



**Basking Habitat Characteristics of  
Blanding's Turtles in Natural and  
Constructed Wetlands in Southeastern  
New York**

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# *Emys blandingii*: NYS Threatened Species

## Threats in Dutchess County, NY:

- roads, construction, farm equipment
- **habitat degradation and loss**
- **landscape fragmentation and sprawl**
- subsidized predators
- collecting



# Blanding's Turtle Habitats in Dutchess County

## *Core Wetland Habitat:*

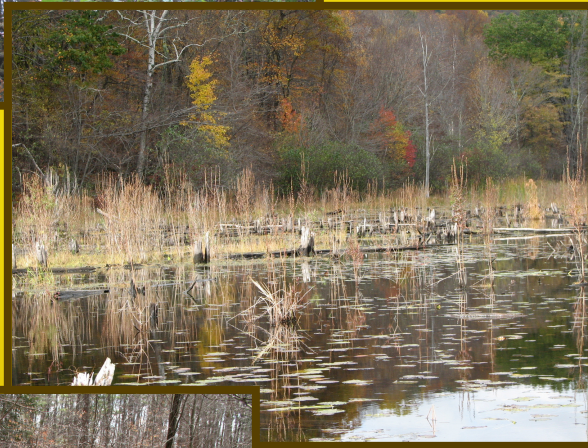
Deep-flooding shrub swamps with organic soil, near gravelly glacial outwash





***Associated Wetland Habitats:***

Vernal (woodland) pools, flooded swamps, beaver ponds, other flooded wetlands



***Drought Refuge:***

Spring-fed natural or artificial ponds, or deep pools in wetlands



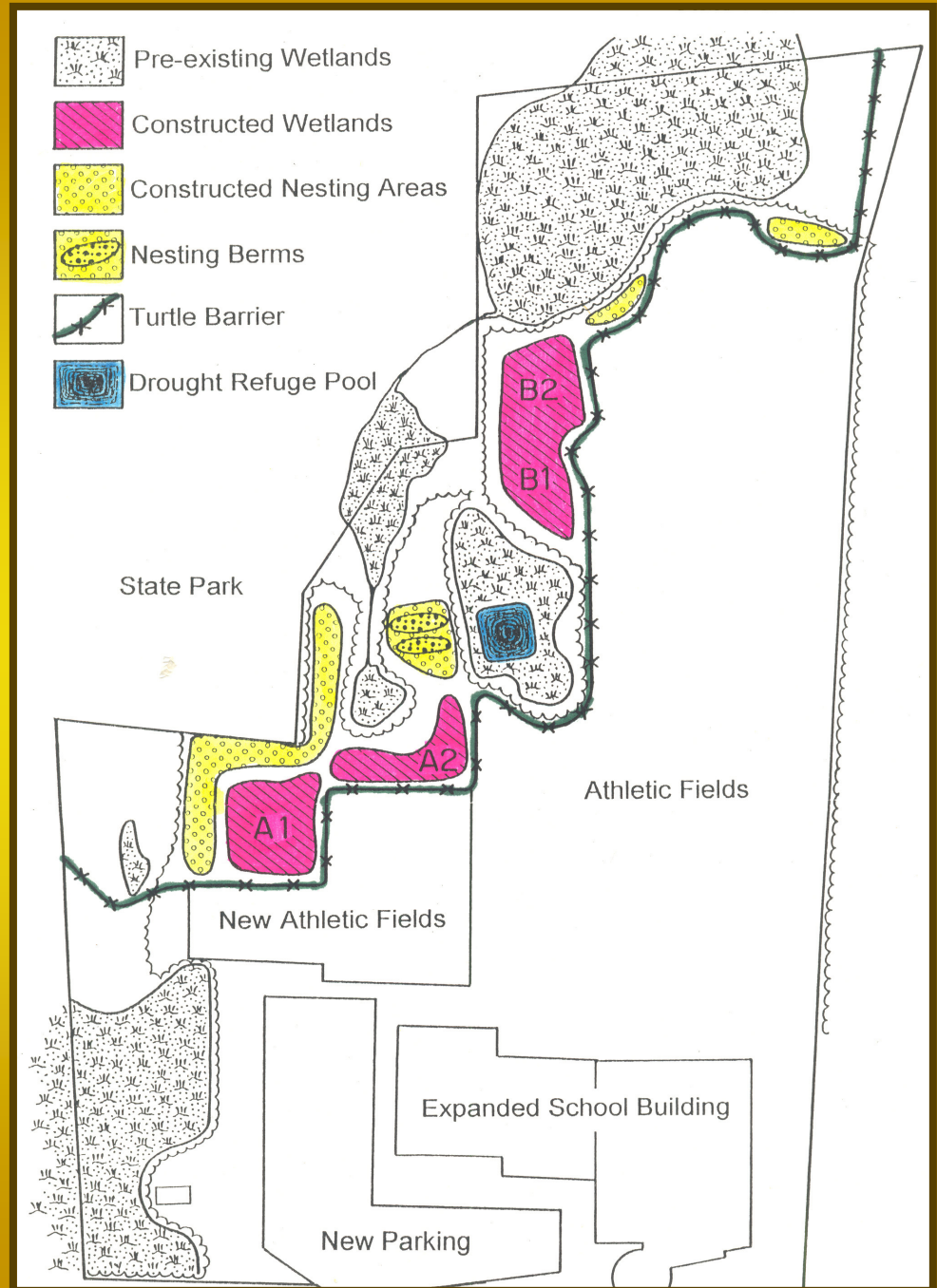
***Estivation Habitat:***

Wetland sediments, upland woods under logs or in shrub thickets, stream pools





# Constructed Habitats, 1996-1997





# Moving Wetland Sods



Spatula for cutting sods



Loading sods on truck



Placing sods in basin



Sods and organic soil

Inspiration for sod technique: Munro Ecological Services



# Methods

- Turtle-centered plots May to September, 2000-2002, in constructed and natural wetlands
- Turtles trapped and radios attached; turtles radiotracked to exact location
- Vegetation, water temperature, and water depth recorded in a 3 x 3 m plot centered on the turtle
- Vegetation surveyed in permanent random 3 x 3 m plots each September





# General Associations

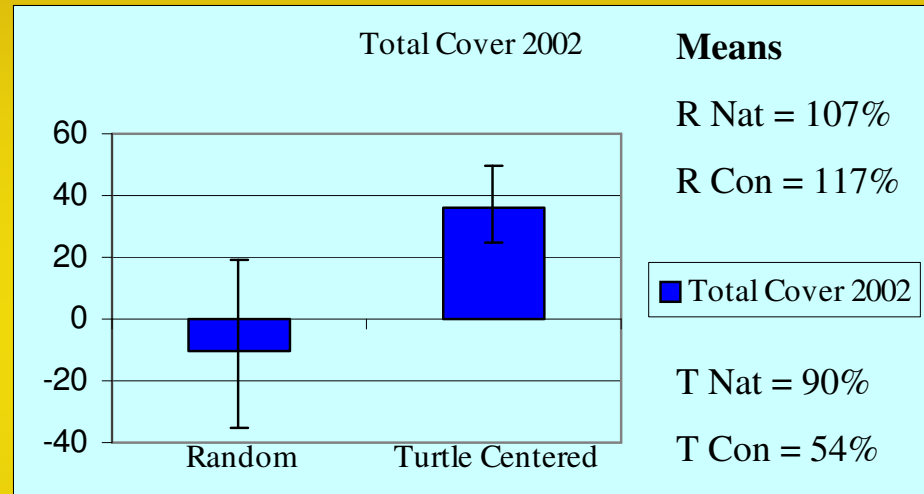
- Shallow water depths  
(mean = 30 cm)
- Abundant vegetation  
(total cover mean = 87%)
- Buttonbush  
(*Cephalanthus occidentalis*)  
(mean = 30%)
- “Edges” between  
emergent vegetation and  
moats





# Natural/Constructed

- Turtles positively associated with high total cover in natural wetlands, but negatively associated with total cover in constructed wetlands

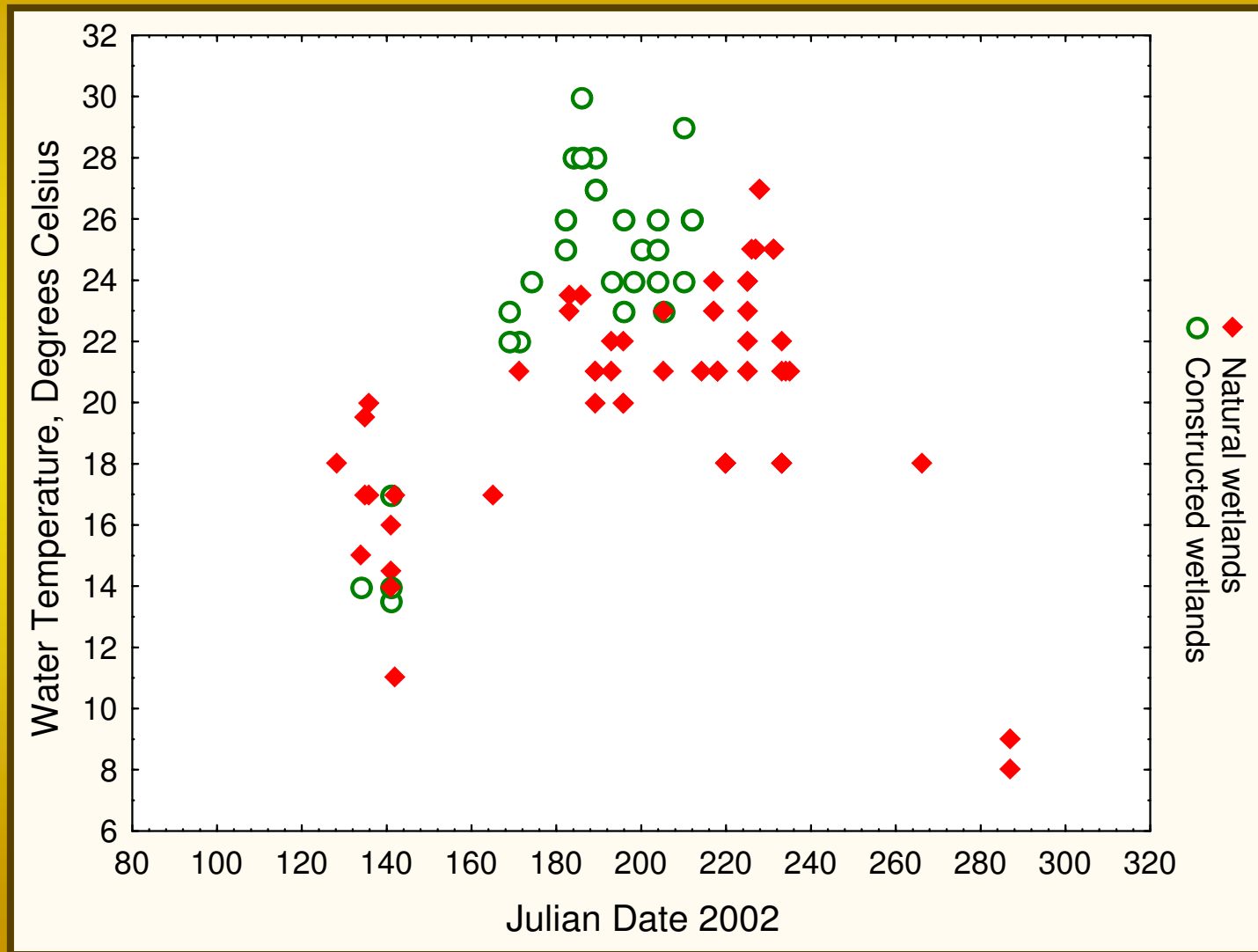


**Confidence intervals on the differences in means between natural and constructed wetlands.**



# Water Temperatures

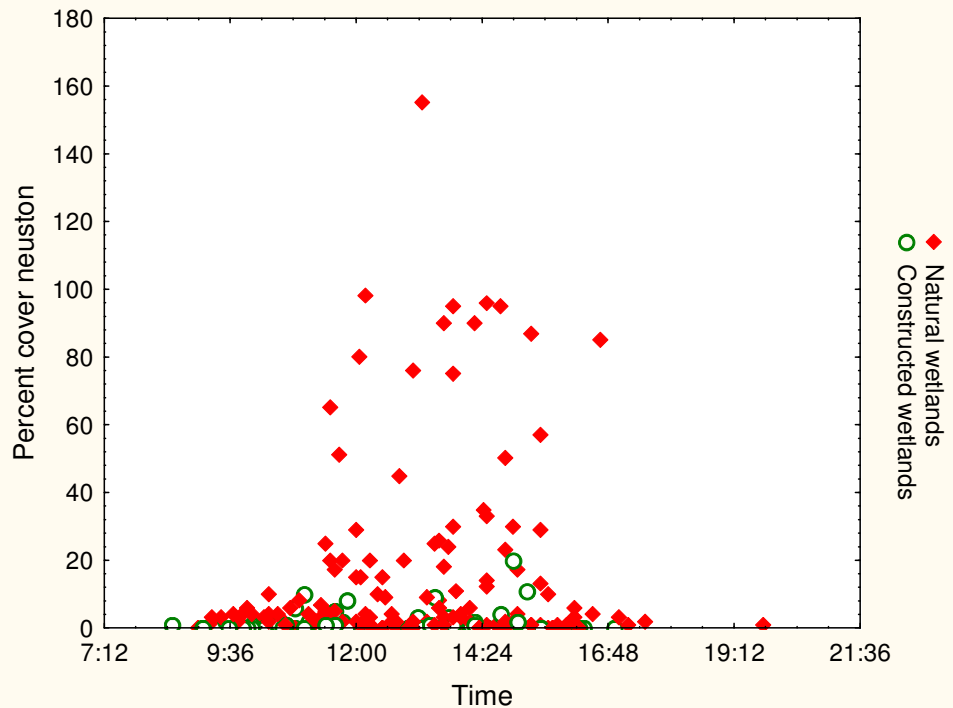
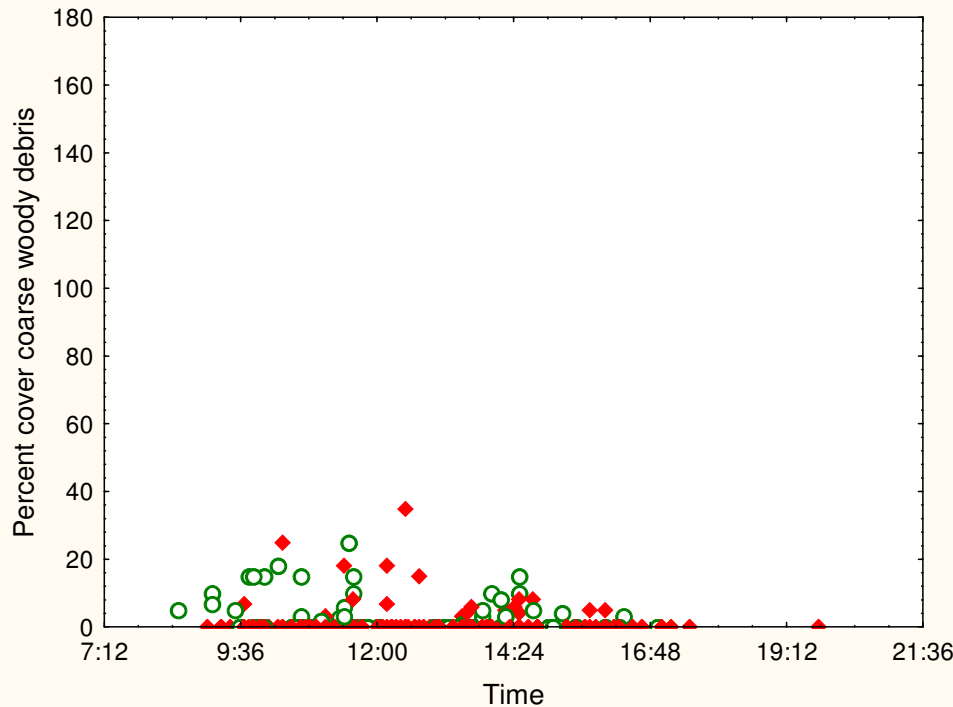
Turtles found in warmer water in constructed wetlands than in natural wetlands (t-value = 3.76; P ☯ 0.001).





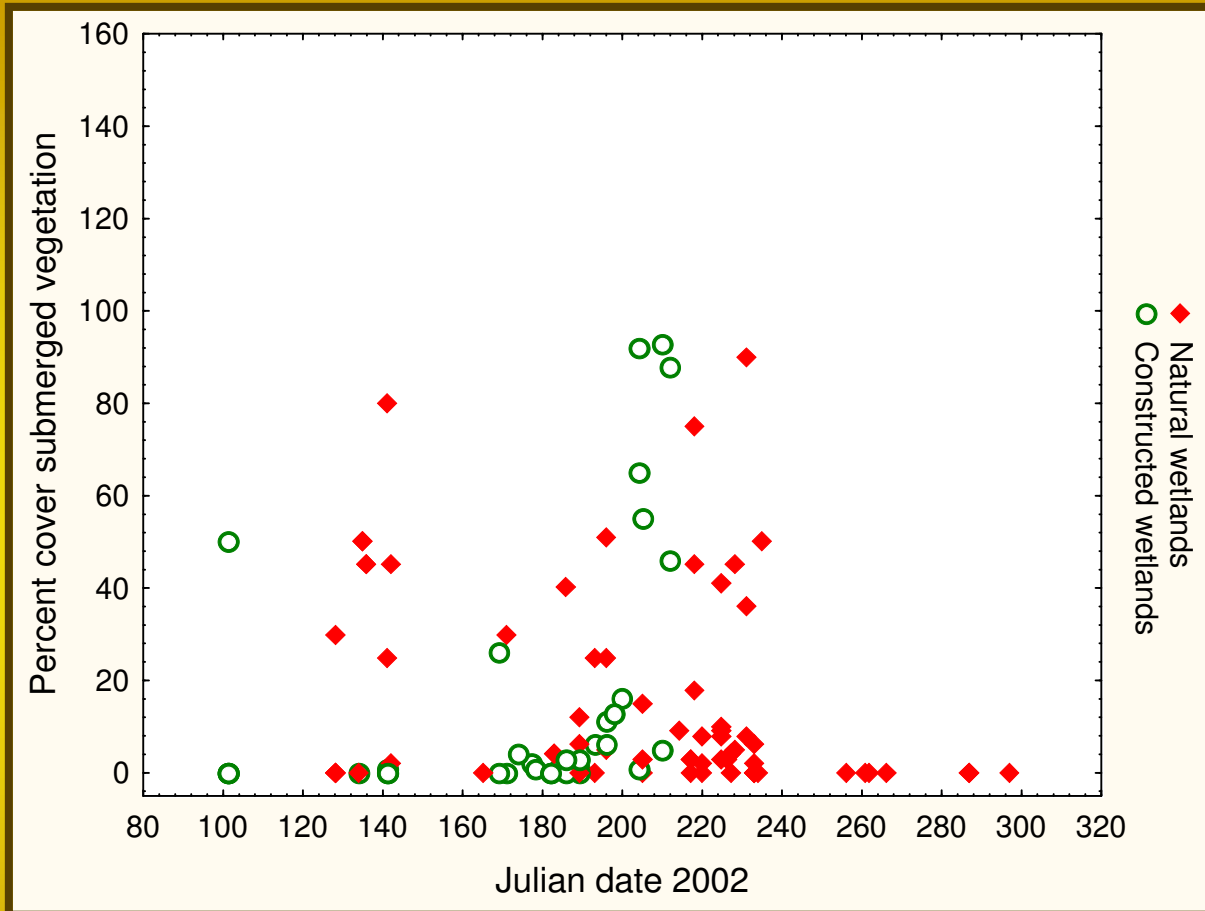
# Basking Patterns

- Logs in the early morning; floating plant materials (algae, duckweeds, etc.) by late morning
- Conserving energy by basking and foraging simultaneously





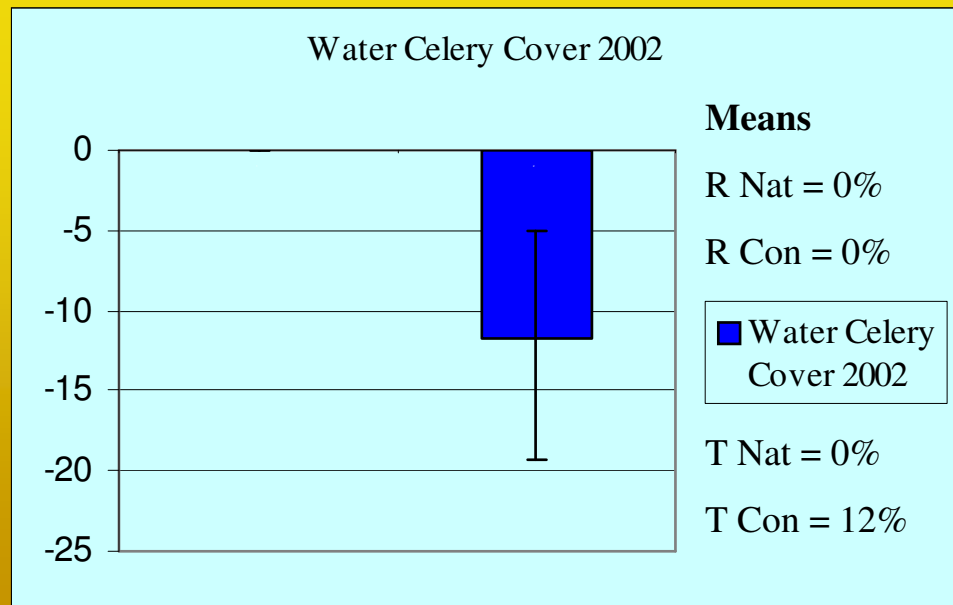
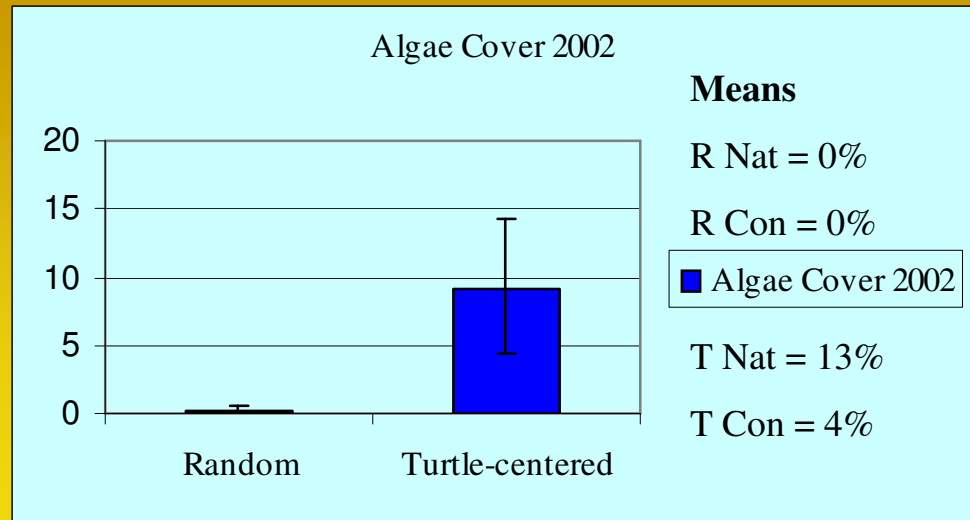
# Submerged Vegetation



Provides: food resources, warmer microclimate, cover from predators.



- Turtles positively associated with filamentous algae in the natural wetlands and with water celery in the constructed wetlands





## Females used the constructed wetlands more often than males.

(2001  $\chi^2 = 15.13$ ,  $df = 1$ ,  $P \leq 0.001$ ; 2002  $\chi^2 = 88.14$ ,  $df = 1$ ,  $P \leq 0.001$ ).

Yr	Wetland type	No. of F observations	No. of M observations	F:M
2000	Both	467	100	4.7:1
2000	Natural	297	68	4.4:1
2000	Constructed	170	32	5.3:1
2001	Both	633	330	1.9:1
2001	Natural	479	285	1.7:1
2001	Constructed	154	45	3.4:1
2002	Both	727	524	1.4:1
2002	Natural	490	472	1.0:1
2002	Constructed	237	52	4.6:1
Total turtle observations natural (2000-2002)				2091
Total turtle observations constructed (2000-2002)				690



# Conclusions

- Constructed wetlands provided basking and foraging habitat in the spring and early summer, and staging or rehydrating areas for nesting females.
- Basking habitat should include shallow water areas with submerged and floating vegetation, interspersed with emergent vegetation and basking substrates such as logs.
- Some basking habitat should be near nesting areas.





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