



USE OF FLOATING AND SUBMERGED AQUATIC VEGETATION AS HABITAT BY NEKTON IN BRACKISH WATER SYSTEMS

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HABITAT USE

- Co-occurring habitats are differentially used by animals
- Degree of habitat use related to:
 - Life history of the animal
 - Habitat features
 - Accessibility, food availability, chemistry (e.g. odor), complexity



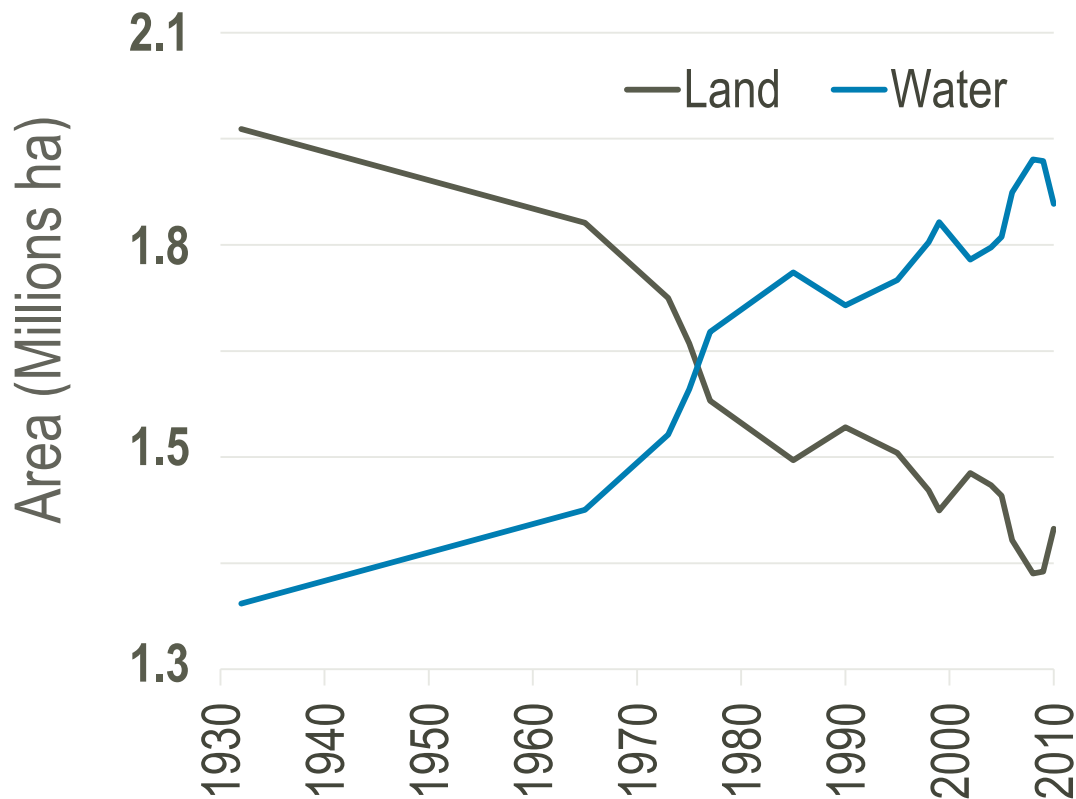
HABITAT COMPLEXITY

- “Heterogeneity in the arrangement of physical structure of a habitat” (Lassau and Hochuli 2004)
- Increased complexity results in increased animal abundance, survival, species diversity, richness
- Coastal aquatic and marine environments



LOUISIANA

- Decline in land cover resulting in increase in area of water



BRACKISH WATER SUBMERGED AND FLOATING AQUATIC VEGETATION

SAV



SAV and FAV



Over 30 species of
FAV and SAV in Louisiana

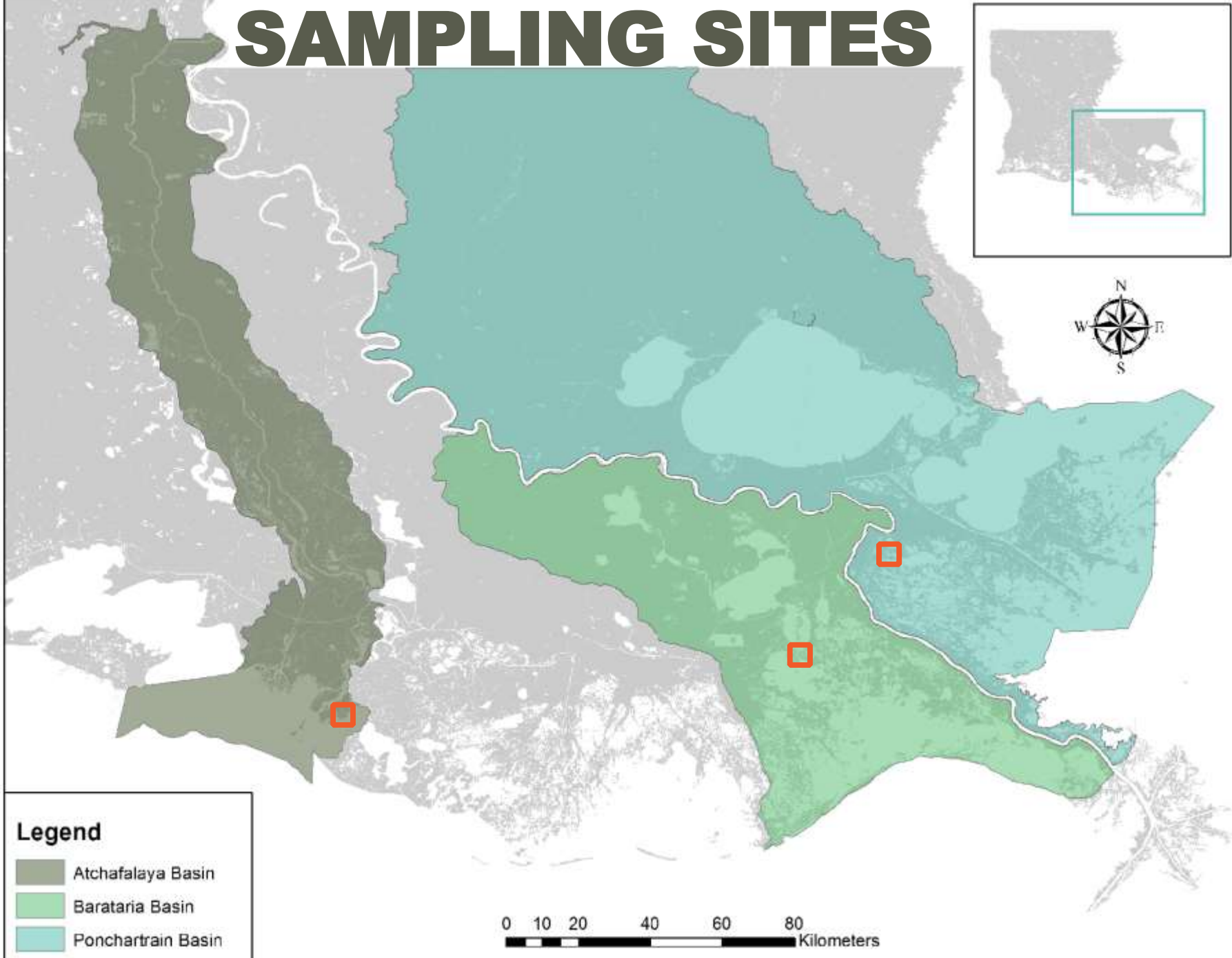


OBJECTIVES

- 1) Assess use of brackish water SAV and FAV as habitat for nekton in Louisiana
- 2) Examine drivers of potential patterns



SAMPLING SITES

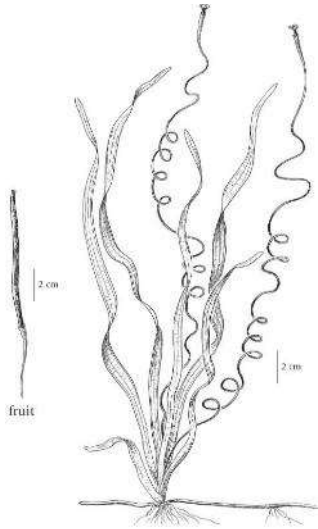


Legend

- Atchafalaya Basin
- Barataria Basin
- Ponchartrain Basin



Wild Celery
Vallisneria americana



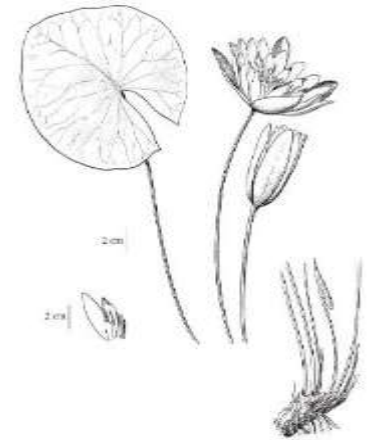
Naiad
Najas guadalupensis



Eurasian Watermilfoil
Myriophyllum spicatum



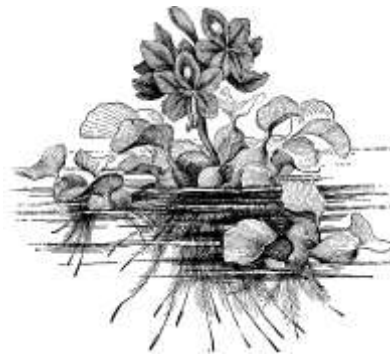
Yellow Waterlily
Nymphaea mexicana



Alligatorweed
Alternanthera philoxeroides



Water Hyacinth
Eichhornia crassipes



Bare substrate



SAMPLED HABITATS

Atchafalaya Basin (AB)	Barataria Basin (BB)	Pontchartrain Basin (PB)
Milfoil	Milfoil	Milfoil
Naiad	Naiad	Naiad
Bare substrate	Bare substrate	Bare substrate
Wild Celery	Wild Celery	Water Hyacinth
Water Hyacinth	Yellow Waterlily	
Alligatorweed		



SAMPLING



SAMPLING



- Identified, counted, (measured) and weighed
 - Abundance, species richness, biomass, Shannon-Wiener Diversity Index, species evenness
- Quantified plant complexity
 - Plant biomass
- Between site comparisons (two-way ANOVAs)
- Within site comparisons (one-way ANOVAs)



RESULTS

- Collected 3,493 individuals
- 1,156 fish (21 taxa)

Scientific name	Common name	# indiv	Percent of total
<i>Lucania parva</i>	Rainwater killifish	384	33 %
<i>Heterandria formosa</i>	Least killifish	285	25 %
<i>Gambusia affinis</i>	Mosquitofish	134	12 %

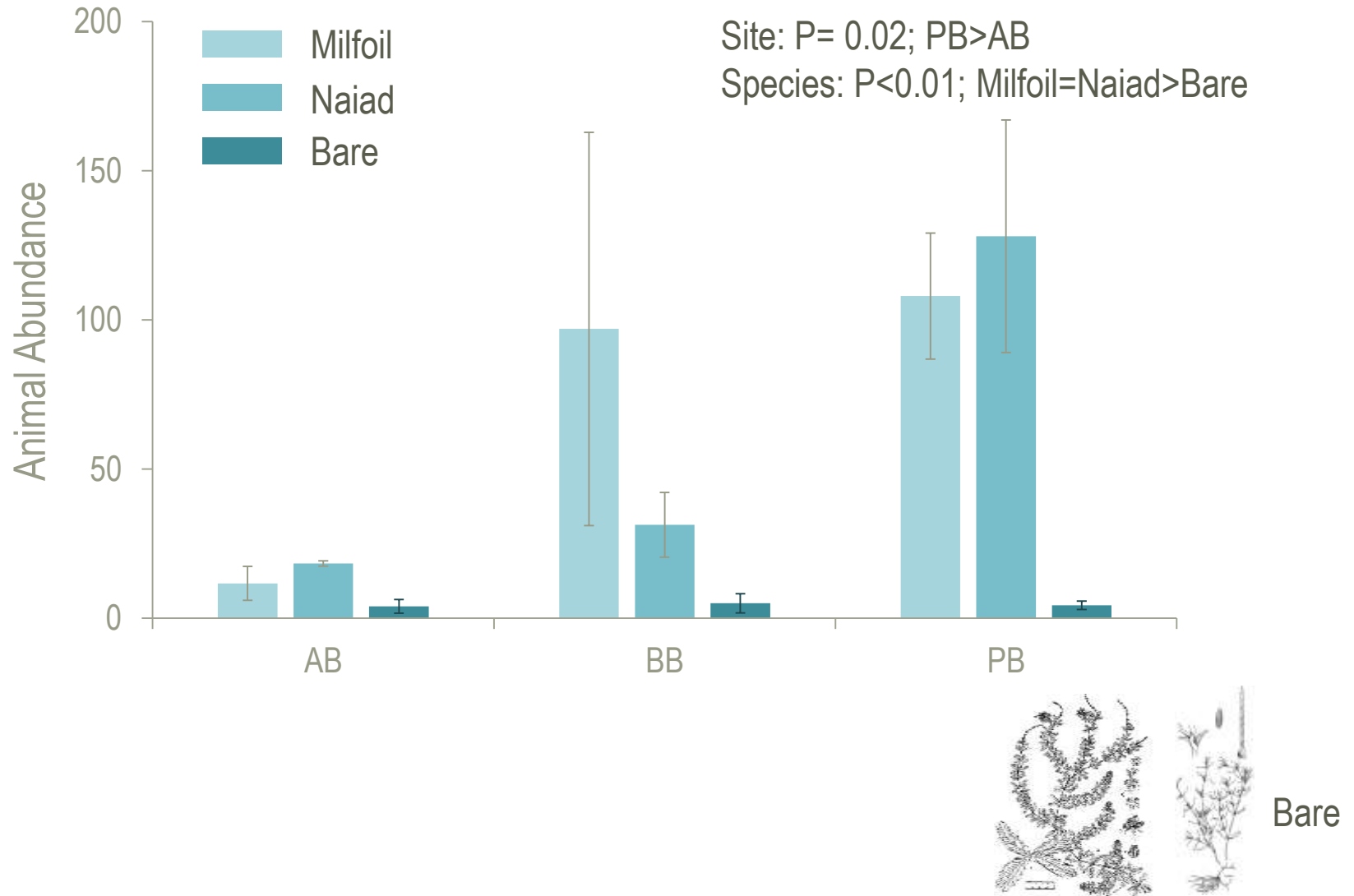


- 2,337 crustaceans (5 taxa)

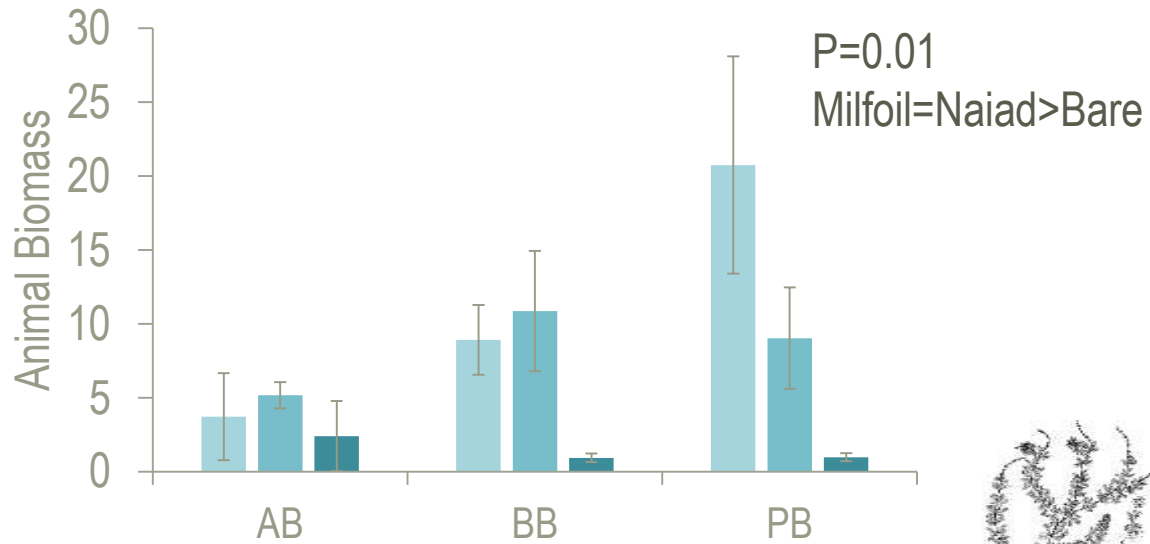
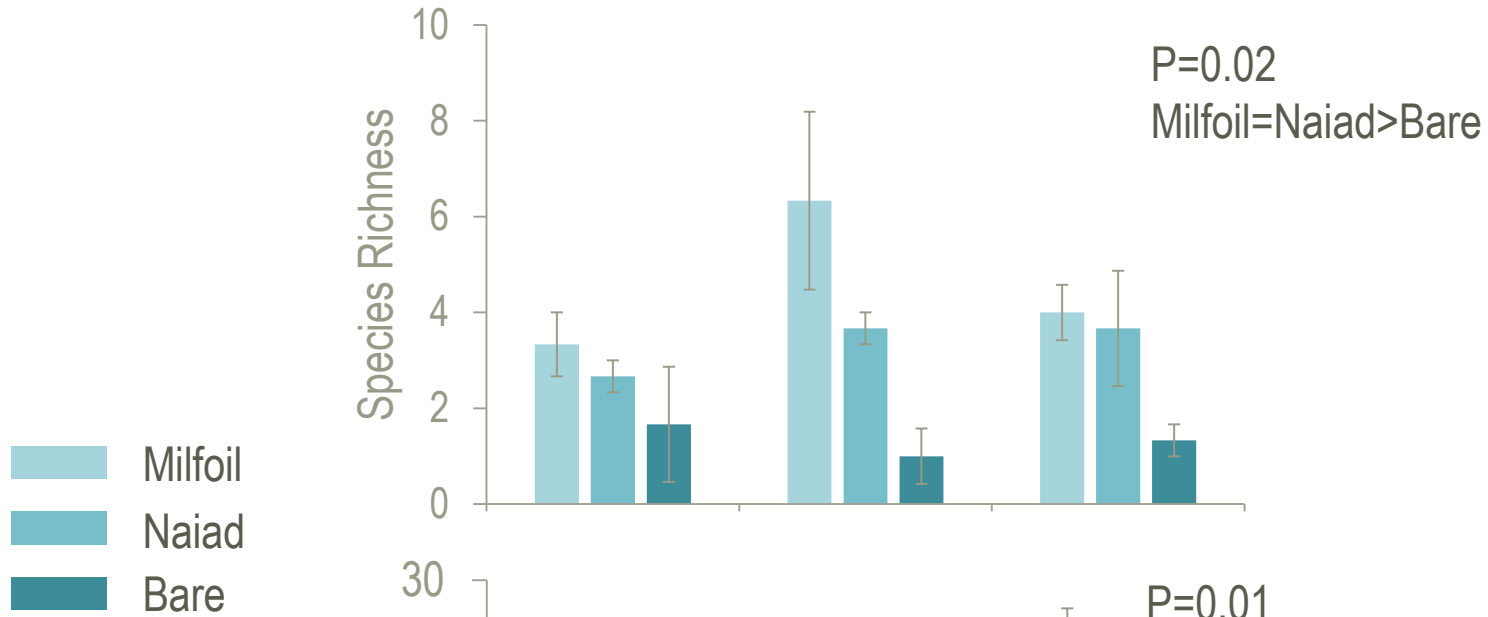
Scientific name	Common name	# indiv	Percent of total
<i>Palaemonetes spp.</i>	Grass shrimp	2246	96 %
<i>Callinectes sapidus</i>	Blue crab	50	2 %
<i>Crawfish spp.</i>	Crawfish	24	1 %



BETWEEN SITE COMPARISONS

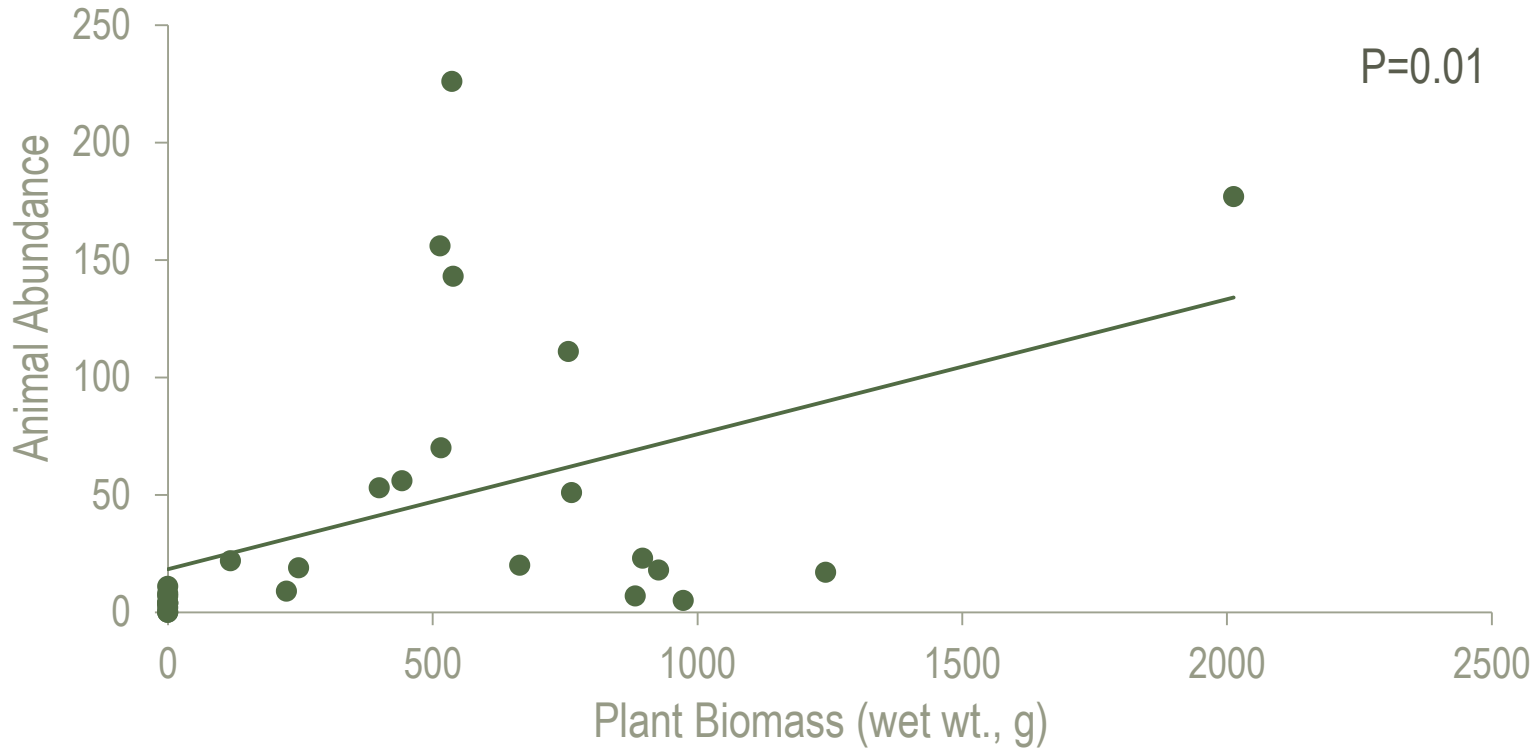


BETWEEN SITE COMPARISONS



Not significant:
Shannon-Wiener
Species evenness

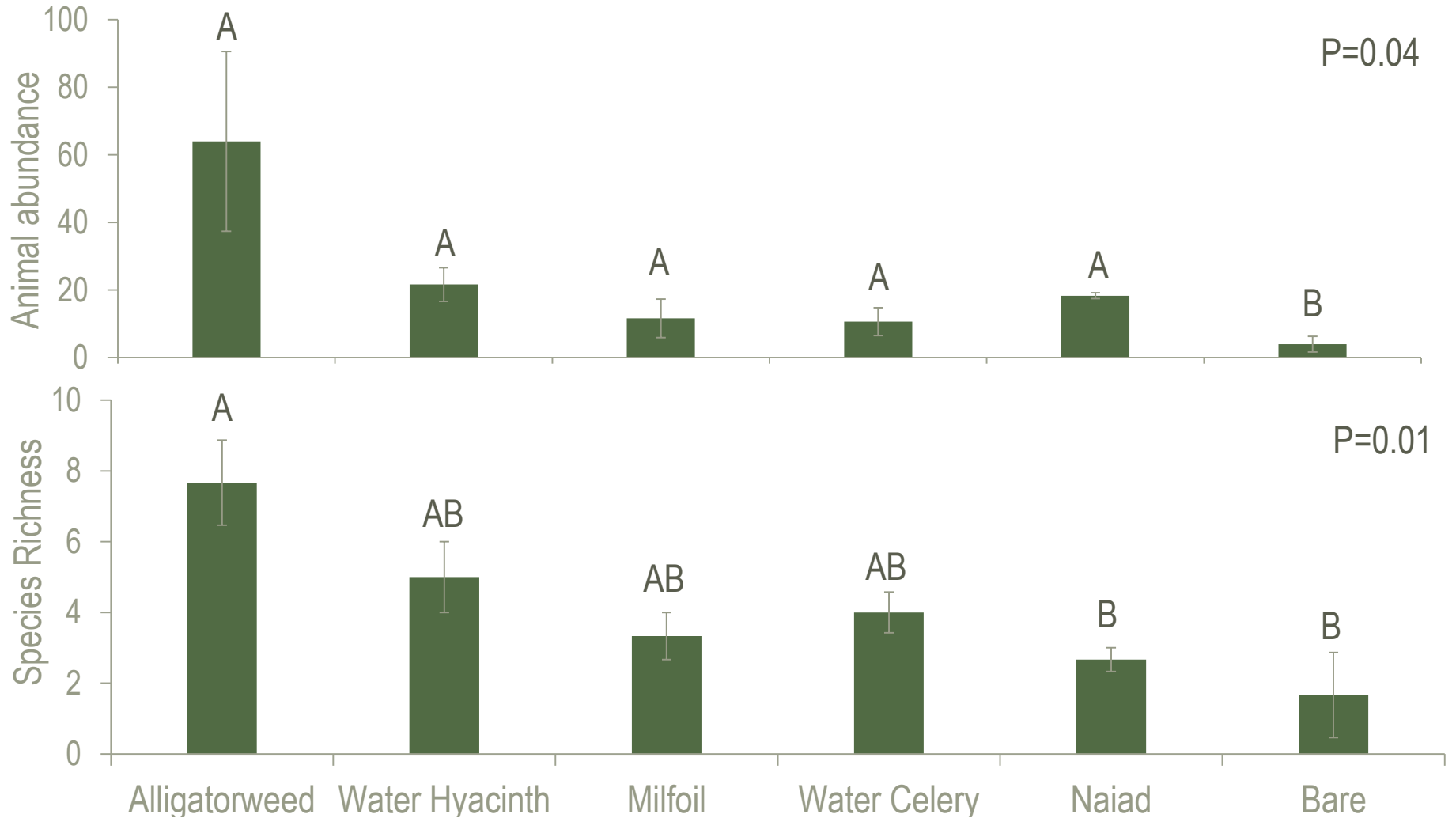
BETWEEN SITE COMPARISONS: RELATIONSHIP WITH PLANT BIOMASS



Not significant:
Species richness
Biomass
Shannon-Weiner
Species evenness



WITHIN SITE COMPARISONS: AB



Not significant:

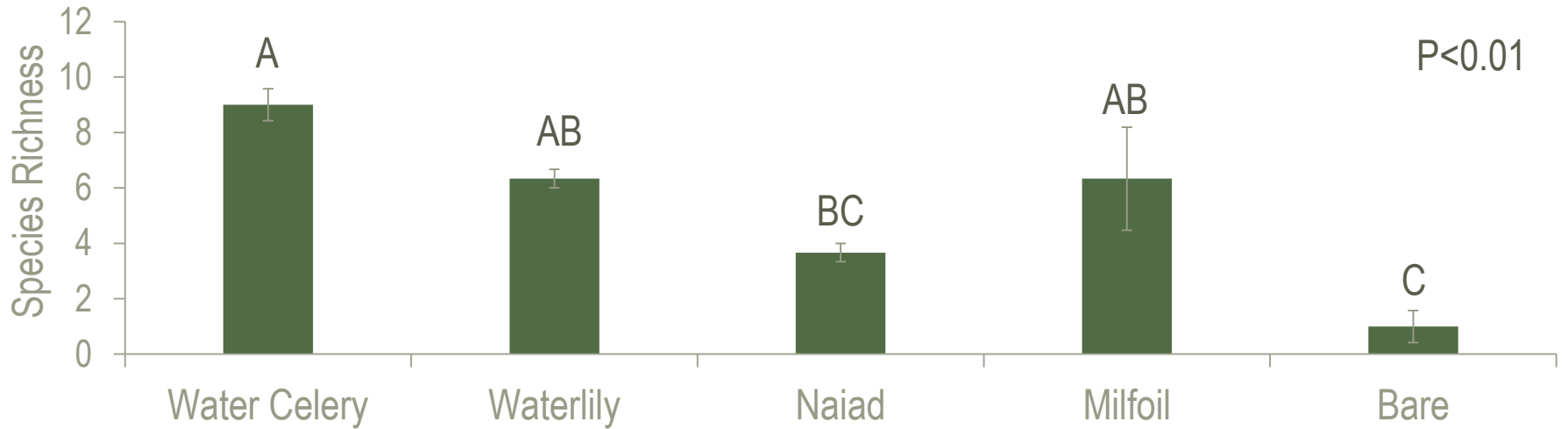
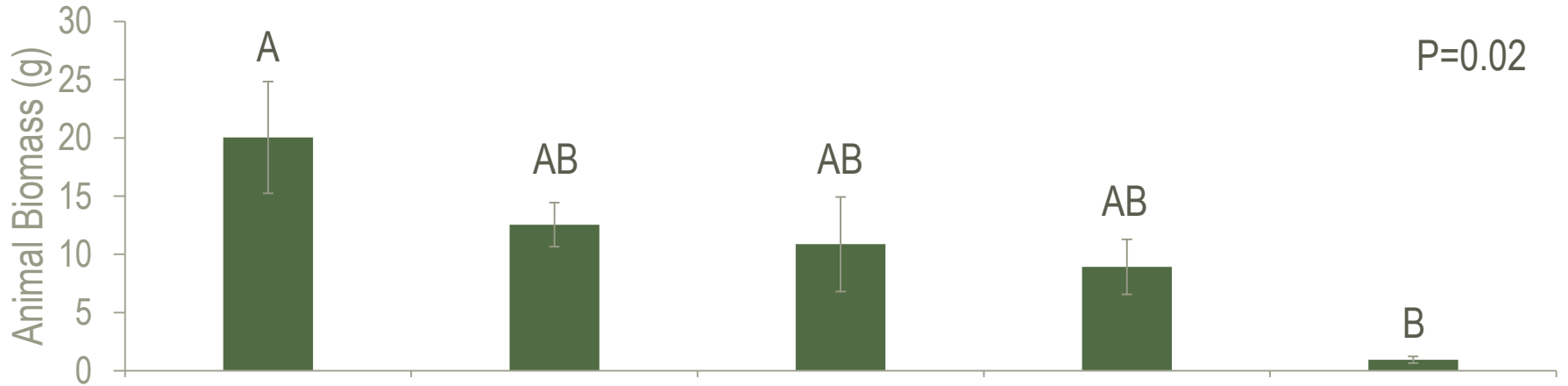
Biomass

Shannon-Wiener

Evenness



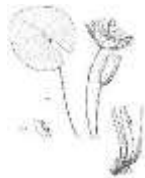
WITHIN SITE COMPARISONS: BB



Water Celery



Waterlily



Naiad



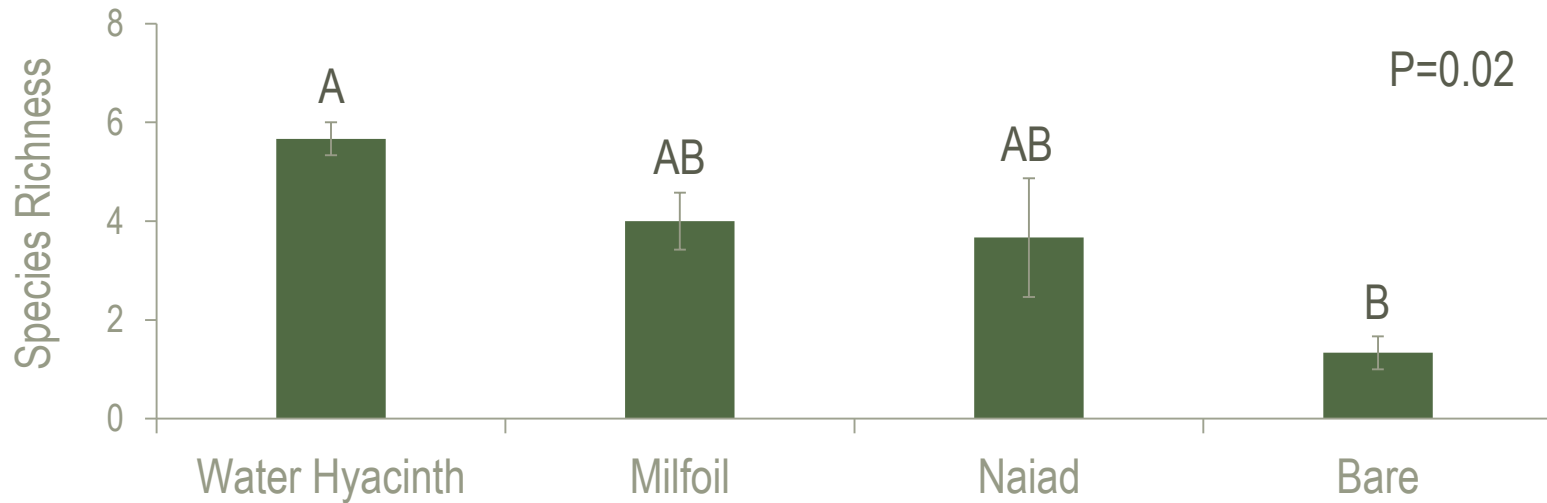
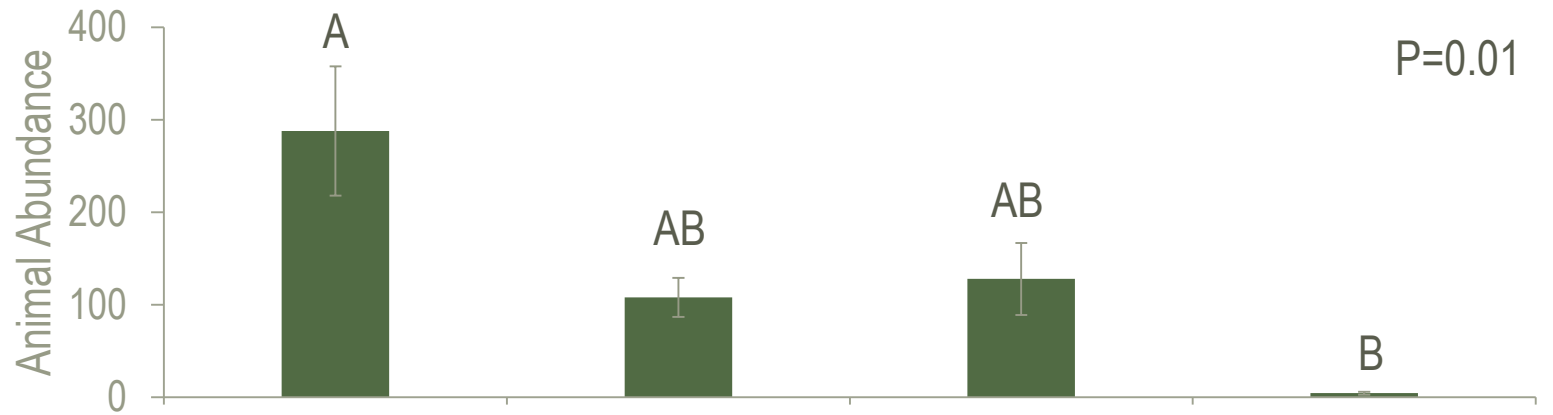
Milfoil



Bare

Not significant:
Shannon-Wiener
Evenness
Abundance

WITHIN SITE COMPARISONS: PB



Water Hyacinth

Milfoil

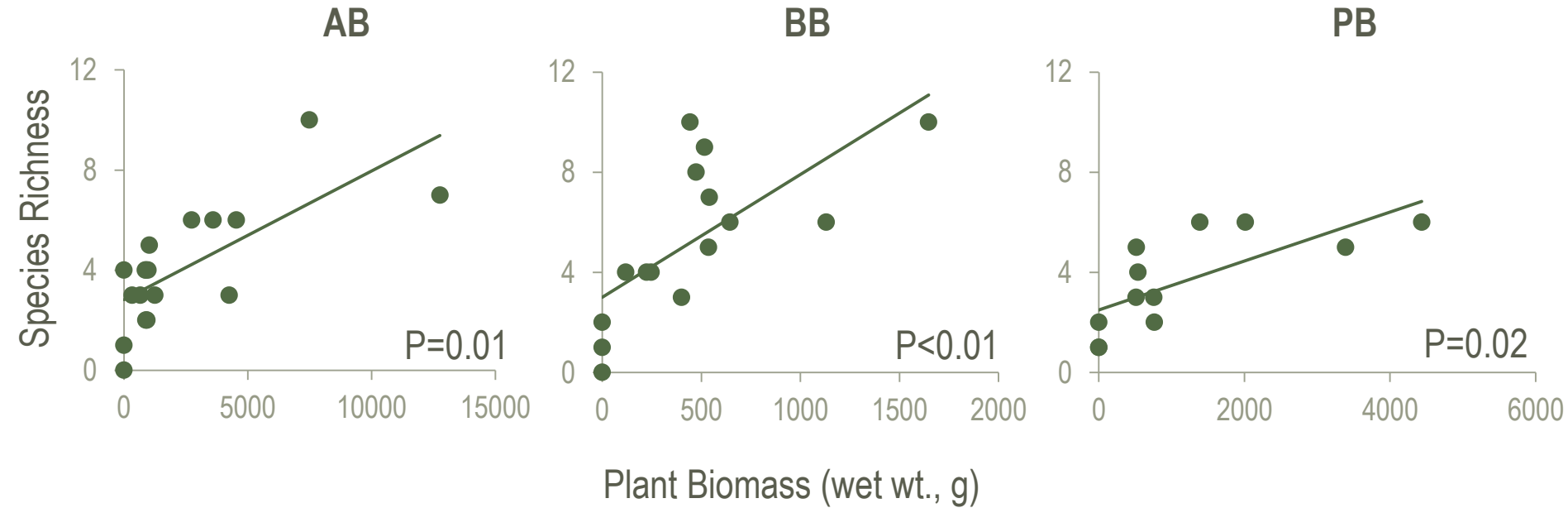
Naiad

Bare



Not significant:
Biomass
Shannon-Wiener
Evenness

WITHIN SITE COMPARISONS: RELATIONSHIP WITH PLANT BIOMASS



Not significant:

Shannon-Wiener (all sites)

Evenness (all sites)

Abundance (BB)

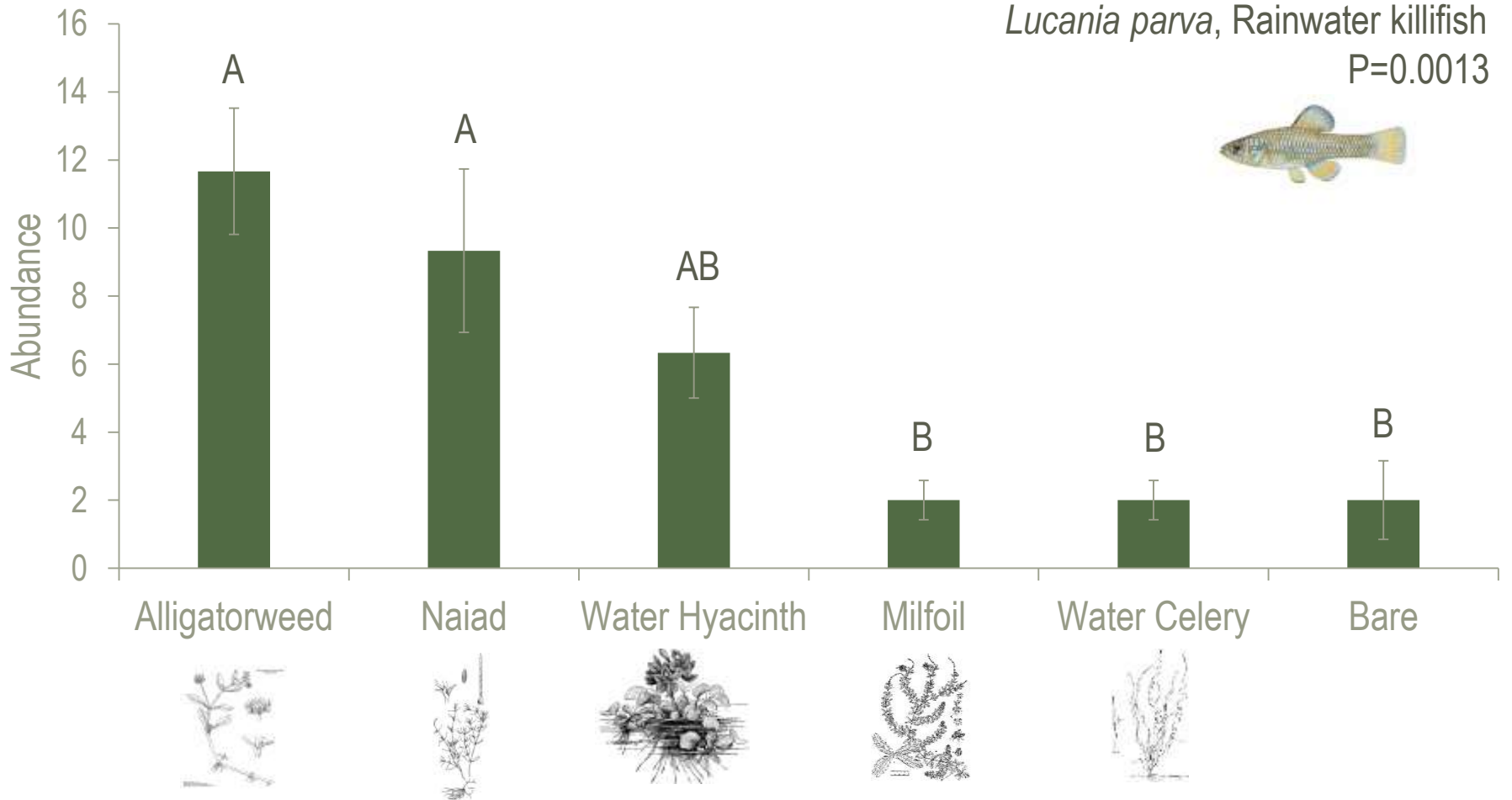
Biomass (AB, PB)

Significant:

Animal Abundance (AB, PB)

Animal Biomass (BB)

INDIVIDUAL SPECIES ASSOCIATE WITH SPECIFIC HABITATS



NEKTON USE BRACKISH WATER SAV AND FAV AS HABITAT

- Fish and crustaceans used all habitats to some degree
 - First documentation of use as habitat for nekton in Louisiana
- Animals include fishery species
 - Blue crabs, crawfish, spotted bass (recreational)



NEKTON COMMUNITY-LEVEL VS. SPECIES-LEVEL DIFFERENCES

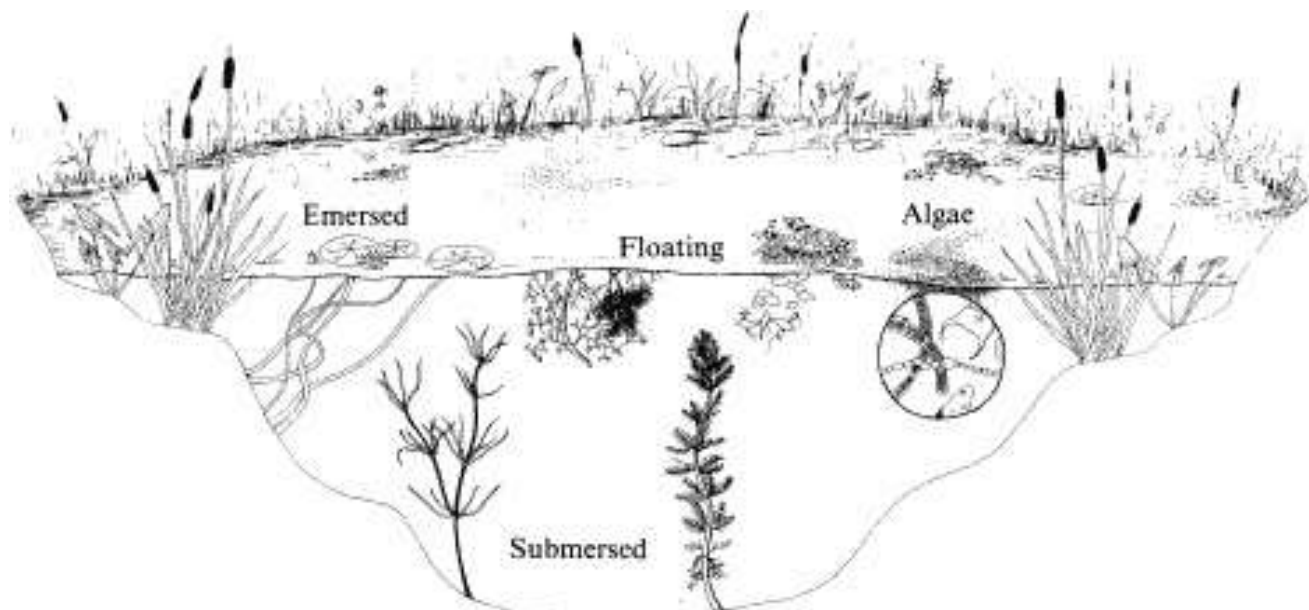
- Main community-level differences due to presence of vegetation
 - Few differences among plant species
- Nekton species-specific associations with habitats
 - Animal biology and/or plant characteristics



- Number of individuals and species increased with plant complexity (biomass)

NEXT STEPS

- Future work will examine animal size and incorporate fractal dimension as additional estimate of plant complexity



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*Baton Rouge
Area Foundation*





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THANK YOU

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