

Impact of *Cyperaceae* as Weeds

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Weed is....

‘...a plant growing out of place.’ (1)

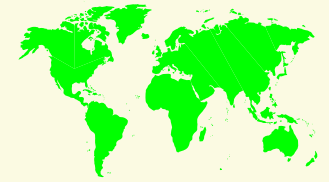
‘...a plant growing where it is not desired.’ (2)

‘...a plant altering native species composition, structure, or ecosystem functions.’ (3)

‘...an undesirable plant that adversely affects humans or other organisms which humans deem desirable.’ (4)

1. James et al. 1991. Noxious Range Weeds.
2. Buchholtz. 1967. Weeds.
3. Zimdall in Smith. 1995. Handbook of Weed Management Systems.
4. Bryson in Plimmer. IN PRESS. Encyclopedia of Weed Control.

Genera of weedy sedges



- **Scirpeae (75)**

- *Scirpus* (20)

- **Fuireneae (100)**

- *Fuirena* (40)

- *Bolboschoenus* (5)

- *Schenoplectus* (50)

- **Eleocharideae (200)**

- *Eleocharis* (200)

- **Abildgaardieae (430)**

- *Fimbristylis* (400)

- *Bulbostylis* (100)

- **Ficinieae (125)**

- *Isolepis* (60)

- **Cypereae (800)**

- *Cyperus* (~630: incl. *Diclidium*, *Juncellus*, *Pycneus*, *Mariscus*, *Queenslandiella*)

- *Kyllinga* (60)

- *Oxycaryum* (3)

- **Rhynchosporae (250)**

- *Rhynchospora* (200)

- **Sclerieae (200)**

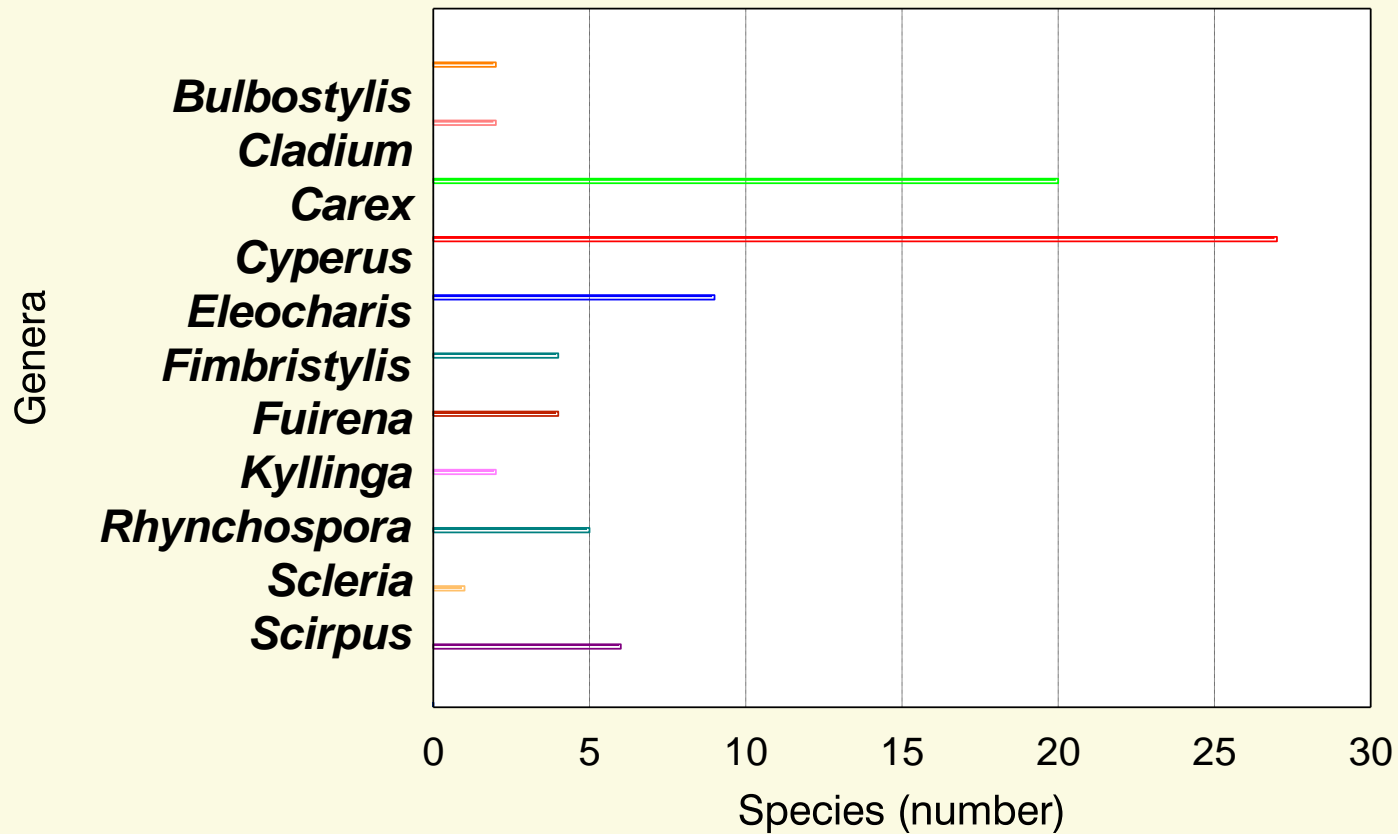
- *Scleria* (200)

- **Cariceae (2100)**

- *Carex* (2000)

Classification and estimates of numbers of species from Goetghebeur, P., *Genera Cyperacearum*. 1986.

Weedy Sedge Genera in U.S.A.



C-3 & C-4 photosynthesis

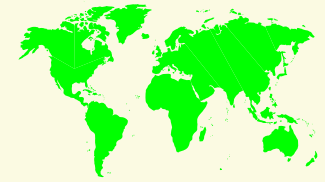
- kranz anatomy, C_4 photosynthesis: Many weeds; usually most troublesome species.



- non-kranz anatomy, C_3 photosynthesis: Fewer weeds; usually not most troublesome species.



C-3 & C-4 photosynthesis in genera of weedy sedges



•Scirpeae

–*Scirpus* (C-3)

•Fuireneae

–*Fuirena* (C-3)

–*Bolboschoenus* (C-3)

–*Schenoplectus* (C-3)

•Eleocharideae

–*Eleocharis* (C-3/C-4)

•Abildgaardieae

–*Fimbristylis* (C-4)

–*Bulbostylis* (C-4)

•Ficinieae

–*Isolepis* (C-3)

•Cypereae

–*Cyperus* (incl. *Diclidium*,
Juncellus, *Pycneus*, *Mariscus*,
Queenslandiella; all C-4, except
subg. *Pycnostachys* all C-3)

–*Kyllinga* (C-4)

–*Oxycaryum* (C-3)

•Rhynchosporeae

–*Rhynchospora* (C-3/C-4)

•Sclerieae

–*Scleria* (C-3)

•Cariceae

–*Carex* (C-3)

Holm et al. 1977

Of the 76 World's Worst Weeds:

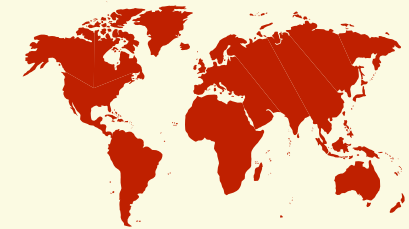
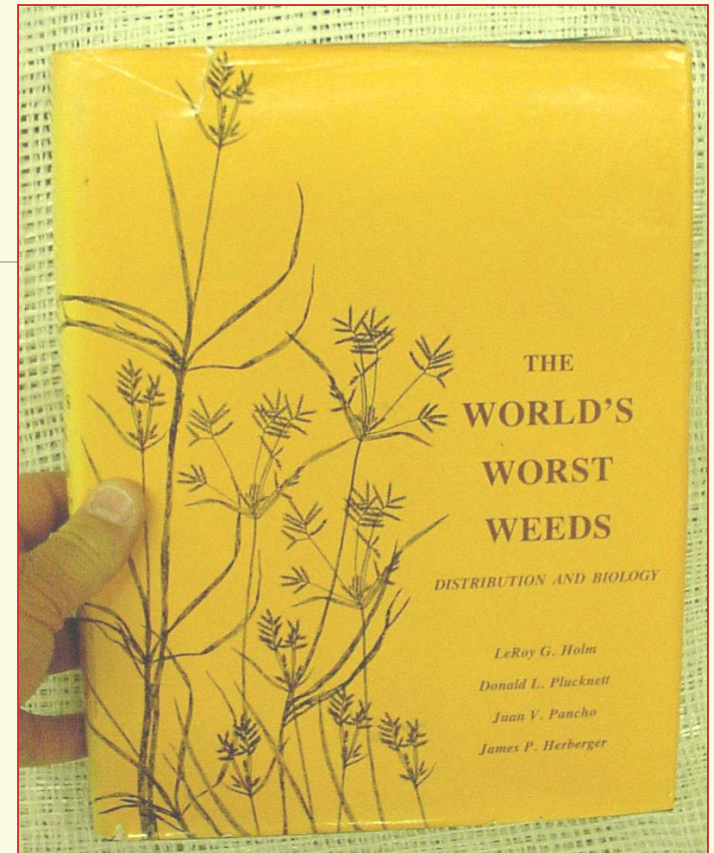
#1 *Cyperus rotundus* L.

16 *Cyperus esculentus* L.

32 *Cyperus difformis* L.

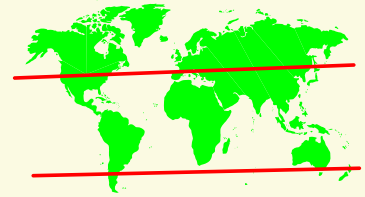
33 *Cyperus iria* L.

40 *Fimbristylis miliacea* (L.) Vahl



Cyperus rotundus L.

Purple Nutsedge

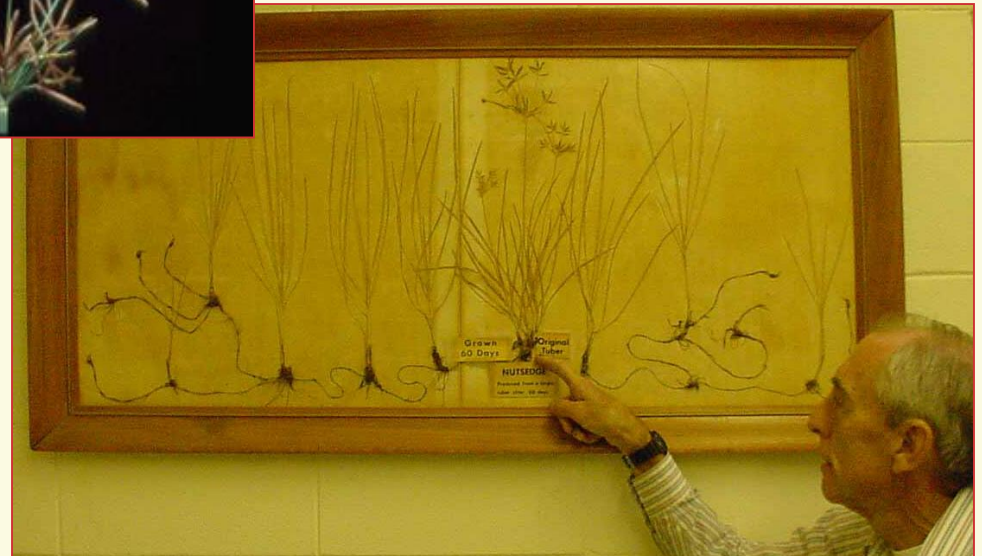


Aggressive Perennial
Agricultural and Urban Areas

- Purple scales
- Seed rarely produced
- Rapid growth
- Rhizomes and tubers in chains
- Non-native from Asia

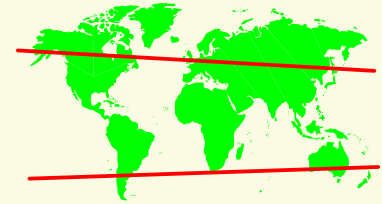


Purple nutsedge in Cotton



Purple nutsedge growth in 60 days – Dr. Wills

Cyperus esculentus L.
Yellow Nutsedge



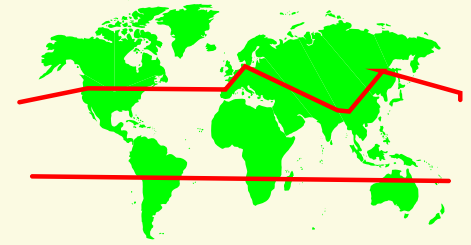
Aggressive Perennial
Agricultural and Urban Areas



- Yellow scales
- Seed produced
- Rapid growth
- Rhizomes terminate in tubers
- Native/non-native ?

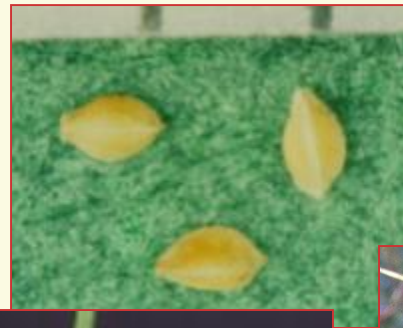


Cyperus difformis L.
Smallflower Umbrellasedge

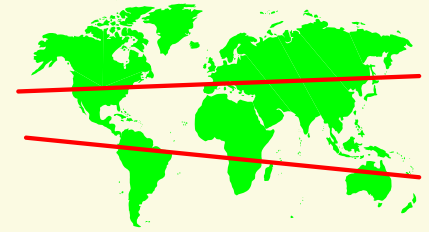


Annual
Agricultural and Urban Areas

- Small seed
- Short life cycle
- Herbicide resistance
- Major weed in Rice
- Non-native from Asia



Cyperus iria L.
Rice Flatsedge



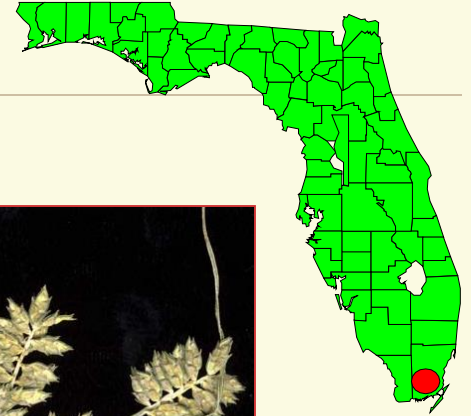
Annual
Agricultural and Urban Areas

- Small seed
- Weed in many crops
- Thrives on moist soils
- Non-native from Asia



Cyperus (subg. *Queenslandiella*) *hyalinus* Vahl

Queensland Sedge



- Combines characteristics of *Kyllinga* and *Cyperus*
- Non-native, invasive
- Recently introduced into U.S.



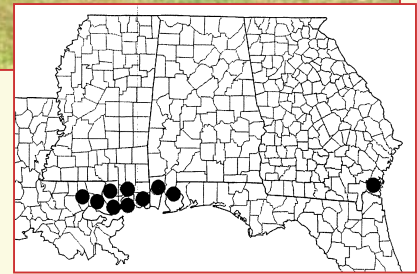
Carter and Mears. 2000. Sida 345-350.

Cyperus sanguinolentus Vahl

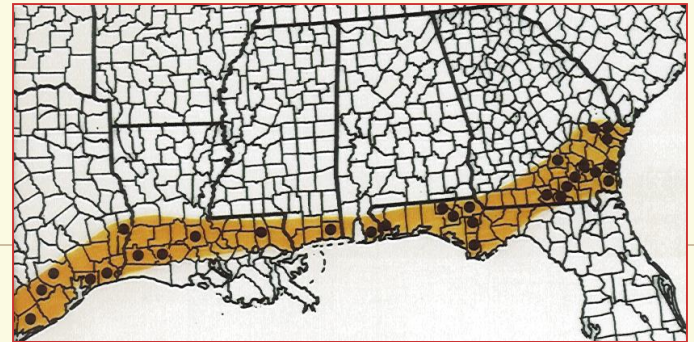
Bloodscale Sedge



- Annual
- Small seed
- Rice weed in Asia
- Late-season flowering
- Non-native invasive



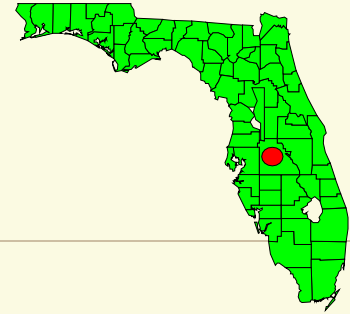
Cyperus entriarianus Boeckl. Deeproot Sedge



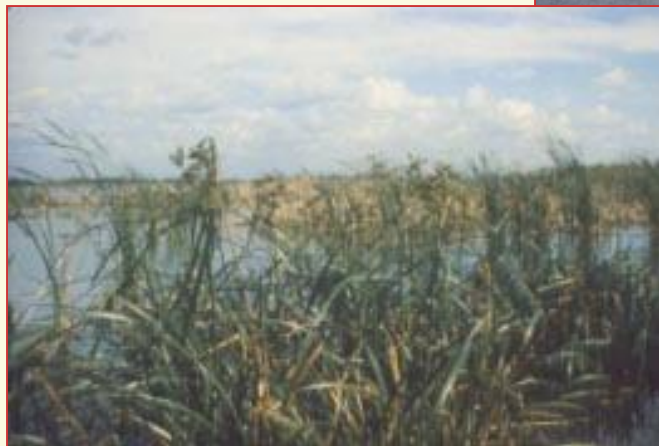
- Perennial
- Deep roots
- Many seeds (> 2 M/plant)
- Non-native invasive
- “I-10 Weed”



Cyperus alopecuroides Rottb.
Foxtail Sedge

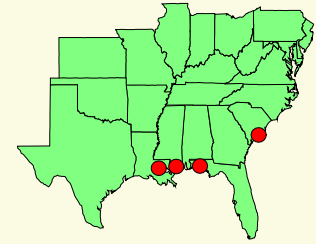


- Perennial
- Many seed
- Floating mats
- Tall
- Non-native, invasive
- Recently introduced



Cyperus pilosus Vahl

Pilose Sedge



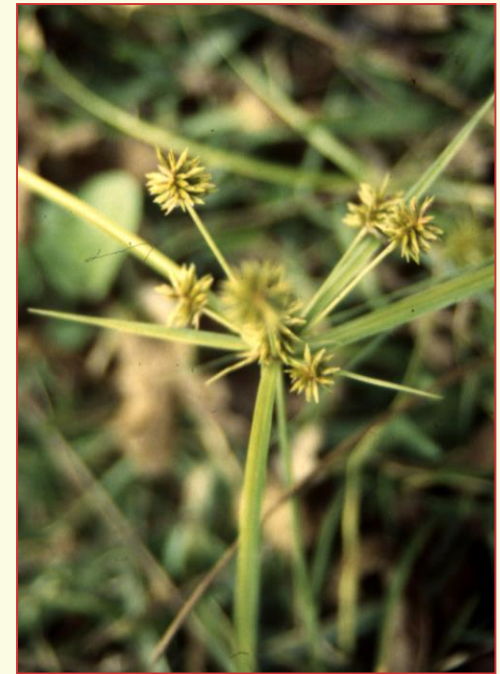
- Perennial
- Many seed
- Scabrous culm
- Non-native, invasive
- Rice weed in Asia



Bryson and Carter. 1992. Sida 15: 119--124.

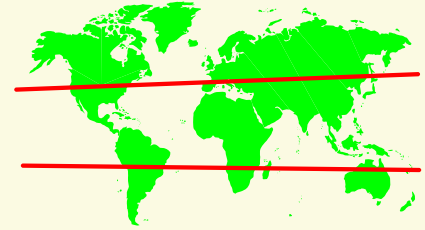
Cyperus Weeds - Native to U.S.A.

- *C. croceus* Vahl Globe sedge
- *C. echinatus* (L.) Wood Round Sedge
- *C. erythrorhizos* Muhl. Redroot sedge
- *C. polystachyos* Rottb. Texas sedge
 var. *texensis* (Torr.) Fern.
- *C. pseudovegetus* Steud. Knob sedge
- *C. retrorsus* Chapman Cylindric sedge
- *C. strigosus* L. False nutsedge
- *C. virens* Michaux Green sedge

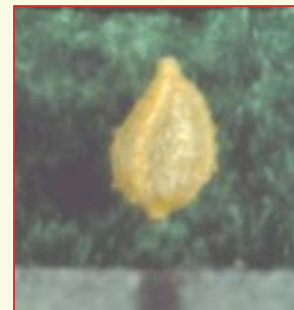
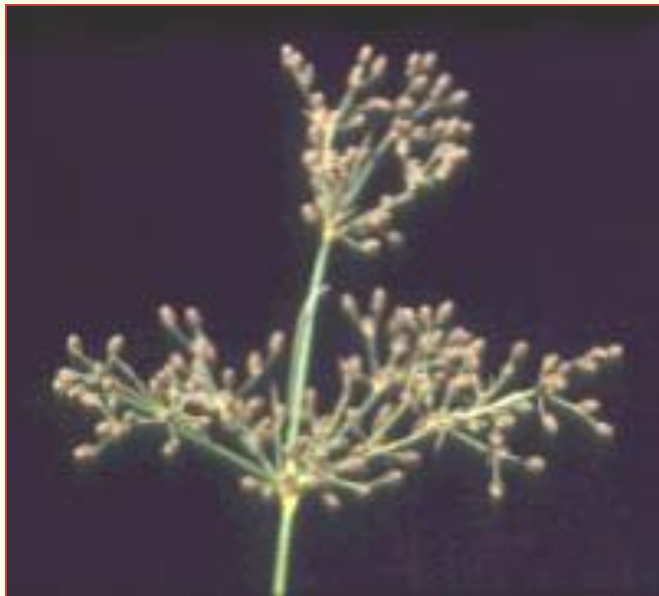


Cyperus croceus Vahl

Fimbristylis miliacea (L.) Vahl
Globe Fingerrush



- Annual or Perennial
- Many seed
- Native of Tropical America
- Weed in Rice production
- Introduced into Asia
- Livestock disperse undigested seed



Carex blanda Dewey

Bland's Sedge

- Weed of lawns
- Easily controlled
mowing & herbicides
- Highly variable
shade, moisture, etc.



Carex cherokeensis Schweinitz
Wolftail Sedge



- Weed of pastures and R.O.W.
- Control – repeated mowing and herbicides (phenoxy)
- Dispersal by contaminated hay, grass seed, etc.

Carex oklahomensis Mackenzie

Oklahoma Sedge

- Weed of R.O.W.
- Introduced into MS, NC, & TN
- Dispersal by contaminated hay, grass seed, etc.



Carex longii Mackenzie

Long's Sedge

- Perennial
- Weed – pastures, lawns, etc.
- Flower/Fruit until frost
- Movement – hay, pine bark mulch



Carex praegracilis W. Boott

Clustered Fieldsedge

- Perennial
- Weed of salted R.O.W.
- Spreading
- Non-weedy in natural prairies



Kyllinga

5 species in continental U.S. (4 are non-native; invasive)

- Annual & Perennial weeds of lawns, flowerbeds
- Difficult to control with mowing & herbicides

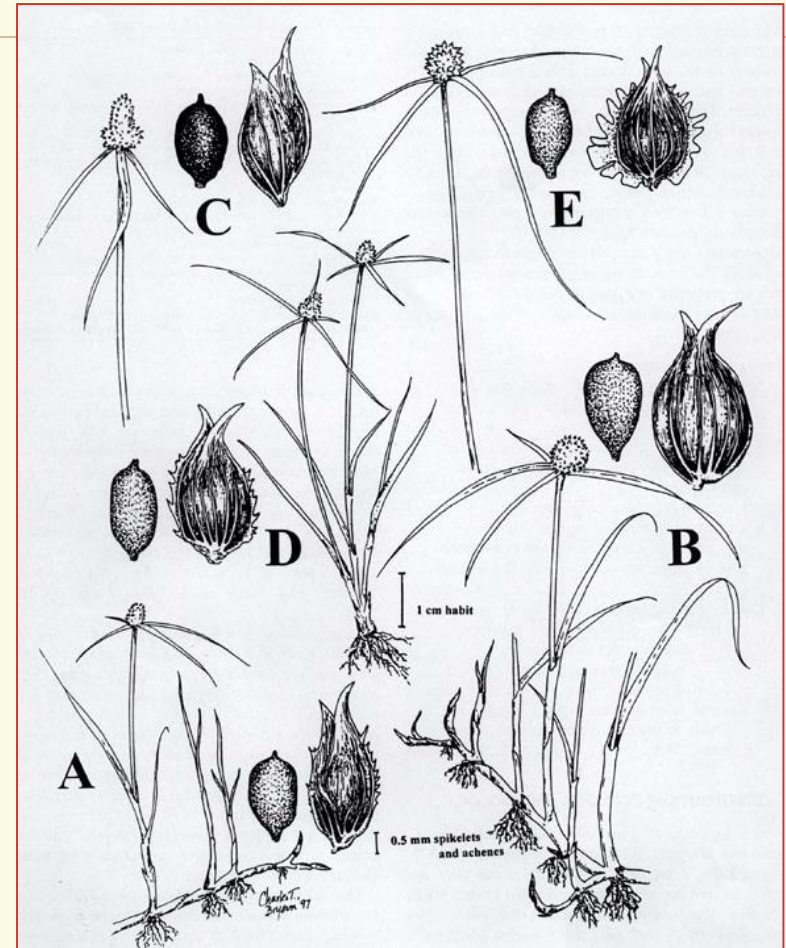
(A) *K. brevifolia* Rottb.

(B) *K. gracillima* Miq.

(C) *K. odorata* Vahl

(D) *K. pumila* Michx.

(E) *K. squamulata* Thonn. ex Vahl



Oxycaryum cubense (Poepp. & Kunth in Kunth) Lye
(forma *cubense* peninsular FL; forma *paraguayense* (Maury) Pederson from TX through northern FL into southern GA)

- Perennial
- Widespread in the tropics of old and new worlds
- Floating mats in swamps and ponds
- SE U.S.A. in TX, LA, southern AL, southern GA and FL.



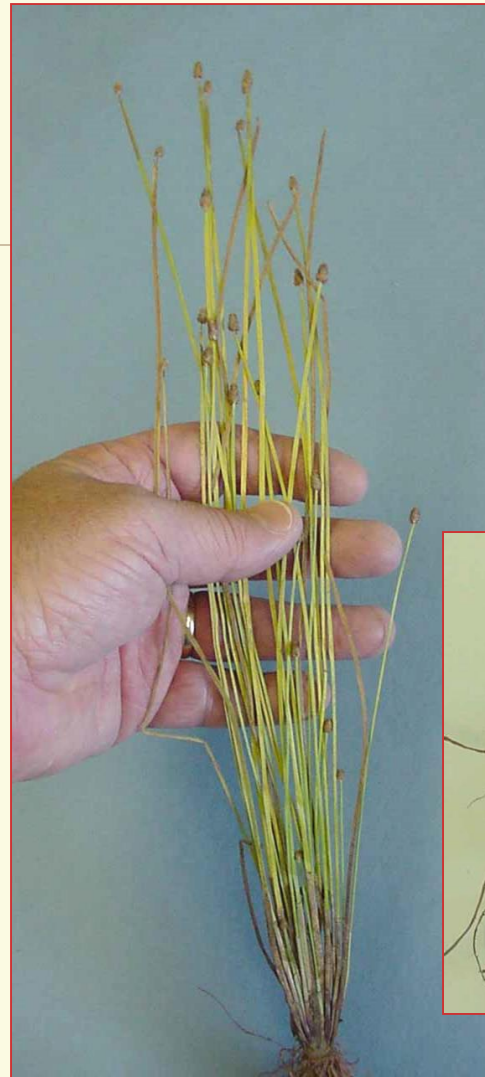
Bryson, MacDonald, Carter, and Jones. 1996. Sida 17:501-518.

Eleocharis Weeds

- Annual or perennial
- Cespitose or rhizomatous
- Weeds of wetland habitats
- Weedy and non-weedy species



Eleocharis palustris (L.) R. & S.
Creeping Spikerush



Eleocharis obtusa (Willd.) Schultes
Blunt Spikerush

Rhynchospora Weeds

- **Perennial**
- **Many seed**
- **Weeds of R.O.W.**
- **Usually wet areas**
- **Southern U.S.A. – more species**



Rhynchospora corniculata (Lam.) Gray
Horned Bearcrush

Scirpus/Schenoplectus Weeds



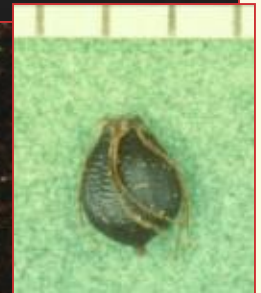
S. acutus Muhl. Ex Bigelow
Hardstem Bullrush



- Perennial
- Many seed
- Weed in crops, R.O.W.
- Wet areas



S. mucronatus L.
Ricefield Bullrush



Sedge Weeds

- Additional species are becoming weedy
- Continue to spread
 - Trade – contaminated produce, packing, etc.
 - Travel – transportation faster & less expensive
- Additional Research Needed
 - Systematics
 - Biology
 - Ecology
 - Control (chemical, cultural, biological)

Acknowledgements

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