 Sep 1908, *L.M. Umbach 236* (CM*, NY, TAES); Dune Park on Lake Michigan (7mi E of Gary Ind., SE of Chicago), *L.M. Umbach 2624* (SMU); 17 Sep 1912, *L.M. Umbach 6358* (SMU); Dune Park, 27 Jul 1929, *M.W. Lyon s.n.* (MICH*); 9 Aug 1952, *F.A. Swink 1763* (F*); Dune Park, 2 Sep 1898, *L.M. Umbach s.n.* (IND*); 12 Sep 1899, *L.M. Umbach s.n.* (F*); 13 Sep 1902, *O.E. Lansing 1533* (F*); along the Kankakee River near the Baum Bridge, 15 Sep 1918, *C.C. Deam 26521* (IND*); just S of Stage Coach Road, to the W of where it intersects with Marine Road, ca. 3/4 S of Ogden Dunes, 2 Oct 1979, *G. Wilhelm 6993* (MOR*). **Randolph Co.:** along the Mississinewa River 5 miles S of Redkey, 29 Jul 1944, *C.C. Deam 63012* (IND*). **St. Joseph Co.:** Mishawaka, Jul 1891, *E.B. Ulme s.n.* (F*-2). **Tippecanoe Co.:** 6 Jul 1933, *C.C. Deam 54021* (TENN*). **Vermilion Co.:** creek SW of Hillsdale, 28 Aug 1915, *C.C. Deam 9834* (EMC*). **Vigo Co.:** N of Highland Lawn, Terre Haute, 28 Jul 1925, *A.R. Bechtel 11421* (NY); Terre Haute, pond and forests N of conjunction of Highway 41 and Highway 63, S of Florida Avenue, 14 Oct 2006, *I.D. Macdonald 061014c21* (IND*). **Warren Co.:** Kate's Pond about 1 1/2 mi, NW of Independence, 31 Aug 1916, *C.C. Deam 21641* (IND*). **Wells Co.:** 19 Aug 1997, *C.C. Deam s.n.* (IND*); 30 Aug 1903, *C.C. Deam* (MICH*); about 2 miles SE of Bluffton, along Six-mile Creek near Christian church, 12 Sep 1898, *C.C. Deam* (IND*). **IOWA. Cerro Gordo Co.:** 7 Aug 1957, *R.F. Thorne 18579* (NCSC*). **Dickinson Co.:** 11 Aug 1953, *R.F. Thorne 13333* (NCSC*). **Fremont Co.:** 3 Jul 1952, *M.J. Fay 3270* (FSU*). **Lyon Co.:** 8 Aug 1949, *M.L. Grant 11272* (NCSC*); Gitchie Manitou State Park, SW 11, 100-49, 12 Aug 1954, *R.F. Thorne 14626* (FSU*, NCSC*, SMU). **Mahaska Co.:** NE 1/4 Sec. 1, T-74N, R-17W, 14 Sep 1954, *R.A. Davidson 3832* (SMU). **Polk Co.:** Skunk River, S1/2 sec 12, Elkhart twp., T-81, R-23, 29 Jul 1957, *T.V. Bruggen 3279* (SMU). **KANSAS. Atchison Co.:** Muddy sand bar 1/2 mile N of Mo-Kan bridge, 17 Jun 1960, *H.W. Blocker 728* (HWBA*). **Bourbon Co.:** 6.0 mi E Redfield, S end of Elm Creek Lake, T26S R23E section 26 SE 1/4, 12 Jul 1998, *C.A. Morse 2603* (NY). **Douglas Co.:** 38.9036°N, 95.4477°W, 7 Oct 2006, *C.C. Freeman 21968* (NY); 12 mi S Lawrence, 10 Jul 1935, *W.H. Horr E87* (CM*). **Ellis Co.:** near pond, Hays, 9 Jul 1935, *E. Bondy 671* (NY). **Graham Co.:** Antelope Lake 2.5 mi W 1 mi N Moreland, 30 Jul 1964, *L.J. Harms 1849* (SMU). **Johnson Co.:** E 1/2, SW 1/4 sec. 29, T13E R22E. Gardner, 4.5 mi N, 3.5 mi W Sunflower Army Ammunition Plant, perimeter rd, E of Spoon Creek, 4 Aug 1993, *C.C. Freeman 5192* (VDB). **Leavenworth Co.:** Fort Leavenworth Military Reservation: NE part, N side of Sherman Army airfield, just S of Weston Bend of the Missouri River, 30 Sep 2003, *C.A. Morse 9816* (BRY*). **Lyon Co.:** 1 mi W, 2 mi S of Neochos Rapids, McKinney Marsh Area, 8 Jul 1976, *L. Hauser 3055* (BRIT). **Meade Co.:** 3 mi N and 1/2 mi E of Fowler, 3 Sep 1951, *W.H. Horr 4088* (NY). **Reno Co.:** Hutchinson, 1890, *B.B. Smyth 74124* (MO*). **KENTUCKY. Ballard Co.:** 24 Aug 1973, *R. Athey 2520* (TENN*-2); Ohio River in the Ballard Waterfowl Management Area, 24 Aug 1973, *R. Athey 2520* (EKY*); Ballard Waterfowl Management Area, *R.H. Athey 2384* (MUR*); KY Dam Village State Park, 31 Aug 1973, *R.H. Athey s.n.* (MUR*). **Boone Co.:** 18 Aug 1985, *A.W. Cusick 24688* (NCU*); 7 Apr 2007, *D.B. Poindexter 07-156* (BOON*); 7 Jun 2007, *R.L. Thompson 07-298* (BOON*); Shore of Ohio River at foot of Aurora Ferry Rd, 0.7 mi W, St Rt 20, ca. 1 mi SW of Petersburg, Aurora Quad, 18 Aug 1985, *A.W. Cusick 24688* (MICH*). **Calloway Co.:** 13.5 miles on 94 E to old 94 at KY Lake, 4 Nov 1982, *M. Woods 1235* (MUR*). **Campbell Co.:** 27 Sep 1981, *G.F. Buddell II 479* (KNK*); 29 Sep 1997, *R.F.C. Naczi 6979* (KNK*); 28 Sep 1998, *R.F.C. Naczi 7677* (KNK*). **Carlisle Co.:** at Laketon boat Dock at end of Laketon Rd off KY 1203, 2 Aug 1994, *R.L. Mears 382* (EKY*). **Fayette Co.:** Lexington, *C. Short s.n.* (USCH*); 1835, *C. Short s.n.* (WIS*). **Franklin Co.:** beside Goodyear on US 127 in Frankfort, 30 Aug 1995, *R.L. Mears s.n.* (EKY*). **Fulton Co.:** 5 Oct 1978, *R. Athey 4284* (FSU*, TENN*-2); Reeloot National Wildlife Refuge, KY 1282- 1.5 mi E of KY 94W, 15 Jul 1974, *R. Athey 2876* (EKY*); Sassafras Ridge on Fishpond Road, 5 Oct 1978, *R. Athey 4284* (EKY*); Sassafras Ridge, KY on Fish Pond Rd, *R.H. Athey s.n.* (MUR*). **Grayson Co.:** between sidewalk and US 62 between A & O gas station and Dixie House Restaurant in Clarkson-KY on S side of road, 25 Jul 1993, *R.L. Mears 127* (EKY*); Western KY Pkwy E-bound ca. 0.5 mi. W of exit # 107 Litchfield exit (KY 259), 16 Sep 1993, *R.L. Mears 298* (EKY*). **Greenup Co.:** Greenup Locks on Ohio River, E of St 3116 & N of Lloyd, 26 Aug 1992, *A.W. Cusick 30471* (CM*). **Harrison Co.:** in Licking River at crossing of Old Lair Road to the E of US 27 and S of Cynthiana, 31 Aug 1995, *R.L. Mears s.n.* (EKY*). **Hickman Co.:** Hickman Road at Waynes

Corner, W toward sand deposit, 5 Sep 1987, *J.T. Grubbs 489* (TROY*). **Laurel Co.:** behind Shell Food Mart on S side of KY 80 ca. 0.2 mi. W of jct with I-75 in London, 2 Sep 1993, *R.L. Mears 359* (EKY*). **Lyon Co.:** 29 Jun 1982, *D.H. Webb 4594* (TENN*); 15 Sep 1983, *E.W. Chester 83-364* (NCU*). **Madison Co.:** Richmond S Quadrangle, Section N (urban area), edge of sidewalk and parking lot on N side of Kentucky Boulevard, 14 Jun 1993, *G.W. Libby OB-513* (EKY*); along s side of KY 876 in Richmond in interstices of pavement on E side of Pizza Hut parking lot, 21 Jul 1993, *R.L. Mears 95* (EKY*). **Marshall Co.:** 31 Aug 1973, *R. Athey 2539* (TENN*); 5 Oct 1978, *R. Athey 4284* (TENN*); Kentucky Dam Village State Park, 31 Aug 1973, *R. Athey 2539* (EKY*). **Mason Co.:** Maysville, Site 5. Eastbound AA highway, just E of highway 68 exit (Aberdeen, Ohio), 21 Jul 2013, *M. Whitson 2013-0032 1/3* (KNK*). **McCracken Co.:** Crawford Lake (slough) about 2 miles NE of Ragland, 14 Sep 1940, *C.C. Deam 60149* (IND*); Off E side of US 68 just S of jct with I-24 behind BP Truck Stop next to Sern Pride Restaurant, 15 Sep 1993, *R.L. Mears 258 A* (EKY*). **Mercer Co.:** at Lock #6, 29 Aug 1995, *R.L. Mears s.n.* (EKY*). **Pendleton Co.:** 21 Aug 1983, *G.F. Buddell II 3173* (KNK*, NCU*). **Pike Co.:** 18 Sep 1988, *F. Levy s.n.* (DUKE*). **Pulaski Co.:** Lake Cumberland about 0.2 mi. W of crossing of Cumberland Parkway, 17 Sep 1995, *R.L. Mears s.n.* (EKY*). **Trigg Co.:** 21 Oct 1978, *J.W. Thieret 50787* (KNK*). **Trimble Co.:** at Milton just E of crossing of US 421, 14 Sep 1993, *R.L. Mears 245* (EKY*). **Warren Co.:** at intersection of KY 80/68 and Robinson Avenue in Bowling Green, 3 Aug 1994, *R.L. Mears 388* (EKY*). **Woodford Co.:** Growing along sandy banks of KY River at Lock #6, 29 Sep 1995, *R.L. Mears s.n.* (EKY*). **LOUISIANA. Bossier Par.:** 20 Aug 1978, *C.M. Allen 8522* (NO*). **Desoto Par.:** Dalton Saline Prairie/Barren, Dalton Saline Prairie, 17 Aug 2007, *B.R. MacRoberts 7955* (LSU*). **East Baton Rouge Par.:** on the LSU Campus along the N side of the Foodservice Building near Nicholson Dr. Extension, 17 Jul 1989, *L.E. Urbatsch 5853* (LSU*); inside the Mississippi River levee not far from the School of Veterinary Medicine of LSU in Baton Rouge, 3 Sep 1990, *A.W. Lievens 4484* (LSU*). **Iberville Par.:** collected inside the Mississippi River levee along LA 75 near the LSU Sugar Cane Research Station, 17 Nov 2010, *L.E. Urbatsch 10047* (LSU*). **Lincoln Par.:** lawn around Lomax Hall and a small pond on Tech Farm S of US 80 and W of Louisiana Tech University's main campus in Ruston, 9 Jun 1990, *R. Thomas 118688* (VSC). **Orleans Par.:** 1 May 1901, *R.S. Cocks s.n.* (NO*); railroad tracts of the L & N Railroad at Montegut St. and N. Galvez St., New Orleans, 21 Jun 1979, *P. Pias 4218* (LSU*). **Ouachita Par.:** 24 Oct 1995, *R.D. Thomas 147789* (TENN*); along W bank of Bayou Lafourche Diversion Canal N and S of railroad tracks between I-20 and US 80 E of Monroe, 24 Oct 1995, *R.D. Thomas 147789* (NO*, UCR*). **Plaquemines Par.:** 30 Jul 2010, *C. Reid 7554* (NCU*); 18 Jul 1984, *D.A. White 342* (NO*); Delta National Wildlife Refuge, N of Pass a Loutre ca. 2.5 mi E of Head of Passes, ca. 3.5 air mi SE of Pilottown, Pilottown, Delta National Wildlife Refuge, 30 Jul 2010, *C. Reid 7554* (LSU*); Mississippi River batture S of Tulane research Facility at English Turn, Mississippi River, 10 Sep 2004, *C. Reid 5244* (LSU*). **Richland Par.:** 23 Oct 1995, *R.D. Thomas 147769* (TENN*). **Sabine Par.:** Oakley's Pasture (a.k.a. Mary Lee's Pasture), N of LA 174 ca. 5 mi W of Converse, along E side of McDonald Bayou, Converse, 20 Jun 2007, *C. Reid 6172* (LSU*, NO*). **St. Bernard Par.:** along hwy LA 47, 2.7 mi N jct hwy LA 46 & 47 in Chalmette, 17 Oct 1993, *C. Bryson 13209* (VSC); Batture along southeastern corner of Unit along Mississippi River and directly S of cemetery, 6 Jun 2007, *S.M. Gunn-Zumo CH-221* (LSU*). **St. Charles Par.:** Mississippi River bank below Bonnet Carré Spillway control structure, ca. 1.5 air mi W of Norco, 19 Aug 2010, *C. Reid 7532* (VSC); 5 Jun 1937, *J. Howard s.n.* (NO*); along highway 18, River Road, 1.6 miles W St. Charles-St. John parish line, 16 Jul 1993, *G.N. Montz 6278* (LSU*); found at Bonnet Carré Spillway, junction of river road and E guide levee, halfway between road and first railroad, ICRR, Bonnet Carre' Spillway, 4 Aug 1973, *G.N. Montz 2693* (LSU*); Mississippi River bank below Bonnet Carré Spillway control structure, ca. 1.5 air mi W of Norco, 19 Aug 2010, *C. Reid 7532* (LSU*); 1 Sep 1973, *G.N. Montz 2771* (NO*); found in Bonnet Carré Spillway at center of floodway just S of Airline Hwy, Bonnet Carré Spillway, 3 Oct 1973, *G.N. Montz 2852* (LSU*); *G.N. Montz 2854* (LSU*, NO*); found in Bonnet Carré Spillway at center of floodway just S of Airline Hwy, Bonnet Carré Spillway, *G.N. Montz 2877* (LSU*, NO*). **St. James Par.:** 3 Aug 1999, *D.J. Rosen 835* (NO*). **St. Martin Par.:** 7 Nov 1971, *J.W. Thieret 36162* (DUKE*, FSU*). **St. Mary Par.:** Found in Atchafalaya Bay near buoy 53 about 3 mi S of lands end., Atchafalaya Bay, 18 Aug 1975, *G.N. Montz 3443* (LSU*); 19 Aug 1975, *G.N. Montz 3485* (LSU*); near Charenton Beach., Charenton, 21 Oct 1963, *C.A. Brown 17876* (LSU*). **St. Tammany Par.:** St Paul's, Covington, 24 Sep 1959, *B.E. Hebert s.n.* (MISS*). **West Baton Rouge Par.:** 21 May 1990, *R.D. Thomas 116644* (TENN*); 2 miles S of Port Allen, 5 Nov 1927, *C.A. Brown 1518* (MICH*). **MAINE. Penobscot Co.:** 22 Aug 1908, *M.L. Fernald s.n.* (NCSC*); 22 Aug 1908, *M.L. Fernald* (NO*). **Maryland. Dorchester Co.:** 6 Sep 2015, *W.D. Longbottom 23600* (MARY*); along Kraft Neck Rd, 2.0 mi west of Elliot Island Rd, *Wayne D. Longbottom 23598* (NY). **Montgomery Co.:** 24 Sep 1989, *A.W. Cusick 28595* (NCU*). **Washington Co.:** shore of Potomac River, C&O Canal at Two Locks, N of Dam No 5 & S of Ashton, Hedgesville Quad, 22 Aug 1988, *A.W. Cusick 27689* (MICH*). **MASSACHUSETTS. Hampden Co.:** Chicopee, Chicopee River near Sewage Plant E of confluence with Connecticut River, 3 Sep 2001, *T.M. Zebryk 7470* (EIU*). **Hampshire Co.:** Amherst, 21 Aug 1931, *F.C. Seymour 248* (SMU); Univ. of Mass. Campus, Amherst, 19 Sep 1967, *H.E. Ahles 70289* (SMU, TENN*). **MICHIGAN. Allegan Co.:** E bank of Kalamazoo River, just N of M-40 bridge, SE 1/4 sect. 32, T3N R14W, ca. 8 mi NW of Allegan, 5 Oct 1999, *A.A. Reznicek 11050* (MICH*).

Berrien Co.: Niles, 1867, *G.L. Ames s.n.* (MICH*). **Dickinson Co.:** S1/2 Sec. 14 & 15 T39N-R30W, along Menominee River, 24 Aug 1989, *D. Henson 2983* (VDB); along edge of the Menominee River, 24 Aug 1989, *D. Henson* (MICH*). **Gratiot Co.:** edge of Maple River, Fulton Tp., ca. 4.5 mi SSE of Perrinton, section 34, 30 Sep 1961, *E.G. Voss 10696* (MICH*). **Ionia Co.:** Ionia, Aug 1887, *C.F. Wheeler s.n.* (MICH*); 1887, *C.F. Wheeler s.n.* (MICH*). **Kent Co.:** Lowell, 3 Sep 1893, *E.J. Cole* (MICH*); Bank of Grand River at Plainfield Village and Soldiers' Home, 3 Sep 1899, *E.J. Cole* (MICH*-2); on banks of Grand River at Lowell, 17 miles E of Grand Rapids, 29 Sep 1941, *C.W. Bazuin 4243* (MICH*); 4 Sep 1899, *E.J. Cole s.n.* (NCSC*). **Lenawee Co.:** NW of railroad & M-52, S of Carleton Rd., Madison Twp. T7SR3ES22, se qtr of ne qtr, 17 Aug 1998, *R.W. Smith 4196* (MICH*); at edge of parking lot at 1301 N Main St. Adrian, 29 Sep 1986, *R.W. Smith 2001* (MICH*). **Mecosta Co.:** Big Rapids Twp., Big Rapids High School S lot, 24 Jul 2015, *S. Ross 2260* (MICH*). **Menominee Co.:** Menominee River, 17 Jul 1988, *D. Henson 2558* (MICH*); Bank of the M. River on the Menominee River Rd, 4 Aug 1933, *C.O. Grassl 2915* (MICH*). **Midland Co.:** 3 mi above Wayne's Grove, 23 Sep 1933, *R.R. Dreisbach 7836* (MICH*). **Monroe Co.:** Pte. Mouillee State Game Area, 14 Aug 1949, *M. McDonald 5441* (MICH*); SW1/4 sec. 36, T6S R6E, W side U.S. 23, N of Ida-Petersburg Rd, ca. 3 mi E of Petersburg (N. of railtracks), 15 Aug 1992, *A.A. Reznicek 9174* (MICH*); Exeter Twp., Capernall Road near Colf Rd, section 5, 12 Sep 1980, *N.W. Easterly 12,166b* (MICH*). **Newaygo Co.:** NW shore of Diamond Lake, ca. 5 mi. NW of White Cloud, 11 Sep 1964, *E.G. Voss 11783* (MICH*). **Ottawa Co.:** Grand River-bank-Grand River Park-M50, 5 Oct 1941, *C. Nelson 4302* (MICH*). **St. Joseph Co.:** Mendon, 31 Aug 1915, *L.M. Umbach 7796* (MICH*). **Van Buren Co.:** Round Lake, 7 Sep 1959, *P.A. Hyypio 1026* (MICH*). **Washtenaw Co.:** Ann Arbor, parking lot of Westgate Mall, near jct of Maple Road and Jackson, near Maple road, 28 Aug 2004, *A.A. Reznicek 11629* (MICH*). **MINNESOTA. Becker Co.:** Bear Trap Bay Resort, along rt 113, about 22 mi E of Waubun, 12 Aug 1987, *V.E. McNielus 87-474* (TENN*); T143 R36 Sec. NESW3, DeSoto Lake, 18 Jul 1933, *J.B. Moyle 872* (IND*). **Big Stone Co.:** Graceville (SW side), about 0.5 mi W of Rte 75, E Toqua Lake, along SW shore of lake, Graceville Township, 18 Jul 1988, *G.A. Wheeler 11167* (MICH*-2). **Clearwater Co.:** 25 Aug 1935, *M.F. Buell 1687* (NCSC*). **Cottonwood Co.:** 18 Sep 1947, *J.W. Moore 19801* (NCSC*); Talcott Lake, *J.W. Moore 19801* (SMU). **Lake of the Woods Co.:** 29 Aug 1939, *J.W. Moore 12229* (SMU). **Mahnomen Co.:** edge of West Twin Lake along Rt. 4, About 8 miles north of Rt. 113, 21 Jul 1988, *V.E. McNielus 88-221* (VDB). **Pipestone Co.:** Aug 1891, *E.P. Sheldon s.n.* (TENN*). **Renville Co.:** 3 miles W of Morton, 14 Sep 1946, *J.W. Moore 19286* (IND*). **Todd Co.:** Long Prairie River, 16 Aug 1910, *R.Z.L. Chandonnet s.n.* (IND*). **Washington Co.:** Afron State Park, shore line of Trout Brook delta at its confluence with Lake St. Croix, 29 Aug 1976, *G.B. Ownbey 5457* (BRIT). **MISSISSIPPI. Bolivar Co.:** 3 mi W of Scott, inside levee along Mississippi River, 12 Sep 1984, *C. Bryson 3707* (IBE*, TENN*, VDB, VSC); ca. 3.5 mi SW of Scott, ca. 2 mi NW on Avondale Road from hwy MS 1 then ca. 1 mi S, 3 Jul 2002, *C. Bryson 19457* (FSU*, ILLS*, USCH*, VDB, VSC). **Chickasaw Co.:** Houston, in parking lot of Trace Regional Hospital on Hwy 8 E, 20 Aug 1996, *R.A. Stewart 5740* (IBE*, MISS*). **Coahoma Co.:** just NW Friars Point, along Mississippi River, T29N, R4W, 14 Sep 1990, *C. Bryson 10395* (VDB, VSC); 12 Sep 1960, *S. McDaniel 2130* (IBE*-2). **DeSoto Co.:** 1.3 mi W Lake Comorant and 1.6 mi S on Mississippi River levee then 0.2 mi W, T2S, R10W, sec. 28, 27 Aug 1990, *C. Bryson 10533* (VSC). **Forrest Co.:** Hattiesburg, S of Hardy St. (hwy US 198), ca. 0.5 mi W of hwy US 49, T4N R13W Sect. 7, 13 Aug 2002, *C. Bryson 19579* (VSC). **Grenada Co.:** ca. 3.5 mi NNW of Gore Springs, T22N, R6E, S1, NW4, 7 Oct 1986, *M. Morris 2682* (IBE*, VSC). **Issaquena Co.:** 2.6 mi SSW Fidler, T10N, R8W, sec. 31, NW/4 of NW/4, 21 Aug 1990, *C. Bryson 10224* (VSC). **Lamar Co.:** ca. 2 mi E jct of hwy US 98 and MS 589, N of US 98, T4N R14W Sect. 18 NW/4, 13 Aug 2002, *C. Bryson 19571* (VSC). **Lee Co.:** Tupelo, N of hwy MS 6 ca. 0.6 mi E Natchez Trace Parkway, T9S, R9S, R5E, S35, 27 Sep 1992, *C. Bryson 12078* (IBE*, MISS*, VSC); Tupelo, SW jct of S Gloster and Garfield St, 18 Sep 1998, *C. Bryson 16753* (TENN*, VSC); Tupelo, S of McCullough Blvd, 2 Aug 2008, *C. Bryson 22830* (VSC); N of MS Hwy 6 ca. 0.6 mi E Natchez Trace Parkway, T9S R5E S35, 27 Sep 1992, *C.T. Bryson 12078* (). **Lowndes Co.:** Columbus, NE jct of hwy US 45 and 18th Ave, 28 Jul 2000, *C. Bryson 17950* (KNK*, NY, TENN*, VDB, VSC); Columbus, SE jct of hwy US 45 and Lincoln Rd, 29 Aug 2007, *C.T. Bryson 22413* (FLAS*, LSU*, MICH*, NY-2, VSC-2). **Oktibbeha Co.:** Mississippi State University, open area, edge of parking lot behind Dorman Hall, 4 Oct 2003, *C. Bryson 19874* (VSC); Starkville, S of Pollard Road near Coop, 3 Oct 2012, *C. Bryson 23874* (MMNS*, VSC). **Sharkey Co.:** ca. 5 mi E of Rolling Fork, off Hwy 16, 24 Sep 1972, *K.E. Rogers 8695-A* (SMU); *K.E. Rogers 8695-B* (MISSA*); *K.E. Rogers 8695-C* (NCU*); Delta Natl. Forest, alluvial bottomland, Exposed mud flats in bottom of Little Sunflower River ca. 6 miles E of Rolling Fork at hwy 16 bridge, 23 Sep 1977, *R. Carter 1140* (MO*). **Tishomingo Co.:** Yellow Creek embayment, Pickwick Lake from Zippy branch to Goat Island, 5 Oct 1978, *K.E. Rogers 46241* (BRIT, TENN*). **Tunica Co.:** Tunica Lake, E of Tunica, T5S, R12W, sec. 3, 27 Aug 1990, *C. Bryson 10543* (VSC); ca. 0.25 mi N of Tunica, W of Hwy US 61 (34°43.658'N, 19°22.061'W), 15 Aug 2004, *C. Bryson 20321* (VSC). **Warren Co.:** Eaglebend, edge of Eagle Lake, T18N, R2E, sec. 35, SE/4 of SE/4, 21 Aug 1990, *C. Bryson 10213* (MO*, TENN*, VDB, VSC-8). **Washington Co.:** 0.6 mi SW of Wayside, along edge of Lake Lee, 17 Sep 1987, *C. Bryson 7200* (IND*, MICH*, MMNS*, VDB, VSC); SW of Wayside along shore of Lake Lee, T16N, R8W, sec 1, 20 Sep 1990, *C.T. Bryson 10433* (TAES, VDB); Greenville, Washington School, S of Reed Rd, 21 Jul 1994, *C. Bryson 13981* (VSC); Greenville, SE jct of hwy US 82 and MS 1, 11 Sep 1999, *C. Bryson 17690* (IBE*, USCH*, VSC); Greenville, E of hwy MS 1, ca. 1.5 mi S jct of hwy US 82

& MS 1, 17 Oct 2000, *C. Bryson 18120* (KNK*, TENN*, **VDB, VSC**). **Yazoo Co.:** Yazoo City, NE jct of hwy US 49E and US 49W, 4 Sep 1997, *C. Bryson 16180* (FSU*-2, MISSA*, MMNS*, TENN*, **VDB, VSC**). **MISSOURI. Barry Co.:** 23 Sep 1936, *B.F. Bush 15820* (MO*); North and east side of White River in broad valley bottom, T21N, R26W, sect 15 and SW corner sect 14, 3-3 3/4 mi. southeast of Eagle Rock, 21 Oct 1955, *J.A. Steyermark 80615* (SMU); 8 mi S, 10.5 mi E Cassville, Big M Recreation Site at Table Rock Lake, boat ramp site across from marina, 4 Oct 1997, *C.A. Morse 2409* (MICH*); 28 Jun 1897, *B.F. Bush 33* (MO*). **Barton Co.:** Prairie State Park, disturbed ground near visitor's center, 2 Aug 1997, *S.L. Timme 14403* (MO*). **Butler Co.:** 12 Sep 1919, *E.J. Palmer 16380* (MO*); 2 Oct 1892, *F.W. Dewart s.n.* (MO*); 7 Aug 1892, *F.W. Dewart 8* (MO*). **Cape Girardeau Co.:** just above Cape Rock along bank of Mississippi, 28 Jul 1972, *T. Brooks 66746* (BRIT). **Cass Co.:** 8 Feb 1911, *G.C. Broadhead s.n.* (MO*); 19 Jul 1989, *N.C. Henderson 89-03* (MO*); 1 Jul 1991, *N.C. Henderson 91-52* (MO*). **Christian Co.:** 31 Jul 1958, *P.L. Redfearn Jr. 3821* (FSU*). **Clay Co.:** 21 Sep 1895, *K.K. Mackenzie 658* (MO*). **Crawford Co.:** Campbell Bridge Public Fishing Access, at the intersection of Missouri Hwy. N and the Meramec River, SE of Bourbon, river bank of the Meramec River, 28 Sep 2003, *G. Davidse 39110* (MO*). **Douglass Co.:** beside White River and Mo. 14 at Twin Bridges, 28 Jul 1969, *R.D. Thomas 15810* (VDB). **Dunklin Co.:** 6 Aug 1932, *J.H. Kellogg 28* (MO*); 23 Oct 1892, *B.F. Bush s.n.* (MO*); 18 Sep 1893, *B.F. Bush s.n.* (MO*); 22 Aug 1894, *B.F. Bush s.n.* (MO*). **Greene Co.:** 20 Jun 1888, *J.W. Blankinship s.n.* (MO*); 26 Jun 1888, *J.W. Blankinship 2699* (MO*). **Grundey Co.:** near Crowder State Park, sand bars near the junction of the Thompson River and Weldon River, 22 Sep 2013, *G. Davidse 41172* (MO*). **Hickory Co.:** Pomme de Terre State Park, Hermitage area, 16 Jun 1987, *J.A. Raveill 2569* (TENN*, VDB). **Iron Co.:** 2 Jul 1914, *E.J. Palmer 6172* (MO*); 22 Jul 1928, *J.H. Kellogg 2123* (MO*); 26 Sep 1973, *A. Christ 20* (MO*); Big Creek, E of St Rt 49, 2 mi S of Chloride, 7 Aug 1996, *A.W. Cusick 33269* (MICH*, MO*); Jul 1897, *C. Russell s.n.* (MO*). **Jackson Co.:** 7 Aug 1909, *E.J. Palmer 2443* (MO*); 18 Aug 1910, *B.F. Bush 6160* (MO*); 24 Aug 1910, *B.F. Bush 6168* (MO*); 19 Sep 1916, *B.F. Bush 7806* (MO*); 11 Aug 1983, *J.A. Raveill 1810* (MO*); *J.A. Raveill 1814* (MO*); 29 Jul 1987, *T.E. Smith 2586* (IBE*); *T.E. Smith 2586* (MO*); 12 Jul 1992, *B.F. Bush s.n.* (MO*); 18 Aug 1888, *B.F. Bush UMO 969* (MO*); 9 Dec 1890, *B.F. Bush 29* (MO*); 21 Aug 1892, *B.F. Bush s.n.* (MO*); 8 Nov 1893, *B.F. Bush s.n.* (MO*); 9 Jul 1894, *B.F. Bush 566* (MO*). **Jasper Co.:** 2 Sep 1906, *E.J. Palmer 884* (MO*); 21 Jul 1909, *E.J. Palmer 2520* (MO*); 14 Aug 1910, *E.J. Palmer 3088* (MO*); 16 Oct 1910, *E.J. Palmer 3280* (MO*); Joplin, 6 Jul 1957, *D. Demaree 39351* (SMU). **Jefferson Co.:** 17 Oct 1926, *R.E. Woodson s.n.* (MO*). **Johnson Co.:** 25 Sep 1989, *W. Wilder 52* (MO*). **Lincoln Co.:** 29 Aug 1933, *A. Christ 20* (MO*); *J.A. Steyermark 8932* (MO*); Winfield Ferry landing, 16 Oct 1997, *T.G. Lammers 10547* (MO*). **McDonald Co.:** 1/2 mile north of Pineville, 29 Jun 1957, *E.J. Palmer 65796* (SMU); 24 Jul 1892, *B.F. Bush s.n.* (MO*). **Miller Co.:** 10 Sep 1938, *M.C. Lodewycks 465* (MO*). **New Madrid Co.:** NE of jct I-55 and US Hwy 61/62, T22N, R14E, sec 6, SE/4, *C.T. Bryson* (VDB, VSC); in vicinity of Hwy US I-55 Welcome Station, 0.5 mi S of New Madrid city limits and 2.65 mi S of Hwy 61 and 62 exit to New Madrid, 19 Aug 1991, *R. Carter 8908* (VSC); 24 Aug 1993, *S.L. Holmes 1068* (MO*). **Newton Co.:** behind the Neosho Inn near jct of US 70/60 and Alternate US 70 in Neosho, T25N, R32W, sec. 36, Neosho West 7.5' Quad, 16 Aug 1994, *P.M. McKenzie 1502* (MO*, VSC). **Oregon Co.:** Thayer, Mo. Beside US 63, 31 Jul 1969, *R.D. Thomas 16069* (VDB). **Pemiscot Co.:** Growing in alluvial soil within 75-100 meters of the Mississippi River, and ca. 1/2 mi SW of the I-155 bridge over the Mississippi River infrequent and scattered, 30 Jun 1991, *P.M. McKenzie 1096* (MO*); City of Cruthersville at S.P. Reynolds Public Fishing Acces Park on the Mississippi River small moist depression in waste area, 10 Jun 1998, *B. Summers 8655* (MO*). **Perry Co.:** along Mississippi R., 1.1 mi E of jct of state routes C and E, at end of County Road 220, 9 Jul 1989, *R. Carter 7913* (VSC); Perryville Community Lake W of Perryville and I-55, S end of lake near wing dam, 17 Jun 2012, *G. Davidse 38829* (MO*). **Pike Co.:** 21 Aug 1918, *J. Davis 9174* (MO*). **Pulaski Co.:** 22 Aug 1937, *J.A. Steyermark 25092* (TENN*). **Ralls Co.:** NE of Hwy US 1915, *J. Davis 4814* (MO*); 1 Aug 1973, *B. Hinterthuer 633* (MO*). **Scott Co.:** jct of hwy US I-55 and MO 77, just E of Lambert/Benton, 20 Aug 1991, *R. Carter 8918* (VSC); barrow pit at jct of Hwy US I-55 and MO 77, just E of Lambert/Benton, (VSC); just S of Miner city limits off of Rt AA, ca. 1 mi S of jct of Rt 62 and Rt AA, or just W of the ramp to the W bound land of Rt. 57/60, T25N R14E NE1/4 of the NW 1/4 of the NW 1/4 of sec. 27, 6 Sep 1993, *P. McKenzie 1273* (VSC); 3 Sep 1998, *J.R. Laatsch s.n.* (MO*). **Shannon Co.:** Buttin Rock Mountains, along Current River just upstream from Rocky Creek access, 9 Jul 1986, *N. Hensold 847* (MICH*). **St. Charles Co.:** along and S of hwy US 67, just W of Alton bridge and old lock and dam, 23 Jul 1989, *R. Carter 7945* (VSC) along road to the Golden Eagle Ferry, 1/2 mile N of its junction with County Hwy B, NW of Kampville. Wet mudflat on backwater of the Mississippi River, 4 Oct 1996, *T.G. Lammers 9866* (MO*); 4 Sep 1997, *J.H. Harris 15* (MO*); ca. 3 mi SW of Defiance, along State Hwy 94, 7 Jul 1973, *G. Davidse 3519* (BRIT); in parking lot at JoJo's Restaurant, shopping center at Lake St. Louis, beside eastbound I-70, 21 Aug 1986, *N.A. Harriman* (GSW*, **VDB**); along road to Golden Eagle Ferry, 0.5 mile N of its junction with Co. Rd. B, NW of Kampville, 16 Oct 1997, *M.A. Vincent 8023* (VDB). **Saint Francois Co.:** 16 Aug 1993, *C. Anderson MO236* (MO*-2). **Ste. Genevieve Co.:** Pickle Springs Natural Area, ca. 7 air miles ENE of Farmington, N of County Highway AA via Dorlac Rd, Piney Glade, along SW side of Trail Through Time loop trail, just E of parking area, 12 Jul 2015, *G. Yatskievych 15-070* (MO*); US Rt. 61, S of St.

Mary P.O, 8 Aug 1996, *A.E. Cusick 33291* (MO*, NY). **St. Louis Co.:** Carrie Area freight yard of the Rock Island Railroad along the eastern roadway north of roadside area, 8 Aug 1954, *L.V. Muehlenbach 315* (VDB); bank of Meramec River, vicinity of boat launch in Castlewood State Park, 10 Sep 1989, *R. Carter 8282* (VDB, VSC); 2 Sep 1929, *J.H. Kellogg 15124* (MO*); Jul 1884, *G.W. Letterman s.n.* (MO*); 8 Sep 1884, *J.H. Kellogg s.n.* (MO*).

St. Louis City Co.: 30 Sep 1928, *J.H. Kellogg 2124* (MO*); 8 Aug 1954, *V. Muehlenbach 315* (MO*); Freight yard of the Franklin Railroad, 14 Jul 1956, *V. Muehlenbach 1009* (MO*); 7 Sep 1957, *V. Muehlenbach 1351B* (MO*); Carrie Ave, 9 Jul 1966, *V. Muehlenbach 2664* (MO*); St. Louis, 6573 Scanlan, 5 Aug 2012, *G. Davidse 38836* (MO*). **Stoddard Co.:** 25 Sep 1980, *A. Christ s.n.* (MO*). **Taney Co.:** 1897, *W. Trelease 817* (MO*). **Texas Co.:** 9 Aug 1990, *B. Summers 3585* (MO*). **Washington Co.:** Hughes Mountain Natural Area, just S of MO Hwy. M, ca. 3 air-line miles SSW of Irondale, 17 Jul 2015, *G. Davidse 42421* (MO*). **Wayne Co.:** 10 Oct 1912, *B.F. Bush 6944A* (MO*); 28 Jun 1972, *S.A. Sutter 764* (MO*); 1899, *W. Trelease s.n.* (MO*).

MONTANA. Missoula Co.: shore of Bitter-root River 315 m NE of McCloy Flats Recreation Area parking area, Missoula, 15 Sep 2003, *D.F. Brunton 15798* (MICH*). **NEBRASKA. Clay Co.:** 3 mi SE of Fairfield, 5 Jul 1941, *W.L. Tolstead 4182* (BRIT). **Douglas Co.:** Platte River area. 2 mi N of Highway 92, Platte River, 1976-09-00, *E. Nalley 5* (LSU*). **Garfield Co.:** ca. 16 mi N of Burwell, 12 Aug 1961, *H.H. Iltis 18574* (COLO*, SMU). **Hall Co.:** near Grand Island, 28 Aug 1943, *W. Kiener 15128* (SMU); along US 34 due S of Grand Island, 16 Aug 1967, *R. Kral 28898* (VDB); 21 Jul 2009, *D. Estes 10754* (TENN*). **Howard Co.:** just S of Loup River N of St. Paul on US 281, 16 Aug 1967, *R. Kral 28864* (VDB). **Jefferson Co.:** 4 mi NNW of Gladstone, Sec. 20, T3N, R1E, 26 Jul 1976, *S.P. Churchill 7990* (BRIT). **Kearney Co.:** Minden, 8 Sep 1918, *H. Hapeman s.n.* (IND*); 17 Sep 1929, *H. Hapeman 1667* (NO*); 14 Aug 1930, *H. Hapeman s.n.* (NO*); Minden, 10 Jul 1932, *H. Hapeman* (DBG*). **Loup Co.:** 1 mi N, 1 W Taylor North Loup River, 14 Jul 1966, *S. Stephens 6818* (SMU). **NEVADA. Churchill Co.:** Lahontan Valley, Sheckler Reservoir WSW of Fallon, T18N, R28E, S7, 5 Aug 1988, *A. Tiehm 11895* (COLO*, VDB). **Douglas Co.:** Carson River, 0.8 road mi S of hwy 395 at extreme N end of the Pine Nut Mts, 23 Aug 2007, *A. Tiehm 17485* (NY). **Washoe Co.:** Truckee River at the bridge to the Tracy-Clark power station E (downstream) of Reno, 21 Jul 2001, *A. Tiehm 13699* (ASU*, COLO*); Truckee Meadows, Sparks, Truckee River just W of Rock Street Bridge, 1 Aug 2007, *A. Tiehm 15466* (NY); Truckee Meadows, Reno, Truckee River near corner of Idewild and Foster, 5 Aug 2007, *A. Tiehm 15471* (NY).

NEW HAMPSHIRE. Chestshire Co.: Hinsdale, 1 Sep 1923, *L.A. Wheeler 329401* (VDB). **NEW JERSEY. Essex Co.:** 23 Oct 1916, *W.N.W. s.n.* (NY). **NEW MEXICO. Dona Ana Co.:** White Sands Missile Range, 25 air km NE of Las Cruces, in San Augustin Mts., 1.4 mi N of San Augustin Pass on US Hwy 70, steep E-facing slope ca. 1/4 mi N of San Augustin Peak, 16 Aug 1990, *R.W. Spellenberg 10501* (NMC*); *R.D. Worthington s.n.* (COLO*). **Grant Co.:** Gila National Forest, Ft. Bayard, 2 Sep 1981, *A.L. Medina 174* (ASU*). **Hidalgo Co.:** San Luis Mountains, 11 mi on St Hwy 79 from jct with St hwy 338, 40 mi S of animas, 23 Sep 1967, *W. Hess 1517* (SMU); Peloncillo Mountains, Lower Lee, just below old corral, 27 Aug 2008, *E. Makings 3068* (USFS*). **Luna Co.:** Columbus, junction of New Mexico route 9 and New Mexico Route 11, 2 Aug 1967, *D.J. Pinkava 3059-a* (ASU*); 0.5 miles N of Palomas, Mexico and S of Columbus, NM, 31 Aug 1974, *L.M. Shultz 1343* (USU*). **Rio Arriba Co.:** 3.6 miles south of Embudo Junction, 19 Jul 1987, *R. Carter 5927* (VDB, VSC-2). **San Miguel Co.:** Cuervo Canyon Pasture, vicinity of windmill TM #19 and crater lake near head of Mogote Canyon, 17 mi E of Las Vegas, 4 mi S of Rte. 104, 24 Jul 1984, *S.R. Hill 14727* (BRIT, GSW*). **NEW YORK. Bronx Co.:** New York City, New York Botanical Garden, E of the Bronx River and S of Waring Ave, at the Horticultural Operation Center, 1 Sep 2015, *D. Atha 15250* (NY); *D. Atha 15251* (NY). **Clinton Co.:** Point au Roche, 31 Aug 1929, *W.C. Muenscher 255* (USU*). **Columbia Co.:** 1.3 mi WSW of Columbiaville, S end of large island in Hudson River, N of mouth of Stockport Creek, 29 Sep 2011, *R.F.C. Naczi 14073* (NY). **Oneida Co.:** *W.A. Matthews s.n.* (COLO*). **Putnam Co.:** town of Kent, along NY 301 at Dixon Rd, along shore of W Branch Reservoir, 41°26'N, 73°44'W, ca. 150 m, 11 Sep 1999, *W.R. Buck 36106* (NY); ca. 2 km NNW of town of Carmel, N of Nichols St. on shore of West Branch Reservoir, 41.445291 N, 73.692568W, 14 Sep 2010, *D. Atha 9007* (NY); 2.1 mi SE of center of Patterson, along E side of rt. 22, Berkshire Nursery, 41.49135°N, 73.57778°W, 13 Sep 2014, *R.F.C. Naczi 15665* (NY); *R.F.C. Naczi 15666* (NY); 0.3 mi SE of center of Patterson, 0.2 mi S of rt. 311, Petersen's Nursery, 41.55152°N, 73.60162°W, *R.F.C. Naczi 15676* (NY); *R.F.C. Naczi 15677* (NY); 0.1 mi W of Milltown, along E branch of Croton River, 41.41124°N 73.56280°W, 2 Oct 2014, *R.F.C. Naczi 15711* (NY). **Saratoga Co.:** 19 Aug 1929, *W.A. Matthews 2978* (FSU*); shore of Saratoga Lake, 22 Sep 1939, *H.D. House 21893* (NY, TAES). **Schoharie Co.:** town of Schoharie, Fox Creek Park along Fox Creek down stream from Route 30, immediately N of village of Schoharie, TNC field no. F89TU225, 2 Sep 1989, *G. Tucker 4919* (VSC). **Westchester Co.:** Bronx River, town of Greenburgh, along the Parkway just S of the Parkway Homes Rd. bridge, 41°3'28"N, 73°46'23"W, 2 Aug 1981, *N.H. Holmgren 10032* (NY); Bronx River, Town of Greenburgh, along the Parkway just S of the Parkway Homes Road bridge, *N.H. Holmgren 10032* (USU*). **NORTH CAROLINA. Cabarrus Co.:** 30 Jul 2013, *J. Matthews s.n.* (UNCC*). **Clay Co.:** 29 Sep 2001, *P.D. McMillan 5917* (CLEMS*). **Columbus Co.:** Sep 1934, *P.O. Schallert 147* (NO*). **Durham Co.:** 21 Aug 1965, *H.E. Ahles 59957* (NCU*); 22 Aug 1982, *C.M. Taylor 1711* (DUKE*). **Forsyth Co.:** 1827, *C.F. Lenke 7452* (DUKE*). **Franklin Co.:** 6 Oct 1990, *R.L. Wilbur 57944* (DUKE*). **Granville Co.:** 1 Sep 1950, *W.T. Baston 127* (DUKE*); 23 Oct 1987, *R.L.*

Wilbur 45461 (DUKE*); 8 Oct 1987, *R.L. Wilbur 44721* (DUKE*). **Rowan Co.:** 11 Oct 1956, *J.H. Horton 553* (NCU*). **Rutherford Co.:** Sandy Mush Granite Flatrock, 20 Sep 2006, *D. Campbell s.n.* (UNCC*). **Surry Co.:** 16 Jul 1948, *D.S. Correll 14661* (DUKE*). **Wake Co.:** Granite near Little River, 2 miles E of Rolesville, 23 Sep 1961, *A.E. Radford 44409* (IND*); 22 Sep 1966, *A.E. Radford 45275* (FUGR*); Mitchells Mill, 2 miles NE of Rolesville, *A.E. Radford 45275* (MICH*, **SMU, VDB**); 15 Sep 1987, *R.L. Wilbur 43892* (DUKE*); *Radford s.n.* (COLO*). 28 Jul 1888, *L.N. Johnson s.n.* (NY). **OHIO. Athens Co.:** off W bank of Hocking River, 50–500 ft. SSW of Stimson Avenue bridge, Athens Quadrangle., Athens Quadrangle, 23 Aug 1987, *W.R. Carr 8676* (LSU*). **Franklin Co.:** Piedmont Rd between N High St & Indianola Ave, city of Columbus, NW Columbus Quad, 21 Jul 1989, *A.W. Cusick 28383* (MICH*); Between nursery & Olentangy River, Olentangy River Rd, N of Union Cemetery, city of Columbus, N Columbus Quad, 30 Aug 1991, *A.W. Cusick 29853* (MICH*, **VDB**). **Jefferson Co.:** Island Creek at St. Rt. 7 bridge, Costonia, Sect 28, Island Creek Twp, 15 Aug 1994, *A.W. Cusick 31950* (NY). **Lucas Co.:** 3+ miles W of Monclova, 19 Aug 1928, *E.L. Waseley s.n.* (MICH*); SE corner Monclova Twp, Maumee River at SW corner of Maumee city limits, 10 Sep 1967, *R.L. Stuckey 5796* (MICH*, **VDB**); Jerusalem Township, at NE end of Maumee Bay, ca. 10 mi E of Toledo, 21 Sep 1971, *R.L. Stuckey 9390* (**VDB**); Stranahan School, Holland Sylvania Rd, NW 1/4, Sect 23, Sylvania Twp, Sylvania Quad, 6 Jul 1982, *A.W. Cusick 21771* (MICH*); btwn US Rt. 20A and W end of E-W runway, Toledo Express Airport, 1/2 mi SSE, jct of St. Rt. 2 at Midway, 29 Aug 1989, *A.W. Cusick 28496* (NY); N side, Old State Line, E, jct of Schwamberger Rd, Sect 11, Spencer Twp, Whitehouse Quad, 25 Aug 1993, *A.W. Cusick 31219* (MICH*). **Meigs Co.:** Shore of Leading Creek at boat ramp, NW of Railroad St, Middleport, Cheshire Quad, 7 Aug 1991, *A.W. Cusick 29765* (MICH*). **Morgan Co.:** E shore of Muskingum River, S of Lock #6 & St Rt 266 bridge, SE, Stockport, Windsor Twp, Stockport Quad, 15 Sep 1983, *A.W. Cusick 23023* (MICH*). **Paulding Co.:** Little Auglaize River, ca. 3 mi S of Oakwood, Washington Twp, N 1/2 sec 15, 24 Sep 1967, *R.L. Stuckey 6336* (MICH*, **VDB**). **Portage Co.:** Muzzy Lake, 55 degrees and 1.2 miles from Rootstown Road bridge of I-76, Rootstown Township, 23 Jul 1991, *J.K. Bissell JKB:1991:181* (MICH*). **Sandusky Co.:** Ballville Twp, bottom of Sandusky River, ca. 3 mi S of Fremont, 7 Sep 1967, *R.L. Stuckey 5660* (MICH*). **Wood Co.:** ca. 1/2 mi SE of Waterville, W edge sec. 47, T6N, R10E, Middleton Twp, 10 Sep 1967, *R.L. Stuckey 5820* (**SMU**). **OKLAHOMA. Bryan Co.:** along the “blind lake” Lake Oberlin about 15 mi SE of Bennington, Oklahoma, 28 Jul 1976, *J. Taylor 22808* (BRIT). **Cleveland Co.:** Ten Mile Flats, R3W, T9N, Section 30, 5 Sep 1972, *C.A. Lawson 576* (VDB). **Comanche Co.:** Wichita Mountains Wildlife Refuge. ca. 15 mi NW of Lawton, trail to summit of Elk Mountain, 34.729786°N, –98.7202174°W, WGS 1984, 19 Jun 2015, *K.N. Taylor 3026* (BRIT); N of Mt. Scott, about 1 mi E of Meers, Wachita Mts, 4 Jul 1941, *Y.T. Walufal 2904* (NY). **Green Co.:** 17 Jun 1913, *G.W. Stevens 1027* (BRIT, **SMU**). **Harper Co.:** along the Beaver (North Canadian) River, 15 miles west and 4 miles south of Buffalo, 22 Aug 1984, *J. Taylor s.n.* (BRIT, TENN*). **Kiowa Co.:** Devil’s Canyon in the SE part of the park, about 3.5 miles SE of the lodge, 5 Oct 1975, *J. Taylor 20812* (VDB). **Noble Co.:** 3 1/2 mi N and 1 mi E of Red Rock, 30 Sep 1950, *R.J. Ellis 24* (SMU). **Pottawatomie Co.:** 1 mile SW of Tecumseh, 28 Jun 1937, *F.A. Barkley 1375* (IND*). **Oregon. Benton Co.:** Corvallis, on gravel bar in the Marys River near its confluence with the Willamette River, 18 Sep 2001, *R.R. Halse 6120* (NY). **Lane Co.:** Green Island, Willamette River shoreline, ca. 1.0 miles WSW of the intersection of Coburg Road and Green Island Road, 23 Sep 2004, *R.E. Brainerd 562* (USU*). **PENNSYLVANIA Co.:** *A.W. Cusick 36955* (MICH*); *A.W. Cusick 37455* (MICH*); *A.W. Cusick 37527* (MICH*). **Bradford Co.:** Towanda, along W side of Susquehanna River, vicinity of courthouse, 41°46'1"N, 76°26'30"W, 27 Jul 2007, *R.F.C. Naczi 11967* (NY). **Bucks Co.:** Delaware River, Point Pleasant, 16 Sep 1923, *W.M. Benner 2369* (IND*); shore of Delaware River, Point Pleasant, *W.M. Benner s.n.* (CM*). **Northampton Co.:** 1.5 mi NW of Riverton, 27 Aug 1953, *R.L. Schaeffer 45213* (MCA*); *W.E.A. Aikin s.n.* (NY). **South Carolina. Andersonville Co.:** Granite, 26 Aug 1961, *A.E. Radford 44275* (MICH*). **Fairfield Co.:** Andersonville Quarry, 26 Aug 1961, *A.E. Radford 44275* (**SMU**). **Kershaw Co.:** 9 Oct 1932, *J.M. Fogg Jr 5321* (NCU*); granite outcrop, Flat Rock, 6 Oct 1957, *A.E. Radford 30003* (NY, **VDB**). **Lancaster Co.:** 28 Sep 1969, *J.N. Page s.n.* (NCU*, NCU*). **Laurens Co.:** 19 Sep 1987, *G. Newberry 8905* (USCS*); 29 Aug 1988, *G. Newberry 9667* (USCS*). **Oconee Co.:** 8 Jul 1989, *S.R. Hill 20751* (CLEMS*). **Pickens Co.:** 7 Jun 1973, *J.N. Knox 199* (CLEMS*); 6 Sep 1973, *J.N. Knox 292* (NCU*). **Spartanburg Co.:** 10 Aug 1971, *R.C. Clark 20115* (FUGR*); 3 Oct 1996, *G. Newberry 11990* (USCS*); 19 Sep 1998, *G. Newberry 12232* (USCS*). **Union Co.:** 23 Jul 1982, *G. Newberry 1698* (USCS*). **TENNESSEE. Anderson Co.:** 29 Aug 1997, *P.C. Durr s.n.* (TENN*). **Benton Co.:** 23 Aug 1978, *D.H. Webb 1383b* (TENN*); 7 Oct 2010, *D.H. Webb 7492* (TENN*). **Cheatham Co.:** 31 Aug 1942, *N.H. Woodruff s.n.* (TENN*). **Claiborne Co.:** 13 Aug 1980, *D.H. Webb 3298* (TENN*). **Clay Co.:** 22 Aug 1991, *V.E. McNeilus 91-1026* (TENN*). **Davidson Co.:** 23 Aug 1942, *J.M. Shaver 2891* (TENN*); *N.H. Woodruff s.n.* (TENN*); 28 Sep 1946, *E. Quarterman* (DUKE*); 27 Jun 1947, *E. Quarterman 3032* (DUKE*); 27 Sep 1965, *R. Kral 25988* (FSU*); 8 Sep 1986, *R. Kral 73615* (UTM*); Nashville, 1878, *A. Gatling s.n.* (NY). **Decatur Co.:** 8 Sep 1978, *D.H. Webb 1611* (TENN*); 29 Sep 1978, *D.H. Webb 1736* (TENN*); 26 Aug 2011, *D.H. Webb 7769* (TENN*). **DeKalb Co.:** 1 Oct 1954, *H.R. DeSelm 159* (TENN*); 12 Aug 1989, *R.L. Thompson 89-1903* (TENN*). **Dyer Co.:** 6 Jul 1979, *B. Boom 530* (TENN*). **Grainger Co.:** along Rt 11-W, two miles S of Bean Station, edge of Cherokee Lake, 28 Sep 1985, *V.E. McNeilus s.n.* (MICH*, TENN*); Area of Lake Cherokee, along Rt 11-W, about 2 miles S

of Bean Station, 16 Sep 1986, *V.E. McNeilus s.n.* (MICH*, TAES); 29 Sep 1995, *V.E. McNeilus 95-583* (TENN*); along 11-W, about 2.0 miles S of Bean Station, 31 Oct 1998, *V.E. McNeilus 98-1091* (MICH*, TENN*). **Hamblen Co.:** Dewatered area along Panther Creek, Panther Creek State Park, 5 Oct 1998, *V.E. McNeilus 98-1018* (LSU*); along Panther Creek, Panther Creek State Park, (MICH*, TENN*). **Hamilton Co.:** 5 Sep 1978, *D.H. Webb 1528b* (TENN*). **Hardeman Co.:** Grand Junction, railroad yard, 28 May 1972, *K.E. Rogers 8164* (MISSA*); *K.E. Rogers 8164* (TENN*). **Hardin Co.:** 1 Sep 1978, *D.H. Webb 1439* (TENN*); *D.H. Webb 1495* (TENN*); 8 Sep 1978, *D.H. Webb 1582* (TENN*); 13 Aug 2010, *D.H. Webb 7445* (TENN*); 26 Oct 2011, *D.H. Webb 7905* (TENN*). **Hawkins Co.:** 14 Sep 1978, *D.H. Webb 1634* (TENN*). **Henderson Co.:** 6 Sep 1979, *D.H. Webb 2279* (TENN*). **Henry Co.:** 30 Sep 1978, *D.H. Webb 1732* (TENN*); 29 Oct 2010, *D.H. Webb 7611* (TENN*); 29 Oct 2015, *B.E. Wofford s.n.* (TENN*). **Humphreys Co.:** 3 Aug 1994, *V.E. McNeilus 94-716* (TENN*); 15 Oct 2008, *D.H. Webb 6887* (TENN*); 28 Oct 2010, *D.H. Webb 7556* (TENN*). **Jackson Co.:** along Free State Road, about 2.3 miles N of Gainsboro, 18 Aug 1992, *V.E. McNeilus 92-802* (MICH*-2, TENN*); 3 Aug 1994, *V.E. McNeilus 94-716* (TENN*). **Jefferson Co.:** 14 Oct 1982, *D.H. Webb 4737* (TENN*). **Knox Co.:** 11 Oct 1994, *V.E. McNeilus 94-1043* (TENN*). **Marion Co.:** 15 Jul 1934, *A.J. Sharp 2507* (TENN*); *J.K. Underwood 1068* (TENN*). **Marshall Co.:** 2 Sep 1992, *P. Durr s.n.* (TENN*); 9 Jul 1998, *V.E. McNeilus 98-517* (TENN*); at junction of Rts. 31 A & 271, S edge of Lewisburg, Lewisburg, *V.E. McNeilus 98-553* (LSU*); Area at junction of Rts 31A & 271, S edge of Lewisburg, (MICH*, TENN*); 3 Sep 1998, *V.E. McNeilus 98-874* (TENN*); 4 Oct 1999, *V.E. McNeilus 99-1024* (TENN*). **Maury Co.:** 21 Sep 1978, *D.H. Webb 1690* (TENN*). **Montgomery Co.:** 19 Aug 1983, *E.W. Chester 83-294* (NCU*). **Obion Co.:** 10 Jul 1986, *M. Guthrie 1108* (TENN*); Union City, parking lot of Catfish Gallery restaurant, W side of city, E side of Hwy 51/3, 27 Jun 1995, *A.A. Reznicek 10061* (MICH*). **Perry Co.:** 12 Oct 1987, *H.R. DeSelm s.n.* (TENN*). **Rutherford Co.:** 30 Nov 1946, *Davis* (TENN*); 16 Aug 1958, *H.R. DeSelm 1914* (TENN*); 11 Oct 1958, *A.J. Sharp 25462* (TENN*); 5 Oct 1963, *A.J. Sharp 32440* (TENN*); 16 Aug 1969, *K. Rogers 44257* (TENN*); 19 Aug 1971, *R. Kral 43623* (FSU*, VSC); 15 Aug 2006, *J. Walck 612* (TENN*). **Smith Co.:** 16 Oct 1954, *H.R. DeSelm 159* (TENN*). **Stewart Co.:** 29 Oct 2010, *D.H. Webb 7597* (TENN*). **Union Co.:** 3 Oct 1981, *H.R. DeSelm s.n.* (TENN*); 26 Sep 1987, *V.E. McNeilus 87-431* (TENN*); 14 Oct 1998, *V.E. McNeilus 98-1052* (TENN*). **Washington Co.:** 17 Sep 1990, *F. Levy s.n.* (DUKE*). **Wayne Co.:** 1 Oct 1981, *D.H. Webb 4343* (TENN*); 7 Oct 2010, *D.H. Webb 7505* (TENN*). **Williamson Co.:** 6 Aug 1968, *R. Kral 32174* (FSU*, NCU*); Hillsboro Rd, 4 mi N Franklin, 12 Jul 1979, *R. Kral 63976* (VSC); 15 Aug 1988, *L. Kelly 1963* (TENN*). **Wilson Co.:** 12 Jul 1935, *H. K. Svenson 7152* (TENN*); 23 Aug 1947, *R.E. Shanks 7359* (TENN*); 20 Oct 1949, *E.H. Cooley 13289* (TENN*); 8 Aug 1968, *K.E. Blum 2848* (FSU*); Cedars of Lebanon State Park and Forest—along secondary rd W of park entrance (HWY 231) ca. 2 mi SE of Gladeville, 12 Aug 1979, *B.E. Wofford 79-243* (EKY*); (TENN*); 1 Aug 2003, *R. McCoy s.n.* (TENN*).

TEXAS. Aransas Co.: On Fulton Beach, 6.5 miles NE of Rockport, off St. Hwy. 35, 7 Jun 1967, *J.R. Crutchfield 2911* (LL*). **Austin Co.:** Lake Austin, Austin, 11 Mar 1928, *B.C. Tharp s.n.* (MICH*); 6.8 mi W of Columbus, 1 Sep 1965, *R. Kral 25792* (VDB); W side of Brazos River, N end of Stephen F. Austin State Recreation Area, ca. 1.5 airmiles NW of FM 1458 bridge over Brazos River. San Felipe Quad. 29°49'28"N, 96°06'45"W, 23 Sep 1993, *W. Carr 13053* (VSC). **Bastrop Co.:** Bastrop State Park, Junction of Gotier Trace & powerline easement, NE quadrant of Park, Elev. 613 ft, 9 Jul 2004, *E.J. Lott 5105* (TEX*). **Bell Co.:** near Moffat, 10 Oct 1930, *S.E. Wolff 2675* (SMU). **Blanco Co.:** Blanco River, just downstream (NE of) mouth of Hog Hollow S edge of Hammond Farm, Crabapple Creek Quadrangle, 12 Oct 2002, *W.R. Carr 21316* (TEX*). **Bosque Co.:** approx. 2 mi NW of Mosheim W from dam site along Hog Creek, 8 Jun 1977, *B.L. Lipscomb 2256* (SMU). **Brazos Co.:** near Campus at College Station, 8 Nov 1946, *J.B. Paxson 501* (TEX*). **Brewster Co.:** Cat Tail Canon, 17 Aug 1931, *E. Whitehouse s.n.* (TEX*); Chisos Mts., upper Cat-Tail canon, 28 Jul 1932, *C.H. Muller* (TEX*); Fresno Spring, Chisos Mountains area, 29 Jun 1937, *B.H. Warnock 774* (TEX*); Entrance of Boquillas Canyon, Chisos Mountains area, 6 Aug 1937, *B.H. Warnock* (TEX*); 26 Aug 1939, *B.H. Warnock 20099* (FSU*); 16 mi S of Marathon, 29 Jun 1947, *B.H. Warnock 6131* (SMU); 16 miles S of Marathon, (TEX*); Big Bend National Park, Lost Mine Peak, 12 Sep 1961, *D.S. Correll 24546* (LL*). **Brooks Co.:** W side of Vargas Creek ca. 2.8 airmiles SE of culvert under R.M. 755, at 26°48'10.4"N, 098°18'18.6"W. Encinitos Ranch. Santa Elena SE Quadrangle. Elev. 185–190 ft, 14 Nov 2006, *W.R. Carr 25349* (TEX*); ca. 1.5 airmiles NW of R.M. 755 culvert on Vargas Creek, ca. 0.2–0.3 airmiles S of Visnaga Windmill, 15 Nov 2006, *W.R. Carr 25361* (TEX*). **Burnet Co.:** Granite Mountain, 16 Jun 1946, *D.S. Correll 12729* (BRIT, SMU-2); Granite Mountain along Farm Road 1431, 1.8 mi W of jct of Farm Road 1431 and US 281, W of Marble Falls, 7 Jun 1988, *L.E. Urbatsch 4791* (BRIT-2, LSU*); 1.8 mi W on FR 1431 from its jct with US 281 in Marble Falls, 1 Sep 1992, *S. Jones 9658* (BRIT-2); Backbone Creek, 10–25 ft. W of crossing on unpaved road to Slaughter Gap, ca. 1/2 mi N of FM 1431, NW of Marble Falls. Marble Falls Quadrangle, *W.R. Carr 12236* (TEX*). **Chambers Co.:** 10 Aug 1991, *W.J. Hayden 3174* (URV*). **Comal Co.:** Comanche Spring, New Braunfels, etc, Aug 1849, *Lindheimer 1239* (TEX*). **Coryell Co.:** Fort Hood Military Reservation, Training Area 21, 0.4 mi N of tank trail, on dirt road that is 0.3 mi E of E Range Road, 11 Jul 2007, *L.L. Hansen 5102* (TEX*). **El Paso Co.:** Hueco Tanks, 20 Jul 1946, *A. Lee 46176* (TEX*); Hueco Tanks, Hueco Mountains, 12 Aug 1946, *D.S. Correll 13783* (SMU); 20 Aug 1946, *U.T. Waterfall 6618* (BRIT); Hueco Tanks State Park, 27 Sep 1972, *S.W. Oefinger s.n.*

(BRIT); Hueco Tanks State Historical Park, top of the NE side of E Mountain, 24 Sep 1977, *T.R. Van Devender* (TEX*); Hueco Mts., Hueco Tanks State Park, NE side of North Mountain, 8 Sep 1979, *R.D. Worthington 5194* (BRIT); *R.D. Worthington s.n.* (COLO*). **Goliad Co.:** along secondary road on O'Connor Ranch, 1.9 roadmiles W of gate on FM 2441 bridge over Sarco Creek, Melo Quadrangle, 25 May 2004, *W.R. Carr 23270* (TEX*). **Grayson Co.:** Randell Lake, 4 miles NW of Denison, 26 Oct 1949, *E. Bonn 51-445* (TEX*). **Hamilton Co.:** Hamilton Texas, 12 Jun 1941, *B.C. Tharp s.n.* (TEX*). **Harris Co.:** Katy Prairie Conservancy property, about 2 km S of Jack Rd, 1.2 miles W of it's intersection with Katy Hockley Rd, 13 Nov 2002, *D. Rosen 2394* (VSC). **Hemphill Co.:** Gene Howe Wildlife Management Area 5 mi E of Canadian, 30 Jun 1958, *C. Rowell 5802* (BRIT, SMU, TEX*); Lake Marvin 11 miles E of Canadian, 22 Jul 1967, *C. Mertins 2291* (LL*). **Henderson Co.:** Koon Kreek Kamp recreation area, lakes and swampy areas below the dams, 10 mi. S of Athens, 30 Aug 1967, *R.S. Mitchell 4077* (LL*). **Hidalgo Co.:** ca. 2.3 airmiles SSW of triangle Jct. of Hidalgo, Kenedy and Willacy counties, ca. 0.4 airmiles N to NNE of Jesus Maria Windmill, on Hunke Ranch, La Sal Vieja Quadrangle, 12 Nov 2003, *W.R. Carr 22708* (TEX*); 2.4-2.5 airmiles SW to SSW of triangle Jct. of Hidalgo, Kenedy and Willacy counties, ca. 0.4 airmiles N to NNE of Jesus Maria Windmill, on Hunke Ranch, La Sal Vieja Quadrangle, *W.R. Carr 22713* (TEX*); Santa Ana National Wildlife Refuge S of Alamo, 1959-08-00, *R.J. Fleetwood 3092A* (TEX*). **Hood Co.:** summit of Comanche Peak, 5 miles S of Granbury, 19 Jun 1949, *L.H. Shimmers 11456* (SMU). **Jeff Davis Co.:** in Fern Canyon, 10 mi. n. of Alpine, 26 Aug 1939, *B.H. Warnock 20099* (TEX*); Limipa Creek by Bird Orchard, 9 Sep 1940, *L.C. Hinckley 1377* (NY); Upper Madera Canyon, Davis Mountains, McIver Ranch. Elev. 6500 ft, 5 Oct 1955, *B.H. Warnock 13498* (LL*); Top of mesa. Mitre Peak Girl Scout Camp at Fern Canyon, 30 Sep 1964, *E. Keough 288* (TEX*); along stream on granite mountain across road from "Point of Rocks" roadside park on scenic drive, about 11 miles from Ft. Davis, 19 Sep 1966, *D.S. Correll 33697* (LL*); 7.9 mi S on TX 166 from its jct with TX 118, NW of Fort Davis, 2 Sep 1991, *S. Jones 7608* (VSC); ca. 2.9 roadmiles SW of gas tank at Davis Mountains Preserve HQ, ca. 3.2 airmiles NE of summit of Baldy Peak, Mount Livermore Quadrangle, 11 Aug 2000, *W.R. Carr 19100* (TEX*); Cherry Canyon ca. 0.1 mi N of Eagle Waterhole Canyon, ca. 0.4 mi S of The Lodge, on Cherry Canyon Ranch in Nern part of Davis Mountains, Friend Mountain Quadrangle, 24 Sep 2004, *W.R. Carr 23519* (TEX*); Limpia Canyon, Mt. Livermore, Aug 1936, *L.C. Hinckley s.n.* (TEX*). **Kenedy Co.:** Kenedy County, 17 Oct 1938, *R. Runyon 1933* (TEX*); 11 May 1941, *R. Runyon 2655* (TENN*); Kenedy County, *R. Runyon 2655* (TEX*); Las Norias, 27 May 1941, *R. Runyon* (TEX*); 26 Jun 1941, *B.C. Tharp 44265* (FSU*); Kenedy County, *B.C. Tharp s.n.* (TEX*); Cristal Pasture, Norias Division of King Ranch, 24 Nov 1953, *M.C. Johnston 5320.1* (TEX*); Norias Division of King Ranch, 28 Nov 1953, *M.C. Johnston 5320.2* (BRIT); Cristal Pasture, Norias Division of King Ranch, (LL*); Norias Division of King Ranch, (SMU); 33.5 mi S on US 77 from it's jct with Los Olmos Creek, S of Norias, 20 Oct 1991, *S. Jones 7792* (VSC); W side of US Rt 77, 0.4-0.5 mi S of La Parra Ave. at Sarita, or 4.2 mi S of Los Olmos Creek. Sarita Quadrangle, 3 Jun 1998, *W.R. Carr 17611* (TEX*); ca. 0.6-0.7 airmiles NE of cabin on Payne Ranch, ca. 1.7 airmiles SSE of Pita Camp, Pita Camp Quadrangle, 1 Oct 2001, *W.R. Carr 20246* (TEX*); just NW of camp house, ca. 1.7 airmiles NE of US Rt. 77 crossing of Willacy Co, line, ca. 0.9 airmiles E of Thomas Ranch HQ, at 26°36'53.0"N, 097°47'19.5"W, Yturria Quadrangle, 28 Nov 2006, *W.R. Carr 25387* (TEX*); ca. 0.7-0.8 airmiles W of US Rt. 77 from a point 1.1-1.2 roadmiles N of Willacy Co. line, ca. 1.4-1.5 airmiles E of Thomas Ranch HQ, Yturria Quadrangle, *W.R. Carr 25389* (TEX*); ca. 3.6-3.7 airmiles SW of US Rt. 77 at Rudolph. El Canelo Ranch. Rudolph Quadrangle, 28 Aug 2008, *W.R. Carr 27034* (TEX*). **Kimble Co.:** Llano River about 6 mi S of Lundon, at hwy 385, 16 Aug 1989, *R. Carter 8211* (VSC); at Walter Buck Wildlife Management Area, in Hunt Area I, 0.1 mile S of Tower Blind, 11 Aug 2007, *L.L. Hansen 5222* (TEX*). **Lamar Co.:** ca. 10 ft. S of unpaved road E-W road at jct. with N-S road to Rich Hill Cemetery, 50 ft. W of BM 542. Camp Maxey (Texas National Guard). Pat Mayse Lake E Quadrangle, 28 Sep 1993, *W.R. Carr 13136* (TEX*). **Liberty Co.:** birdwatchers trail is off of Hwy 2610 N of Romayor 30°29'18"N, 94°50'13"W at vehicle in parking lot, 4 Nov 2007, *L.E. Brown 33091* (BRIT, BRIT). **Limestone Co.:** Fort Parker State Park, 6 Jul 1963, *J.R. Massey 297* (BRIT, LL*, SMU). **Llano Co.:** along Sandy Creek, Rt. 71, E. of Click, 6 Sep 1965, *D.S. Correll 31487* (LL*); 5 Aug 1931, *S.E. Wolff 3157* (BRIT, SMU); Enchanted Rock, 20 Aug 1936, *B.C. Tharp s.n.* (BRIT, SMU); Enchanted Rock SNA, Moss Lake on N side of park, DD 30.5092-98.8255, 4 Oct 1990, *R.J. O'Kennon 8128* (BRIT-2); Enchanted Rock SNA, FM 965, ca. 16.8 mi N of Main St, Fredericksburg, 30.50025762°N, -98.8171891°W, WGS 1984, 15 Jul 2014, *K.N. Taylor 2776* (BRIT); *R.J. O'Kennon 26143* (BRIT); *R.J. O'Kennon 26145a* (BRIT); Enchanted Rock SNA, 30.499982 N, -98.817119W, WGS 1984, 16 Jul 2014, *R.J. O'Kennon 26142* (BRIT); Enchanted Rock SNA, FM 965, ca. 16.8 mi N of Main St, Fredericksburg, 30.5000572°N, -98.82287324°W, WGS 1984, 17 Sep 2014, *K.N. Taylor 2860* (BRIT); Enchanted Rock SNA, FM 965, ca. 16.8 mi N of Main St, Fredericksburg, 30.51246871°N, -98.80255673°W, WGS 1984, 19 Sep 2014, *K.N. Taylor 2908* (BRIT); 7.5 mi E of Llano on Texas 29, 1 Jul 1983, *T.M. Keeney 3032* (BRIT-2); 9.6 mi SW on FM 2323 from its jct with TX 16, then S ca. 100 m on an unnamed paved road, E Side of road, SW of Llano, 26 Sep 1987, *J. Wipfl 563* (VSC); Enchanted Rock SNA. Moss Lake on N side of park. DD 30.5092-98.8255, 4 Oct 1990, *R.J. O'Kennon 8128* (BRIT-2). **Mason Co.:** N side of Tex. R.R. 1222, 2 1/2 miles W of Tex. R.R. 386. Kilency, 9 Jul 1981, *F.M.*

Givens 2198 (LSU*); 14.2 mi E of Mason by Hwy TX 29, 16 Aug 1989, *R. Carter 8214* (VSC); Mason Mountain Wildlife Refuge, 30.826460°N, -99.220047°W, WGS 1984, 14 Aug 2012, *R.J. O'Kennon 25348* (BRIT) 5 air miles NNW of Mason, Texas, N of jct. of Hwy 29 and Hwy 398 2.1 miles, then NW on dirt road 2.4 miles, 24 Sep 1999, *J. Singhurst 8242* (TEX*). **McLennan Co.:** E Waco Lakeside, General Tire Co. area, 11 Oct 1946, *L.D. Smith 278* (TEX*). **Nueces Co.:** Padre Island. Elev. 10 ft, 2 Dec 1928, *B.C. Tharp 6237* (TEX*); Port Aransas, Mustang Island. Elev. 5 ft, 31 Oct 1954, *H. Hildebrand 83* (TEX*). **Parker Co.:** Weatherford, Texas, 6 Jun 1902, *S.M. Tracy 7970* (TEX*). **Polk Co.:** Polk county, 23 Jul 1934, *B.C. Tharp s.n.* (TEX*). **Presidio Co.:** W branch of ZH Canyon near Vieja Pass, 16 Jul 1941, *L.C. Hinckley 1997* (NY); Knox Canyon, 20 Jul 1941, *L.C. Hinckley 2031* (NY); about 1/2 mi above Watts ranch house, 27 Aug 1943, *L.C. Hinckley 2839* (NY); Chinati Mtns. State Natural Area, San Antonio canyon, Right (E) fork, near old dam W Salix, Looking W into 5 de Mayo Canyon, 20 Sep 2004, *E.J. Lott 5377* (TEX*); 24 airmiles NNW of Presidio on the SW side of Chinati Mts. in Chinati Mtns. State Natural Area, in San Antonio Canyon near the San Antonio Cabin, in drainage between the cabin and road, 30 Aug 2005, *J. Henrickson 24209* (TEX*); Los Ojitos, 24 Aug 2015, *R. Morey 275* (SRSC*). **Real Co.:** Sabinal Canyon State Natural Area (now Lost Maples State Natural Area), ca. 1000 ft W of the confluence of Can Creek and drainage 16, 18 Jun 1975, *J. Smith 690* (LL*); ca. 100-300 ft. N of Dry Creek from a point, ca. 300 ft. downstream from dam on entrance road to Lost Canyon Camp, ca. 800-1000 ft. N of Dry Creek Rd (Lost Canyon Rd) from a point 4.0 roadmiles E of its jct. with St. Rt. 55 at Barksdale Jo Jo Van Camp Qua, 3 Oct 1998, *W.R. Carr 17770* (TEX*). **San Patricio Co.:** Welder Wildlife Refuge, Sect 51, 3 Jul 1957, *G.G. Williges 138* (TEX*). **Sutton Co.:** along US route 277, 16 mi N of the junction with state route 55, 10 Oct 1990, *J.S. Miller 5659* (MICH*, VDB). **Tarrant Co.:** Eagle Mountain Lake, 29 Jun 2000, *Norm Sears s.n.* (BRIT); 32.8187°, -97.4527°, 21 Aug 2010, *R.J. O'Kennon 22564* (BRIT); Lake Worth Sailing Club, Sunset Point Ct ca. 0.2 mi E of Peninsula Club Cir E. Sandy Beach on N side of Lake Worth, 30 Jul 2012, *K.N. Taylor 1800* (BRIT). **Terrell Co.:** Below tank on mesa-top, Blackstone Ranch 13 miles S of Sheffield, 8 Jul 1949, *G.L. Webster 504* (TEX*); 3 mi E of Dryden, 6 Jul 1954, *B.H. Warnock 11893* (BRIT, SMU). **Travis Co.:** Austin, 1 Jul 1920, *B.C. Tharp 130* (TEX*); Bull Creek, 23 Jun 1921, *B.C. Tharp 875* (TEX*); Lake Austin, 12 Aug 1922, *B.C. Tharp 2126* (TEX*); Austin, 4 Nov 1922, *R.H. Painter 97* (TEX*); Edwardo Plateau, 29 Oct 1923, *R.H. Painter 2965* (TEX*); Colorado River, 10 Aug 1930, *B.C. Tharp s.n.* (VDB); Austin, 1 Aug 1940, *B.C. Tharp s.n.* (TEX*); Lake Travis on NE side of Sandy Creek LCRA Park, N side of Lime Creek Rd ca. 4.0-4.1 roadmiles N of F.M. 2769, Mansfield Dam Quad, 8 Oct 1981, *W. Carr 3502* (VSC); Lake Travis, S end of LCRA Park on Glouster Bend (S end of Shaw Rd.) NW1/4 Pace Bend Quad, 3 Aug 1988, *W.R. Carr 9104* (BRIT-2); Austin, 1931-05-00, *B.C. Tharp s.n.* (TEX*). **Trinity Co.:** roadside clearing on Hwy 356, 2 mi S of Trinity, 25 Jul 1981, *J. Kessler 4731* (BRIT-2, TAES); Hwy 356, 2 mi S of Trinity, (VDB). **Val Verde Co.:** Amistad National Recreation Area, Indian Springs, Sample plot no. 8. Satan Canyon Quad (1:24,000), 28 Jun 2002, *J.M. Poole 4610a* (TEX*); W side of Devils River ca. 0.6-0.7 airmiles N of Dolan Falls, Dolan Falls Preserve, Dolan Springs Quadrangle, 6 Oct 2008, *W.R. Carr 27282* (TEX*). **Washington Co.:** Peaceable Kingdom Farm, ca. three miles NW of Washington, near Summerland Pond, 20 May 2006, *E.W. Mize 178* (TEX*). **Wharton Co.:** SW side of the Colorado River with its jct with US 59, SW of Wharton, 30 Oct 1990, *S. Jones 6026* (VSC). **Willacy Co.:** ca. 3 mi NE of Hargill, 18 Mar 1969, *W.F. Mahler 5310* (BRIT, SMU). **Wise Co.:** LBJ National Grasslands, Unit 55, Fs 916 1 mi S of Co Rd 2650, ca. 2.2 mi NW of FM 730 DD 33.4031°, -97.5478°, 26 Oct 2002, *R.J. O'Kennon 17406* (BRIT-2); LBJ National Grasslands, Unit 47, 4 Oct 2003, *R.J. O'Kennon 19085* (BRIT-2); LBJ National Grasslands, Unit 50, DD 33.3342 -97.5686, 20 May 2005, *R.J. O'Kennon 20050B* (BRIT-2); unit 21 of LBJ Nat'l Grasslands, 33°23'16.8"N, 97°39'55.26"W, 8 Aug 2009, *R.J. O'Kennon 21306* (BRIT, BRIT). **Wood Co.:** ca. 1/10 mi S of jct of Hwy 37 with Coke Rd, 10 Oct 1971, *M.B. Ballard 143* (BRIT, SMU). Comanche Spring, New Braunfels, 18 Apr 3839, *Lindheimer 1239* (BRIT). **UTAH. Kane Co.:** White Cliffs, The Sand Hills N of US Hwy 89, ca. 8.5 air mi NW of Kanab, 2 Sep 2005, *W. Fertig 22310* (NY). **Piute Co.:** 1 Aug 1990, *A. Taye 4954* (UT*). **Salt Lake Co.:** 25 Aug 1979, *B. Albee 4731* (UT*). **Uintah Co.:** floodplain of the Green River at Jensen Bridge, 14 Sep 2007, *S. Goodrich 27328* (NY). **Vermont. Chittenden Co.:** 27 Sep 1975, *H.E. Ahles 81627* (TENN*). **VIRGINIA. Accomack Co.:** town of Oak Hall, Arcadia High School, along US Rt. 13, Lankford Highway, 37°55'33.9"N, 75°32' 58"W, 3 Jul 2011, *W.D. Longbottom 15384* (NY). **Albemarle Co.:** Mouth of Ballinger Creek on N side of James River, S of deadend of St Rt 627 at Warren, Esmont Quad, 10 Sep 1991, *A.W. Cusick 29887* (MICH*). **Amherst Co.:** 12 Sep 1997, *W.J. Hayden 3809* (URV*). **Appomattox Co.:** *W.J. Hayden 3766* (URV*). **Botetourt Co.:** 19 Sep 1997, *W.J. Hayden 9831* (URV*). **Clarke Co.:** 13 Oct 1997, *W.J. Hayden 3927* (URV*). **Fairfax Co.:** 14 Aug 1983, *T. Bradley 19857* (NCU*). **Giles Co.:** N side of New River just below small island, 1.7 km WNW of Hwy 460 bridge at Bluff City, 16 Jul 2002, *T.F. Wieboldt 11006* (VDB). **Loudoun Co.:** 13 Oct 1997, *W.J. Hayden 3942* (URV*). **Pittsylvania Co.:** 20 Jun 2012, *T.F. Wieboldt 12600* (VPI*). **Powhatan Co.:** 7 Aug 2004, *M. Terry 687* (URV*). **Washington. Clark Co.:** Salmon Creek Greenway, Klinehline Ponds, W side of I-5, near N shore of Salmon Creek, 13 Sep 2002, *P.F. Zika 17847* (NY). **Douglas Co.:** 6.8 miles W of county line, near highway US 2 (11.6 miles W of Coulee City), 6 Jul 1952, *H.H. Bartlett 595* (MICH*). **Klickitat Co.:** Sandy riverbank, Bingen, 2 Oct 1909, *W.N. Suksdorf 6932* (DES*, DES*); Bingen, (MICH*); mouth of the Klickitat River (southeast side) in the

Columbia River, 14 Sep 1992, *R.R. Halse 4552* (VDB); *W.N. Suksdorf s.n.* (COLO*). **WEST VIRGINIA. Fayette Co.:** Army Camp, New River Gorge National River, end of dirt road off of Rt 41 along the New River, river right, across from Terry, ca. 2.1 air mi W of Prince, 5 Aug 2014, *J. Vanderhorst 5251* (NY). **Wetzel Co.:** *A.W. Cusick s.n.* (MICH*). **Wood Co.:** *Unknown* (NCU*). **WISCONSIN. Adams Co.:** Bordering 14-Mile Creek [Fourteenmile Creek], 20 Aug 1962, *P. Sorensen 4325* (WIS*). **Bayfield Co.:** Middle Eau Claire Lake, 2 Sep 1928, *N. Fassett 7749* (WIS*); Taylor Lane, N of village, 16 Sep 1996, *E. Judziewicz 12153* (WIS*). **Brown Co.:** W of Peters Marsh, 14 Jul 1987, *G. Fewless 3970* (WIS*); Barkhausen Waterfowl Preserve, *G. Fewless 3972* (WIS*). **Burnett Co.:** Danbury, 26 Aug 1916, *E. Baird s.n.* (WIS*); Shore Clear Lake, Siren, 19 Sep 1928, *N. Fassett 7751* (WIS*); Shore Long Lake. Web [Webb] Lake, 21 Sep 1928, *N. Fassett 7748* (WIS*); Shore Big McKenzie Lake, 20 Aug 1929, *W. McLaughlin 585* (WIS*); Shore Sucker Lake, Web [Webb] Lake, 11 Sep 1929, *W. McLaughlin 586* (WIS*); Shore Sand Lake [near Gaslyn Lake], Gaslyn, 12 Sep 1929, *N. Fassett 9190* (WIS*). **Columbia Co.:** near Portage, 1892-08-20, *R. True s.n.* (WIS*). **Crawford Co.:** Shore Pickerel Slough, 18 Aug 1927, *N. Fassett 7742* (WIS*); Extensive (ca. 850 acres) undisturbed floodplain forest bounded by Kickapoo River, Wisconsin River, and the railroad, 0–2 mi E of Wauzeka, just downstream from RR bridge, 21 Aug 1977, *M. Nee 15799* (WIS*). **Dane Co.:** Wisconsin River, 28 Aug 1941, *F. Stearns s.n.* (WIS*); along the Wisconsin River, 4 Jul 1950, *F. Seymour 11493* (WIS*); Wisconsin River bar, N of Mazomanie, 26 Sep 1973, *W. Tans 265* (WIS*); Lake Barney, S side of CTH M about 2mi NW of Oregon, 18 Sep 1996, *S. Smith 8873* (WIS*); Madison, *T. Hale s.n.* (WIS*, WIS*); Mazomanie, 1892-09-08, *Unknown* (WIS*). **Douglas Co.:** Shore White Fish Lake, 6 Sep 1928, *N. Fassett 7744* (WIS*); along road referred to as old 27, along shore of Murray Lake near Murray Lake Lodge (burned down last summer), 24 Sep 1962, *T. Gerst s.n.* (WIS*); Wetlands in the vicinity of Pokegama Junction, SW of City of Superior, On S side of Old Hwy 105, 31 Aug 1995, *E. Judziewicz 11661* (WIS*). **Dunn Co.:** Caryville, 14 Aug 1920, *E. Baird s.n.* (WIS*); Shore Elk Lake, S of Elk Mound, 14 Oct 1939, *N. Fassett 20340* (WIS*). **Grant Co.:** Blue River, 4 Aug 1921, *J. Davis s.n.* (WIS*); 5 Aug 1921, *J. Davis* (WIS*); 28 Aug 1922, *J. Davis* (WIS*); Mississippi River bottoms, 8 Sep 1930, *N. Fassett 12622* (WIS*); Mississippi River bottoms, opposite Dubuque [Iowa], *N. Fassett 12630* (WIS*); Mississippi River Bottoms, Glenhaven, 9 Sep 1930, *N. Fassett 13666* (WIS*); Mississippi River bottoms, 10 Sep 1930, *N. Fassett 14157* (WIS*); 11 Sep 1930, *N. Fassett 14180* (WIS*); *N. Fassett 14205* (WIS*); 3 mi S of Cassville, 26 Aug 1933, *R. Anthony s.n.* (WIS*); Sandbar Mississippi [River], S of Glen Lake Landing, 22 Aug 1970, *L. Musselman 3806* (WIS*). **Green Co.:** Sugar River at 81 [E of Juda], 29 Jul 1958, *E. Fell 53-554* (WIS*); at old railroad depot [New Glarus], 28 Aug 1974, *G. Eldred s.n.* (WIS*). **Iowa Co.:** Across from Shot Tower, 1 Aug 1961, *R. Cross 18386* (WIS*); 1.7 mi E of Avoca, 25 Jul 1964, *F. Crosswhite s.n.* (WIS*); Sandbar in Wisconsin River [NE of Avoca], 29 Aug 1968, *M. Nee 1305* (WIS*); E end of Avoca, Lake, a Wisconsin River Bottom Slough, Prairie Hunting Grounds, 6 Sep 1970, *T. Cochrane 3019* (WIS*). **Iron Co.:** E of CAROLINE LAKE, 14 Jul 1996, *E. Judziewicz 11926* (WIS*). **Jackson Co.:** Lake Arbutus, 1 mi E of Hatfield, 25 Aug 1947, *D. Grether 6646* (WIS*); Shore Sand Creek Pond, 8 Aug 1956, *T. Hartley 2084* (WIS*); Town of Komensky in Jackson County Park, E shore of Black River Flowage, Lake Arbutus, 18 Aug 1962, *R. Ellarson s.n.* (WIS*). **Juneau Co.:** Wisconsin River just down river from “Cliffhouse”, 14 Oct 1973, *H. Iltis 28083* (WIS*); in village of Necedah, 16 Jul 1988, *V.E. McNeilus 88-122* (EKY*, TAES, TENN*); along edge of Yellow River, in village of Necedah, *V. McNeilus* (WIS*). **Kenosha Co.:** at Wilmot, on left (east) bank of Fox River ca. 300' downstream (S) from the dam S of County C, on wet bank, 14 Sep 1973, *R. Schulenberg 73-414* (MOR*). **La Crosse Co.:** Shore French Island, Onalaska, 22 Aug 1927, *N. Fassett 7737* (WIS*); at La Crosse, 22 Aug 1948, *E. Jones s.n.* (WIS*-2); McGilvray Bottoms, 25 Aug 1958, *A. Peterson 633* (WIS*); Mississippi River miles #691.6, Island 15, label has map, 30 Jul 1975, *S.R. Ziegler 2128* (MWI*). **LaCrosse Co.:** La Crosse, site 40, 25 Sep 1975, *S.D. Swanson 2427* (TAES, VDB). **Lincoln Co.:** along Wisconsin River, 27 Aug 1955, *F. Seymour 16352* (WIS*); Valley of the Wisconsin River near Merrill, 1893-07-31, *L. Cheney 2780* (WIS*). **Manitowoc Co.:** Cherney Maribel Caves County Park, Cooperstown Twp, 25 Jul 1990, *J. Moore 1539* (WIS*). **Marinette Co.:** in the Peshtigo River, 7 Jul 1987, *G. Fewless 3956* (WIS*); Sea Gull Bar, along Lake Michigan, 3 Sep 1989, *G. Fewless 5877* (WIS*). **Outagamie Co.:** Wolf River floodplain, 2 blocks N of Shiocton, 1 block W of Hwy 187, 30 Aug 1976, *G. Wedemayer 294* (WIS*); at edge of boat landing Koepke Co. Park-open Koepke Rd, E of CTH M, 3 mi N of Shiocton, 3 Sep 1977, *K. Rill 4444* (WIS*). **Pepin Co.:** Shore Lake Pepin [near Pepin], 28 Aug 1927, *N. Fassett 7740* (WIS*). **Pierce Co.:** Shore Lake St. Croix, 30 Aug 1927, *N. Fassett 7738* (WIS*); Shore Mississippi River, *N. Fassett 7739* (WIS*). **Polk Co.:** Beach Poplar Lake, 4 Sep 1928, *N. Fassett 7736* (WIS*); Shore Bass Lake, 9 mi E of Luck, 22 Sep 1928, *N. Fassett 7734* (WIS*); Shore Clear Lake, 28 Aug 1929, *W. McLaughlin 587* (WIS*); Shore Island Lake, *W. McLaughlin 588* (WIS*); Shore Magnor Lake, Richardson, *W. McLaughlin 589* (WIS*); Shore St. Croix River, 31 Jul 1934, *N. Fassett 17753* (WIS*); Shore St. Croix River [S of Wolf Creek], 1 Sep 1964, *B. Marcks s.n.* (WIS*); along 220th Ave. near radio tower (both sides), 5 mi W of Milltown, Eureka Twp., 24 Aug 1993, *E. Judziewicz 10751* (WIS*). **Price Co.:** Pike Lake, 31 Jul 1915, *C. Goessl s.n.* (WIS*). **Racine Co.:** On W gravel bank of the White River, just N of the Wis. 11 bridge, in the city of Burlington, 11 Sep 1970, *R. Read 1106* (MOR*). **Richland Co.:** along the Wisconsin River [W of Gotham], 28 Sep 1969, *M. Nee 2675* (WIS*); Sandbar in

the Wisconsin River [W of Port Andrew], 6 Aug 1970, *M. Nee 3241* (WIS*); Wisconsin River 3 mi SE of Gotham, 27 Sep 1970, *T. Cochrane 3045* (WIS*); along slough between Garner and Lower Lakes [W of Port Andrew], 13 Aug 1972, *M. Nee 5200-a* (WIS*); Shore Wisconsin River at Cruson Slough, 2.5 mi W of Lone Rock, 31 Aug 1975, *T. Cochrane 7091* (WIS*); Shore of Wisconsin River, Cruson Slough, 2 1/2 mi W of Lone Rock, *T.S. Cochrane* (MICH*); Sandbar in Wisconsin River, opposite lower part of Little Island, 3 mi W of Blue River [Grant Co.], 12 Aug 1977, *M. Nee 15664-a* (WIS*). **Rock Co.:** SE shores of Lake Koshkonong, along dirt road between lake and marsh, 7 Oct 1956, *H. Iltis 8467* (WIS*); Coon Creek dam, 30 Jul 1957, *E. Fell 57-879* (WIS*). **Sauk Co.:** Spring Green, 25 Aug 1930, *J. Davis s.n.* (WIS*); NE shore [Devil's Lake], 31 Aug 1946, *J. Zimmerman 1493* (WIS*); Shore Wisconsin River at Cactus Bluff, 20 Aug 1948, *H. Greene s.n.* (WIS*); along Wisconsin River, 7 Aug 1955, *F. Seymour 16194* (WIS*); along Wisconsin River, at N end of Spring Green bridge, 4 Sep 1958, *H. Iltis 11782* (WIS*). **Sawyer Co.:** Shore Round Lake, 4 Sep 1928, *E. Gilbert 7745* (WIS*); Shore Sand Lake, 10 mi S of Hayward, *E. Gilbert 7747* (WIS*). **St. Croix Co.:** Shore Lake St. Croix, between Houlton & Hudson, 18 Sep 1937, *N. Fassett 20434* (WIS*); 1847-11-30, *C. Parry s.n.* (WIS*). **Taylor Co.:** Jump River, 24 Aug 1994, *D. Fields 1989* (WIS*). **Trempealeau Co.:** Jack Slough, 23 Aug 1927, *N. Fassett 7743* (WIS*); McGilvery Bottoms [E of Trempealeau], 8 Jul 1956, *T. Hartley 1270* (WIS*); Black River in McGilvray Bottoms, 23 Aug 1959, *T. Hartley 8552* (WIS*); Trempealeau, 1860-11-30, *T. Hale s.n.* (WIS*-2). **Vernon Co.:** Mississippi River-Navigation Pool 8, Island 4, Mississippi River-mile #696.7, large island E of main channel, 2 Jul 1975, *S. Ziegler 1550* (WIS*); MS River mile #685.1, 8 Jul 1975, *S.R. Ziegler 1666* (MSUB*); Mississippi River-Navigation Pool 8. Site 54, 11 Jul 1975, *S. Swanson 1392* (WIS*). **Washburn Co.:** W end of Stone Lake, 5 Sep 1928, *N. Fassett 7746* (WIS*); Shore Nancy Lake. 10 mi W of Minong, 6 Sep 1928, *N. Fassett 7735* (WIS*); Shore of Shell Lake, 22 Sep 1928, *N. Fassett 7750* (WIS*); Spring Lake [S of Springbrook], 17 Sep 1961, *G. Schwerer s.n.* (WIS*). **Waupaca Co.:** Shore Wolf River, 13 Sep 1931, *N. Fassett 15039* (WIS*). **Wood Co.:** Valley of the Wisconsin River near Grand Rapids [now Wisconsin Rapids], 1894-07-06, *L. Cheney 3593* (WIS*). **SOUTH AMERICA. ARGENTINA. Corrientes Prov. Paso de los Libres Dept.:** 26 Jan 1945, *C.J. Barrola 2247* (NY). **San Juan. Calingasta Div.:** Vega del Potrero de las Burras, 31°20'S, 69°40'W, 9 Feb 1990, *R. Kiesling 7406* (NY). **BRASIL BAHIA:** Municipality of Morro do Chapeu, BR052, vicinity of bridge over Rio Ferro Doido, ca. 18 km E of Morro do Chapeu, 17 Jun 1984, *S.A. Mori 14525* (NY); Feira de Santana, 28 Jun 1998, *F. França 2448* (NY); **Pernambuco:** Praia do Guaibu, 35km S of Recife, 31 Aug 1987, *S. Tsugaru B-1369* (NY); **ECUADOR. Galapagos:** Galapagos Islands, in clearing on Wenman Island, 31 Jan 1964, *J.R. Hendrickson H-9* (NY); Wenman Island, 1 Feb 1964, *E. Y. Dawson s.n.* (NY); **GUAYAS:** Chanduy, 18 Mar 1973, *L. Holm-Nielsen 2116* (NY). **PERU. Arequipa. Islay Prov.:** Lomas de TinTayani, 2 May 1998, *Unknown s.n.* (NY).

Cyperus squarrosus* var. *runyonii

TEXAS. Bastrop Co.: jct of Gotier Trace & powerline easement, NE quadrant of Park, 30°6'27"N, 97°14'31"W, 9 Jul 2004, *E.J. Lott 5105* (BRIT). **Kenedy Co.:** Los Norias, 27 May 1941, *R. Runyon 2655* (NY). **Nueces Co.:** 21 Jun 1957, *F.B. Jones 1470* (SMU). **San Patricio Co.:** Welder Foundation Research Area, near headquarters of buildings, 9 mi E of Sinton, 28 Oct 1958, *F.W. Gould 8525* (SMU).