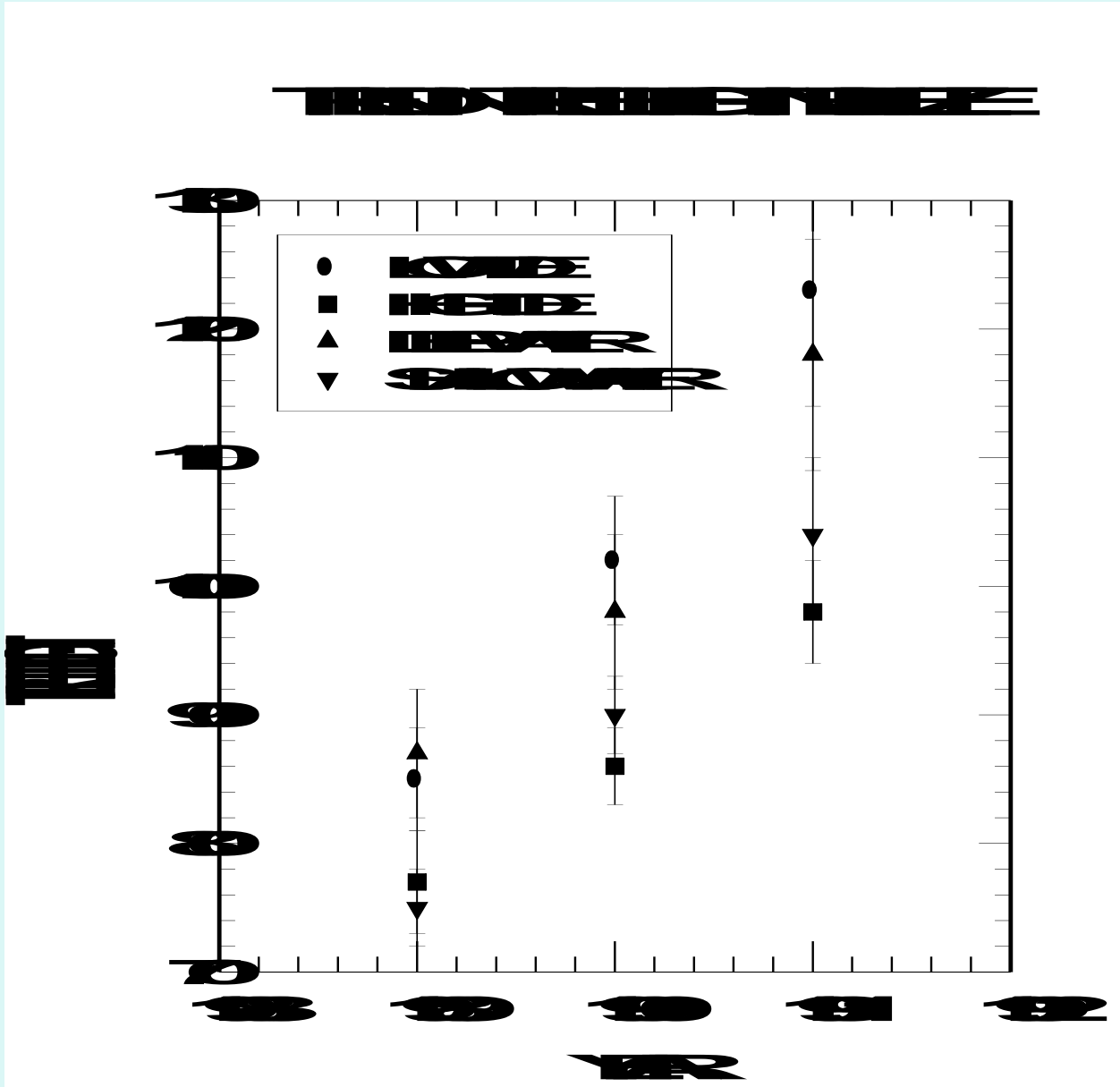
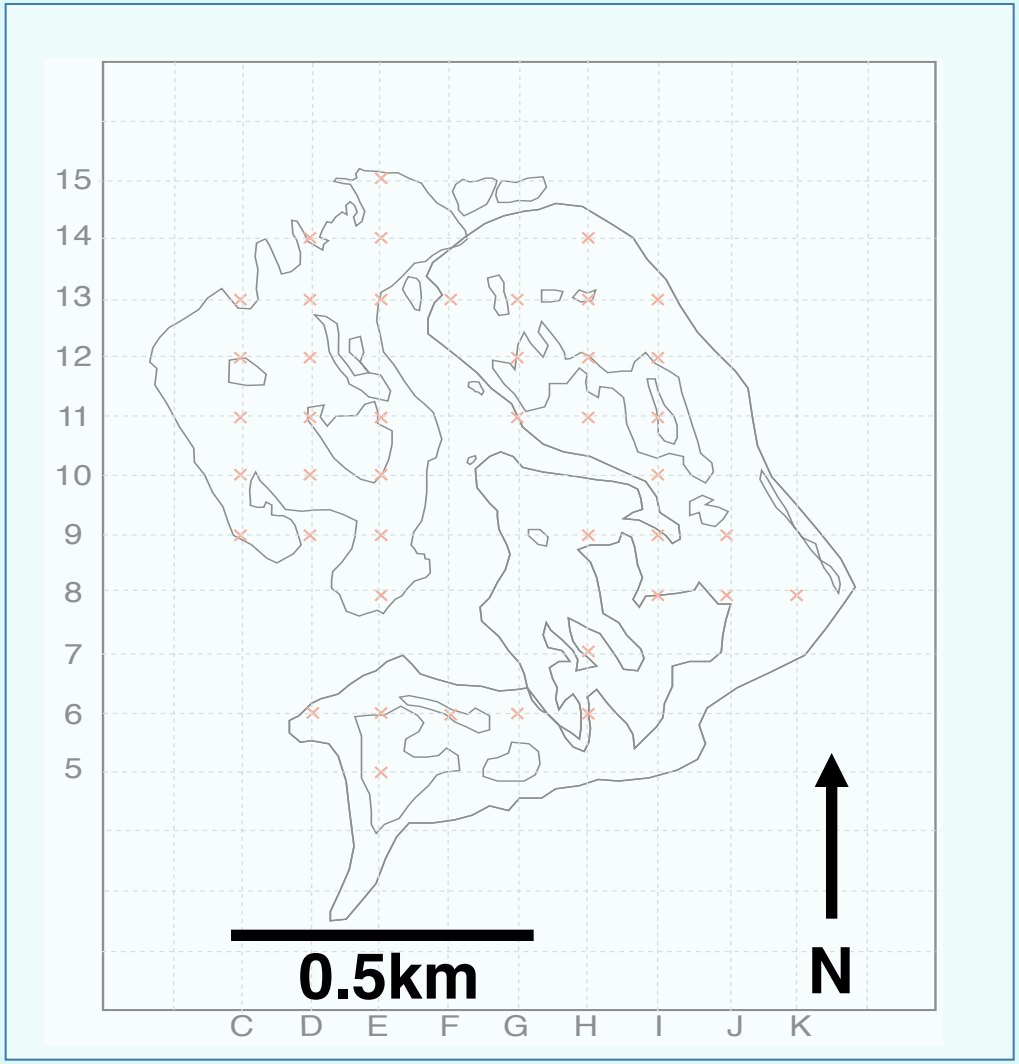


after Feller, 1995

Grid of Stations at Twin Cays

Sediments
Leaves
- fresh
- senescent

Detritus
Wood
Insects
Algae
Surface water
Pore water
Floc

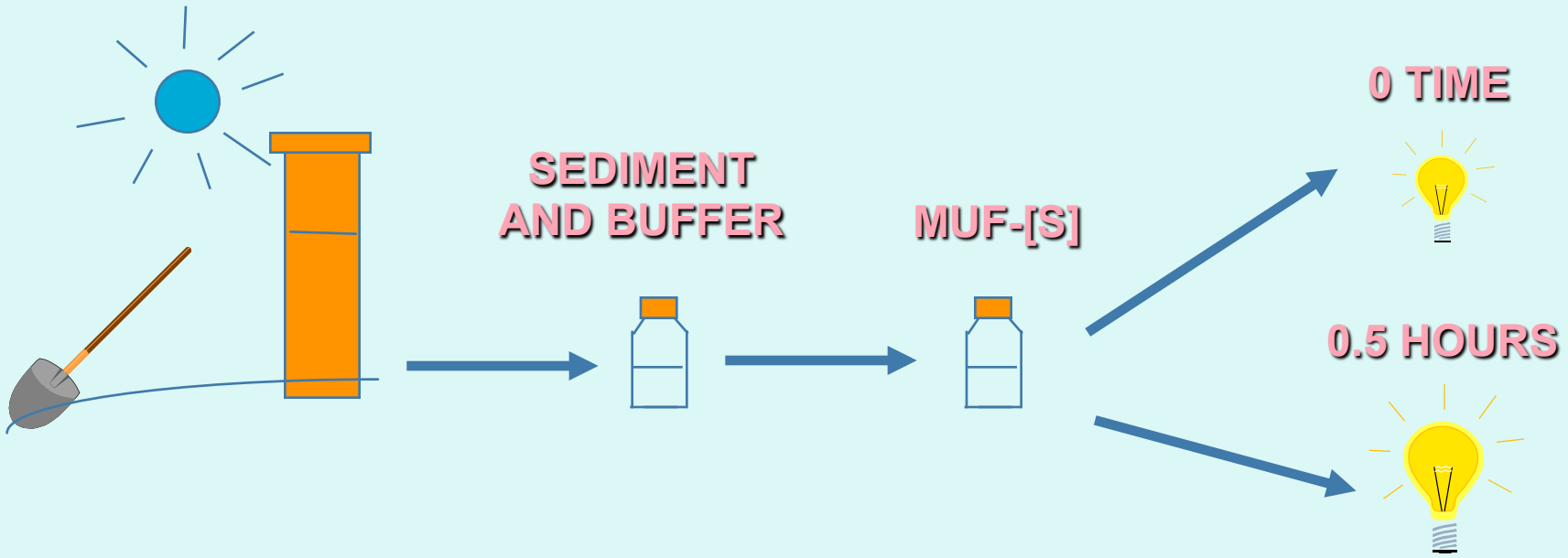


Nutrients
- NH_4
- HS^-
- PO_4
- NO_2
- NO_3

Organic matter
- TOC
- TN
- C/N
- $\partial^{13}C$
- $\partial^{15}N$

EXPERIMENTAL PROTOCOL

Sediments

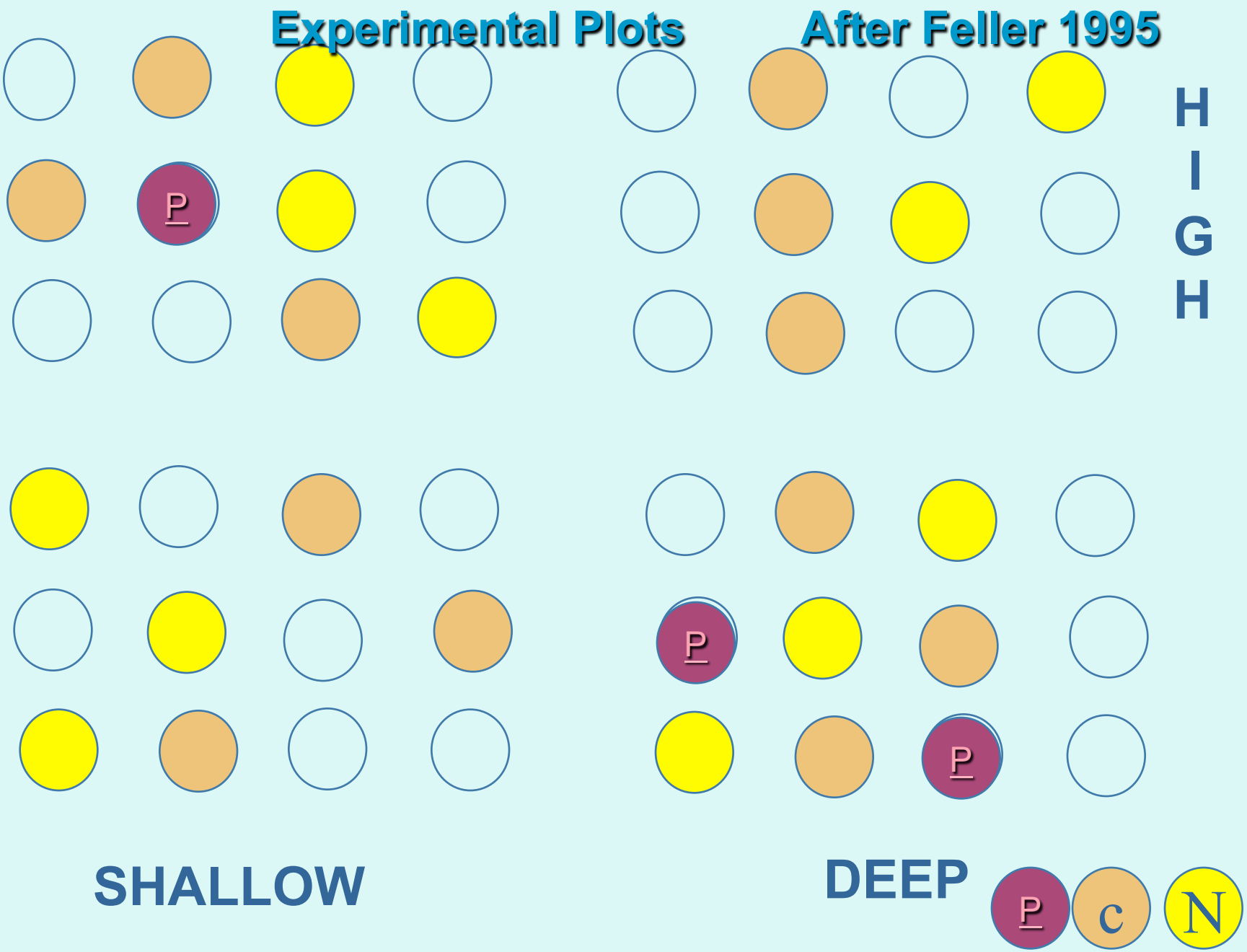


4 - METHYLUMBELLIFERONE

7-HYDROXY-4-METHLCOUMARIN-B-METHYLUMBELLIFERONE

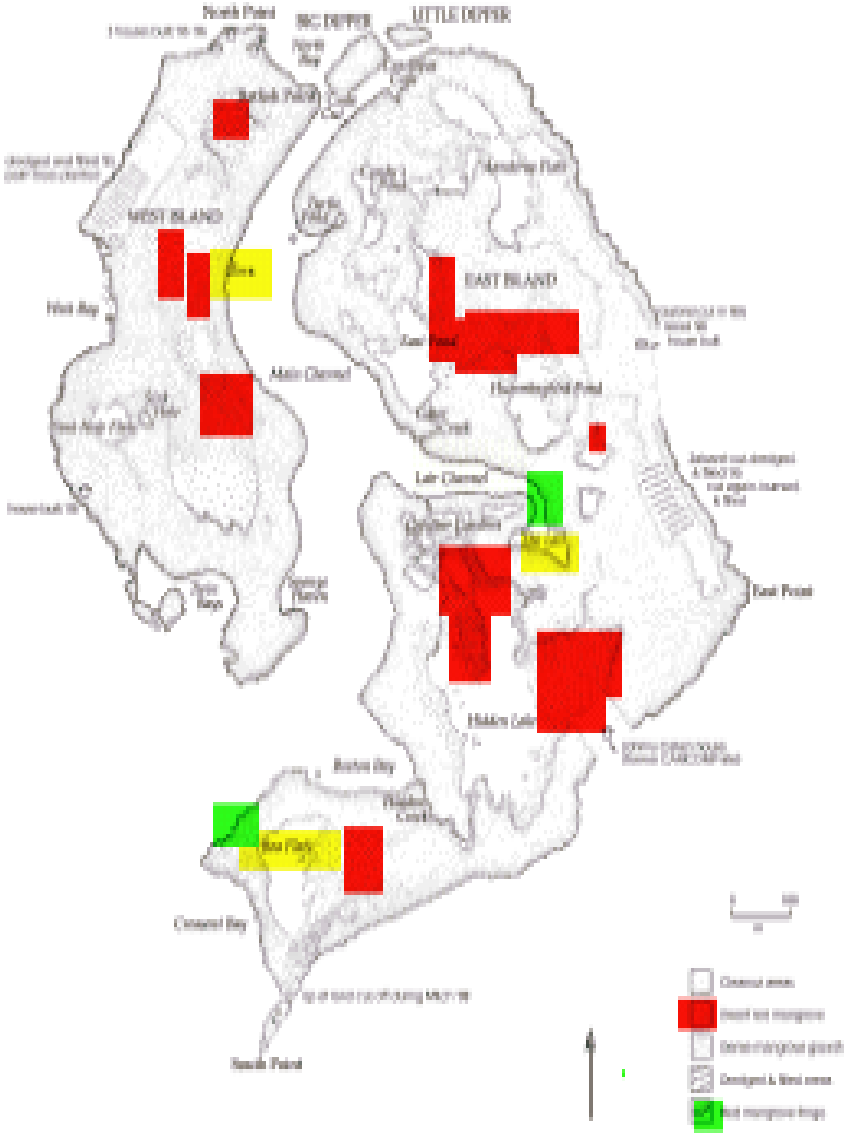
[MUF-S]

[MUF-S] + [E] = MUF+ [ES]+


Experimental Plots
After Feller 1995
HIGH
P
P
P
SHALLOW
DEEP
P
C
N

Twin Cays, Belize

2000



Enzyme Kinetic Analysis

- Michaelis constant = Km tells about the rate of reaction at any substrate level
- instantaneous velocity at any time depends on the concentration of the ES,(E + S = ES = E + P)
- plot velocity/substrate can use the information for prediction of velocity of reaction which is proportional to the amount of enzyme activity in the system and use this to compare sediment history

CONCLUSIONS

- High Phosphatase Activity is Associated with Dwarf Trees
- A Gradient in Tree Height is Associated with a Parallel Gradient in Phosphatase Activity, the latter can show seasonality
- Variation of Phosphatase Activity due to Nutrient Input can be predicted by laboratory experiments

Conclusions

- Enzyme activity is highest at surface of control and N sites and low in P fertilized areas
- Enzyme activity is higher in sediment surface and decreases rapidly with depth - Biomass of active bacteria?
- Mat areas have vv high activity Biomass + limitation differernces
- await total P and C (fatty acid) correlates.
- Models on nutrient addition and resulting sediment indicate release of nutrient limitation causes temporal ecosystem response .