



Contributions to the Southeastern Flora

The 76th Annual Meeting of the Association of Southeastern Biologists
Chattanooga, Tennessee
April 1–4, 2015

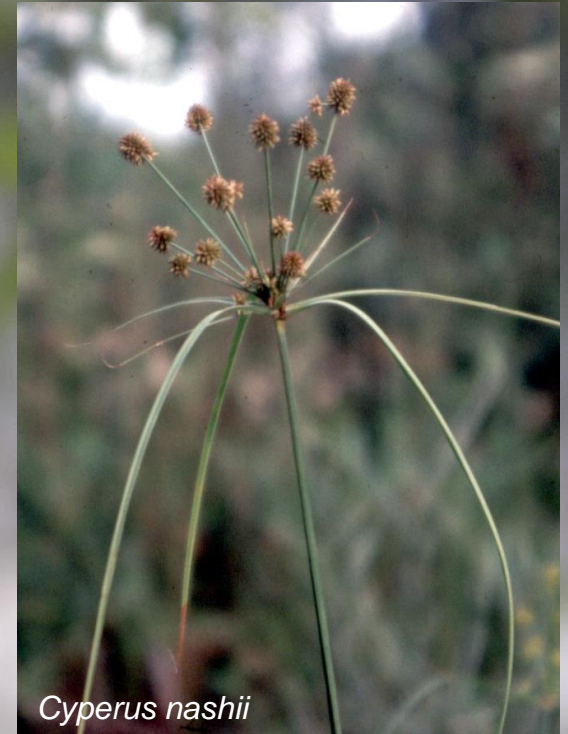
Richard Carter
Biology Department
Valdosta State University
Valdosta, GA 31698



An undescribed species from the southeastern United States

CYPERUS DIMINUTUS

Cyperus diminutus



Cyperus nashii



*Cyperus
retrorsus*



Cyperus diminutus
Ware Co., GA



Cyperus diminutus
Ware Co., GA



VSC 0004636



CYPERACEAE

Cyperus nashii Britt.

U.S.A. GEORGIA, Long County: sandridge just NE of Altamaha River and SE Hwy. US 82; plants occasional.

Richard Carter 7452

26 Aug 1988

Valdosta State University Herbarium (VSC)

Cyperus nashii

VSC 0047246



HERBARIUM
VALDOSTA STATE
COLLEGE
35552

UNITED STATES OF AMERICA
CYPERACEAE
Cyperus retrorsus Cham.

TEXAS: Rusk County
Highway US 84 right-of-way, 2.6 miles
west of Concord; pine woods.

Locally common.

17 August 1989
Richard Carter 8245
MISSOURI BOTANICAL GARDEN HERBARIUM (MO)

Cyperus retrorsus

1dm



CYPERACEAE

Cyperus

U.S.A. Georgia, Ware County: SL300129 82.51957W, vic. Talmo, along W side Hwy GA 158 and Stream channel Satilla River, 3.7 mi NW of Hwy. GA 158 and US 82; sand dune, with *Quercus agrifolia*, *Quercus muhlenbergii*, *Quercus chapmanii*, *Rhynchospora macrocarpa*, *Polypodium*; plants locally common; exsiccatae.

Richard Carter: 37391
with Steven Carter

12 Nov 2006

Valdosta State University Herbarium (VSC)

Cyperus diminutus



Cyperus nashii

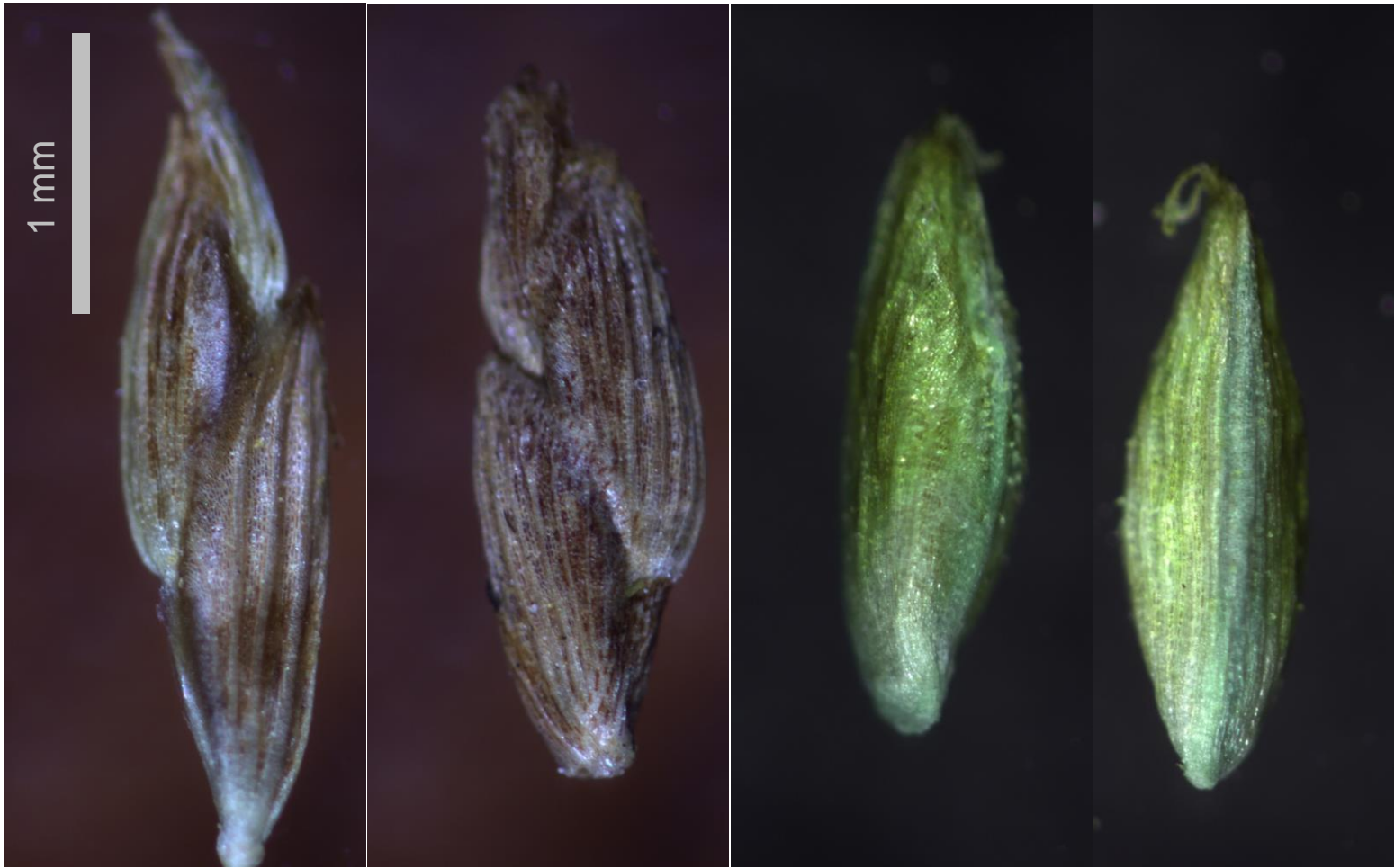


Cyperus diminutus

5 cm



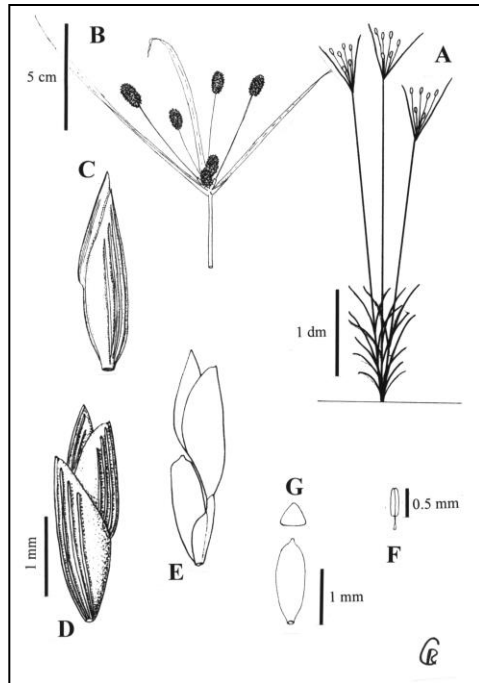
Cyperus retrorsus



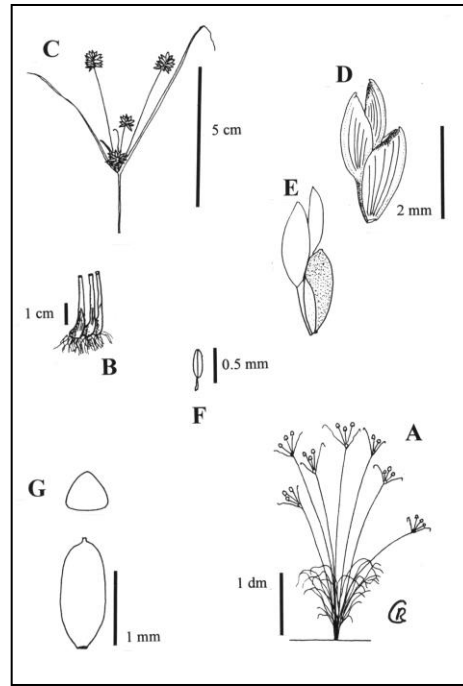
Cyperus retrorsus

Cyperus diminutus

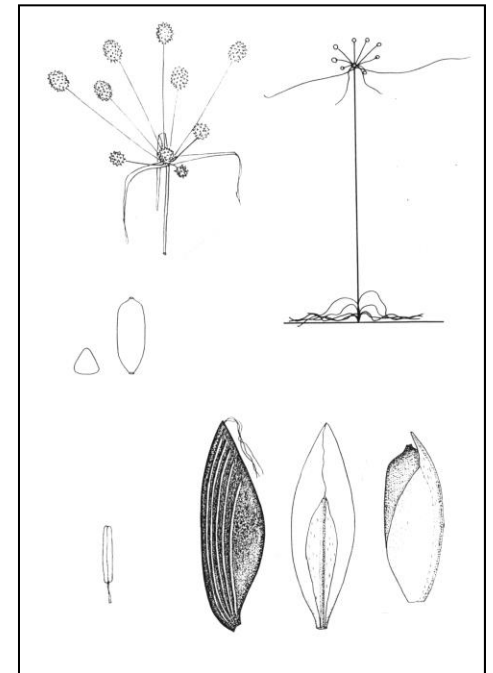
Cyperus nashii



Cyperus retrorsus



Cyperus diminutus

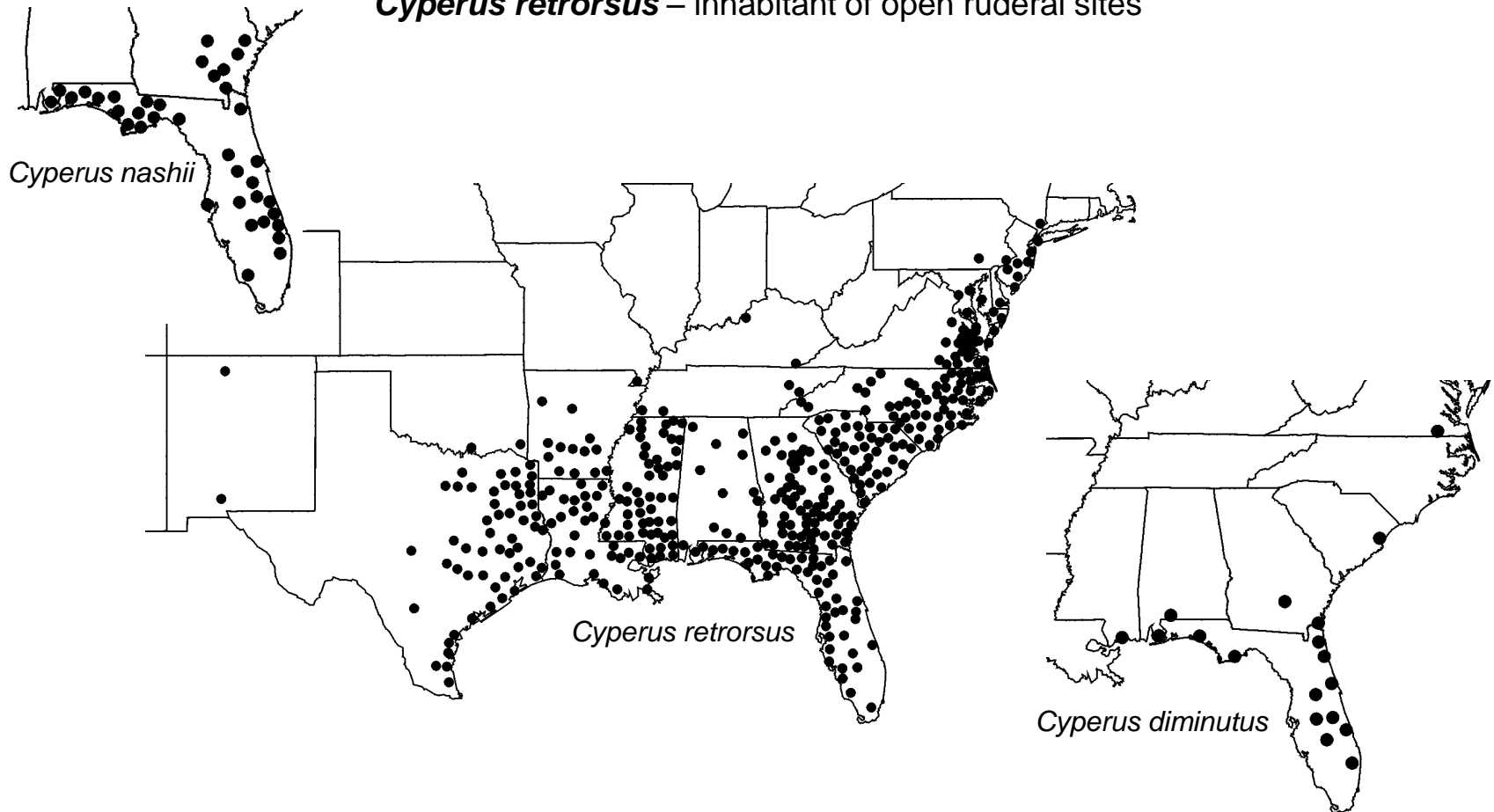


Cyperus nashii

<i>Cyperus retrorsus</i> Cham.	<i>Cyperus diminutus</i>	<i>Cyperus nashii</i> Britt. in Small
∴Stems moderately cespitose	∴Stems isolated or sparingly cespitose	∴Stems isolated to sparingly cespitose
∴Plants (11—)20—80(—110) cm high	∴Plants 19—40(—60) cm high	∴Plants 40—94 cm high
∴Stems more robust, ascending to erect, 0.9—2.5 mm wide	∴Stems lax, mostly arching over nearly to ground, 0.4—1.2 mm wide	∴Stems more robust, erect to spreading, 1.0—2.2 mm wide
∴Leaves and primary bracts olive to dark green	∴Leaves and primary bracts medium to dark green	∴Leaves and primary bracts grayish green
∴Leaf blades 1.9—5.0(—5.8) mm wide	∴Leaf blades 0.9—2.0 (3.2) mm wide	∴Leaf blades 1.7—3.6 mm wide
∴Primary bracts ascending to spreading, (2—) 3—4(—5) exceeding longest ray	∴Primary bracts erect to ascending, 1—2(—3) exceeding longest ray	∴Primary bracts divaricate, (3--) 3—6(—7) exceeding longest ray
∴Inflorescence of (4—)6—12 rays	∴Inflorescence of 3—6(—8) rays	∴Inflorescence of 8—27 rays
∴Spikes $\geq 1.5x$ as long as wide, dense, with (42—)50—200(—274) spikelets	∴Spikes $\leq 1.5x$ as long as wide, moderately dense, with (19—)30—64 spikelets	∴Spikes $\leq 1.5x$ as long as wide, moderately dense, with (13—)38—92 spikelets
∴Bracteoles mostly narrowly triangular, 0.6—1.1 mm long (rarely lower ones setaceous and longer)	∴Bracteoles triangular to narrowly triangular, subequal, 0.7—1.3 mm long, hidden among spikelets	∴Bracteoles 0.8—5.0 mm long, polymorphic, narrowly triangular-setaceous and usually salient and surpassing spike edge at spike base and middle to triangular, 0.8—1.2 mm long, hidden among spikelets at spike apex
∴Mature floral scales pale brown to reddish brown, dull	∴Mature floral scales pale brown, fuscous, often tinted yellow-brown, lustrous	∴Mature floral scales fuscous often tinted yellow-brown, lustrous
∴Lateral nerves of floral scales (6—)8—10 conspicuous, raised	∴Lateral nerves of floral scales (8—)10—12 conspicuous, raised	∴Lateral nerves of floral scales lateral nerves (8—)10—12, inconspicuous, impressed
∴Terminal sterile floral scale somewhat reduced, but usually exceeding fertile scale below	∴Terminal sterile floral scale somewhat reduced, but usually exceeding fertile scale below	∴Terminal sterile floral scale greatly reduced, barely if at all exceeding involute fertile scale below, usually included within it
∴Anthers (0.25—) 0.3—0.5 mm long	∴Anthers 0.2—0.5(—0.7) mm long	∴Anthers 0.8—1.0 mm long
∴Achenes 1.3—1.8 × 0.4—0.5(—0.6) mm	∴Achenes 1.3—1.6 × 0.5—0.6 mm	∴Achenes 1.6—1.7 × 0.6—0.7 mm

Cyperus diminutus*, *C. nashii – inhabitants of sand-scrub with *Q. laevis*, *Q. geminata*, *Q. myrtifolia*, *Q. chapmanii*, *Pinus palustris*, *Osmanthus americanus*, *Serenoa repens* in Florida and Georgia

Cyperus retrorsus – inhabitant of open ruderal sites





A putative new taxon from karst ponds in the Georgia Coastal Plain

CYPERUS EXCURRENS

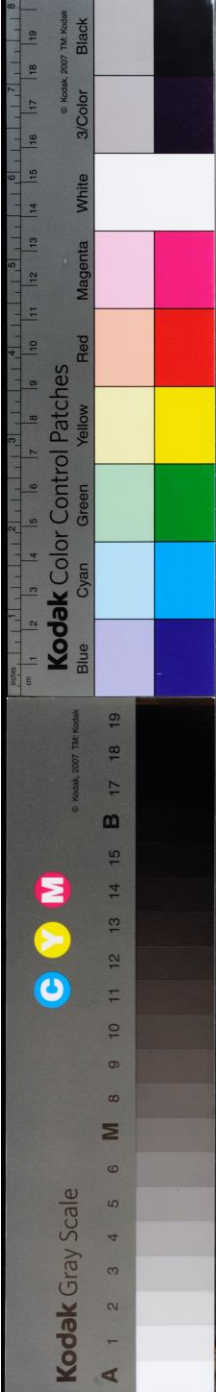
***Cyperus strigosus* L.**

- Perennial
- to 1.2 m tall
- Culms (0.9—)2.0—5.7 mm wide
- Leaves (1.6—)3.0—11.8 mm wide
- Floral scales acute to submucronate
- Widely distributed in North America
- Variety of wetland habitats

Cyperus excurrens

- Annual
- to 30 cm tall
- Culms 0.5—1.5 mm wide
- Leaves 1.4—3.2 mm wide
- Floral scales cuspidate with excurved awn 0.4—0.6 mm long
- Restricted to S Georgia
- Margins of karst ponds

Cyperus strigosus



Valdosta State University
Herbarium (VSC)
52180

Valdosta State University Herbarium
VSC 0047537



CYPERACEAE

Cyperus strigosus L.

U.S.A. GEORGIA, Lowndes County: 0.5 mile N
Valdosta city limits (Inner Perimeter Rd.) by Forrest St.,
then 1 mile E by Mt. Zion Church Rd; sandy road ditch
along Mt. Zion Church Rd.; common.

Richard Carter 6183 23 Aug 1987
det. R. Carter

Valdosta State University Herbarium (VSC)

*Cyperus
excurrens*



Valdosta State University Herbarium
VSC 0047516

HERBARIUM
VALDOSTA STATE
COLLEGE

37218



Cyperus strigosus L.

Richard Carter 1991
Valdosta State College Herbarium

PLANTS OF GEORGIA

COUNTY: BAKER

Cyperus odoratus L.

In most peaty-sandy soil, bottom of a pond in which no water has stood for 2 or 3 years, the following plants intermixed: *Eragrostis hypnoides*, beneath that and for the most part completely hidden by the *Eragrostis* an extremely prolific population of *Fimbristylis perpusilla*, and exserted from the *Eragrostis* were a few inflorescences of three species of *Cyperus*, just a few specimens of each, those of one too immature to be identifiable. The pond, Alligator Pond, on the Joseph W. Jones Ecological Research Station (Ichauway Plantation), a "spread" of about 30,000 acres.

9 September 1990
R. K. Godfrey 83976 with Angus Gholson & W. Baker

459

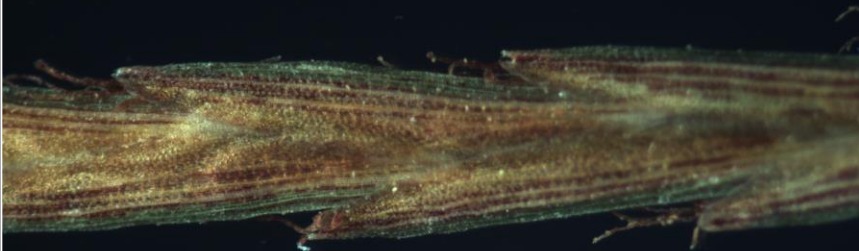
Cyperus strigosus



Lowndes Co., GA
Wilson 321



Liberty Co., GA
Carter 7446



Lanier Co., GA
Carter 9161



Richmond Co., GA
Moore 1327

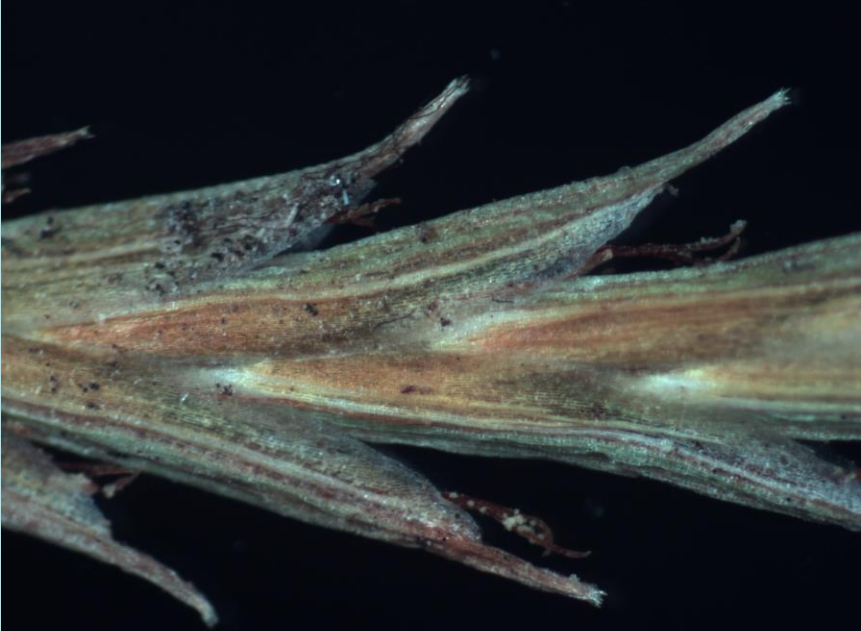
Cyperus excurrens



Baker Co., GA
Godfrey 83976



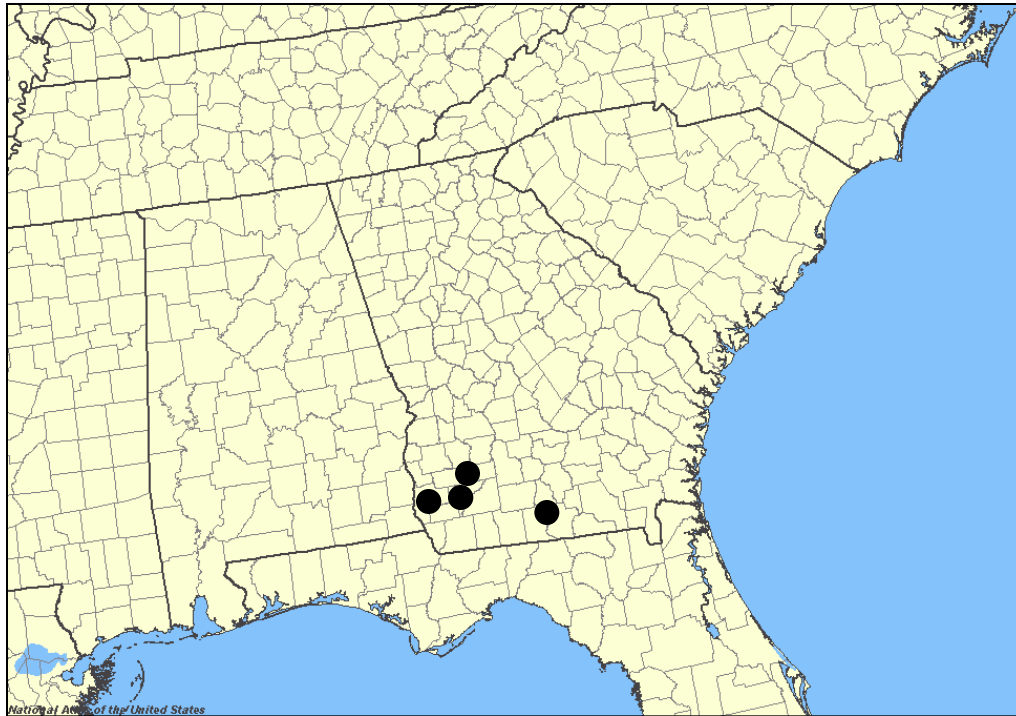
Lowndes Co., GA
Carter 11266



Early Co., GA
Carter 17789



Dougherty Co., GA
Carter 17920



Distribution of *Cyperus excurrens*



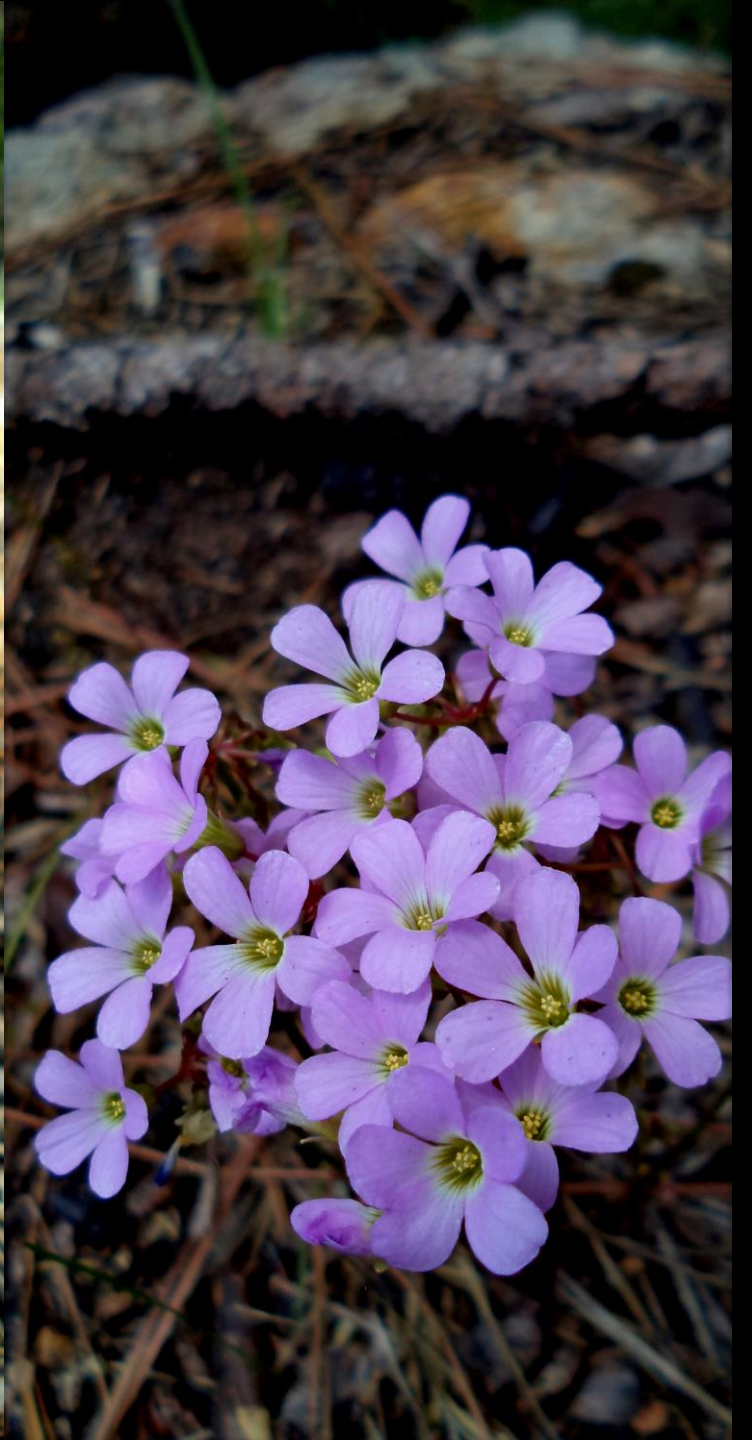
An undescribed species from the Altamaha Grit of Georgia

OXALIS ASYNCHRONA



Wikimedia Commons, the free media repository
File:Violet Wood-Sorrel - Oxalis violacea.JPG
Oxalis violacea - Cross Plains, WI, USA
Date 20 May 2008
Source Own work
Author Ilona Loser





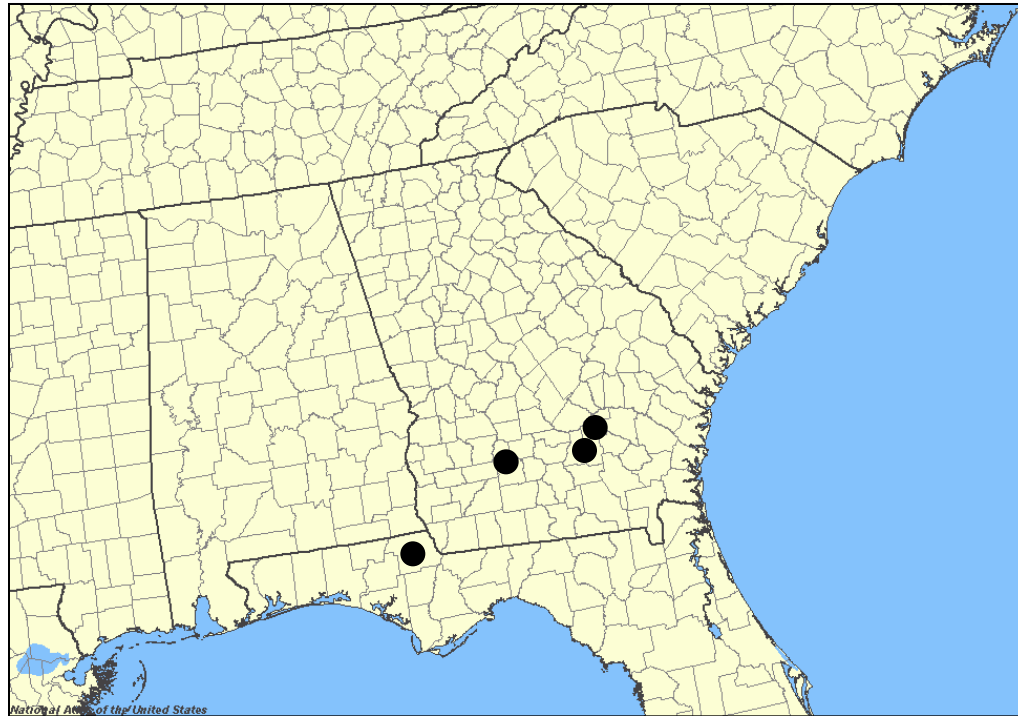


***Oxalis violacea* L.**

- Mass. south to Florida and west to Texas and N. Dakota
- Upland woods and prairies (Cronquist 1991); alluvial or rich upland woods (RAB 1968)
- Flowering Apr – May (Jun)
- Leaves present when flowering and throughout growing season [“Often flowering very sporadically; late flowering plants are without foliage.” (RAB 1968)]

Oxalis asynchrona

- S Georgia, N Florida, other southeastern states?
- Rock outcrops and adjacent longleaf pine-wiregrass savanna in S Georgia and N Florida
- Flowering Aug – Sept (Oct)
- Leaves present during winter (Oct – May); plants dormant and leafless during summer



Distribution of *Oxalis asynchrone*

Hypothesis: species evolved on coastal plain rock outcrops and has dispersed into adjacent longleaf pine communities (xeric phase)



A perplexing spikerush from coastal Georgia

ELEOCHARIS ANGUSTICEPS

***Eleocharis albida* Torr.**

- Plants 10—20 (—35) cm tall
- Culms erect
- Spikelet 4.2—10 (12.6) x (2.0) 2.3—3.6 mm
- Perianth bristles 0.80—1.47 mm long
- Perianth bristles 0.7—1.0 (1.3)x as long as achene-tubercle complex
- Achene obovate to ellipsoidal [ACHMX/ACHL = 0.46—0.94]
- Achene 0.75—1.10 x 0.50—0.93 mm
- Tubercle 0.15—0.37 x 0.20—0.37 mm
- Achene 2.0—4.0x as wide as tubercle

Eleocharis angusticeps

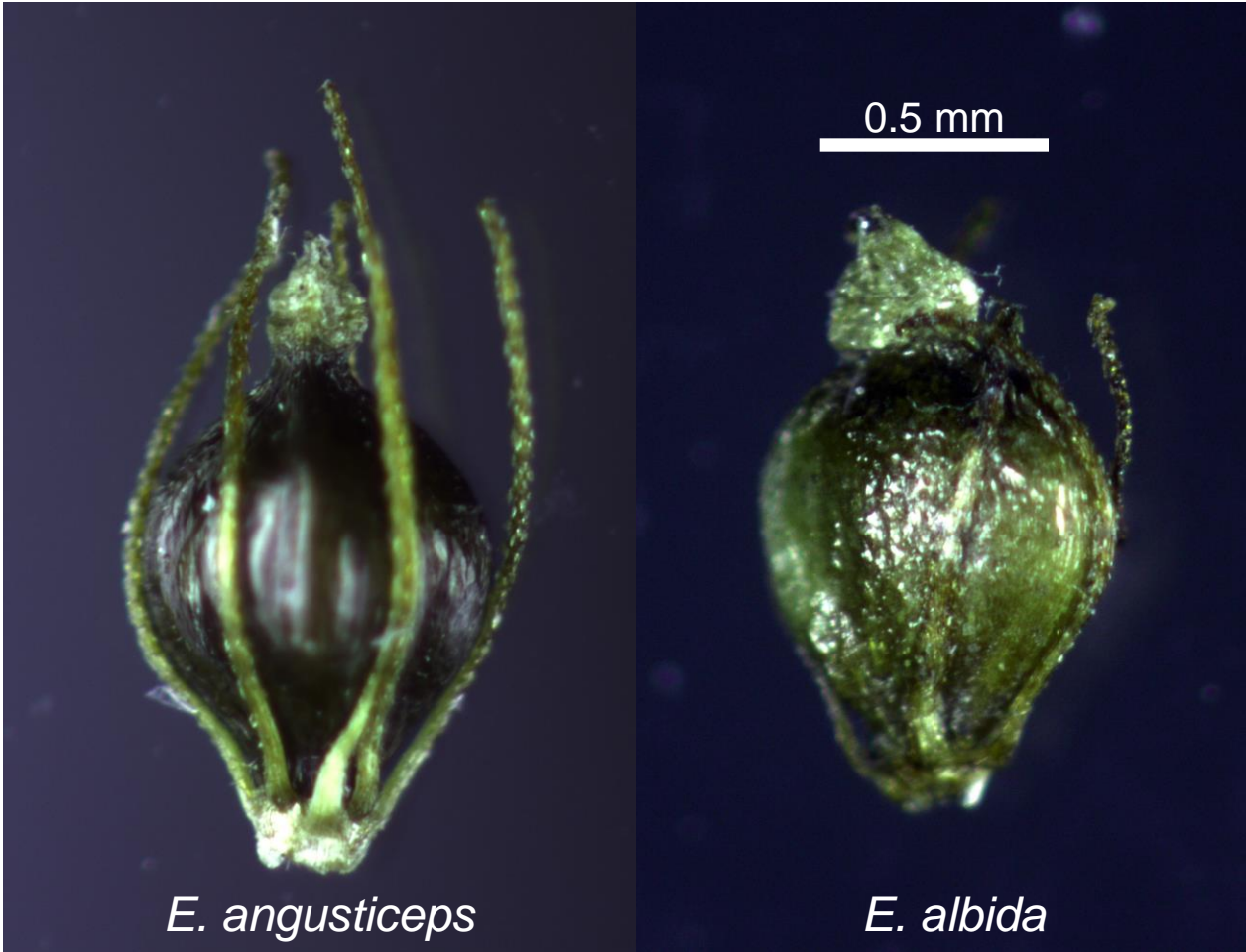
- Plants 20—40 cm tall
- Culms lax
- Spikelet 6.2—10.3 x 1.8—2.6 mm
- Perianth bristles 1.33—1.60 mm long
- Perianth bristles 1.4—1.9x as long as achene-tubercle complex
- Achene ellipsoidal [ACHMX/ACHL = 0.54—0.75]
- Achene 0.63—0.87 x 0.47—0.72 mm
- Tubercle 0.15—0.37 x 0.16—0.23 mm
- Achene 2.4—4.1x as wide as tubercle

Eleocharis albid



Eleocharis angusticeps





E. angusticeps

E. albida

Key to abbreviations

SPKL – Spikelet length

SPKW – Spikelet width

BRSL – Bristle length

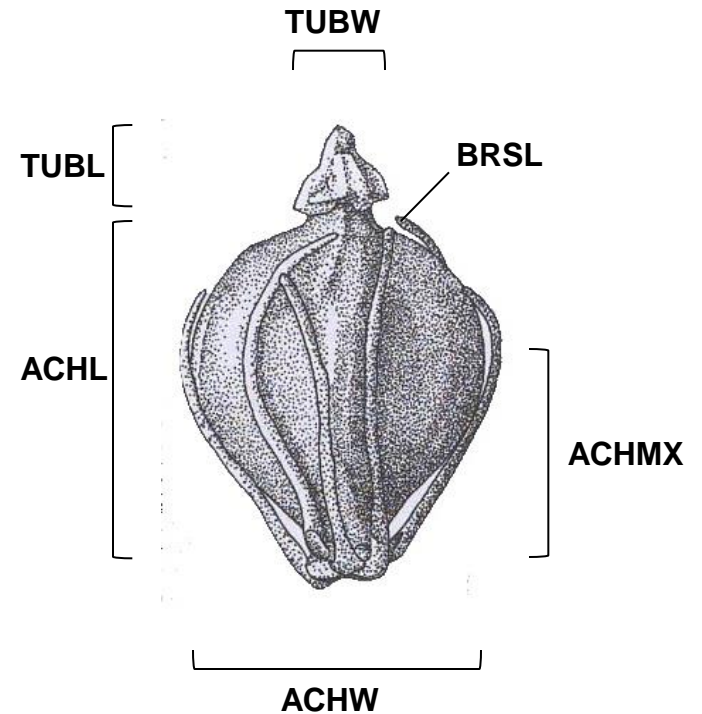
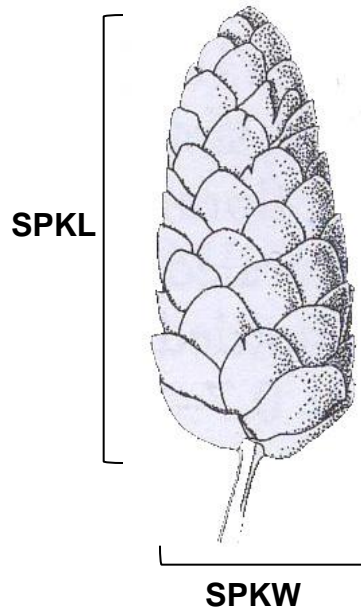
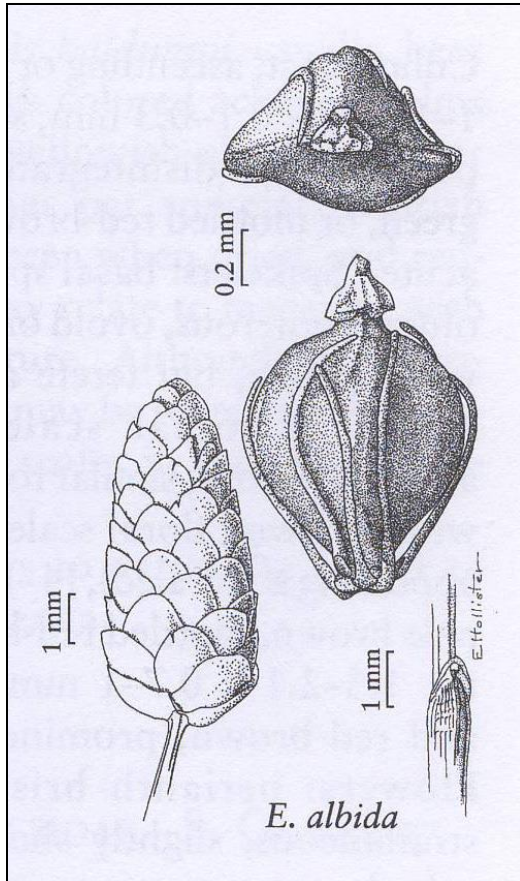
ACHL – Achene length

ACHW – Achene width

ACHMX – Distance from achene base to widest point

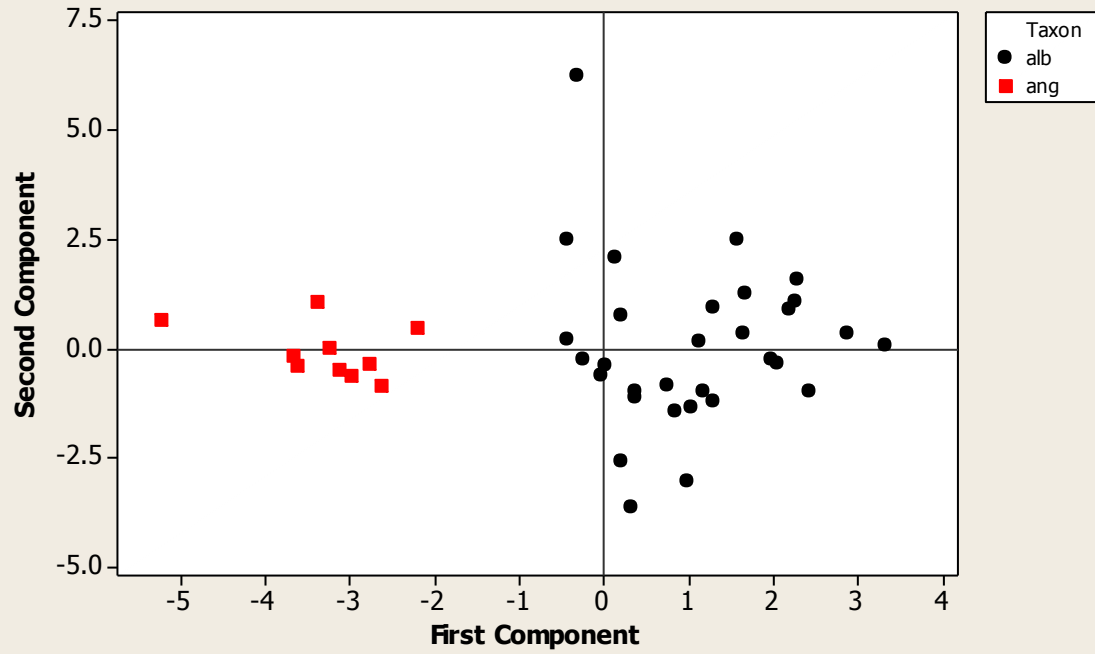
TUBL – Tubercle length

TUBW – Tubercle width

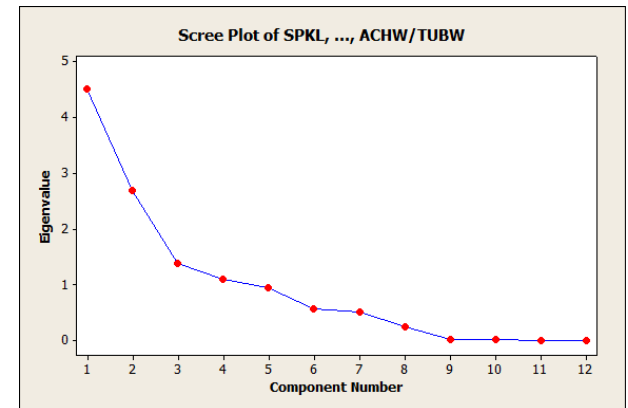


Illustrations adapted from
Fl. North America 23

Score Plot of SPKL, ..., ACHW/TUBW



Eigenvalue	0.0177	0.0103	0.0057	0.0016
Proportion	0.001	0.001	0.000	0.000
Cumulative	0.999	0.999	1.000	1.000



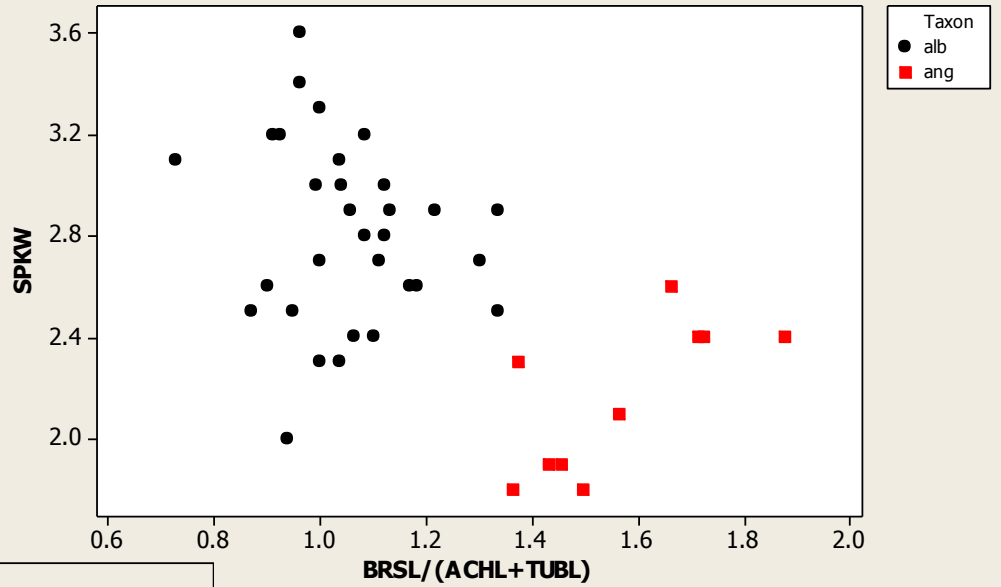
Variable	PC1	PC2	PC3	PC4	PC5	PC6	PC7
SPKL	-0.015	0.039	-0.634	0.503	-0.229	-0.342	0.009
SPKW	0.339	0.050	-0.366	0.329	0.096	0.160	0.074
BRSL	-0.221	-0.193	0.374	0.516	0.386	-0.246	-0.170
ACHL	0.354	0.188	0.271	0.350	-0.104	0.208	-0.332
ACHW	0.349	-0.265	0.288	0.228	-0.225	0.029	0.253
ACHMX	0.255	0.457	0.268	0.155	0.008	-0.140	0.116
TUBL	0.292	-0.222	0.032	-0.251	-0.052	-0.721	-0.435
TUBW	0.406	-0.204	0.017	0.017	0.341	0.081	0.075
ACHL/ACHW	-0.117	0.518	-0.080	0.002	0.221	0.111	-0.539
ACHMX/ACHL	0.044	0.514	0.116	-0.084	0.120	-0.429	0.512
BRSL/ (ACHL+TUBL)	-0.404	-0.133	0.036	0.255	0.348	-0.091	0.168
ACHW/TUBW	-0.308	0.056	0.271	0.195	-0.651	-0.036	-0.051

Variable	PC8	PC9	PC10	PC11	PC12
SPKL	0.413	0.011	0.020	0.034	0.025
SPKW	-0.772	0.007	-0.020	0.053	-0.026
BRSL	-0.054	-0.240	-0.074	0.449	-0.047
ACHL	0.181	-0.060	-0.334	-0.405	-0.410
ACHW	0.073	-0.154	0.721	-0.094	-0.007
ACHMX	0.038	0.016	-0.144	-0.052	0.756
TUBL	-0.219	0.077	0.024	-0.185	0.011
TUBW	0.258	0.724	-0.045	0.265	-0.042
ACHL/ACHW	0.012	0.156	0.573	0.073	-0.034
ACHMX/ACHL	-0.044	0.025	0.036	0.061	-0.496
BRSL/ (ACHL+TUBL)	-0.104	0.310	0.092	-0.688	0.075
ACHW/TUBW	-0.251	0.514	-0.026	0.179	-0.049

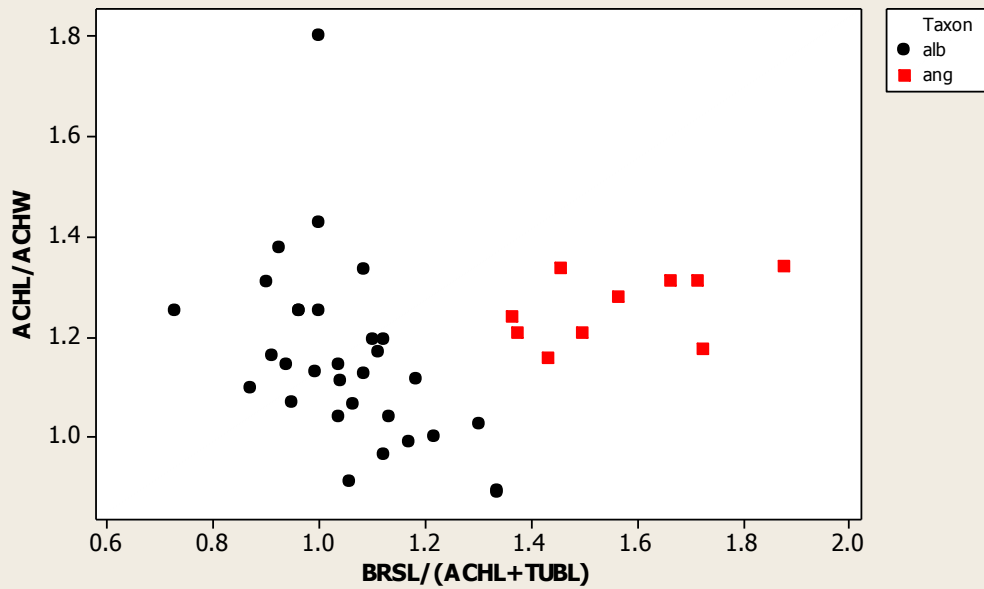
Key to abbreviations

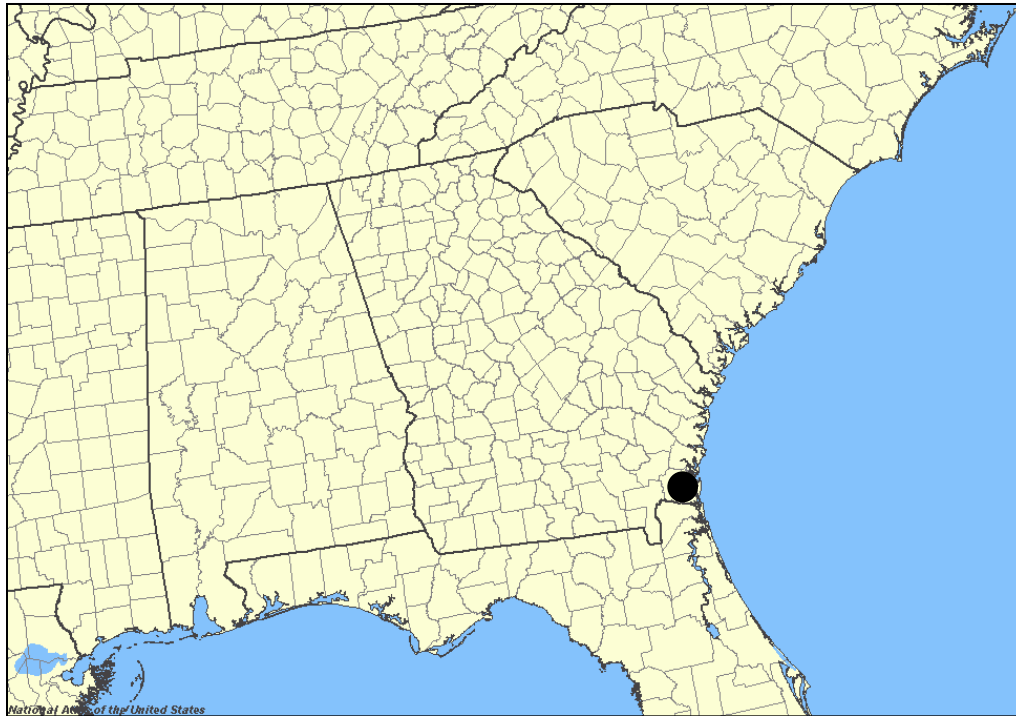
- SPKL** – Spikelet length
- SPKW** – Spikelet width
- BRSL** – Bristle length
- ACHL** – Achene length
- ACHW** – Achene width
- ACHMX** – Distance from achene base to widest point
- TUBL** – Tubercle length
- TUBW** – Tubercle width

Scatterplot of SPKW vs BRSL/(ACHL+TUBL)



Scatterplot of ACHL/ACHW vs BRSL/(ACHL+TUBL)





Distribution of *Eleocharis angusticeps*

Sandy banks along upper reaches of tidal creeks

Rank? varietal status?

Eleocharis albida var. *angusticeps*



A diminutive rush from sandstone seeps
on the Altamaha Grit of Georgia

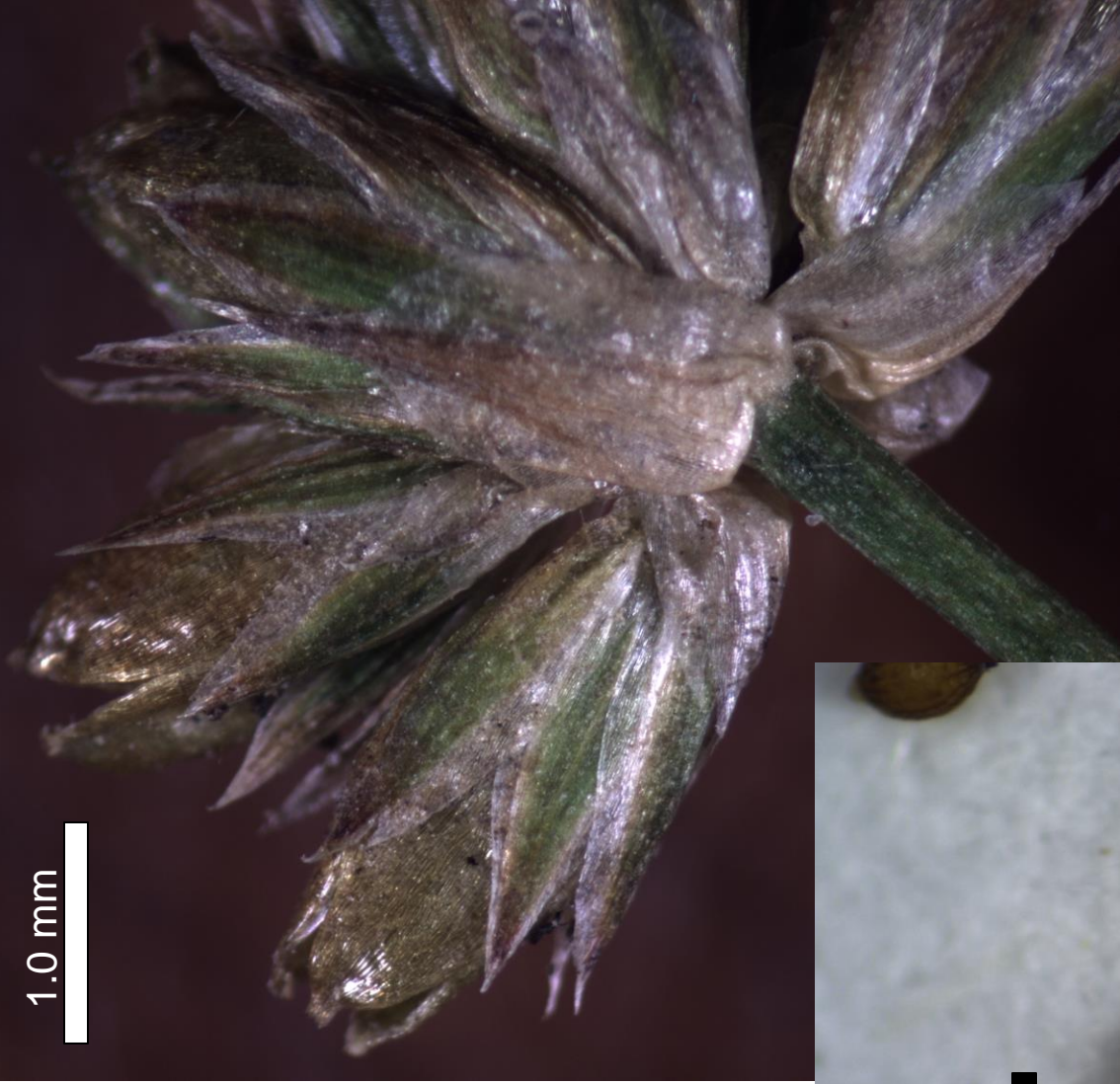
JUNCUS



Distribution of *Juncus* sp.?



1.0 mm



0.5 mm





Acknowledgments

- Support from the Valdosta State University Center for Faculty Scholarship is gratefully acknowledged.
- Support for field research was provided by Georgia Department of Natural Resources, Nature Conservancy of Georgia, U.S. Air Force, and U.S. Department of Defense.
- Photographs of herbarium vouchers were made possible through support from the National Science Foundation, DBI 1054366 (J.R. Carter, PI).
- Frankie Snow, South Georgia State College, kindly assisted with field work at Broxton Rocks Nature Preserve and provided photographs of *Oxalis*.
- W.W. Baker kindly assisted with field work.
- Malcolm Hodges, Nature Conservancy of Georgia, kindly granted permission to collect vouchers at Broxton Rocks NP.