

Distribution, Ecology and Taxonomy of
Cyperus louisianensis (Cyperaceae)

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Introduction

- 📄 *Cyperus louisianensis* Thieret described in 1977
- 📄 previously thought to be endemic to two sites in southeastern Louisiana
- 📄 listed as *category 2* among endangered and threatened species by Department of Interior, U.S. Fish & Wildlife Service
- 📄 classification: Cyperaceae, *Cyperus*, subg. *Pycneus*, sect. *Sulcati*

CYPERUS LOUISIANENSIS (CYPERACEAE), A NEW SPECIES
FROM SOUTHERN LOUISIANA

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In 1970 and 1972 in Tangipahoa Parish, Louisiana, I collected a *Cyperus* that, in subsequent years, I have been unable to identify as any described species of this large and complex genus. Finally I have decided to describe it as a new species, as follows.

Cyperus louisianensis Thieret, sp. nov. *Annus* [?], caespitosus. *Radix* fibrosa. *Culmi* [6] 15-40 cm alti, [0.5] 1.0-1.3 mm crassi, laeves. *Folia* [1] 2-6, culmo breviora; laminae [0.6] 1.3-3.0 mm latae, [0.2] 3.0-15.0 cm longae, laeves. *Bractae* 1-4 valde inaequales, 2.0-12.5 cm longae, 0.5-2.5 mm latae, saltem aliquot marginibus antrorse scabrae. *Anthelae* cum [6] 18-40 spiculae; rami primarii ad 1 cm longi, persaepe multo breves, anthelae plerumque glomerulus solitarius terminalis simulans; glomeruli [0.5] 1.5-3.5 cm lati. *Spiculae* ovatae ad anguste elliptico-ovatae, [3] 6-10 mm longae, [1.5] 2.3-2.8 mm latae, [6] 10-30 flora. *Rachilla* 0.3-mm latae [plicatae], sulcatae, obtusae, plerumque marginibus sanguineae vel brunneae, color interdum praesens tantum distalis, interdum obscurus; carina 3-5 nervis obscuris, interdum virella. *Stamina* 3; antherae 0.5 mm longae, filamenta 2.0-2.5 mm longa persistens. *Stylus* 2.5 mm longus, 1/3 vel fere 1/2 ad basim bifidus; stigmata exserta. *Nux* lenticularis biconvexa, 1.1-1.4 mm longa, 0.7-0.8 mm lata, 0.3 mm crassa, elliptica vel elliptico-obovata, aliquantum asymmetrica, vix stipitata et apiculata; minute reticulata, reticulum argenteum vel crystallinum, sed pagina nucis chokolatina.

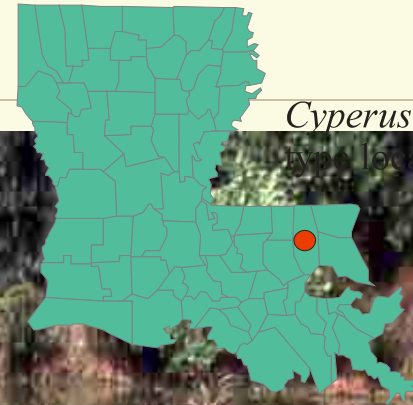
Annual [?] caespitose. *Roots* fibrous. *Culms* [6] 15-40 cm tall, [0.5] 1.0-1.3 mm thick, smooth, not septate-nodulose. *Leaves* [1] 2-6 on a culm, shorter than the culms; blades [0.6] 1.0-3.0 mm wide, [0.2] 3.0-15.0 cm long, smooth, not septate-nodulose, rarely absent on depauperate culms. *Bracts* 1-4, very unequal, 2.0-12.5 cm long, 0.5-2.5 mm wide, shorter than to much surpassing the inflorescence, at least some upwardly scabrous along the margin. *Inflorescences* with [6] 18-40 spikelets; primary branches to 1 cm long, almost always much shorter, most inflorescences, with their abbreviated primary branches, simulating a solitary, terminal glomerule; glomerules [0.5] 1.5-3.5 cm wide. *Spikelets* ovate to narrowly elliptic-ovate, [3] 6-10 mm long, [1.5] 2.3-2.8 mm wide, [6] 10-30 flowered. *Rachilla* 0.3 mm wide, wingless. *Scales* [1.5] 1.9-2.7 mm long, [0.5] 1.0-1.3 mm wide [folded], sulcate, obtuse, usually with a dull reddish to brownish marginal band to 0.3 mm wide, the color sometimes present only distally along the margin, sometimes obscure; keel with 3-5 obscure nerves, sometimes greenish. *Stamens* 3; anthers 0.5 mm long, filaments 2.0-

Cyperus louisianensis
Thieret, Proc. Louisiana
Acad. Sci. 40:23-26. 1977.



HOLOTYPE (GH)
Cyperus louisianensis
Thieret

Cyperus louisianensis holotype locality,
Tangipahoa Parish, LA



Cyperus louisianensis
type locality





looking down at inflorescences (spikes) of
Cyperus louisianensis

Department of Interior, United States Fish & Wildlife Service, *category 2* listing among endangered and threatened species



Category	Status		Lead Region	Scientific name	Family	Common name	Historic range
	Trend						
PE ...	U	R1		<i>Cyanea hamatiflora</i> ssp. <i>carsonii</i>	Campanulaceae ..	Haha	HI.
2	U	R1		<i>Cyanea kunthiana</i>	Campanulaceae ..	.....	HI.
2	U	R1		<i>Cyanea leptostagia</i>	Campanulaceae ..	Cyanea, giant koke'a	HI.
S	N	R1		<i>Cyanea lindseyana</i>	*** see ***	<i>Clemontia lindseyana</i> .....	.....
2*	E	R1		<i>Cyanea longissima</i>	Campanulaceae ..	.....	HI.
2	U	R1		<i>Cyanea marksii</i>	Campanulaceae ..	.....	HI.
S	N	R1		<i>Cyanea nelsonii</i>	*** see ***	<i>Cyanea stictophylla</i> .....	.....
PE	D	R1		<i>Cyanea shipmanii</i>	Campanulaceae ..	Haha	HI.
PE	U	R1		<i>Cyanea stictophylla</i>	Campanulaceae ..	Haha	HI.
S	N	R1		<i>Cyanea submuricata</i>	*** see ***	<i>Cyanea tritomantha</i> .....	.....
2	U	R1		<i>Cyanea tritomantha</i>	Campanulaceae ..	'Aku'aku	HI.
PE	U	R1		<i>Cyanea truncata</i>	Campanulaceae ..	Haha	HI.
S	N	R4		<i>Cyclodon alabamensis</i>	*** see ***	<i>Matelea alabamensis</i> .....	.....
2*	U	R4		<i>Cylindrocolea andersonii</i>	Cephaloziellaceae	.....	NC.
2	D	R6		<i>Cymopterus acaulis</i> var. <i>higginsii</i>	Apiaceae	Biscuitroot, Higgins	UT.
2	U	R6		<i>Cymopterus beckii</i>	Apiaceae .....	.....	UT.
2	D	R1		<i>Cymopterus davisii</i>	Apiaceae .....	.....	ID.
1	U	R1		<i>Cymopterus deserticola</i>	Apiaceae	Cymopterus, desert	CA.
2	U	R1		<i>Cymopterus douglassii</i>	Apiaceae .....	.....	ID.
3C	N	R6		<i>Cymopterus everetti</i>	Apiaceae .....	.....	WY.
2	U	R1		<i>Cymopterus goodrichii</i>	Apiaceae .....	.....	NV.
S	N	R6		<i>Cymopterus higginsii</i>	*** see ***	<i>Cymopterus acaulis</i> var. <i>higginsii</i> .....	.....
2	U	R2		<i>Cymopterus megacephalus</i>	Apiaceae .....	.....	AZ.
2	U	R6		<i>Cymopterus minimus</i>	Apiaceae	Biscuitroot, Cedar Breaks	UT.
2	U	R1		<i>Cymopterus ripleyi</i> var. <i>saniculoides</i>	Apiaceae .....	.....	NV.
S	N	R6		<i>Cymopterus</i> sp. nov. <i>fined.</i>	*** see ***	<i>Cymopterus everetti</i> .....	.....
S	N	R1		<i>Cymopterus</i> sp. nov. <i>fined.</i> (Custer, Lemhi Cos.)	*** see ***	<i>Cymopterus douglassii</i> .....	.....
2	U	R2		<i>Cynanchum wigginsii</i>	Asclepiadaceae ..	.....	AZ, Mexico.
2	U	R4		<i>Cyperus cephalanthus</i>	Cyperaceae .....	.....	LA, TX.
2	S	R3		<i>Cyperus grayoides</i> (= <i>grayioides</i>)	Cyperaceae	Sedge, umbrella,	IL, LA, MO, TX.
2	U	R4		<i>Cyperus louisianensis</i>	Cyperaceae	Sedge,	LA.
2	U	R2		<i>Cyperus onerosus</i>	Cyperaceae	Sedge, flat dune	TX.
S	N	R1		<i>Cyperus pennatifolius</i> var. <i>bryanii</i>	*** see ***	<i>Marsicus pennatifolius</i> .....	.....
2	U	R1		<i>Cyperus trachysanthos</i>	Cyperaceae .....	.....	HI.
S	N	R4		<i>Cyperus urbanii</i>	*** see ***	<i>Marsicus urbanii</i> .....	.....
2	D	R1		<i>Cypripedium fasciculatum</i>	Orchidaceae	Lady's-slipper, clustered	CA, CO, ID, MT, OR, UT, WA, WY, Canada.

Classification

Family Cyperaceae - sedge family

Genus *Cyperus*

Subgenus *Pycneus*

- stigmas 2
- achene lenticular
- achene angle adjacent to rachilla
- scales and achenes disarticulating from rachilla

Section *Sulcati*

- scales laterally sulcate

lenticular achene



lenticular achenes, bifid style



sulcate scales



Cyperus sanguinolentus Vahl

- Thieret commented on close relationship between *C. louisianensis* and *C. sanguinolentus*
- distinguished between the species based upon differences in
 - achene shape
 - scale imbrication

Cyperus sanguinolentus

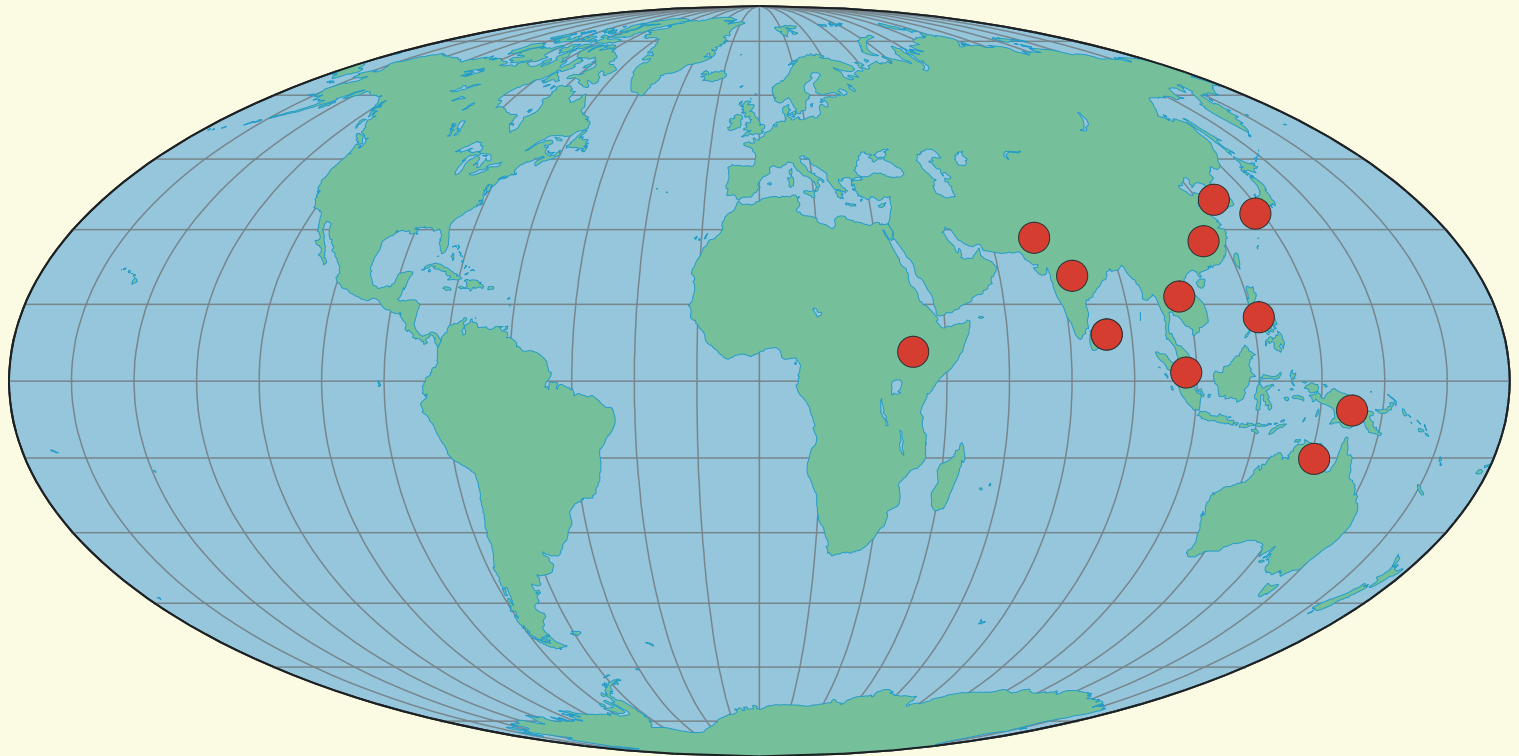
☰ widely distributed in Old World

☰ NE Africa, Middle East, India, Ceylon, central Asia, SE Asia, China, Taiwan, Japan, Korea, Philippines, Indonesia and Australia

☰ not previously reported from the Western Hemisphere

☰ listed among agricultural weeds

distribution of *Cyperus sanguinolentus*



Cyperus sanguinolentus

☞ highly variable

☞ Kükenthal (1936) segregated five varieties and named seven forms, including six under the typical variety.

☞ Kern (1974) treated four subspecies, including the typical one, from Malaysia.

questions

- ☞ What are the range, distribution, frequency and habitat of *Cyperus louisianensis*?
- ☞ Is *C. louisianensis* a narrow endemic requiring legal protection?
- ☞ What is the taxonomic relationship between *C. louisianensis* and *C. sanguinolentus*?

Methods

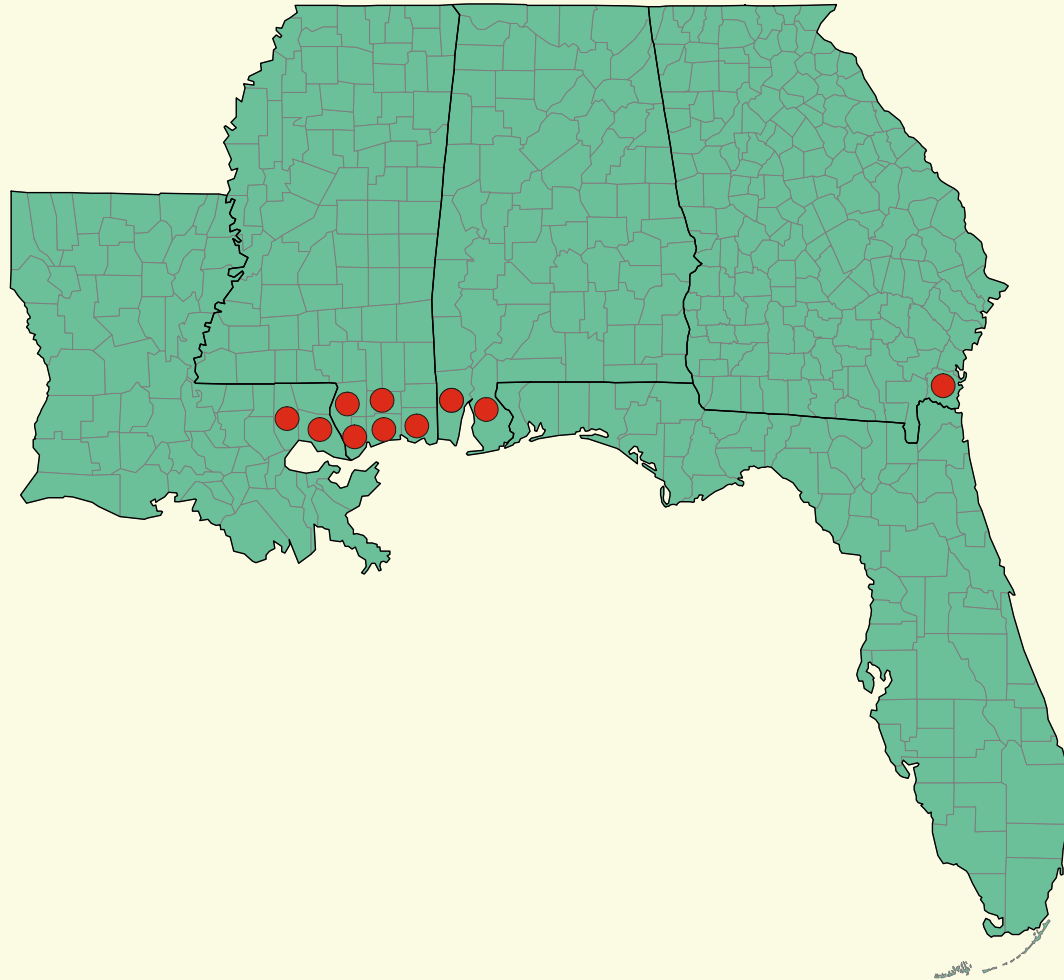
- ☰ type locality relocated
- ☰ additional populations intensively sought in southeastern LA and southern MS
- ☰ voucher specimens prepared
- ☰ type specimens of *Cyperus louisianensis* borrowed for study
- ☰ herbarium specimens of *C. sanguinolentus* borrowed for comparison and analysis

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- 📄 5 achenes @ from 13 specimens of *C. louisianensis* and 20 specimens of *C. sanguinolentus* measured using a stereomicroscope and ocular micrometer
 - 📄 characters examined: ACHL, ACHW, ACHTH, ACHMX
 - 📄 data analyzed and graphed using Minitab™

Results

- 📄 In addition to Thieret's original sites in Tangipahoa Parish, LA, we have identified >30 sites concentrated in southeastern LA and southern MS.
- 📄 Isolated stations have been found in southern AL and southeastern GA.

distribution of *Cyperus louisianensis*



ecology & life history

 weedy characteristics

 usually locally abundant

 invader of disturbed habitats

– roadside ditches

– margins of artificial ponds

 phenology: flowers & fruits Sept. until frost

 annual habit in southeastern United States



*Cyperus
louisianensis*
site in
Tangipahoa
Parish, LA



*Cyperus
louisianensis*
Hancock
County, MS



Cyperus louisianensis
in *mid-October*



*Cyperus
louisianensis*
site in Camden
County, GA



Cyperus louisianensis
Camden County, GA

Cyperus louisianensis versus *C. sanguinolentus*

achene shape

- *C. louisianensis*: elliptic to elliptic-obovate, rather flattened (thickness-length ratio: 0.25--0.30)
- *C. sanguinolentus*: orbicular-obovate, turgid (thickness-length ratio: 0.40)

scales

- *C. louisianensis*: well imbricated and flat along margin
- *C. sanguinolentus*: often barely imbricate and frequently somewhat involute along margin

achenes

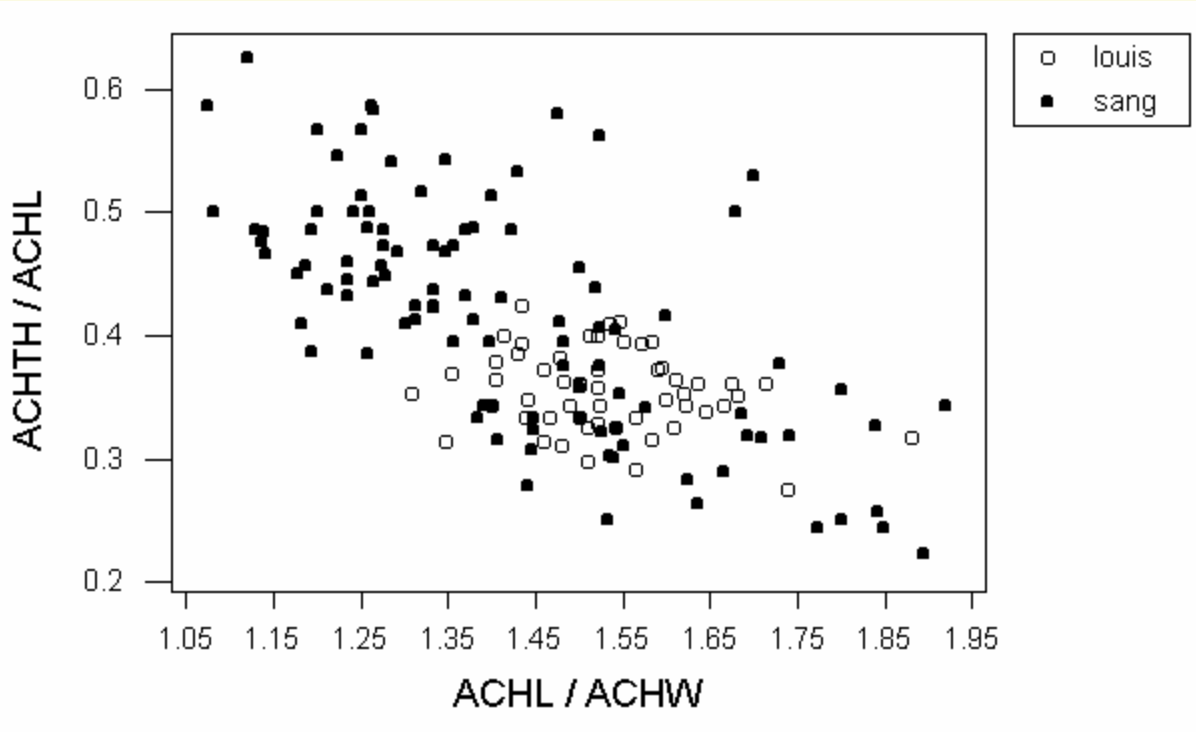


☰ *C. sanguinolentus*:
Japan

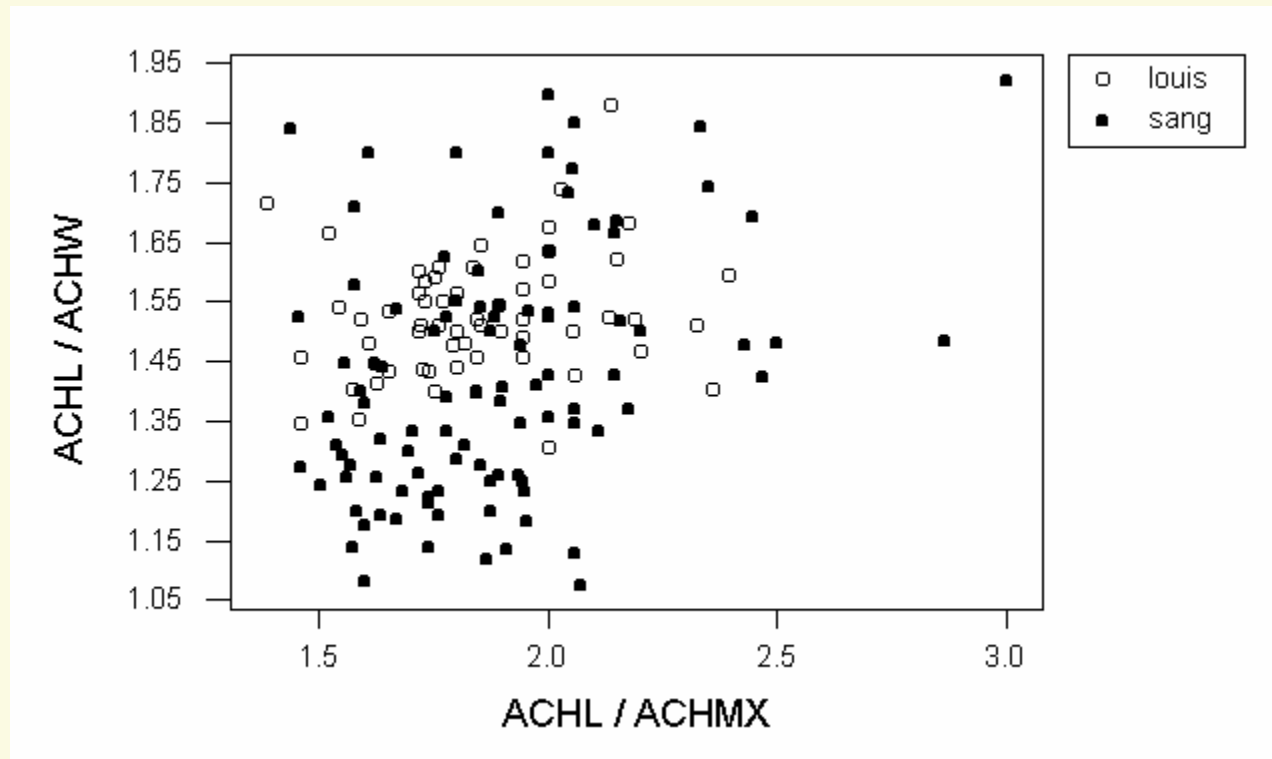


☰ *C. louisianensis*:
U.S.A

achene length to width vs. achene thickness to length



ratio of achene length to distance of maximum width
from base vs. ratio of achene length to width



scale imbrication



☞ *C. louisianensis*:
holotype--left

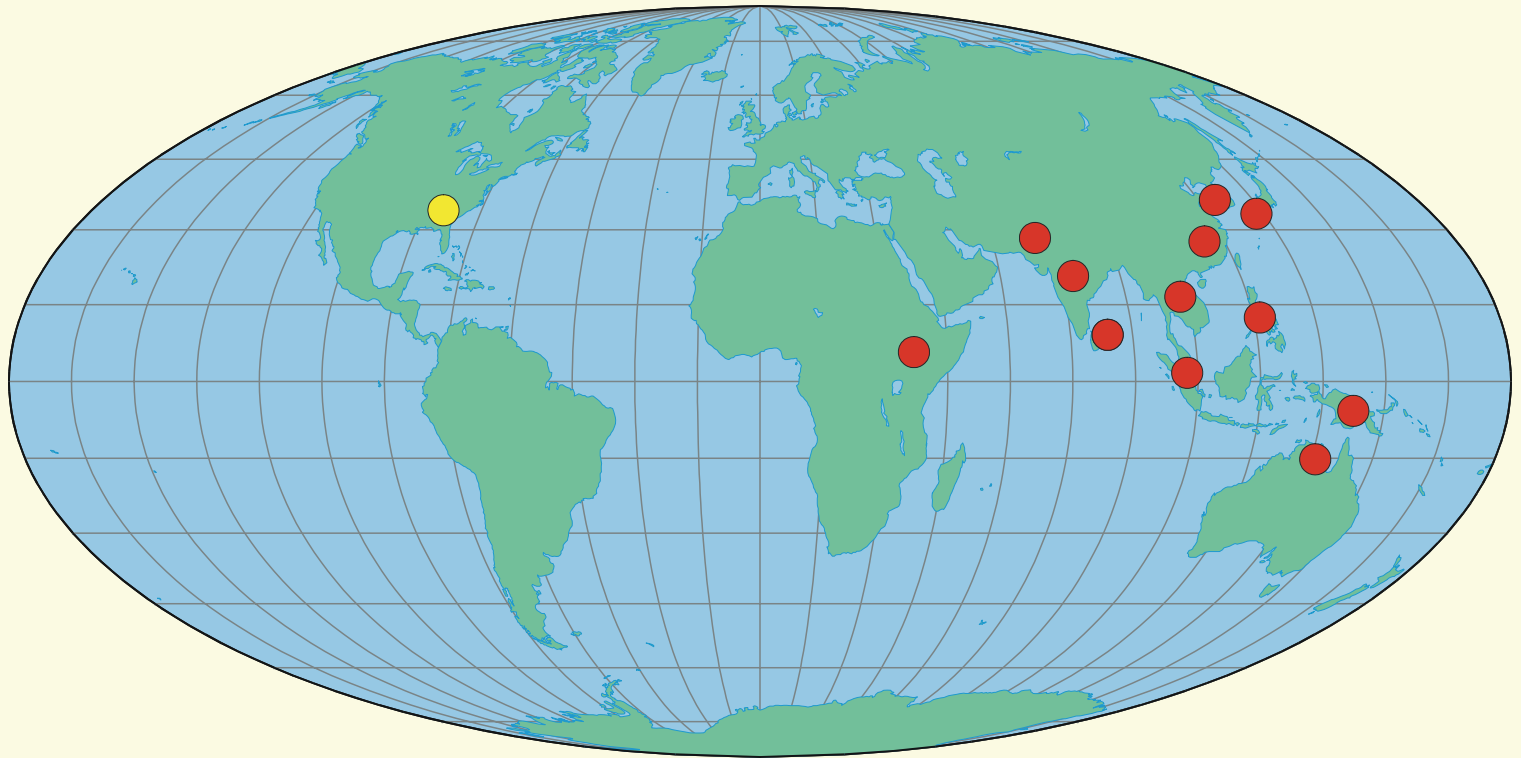
☞ *C. sanguinolentus*:
Japan, *Furuse 09-30-1959*--right

Conclusions

- 📄 *Cyperus louisianensis* is widespread and weedy in southeastern U.S.
- 📄 *C. louisianensis* is usually locally abundant in disturbed habitats, e.g., ditches, margins of artificial ponds, etc.
- 📄 Range of *C. louisianensis* is expanding in southeastern U.S.
- 📄 *C. louisianensis* is not a narrow endemic species.

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- 📄 *Cyperus louisianensis* indistinguishable from certain *C. sanguinolentus* specimens
 - 📄 *C. louisianensis* = *C. sanguinolentus*
 - 📄 *C. sanguinolentus* Vahl (1805) is correct name for U.S. populations previously called *C. louisianensis* Thieret (1977).
 - 📄 Range of *C. sanguinolentus* extended to the Western Hemisphere

revised distribution
of *Cyperus sanguinolentus*



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