

Protecting Forests for Fish: using Conservation Easements to Protect the Watersheds of Cisco lakes

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Photo: Mike Duval

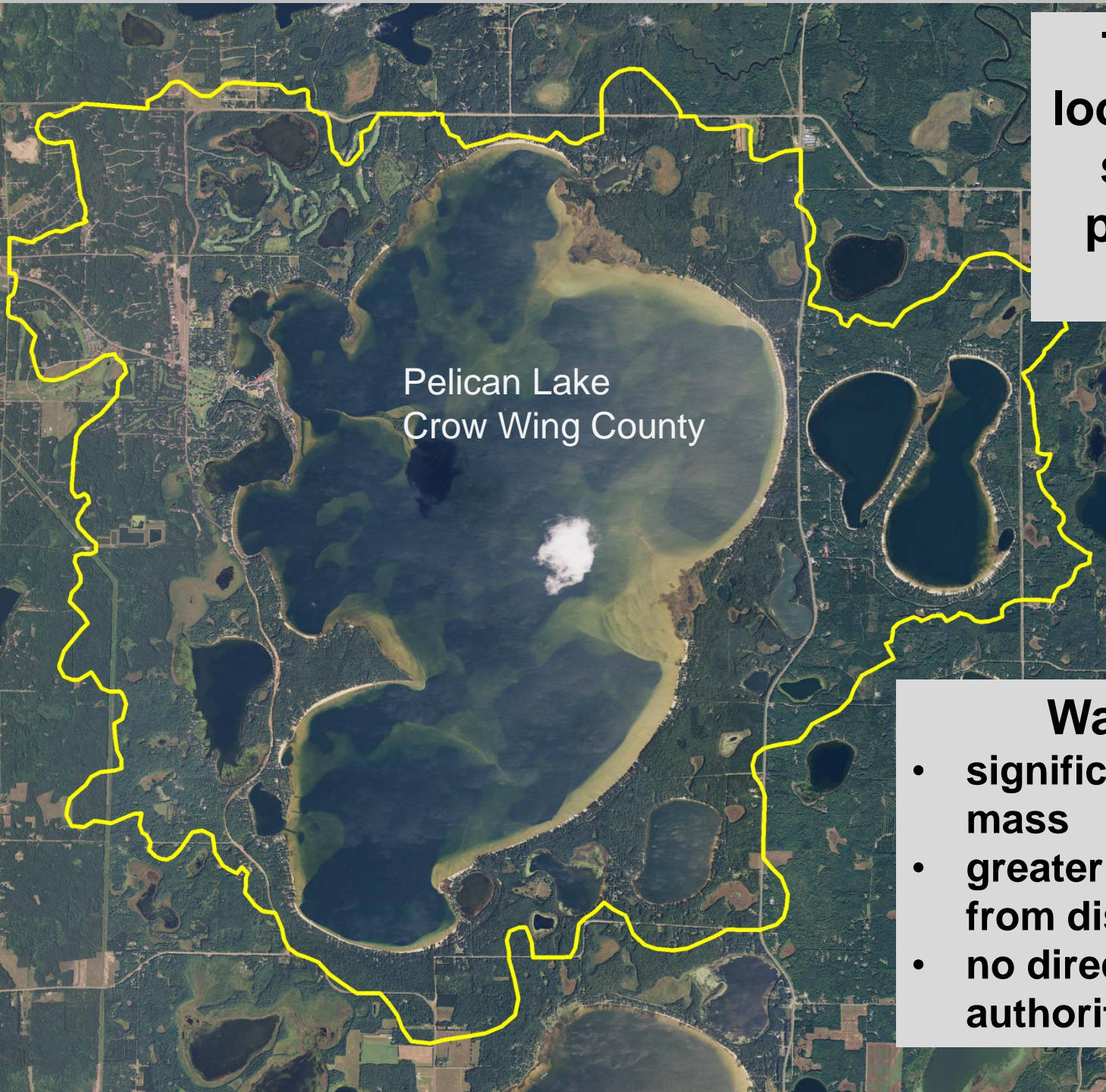
Photo: Eric Engbretson

**Sugar (Siseebakwet) Lake
Itasca, County
2000**



**Sugar Lake
2012**





**The need to
look beyond the
shoreline to
protect water
quality**

Pelican Lake
Crow Wing County

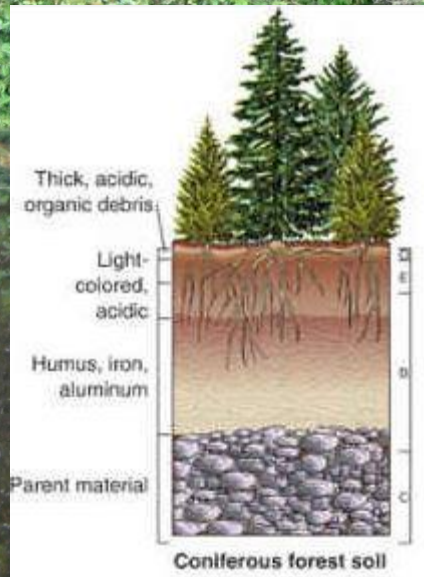
Watershed

- **significantly larger land mass**
- **greater nutrient loading from disturbed land**
- **no direct DNR regulator authority**

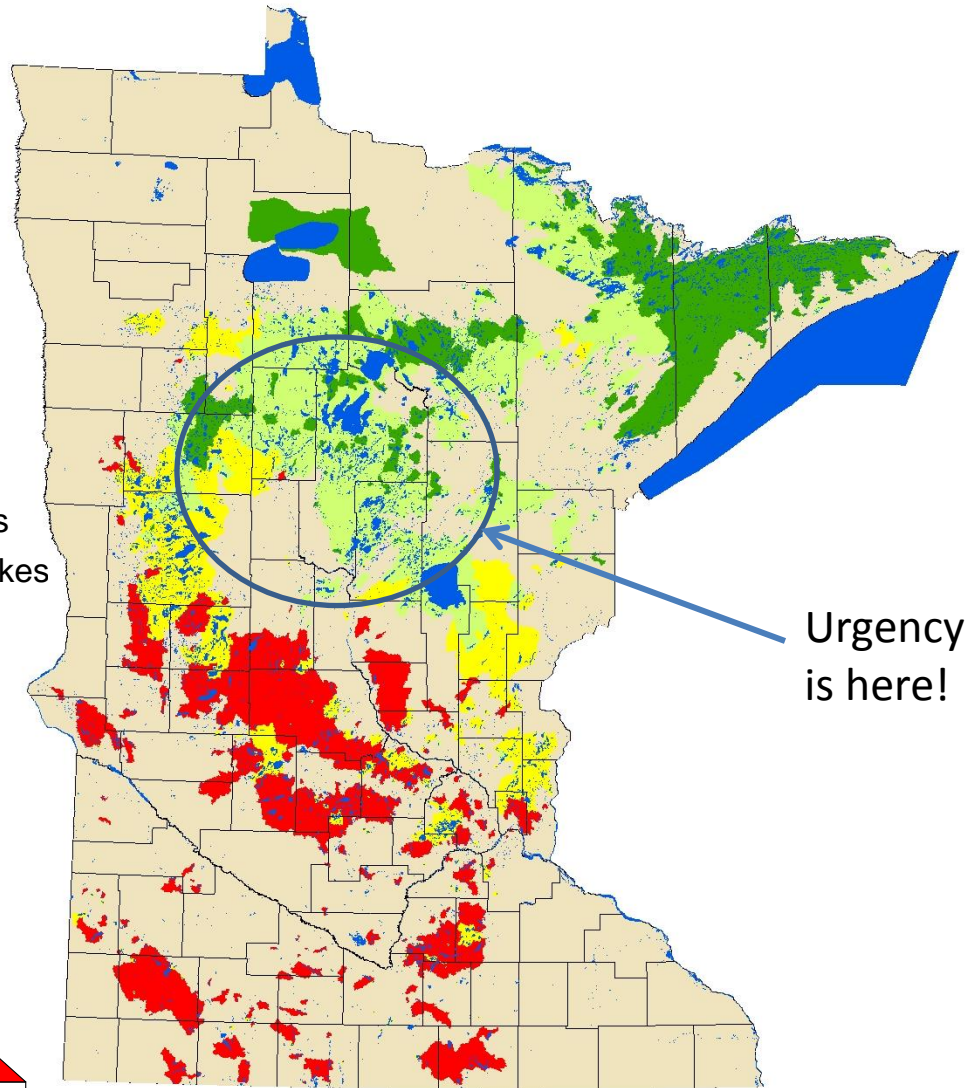
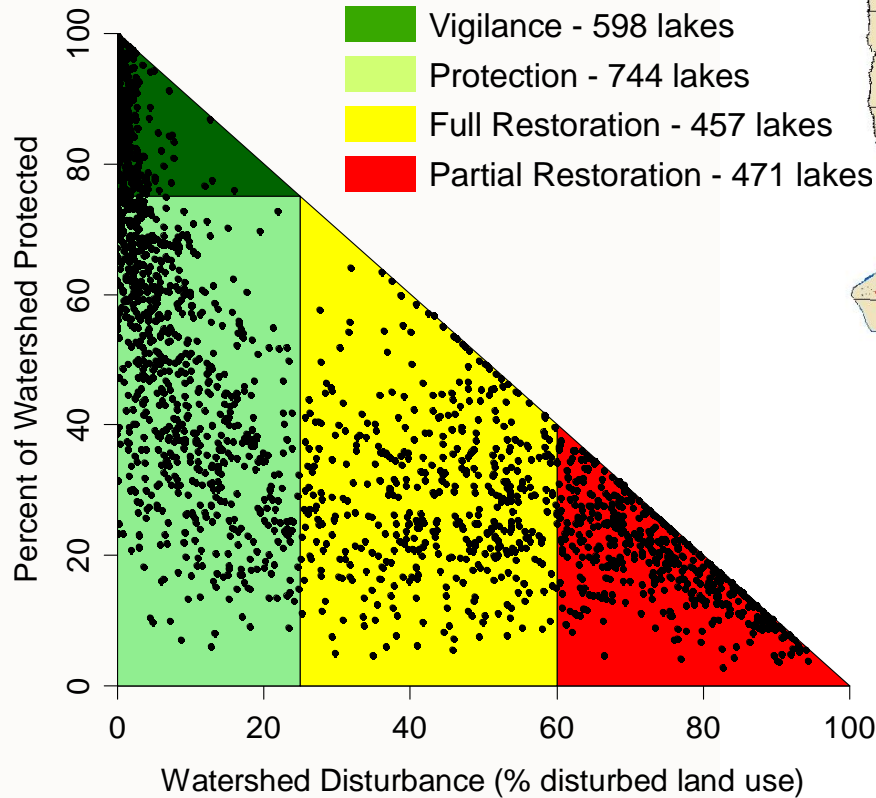


**Protecting
75% of the
watershed
of a lake as
forested
keeps good
water
quality and
good fish
habitat**

Protect the sponge!

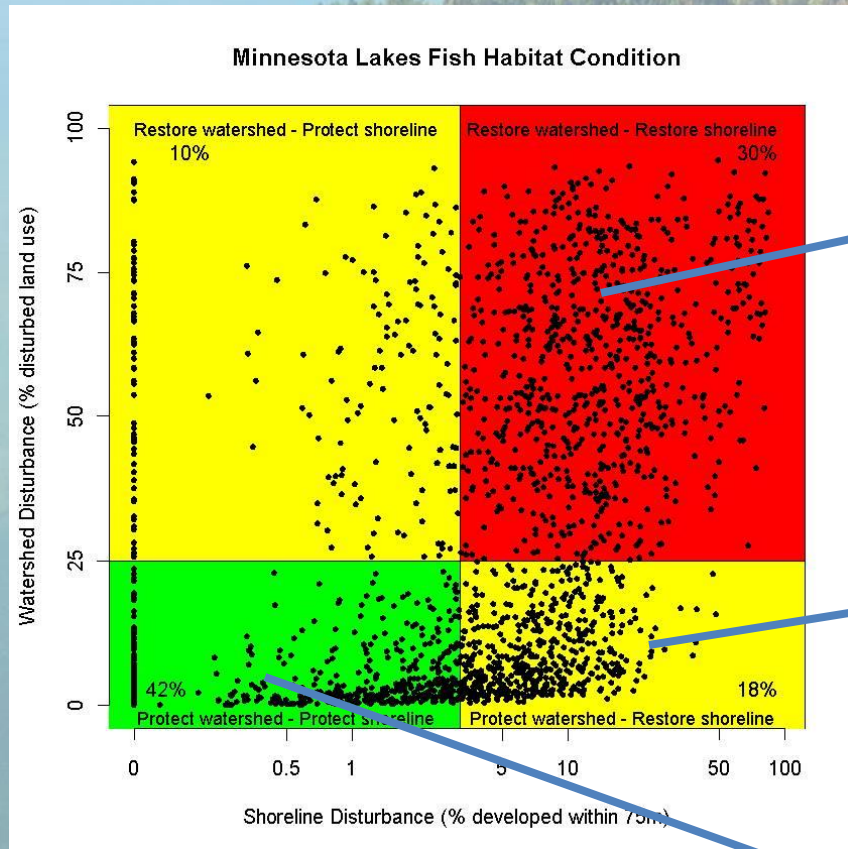


Suggested approaches for watershed protection and restoration of DNR managed fish lakes in Minnesota



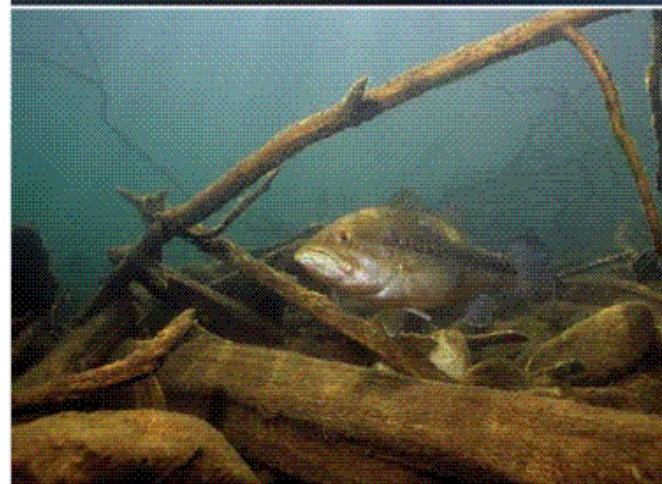
Toward a strategic framework

Assessment of our current status



FISH HABITAT PLAN:

A STRATEGIC GUIDANCE DOCUMENT



MINNESOTA DEPARTMENT OF NATURAL RESOURCES
SECTION OF FISHERIES

LSOHC Funding for DNR Aquatic Habitat Protection- FY2016

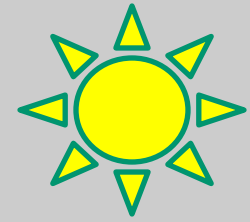
- AMA acquisition
- Trout stream easements
- Watershed protection in 5 Cisco lake watersheds in N-C MN
 - Forests for the Future Easements
 - Managed and held by DNR Forestry
 - Funding for approximately 600 acres



Why protect Cisco?

- Cisco need cold, clean, well oxygenated waters to survive
- When you protect cisco habitat you protect the habitat for many other species of fish and aquatic life
- Protecting cisco habitat protects the some of the best lakes in the State of MN!

**Nutrient loading increases
primary productivity**



Phosphorus



**Watershed sources of
excessive nutrients
include agricultural
and urban lands**

**Direct connection
between land use
and cisco habitat**

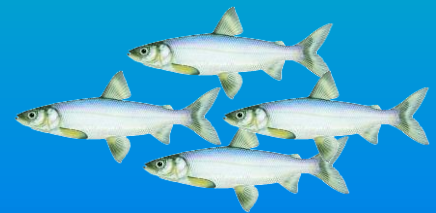
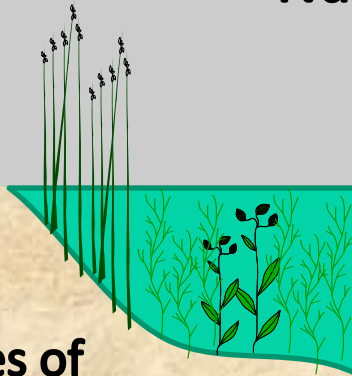
Epilimnion

Metalimnion

Hypolimnion

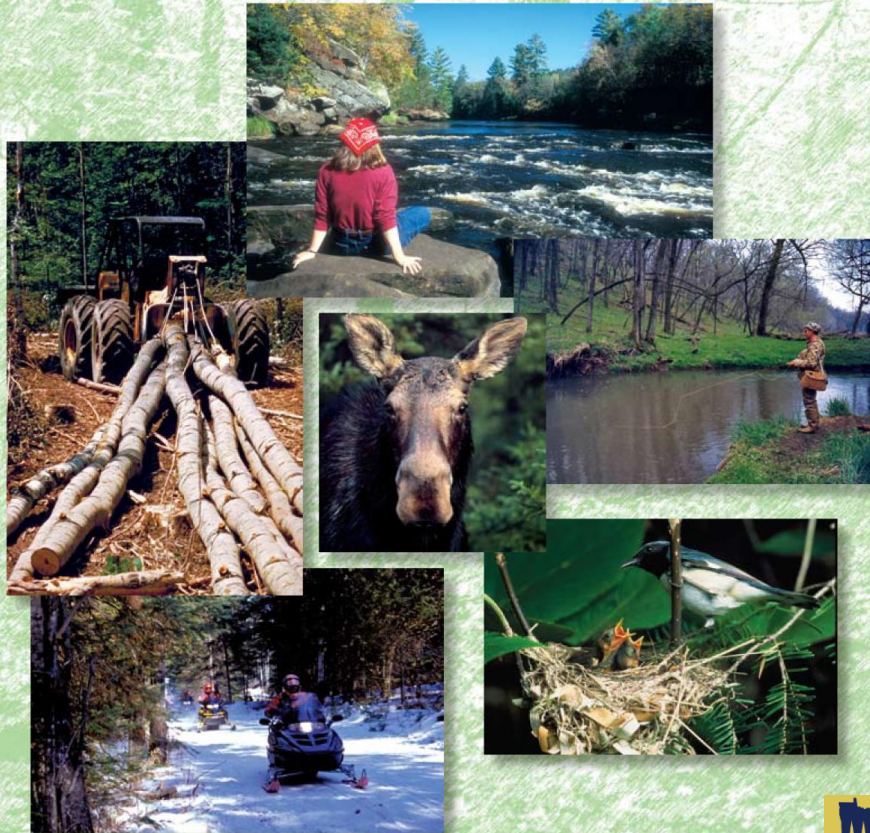
**Organic
material decay
depletes
oxygen**

Anoxic



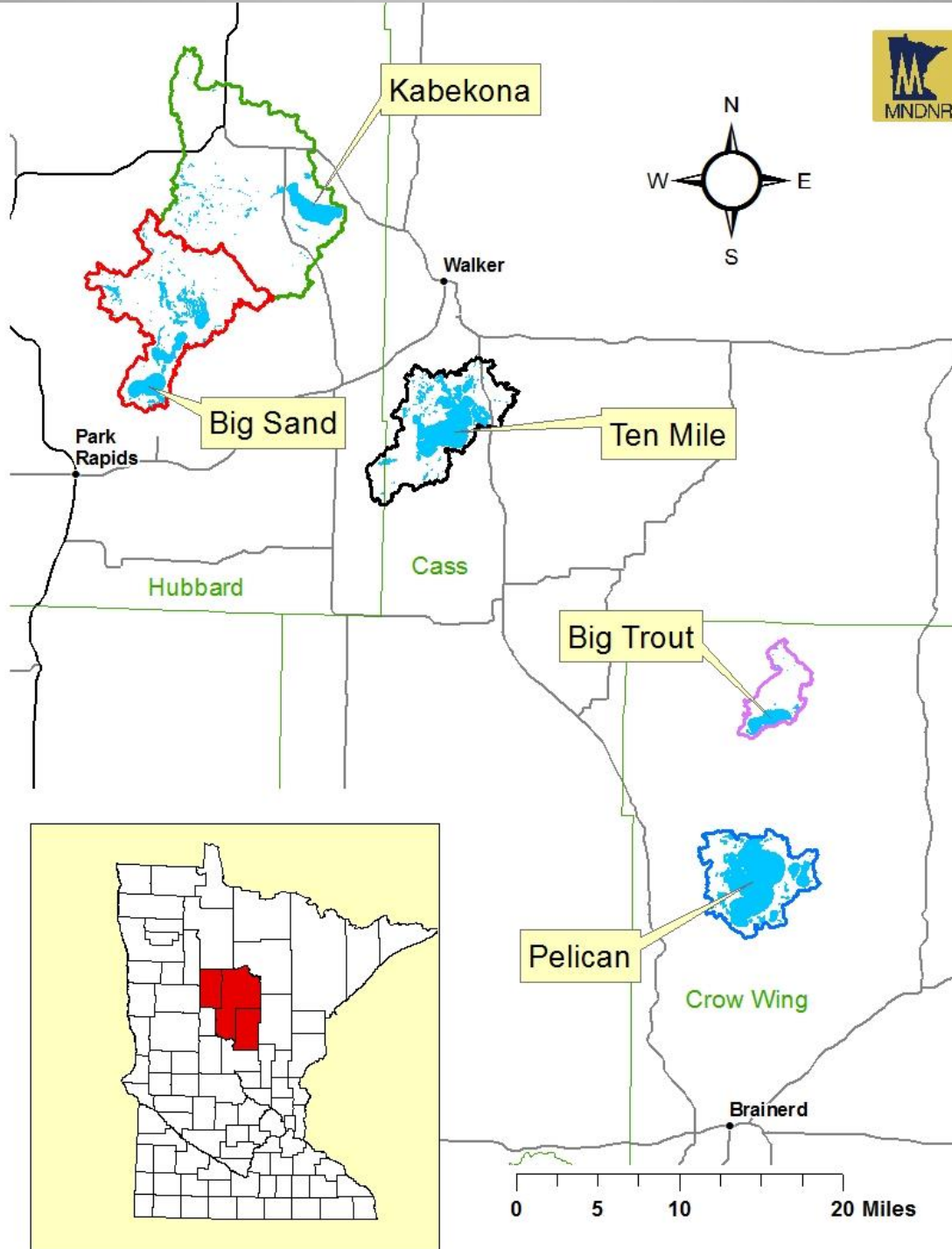
Minnesota Forests for the Future

Conserving Minnesota's working forest lands to meet the state's future recreation, economic, and ecological needs.

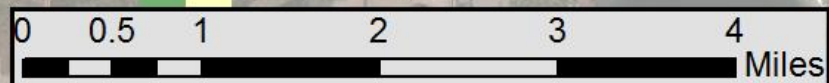
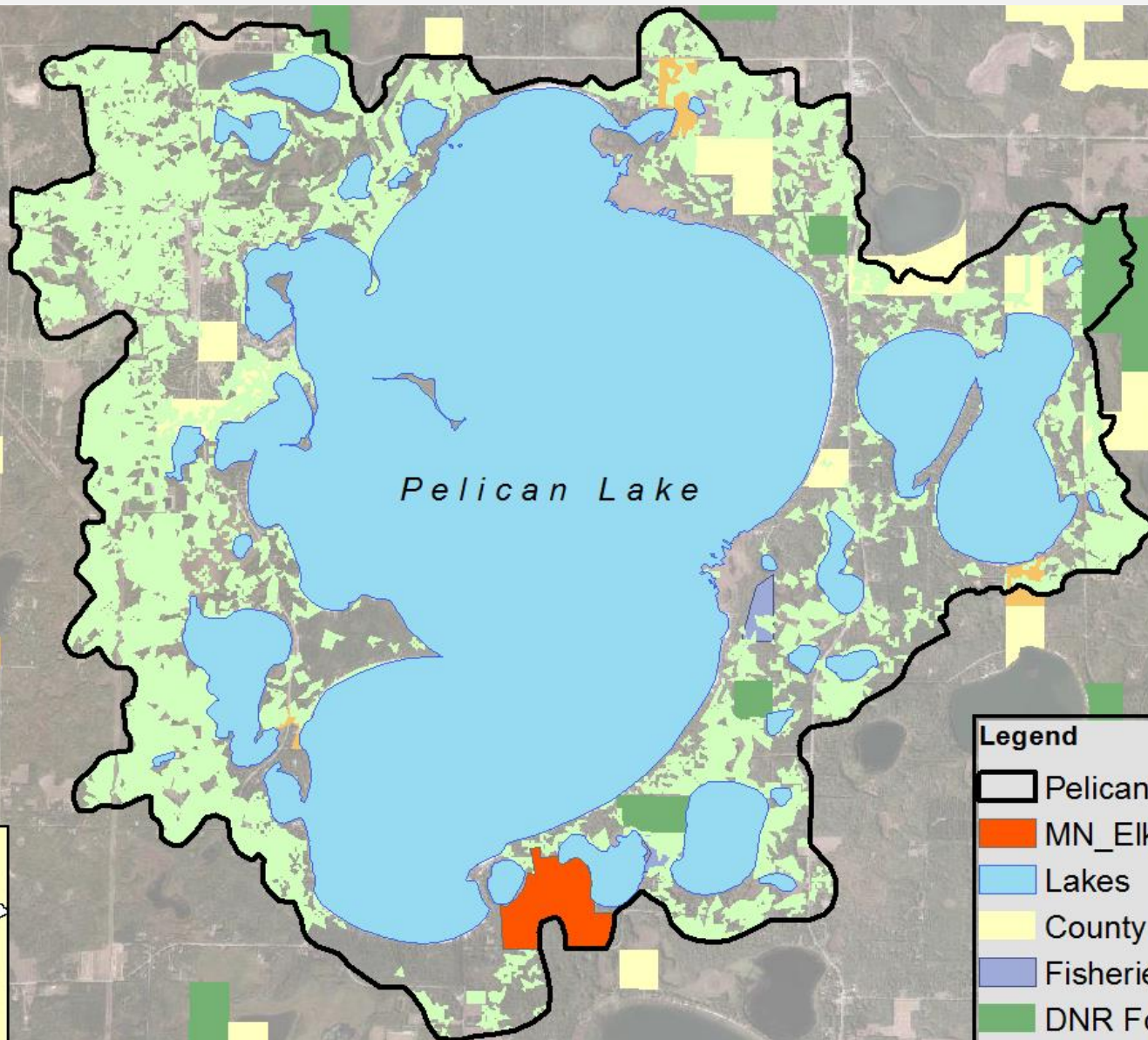


Private Forest Conservation Easements







- Established tool to provide permanent protection of forested lands
- Division of Forestry and many partners
- Working lands easements
- Smaller private landowners need to be also targeted
- Extraordinary water quality benefits



Ownership in the watershed of Pelican Lake, Crow Wing County



Legend

-  Pelican Watershed
-  MN_Elks_camp
-  Lakes
-  County Administered
-  Fisheries
-  DNR Forestry
-  DNR Parks and Trails
-  Private Forest ownership



Elks Camp Project-Pelican Lake Crow Wing County, MN

Pelican

Markee

Stevens

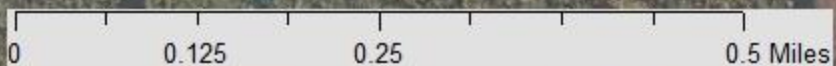
Proposed Conservation Easement
Approximately 193 acres

Camp Facilities
non-easement

Little Markee



Mapped prepared by
Heather Baird



Ten Mile Lake Watershed, close to 75% protected



McGill Property
Approximately 120 acres
enrolling in FFE

Ten Mile Lake

Legend

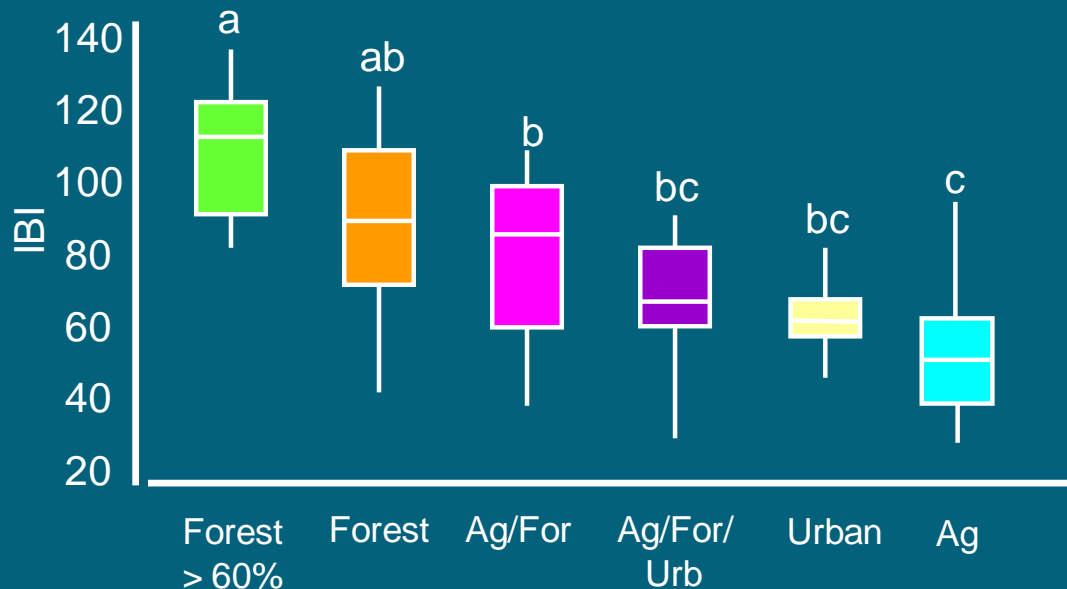
- McGill_parcel
- Ten Mile Watershed
- Wetlands
- County Administered
- Fisheries
- DNR Forestry
- Parks and Recreation
- Trails and Waterways

Public Land, non-state owner_type

- County
- US Forest Service

0 0.5 1 2 3 4 Miles

Intolerant fish species are sensitive to water quality and are especially useful as indicators of biological integrity



Drake and Pereira 2002. North American Journal of Fisheries Management 22:1105-1123.



Score the Shore

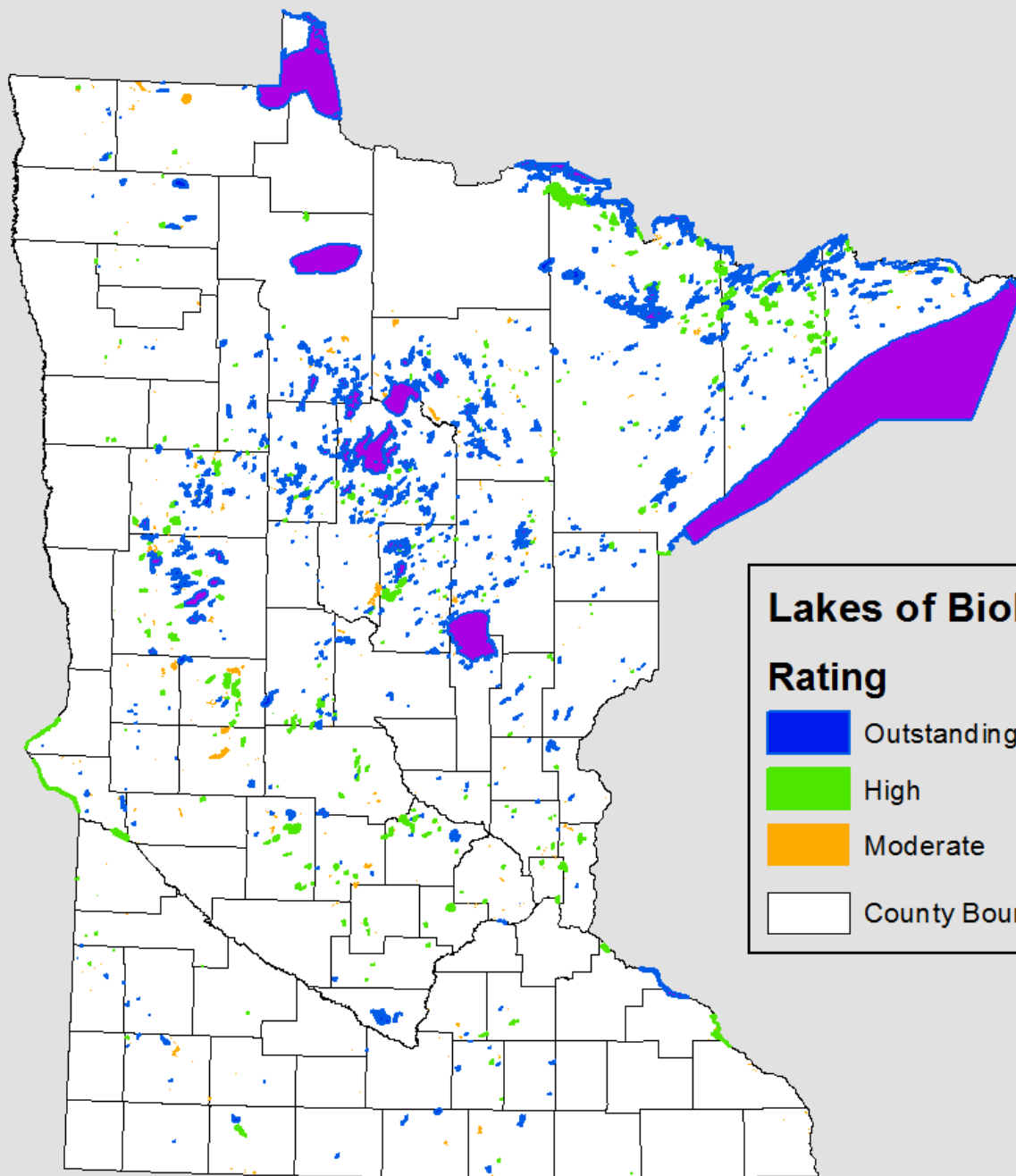
- Rapid assessment
- 3 zones assessed at each 100' site:
 - Shoreland
 - Shoreline
 - Aquatic
- Sites scored 0-100
- Site scores are averaged for a lake wide score



LSOHC Funding for DNR Aquatic Habitat Protection- FY2017






- AMA acquisition on Lakes of Outstanding Biological Significance
- Trout stream easements
- Continues watershed protection in 5 Cisco lake watersheds in N-C MN
 - Forests for the Future Easements
 - Managed and held by DNR Forestry
 - Funding for approximately 330 acres





Lakes of Biological Significance

Rating

	Outstanding		Outstanding for Fish
	High		
	Moderate		
	County Boundaries		

AMA acquisition will be restricted to lakes with a rating of Outstanding for Fish

Thank You!

