

INVASIVE SPECIES BASICS



WHAT IS A NATIVE PLANT?

A plant that has evolved in a given place over a period of time sufficient to develop complex and essential **relationships** with the physical environment and other organisms in a given ecological community.

(Darke & Tallamy, *The Living Landscape* 2014)



Purple Coneflower - photo by Laura McCloughan

WHAT IS AN INVASIVE PLANT?



Multiflora Rose - photo by Leslie J. Merhoff, University of Connecticut, Bugwood.com

A species that does not naturally occur in a specific area (non-native) and whose introduction does or is likely to cause economic or environmental harm or harm to human health.

(President's Executive Order 13112, 1999)

WHAT ABOUT NON-NATIVES?

- ▶ Not all non-native plants are invasive (most are not)
- ▶ Non-natives provide far fewer ecological services than natives & can become invasive over time
- ▶ 50,000 non-native species have been introduced into the US



The non-native Knockout Rose provides little benefit to native pollinators but are a favorite food of the invasive Japanese Beetle



SOME BACKGROUND ON INVASIVES

Autumn Olive in Dillon Park photo by Laura McCloughan

WHERE DO INVASIVES COME FROM?



Introduced accidentally

- Packing material/shipping containers
- Contaminants in soil/mulch
- Seed mixes
- Effects of wind/water
- Wildlife or human activity

Introduced deliberately

- To produce goods and food
- To feed wildlife
- To control the environment
- As ornamentals in gardens



Kudzu was purposely planted for erosion control

MOST COMMON METHOD OF INTRODUCTION

- ▶ 83% of the invasive plants that have escaped into naturally occurring green spaces came from our own home landscapes
- ▶ 25% of Indiana's total flora populations are now invasive species



WHAT MAKES THEM SO INVASIVE?

- ▶ High adaptability to variety of soil, water and light conditions
- ▶ Aggressive growth rates
- ▶ High reproductive rates
- ▶ Lack of natural pests
- ▶ Early leaf out/late leaf drop or evergreen nature enabling them to outcompete natives
- ▶ Utilization of chemical warfare (allelopathy) that poisons the soil
- ▶ Difficult to control/eradicate



English Ivy



Dame's Rocket



Japanese Barberry

WHY SHOULD WE CARE?

Asian Bush Honeysuckle



NEGATIVE IMPACTS OF INVASIVE PLANTS

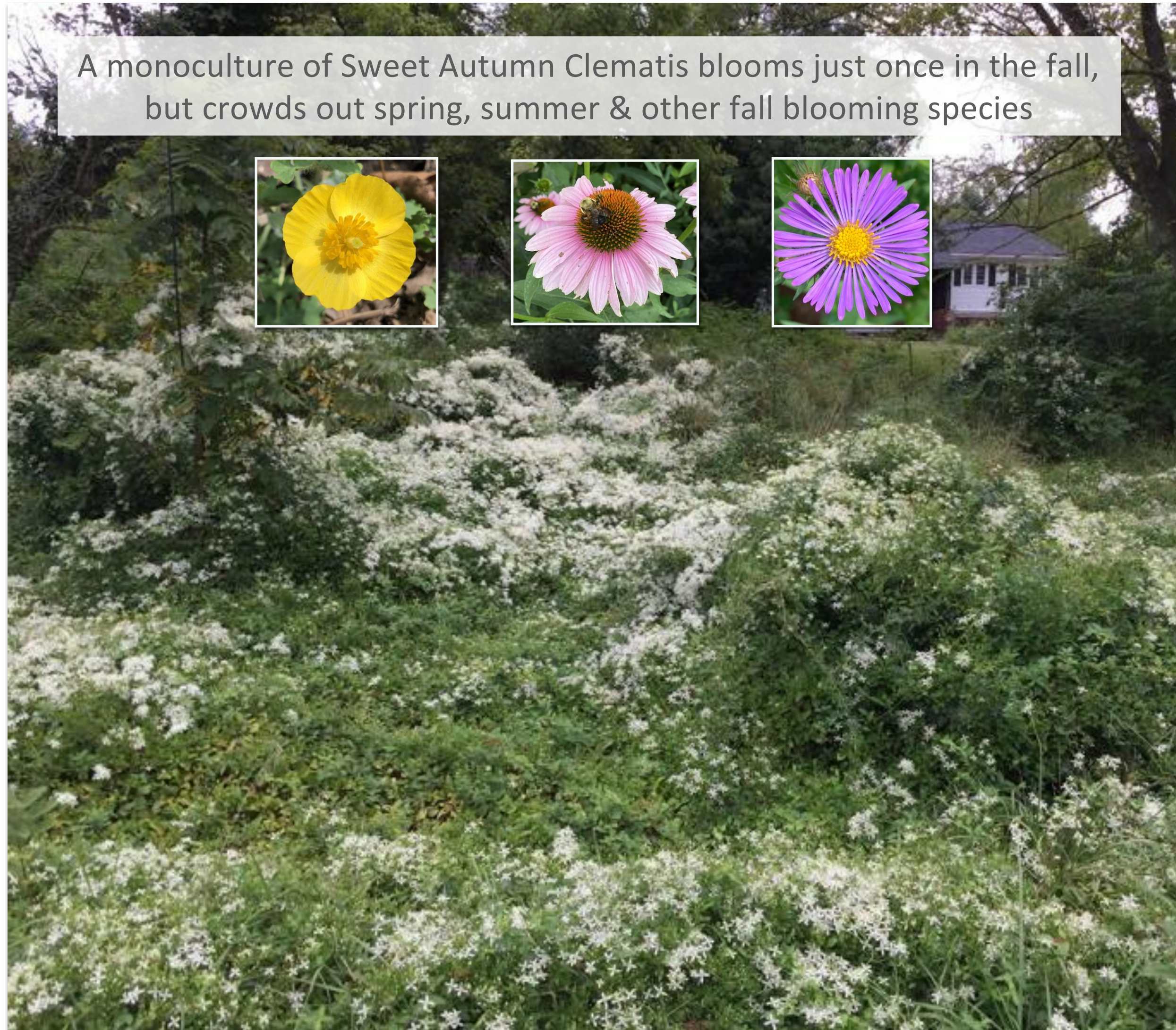
- ▶ Displaces native plants
- ▶ Disrupts vital food webs
- ▶ Degrades wildlife populations
- ▶ Harms the environment
- ▶ Negatively effects human health
- ▶ Costs billions in economic damages & control efforts!



Burning Bush Gone Wild!

DISPLACES NATIVE PLANTS

A monoculture of Sweet Autumn Clematis blooms just once in the fall, but crowds out spring, summer & other fall blooming species



- ▶ Reduces the growth and reproduction of native plants through competition for water, soil nutrients, light and space
- ▶ Creates monocultures that exclude native plants and inflict negative pressure on food webs

DISRUPTS VITAL FOOD WEBS

- ▶ Native herbivores have co-evolved over time to develop essential and complex relationships with native plants
- ▶ Approximately 90% of our herbivorous insects are diet/host plant specialist



Cathy Keifer/ Getty images

Monarchs have evolved to rely exclusively on Milkweed species as a food source and host plant for their caterpillars. Declining Milkweed populations have led to a 90% reduction in the populations of Monarch Butterflies.

ALL PLANTS ARE NOT CREATED EQUAL!

Hosting Capacity of Non-Native Plants Introduced to North America			
Non-Native Plant Species	Insects Supported in Homeland	Insects Supported in North America	Years Since Introduction to North America
<i>Clematis vitalba</i>	40 species	1 species	100
<i>Eucalyptus stellulata</i>	48 species	1 species	100
<i>Melaleuca quinquencervia</i>	409 species	8 species	120
<i>Opuntia ficus-indica</i>	16 species	0 species	250
<i>Phragmites australis</i>	170 species	5 species	300
Total	683 species	15 species	

Hosting Capacity of Plants Native to North America	
Native Plant Species	Insects Supported
<i>Oak</i>	534 species
<i>Willow</i>	456 species
<i>Cherry, Plum</i>	456 species
<i>Birch</i>	413 species
<i>Poplar, Cottonwood</i>	368 species
Total	2,227 species

Tables adapted from “Bring Nature Home: How you can Sustain Wildlife with Native Plants” by Douglas Tallamy

Even hundreds of years will not provide enough evolutionary time for a non-native plant to become ecologically equivalent to a native species it has displaced.

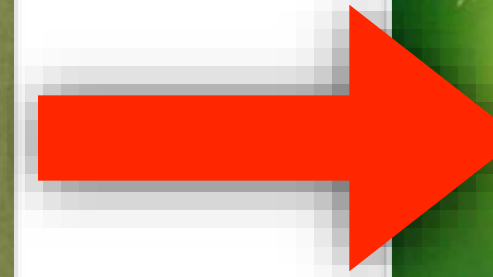
HARMS THE ENVIRONMENT



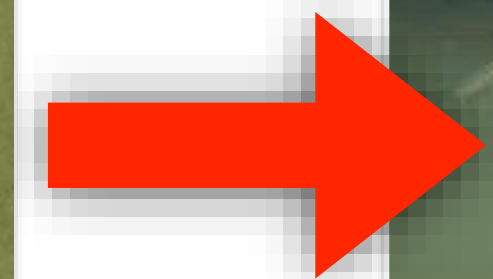
- ▶ Alters the hydrology of water sources
- ▶ Alters soil health by increasing erosion and depleting soil nutrients
- ▶ Degrades the water quality of ponds, streams, rivers, lakes and aquifers
- ▶ Alters natural fire regimes
- ▶ Alters the microbial communities of soil

HARMS HUMAN HEALTH

Dense stands of invasive Japanese Barberry shelter white-footed mice & other rodents from predators and act as vectors for black-legged ticks, increasing the risk of Lyme Disease for humans



Water with invasive honeysuckle leaf & flower extracts have altered chemical composition which increase the survival & development of mosquito larvae, raising the risk of mosquito born diseases



HARMS THE ECONOMY

- ▶ Introduces devastating pests & plant diseases at great economic harm
- ▶ Economic costs in the US currently exceeds \$138 billion per year & includes their effects on:
 - ❖ Property values
 - ❖ Agricultural productivity
 - ❖ Utility operations
 - ❖ Native fisheries
 - ❖ Tourism and outdoor recreation
 - ❖ Invasive species control efforts



WHAT ARE WE DOING



The logo for SICIM features the letters 'S', 'I', 'C', 'I', and 'M' in a bold, green, sans-serif font. The letter 'I' is replaced by a green leaf. The letters 'C' and 'I' are also stylized with green leaves. A small 'TM' trademark symbol is located to the right of the 'M'.

SICIMTM

State of Indiana Cooperative
Invasives Management

www.sicim.info

HAMILTON COUNTY Soil & Water

CONSERVATION DISTRICT

- Technical assistance
- Tool Loan Program
- Native tree and shrub sale in the fall
- Resources
 - Creating and Maintaining a Native Prairie Booklet
- Soil and well water testing
- Rain barrel and native plant kit sales
- Hamilton County Invasives Partnership (HIP)



HAMILTON COUNTY

INVASIVE SPECIES AWARENESS WEEK

APRIL 16 - 23, 2022

Hamilton County Invasives Partnership

- Education
 - Workshops, speaking engagements
- Invasive species surveys
- Weed Wrangles
- Strike Team
- Invasive for native swap
- Boot brush stations
- #InvasivesBucketChallenge

