



Invasive Species Affecting Maple Trees

Asa Plonsky

**Central Wisconsin Invasives Partnership (CWIP) Coordinator
Golden Sands Resource Conservation & Development Council**

What is an “invasive species”?

Not native to the ecosystem

Causes (or is likely to cause) harm



Garlic mustard, photo from Paul Skawinski

What is an “invasive species”?



Hydrangea - not invasive



Poison ivy - not invasive

Common Traits of Invasive Plants

- Rapid growth + spread
- Produce lots of seed
- Survive well in disturbed areas
- Seeds spread easily
- Tolerant of a wide range of conditions



Oriental bittersweet smothering trees

Woody Invasive Species + Maples

They impact maple seedlings

- Areas with big Amur honeysuckle plants had fewer sugar maple seedlings (Cameron et al. 2016)
- More native tree seedlings, including maples, after controlling species like Japanese barberry, Oriental bittersweet, and burning bush (Ward et al. 2018)



Japanese barberry

Woody Invasive Species + Maples

They impact maple saplings

- Areas invaded by glossy buckthorn had reduced growth and survival of sugar and red maple saplings (Fagan and Peart 2004)



Glossy buckthorn

Woody Invasive Species + Maples



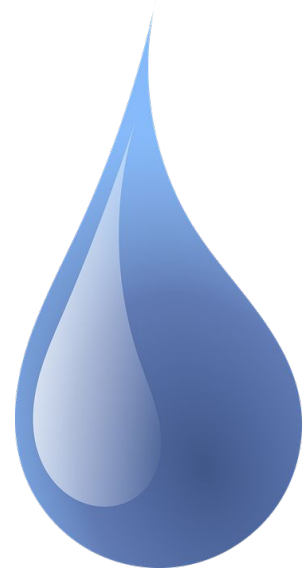
Why does this happen?

Light availability

Water availability

Nutrient availability

Other reasons?



Garlic Mustard + Maples



Areas with lots of garlic mustard had fewer sugar and red maple seedlings
(Stinson et al. 2007)

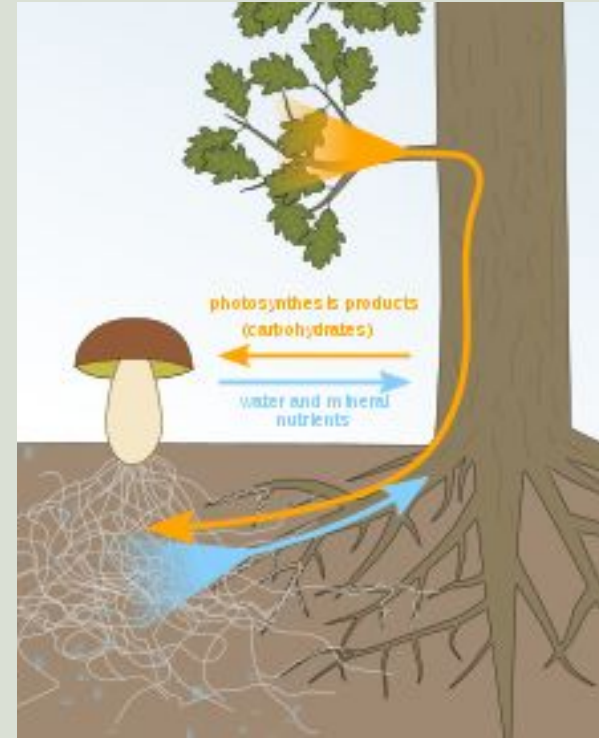
Why does this happen?



Garlic Mustard + Maples

Arbuscular mycorrhizal fungi (AMF)

- Symbiotic with many plant species, attach inside plant roots
- AMF provide nutrients, water, disease resistance? in exchange for sugars from the plant
- Usually beneficial
- Many woody seedlings thought to be dependent on AMF



Mycorrhizal fungi and tree interaction, from Wikipedia.org

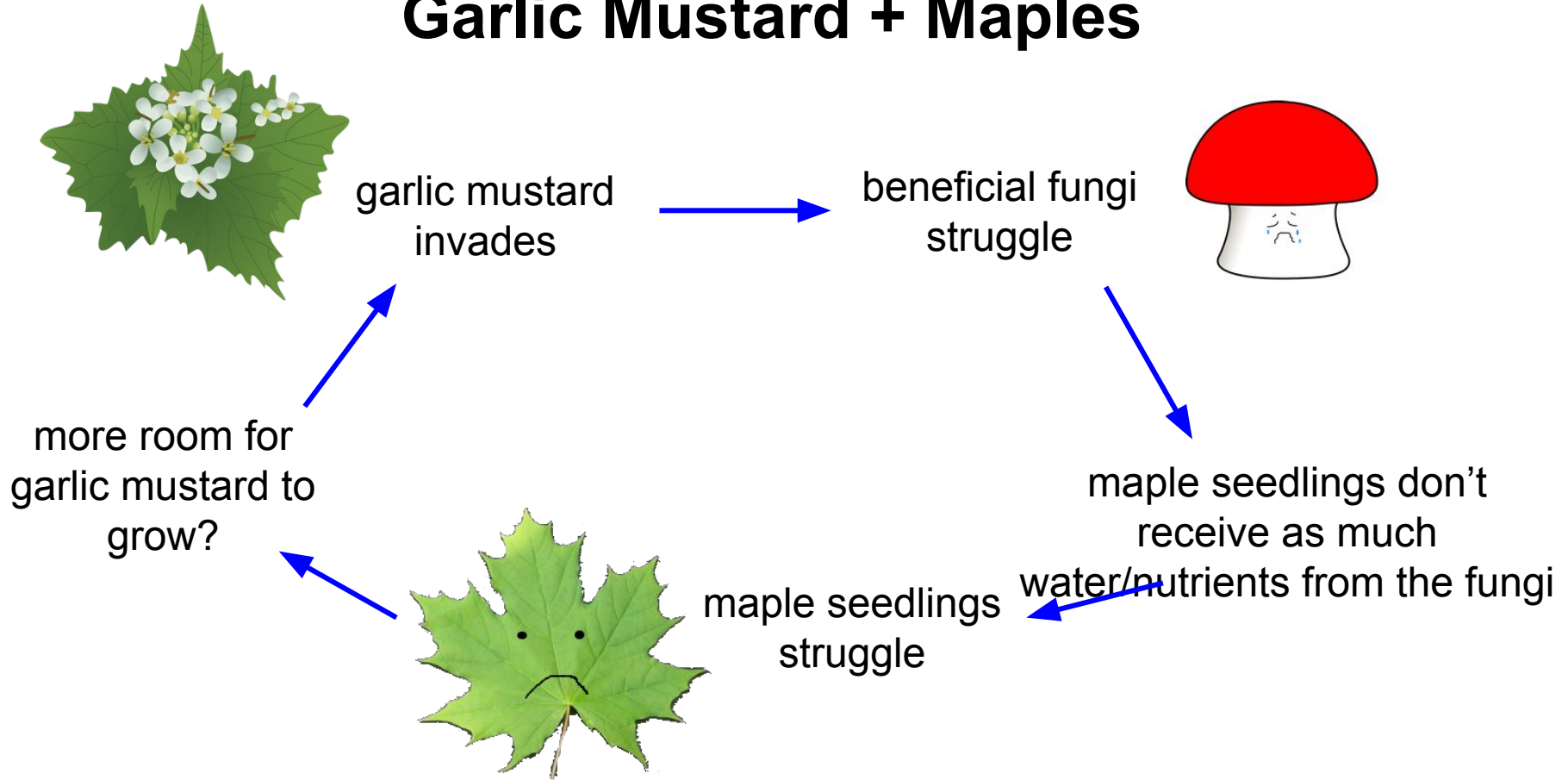
Garlic Mustard + Maples

- Sugar and red maples grown in soils invaded by garlic mustard had less AMF colonization and slower growth (Stinson et al. 2006)
- Sugar maple seedlings grown in areas invaded by garlic mustard had reduced colonization of AMF and different species of AMF than uninvaded areas (Barto et al. 2011)



Mycorrhizal fungi on seedling roots, from <https://www.csuchico.edu/>

Garlic Mustard + Maples



Other Invasive Species Problems

- Wildlife/biodiversity
- Erosion
- Property/trail access
- Aesthetics
- Altered soil chemistry



Infestation of Japanese barberry, photo from Paul Skawinski



**Some Common
Invasive Plants**



Garlic Mustard



Buckthorn



Common

Glossy



Honeysuckle

Multiple species
and hybrids



Oriental Bittersweet



Autumn Olive

Photo from Peter M. Dziuk,
MinnesotaWildflowers.info



2015 © Peter M. Dziuk

Japanese Barberry



Winged Burning Bush

Photos from Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



5457494



5457792



Controlling Invasive Plants

- Pulling (garlic mustard, young woody invasives)
 - Hand-pulling
 - Pulling tools
- Cutting/mowing - usually not effective alone



Weed wrench in action, photo from ecolandscaping.org

Controlling Invasive Plants

- Smothering
 - Entire infestation (non-woody plants)
 - Tin can or black baggie (woody stumps)
- Herbicide use (not organic?)
 - Foliar - spray leaves
 - Cut stump - apply to stump after cutting/mowing
 - Always read the entire label and follow safety precautions
 - Certain species respond better to certain herbicides



Buckthorn Baggie, photo from buckthornbaggie.com

Controlling Invasive Plants

Resources

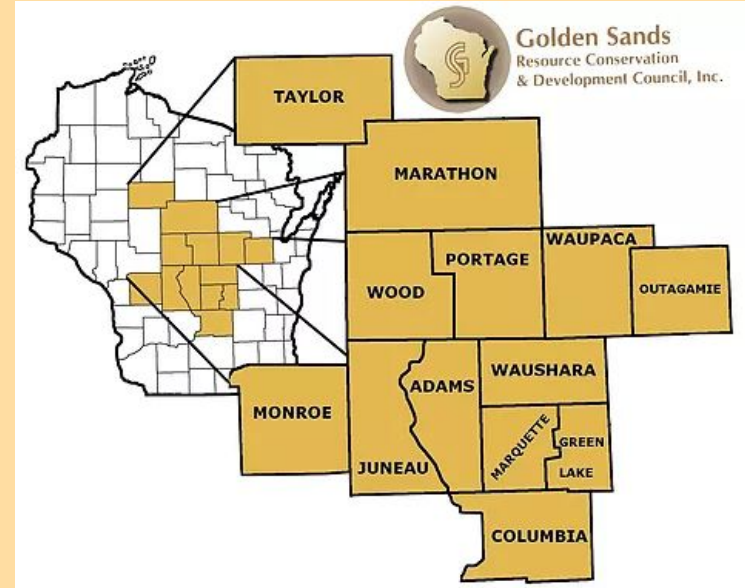
- **UW-Extension Fact Sheets** - ID and control info
 - <https://fyi.extension.wisc.edu/wifdn/learn/invasive-species-i-d-and-impacts/>
 - Google “UW Extension Invasives Fact Sheets”

- **Woody Invasives of the Great Lakes** - ID, control, regulation info and native alternatives to plant
 - <https://woodyinvasives.org/>

- **Central Wisconsin Invasives Partnership (CWIP)** - ID and control info
 - I coordinate this group!
 - <https://www.cwipartnership.org/>

Cooperating for Woods and Wildlife

- Golden Sands RC&D program to join nearby landowners and form Deer Management Assistance Program (DMAP) cooperatives
- Site visits from wildlife biologist + forester
- Possible reduced price antlerless tags
- Work with neighbors on habitat/timber/invasive species projects?
- Contact me for more information



Sources

Barto, E. & Antunes, Pedro & Stinson, Kristina & Koch, Alexander & Klironomos, John & Cipollini, Don. (2011). Differences in arbuscular mycorrhizal fungal communities associated with sugar maple seedlings in and outside of invaded garlic mustard forest patches. *Biological Invasions*. 13. 2755-2762. 10.1007/s10530-011-9945-6.

Cameron, Guy & Culley, Theresa & Kolbe, Sarah & Miller, Arnold & Matter, Stephen. (2016). Relationships between an invasive shrub Amur honeysuckle (*Lonicera maackii*, Caprifoliaceae) and environmental factors on recruitment of sugar maple trees (*Acer saccharum*, Aceraceae) in southwestern Ohio. *The Journal of the Torrey Botanical Society*. 143. 386-397. 10.3159/TORREY-D-15-00036.1.

Fagan, Matthew & Peart, David. (2004). Impact of the invasive shrub glossy buckthorn (*Rhamnus frangula* L.) on juvenile recruitment by canopy trees. *Forest Ecology and Management*. 194. 95-107. 10.1016/j.foreco.2004.02.015.

Stinson, Kristina & Campbell, Stuart & Powell, Jeff & Wolfe, Benjamin & Callaway, Ragan & Thelen, Giles & Hallett, Steven & Prati, Daniel & Klironomos, John. (2006). Invasive Plant Suppresses the Growth of Native Tree Seedlings by Disrupting Belowground Mutualisms. *PLoS biology*. 4. e140. 10.1371/journal.pbio.0040140.

Stinson, Kristina & Kaufman, Sylvan & Durbin, Luke & Lowenstein, Frank. (2007). Impacts of Garlic Mustard Invasion on a Forest Understory Community. *NORTHEASTERN NATURALIST*. 14. 73-88. 10.1656/1092-6194(2007)14[73:IOGMIO]2.0.CO;2.

Ward, Jeffrey & Williams, Scott & Linske, Megan. (2018). Influence of invasive shrubs and deer browsing on regeneration in temperate deciduous forests. *Canadian Journal of Forest Research*. 48. 10.1139/cjfr-2017-0208.

Questions?

Asa Plonsky
CWIP Coordinator / Terrestrial Invasive
Species Coordinator

asa.plonsky@goldensandsrcd.org

Check us out online!

<http://www.goldensandsrcd.org>

www.facebook.com/goldensandsrcd

www.facebook.com/cwippartnership

