



# Terrestrial Invasive Species



Sue Tangora, MDNR Forest Resources Division

October 6, 2016



# Outline

- Invasive Species Program Background
  - AIS Program
  - **TIS Program**
- TIS State Management Plan
- Implementation
  - Decontamination
  - Early Detection and Response
  - Michigan Invasive Species Grant Program



# Department Missions



- Promotes wise management of Michigan's air, land, and water resources to support a sustainable environment, healthy communities, and vibrant economy.



- Commits to the conservation, protection, management, use and enjoyment of the state's natural resources for current and future generations.



- Assures the food safety, agricultural, environmental, and economic interests of the people of the State of Michigan are met through service, partnership, and collaboration.



# Invasive Species Program

- Unique Regulatory Authorities and Expertise



- MDEQ
  - Ballast Water
  - Aquatic Nuisance Control
  - Wetlands, Great Lakes Bottomlands, Inland Lakes and Rivers, Critical Dunes



- MDNR
  - Prohibited Animals
  - Live Bait, Fish Stocking
  - Public Land Management

- MDARD
  - Prohibited Plants and Insects
  - Aquaculture
  - Quarantines

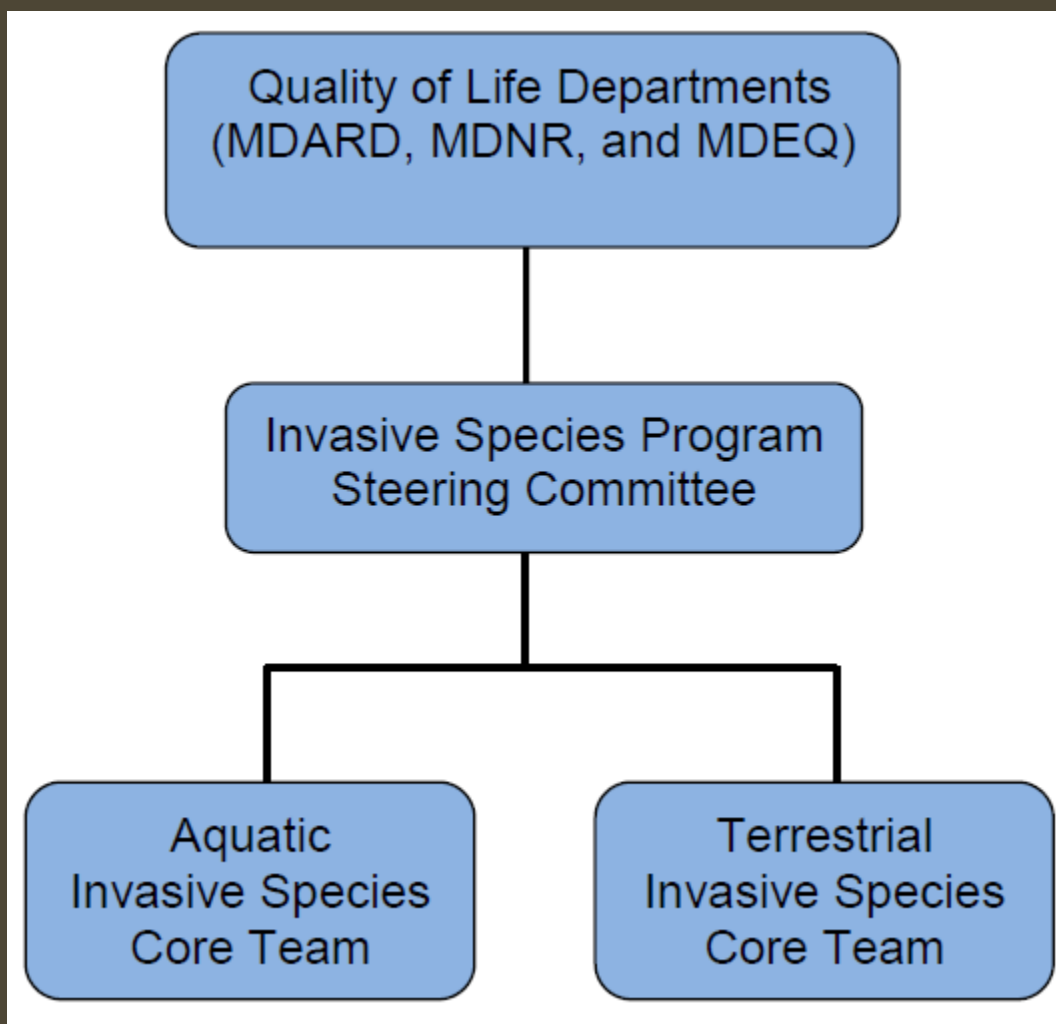


- Shared Responsibilities

- Coordination
- Partnership
- Education and Outreach



# Invasive Species Program





# History of TIS

Lacey Act



Michigan  
Noxious  
Weed Law

Emerald ash  
borer found  
in SE MI



First Cooperative  
Weed  
Management  
Area forms in  
western Upper  
Peninsula

TIS Core Team  
is created to  
develop and  
implement TIS  
State Plan

1900      1941    1975      2002      2005      2009      2014      2016

Federal  
Noxious  
Weed Law



Terrestrial  
plants  
added to  
Part 413



DNR lists Feral  
Swine as  
prohibited



# State of Michigan TIS Team



- **Department of Environmental Quality**
  - **Water Resources**  
(Sarah LeSage, Anne Garwood, Kate Lederle)
  - **Office of the Great Lakes** (Karen Boase)



- **Department of Natural Resources**
  - **Wildlife** (Ryan Wheeler, Dwayne Etter)
  - **Parks and Recreation** (Ray Fahlsing)
  - **Law Enforcement** (Glenn Guttierrez)
  - **Forest Resources** (Sue Tangora, Roger Mech, Bob Heyd)
  - **Marketing and Outreach** (Kevin Frailey, Jon Spieles)



- **Department of Agriculture and Rural Development**
  - **Pesticide and Plant Pest Management** (John Bedford)
  - **Animal Industry** (Stephen Hussey)
  - **Environmental Stewardship Division** (Steve Shine)



- **Department of Transportation** (Tim Jones, Darwin Heme)



# State Management Plans

Draft:

## Michigan's Terrestrial Invasive Species State Management Plan

Coordinated by the Terrestrial Invasive Species Core Team



2016-2021

Public Review  
May 16 – June 24, 2016

A Cooperative Effort of the  
Michigan Department of Agriculture and Rural Development  
Michigan Department of Environmental Quality  
Michigan Department of Natural Resources  
Michigan Department of Transportation  
In Consultation and Partnership with Other Interested Parties

Feral Pig Photo Credit: Chris Gray



### Michigan's Aquatic Invasive Species State Management Plan 2013 Update

Prevention, Detection, and Management in Michigan Waters

A Cooperative Effort of the  
Michigan Department of Environmental Quality  
Michigan Department of Natural Resources  
Michigan Department of Agriculture and Rural Development  
Michigan Department of Transportation

In Consultation and Partnership with Other Interested Parties

Coordinated by:  
Water Resources Division  
Michigan Department of Environmental Quality  
P.O. Box 30008  
Lansing, Michigan 48906-7008  
817.633.4176

March 18, 2013





# Why are we concerned?

## Economic Effects of TIS

- *Decreased aesthetic and recreational value* of terrestrial resources including reduced or impaired trail use and hunting opportunities (Charles and Dukes 2007).
- *Decreased tourism* and opportunity for wildlife viewing (Charles and Dukes 2007).
- Decreased value or *loss of timber products* (Charles and Dukes 2007).
- *Damage to infrastructure* and equipment (Pejchar and Mooney 2009).
- *Impacts to urban forests* including loss of thermal cooling, increased rainwater runoff and loss of other green infrastructure (Charles and Dukes 2007).





# Emerald Ash Borer





# Asian Longhorned Beetle





# Hemlock Woolly Adelgid



# Japanese Barberry



# Japanese Knotweed



5331054

# Swallow-wort



# Feral Swine







# Invasive Species Defined

- Species is NON-NATIVE
- Species causes HARM to:
  - Economy
  - Environment
  - Human Health

# THE INVASION CURVE

Asset Based Protection  
& Long-term Management

AREA INFESTED →

CONTROL COSTS →

Containment

Eradication

Prevention

Species  
absent

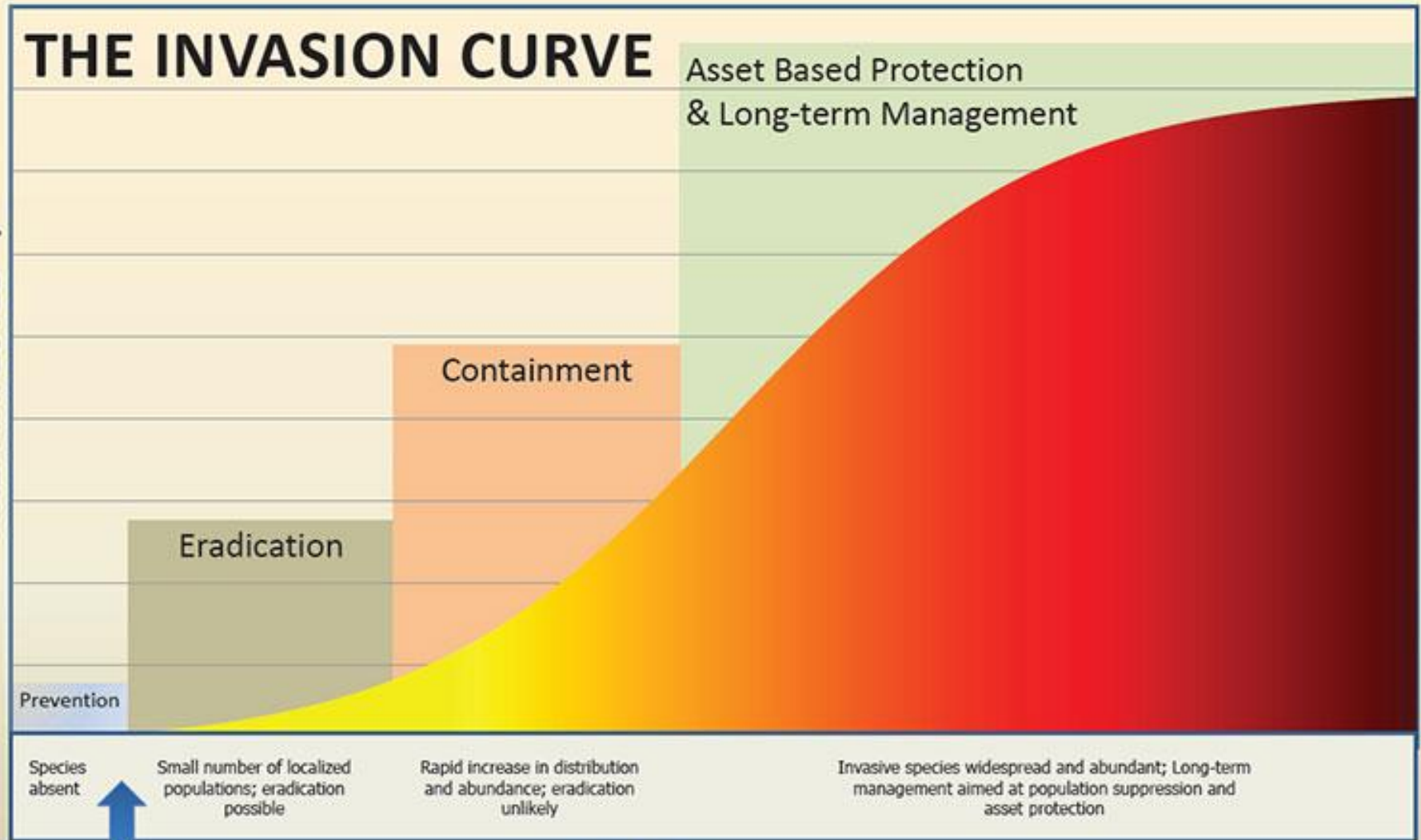
Small number of localized  
populations; eradication  
possible

Rapid increase in distribution  
and abundance; eradication  
unlikely

Invasive species widespread and abundant; Long-term  
management aimed at population suppression and  
asset protection

TIME →

Introduction





# TIS State Management Plan



## GOALS

Prevention  
Early Detection and Response  
Control, Manage and Restore  
Collaborate



# TIS State Management Plan



## ACTIVITY AREAS



Risk Analysis  
Management Measures  
Monitoring and Research  
Regulation and Policy  
Outreach and Education  
Leadership and Coordination



.....**60 STRATEGIC ACTIONS**  
that address one or more goals



# Decontamination

2014 Interdepartmental policy and procedure “...will aim to perform basic decontamination steps for field equipment in order to minimize the risk of invasive species transfer between work locations...”

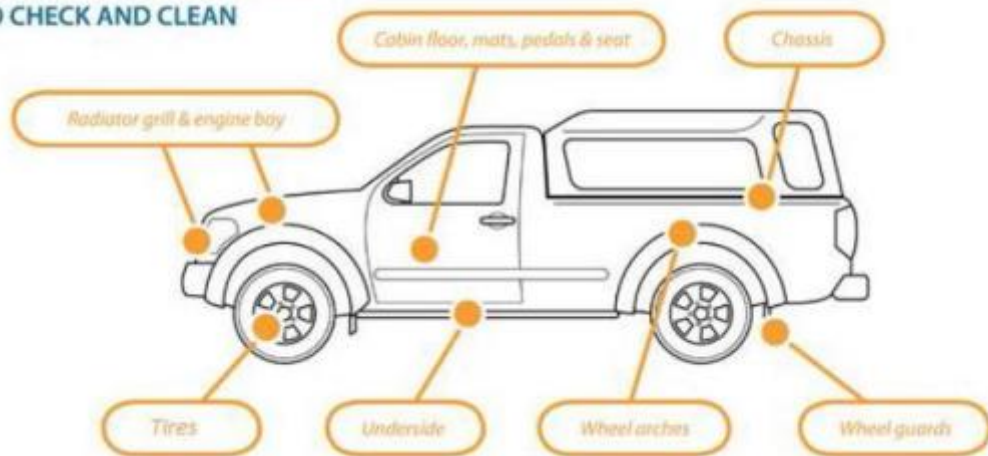




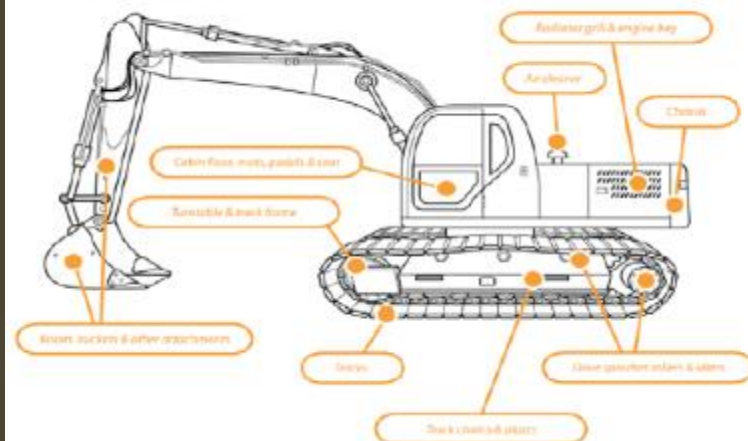
# Decontamination

- “Each Division... will develop decontamination steps that are practical and reasonable...”
- Prevention of aquatic and terrestrial invasive species
- Situation specific tiered approach based on risk
- Guidance for equipment type
- Guidance and safety information on disinfectants

4WD VEHICLE WITH KEY SPOTS TO CHECK AND CLEAN



EXCAVATOR WITH KEY SPOTS TO CHECK AND CLEAN





# Decontamination

## Planning Your Work:

- Select appropriate measures dependent on the type of work being conducted and the specific situation
- Know your management area and level of risk
- Avoid infested areas when possible
- Conduct field work in upstream areas before downstream areas to decrease the likelihood of carrying species further up into the watershed or visit highest quality/least invaded sites before invaded sites during a trip



# Decontamination

Tool kit- physical removal and bleach







# Early Detection & Response

- Response Policy
  - Report, verification, response options, implementation w/ or w/o Incident Command System, evaluate and adapt
  - Currently just AIS
- Invasive Species Watch List
  - [www.michigan.gov/invasivespecies](http://www.michigan.gov/invasivespecies)
  - Reporting contacts
  - Plants and animals





# Early Detection & Response

## TIS Watch List

- Insects and Tree Diseases
  - e.g. Asian Long-horned Beetle
- Plants
  - e.g. Kudzu
- Other
  - Asian Jumping Worms?

## TIS Policy

- Comprehensive Early Detection and Response Policy – coming soon!!





# Outreach and Education

## Best Control Practices



### Invasive Species—Best Control Practices

Michigan Department of Natural Resources  
Michigan Natural Features Inventory  
5/2011

## Japanese knotweed

*Polygonum cuspidatum* (*Fallopia japonica*)

Japanese knotweed is native to Asia. It can be extremely invasive and difficult to eradicate. Knotweed spreads vegetatively by rhizomes and also sprouts from fragments of root and stem material, which are dispersed by water, equipment or in fill. It forms fertile hybrids with giant knotweed (*Polygonum sachalinense*). Some populations, particularly hybrids, produce fertile seed.

Knotweed forms dense monocultures, with a thick layer of accumulated leaf and fibrous stem litter. A number of mechanisms contribute to its ability to exclude native species; light limitation, alteration in nutrient cycling and allelopathy—the ability to suppress growth of a potential plant competitor by releasing toxic or inhibiting chemicals.

Knotweed can contribute both to stream bank erosion and to flooding, when its large, fibrous stems wash into the water during periods of peak flow. Its rhizomes and shoots can penetrate asphalt and cracks in concrete. It is most aggressive





# Outreach and Education

Prevention, identification, and disposal

## Invasive Plant Species of Michigan



A Pocket Guide



MICHIGAN STATE  
UNIVERSITY  
EXTENSION



# DON'T MOVE FIREWOOD.org

## Disposal Guide for Aquatic and Terrestrial Invasive Plants

Controlling and limiting the spread of invasive plants requires long-term effort and consideration of timing of removal, the method of removal and proper disposal techniques. Following these measures with continual monitoring and maintenance is the best approach to pre-





# Michigan Invasive Species Grant Program

## Objectives

- **Prevent** new introductions
- **Monitor** for new invasive species
- **Respond** and conduct eradication efforts
- **Manage and control** key colonized species



# Michigan Invasive Species Grant Program

## Current Application Period

- Timeline
  - Request for Pre-Proposals June 2016
  - Request for Full Proposals September 2016
  - Awards Announced December 2016
- Available Funding \$3.6 million
- Eligible Applicants Local, Federal, or Tribal Units of Government Nonprofit organizations, Universities



# Michigan Invasive Species Grant Program 2014 & 2015

- 38 projects for \$7.6 million
- Aquatic and terrestrial
- Key to implementing AIS and TIS State Management Plans
- MISIN
- Cooperative Invasive Species Management Areas (CISMAs)

# MISIN

# Midwest Invasive Species Information Network

12 New Aquatic Invasive Species Training Modules Now Available!

**MISIN** Midwest Invasive Species Information Network

Welcome to MISIN, **Dan** (My Account) | Logout

HOME ABOUT REPORT SIGHTINGS SPECIES INFORMATION BROWSE DATA CITIZEN SCIENCE TOOLS MY MISIN

**Training**  
Species Identification

The invasive species education modules will help you become more comfortable with identifying these species in the field. Each module includes a short ten question quiz at the end to help you assess your newly acquired knowledge. Completing a module should only take about 15 minutes.


**Latest Contributions**

- Brown Marmorated Stink Bug in Kent County, MI on January 19, 2016
- Brown Marmorated Stink Bug in Oakland County, MI on January 18, 2016
- Phragmites (Invasive) in Midland County, MI on January 18, 2016
- Phragmites (Invasive) in Midland County, MI on January 19, 2016

**MISIN eNews**  
Subscribe to receive MISIN eNews.

**Free**

**Free**

## Report Invasive Species

**MISIN Smartphone App**

The MISIN smartphone app provides a mobile solution for the capture of invasive species observations. You can play an important role in the early detection and rapid response to new invasive threats in your area by contributing invasive species observations to the MISIN project.

**Features**

- ✓ Identify and report 230+ different species
- ✓ Capture and submit species field observations
- ✓ View real-time species observation maps
- ✓ Include field images with your observations
- ✓ Browse information about top Midwest invaders

Available on the **App Store** | **Google play**

## Midwest Invasive Species Information Network

www.misin.msu.edu • info@misin.msu.edu



**MICHIGAN STATE UNIVERSITY**

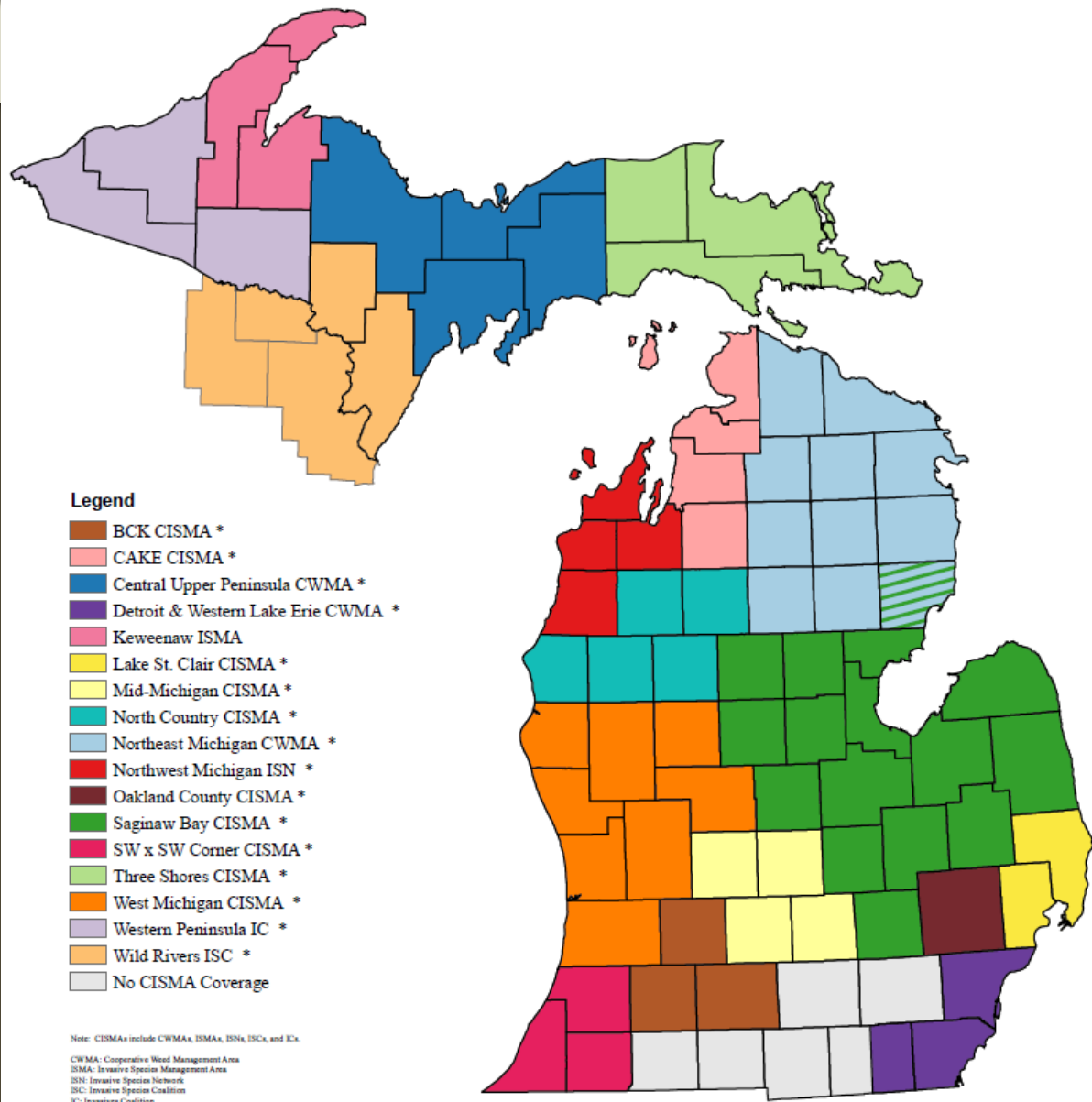
Developed by the Applied Spatial Ecology and Technical Services Laboratory, Department of

**MISIN** Midwest Invasive Species Information Network

For further information please contact: Amos Ziegler / info@misin.msu.edu



# Michigan Cooperative Invasive Species Management Areas (CISMAs)





# How can you help?

- Learn to IDENTIFY invasive species
- PREVENT the spread of invasive species
- REPORT invasive species you find to MISIN
- CONTROL invasive species and RESTORE
- Raise AWARENESS with your colleagues, friends, family, clients, etc.

***THANK YOU!***

***Acknowledgements: Michigan AIS and TIS Core Teams (DEQ, DNR, DARD and MDOT)***





# Questions?

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[www.michigan.gov/invasivespecies](http://www.michigan.gov/invasivespecies)