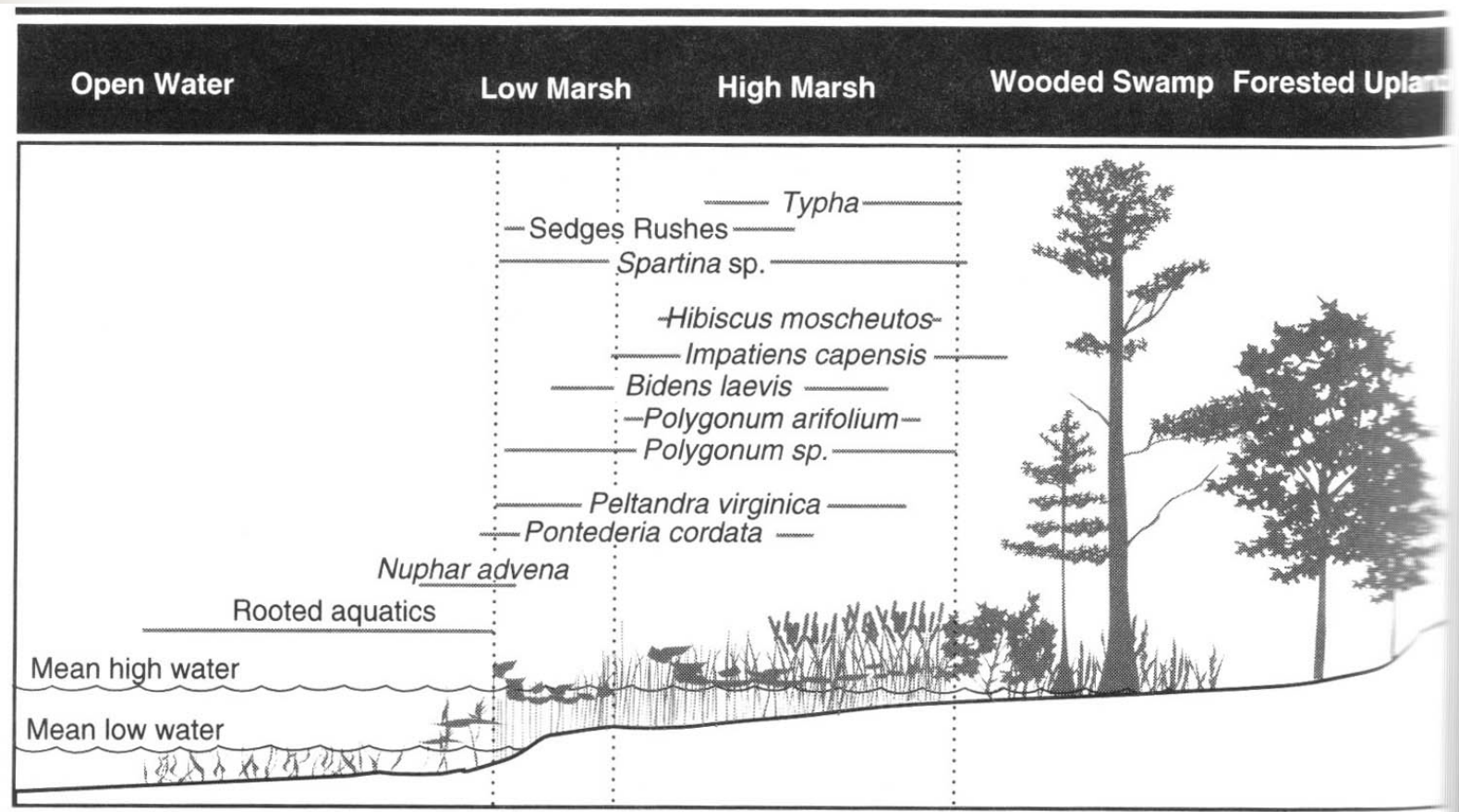


Wetlands as ecosystems  
or  
How do we put this all together?

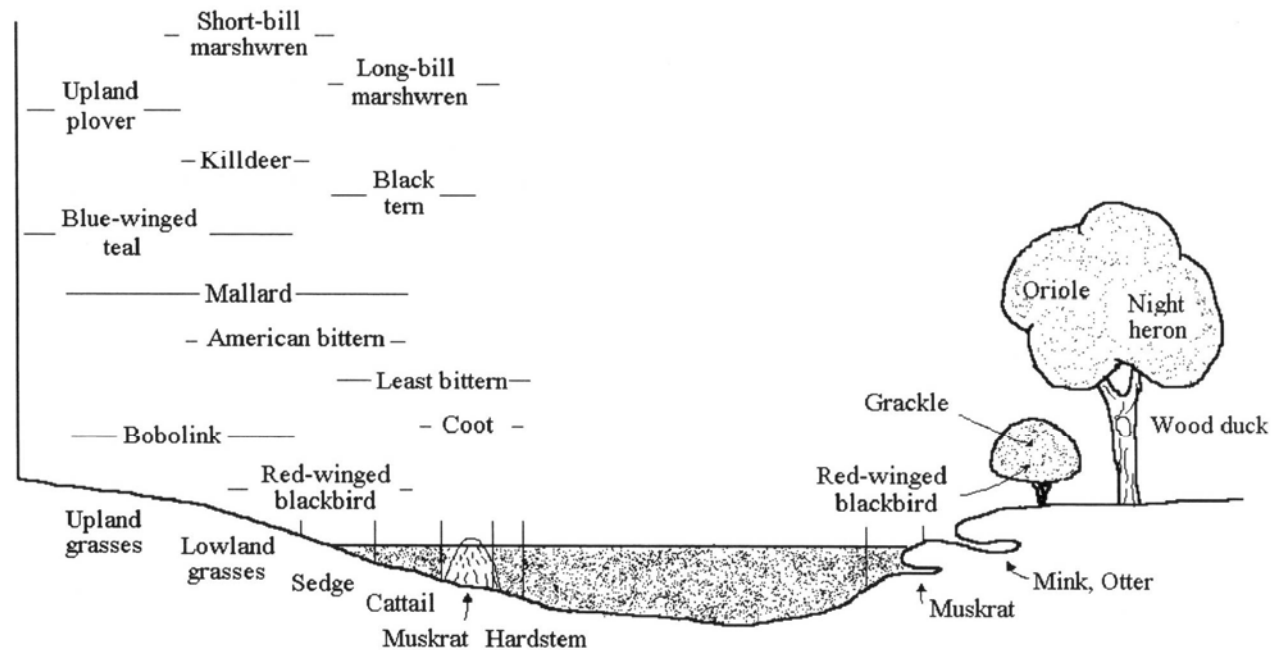
Zonation



# Plant zonation



## Zonation patterns in birds & mammals?



Weller 1994



## Possible causes of zonation patterns:

- Succession

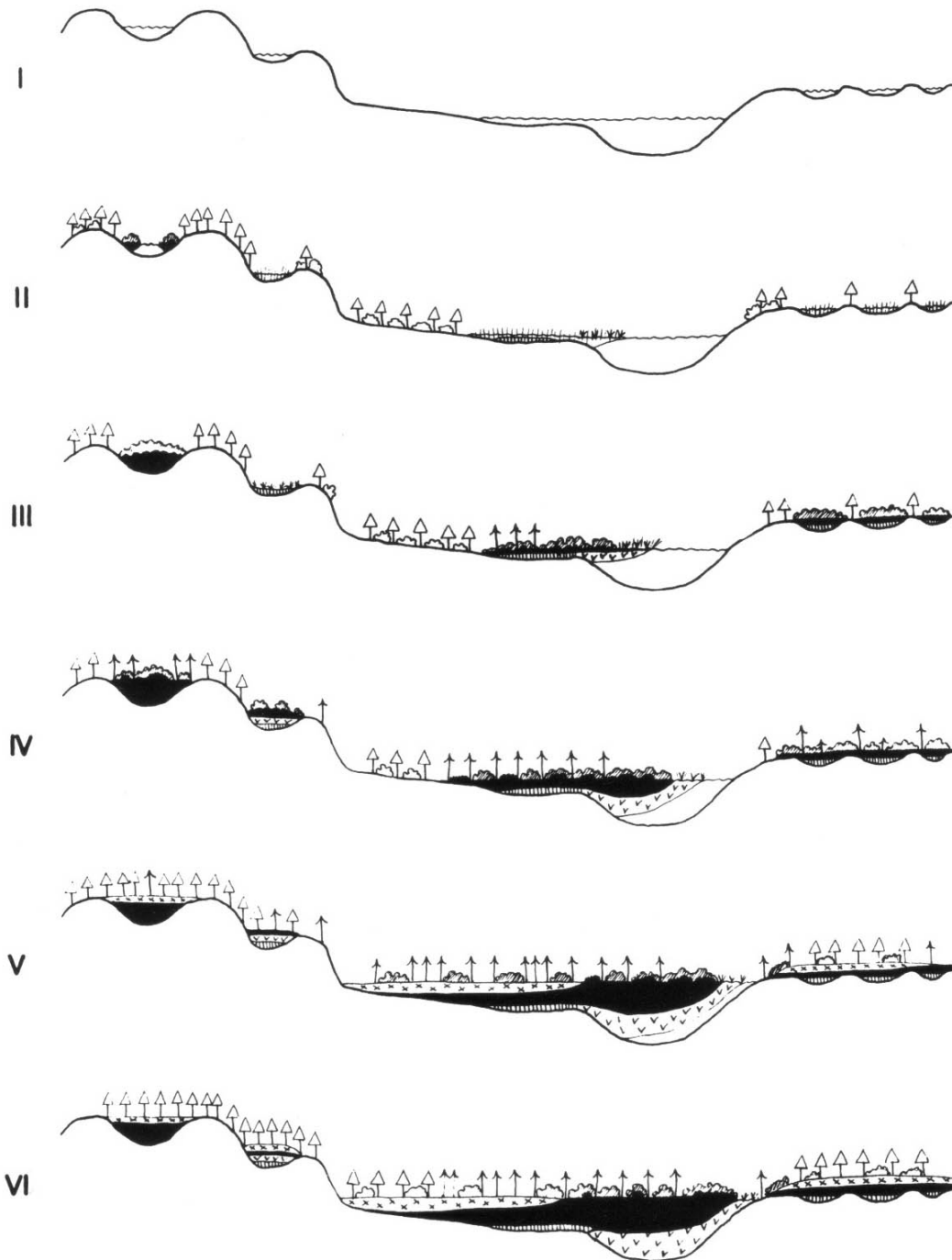
Zones = temporal trends; wetland filling in and becoming land

- Physical factors

Individual adaptations to stresses, resources

- Biological interactions

Competition, predation, etc.

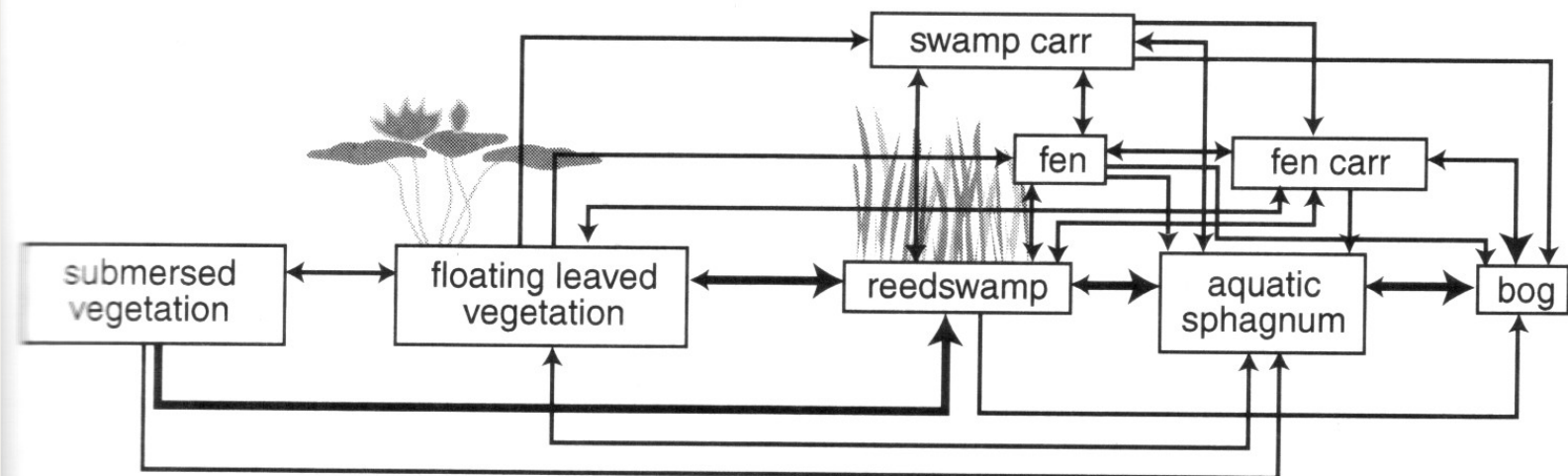


## Succession Peatland example

Autogenic or  
allogenic?

Dansereau & Segadas-Vianna 1952





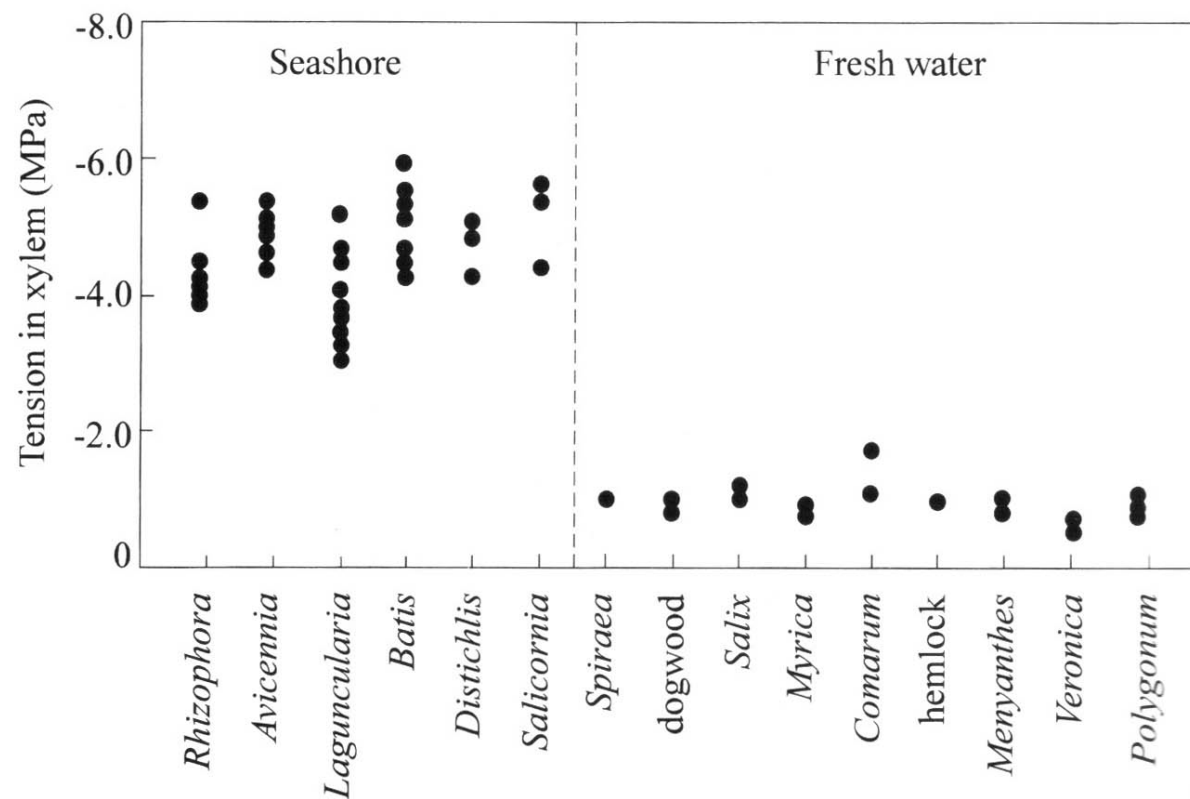
Walker 1970

## Physical Factors

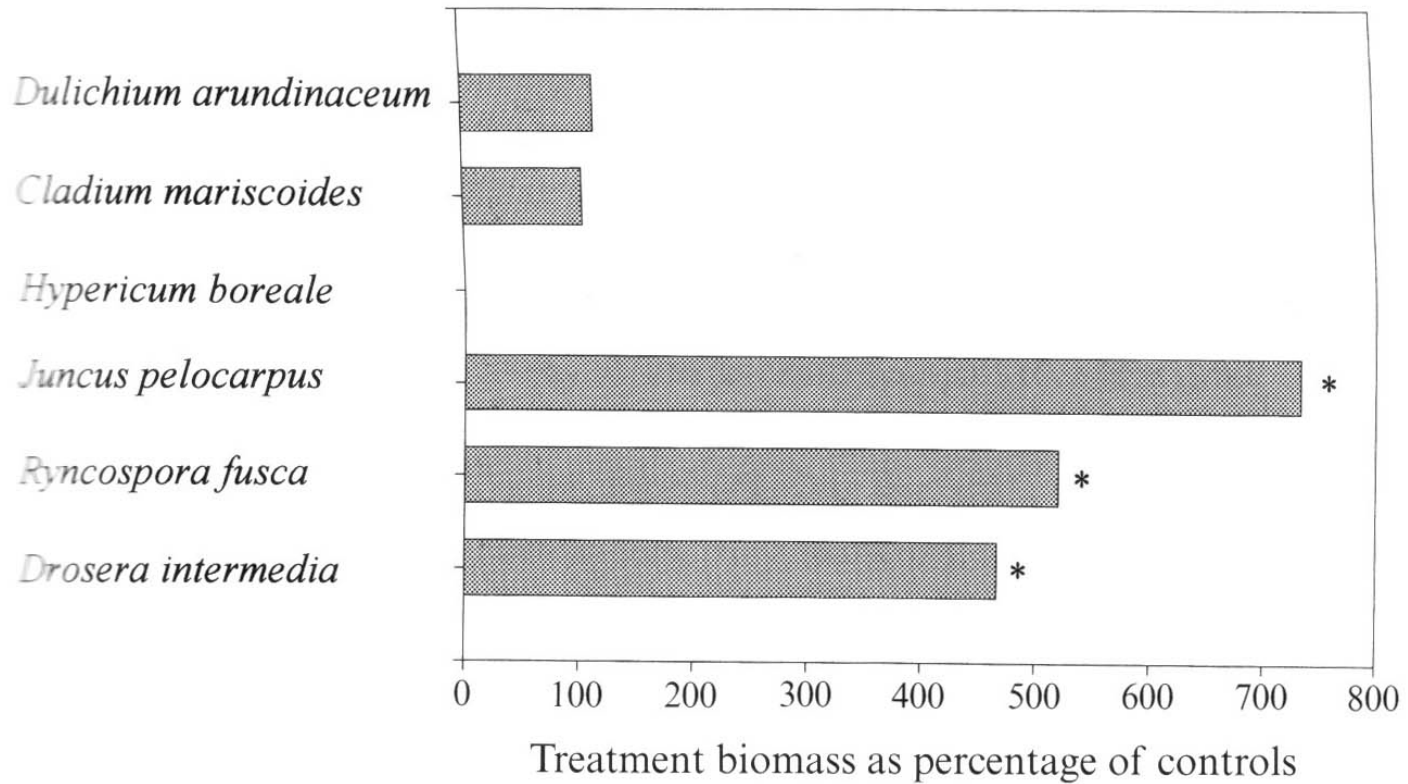
Anoxic sediments  
Salinity

Substrate type  
Nutrient availability

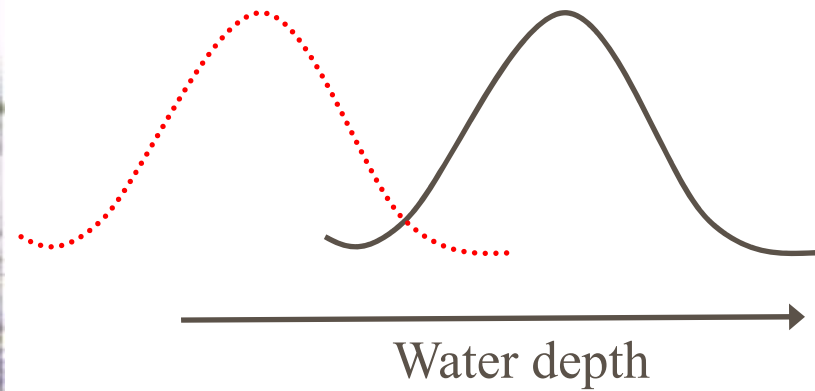
Wave stress  
Flooding



## Biological Interactions







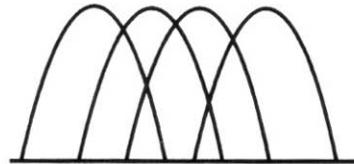
Niche:

Fundamental niche (physiological response curve)

Realized niche (ecological response curve, resource partitioning)

Observed distribution  
under natural conditions

Resource partitioning

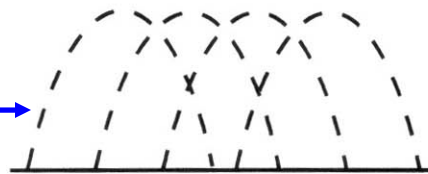


Distributions in non-  
competitive environment

Release experiment  
(mechanism)

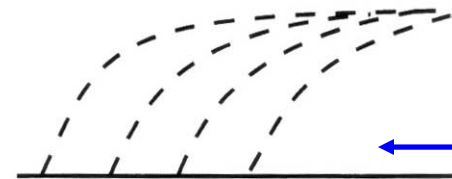
Niche differentiation

Biotic  
interactions  
minor



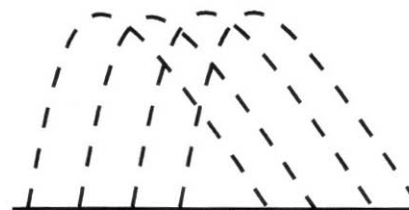
Competitive hierarchy

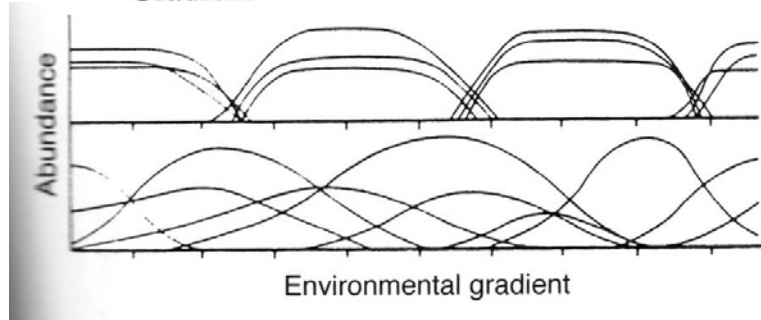
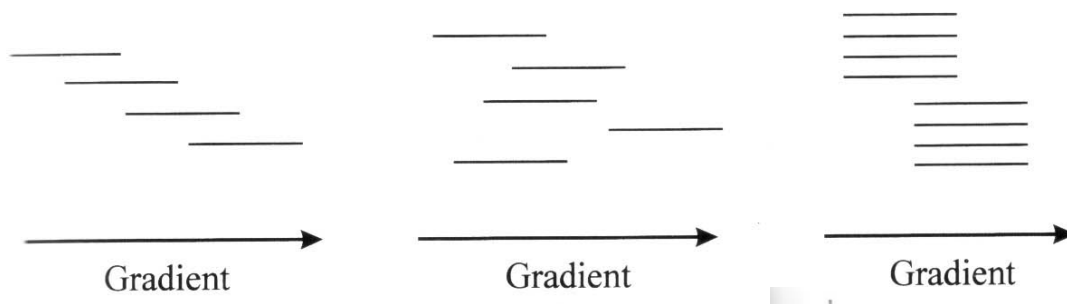
Strong  
biotic  
interactions



One-sided competition

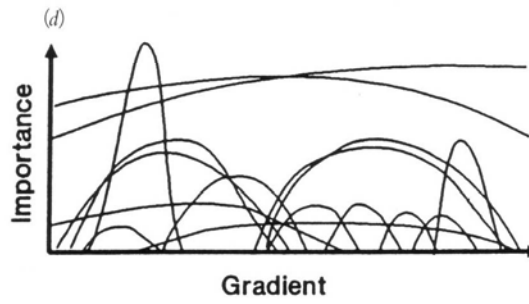
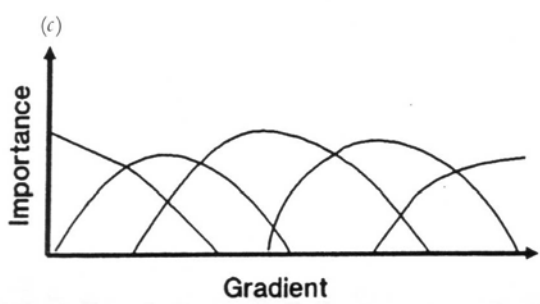
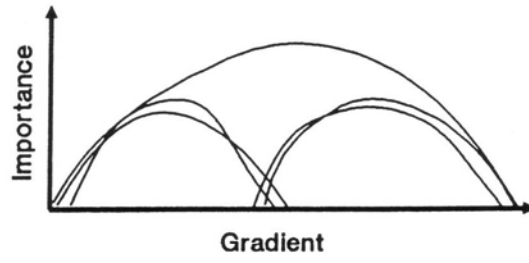
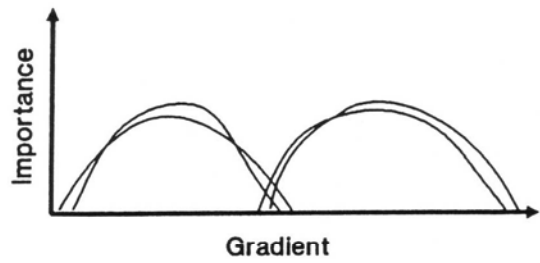
Strong biotic  
interactions






Community unit hypothesis  
(Clementsian)

Individualistic hypothesis  
(Gleasonian)



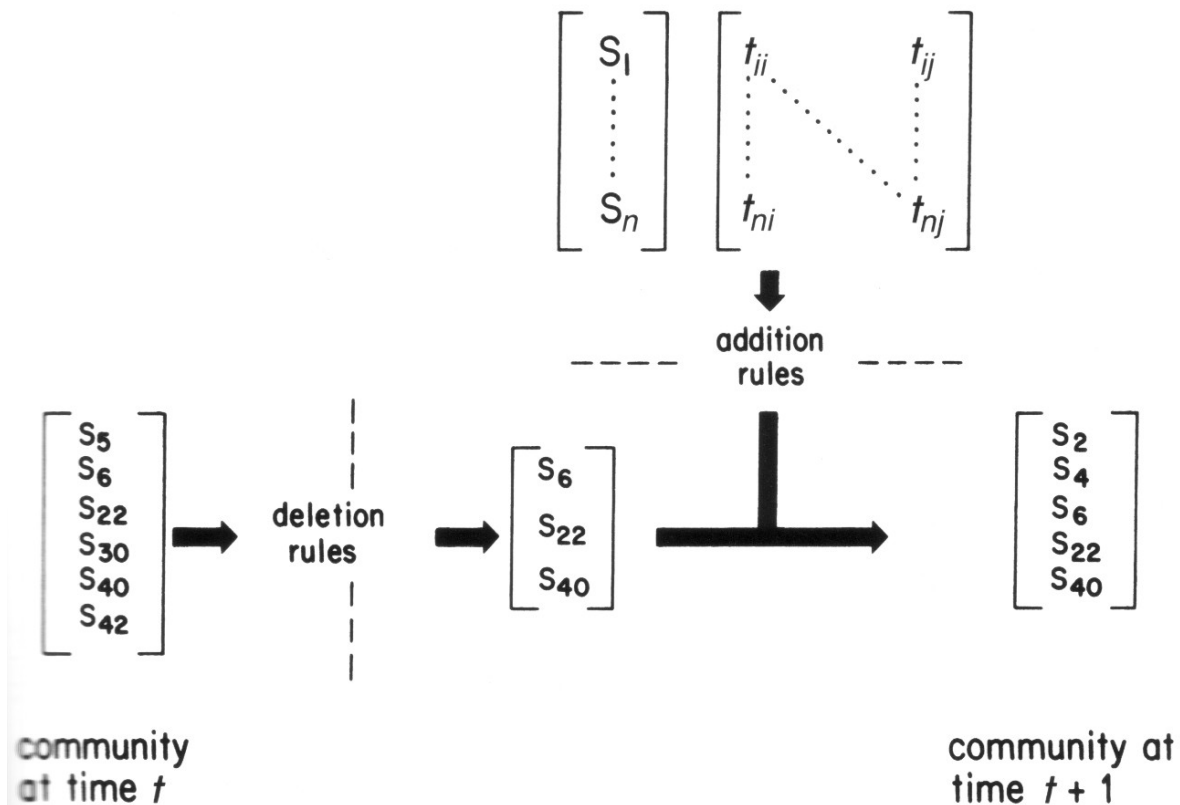
Keddy 2000; Shipley & Keddy 1987;  
Hoagland & Collins 1997



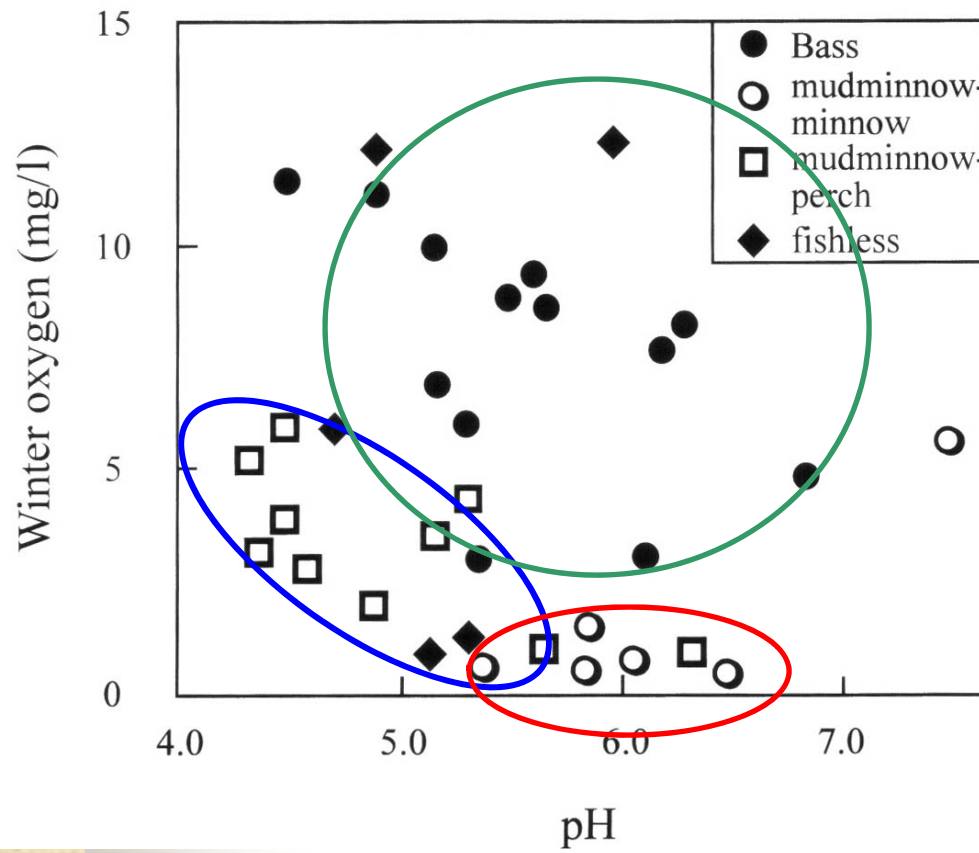
<u>Environmental factor</u>	<u>Relative importance (%)</u>
Hydrology	50
Fertility	15
Salinity	15
Disturbance	15
Competition	< 5
Grazing	< 5
Burial	< 5



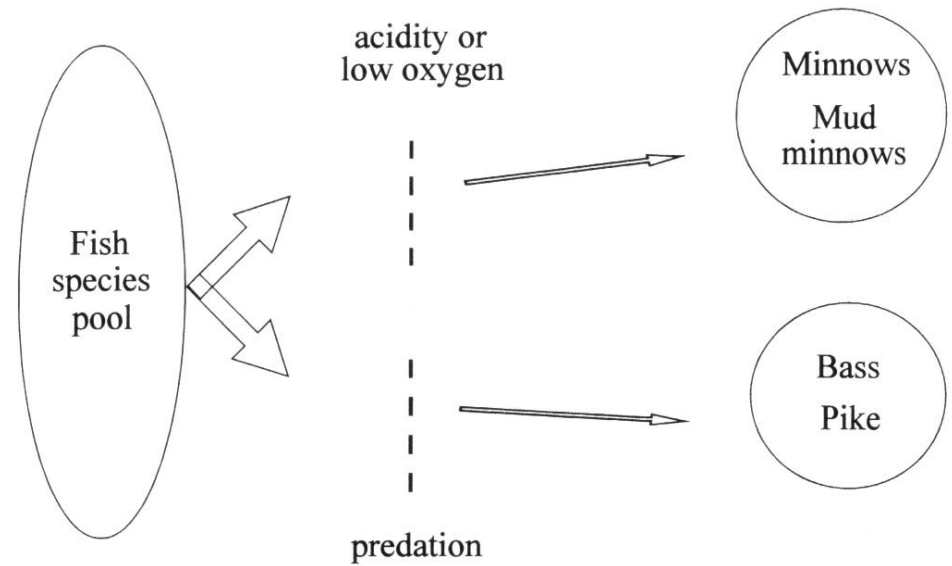
# Response rules to predict species assemblages



Keddy 1992



Magnuson et al. 1989



# Possible causes of zonation patterns:

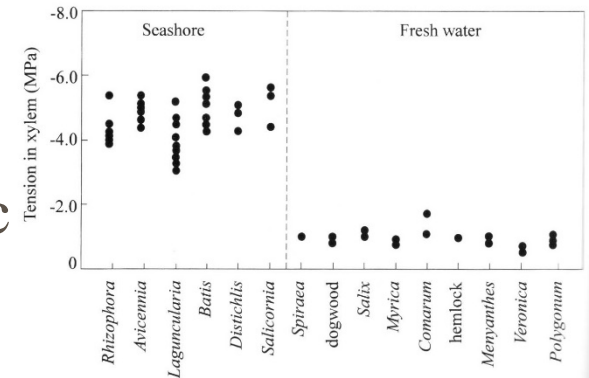
- Succession

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