# Wisconsin's Aquatic Invasive Species Program

Scott Van Egeren – Wisconsin DNR Lake and Reservoir Ecologist

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# What is an “Invasive Species”?

*A nonnative species whose introduction causes or is likely to cause economic or environmental harm or harm to human health, and includes individual specimens, eggs, larvae, seeds, propagules and any other viable life-stages of such species.*

# Why do we care?

- **Economic impacts**
  - Fishing industry, tourism, property values
- **Ecological impacts**
  - Native fish, invertebrates, plants
- **Recreational impacts**
  - Boating, angling, swimming

# Wisconsin's AIS Program

- Partnership
- Grants
- Prevention
- Monitoring
- Control
- Research

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# Aquatic Invasive Species Grants

- $4 million annually
- DNR Aquatic Invasive Species grants
  - Education/Prevention/Planning
  - Control
    - Rapid Response
    - Established Population Control
  - Research

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# Prevention

**Wisconsin Invasive Species Law**
**Adm Code NR40**


PREVENT THE SPREAD OF
**INVASIVE SPECIES**
IT'S THE LAW

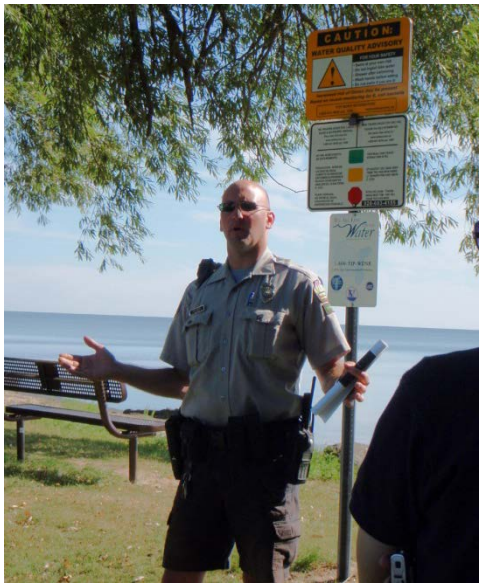
PENALTIES MAY EXCEED $2000

Before *launching* and before *leaving* YOU MUST:

- ✓ **INSPECT** boats, trailers, and equipment.
- ✓ **REMOVE** all attached aquatic plants and animals.
- ✓ **DRAIN** all water from boats, vehicles, and equipment.
- ✓ **NEVER MOVE** plants or live fish away from a waterbody.*

**STOP AQUATIC HITCHHIKERS!**
Prevent the spread of invasive species, it's the law

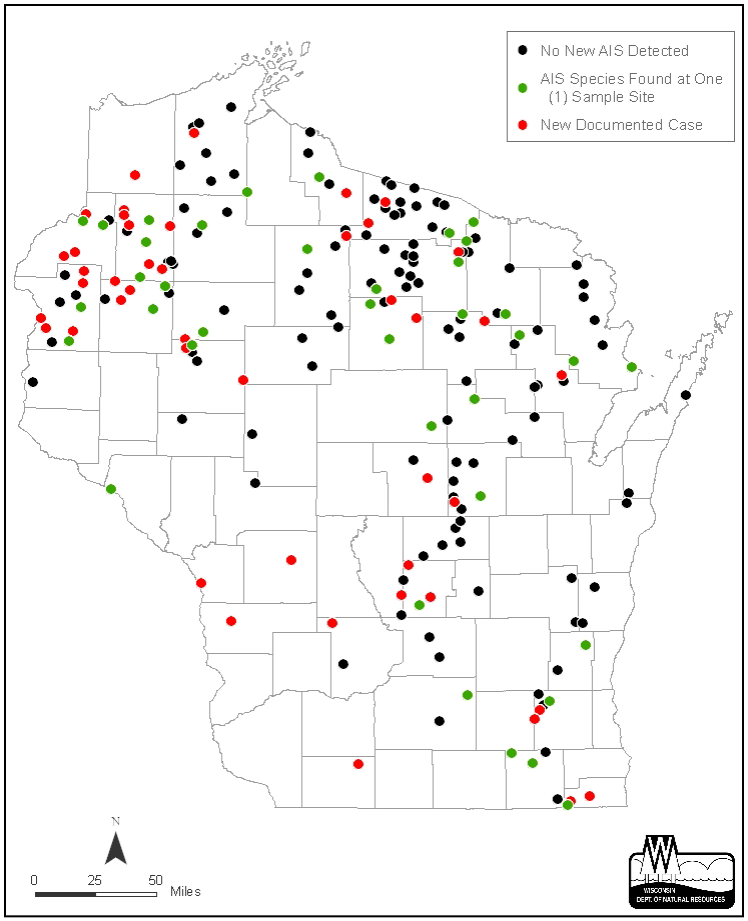
*Limited exceptions apply. Visit WWW.DNR.WI.GOV and search for "BAIT LAWS."



# Monitoring

## Citizen scientists

## Professional Staff




# Research to aid management
## (~ $350,000/year)

- AIS Prevention
  - Social marketing to change behavior
  - AIS decontamination methods
  - “Smart” prevention
- AIS Control
  - Operational evaluation of EWM/CLP control
  - EWM biological control – rearing weevils and evaluating weevil stocking
  - Non-target impacts of AIS control
- AIS Monitoring
  - Long-term EWM population dynamics
  - Tracking the rate of AIS spread
- AIS Impacts
  - Spiny water flea - detection, vectors, impacts
- Etc.

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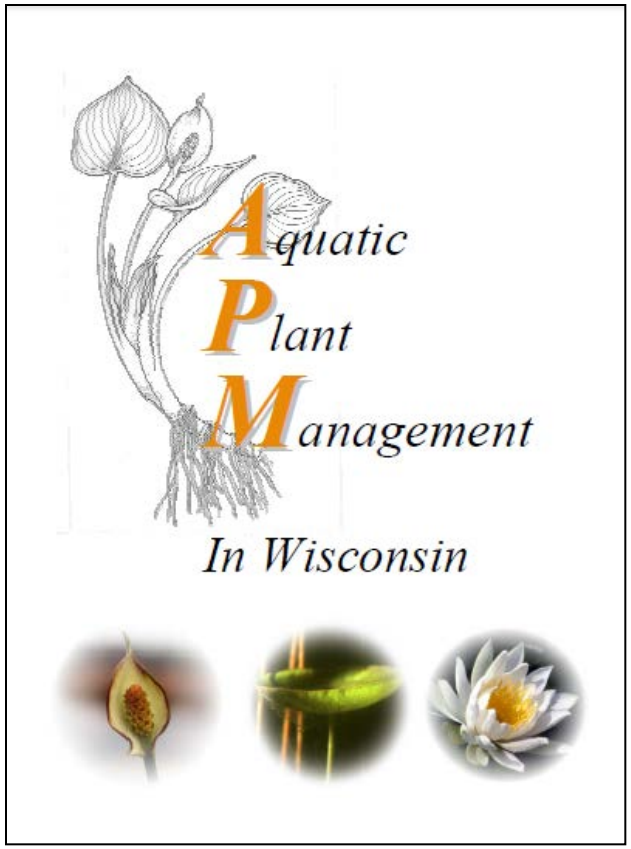
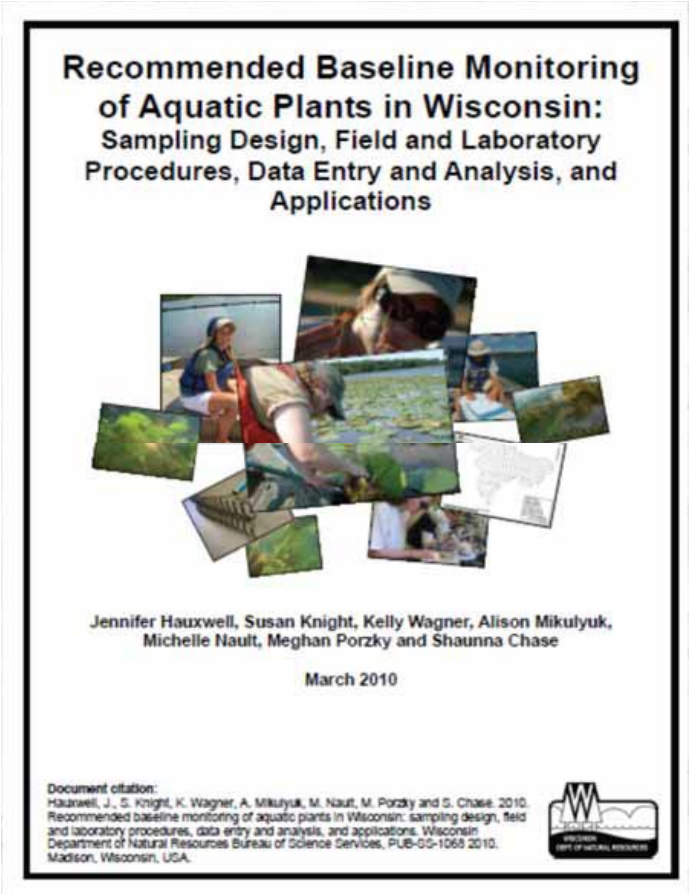
# Eurasian water-milfoil management

- Grants and Technical Assistance Available
- Operational research
- Importance of Monitoring

# Lakes Partnership Technical Assistance

- Guidance on APM/AIS Planning
- Standardized monitoring to evaluate management



# APM Planning Checklist

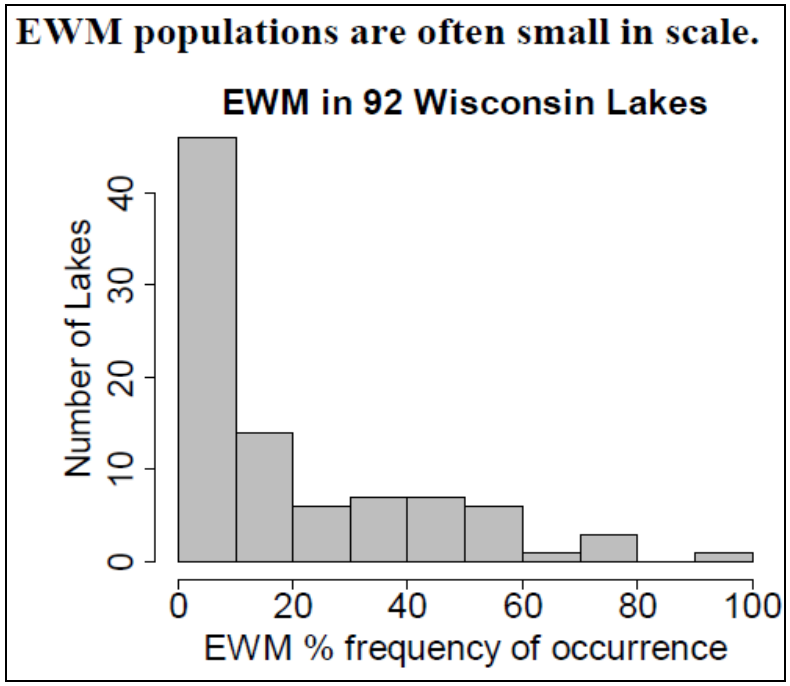
- Set Goals
- Take inventory of your lake
  - Aquatic Plant Management History
  - Plant Survey
  - Critical Areas of Fish and Wildlife Habitat
  - Water Quality
  - Areas of recreational use and restrictions
  - Lake user perceptions of aquatic plant issues
  - Watershed issues affecting plant growth
- Develop management objectives needed to maintain beneficial ecological and recreational lake uses.
  - Include prevention strategies for additional invasion
- Analysis of management alternatives
  - Consider feasibility, efficacy and non-target/water quality impacts
- Discuss preferred recommendations with regional DNR APM Coordinator
- Develop a strategy for evaluating management
  - Aquatic plant data
  - Water quality data
  - Herbicide concentration data

OPEN ACCESS Freely available online

PLOS | ONE

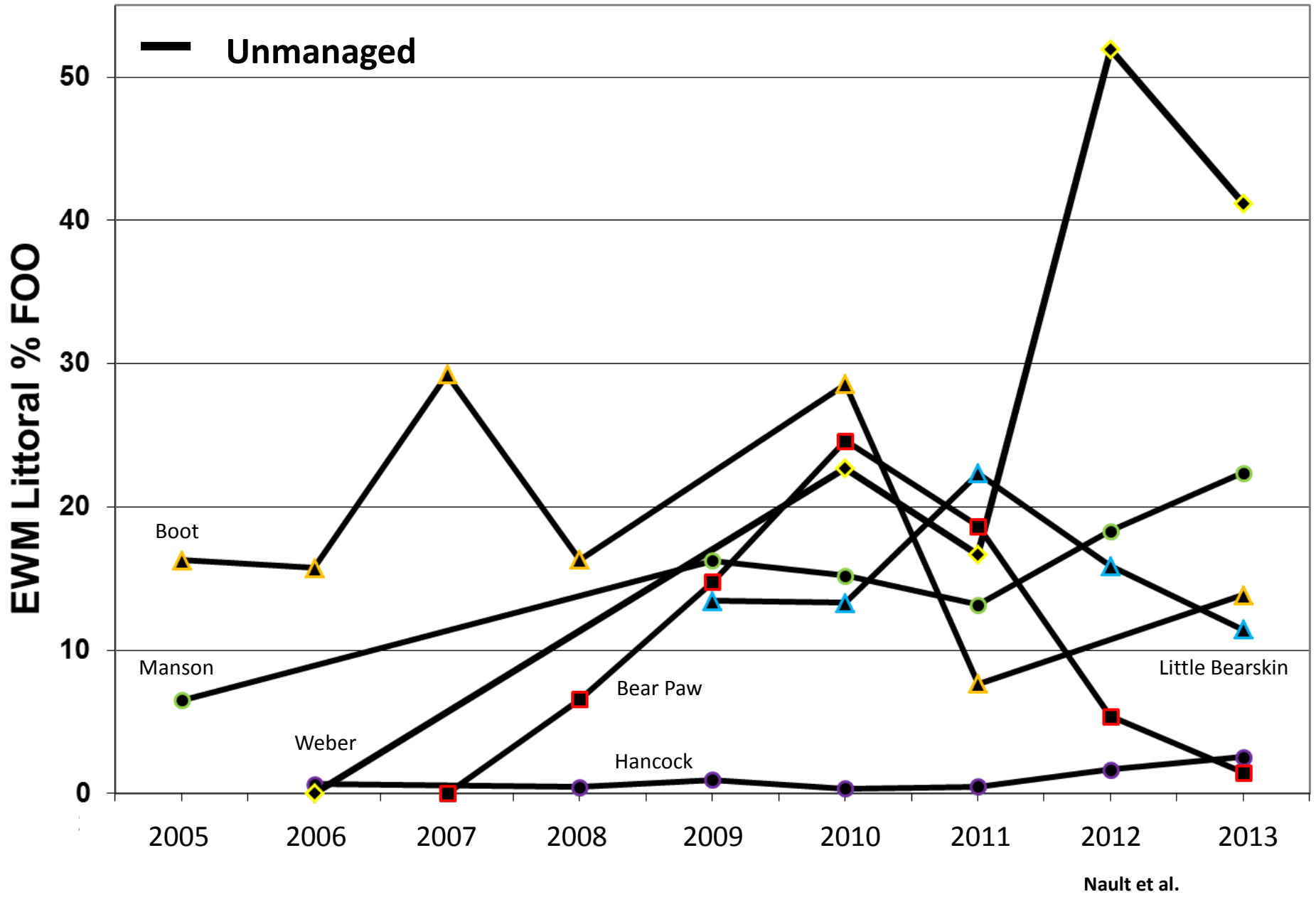
# Commonly Rare and Rarely Common: Comparing Population Abundance of Invasive and Native Aquatic Species

Gretchen J. A. Hansen[1*¤a], M. Jake Vander Zanden[1], Michael J. Blum[2], Murray K. Clayton[3], Ernie F. Hain[4], Jennifer Hauxwell[5], Marit Izzo[1¤b], Matthew S. Kornis[1¤c], Peter B. McIntyre[1], Alison Mikulyuk[1,5], Erika Nilsson[1¤d], Julian D. Olden[6], Monica Papeş[1¤e], Sapna Sharma[1¤f]




"both invasive and native species occurred at low densities in most locations where they were present."

# A “Wait and See” Strategy can be an option

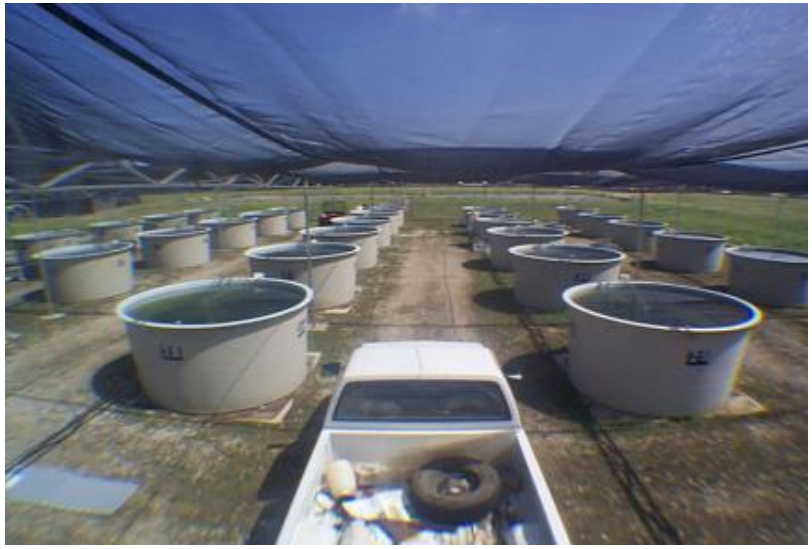


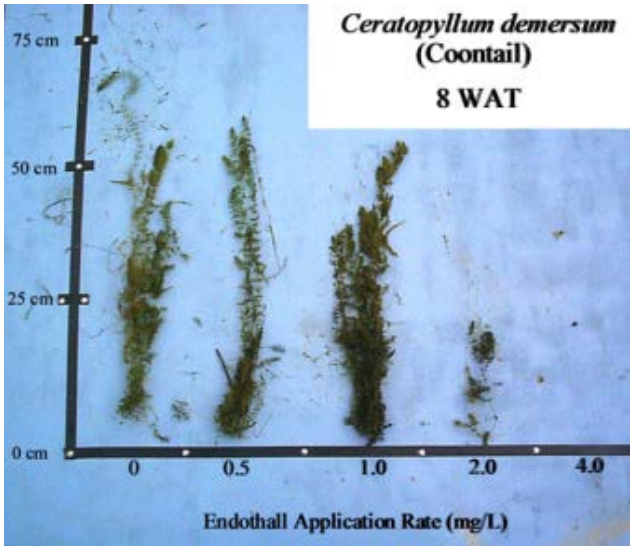

Nault et al.

# Much research has been done to find appropriate EWM control techniques

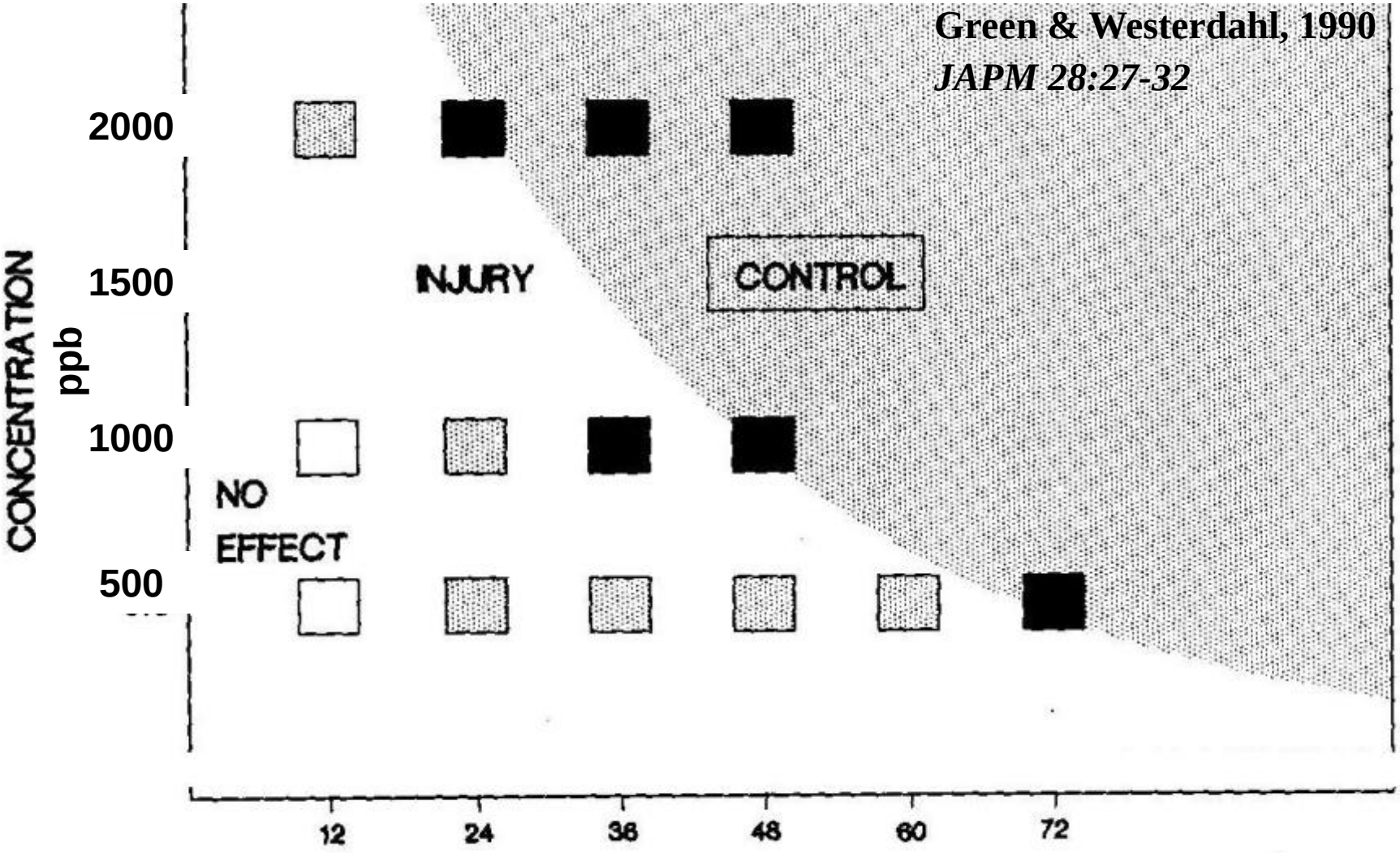
## Indoor Growth Chambers

## Outdoor Mesocosm Tanks





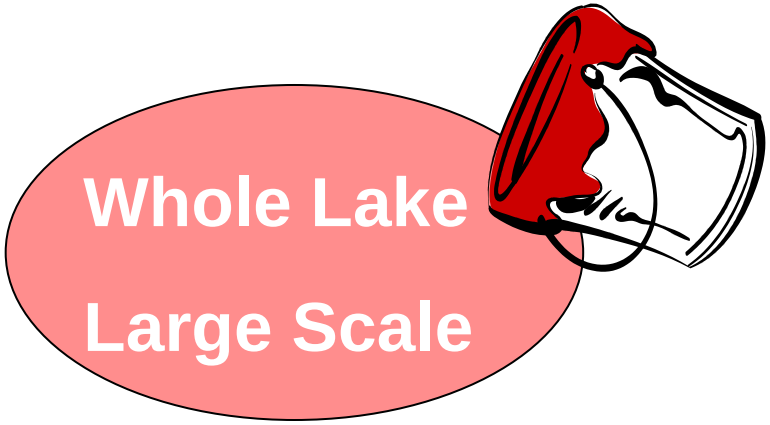
# We know the required exposure time for control



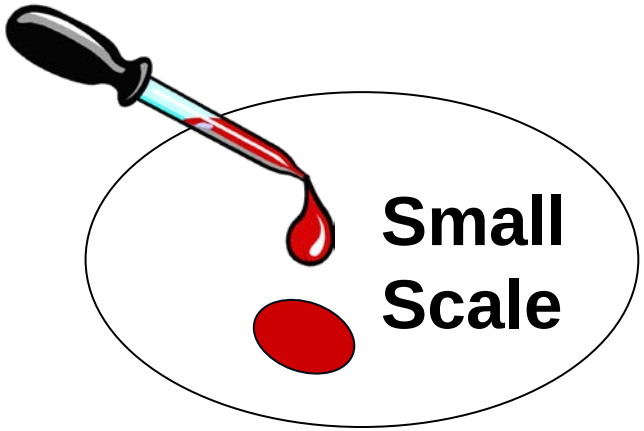

**Recommended label rate:**
**2.0 – 4.0 ppm**

**1.0 ppm = 1.0 mg/L = 1000 ppb**

# EWM Management Scenarios

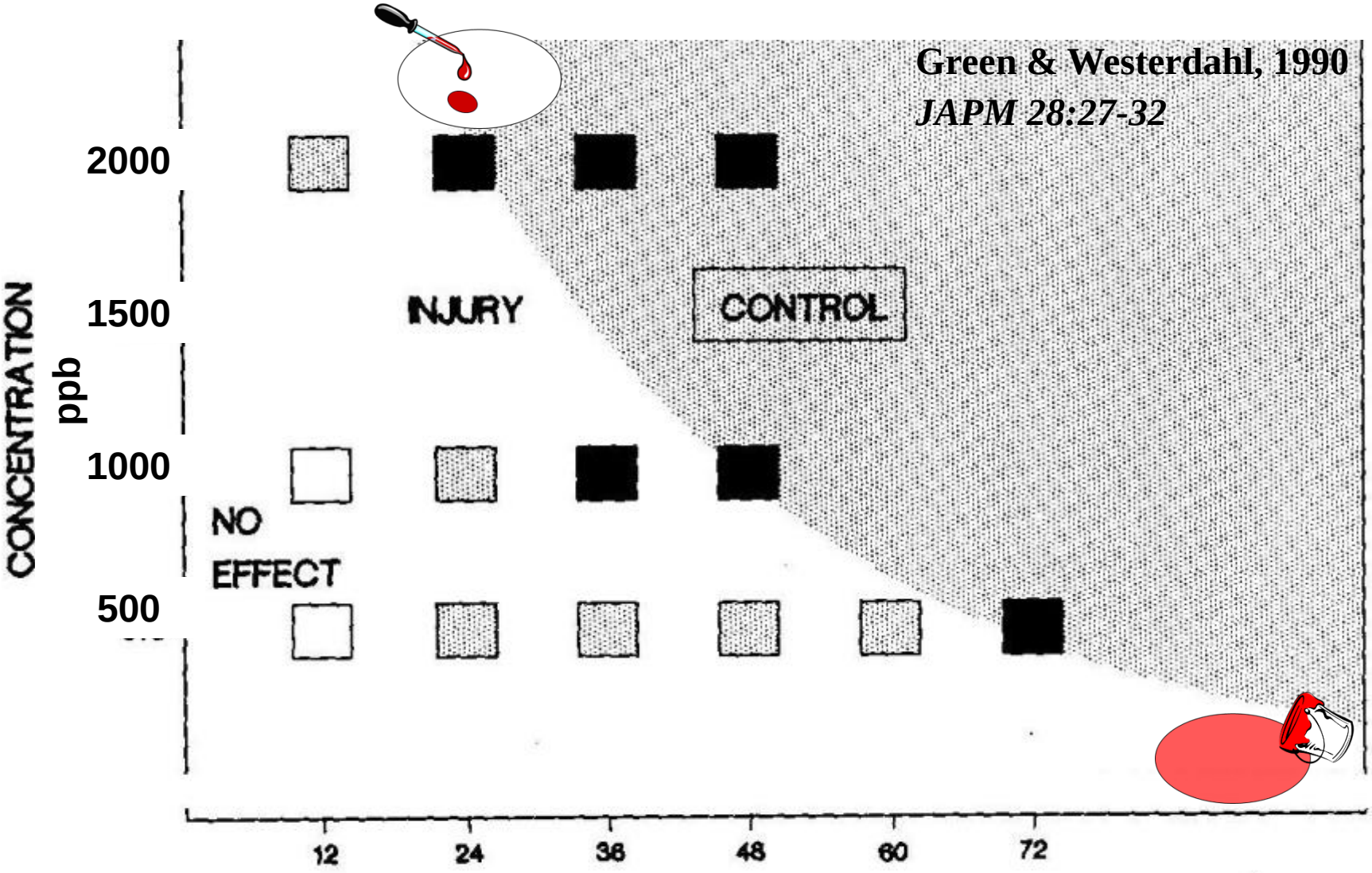



**Amount of herbicide applied will have lakewide effects on plants (>0.1 ppm lakewide)**




**Herbicide will be applied on a small scale where dissipation will not result in significant lakewide concentrations**

# We know the required exposure time for control

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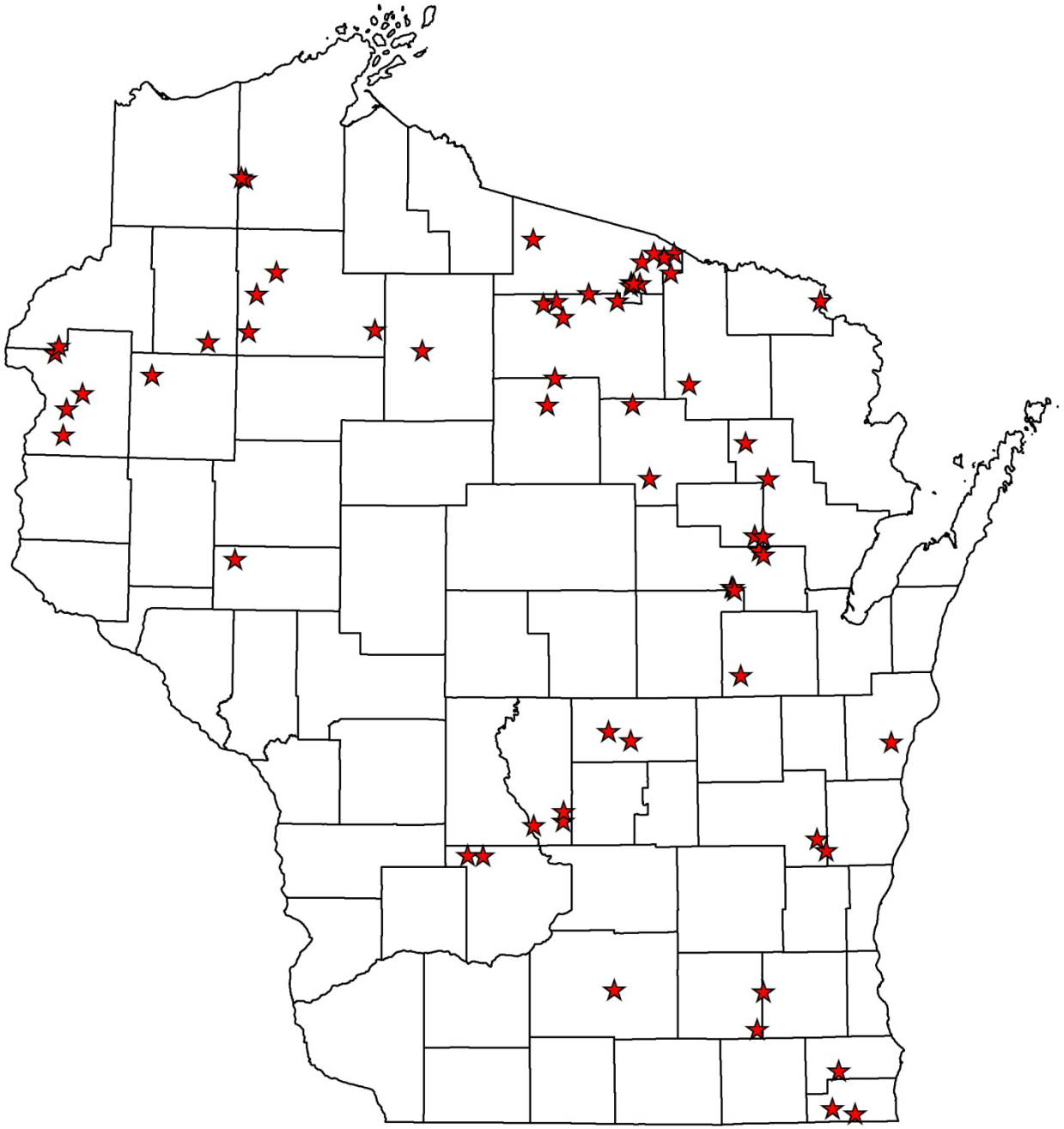
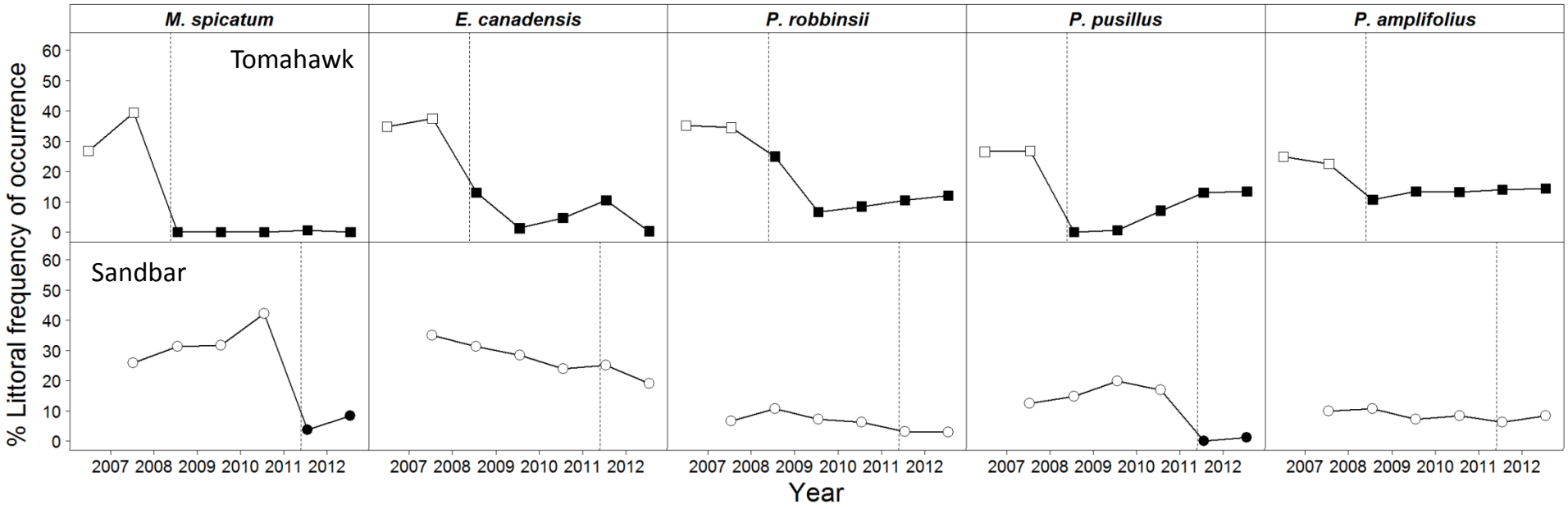
# Herbicide Monitoring Project Lakes

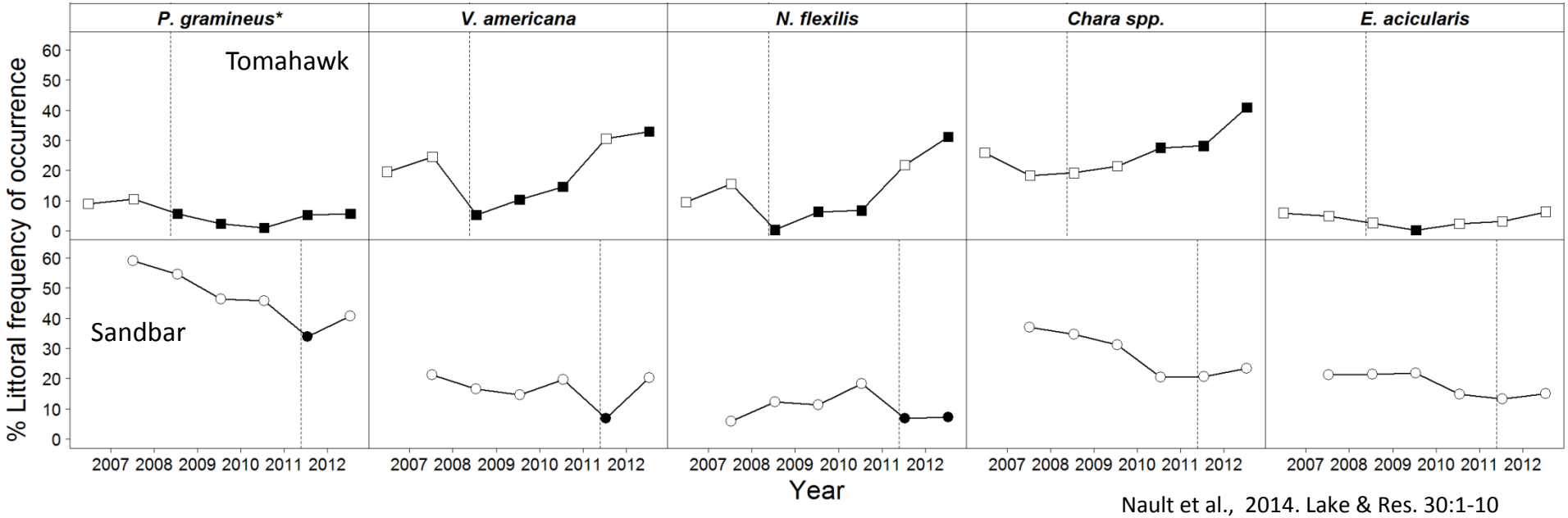


# Eurasian water-milfoil can become a problem, but management must be scaled appropriately

Sandbar Lake, Bayfield County Photo by Frank Koshere

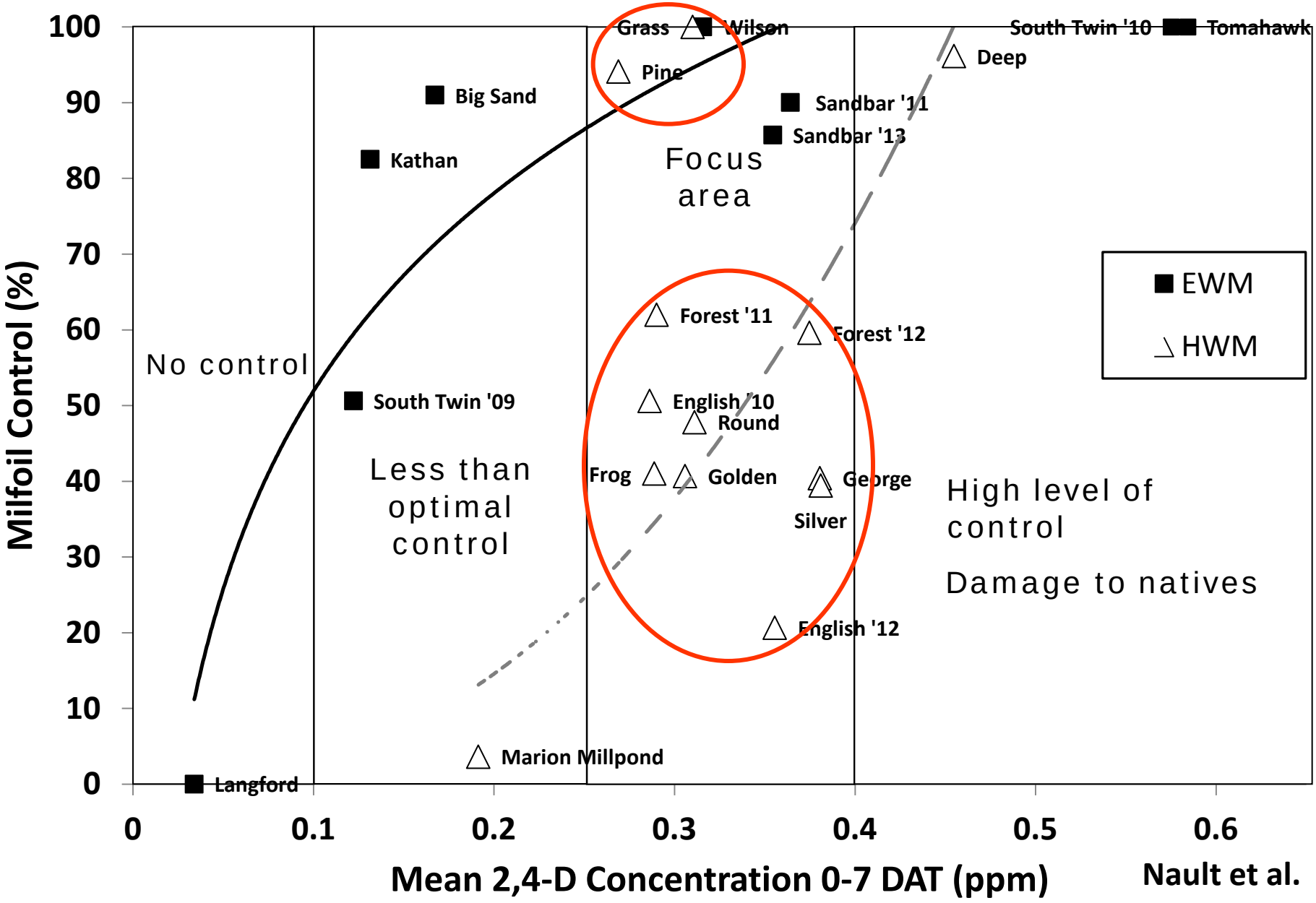
# Whole-lake treatments: Effective, but can be done too well.



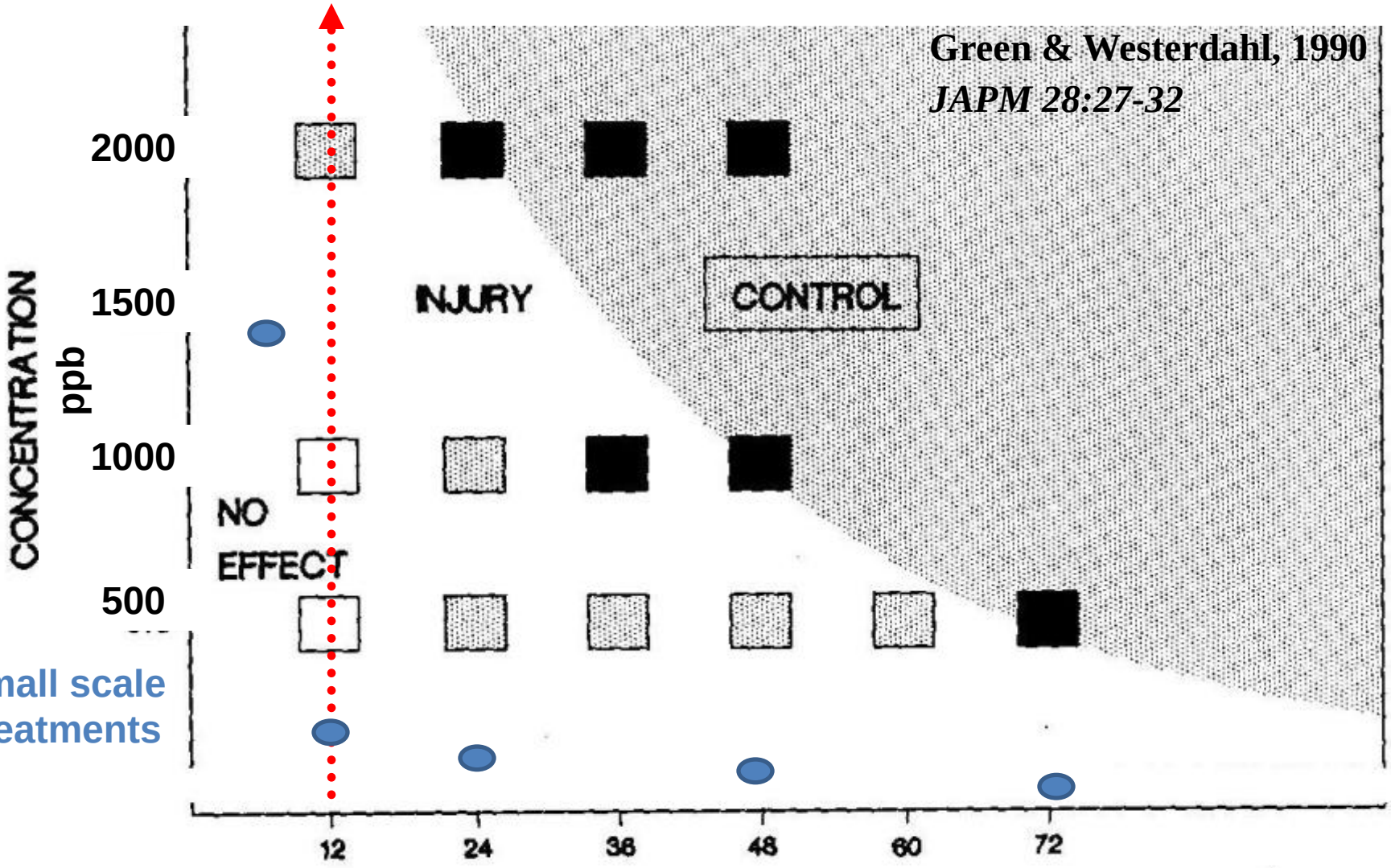




Nault et al., 2014. Lake & Res. 30:1-10

# Whole-lake Treatment Milfoil Control



# Concentration exposure time not great enough for plant control in spot treatments




Small scale Treatments

Nault et al.

# There is a need other management options for smaller milfoil beds

Archibald Lake Association

www.archibaldlake.com

**Manual Removal Method for Eurasian Water Milfoil**

*By Steve & Karen Fleming*

Other lake associations are trying manual removal with volunteer help.

Contractors and sometimes volunteer divers are available to handpull deeper areas.



Golden Sands RC&D has instructional materials for manual removal.

# EWM management take homes

- Eradication is not a realistic goal, unless a new population is discovered.
- No one management strategy alone will control and maintain low levels of AIS, while not causing other impacts.
- EWM is naturally variable from year to year – a wait and see strategy is a viable option.
- Whole-lake treatments effective at large reductions, but they can be overdone.
  - Flowing water problematic in getting appropriate concentration contact.
  - Some clones of hybrid milfoil appear to be tolerant to commonly used herbicides.
- Small treatments (relative to lake size) appear to not hold appropriate herbicide concentration long enough.
  - Additional maintenance strategies needed – hand pulling, suction harvesting, barriers for small treatments, bottom mats
- We are evaluating the toxicity of 2,4D to fish and aquatic insects – more to come in the future.

# Questions