Juniper Pond

- Benthic dominated system
  - *Eunotia* – acidophilic taxa

**Correspondence Analysis (CA) of diatom data:**

*Outliers*

- Major disturbance and planktonic increase 87cm
  - Diatom deposition and preservation low
  - Diversity declines

- Planktonic incursion at 75-76cm
  - Planktonic *Aulacoseira* only present at this level
Juniper Benthic, Pelagic & Total Diatom Abundances

BENTHIC

PELAGIC

TOTAL

A

B

C

D

frustules / (g) sed

frustules / (g) sed

frustules / (g) sed

0 500000 1000000 1500000 0 125000 250000 0 500000 1000000 1500000
Juniper Pond

• **Group C** (47-33 cm):
  – Decline in accumulation rate at 47cm
  – Benthic/epiphytic forms increase
  – Increased benthic deposition (productivity)
  – Decline in acidophiles
  – Increase in mesotrophic plankton

• Disturbance event 29 cm (mid 1930’s)
  – Low lake stage
  – Decline in diatom and chrysophyte deposition
Juniper Pond

• **Group B** (24 – 10 cm)
  – Increase in plankton
  – Increase in nutrient tolerant taxa
  – Ditom accumulation increases
  – Decline in chrysophyte cysts characteristic of nutrient enrichment

• **Group A** (6 – 2 cm)
  – Most recent assemblages
  – Decline in nutrient enrichment forms at surface?
Little Sodus

• Dominant plankton community
  – *Aulacoseira* species need turbulence

Correspondence Analysis (CA) of diatom data:

• **Group C** (61 – 51, 39 cm):
  – Dominated by *A. granulata* and *A. ambigua*
  – Shift to *A. ambigua* indicates lower nutrient environment

• **Group B** (45, 33 – 21 cm):
  – Shift from *A. granulata* and *A. ambigua* to *A. islandica*/* A. italica*
    * More open to L. Ontario - incursion/breach?
  – *A. crenulata* planktonic acidophile
  – Increase in *Stephanodiscus niagareae*
  – Increased diversity
    • Benthic increase at 27cm
Little Sodus

• Major change in taxa 13cm
  – Decreased diatom and chrysophyte cyst deposition
  – Highest diversity
  – Decline in *Aulacoseira* dominance
  – Increase in nutrient tolerant forms
  – Increase in acidophilic taxa

• **Group A (4-2 cm):**
  – Return to moderate nutrient taxa
    • Increase in planktonic *Fragilaria crotonensis*
  – Decline in *Aulacoseira* dominance
  – inc
Little Sodus Benthic, Pelagic, & Total Diatom Counts

<table>
<thead>
<tr>
<th>Depth cm</th>
<th>Benthics</th>
<th>Pelagics</th>
<th>Total</th>
</tr>
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<td>0-1</td>
<td>11.5</td>
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<td>1-2</td>
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<td>33</td>
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<tr>
<td>8-9</td>
<td>99</td>
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</tbody>
</table>

Shannon Index

Depth cm

Little Sodus
Shannon Index

1 1.5 2 2.5 3
0 1 2 3 4 5 6
Little Sodus

Aulacoseira granulata  A. ambigua  A. islandica  A. italica  A. crenulata  A. distans  Eunotia spp

Depth (cm)

Sodus dominance  L Ontario?  Marsh expansion?
Nutrient increases
South Sandy

• Dominant planktonic community
  – *Aulacoseira* species need turbulence
• Pre-settlement water level change and wetland expansion (94 – 39cm)
• Major erosion disturbance (36-30cm)
• Nutrient enrichment (26-0cm)
South Sandy Pond Benthic, Pelagic, & Total Diatom Counts

2001 1990 1972 1925 1850 1790
0 1000000 2000000

Total Benthics

Total Pelagics

Total Diatom Abundance
South Sandy

Correspondence Analysis (CA) of diatom data:

• **Group C**(87 – 61 cm):
  – Dominated by *A. ambigua*
  – Periodic occurrence of *A. islandica*
    • More open to Lake Ontario?

• **Group B**(68, 55 – 39 cm):
  – Decline in plankton accumulation
  – Disturbance and benthic increase at 68 cm
  – Decline in importance of *A. ambigua*
  – Increase in *A. distans* planktonic acidophile
  – Increase in attached and benthic diatom taxa (45-39 cm)
    • Increased deposition of benthic forms
  – Increased diversity
    • Benthic increase at 27 cm
South Sandy Total Diatom and Cyst Abundance with Depth

- Shannon Index
- Total Diatoms
- Total Cysts
South Sandy

• Erosional event 36-30 cm
  – Major change in dominant flora post-erosional event
  – Decrease in acidophiles above 35-36cm
• Group A(21 – 0 cm):
  – Increase in planktonic community to >90%
  – Decline in diversity
    • Average Shannon diversity 2.7 before, 1.66 after
  – Increase in nutrient tolerant forms
    • *Stephanodiscus niagarae* rise
    • Largest increase above 15 cm
South Sandy

Depth (cm)

Cyclotella bodanica

Fragilaria capucina

Stephanodiscus niagarae

Cocconeis spp.

Eunotia spp.