Fish Sticks and Bulrush Minus Eurasian Milfoil

Kangaroo Lake Association Meeting
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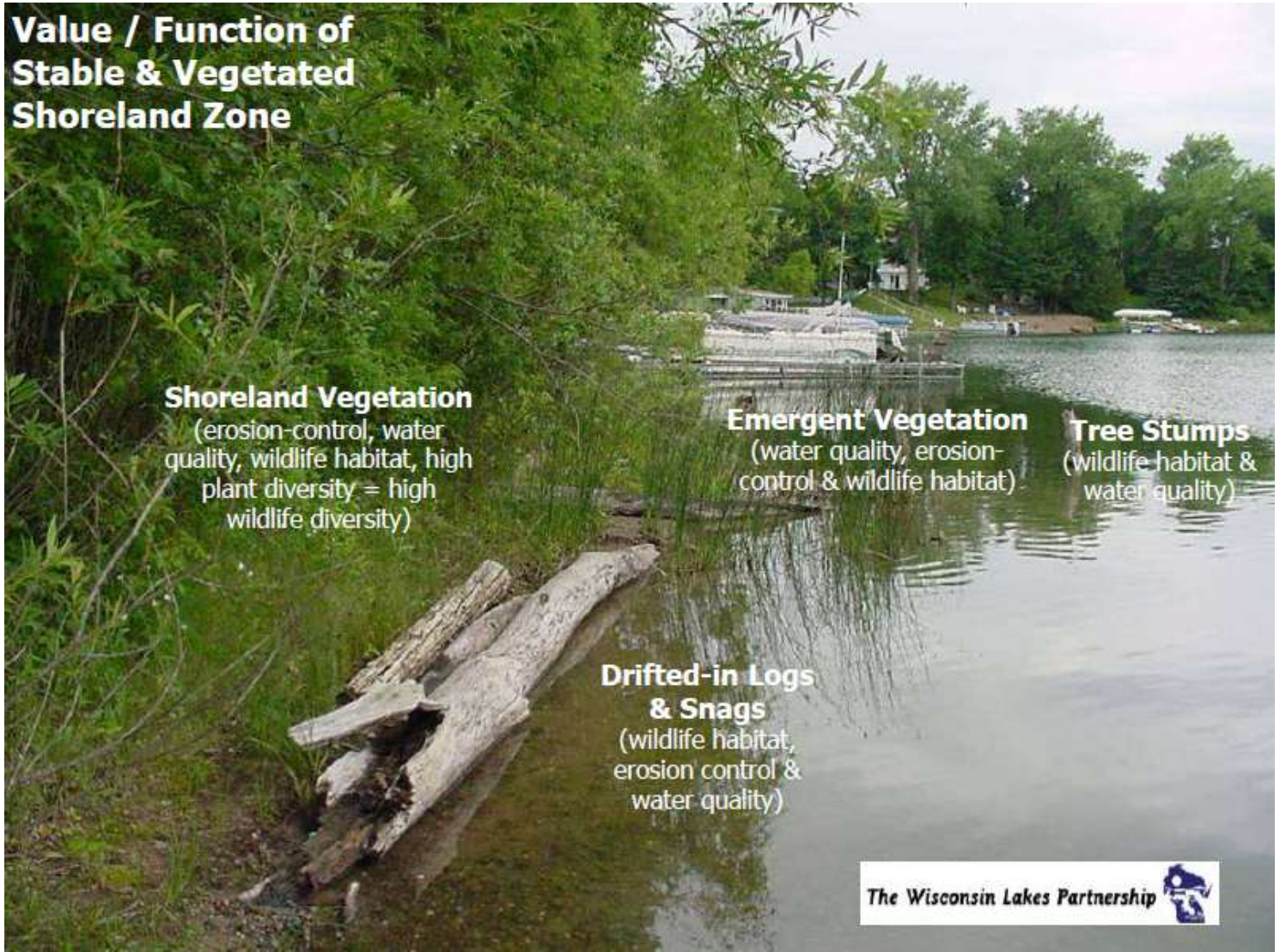
Importance/functions of a buffer zone

- Help clarity by holding sediment in place.
- Take up nutrients that would be used by algae.
- Shelter for wildlife.
- Wildlife food and nesting areas.
- Can help reduce erosion and runoff.
- Spawning beds in sedges /emergent plants for fish.

90% of all lake life is born, raised and fed in the area where land and water meet.

Many benefits of fallen logs and bulrushes



Sad Fish.

Happy Fish!

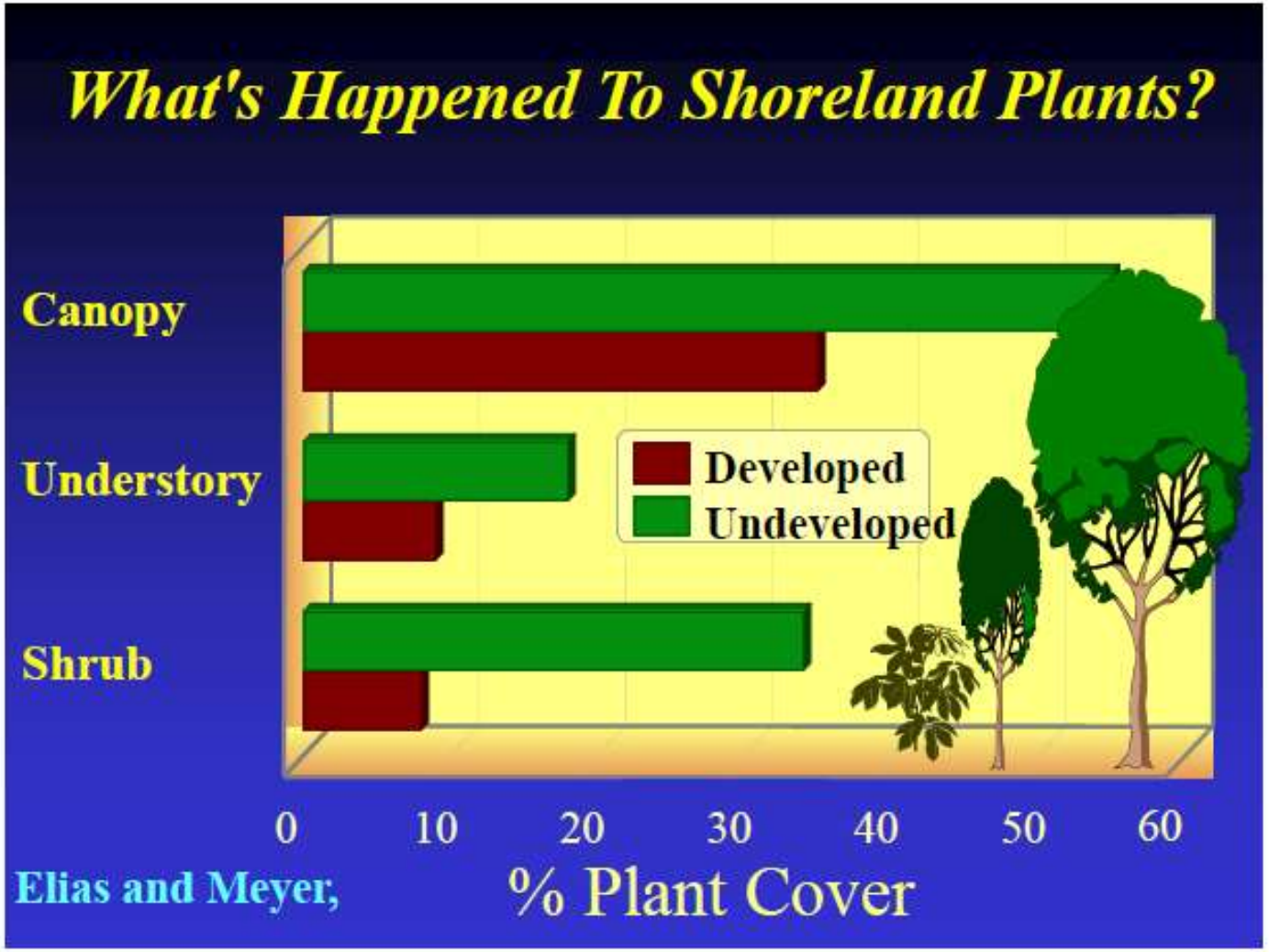
Some fish need thin branches or emergent plants for spawning.

Many Wildlife Species Benefit from Wood and Vegetation

Uncommon Birds Benefit from Habitat and Feeding Opportunities

Many people like to keep tidy shorelines

Effects of Shoreline Development



Effect on Submerged Wood

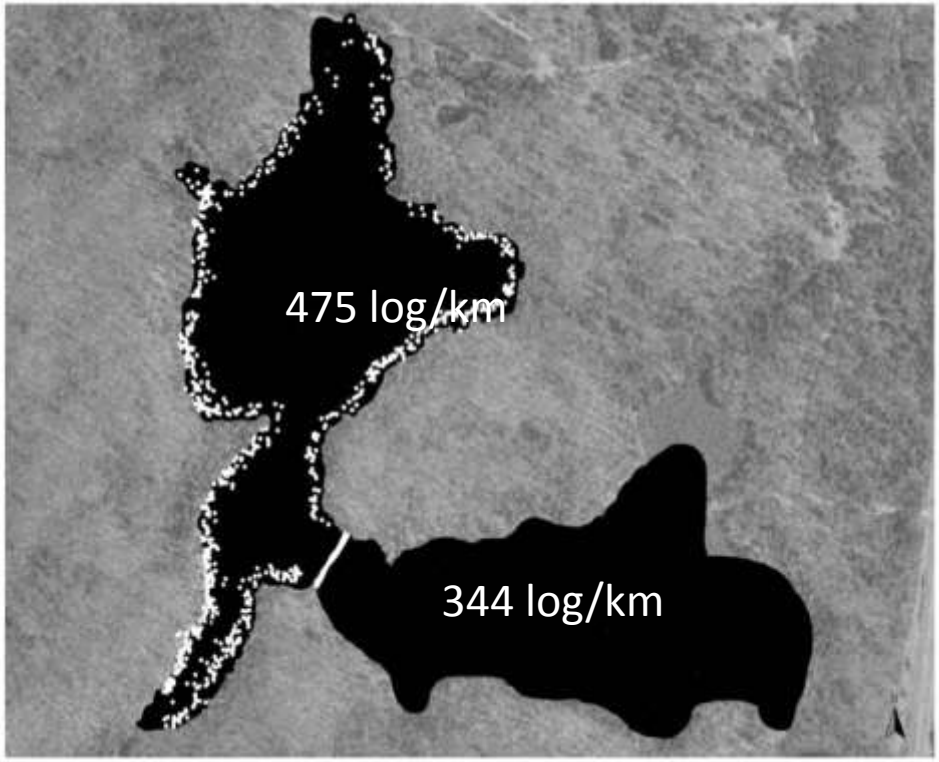
- Study of northern WI/ Upper Peninsula MI, found undeveloped lakes averaged **894 logs/mi** of Shoreline (Christensen et al. 1996)
- Study of 16 northern WI lakes
  - Undeveloped shoreline on developed lakes averaged **610 logs/mi** of shoreline
  - Developed shoreline on same set of lakes averaged 92 logs/mi of shoreline (Jennings et al. 1999)

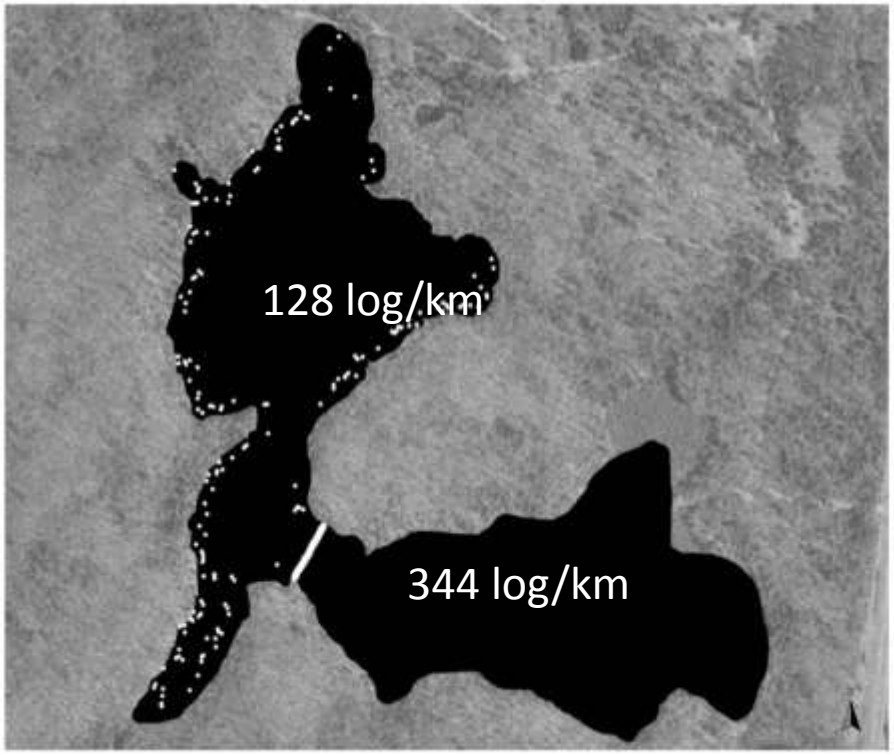
Effect on Emergent Vegetation

- Developed shorelines have less aquatic vegetation (Radomski and Goeman, 2001)
- Study of 24 Minnesota lakes
  - For each lake lot 2/3 of emergent and floating-leaf vegetation was lost.
  - Minnesota has lost 20-28% of emergent and floating plants from developed lakes.
  - Bluegill and sunfish size is smaller in lakes with less bulrush.

Wood Removal Experiment

Little Rock Lake Experiment
Vilas County, Wisconsin



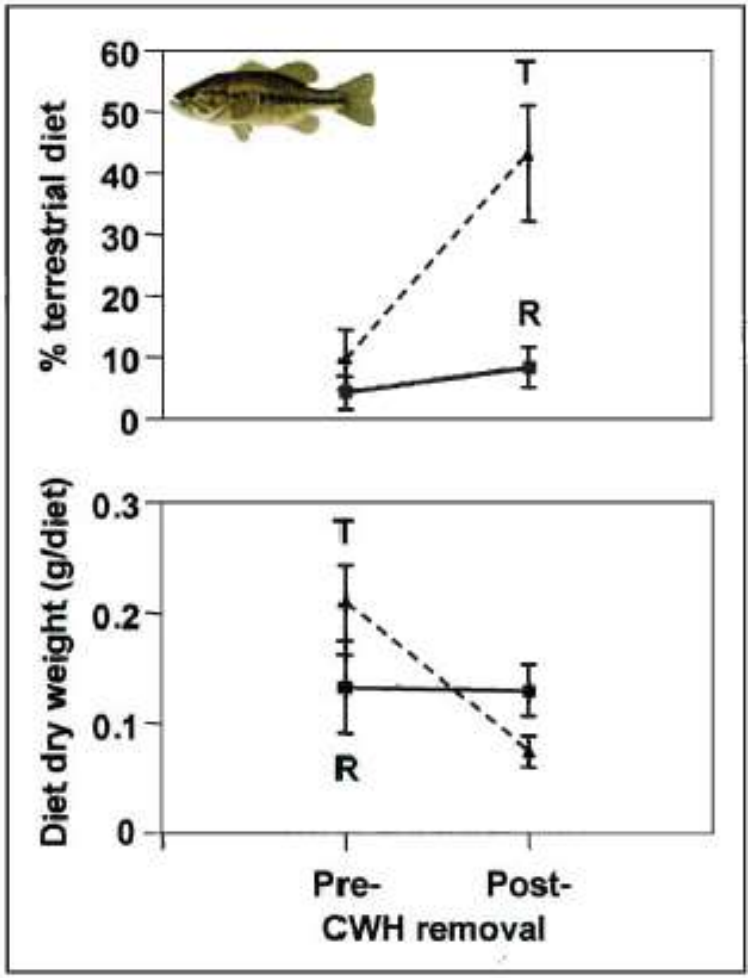


Sass et al 2006.

Wood Removal Experiment Results
Game Fish Diet and Growth Changes

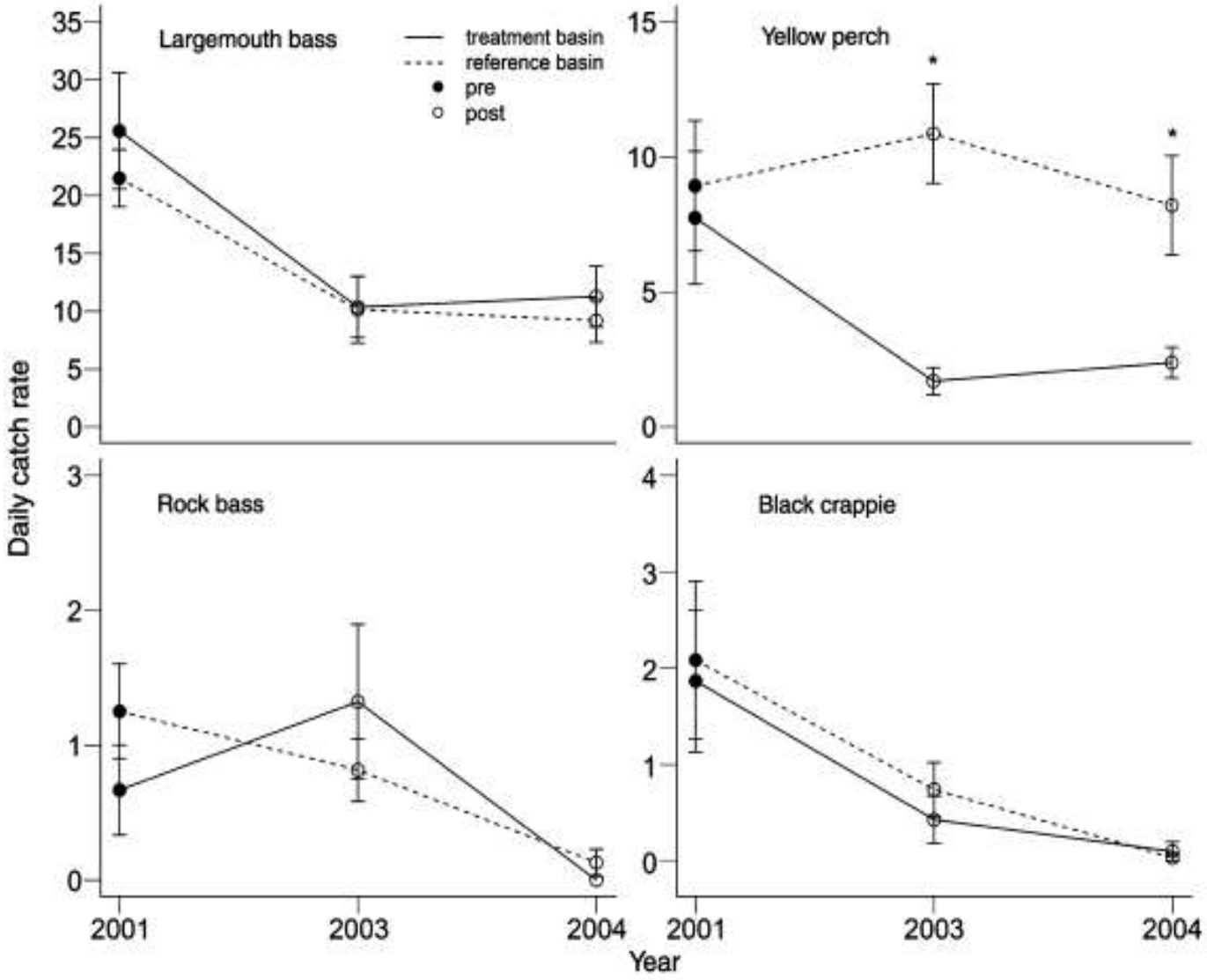
- Bass ate all perch and diet switched to occasional rodents, terrestrial insects and cannibalism.

- Largemouth bass take 1.5 more years to reach legal size in highly developed lakes than undeveloped lakes (Gaeta et al 2010).



Sass et al 2006.

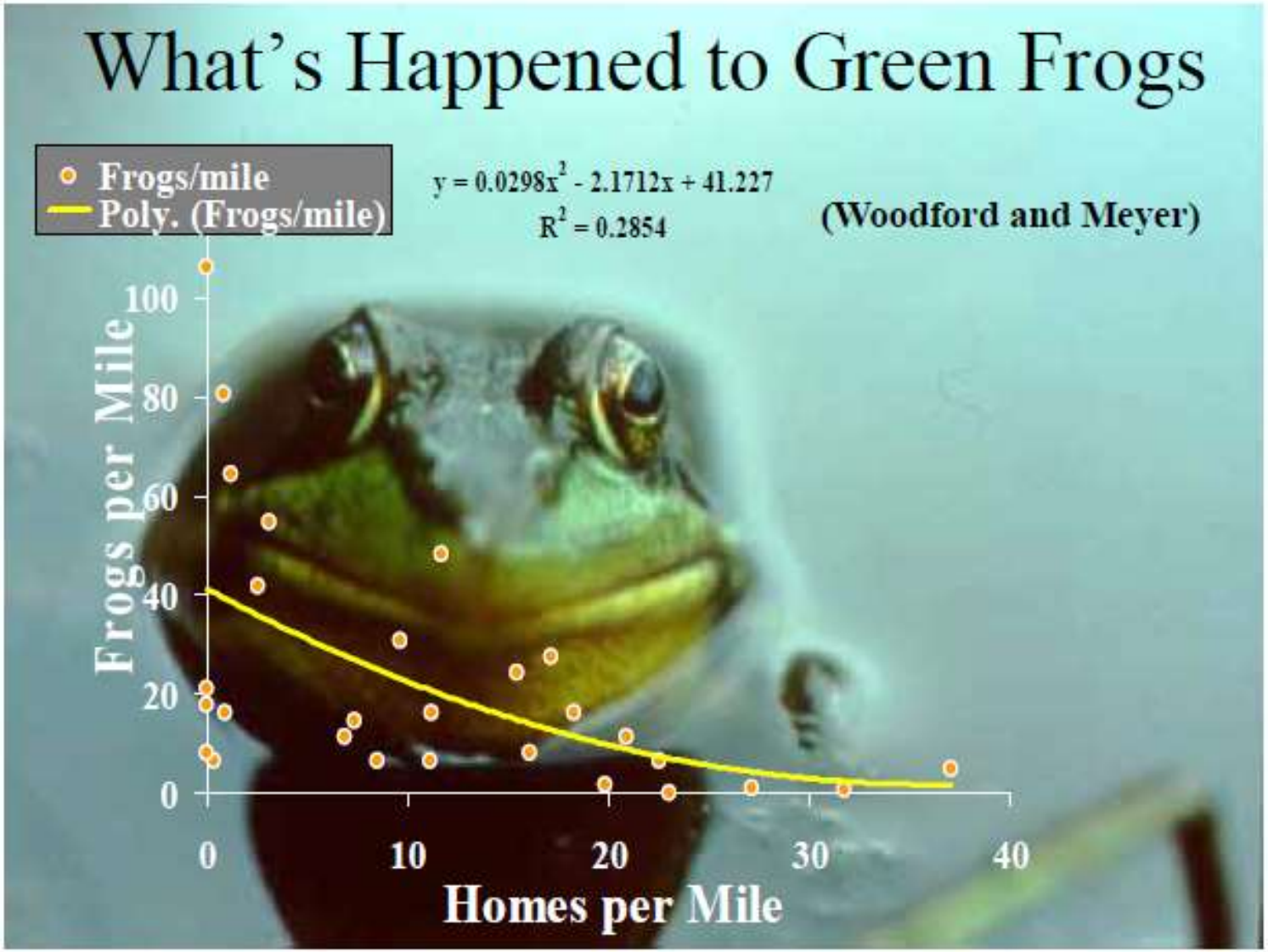
Effects of Wood Removal Small Fish Decline



Helmus et al 2006.

Effects of Shoreline Development

Effects of Shoreline Development



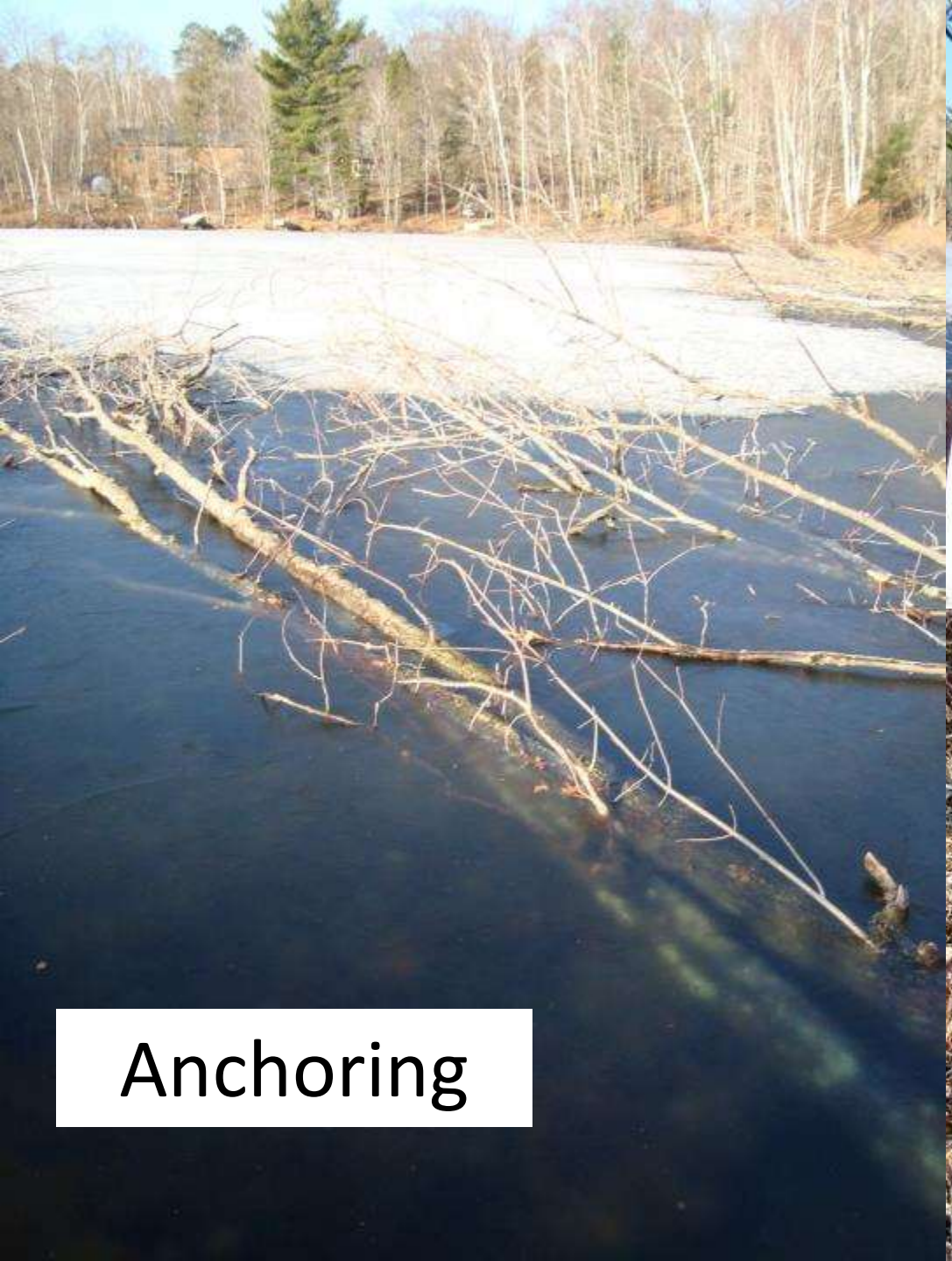
This is your chance to turn back the clock

“Fish Sticks”

- Fallen tree complexes placed in nearshore area that have not been cut near the lake shoreline.
- Fish sticks general permit ~ $303, can be covered by lake management grant
- New permit fee reduction allows additional landowners to be covered under the permit at no additional cost.
- The Nature Conservancy has agreed to donate logs for Kangaroo Lake landowners
- Contact your local DNR fisheries biologist to help with the project

RAM 1500

NEW HOLLAND



Anchoring

DNR has developed Best Management Practices

How to guidance available to public and staff on completing successful fish sticks projects

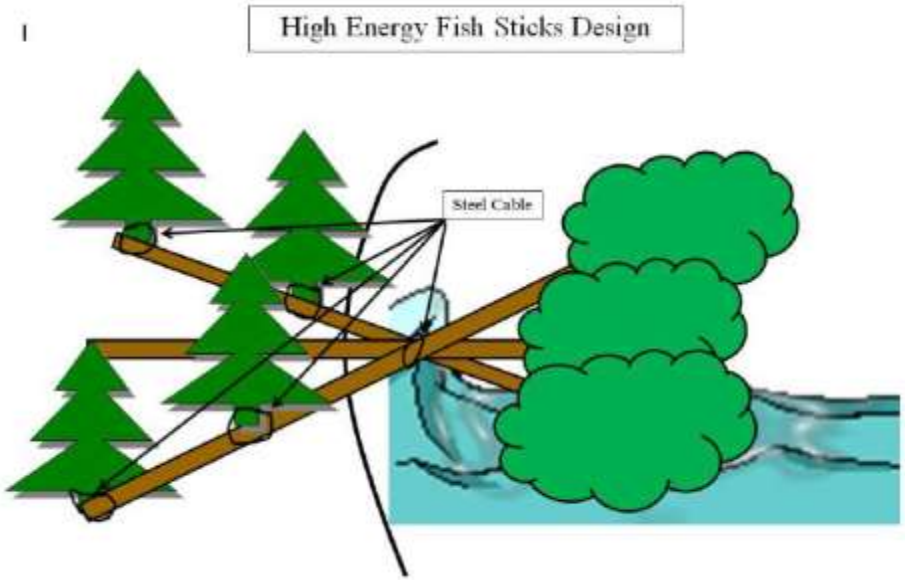
Where to place trees

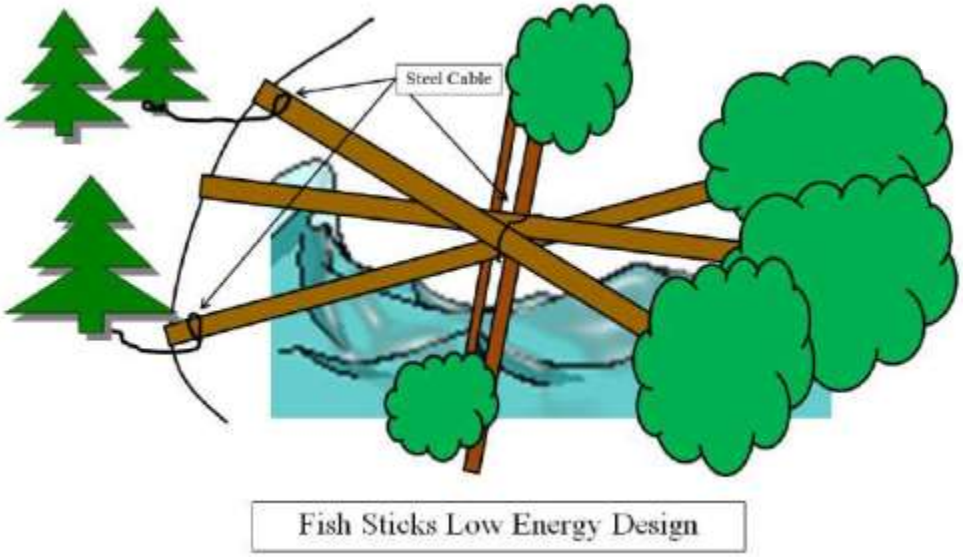
- Whole lake for lakes less than ~250 acres
- Lakes larger than ~250 acres, in bays and transition areas out of bays
- Areas protected by points or islands
- Bullrush beds
- Areas with submerged aquatic plants
- Areas that aren’t in riparian use corridor

Where **not** to place trees

- Navigation areas
- Swimming areas
- Very shallow water areas (1 foot deep, 75 feet from shore)
- High energy shorelines (indicated by ice heave)
  - DNR testing different types of placement which mimics what is observed on high energy shorelines

Strategies for Different Shorelines





Logistics Step by Step

- **Permits** (DNR/volunteer)
- **Plowing roads** (contractors)
- **Cutting or delivering trees** (volunteers, contractors, DNR, LCWD)
  - The Nature Conservancy volunteered for Kangaroo Lake
- **Stage trees on ice** (volunteers, contractors, DNR, LWCD)
- **Build complexes** (contractors, DNR, LWCD)
- **Anchor Complexes** (volunteers, contractors, DNR, LWCD)
- **Check at ice out** (DNR, volunteer)

Go to **dnr.wi.gov** and type in **“Fish Sticks”**

Fishing Wisconsin

Fish sticks: Improving lake habitat

Trees have been dropping naturally into Wisconsin lakes since the glaciers receded. Fallen trees provide shelter and feeding areas for a diversity of fish species and may also provide nesting and sunning areas for birds, turtles and other animals above the water. Nearly all fish species use woody habitat for at least a portion of their life cycle.

Skid steer placing a red pine on Middle Eau Claire Lake in Bayfield County.

Play Pause Next

What are fish sticks?

"Fish Sticks" projects are intended to restore woody habitat in lakes by adding trees to the near-shore area. They are large woody habitat structures that use either single trees or trees grouped together. Fish sticks structures are anchored to the shore and are partially or fully submerged near the shoreline of a lake. Fish sticks projects are completed to provide additional fish habitat, as well as to expand fishing opportunities by anglers and provide protection to shorelines. Additional information on fish sticks and the fish sticks implementation process can be found in the Fish Sticks Best Practices Manual. [PDF].

Fish sticks projects generally include a variety of cooperators: lakefront property owners, lake associations or districts, DNR permitting and fisheries staff, county land and water conservation departments and possibly federal agencies.

How can I get involved in a fish sticks project?

- Fish sticks projects are permitted through a general permit process.
- Contact your local fisheries biologist for recommendations.

Fish sticks literature

- Impacts of lakeshore residential development on coarse woody debris in north temperate lakes [PDF]

Fishing Wisconsin

Got license?
Give yourself the license to relax and catch some memories while you're at it.

Regulations
Know the regulations to make your fishing more enjoyable.

Places to fish
Wisconsin offers a variety of fishing opportunities. Give them a try!

Get started
Get the basic information you need to get on the water and try your luck.

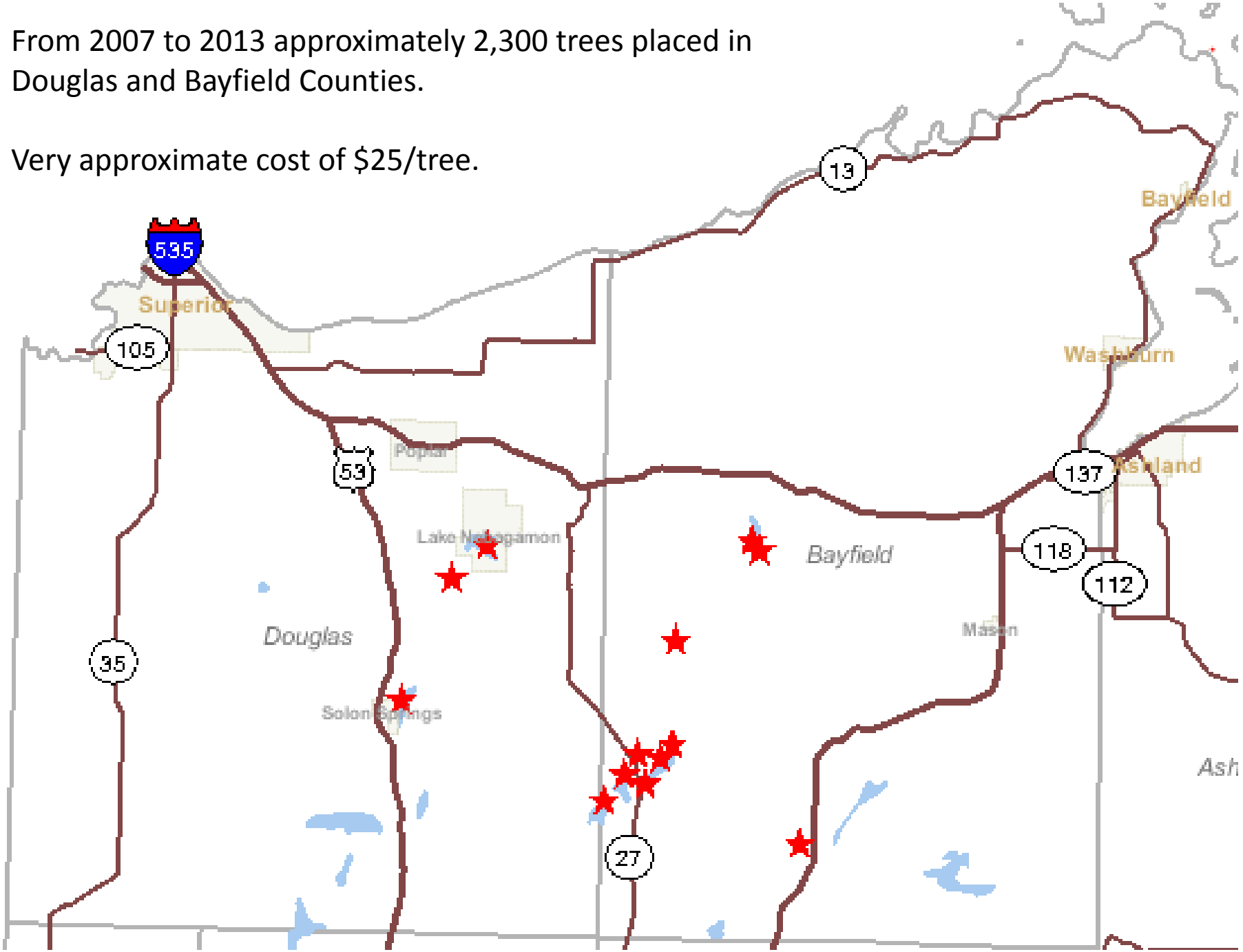
Fish sticks manual and guide

Making fishing better

- Ceded territory
- Lake Michigan

From 2007 to 2013 approximately 2,300 trees placed in Douglas and Bayfield Counties.

Very approximate cost of $25/tree.



Emergent Plant Restoration
Vilas County, Wisconsin

Emergent Plant Restoration
Vilas County, Wisconsin

Five years later!

Obstacles and opportunities to improve bulrush restoration

(from Vanderbosch and Galatowitsch 2010)

- Timing of planting – early summer has the best chance of success.
- Plant on sites with lower wave energy
- Use root stock that is well developed.
- Minimize browsing by muskrats and deer
- Use experts in Wisconsin and Minnesota for technical advice.

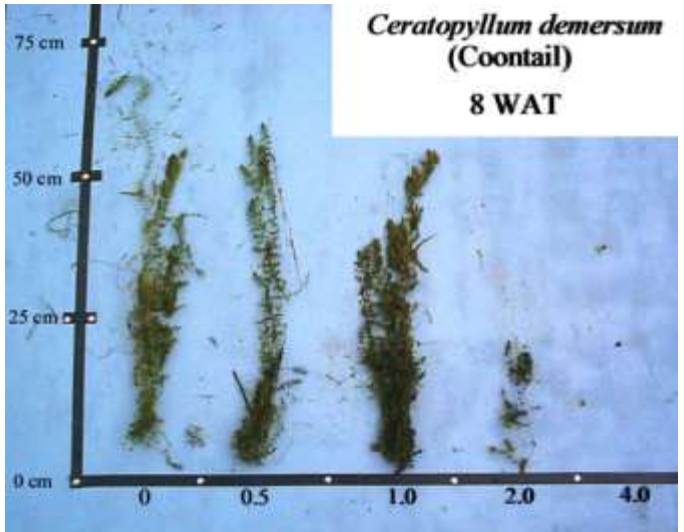
Eurasian milfoil can become a problem, but solution must be scaled appropriately

Sandbar Lake, Bayfield County Photo by Frank Koshere

Much research has been done to find appropriate management techniques

Indoor Growth Chambers

Outdoor Mesocosm Tanks



Problems with getting adequate herbicide exposure

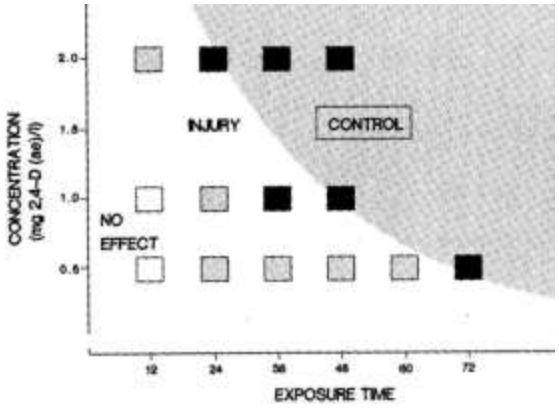
- **Dissipation:** horizontal and vertical movement of herbicide within the water column
  - Wind
  - Water flow
  - Water depth
  - Herbicide moves offsite within 12 hours if treated area is a small percentage of the lake.
- **Degradation:** physical breakdown of herbicide into inert components
  - Microbial
  - Photolytic
  - 2,4D half-life in water is approximately 15 days

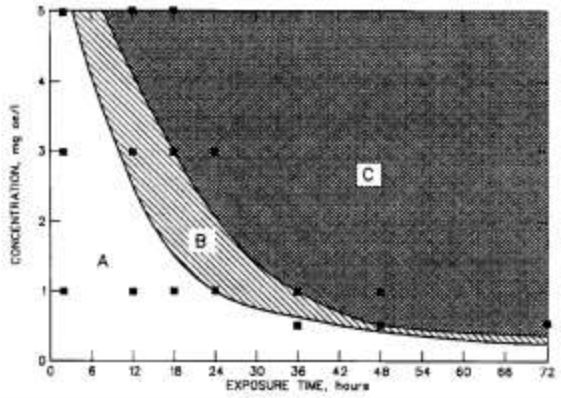
Aquatic herbicides and required exposure time for control

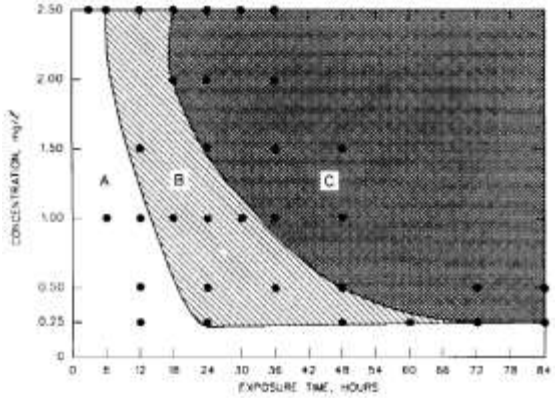
EWM

- 2,4-D: > 18 hours
- Triclopyr: > 18 hours
- Endothall: > 18 hours
- Diquat: > 1 hour
- Fluridone: > 60 days

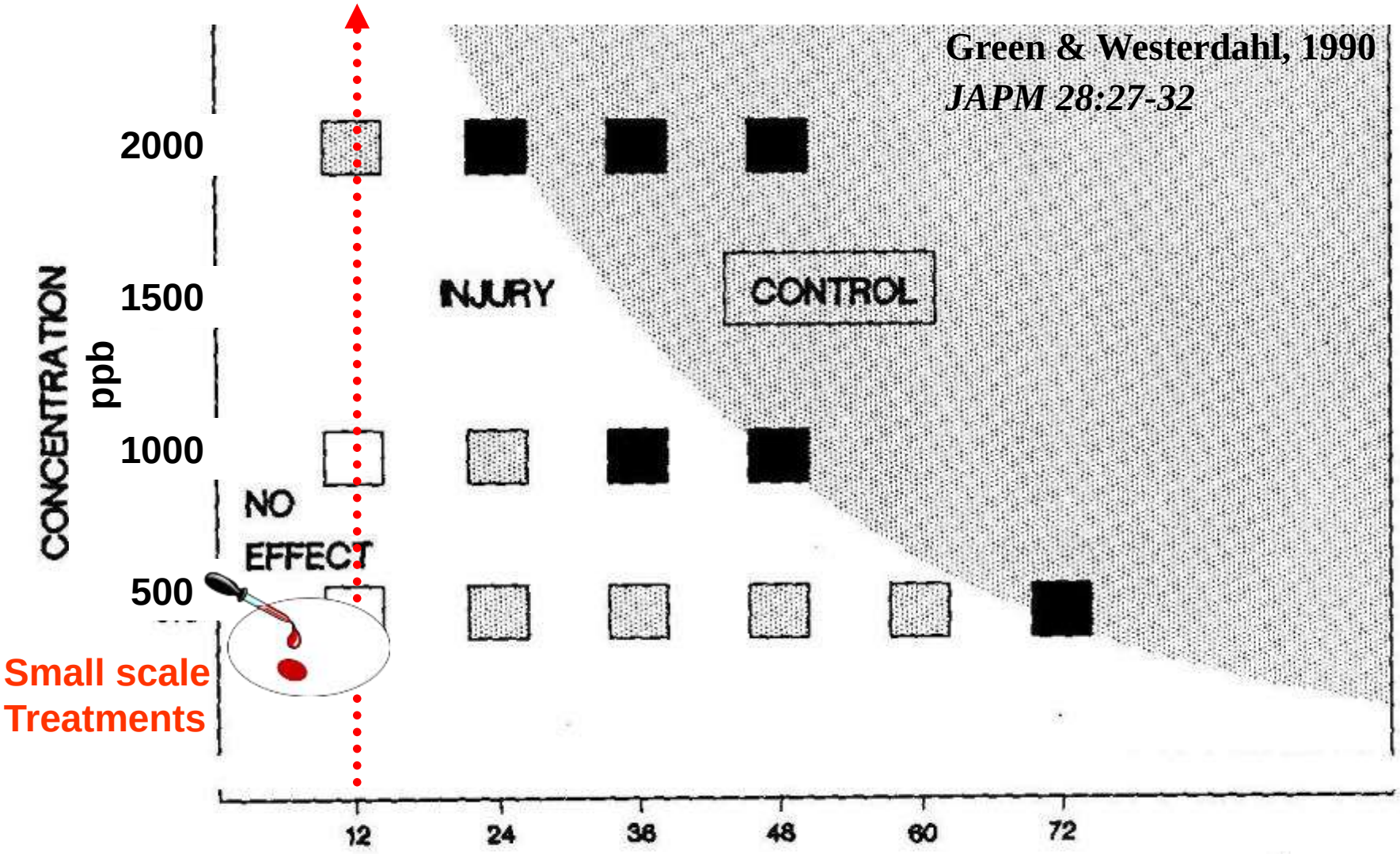
CLP







Concentration exposure time not great enough for plant control in small treatments



Recommended label rate:
2.0 – 4.0 ppm

1.0 ppm = 1.0 mg/L = 1000 ppb

There are other management options

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 instruction materials for manual removal.

Thank you for all you do to protect
and restore Kangaroo Lake!