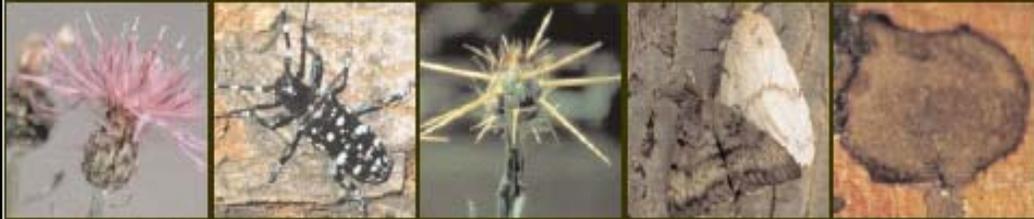


AQUATIC INVASIVES, HYDROPOWER RELICENSING AND EASTERN REGION NATIONAL FORESTS

National Strategy and Implementation Plan



for Invasive Species Management



Caring for the land and serving people

By
Nick Schmal
Fish and Aquatic Ecology Program leader
USDA Forest Service Region 9

USDA Forest Service-Eastern Region (Region 9)



EASTERN REGION NATIONAL FORESTS

KEY FACTS

- 41% of the nation's population
- 40% of the U.S. Senate seats
- 44% of the U.S. House seats
- 9 of the top 20 U.S. metropolitan areas
- 13 of the country's top 20 newspapers

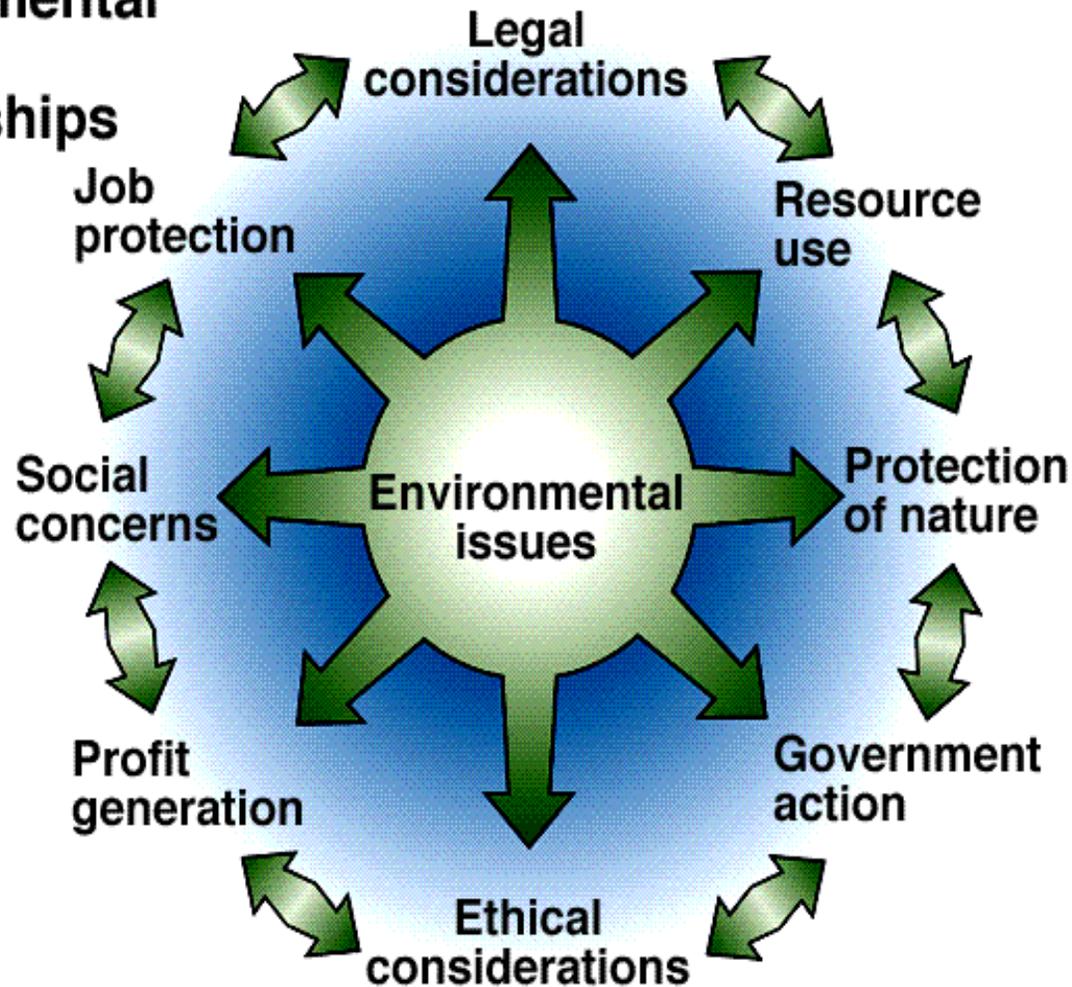
- Two million acres of wetlands
- 15,000 miles of streams (68% of which contain trout and salmon)
- More than 10,000 lakes
- Half the nation's 45 million anglers
- Nearly 1,000,000 Total Lake Acres
- Over 300 fish species
- 68 crayfish species
- 46 Regional Forester Aquatic Sensitive Species (Sp. of Concern)



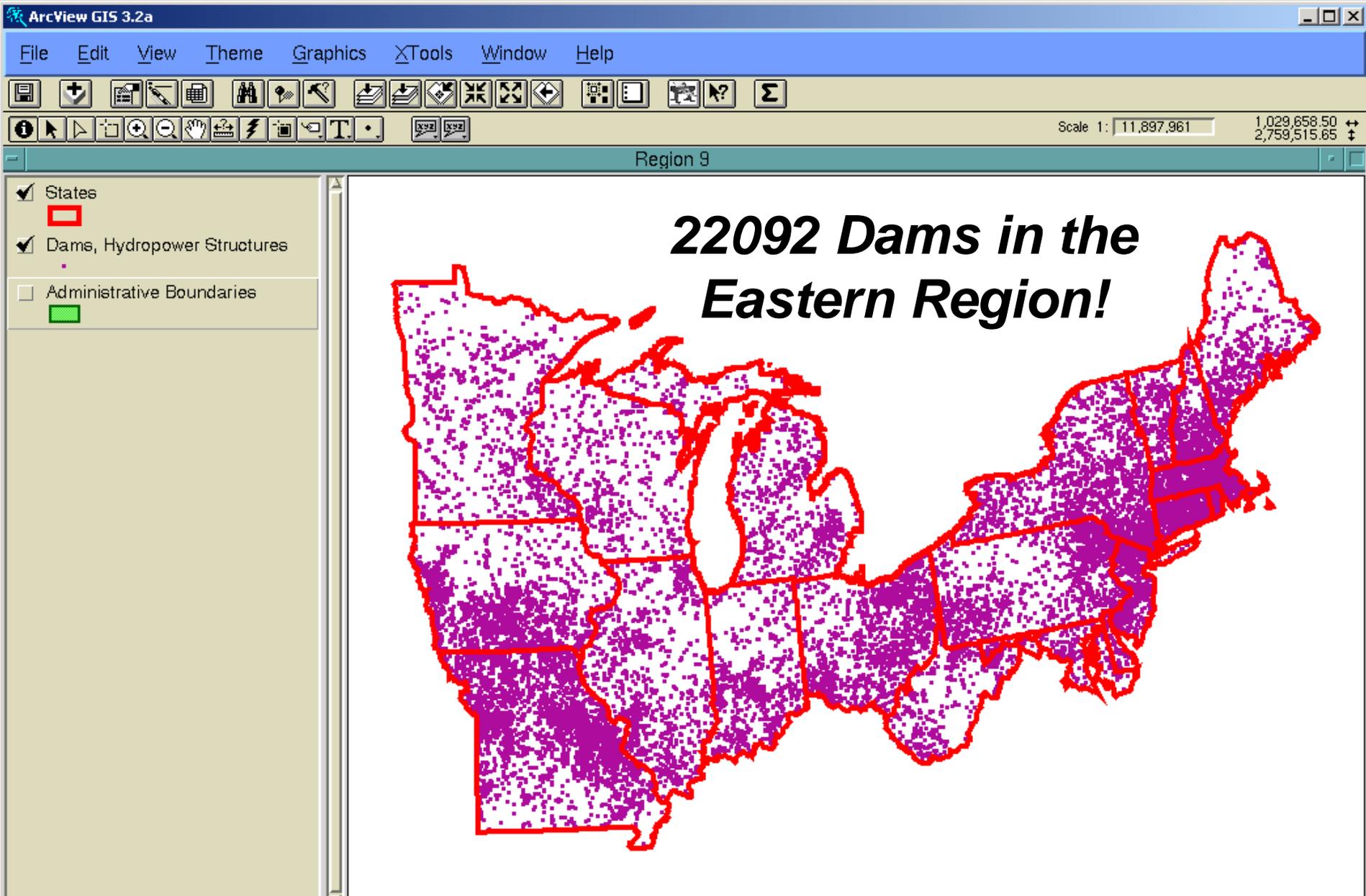
We Live in a Complex World !!

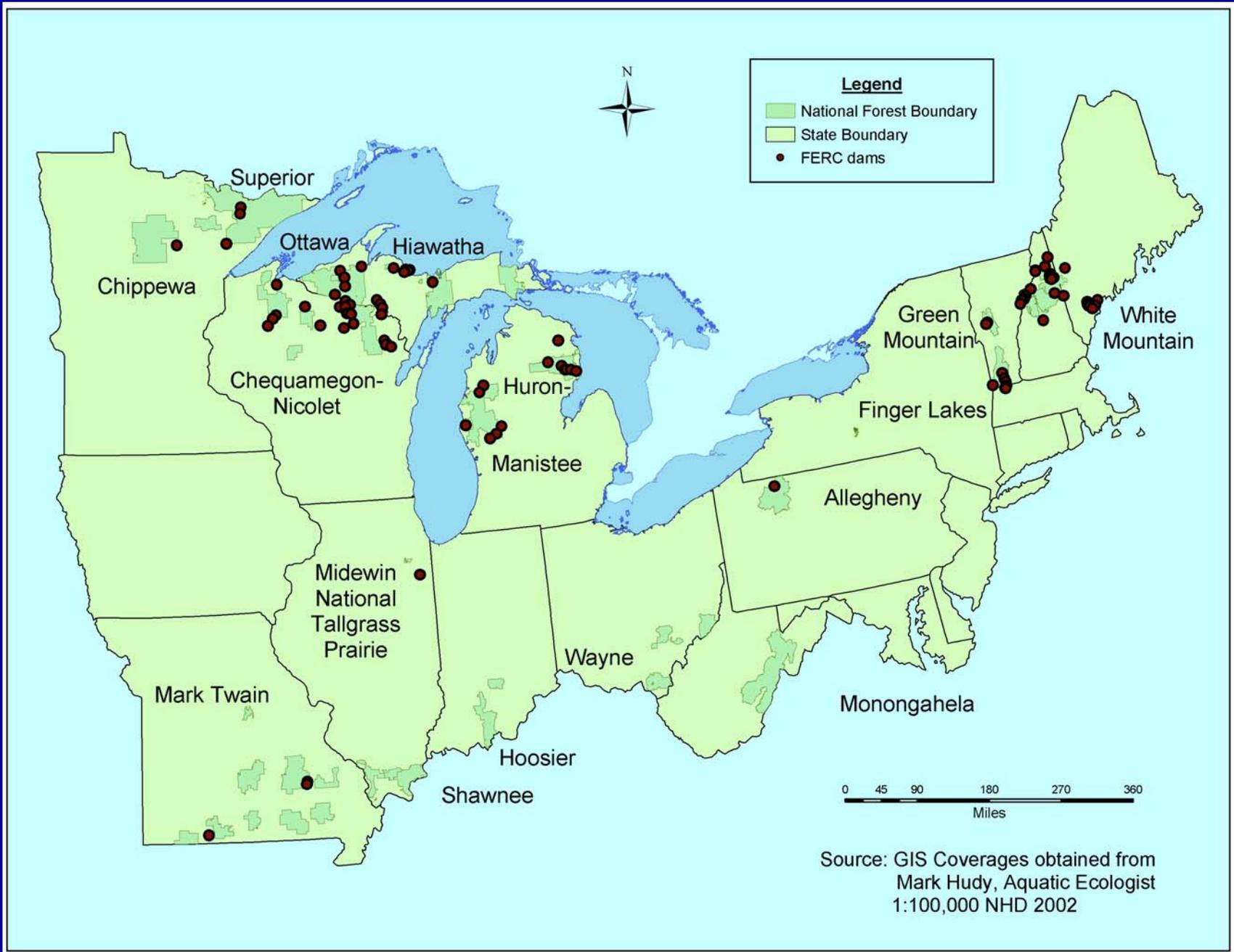
Enger/Smith, *Environmental Science, A Study of Interrelationships*, 6th ed. ©1998 The McGraw-Hill Companies, Inc. All rights reserved.

Environmental Inter-relationships



Eastern Region and State boundaries



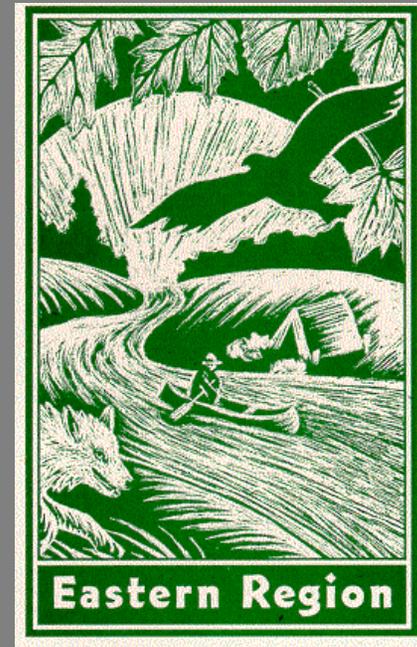


Threats to Freshwater Biodiversity

- Nutrient enrichment
- Sediment delivery
- Contaminants
- Habitat Deterioration
- *Non-indigenous/non-native invasive species*
- Altered Flow Regimes
- Habitat Fragmentation

Consequences include elimination of native species, altered biological communities, and loss of "fishable" and "swimmable" qualities

***Non-Native Invasive
Species Framework
For Plants and Animals in the
U.S. Forest Service, Eastern Region***



***April 11, 2003
R9 Regional Leadership Team***

National Strategy and Implementation Plan



for Invasive Species Management

USDA Forest Service Invasive Species Program

Strategic Focus:

Internally – Work with partners to aggressively fight aquatic and terrestrial invasive species problems across the National Forest System

Externally – Support stewardship work on State, Tribal, and Private partner lands

National Strategy Program Elements

1. *Prevention* - Keep out invasive species.
2. *Early Detection and Rapid Response* - Detect and eradicate invasive species to stop them from spreading.
3. *Control and Management* - Apply integrated control techniques to manage the problem.
4. *Rehabilitation and Restoration* - Heal, minimize, or reverse the harmful effects from invasive species

The Regional Panels of the Aquatic Nuisance Species Task Force

Western

(AZ, CA, ID, KS, MT,
ND, NE, NM, NV, OK,
OR, SD, TX, UT, WA
WY - Estab. 1997)



Great Lakes

(IL, IN, MI, MN, NY, PA
OH, WI - Estab. 1991)



Northeast

(Ct, MA, ME, NH, NY
RI, VT - Estab. 2001)



Mississippi River Basin

(AL, AR, CO, GA, IA, IL, IN, KY, KS, LA, MD, MI,
MN, MO, MS, MT, NC, NE, NM, NY, OH, OK, PA,
SC, SD, TN, TX, VA, WI, WV, WY, - Estab. 2002)



Gulf of Mexico

(AL, FL, MS, LA, TX - Estab. 1999)



ANS Panels & Region 9 Forests

- **Great Lakes Panel:**

Chequamegon-Nicolet, Ottawa, Hiawatha, Huron Manistee, Superior, Finger Lakes NF's, Midewin Tall Grass Prairie

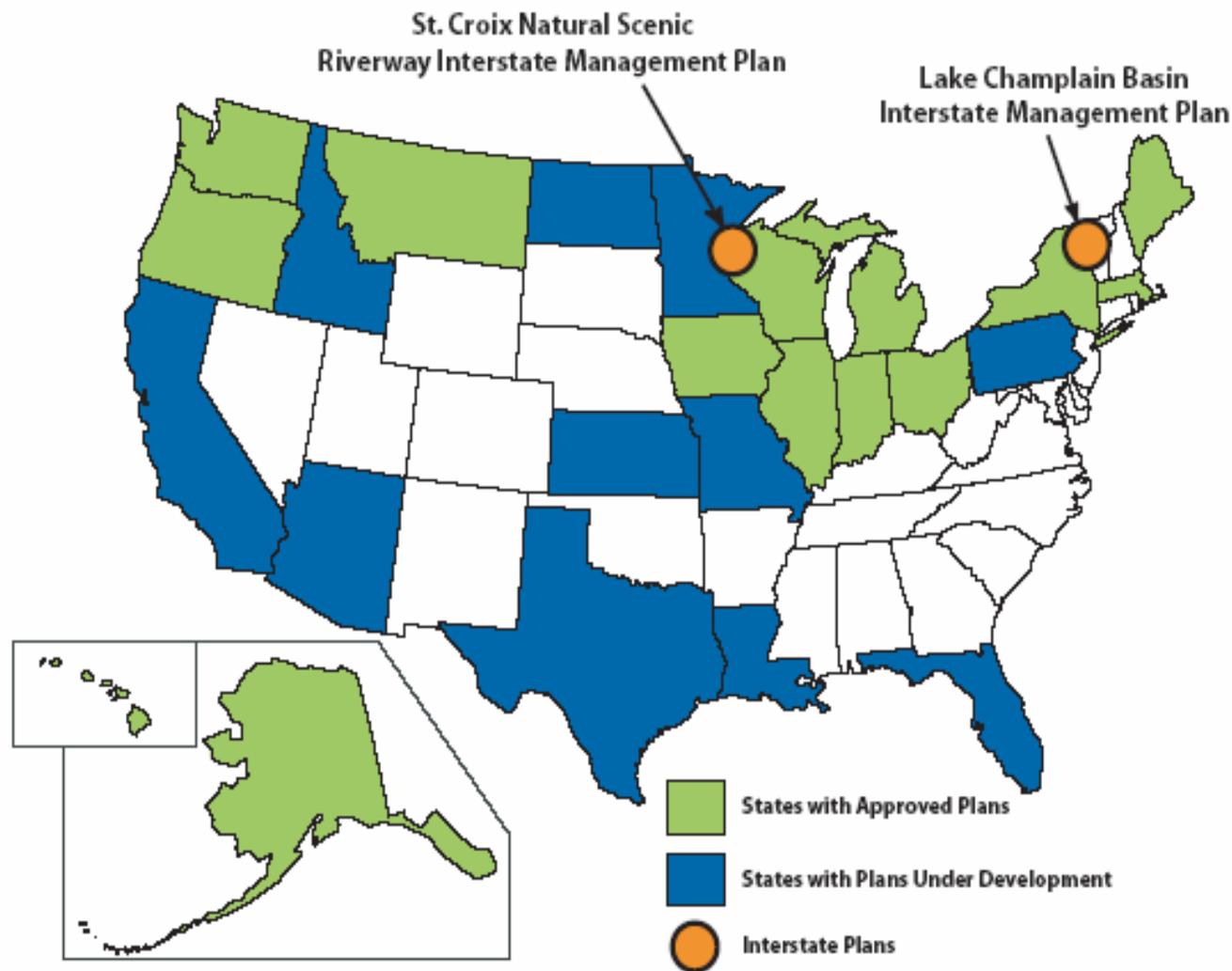
- **Mississippi River Basin Panel:**

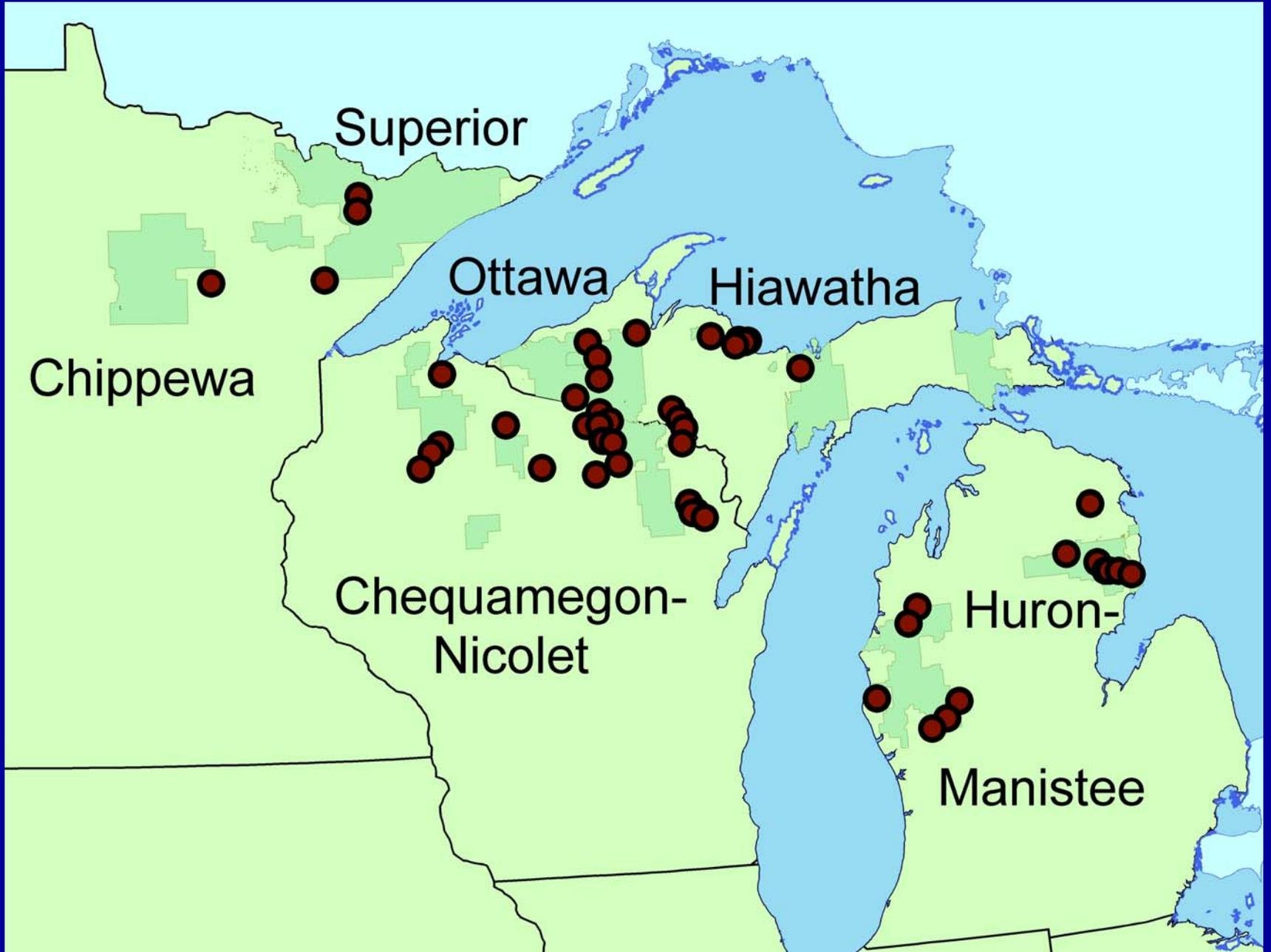
Chippewa, Chequamegon-Nicolet, Ottawa, Shawnee, Mark Twain, Allegheny, Hoosier, Wayne and Monongahela NF's, Midewin Tall Grass Prairie

- **Northeast Panel:**

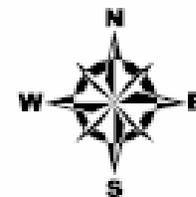
Green Mountain and White Mountain NF's

Status of State ANS Management Plans

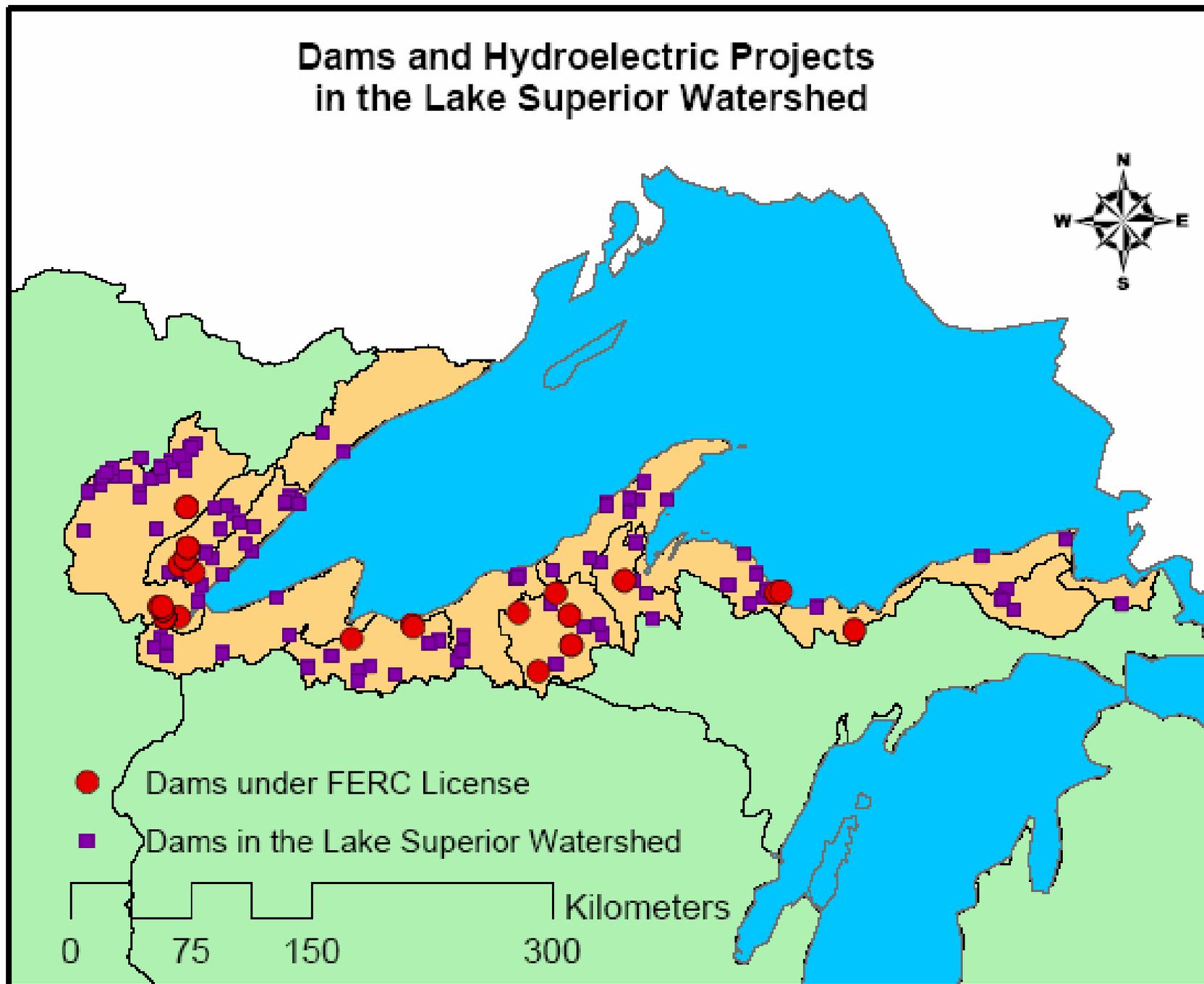




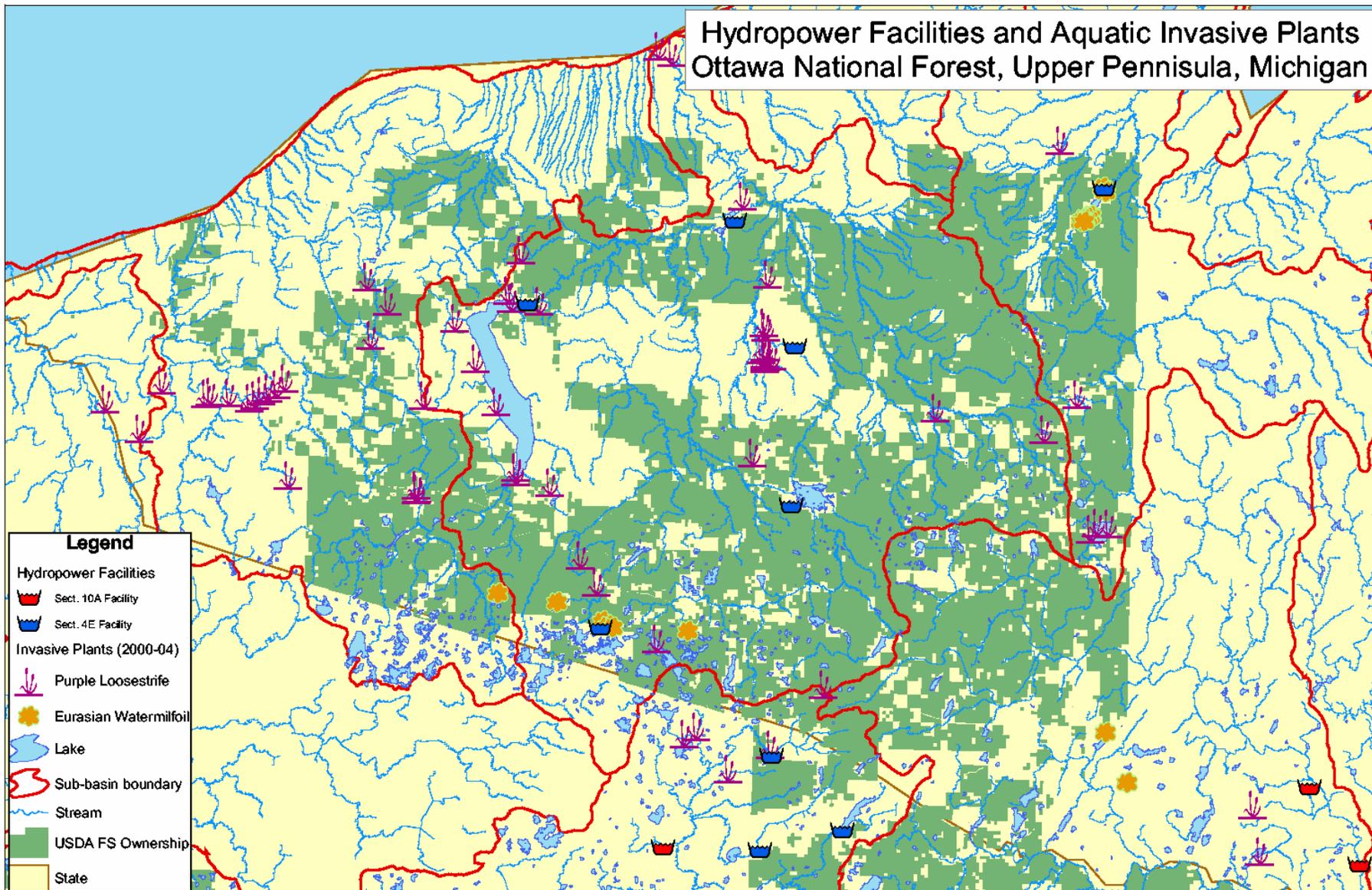
Dams and Hydroelectric Projects in the Lake Superior Watershed



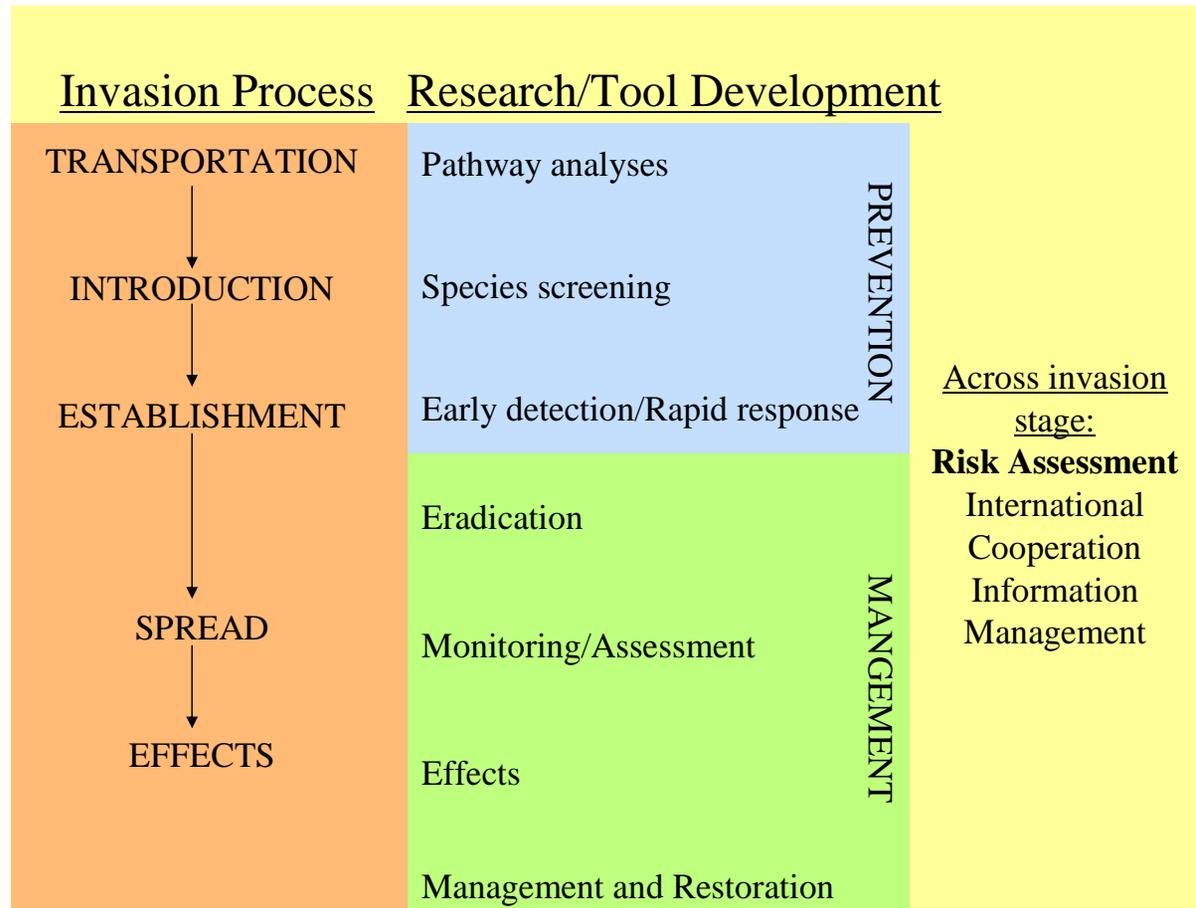
- Dams under FERC License
- Dams in the Lake Superior Watershed



Aquatic Invasive Plants at or near Hydropower Facilities



Different Stages of an Invasion Process



Dr. Cindy Kolar, U.S.G.S. La Crosse, WI
Upper Midwest Environmental Sciences Center



EXOTIC SPECIES ALERT

These waters contain *Eurasian Watermilfoil*.



This plant can spread very quickly from small leaf fragments. It can form dense mats that interfere with swimming, fishing, and boating.

These plants grow mostly below the lake surface, with the flowers above water. The feathery leaves are arranged in groups of 4 around pinkish stems. The leaves collapse against the stem if the plant is removed from water.

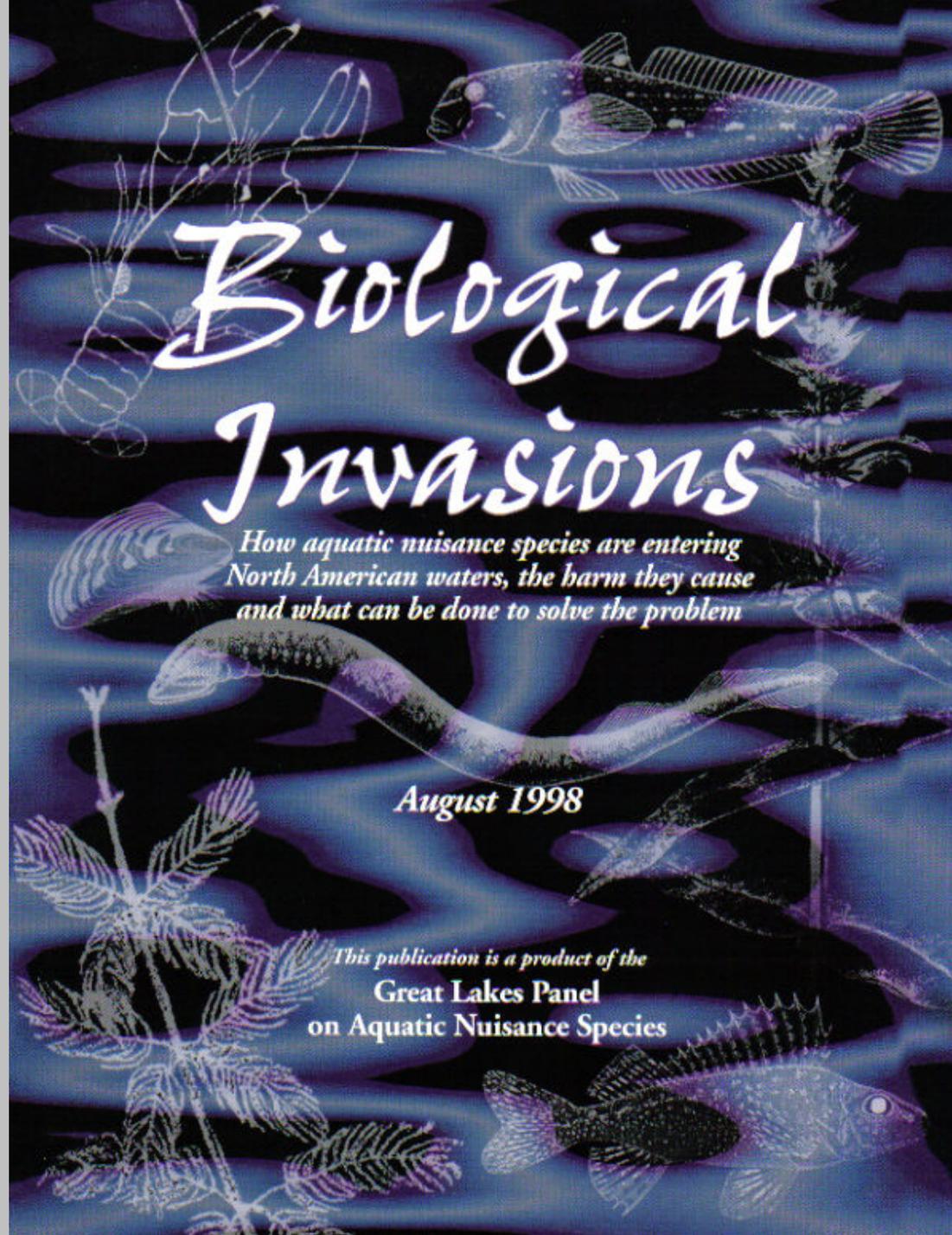
Education and Outreach

Challenge Cost Share

Agreement with the

Great Lakes Commission

and US EPA



Biological Invasions

How aquatic nuisance species are entering North American waters, the harm they cause and what can be done to solve the problem

August 1998

*This publication is a product of the
Great Lakes Panel
on Aquatic Nuisance Species*

QUESTIONS??

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<http://www.fs.fed.us/r9/wildlife/nnis/>