

WELCOME

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Water Level Flux to Control AIS and Restore Impoundments

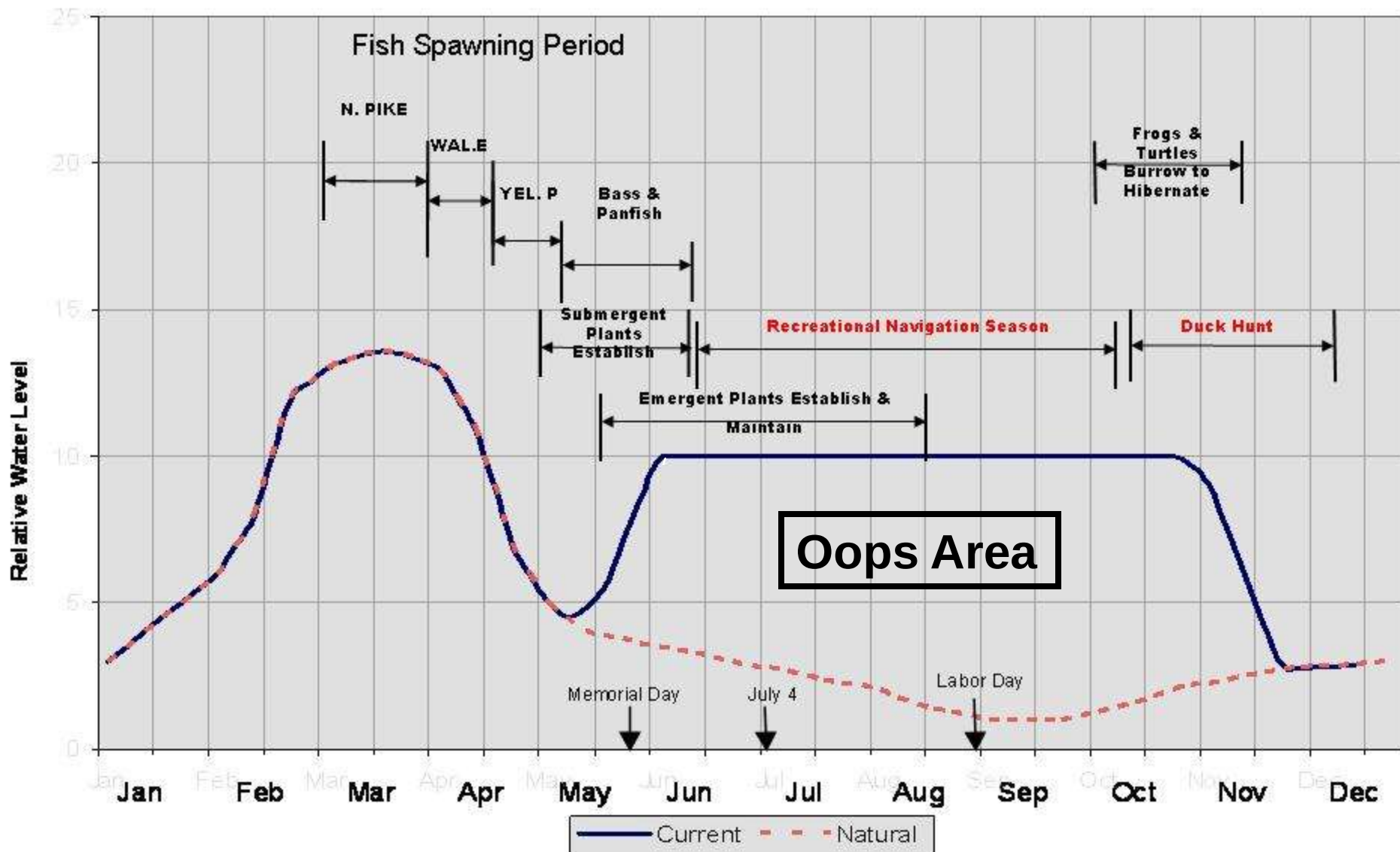


WHY? Restore natural ebb and flow

- Restore natural rhythm of ecosystem
 - Evolution of plants and animals
- Allows a system to “heal”
- Increase diversity
- Good health management of lake.
- Can control some AIS (EWM)

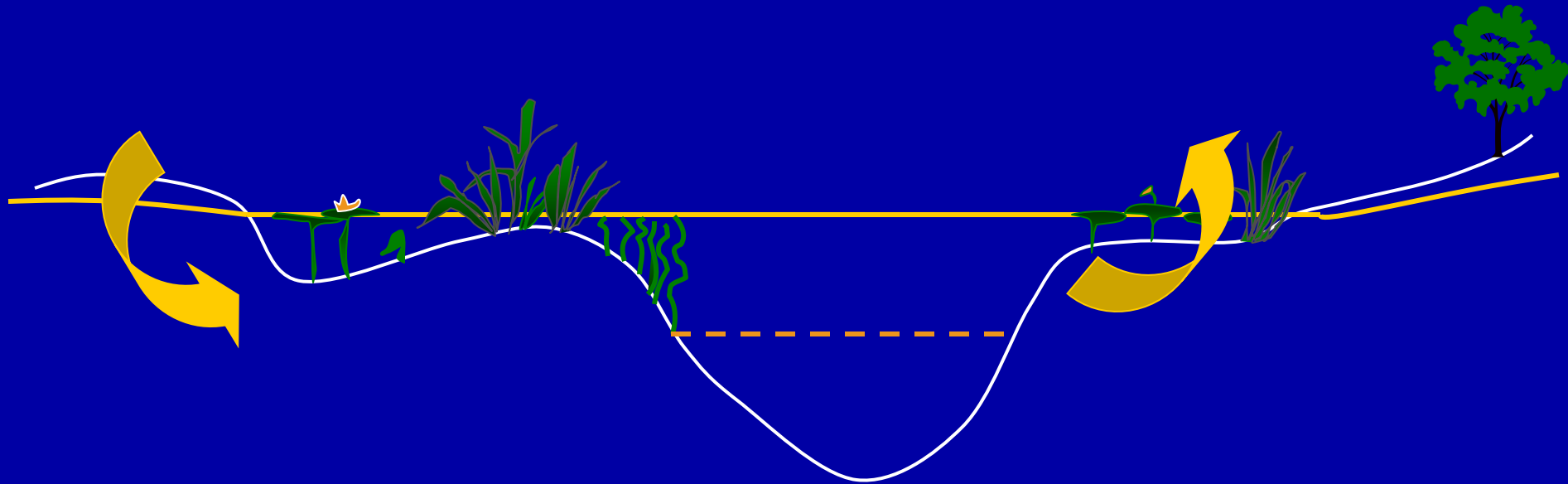
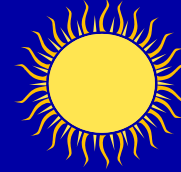
It's a good thing...

Water Level Changes Fish, Habitat, & Recreation



Water Level Cycling in Natural Lakes

The Ordinary Year

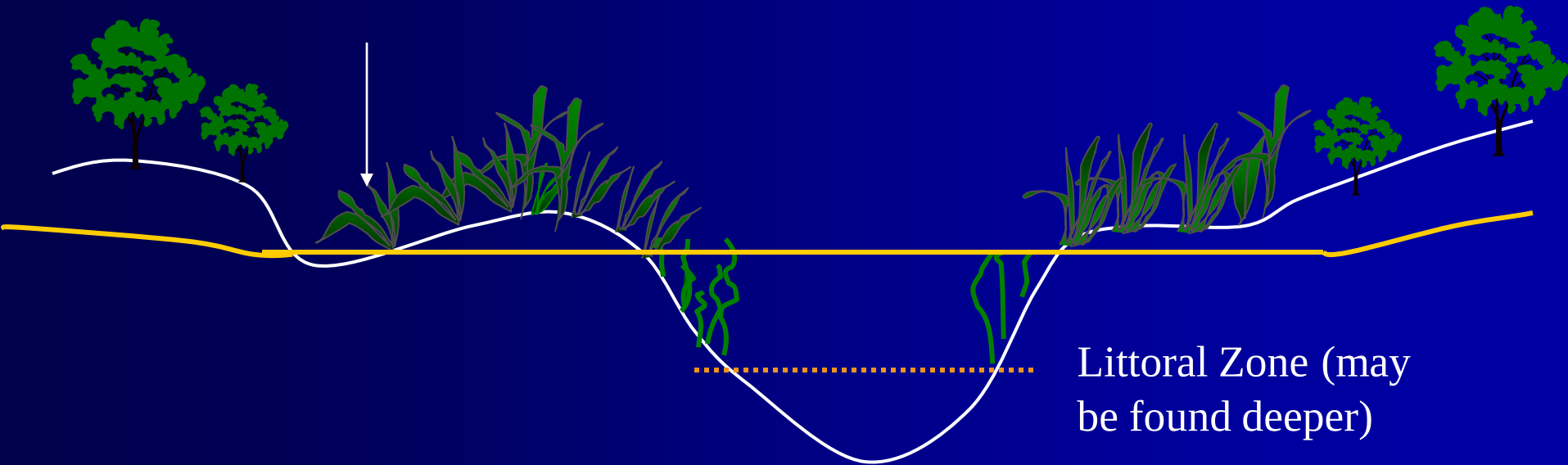
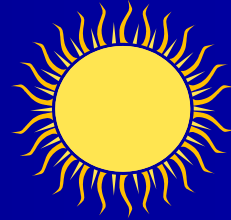


Lake levels determined by rain and snow

Water Level Cycling in Natural Lakes

The Low Year

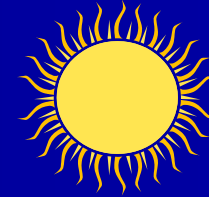
Emergent plants expand
excess nutrients used



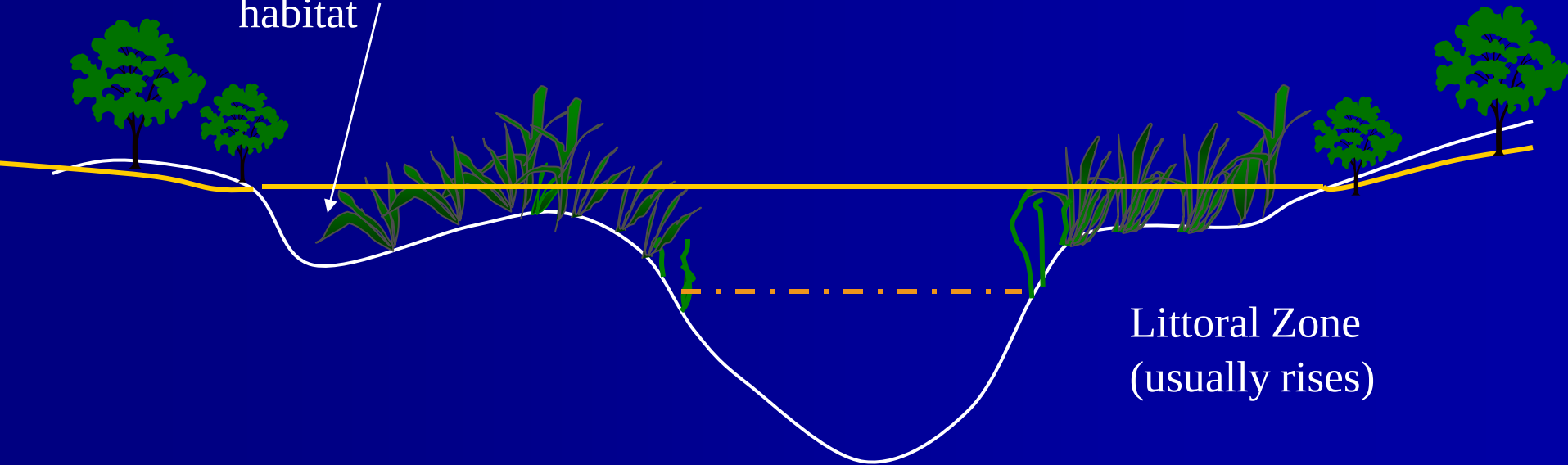
Littoral Zone (may
be found deeper)

Water Level Cycling in Natural Lakes

Return to Ordinary Year



Expanded emergent
plants become aquatic
habitat



Littoral Zone
(usually rises)

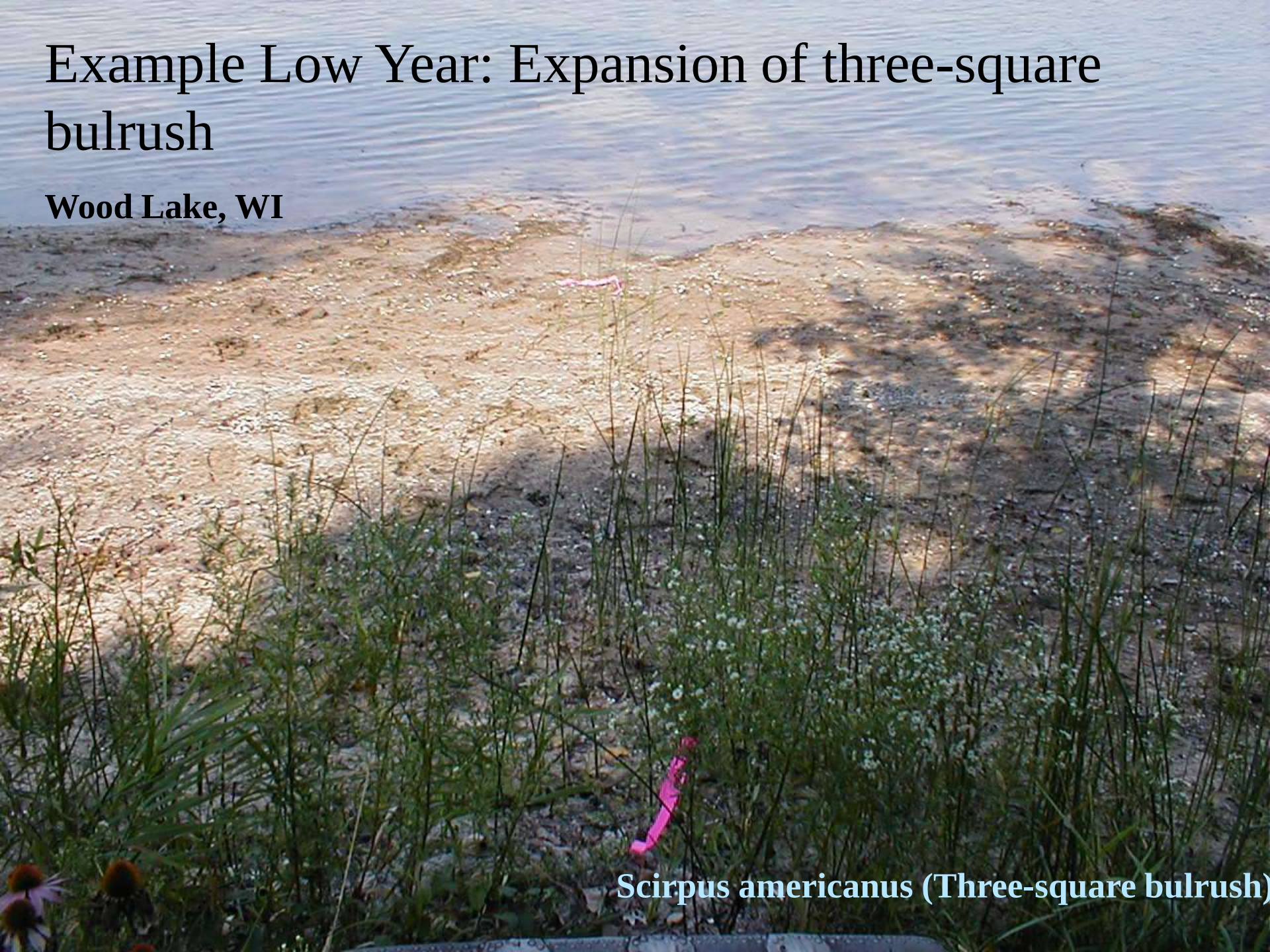
Example Low Year: Expansion of lake sedge

Montello Lake, WI



Example Low Year: Expansion of three-square bulrush

Wood Lake, WI



Scirpus americanus (Three-square bulrush)

Example Low Year: Expansion of Fassett's Locoweed

Plainfield Lake, WI

OHWM



Return to normal water level



Example: Flooded vegetation following low

Lake Pucaway, WI



Example: Flooded vegetation following
low year

McDill Pond



Understanding and Using the Tool

- Mimic Mother Nature.
- Used Nationally - USGS (Great Lakes Science Center)
- Used in Wisconsin - NER, WCR



Sediments at Fish Point wetland in Saginaw Bay of Lake Huron exposed by low lake levels in 1988



Fish Point in 1989 after seed bank germination and recolonization of exposed substrate by emergent vegetation

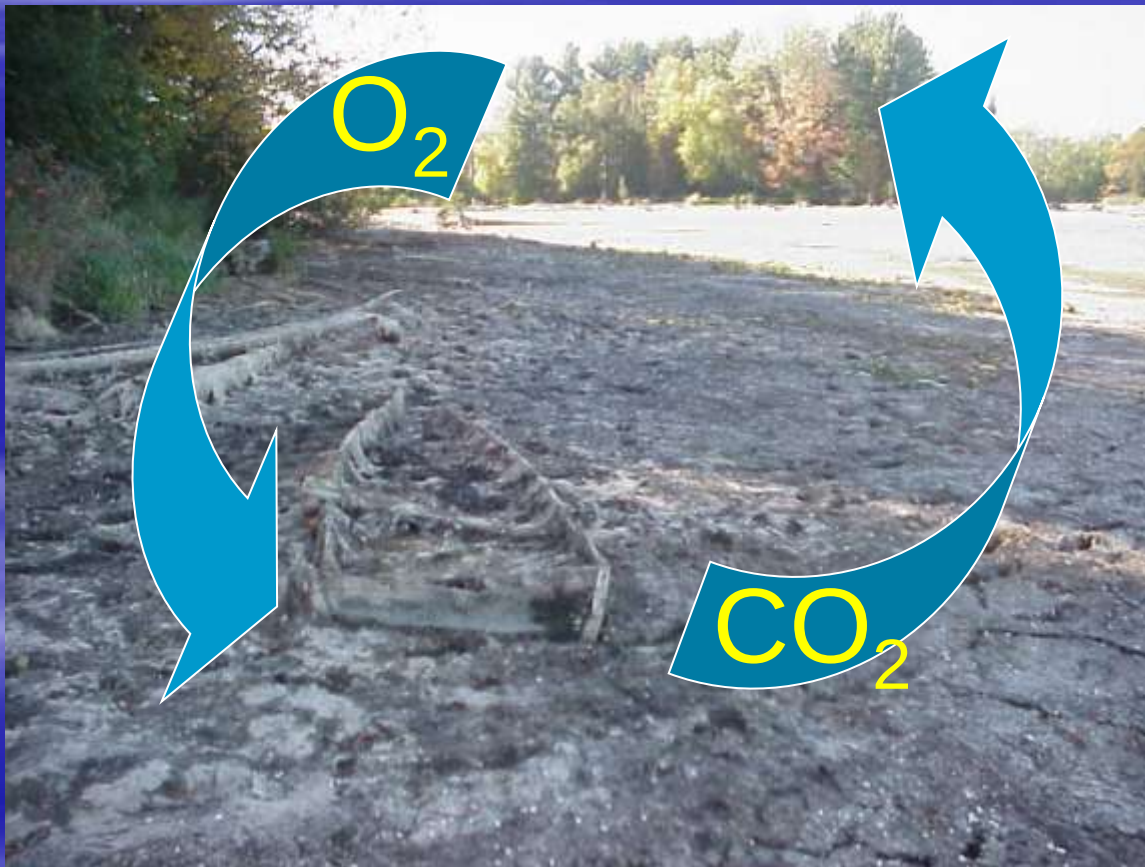
How does this work?

Dessication:



How does this work?

Aeration:



How does this work?

Freezing:

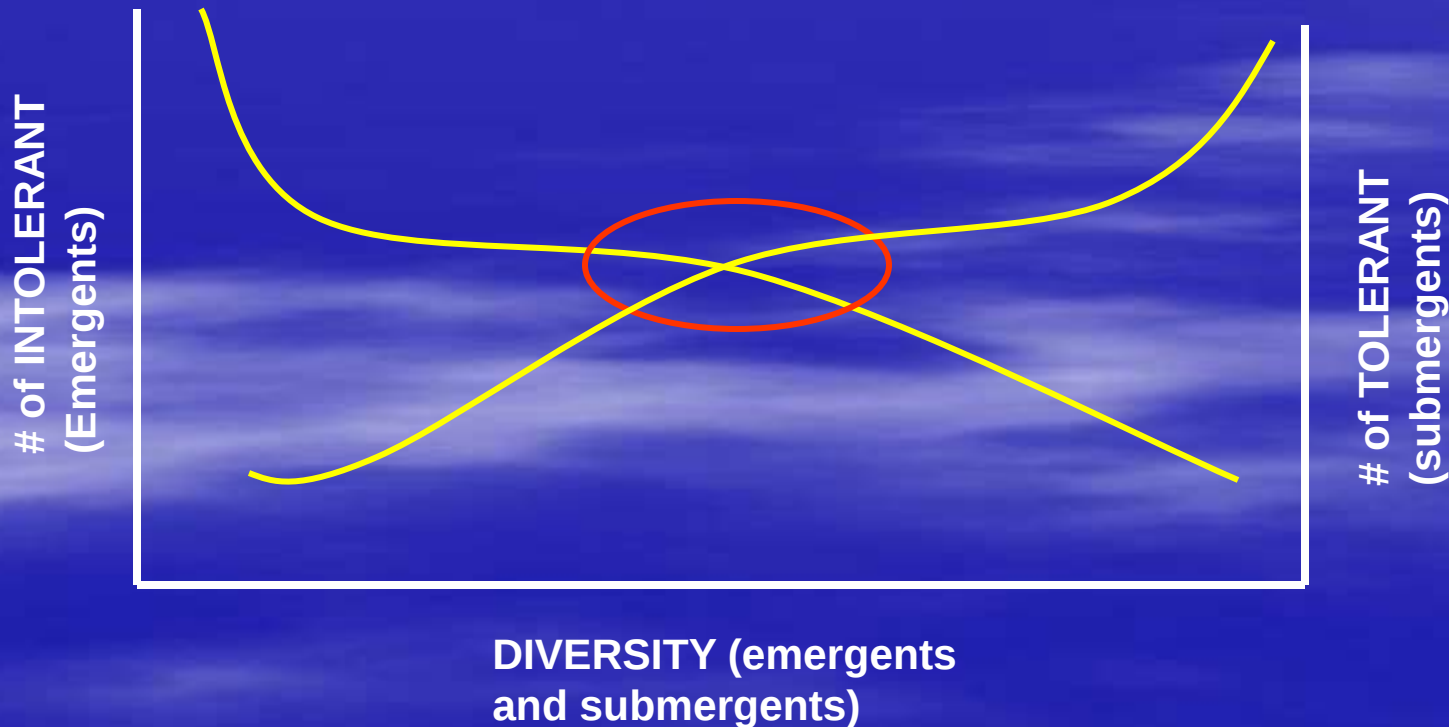


Benefit of Alternation

Drawdown tolerant vs drawdown intolerant

Water Level Flux Practices

Sustained artificial levels



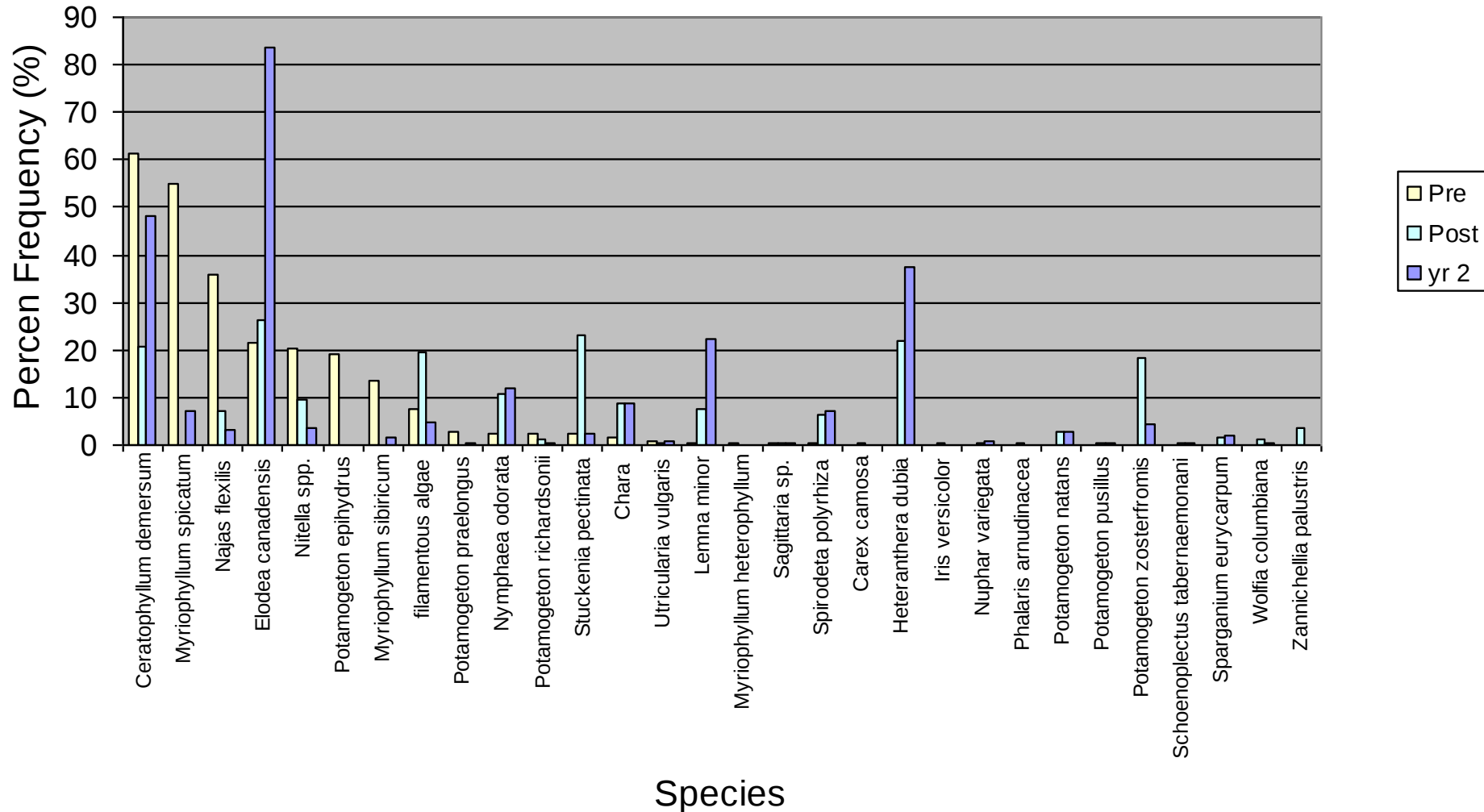
Case Studies

- McDill Pond
- Marion Millpond
- Montello Lake
- Alpine Lake
- Lake Thoma (in progress)

McDill

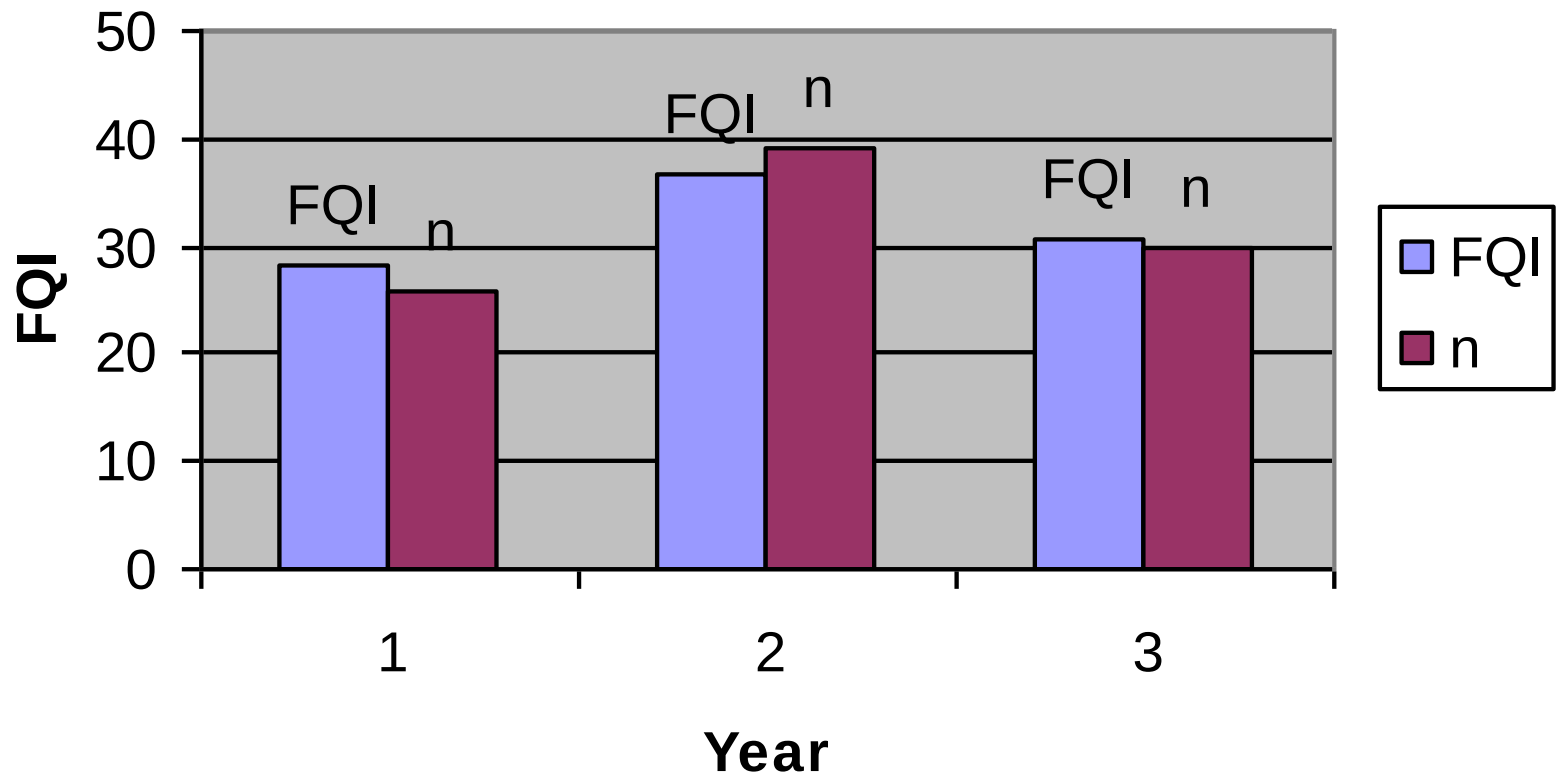
- pre-DD, post +1yr, post +2yr

Pre and Post Drawdown Aquatic Plant Frequency, McDill Pond



McDill Change in FQI

McDill FQI
pre-DD, post +1, post +2



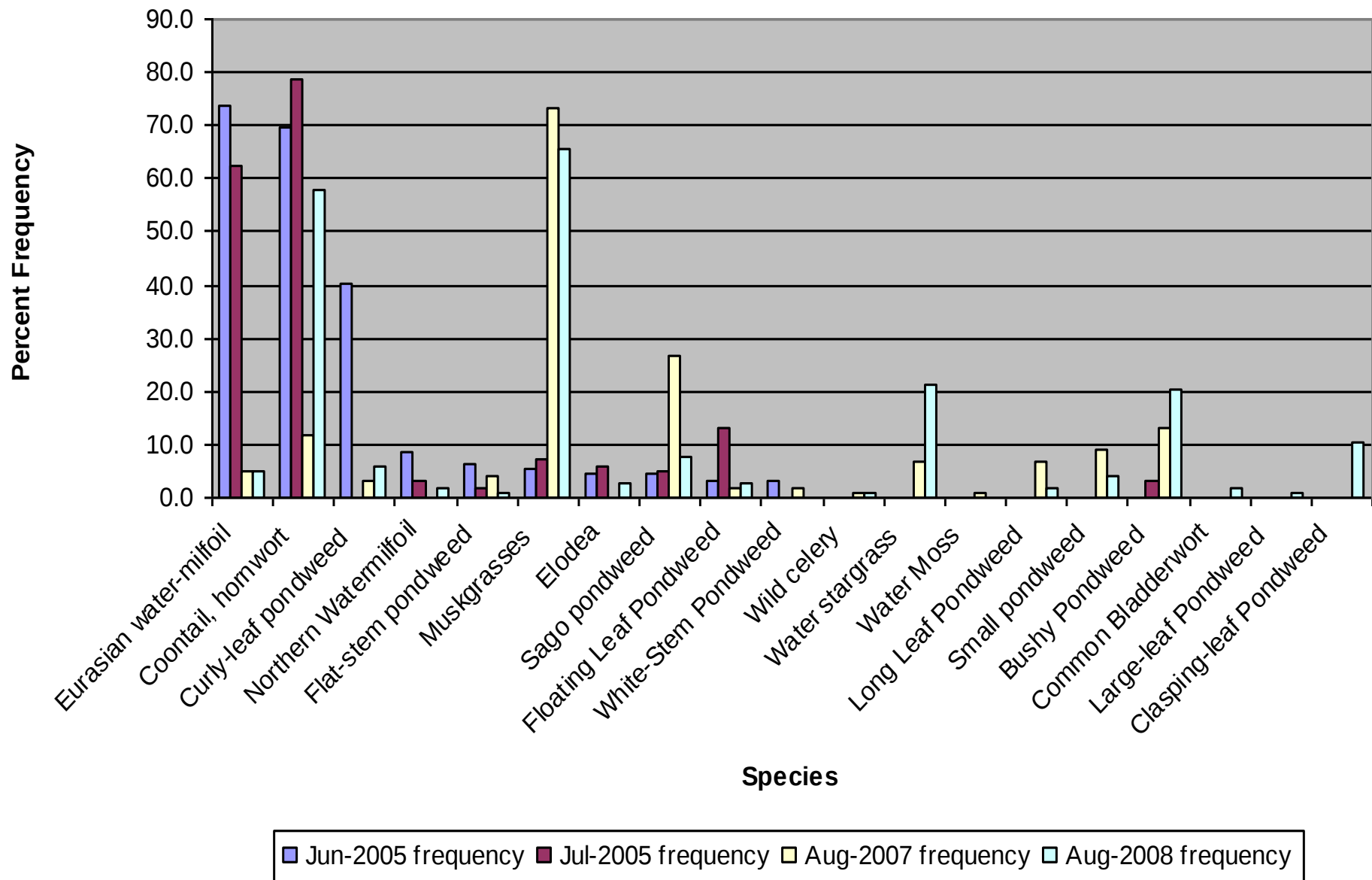
Partial Winter Drawdown Marion Millpond, WI

September though April



Pre/Post Winter Drawdown at Marion Millpond

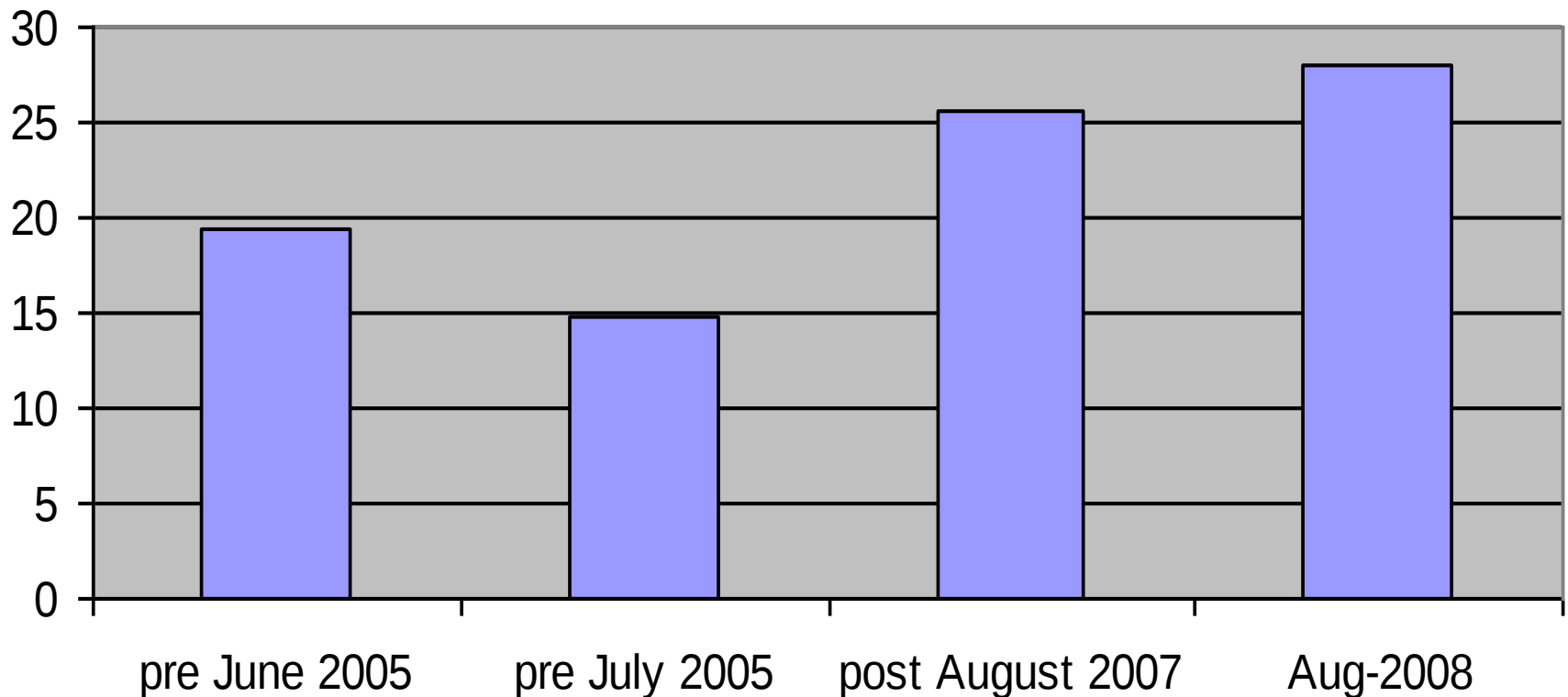
submergent species



FQI Following Winter DD

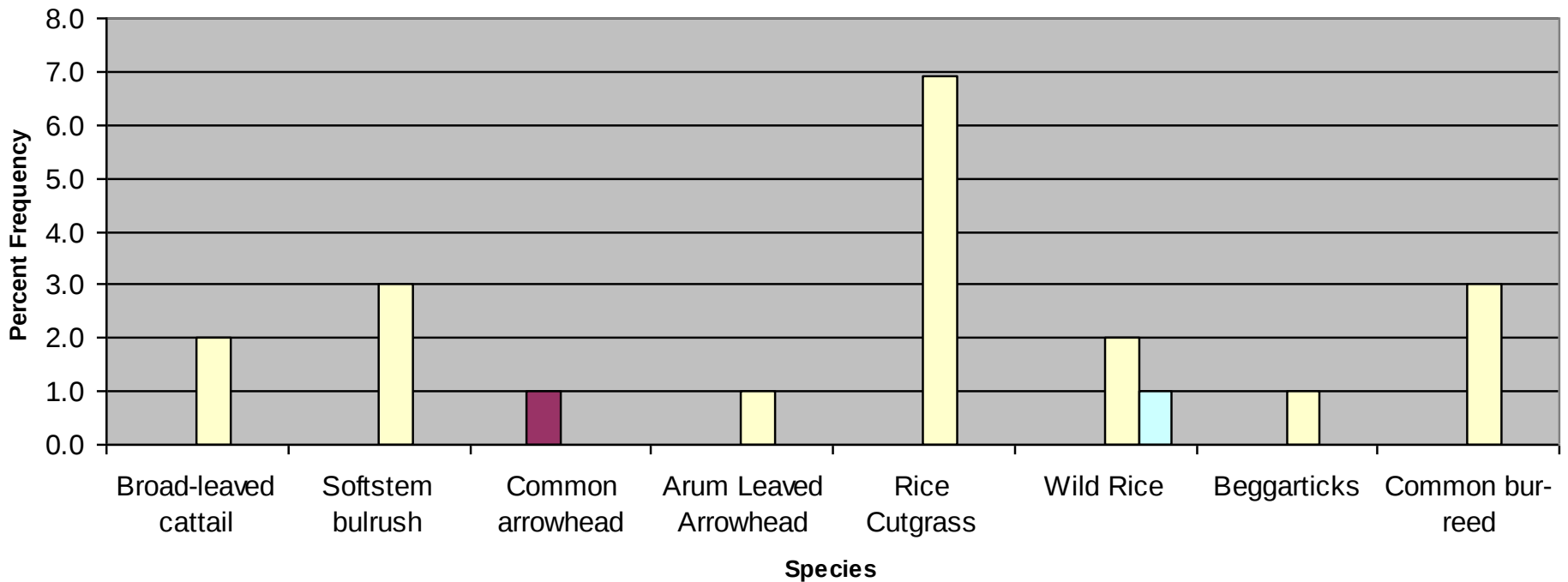
Marion Millpond, WI

Floristic Quality Index of Marion Millpond
Pre and Post Winter Water Flux



Emergent Species

Pre/Post Winter Drawdown at Marion Millpond



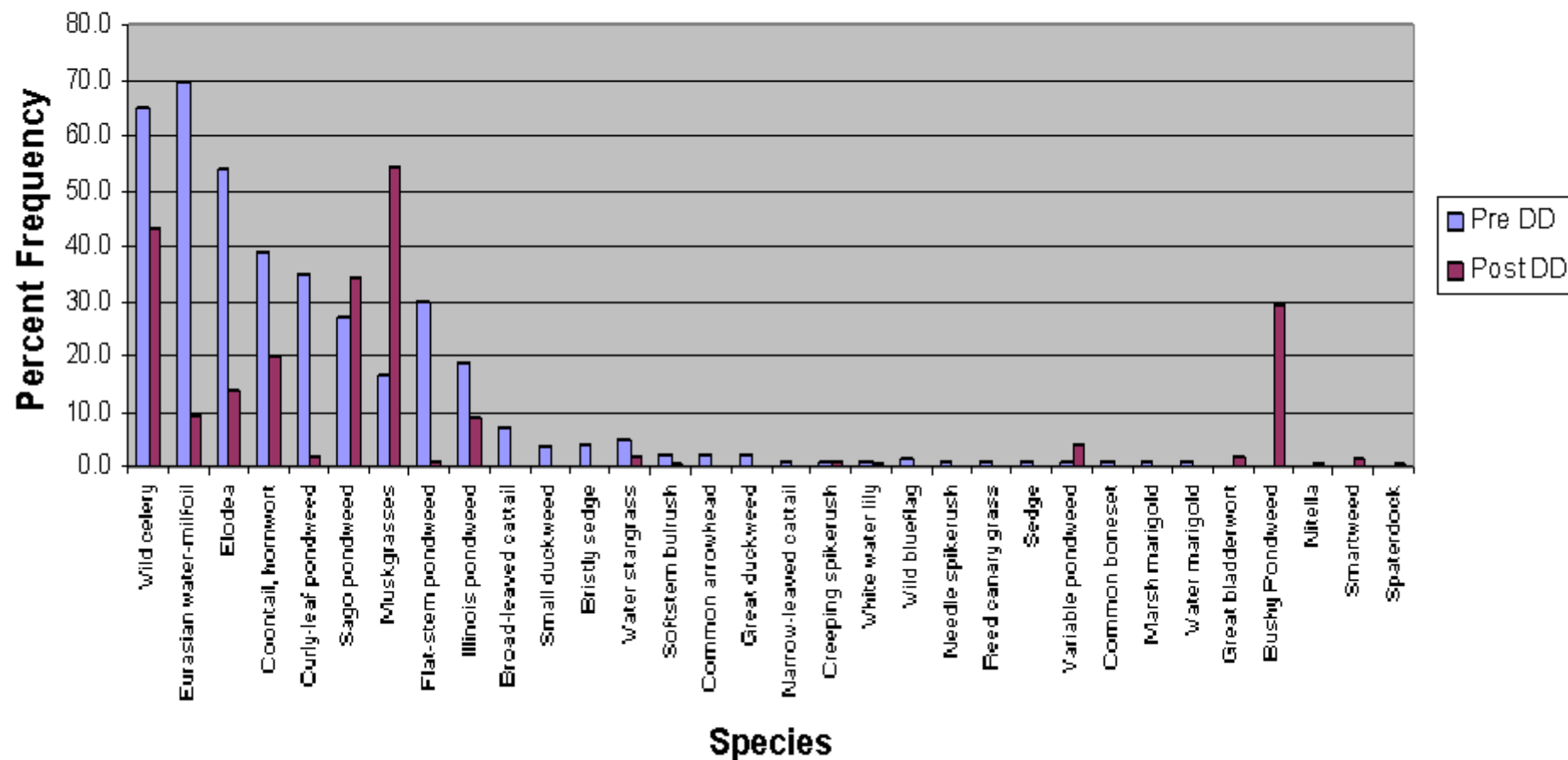
Jun-2005 frequency Jul-2005 frequency Aug-2007 frequency Aug-2008 frequency

Partial Winter Drawdown Alpine Lake, WI

September though April



Alpine Lake Pre and Post Drawdown Plant Frequency



Using the Tool for AIS Control

- Used Internationally — Czech Republic, et al.
- Used Nationally
TVA, WA, OR, NY, CN, WI, MN,
- Used in Wisconsin
NER, WCR



Paul Skawinski



Paul Skawinski

Climates capable of freezing; southern states less control

EWM Control McDill Millpond 2008-2010

Pre DD EWM frequency	55.1%
Post DD EWM frequency 2009	0*0%
Post DD EWM frequency 2010	7.3%

* 0% observed at the time of survey but found later in August

EWM Control Marion Millpond 2006-2007

Pre DD EWM frequency	73.9%
Post DD EWM frequency	5.0%

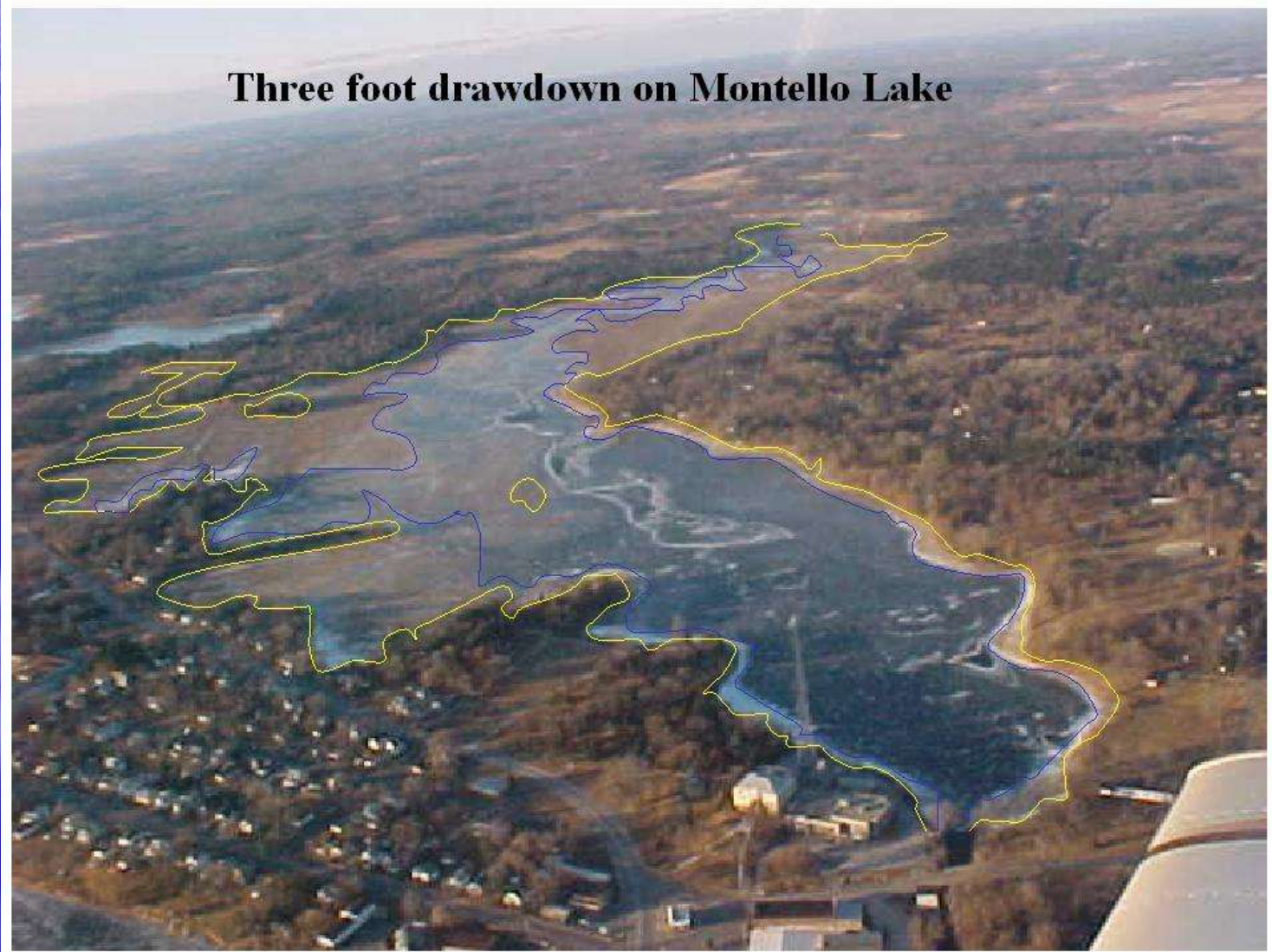
EWM Control Alpine Lake 2005-2006

Pre DD EWM frequency	69.7%
Post DD EWM frequency	9.2%

Partial Winter Drawdown Montello Lake, WI

September though April

Three foot drawdown on Montello Lake



EWM Control Montello Lake 2002-2003

Pre DD EWM frequency	~80* %
Post DD EWM frequency	~ 6* %

* Different survey methods

Sounds great, but.....

- Short-term fishery Impacts - flow is key
- Physical constraints – dam capabilities
- Economic impacts – tourism, fisheries, industrial, hydro power
- Social concerns – history, emotions
- Frame it correctly!

That's why.....

Know how to proceed

Good Plan (not just a plan)

Identify objectives

Simultaneous 2-prong approach

science

socio-economic

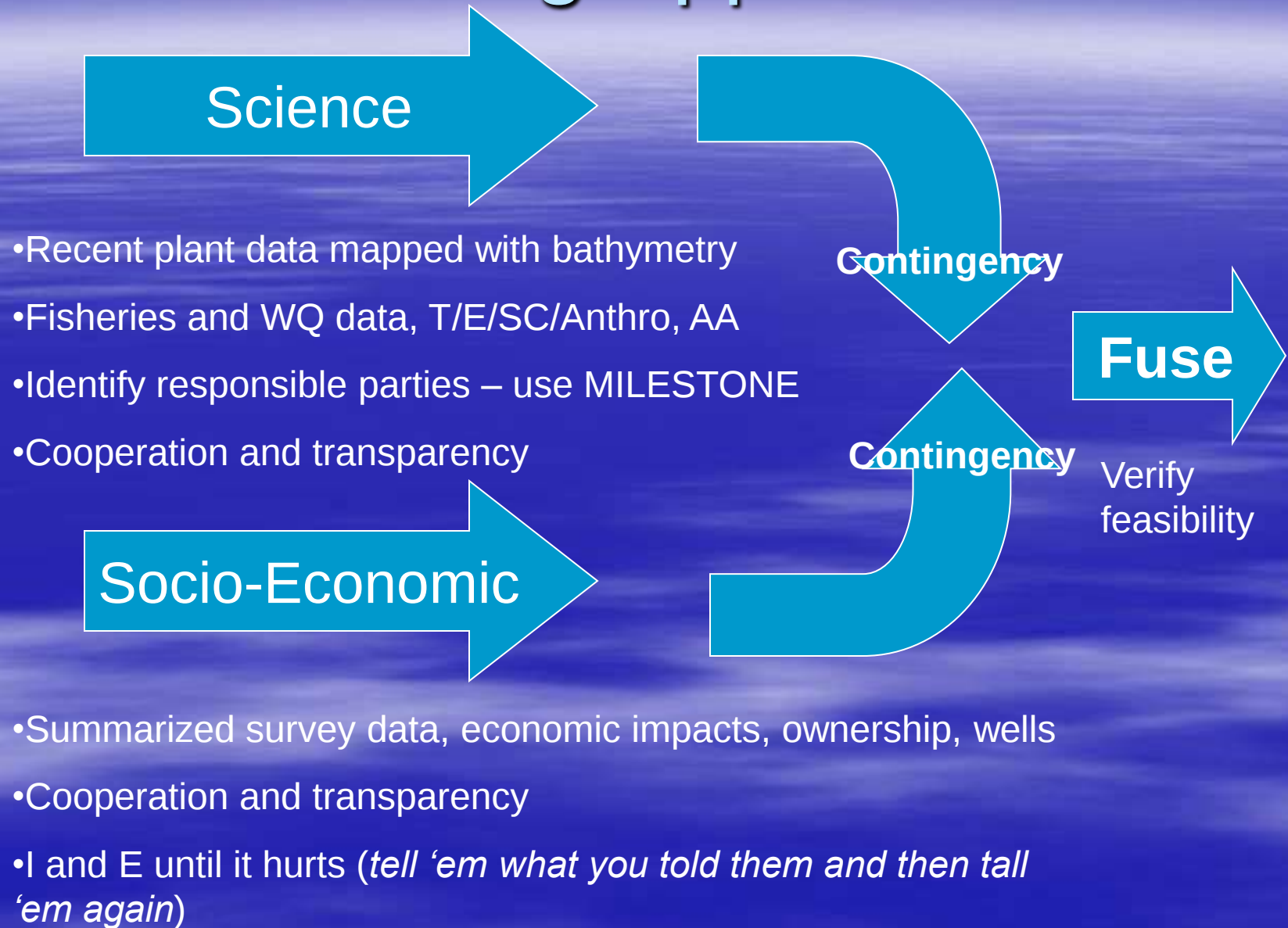
I and E

history dictates amount

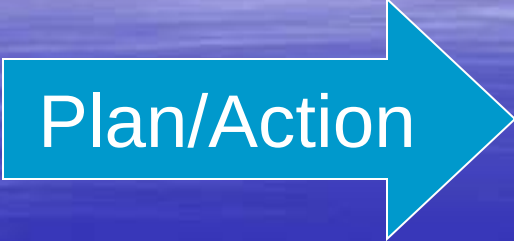
You
Need a
Plan!



2 – Prong Approach



2 – Prong Approach



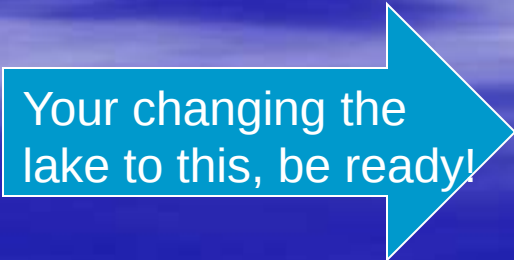
Plan/Action

Holistic Plan, with public input, specific to objective

Permit process started early (4-6 months before start)

Ready for survey work (AP and public? survey)

Contingency plan ready



Your changing the
lake to this, be ready!



Almost Done!

In Summary!

- Water level flux has been successfully employed in Wisconsin for AIS and restoration
- Solid plan needed (objectives, pre and post)
- More long-term monitoring needed
- I and E needed for society
- Frame it correctly

you're fighting this image...



QUESTIONS

Thank You!

Where's
McLennan!?

