

Invasive Species

And Their Impact On Wildlife



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Defining Invasive Species

- occur artificially in locations beyond their known historical natural ranges
- many have been transported from other continents or other parts of America
- some come from other habitats near-by
- also referred to as exotic, alien, foreign, introduced, or non-indigenous

Their Competitive Edge

- arrive, germinate, reproduce, disperse
- spread into areas where they are not native and/or not wanted
- have harmful impacts to that which we desire
- many green up earlier and stay green longer
- display rapid *vegetative growth*, allowing establishment over large areas
- long flowering and fruiting periods, abundant seed production, high seed germination rate, long-lived seeds, rapid maturation...
- some can regenerate from plant fragments



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Impacts of Invasive Species

- invasives are considered the second highest threat to biodiversity

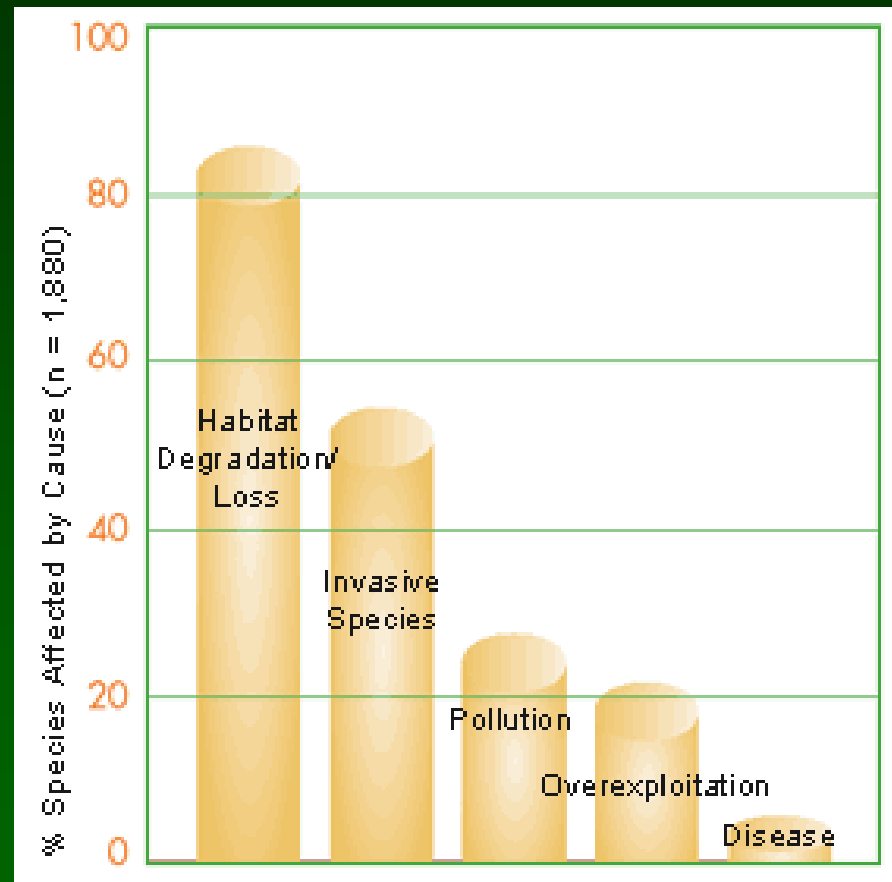
Impact soil chemistry

Alter fuel load

Create monocultures

Can increase soil erosion

Alter hydrology



Source: *Precious Heritage: The Status of Biodiversity in the United States* © The Nature Conservancy and NatureServe

Our challenge is to pick the right battles.

- important places
- success likely

Widespread awareness
(many locations)

Detection
(scattered locations)

Introduction

No hope!!



Area invaded

Time

Prevention

Early detection-
rapid response

Prioritizing winnable battles
Control, contain, restore

How Are They Introduced?

- Geographic routes and corridors
 - Roads
 - Canals
 - Trades
- Economic activities
 - Commercial trade
- Transportation corridors
 - Hitchhikers
- Species may be introduced via one pathway and spread through another



Japanese stiltgrass was used as packing materials for porcelain

Controlling Invasives

Approach:

- *Prevention*
- *Early Detection and Rapid Response*
- *Restoration*
- *Research*
- *Education and Outreach*



The Nature Conservancy

Control methods: Your arsenal

- Manual
- Mechanical
- Chemical
- Prescribed fire
- Biological



All control methods seek to take advantage of:

- 1) Biology of the species**
- 2) Ecology of the system**

Control: Which practice is best?

Method	Pros	Cons
Hand pulling/ digging	Effective kill if all roots removed, little training needed (ID of spp.)	Soil disturbance promotes new invasives, very time-intensive
Foliar herbicide	Efficient on dense herbaceous colonies, also can spot spray	Most herbicides non-selective, cause non-target damage, growing season only
Cut-stump herbicide	Can be very effective, zero non-target damage, year round (< freezing)	Time consuming to cut brush, herbicide needs to be applied immediately
Basal bark herbicide	Fast, very effective on small shrubs & vines, year-round (no snow)	Cannot treat large shrubs (>6"), requires more equipment and experience (technique, ID)

Biennial: flowers in second year



garlic mustard
Alliaria petiolata



Control Issues: Size of infestation

What is the likelihood of control?



Chris Evans, The University of Georgia, www.forestryimages.org



Leslie J. Mehrhoff, University of Connecticut



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Control Issues: Seedbank

- Expect sprouting
- Plan for control



Control Issues: Timing is Critical

Know the biology of the species

Late fall – early spring

Cut & herbicide shrubs, spray garlic mustard

Spring

Conduct prescribed burn, pull garlic mustard

Late Summer

Herbicide swallow-wort, phragmites, japanese knotweed

Biology: Biennials (Garlic mustard)

- Biennial: normally two years to flowering
- Three primary growth stages:
 - Seedling (1st spring ~ summer)
 - Rosette (fall ~ 2nd spring): **GREEN ALL WINTER**
 - Flowering/Fruiting (2nd spring ~ summer)
- Self-fertile: one stray plant = new infestation
- Flowers/fruits mature even if picked – must destroy
- Seed bank often present



General Methods: Herbaceous Biennials

Garlic mustard

Rosette Stage

- Foliar herbicide
 - 2% Glyphosate (RoundUp) Oct thru March

Flowering Stage

- Hand pull
 - Bag plants and remove from site



Monitoring

- Always keep track of what was done and why
- Return to see if management was effective
- Adapt management as necessary



- No silver bullets

Summary: Key Points

- Consider a full range of possible treatments
- Control is always site-specific; know your site
- Know the biology of the species
- Select the best combination of treatment methods that
 - 1) Most efficiently control the problem
 - 2) Have the least detrimental impact
- Monitor the results

Realize that:

- Effective control takes time
- Incorrect control may make it worse





Report Sightings

Welcome to the invasive species reporting module of the MISIN web site. Here you will be able to interactively map targeted invasive species occurrences. We have developed a mapping service based on the ESRI ArcGIS Server platform which allows users to navigate the project area and screen digitize species occurrences with the aid of statewide digital imagery.

Registered MISIN users have access to the mapping service for reporting purposes. Completion of a short training module corresponding to the species you wish to report is required before you can contribute data.

STEP 1

Register
and Login

STEP 2

Species
Training

STEP 3

Report
Sighting

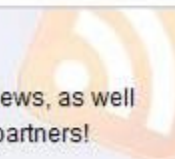
How Do I Report
An Invasive Species
Sighting?

[Garlic Mustard / Learn More...](#)



eNews & Updates

Sign up to receive the latest MISIN news, as well as daily postings from our network partners!



Acknowledgements

- **Michigan Natural Features Inventory** –
Phyllis Higman, Suzan Campbell
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- Pam Grassmick, Beaver Island
Homeowner's Association
- Susan Tangora, Wildlife Division

Invasive Plant Species of Michigan



A Pocket Guide



MICHIGAN STATE
UNIVERSITY
EXTENSION



Michigan
Natural
Features
Inventory

[http://web4.msue.msu.edu/
mnfi/education/invasives.cfm](http://web4.msue.msu.edu/mnfi/education/invasives.cfm)

or

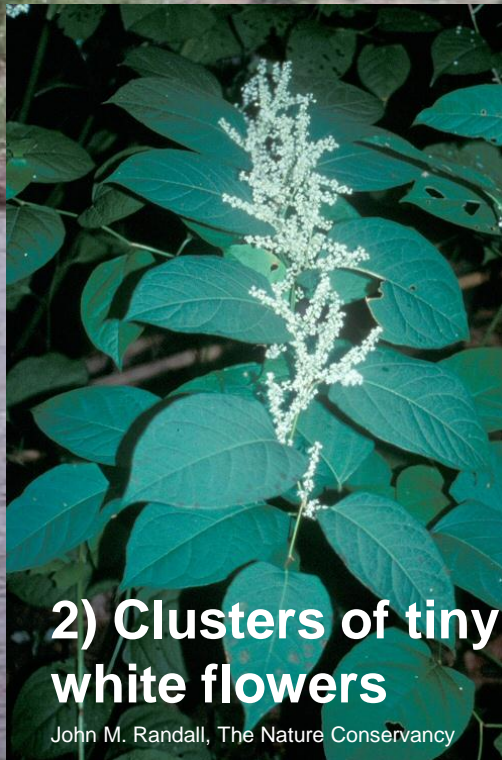
Search Michigan Natural
Features Inventory, select
invasive species

Japanese knotweed

Polygonum cuspidatum

John M. Randall, The Nature Conservancy

1) Broad cuspidate leaves



2) Clusters of tiny white flowers

John M. Randall, The Nature Conservancy

3) Hollow stems in clonal clusters



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Japanese Barberry *Berberis thunbergii*



Japanese Barberry *Berberis thunbergii*

USDA Forest Service,
Ottawa National Forest



Thank you



Great Lakes, Great Times, Great Outdoors

www.michigan.gov/dnr