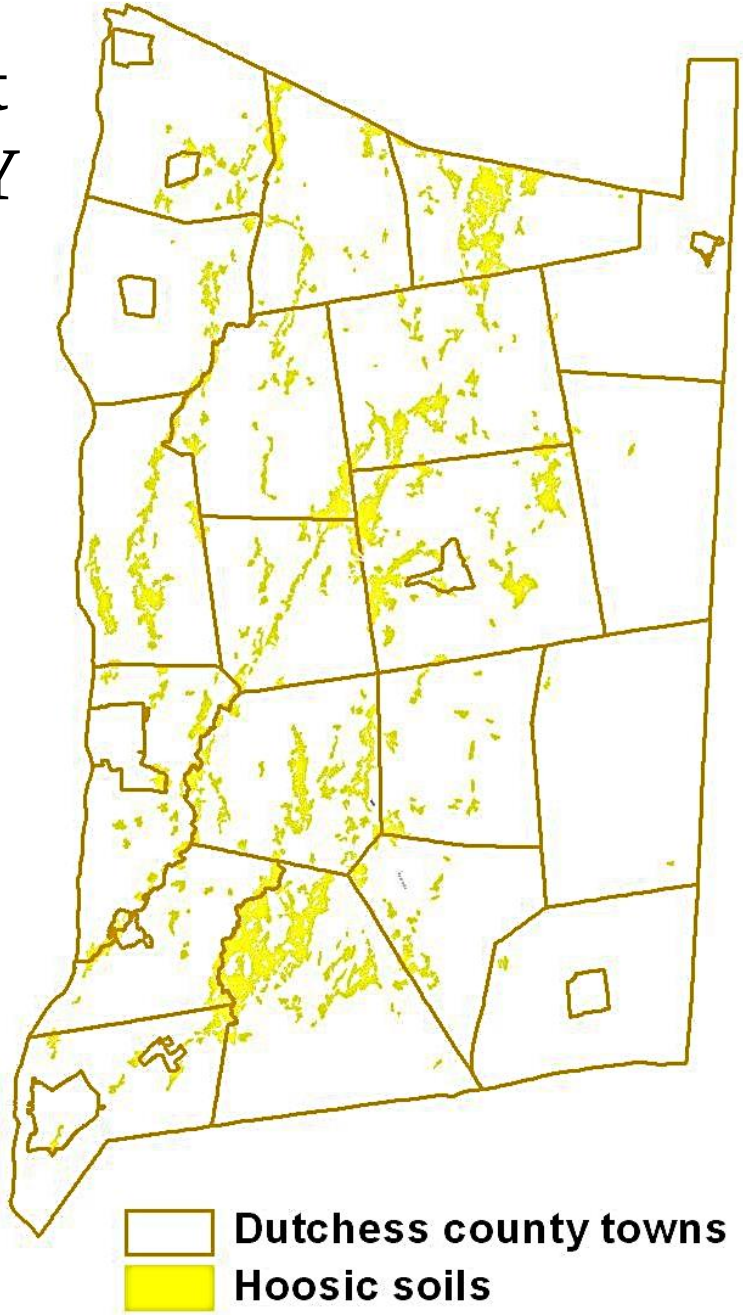
Two Decade Study of Blanding's Turtle and Habitat Response to Wetland and Upland Restoration

Erik Kiviat

Analyses in progress

Hudsonia

An isolated, genetically distinct population in Dutchess Co., NY associated with gravelly glacial outwash soils



Blanding's Turtle Habitat 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

Juvenile Wetland Habitat:

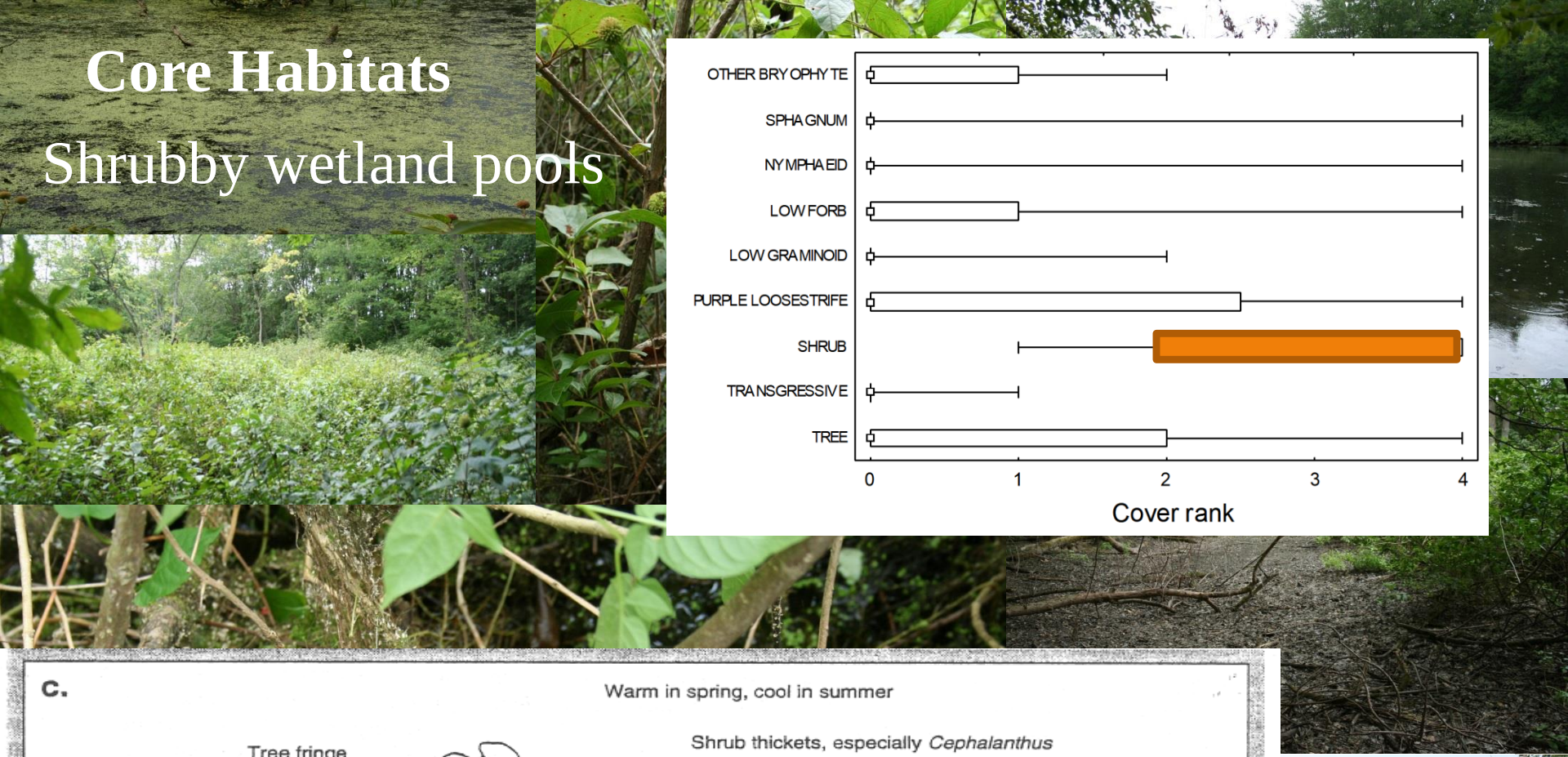
Shallow-flooding, densely-vegetated wetlands ?

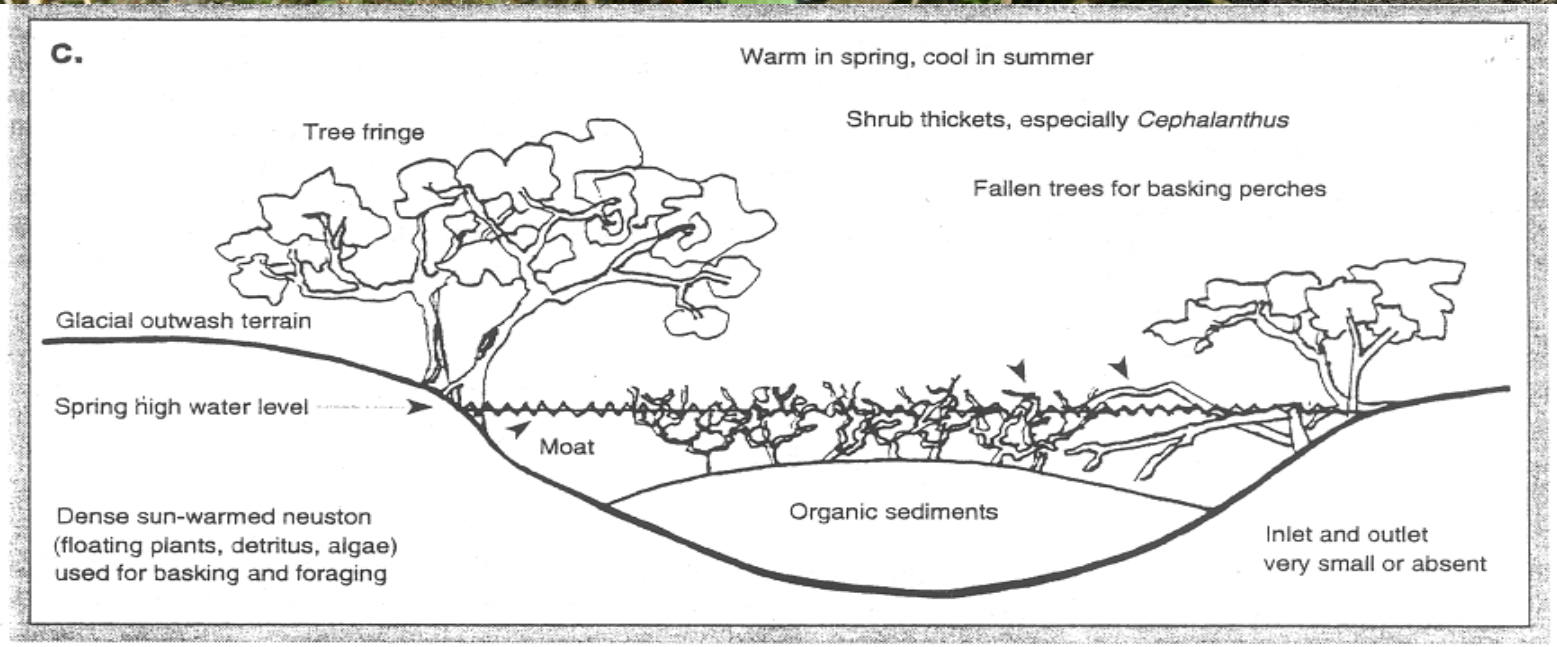
Connecting Corridors

Kiviat 1997

Core Habitats

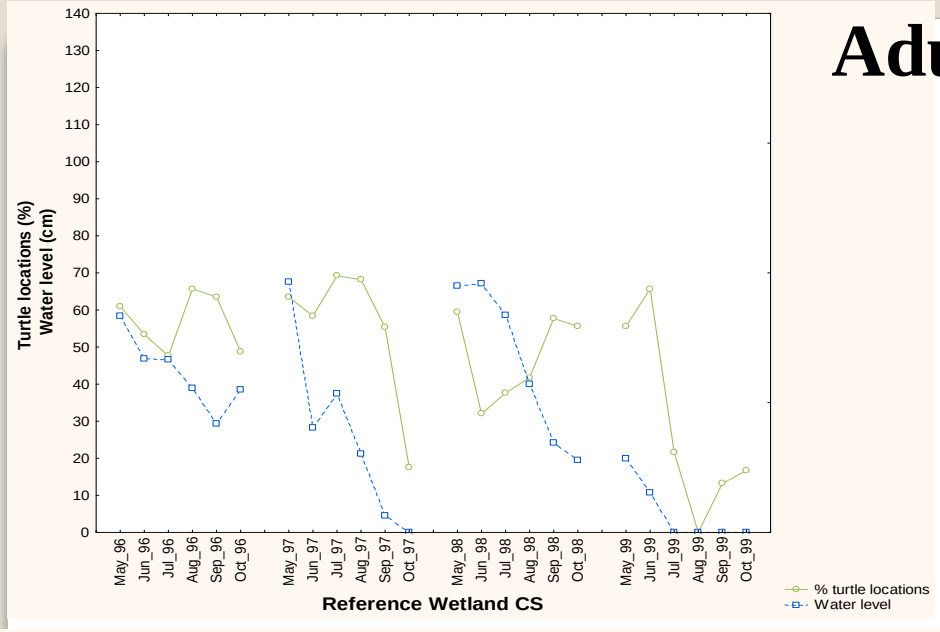
Shrubby wetland pools

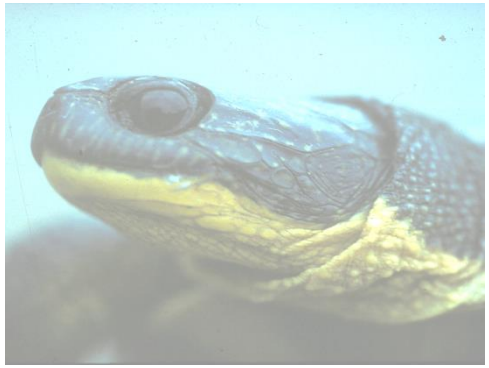


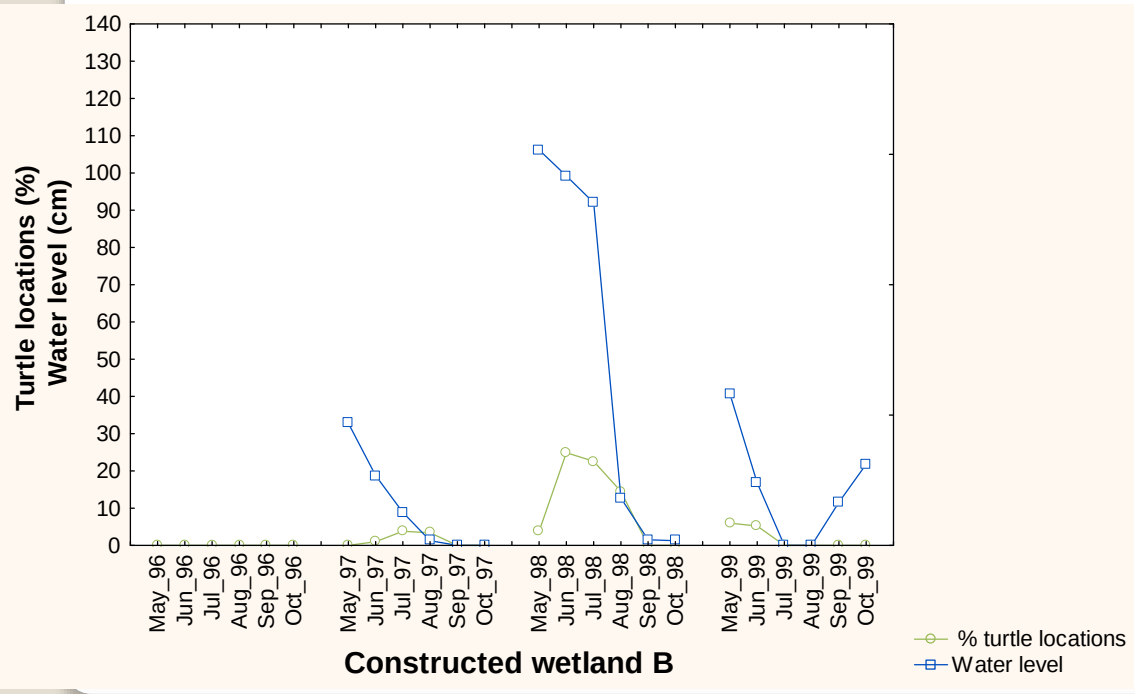


Kiviat 1997

Adults move among wetlands to track water levels







Habitat Creation Project

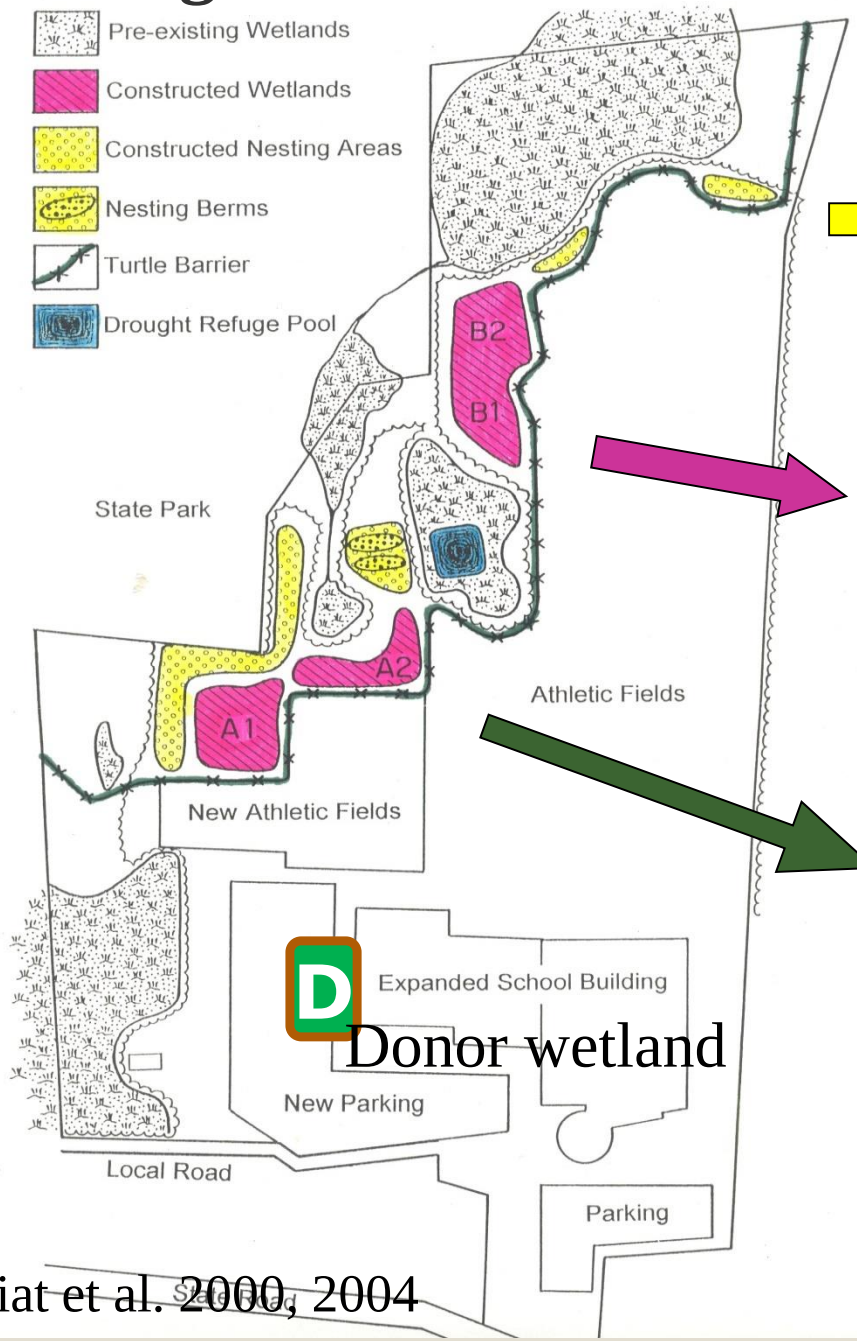
Few wetlands have been created or restored specifically for rare animal species

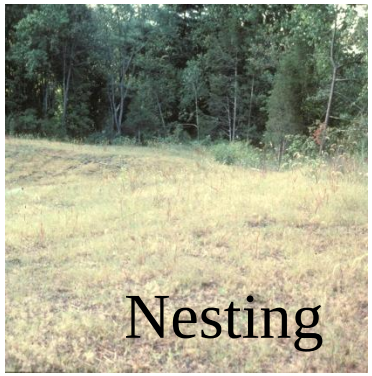
Pre-existing (Reference) wetlands in white

Donor wetland (sod source)

Before construction

Mitigation for wetland loss due to school expansion





Kiviat et al. 2000, 2004

Moving wetland sods:

1.2 x 2.4 m x 38 cm


Spatula for cutting sods


Harvested sod


Loading sods on truck

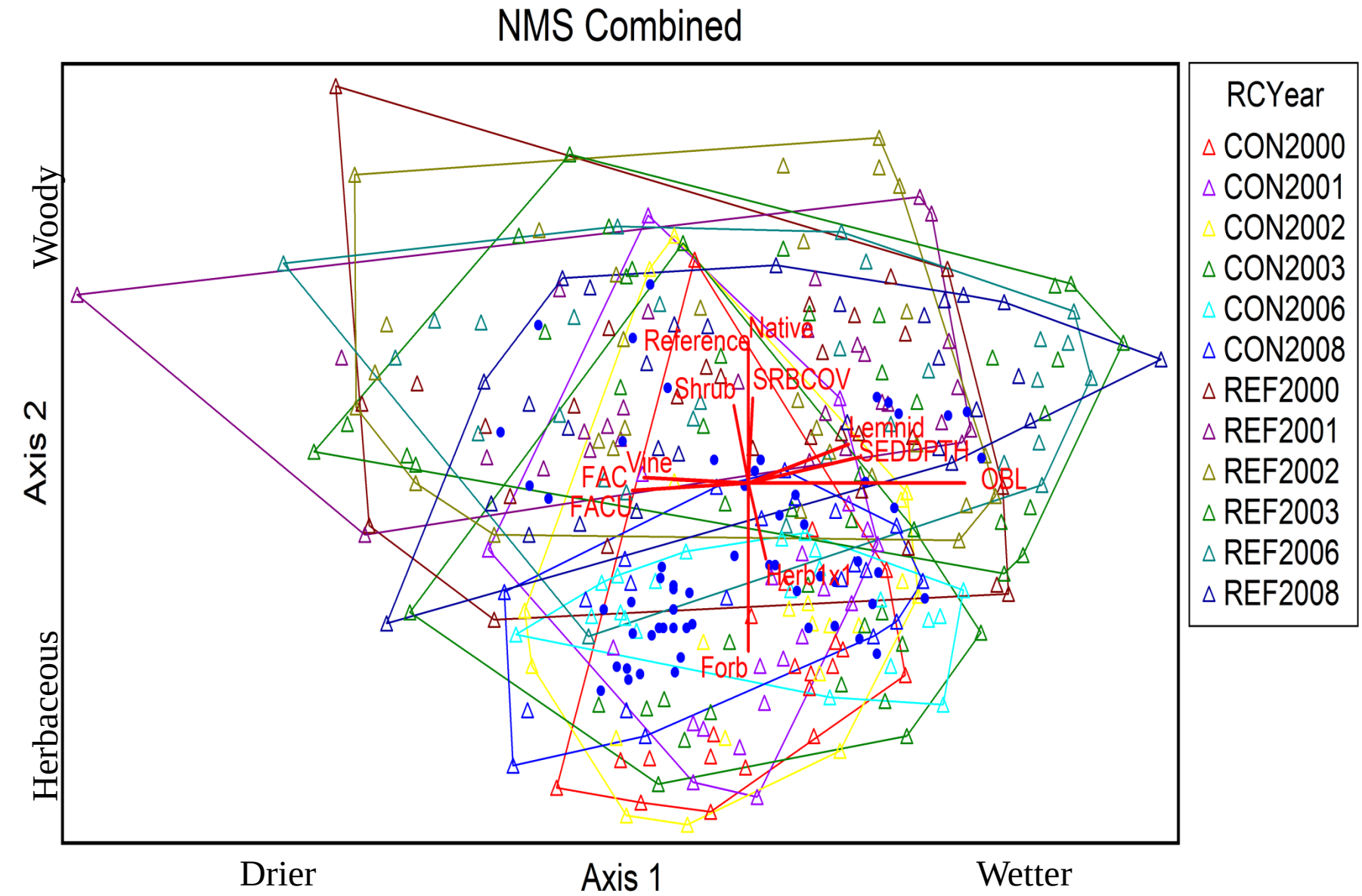
Concept for sod technique: Munro Ecological Services

Placing sods in basin

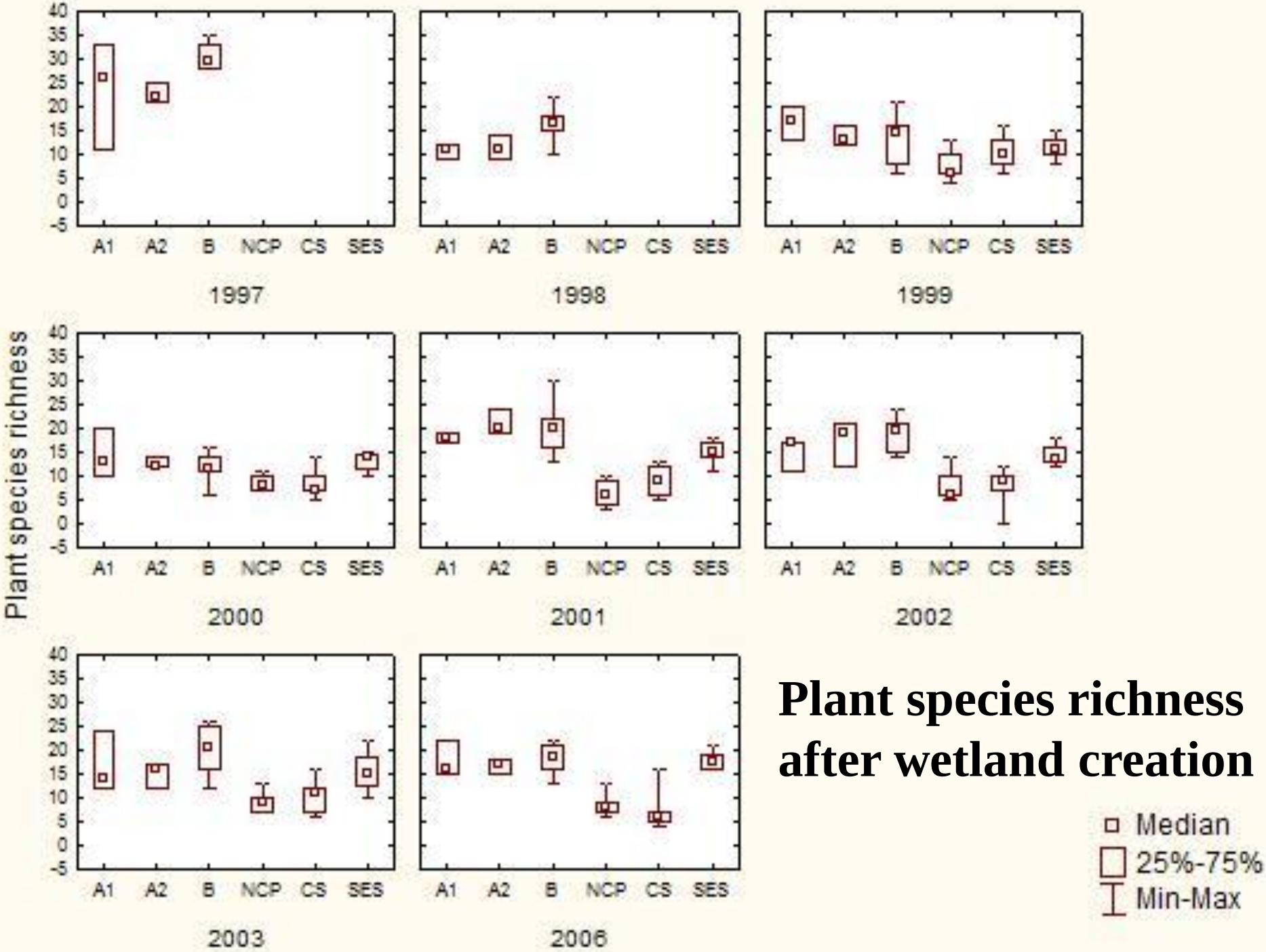
Sods and organic soil

Created wetland after one summer

Society for Ecological Restoration Award, 1997

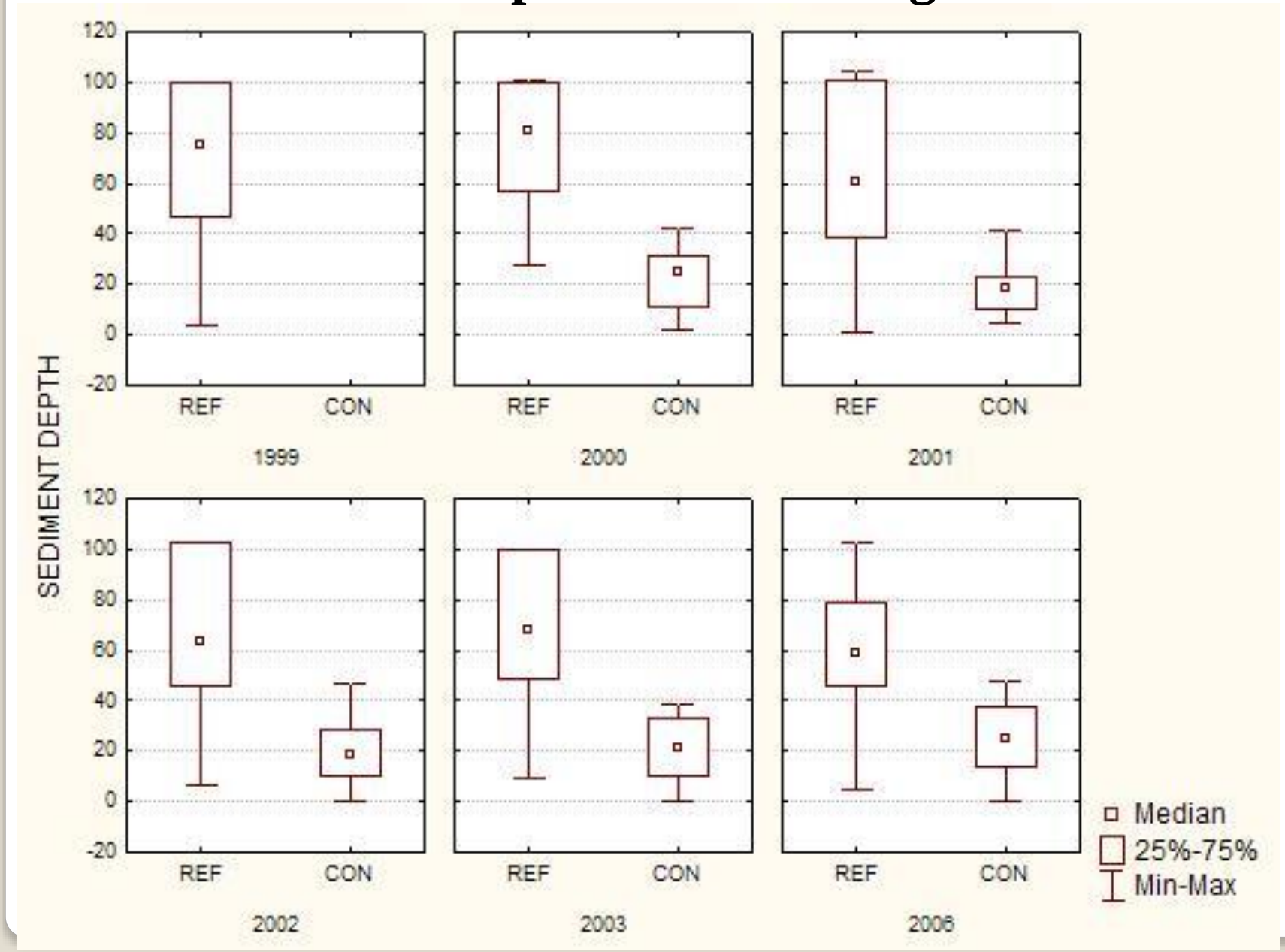


Multivariate analysis of vegetation shows little temporal change (however, tree cover increased in C wetlands)

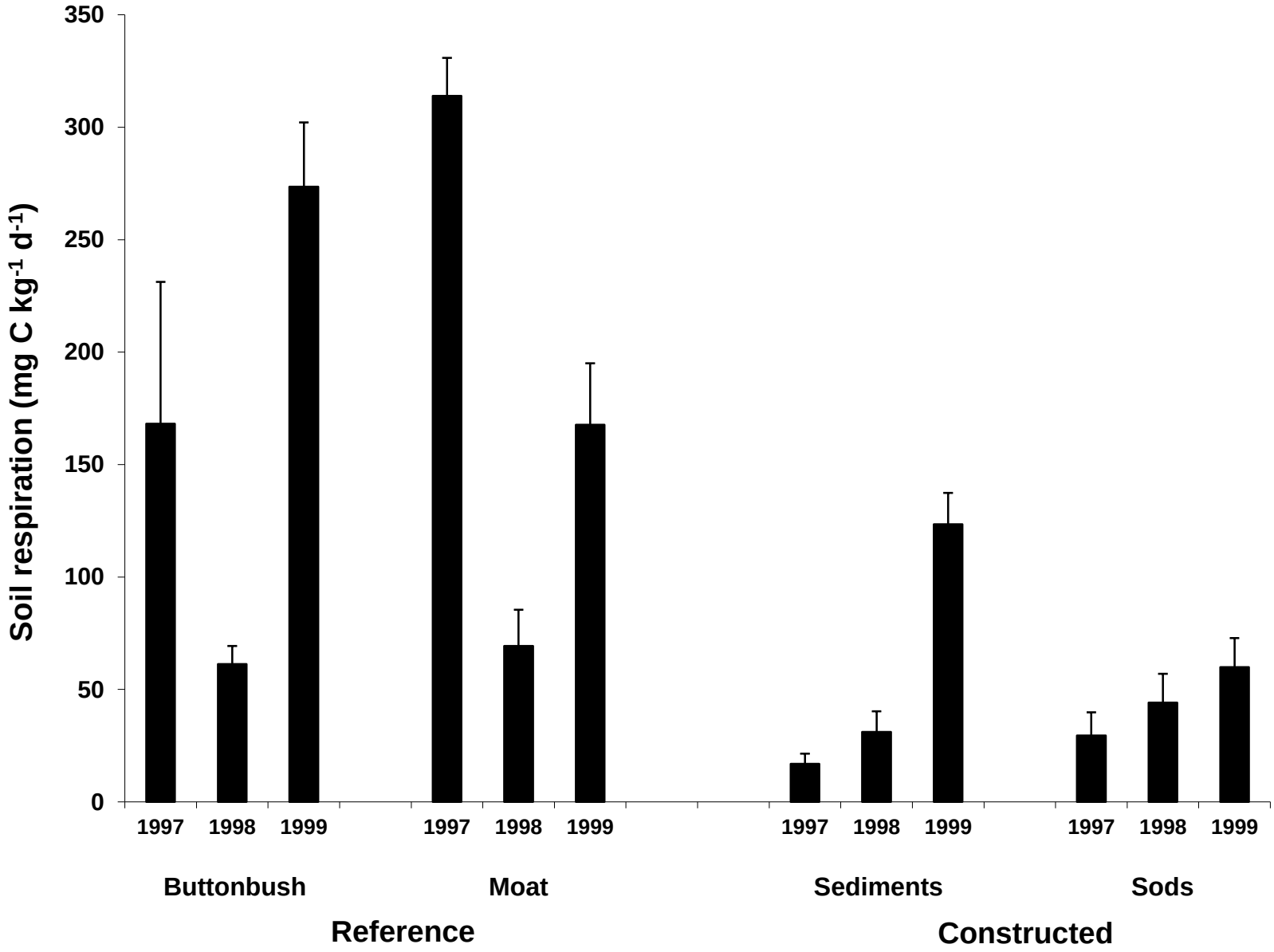


Plant species richness after wetland creation

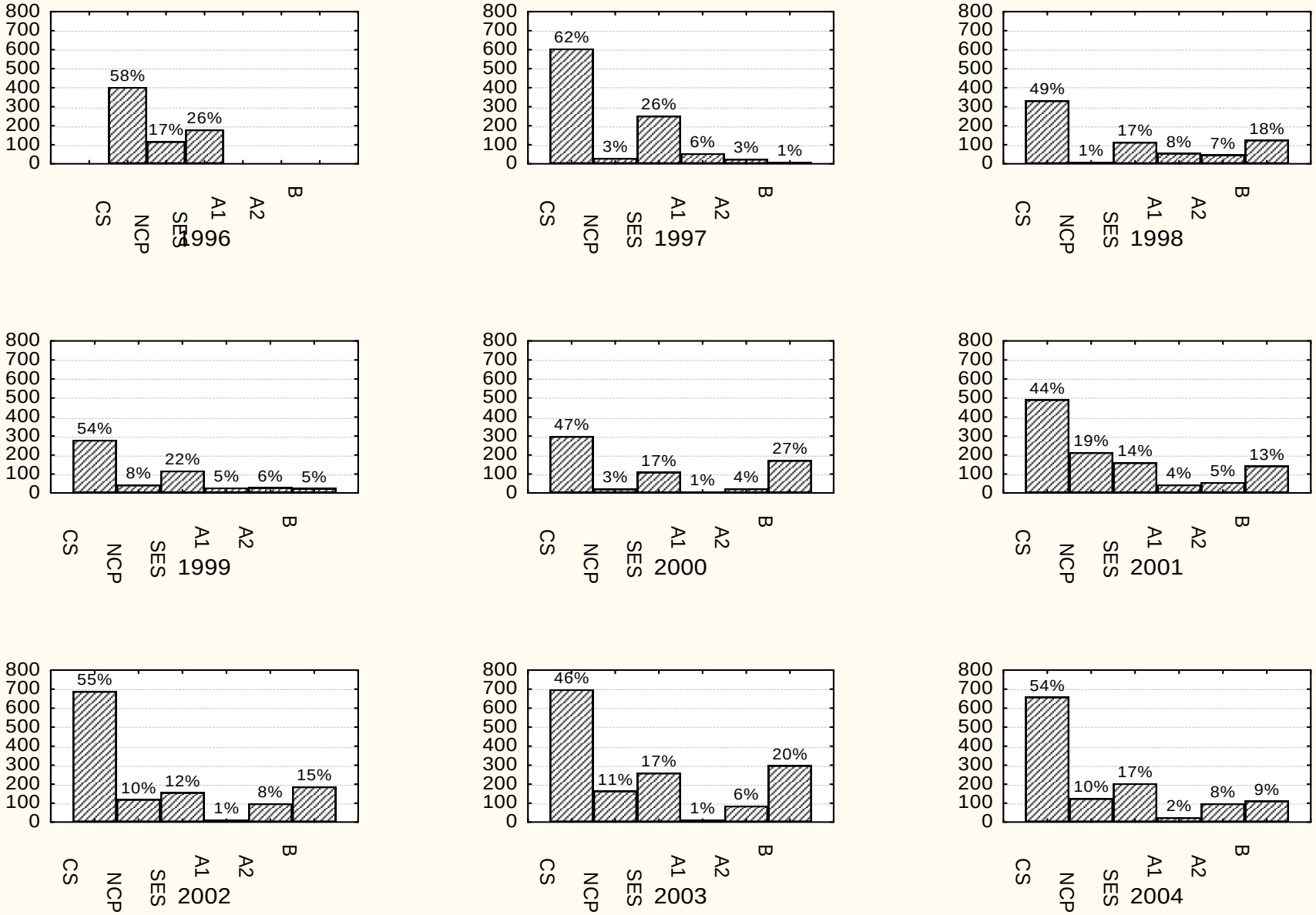
Sediment depth has not changed



Soil respiration increased during first 3 yr in C wetlands



Unpubl. data, P. Groffman, Cary Institute of Ecosystem Studies

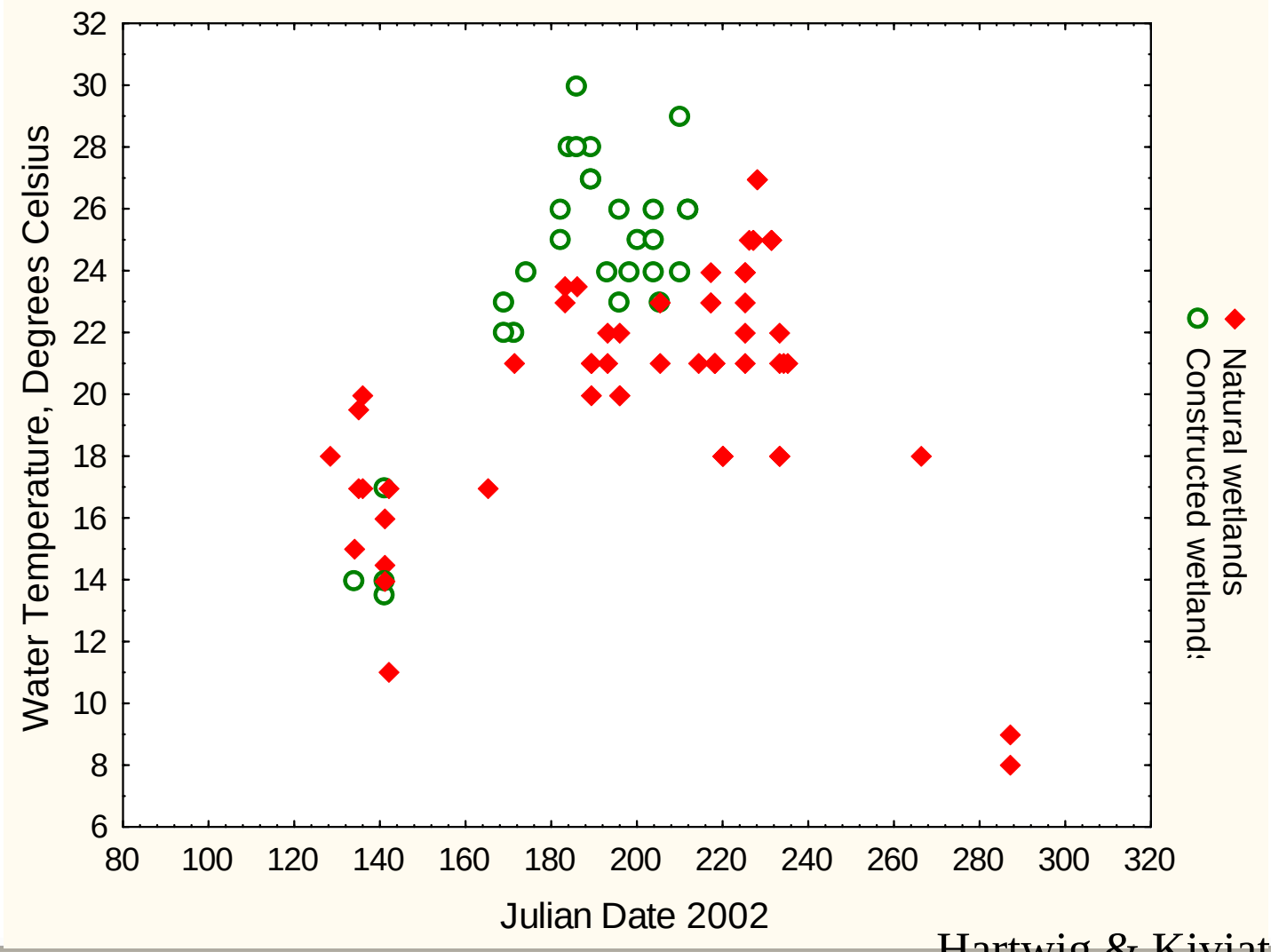


Proportions of telemetry locations in R vs. C wetlands, May-Sep

CS, NCP, SES = Reference wetlands (left), A1, A2, B = Constructed wetlands (right)

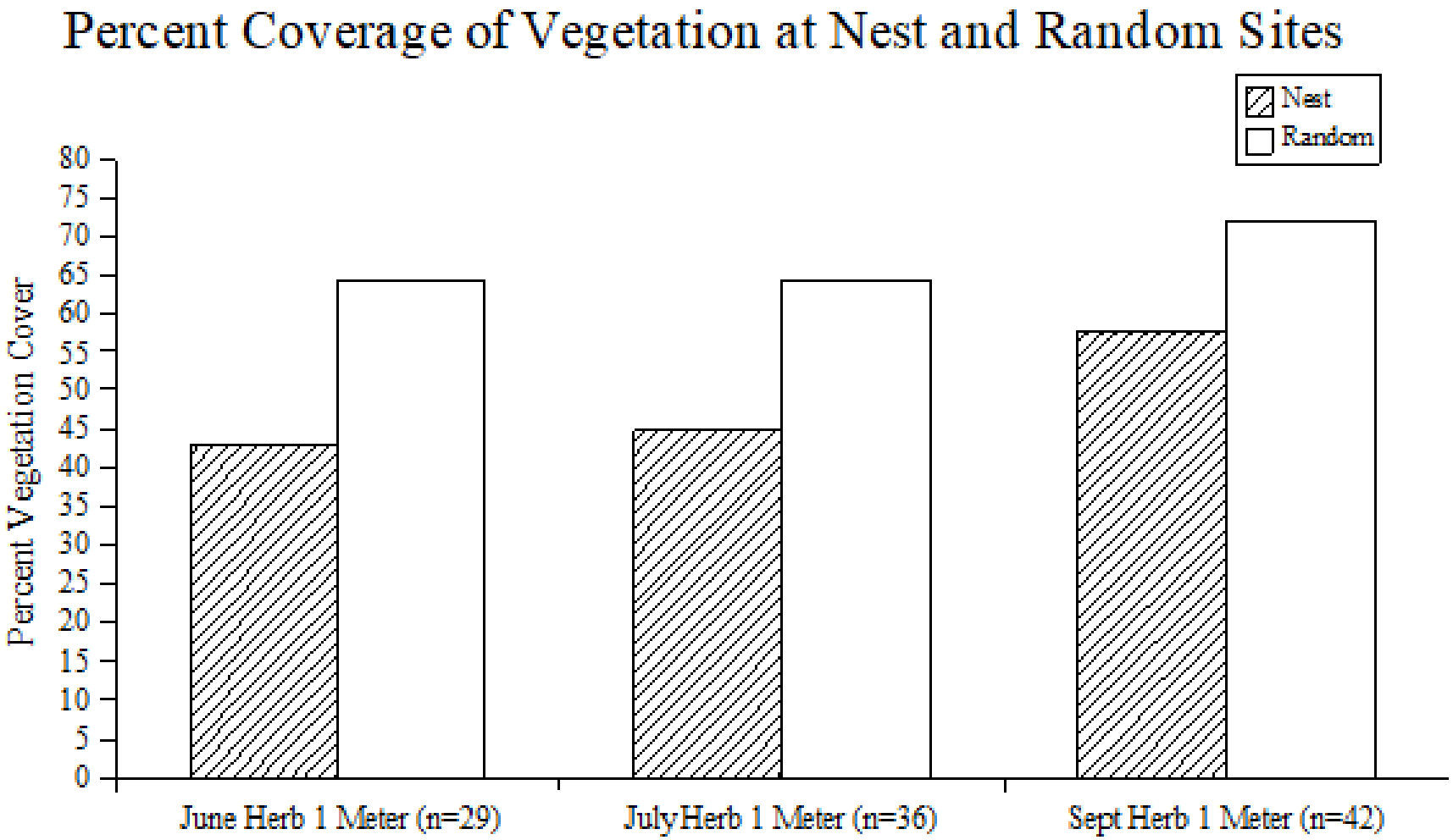
Constructed wetlands collectively 10-33% of telemetry locations

Turtles were found in warmer water in constructed wetlands than in natural wetlands



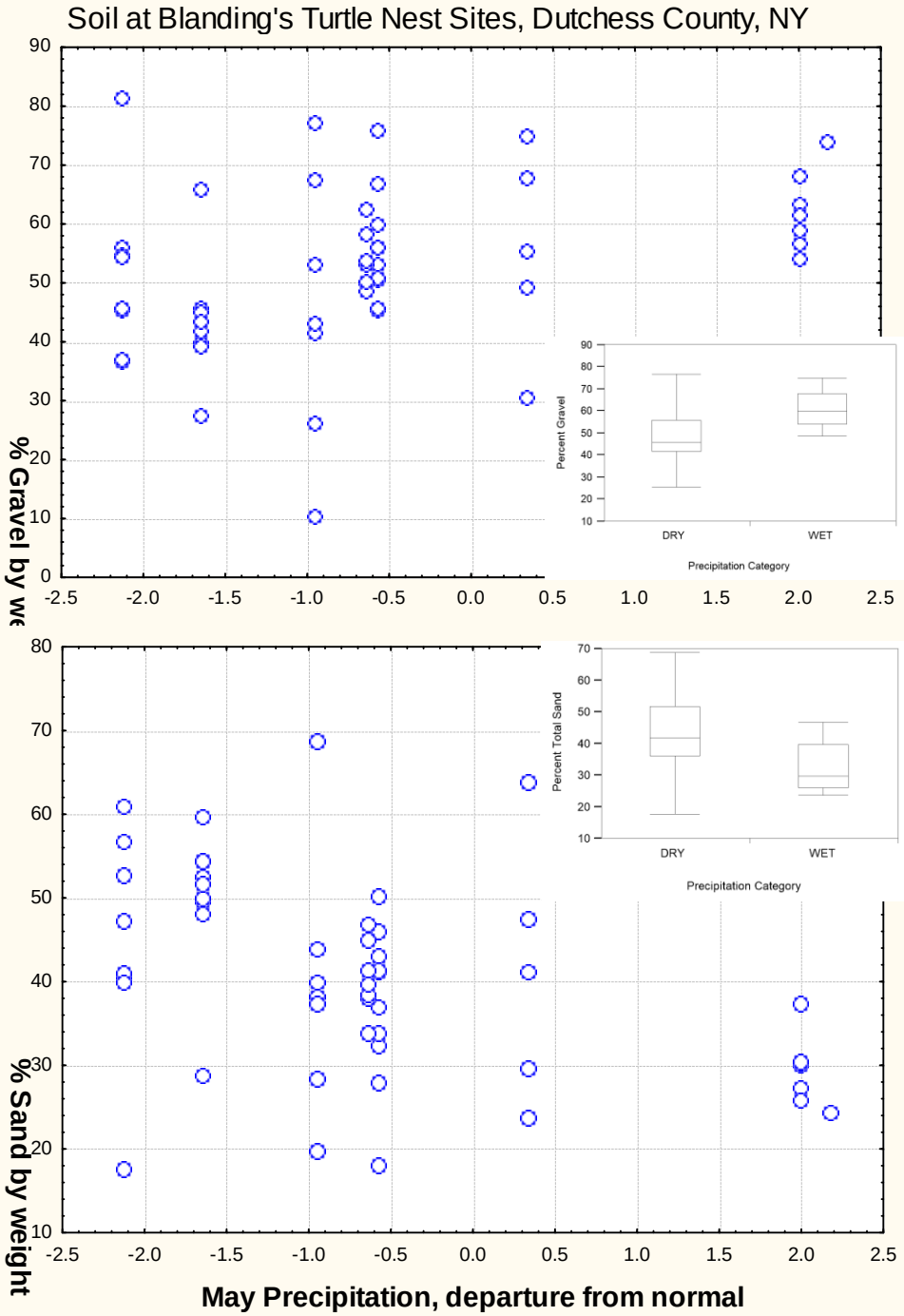
Hartwig & Kiviat 2007

Females select nest sites by vegetation cover



Bock 2007 master's thesis

Females select nest sites by soil texture

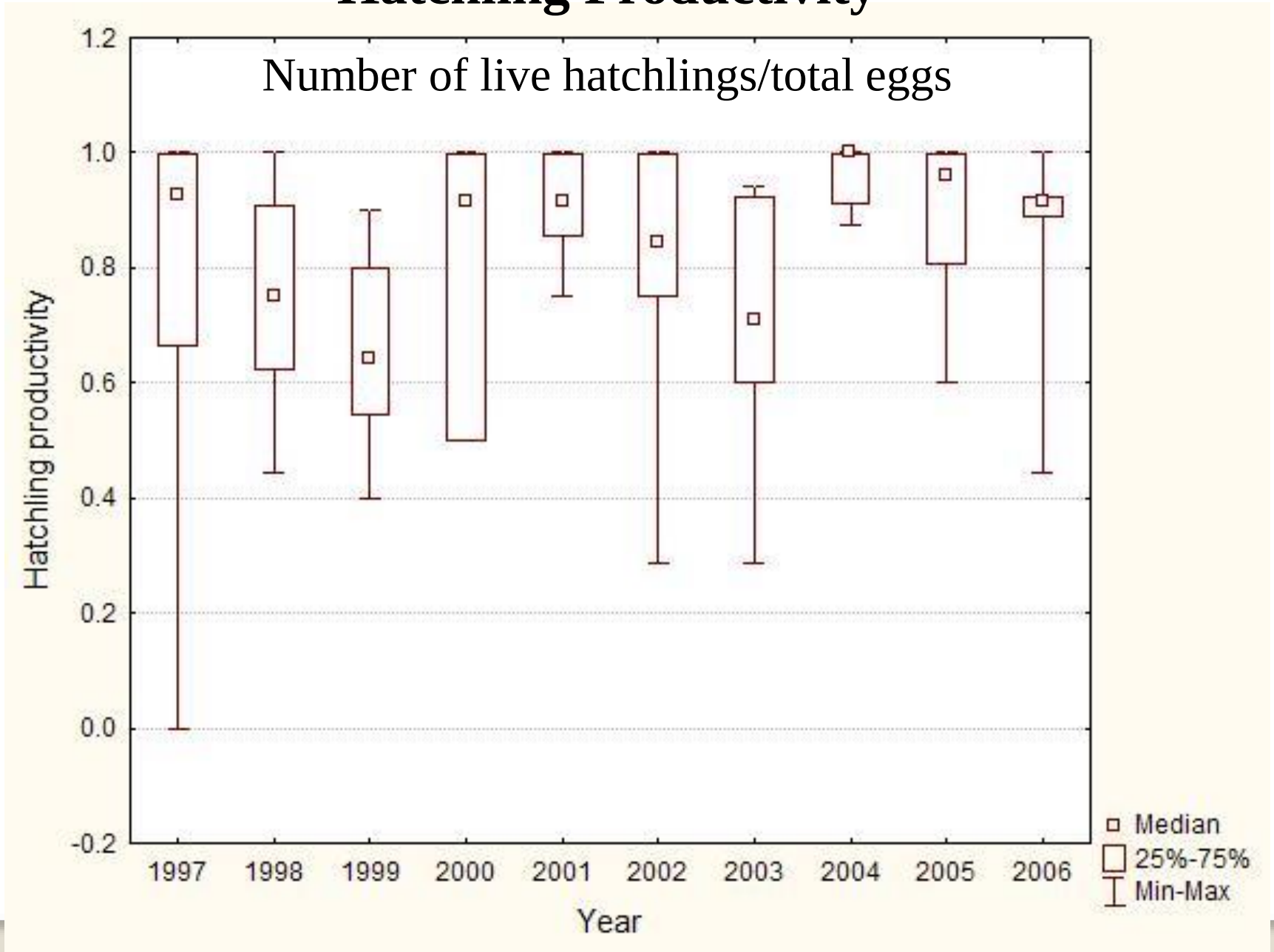


Nesting habitat is simple to create, must be managed to avoid overgrowth by dense tall vegetation

Females selected nest sites on tilled plots in preference to mowed or hand-weeded plots

Dowling et al. 2010

Hatchling Productivity



Constructed wetland

Constructed wetlands provide late spring and summer habitat for adult Blanding's turtles

Habitat replacement is expensive and risky: wetland development is slow and some functions may not be successfully created

Wetland creation can supplement habitat in special situations

Constructed habitats need perpetual maintenance

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