Evaluating the effects of propagule type, seasonality and plant spacing on establishment of giant bulrush

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Giant bulrush

Schoenoplectus californicus (Cyperaceae)
Monocot

To 12’
Triangular dark-green stem
Leaves V-shaped basal sheath

Open-panicle inflorescence

- Near apex
- 20 to many spikelets
- Reddish-brown

Main challenge

Poor establishment

- Site conditions?
- Substrate composition?
- Ecotype?
- Propagule type/size?
- Time of planting?
- Plant spacing?

Field trials at Orlando Wetlands Park

Established in 1987
Bought for $5.128 M
To date has reclaimed 126 B gallons

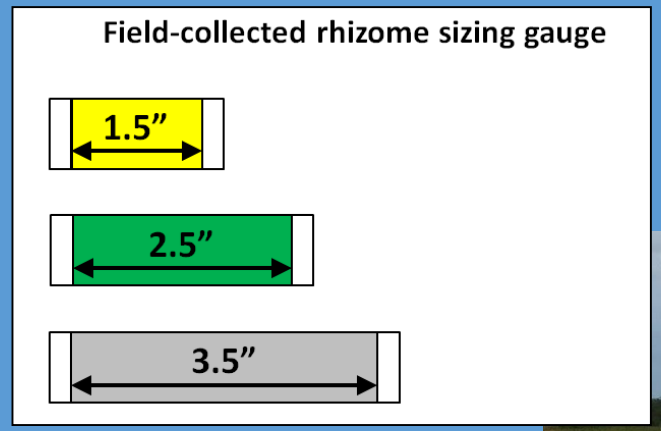
1,220 acres
2.3 M aquatic plants and 200,000 trees
17 cells
3 wetland communities

- Deep marsh
- Mixed marsh
- Hardwood- cypress swamps

Field studies at OWP

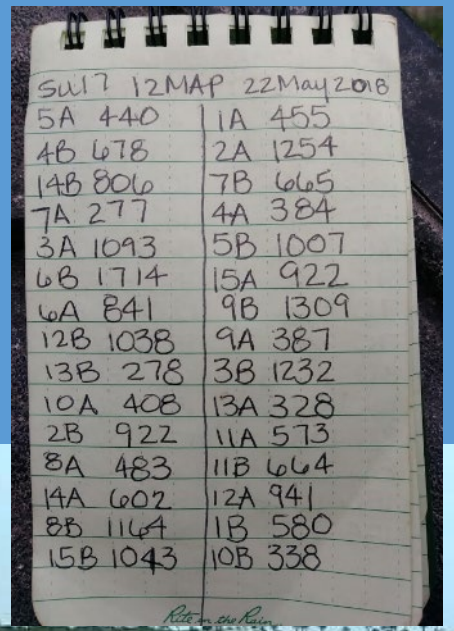
Objectives: determine how field establishment of giant bulrush is influenced by:

- plant source
- rhizome size
- initial planting density
- planting season

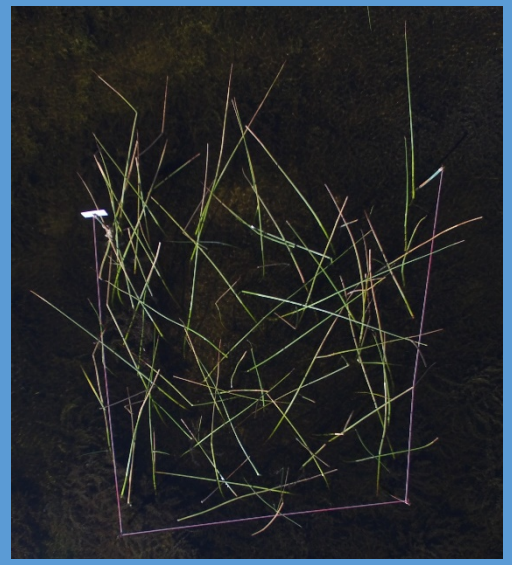


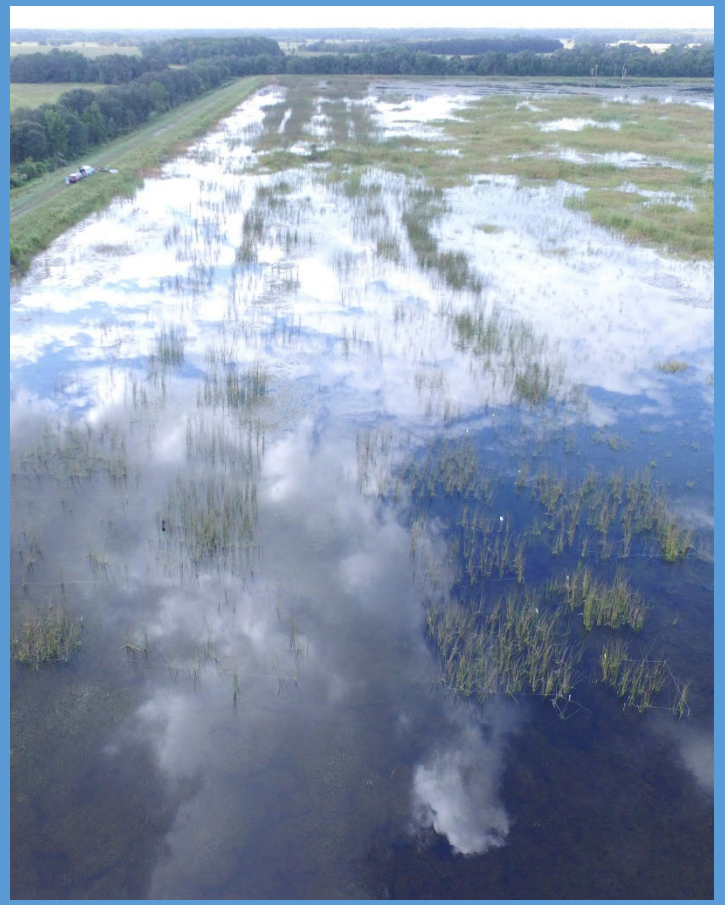
Field prep

Monitoring


SW7 12MAP 22May2018
5A 440
4B 678
14B 806
7A 277
3A 1093
6B 1714
6A 841
12B 1038
13B 278
10A 408
2B 922
8A 483
14A 602
8B 1164
15B 1043
1A 455
2A 1254
7B 665
4A 384
5B 1007
15A 922
9B 1309
9A 387
3B 1232
13A 328
11A 573
11B 664
12A 941
1B 580
10B 338

Drone photos





Results from OWP: Spacing

Most important main effect

Most bang for your buck:
3’ had greatest x-fold increase
Stems per plot*: 1’ centers 483.43; 2’ 896.24; 3’ centers 1191.45

Quickest fill-in:
1’ centers had highest number of plants per sf
Stems per sf*: 1’ centers 4.83; 2’ centers 2.24; 3’ centers 1.32

Results from OWP: Plant type

2nd most important main effect

No difference between among field-collected materials; $0.50/stem= $50/plot
Nursery materials=plugs; 6.4 stems per plug; $1.80/plug= $180/plot

Most bang for your buck:

Field collected material has greatest x-fold increase
Stems per plot*: field 628.0 to 741.1; $314 to $371 from $50
nursery 1450.4; $725 from $180 initial (2x value, 3.6x initial cost)

Quickest fill-in:

Nursery has highest number of plants per sf
Stems per sf*: nursery 4.65, $2.32/sf from $1.80; field 2.16 to 2.50, $1.08 to $1.25 from $0.50

Results from OWP: Season

3rd most important main effect

Spring or summer= best time to plant
Greatest x-fold increase
Stems per plot*: Spring 1188; Summer 922; Fall 460

Greatest stems per sf
Stems per sf*: Spring 7.06; Summer 5.93; Fall 2.55

Take-home messages

Spacing

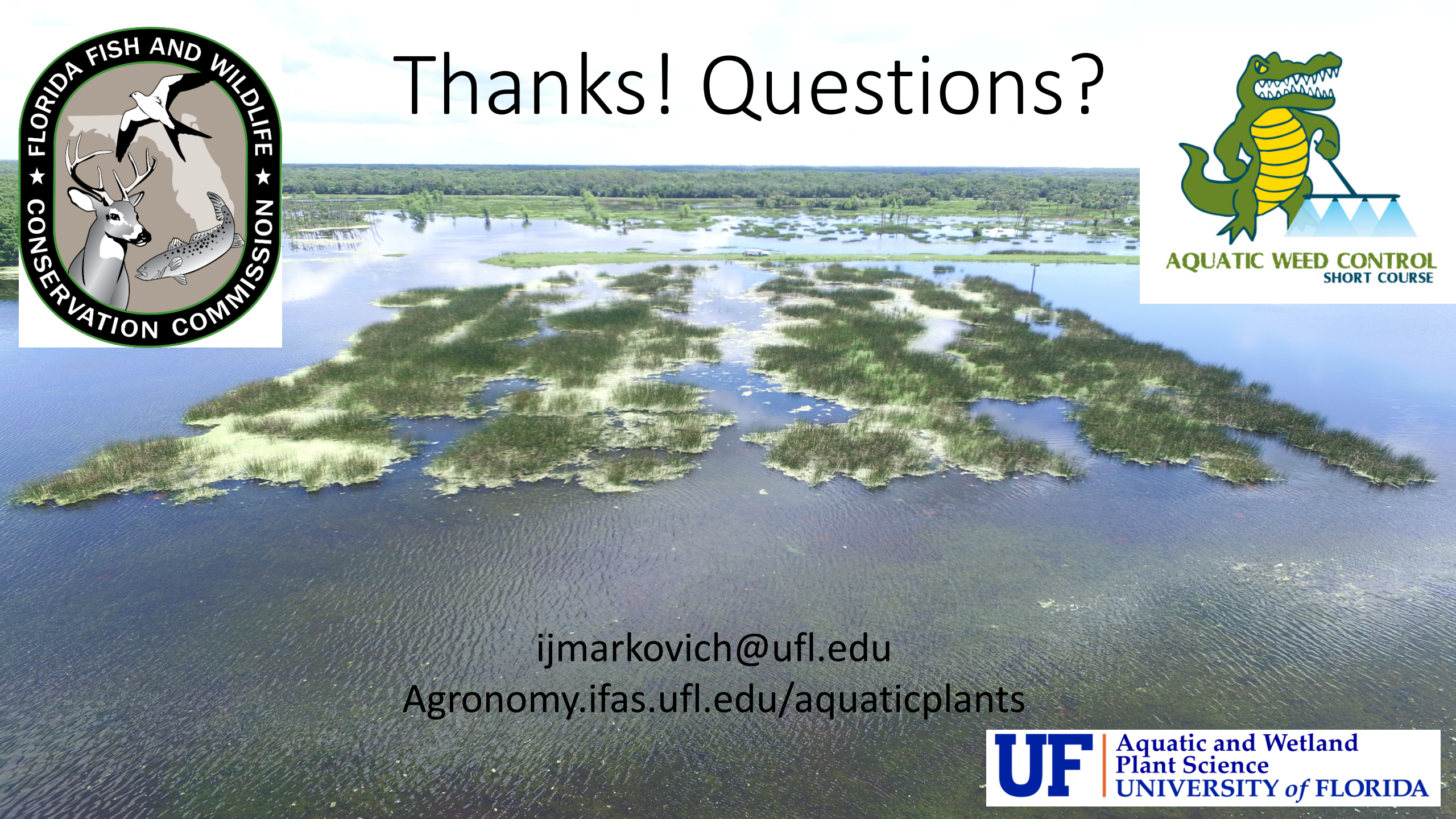
3’ centers

No difference in field-collected material; rhizome size not that important

Are nursery plugs worth the extra expense?

Field plantings should be scheduled in March through early June

Thanks! Questions?



AQUATIC WEED CONTROL SHORT COURSE

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