Invasive plant Identification, prioritization and management for woody species in Dane County

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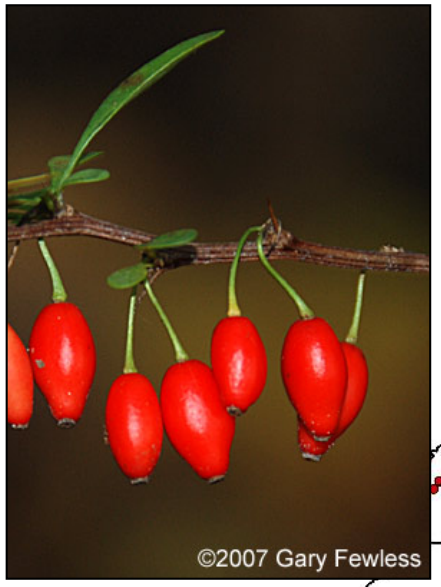
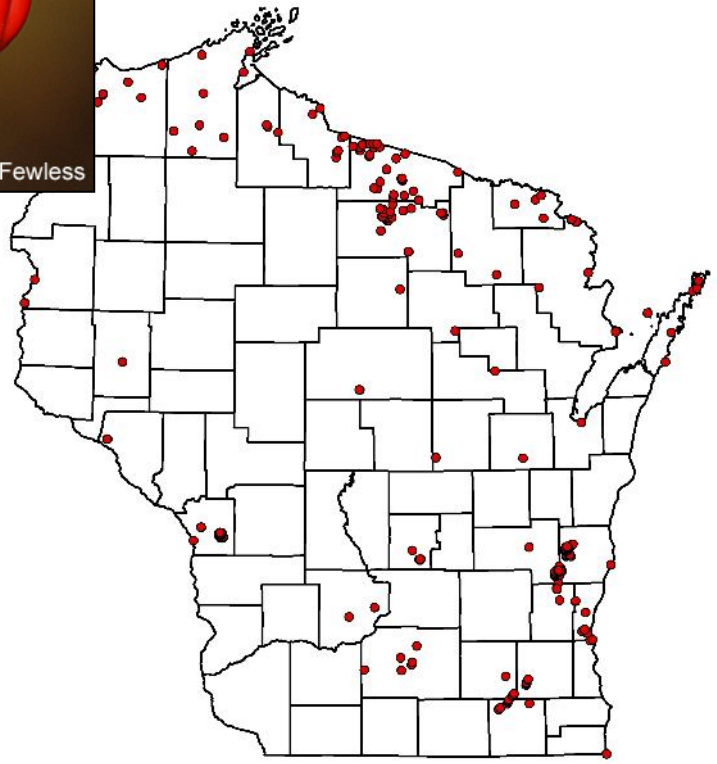
Top species that can invade Dane County

(that we have modeled)

1. **autumn olive**
2. wild chervil
3. reed canarygrass
4. **glossy buckthorn**
5. **Japanese barberry**
6. leafy Spurge
7. hedgeparsleys
8. crown vetch
9. Canada thistle
10. knotweed species
11. spotted knapweed
12. **Oriental/Asian bittersweet**
13. phragmites
14. purple loosestrife
15. garlic mustard
16. teasel species

Japanese barberry *(Berberis thunbergii)*





Japanese barberry
(Berberis thunbergii)

- Round, dense, spiny shrub.
- Branches are reddish-brown, deeply grooved, somewhat zig-zag with a single sharp spine at each node.
- Leaves alternate and oval shaped.
- Fruit bright red, oblong berries, 0.3” long.

How it looks in the wild

It can get really bad in forest understories

Key identifying characteristics in winter

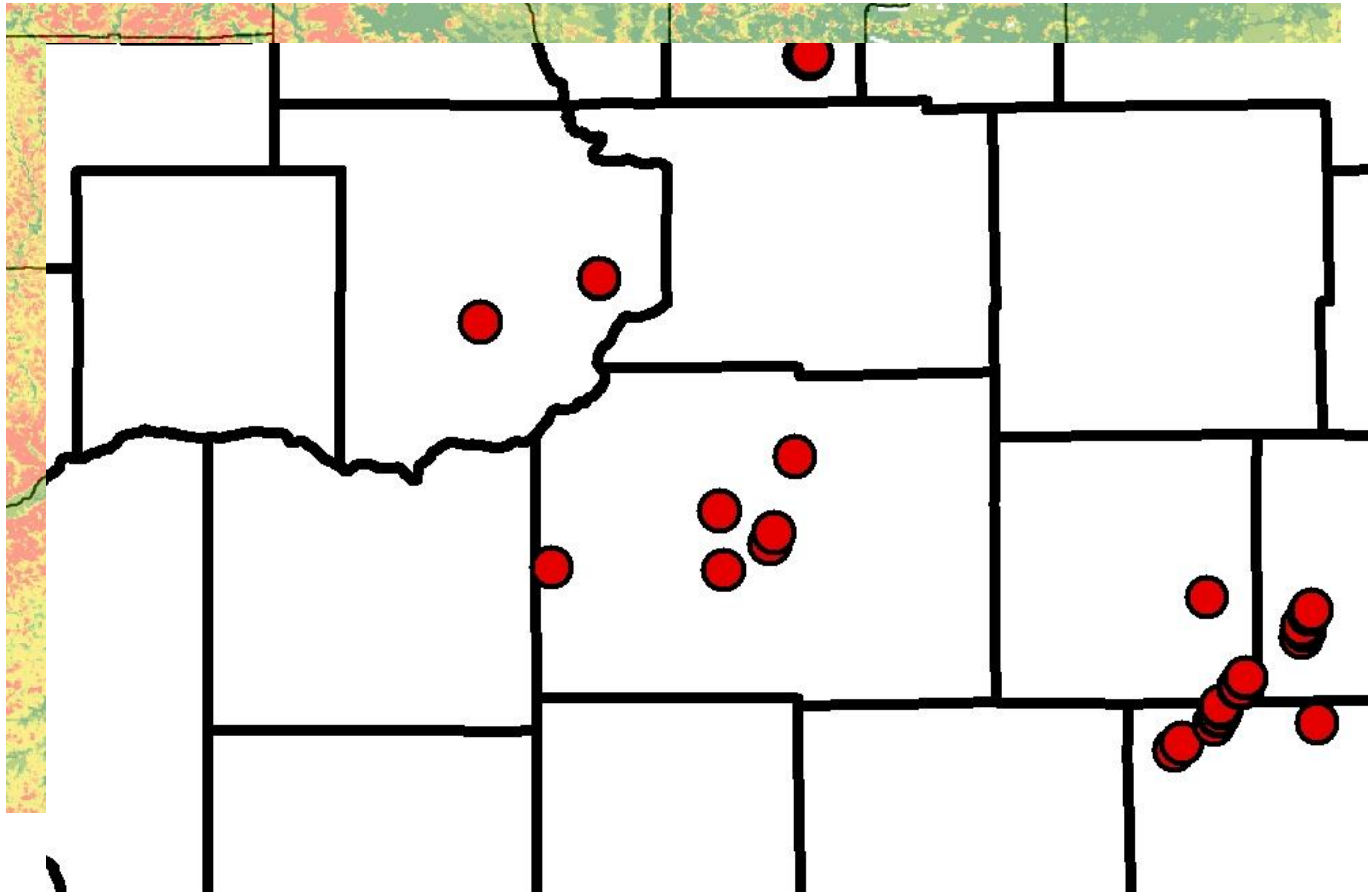
- Zig-zag branches
  - reddish-brown
  - deeply grooved
  - **single sharp spine at each node**

- European barberry (*Berberis vulgaris*)
  - introduced species (invasive?)
  - spines occur in sets of 3

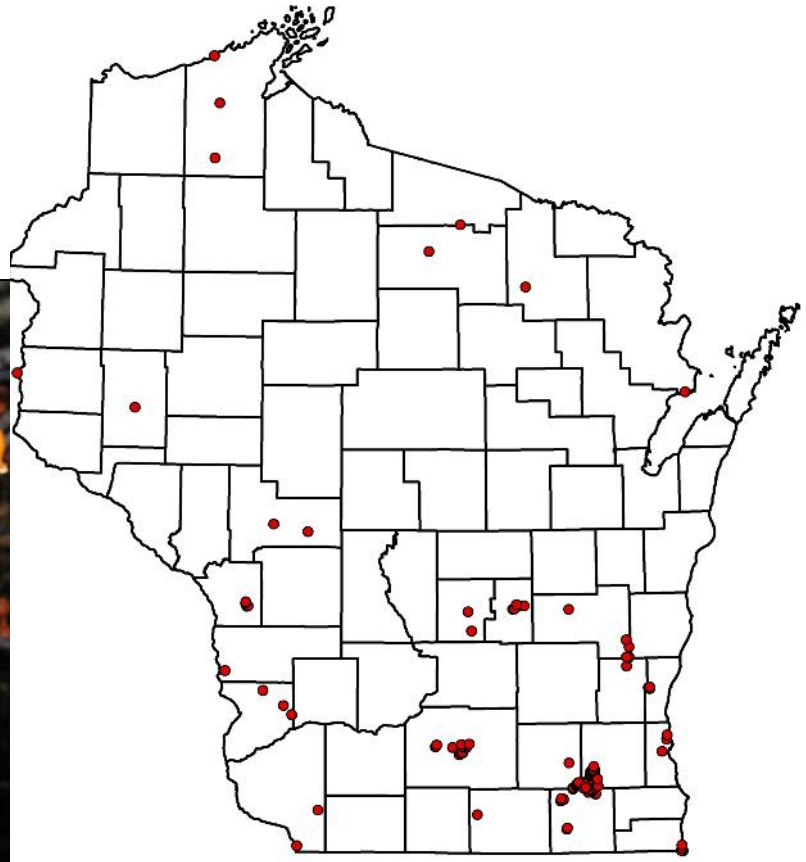
Why we want to prioritize removal of Japanese barberry

- Highly invasive and lots of suitable habitat
- Just now appearing in forests
  - Easy to control now
- Populations are difficult to walk through
- Promotes ticks and Lyme disease

Suitable habitat for Japanese barberry



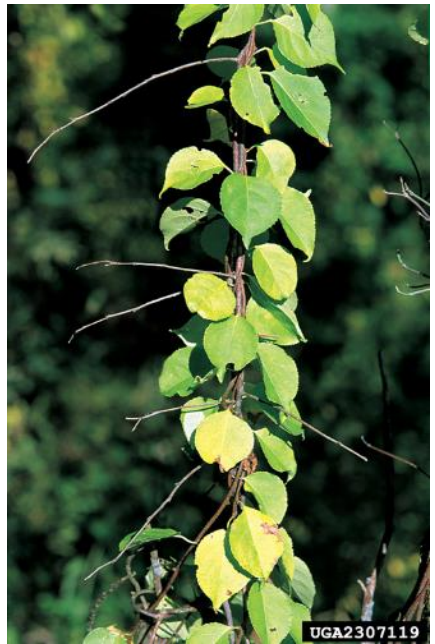
Oriental/Asian bittersweet *(Celastrus orbiculatus)*



Oriental bittersweet

- Perennial woody vine

- Leaves
  - alternate, glossy, and round
  - pointed tip and toothed margins



Oriental bittersweet

- Fruit
  - showy round that split open at maturity
    - 3 orange fruit
  - **clustered in leaf axils**

- **NOTE: NATIVE bittersweet has fruit at ends of stems**
  - Invasive can hybridize with native

Oriental bittersweet

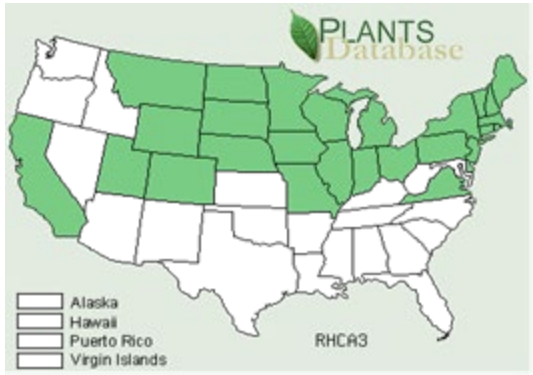
- Bark striated, brown to dark brown
  - twigs light gray to dark brown

Buckthorns

- Woody shrub 10-25 ft, one to many stems/trunks.
  - Can grow as a shrub or tree
- Leaf scars are prominent in winter.
- Cut branch exposes yellow sapwood and orange heartwood.
- **Common** has buds covered in hoof-like scale and twigs that end as stout thorns.
  - **Glossy** lacks both of these characteristics.

Common buckthorn (*Rhamnus cathartica*)

Glossy buckthorn (*Frangula alnus*)



Leaves

- Ovate/elliptical, with prominent veins curving toward tip. Stay green late into fall.

- **Common buckthorn**
  - mostly opposite leaves, 1–2.5” long
  - tiny teeth on margin.

- **Glossy buckthorn**
  - mostly alternate leaves, 2–3” long
  - No teeth on margin
  - glossy upper surface.

Winter ID of Buckthorns

- Terminal bud
  - common buckthorn buds
    - adjacent to each other
    - that are dark brown to black in color,
    - spiny thorn between buds.
  - Glossy buckthorn
    - fuzzy, rusty colored and lacking bud scales

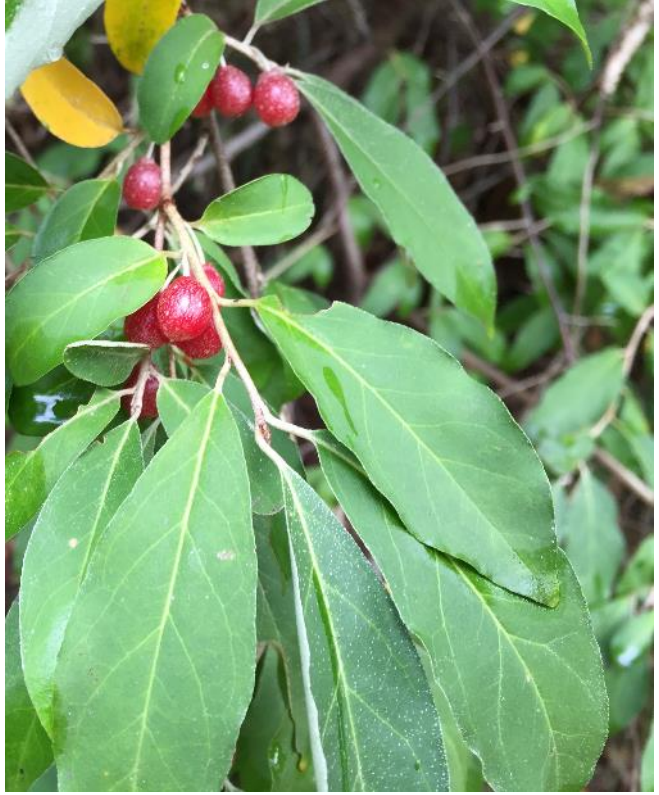
Winter ID of Buckthorns

Autumn and Russian Olive

- Large shrub or small tree with grey to silver foliage and **CREEPING ROOT SYSTEM**.

- **Autumn olive** grows up to 20’ tall.
- **Russian olive** can reach up to 30’ and often has thorny branches.

Russian and Autumn Olive Leaves



Simple and alternate

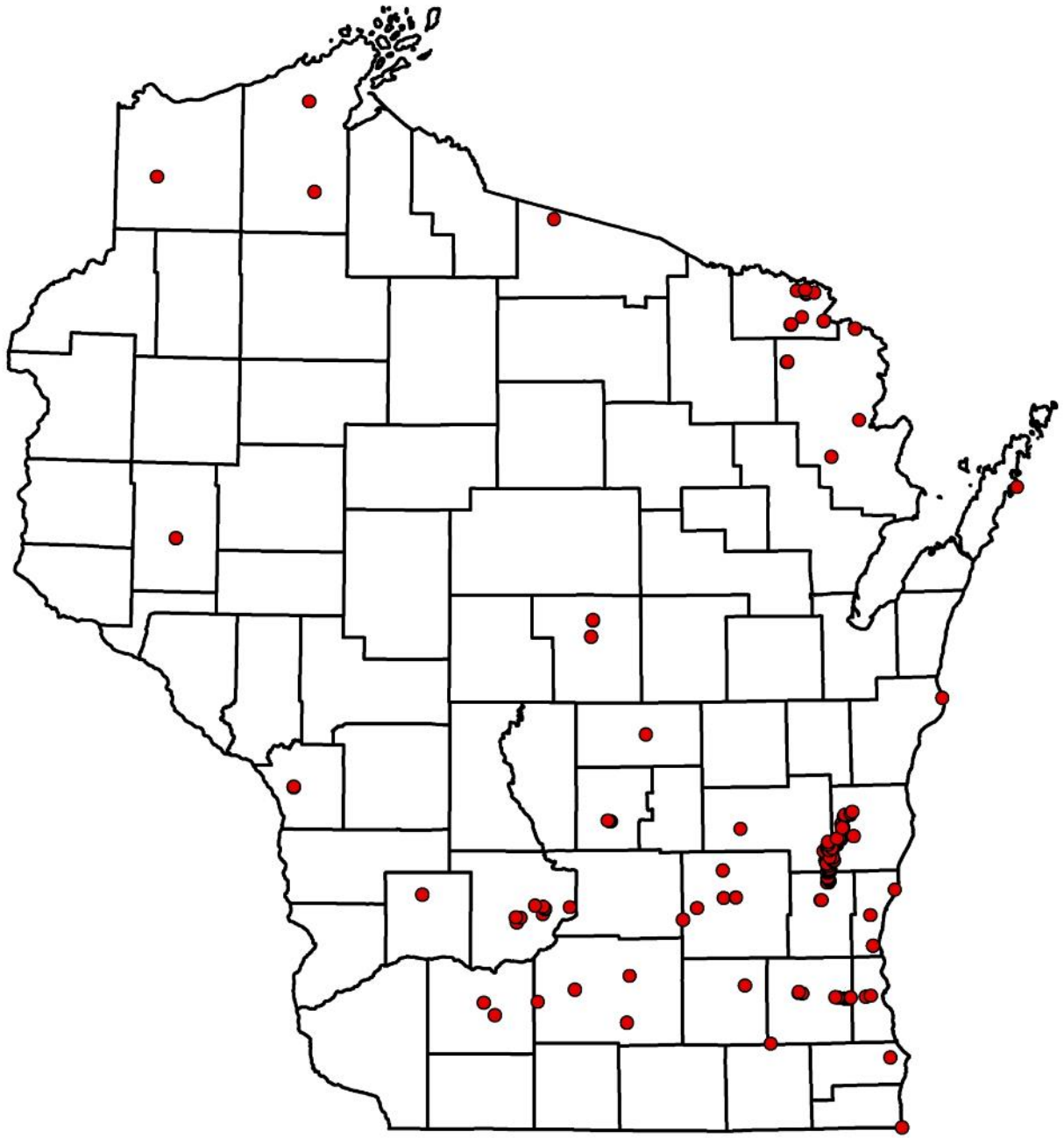
- **Autumn olive**:
  - 1-3” long, about 1” wide, silver-gray on the underside and dark green on top.
  - Leaves can be lance or oval in shape, with entire, wavy margins.
- **Russian olive**
  - lance shaped, 1.5-3.5” long, 0.5” wide
  - silver on both sides.

Autumn Olive bark and winter buds

Autumn olive *reported distribution*

(spring 2017)

- Populations heavily under-reported in Wisconsin
  - Know it is common in southern WI
  - Likely common in central and northern…..



What about Bush Honeysuckles?

- Multi-stemmed shrub.
- Shaggy bark and hollow stems as they age.
- Opposite leaves with entire margins.
- Paired flowers.

Winter ID of Bush Honeysuckles

- Multi-stemmed
- One of the first species to green-up in spring
- Shaggy bark, tan bark
- Hollow stems

Where do I get all the needed information and resources

- www.fyi.uwex.edu/weedsci
- www.fyi.uwex.edu/wifdn
- Story map (linked at WIFDN website)
  - Links to factsheets, presence points, top 10-15 invasive species by county

Management options for woody species

Manage before densities get high!

	Hook Lake (Southern)	Buena Vista (Central)	Johnson (NW)
Low Brush Density **(5-20% cover)**	3 gallons used 1.1 hrs to treat	1.25 gallons used 0.8 hrs to treat	0.75 gallons used
High Brush Density **(20-50% cover)**	5 gallons used 1.9 hrs to treat	2.5 gallons used 2.2 hrs to trt	3 gallons used

USED MORE HERBICIDE (50-300% more)

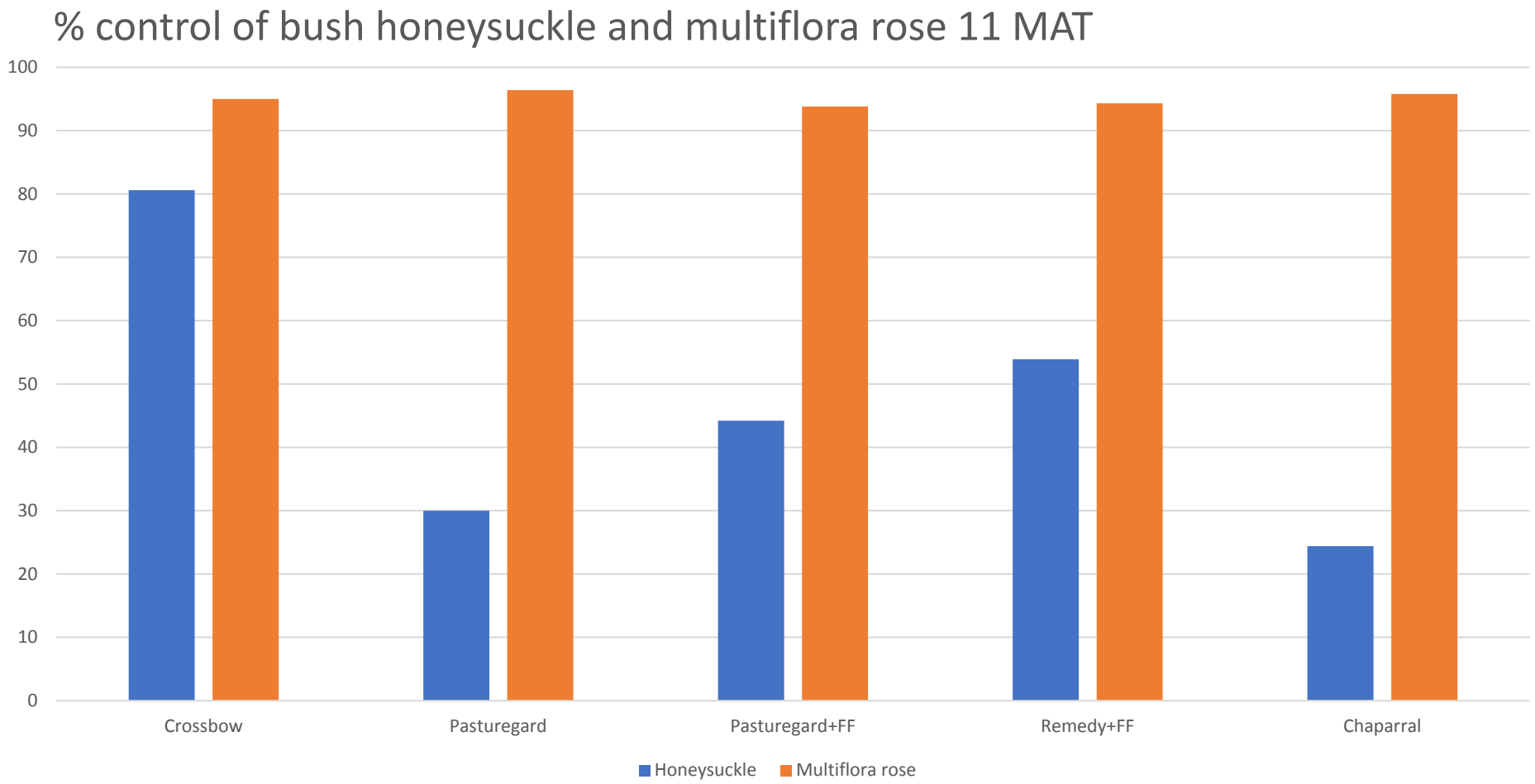
SPENT MORE TIME (75 to 175% more time)

What techniques should I be familiar to control woody species

- Something to cut down woody species
  - Chainsaw
- Something to pull them out of the ground
  - Weed wrench/pulling implement
- Something to spray with a herbicide
  - Foliar
  - Basal bark
  - Cut stump

A range of herbicides are effective

- Inexpensive IF treated early in an invasion!
- Species specific response



Foliar applications

- Herbaceous (nonwoody) or woody plants
- Can spot treat or broadcast
- Tends to be most cost effective for large populations
- Systemic herbicides work best

- IMPORTANT APPLICATION INFO
  - Apply to green tissue (leaves) to the point of runoff
  - Effectiveness reduced when plants are stressed
  - If temps are low (<50F) expect reduced control
  - Rainfall day of application may reduce control
  - USE LABEL RATES (higher rates can reduce control)

Basal Bark applications

- Use on woody species *5” or less in diameter*

- Treat lower 12 to 18 inches
  - Around entire stem
- High rates of herbicide targeting individual plants
- Must mix with oil-compatible products for penetration
  - diesel fuel, basal bark oil, RTU
- Do not apply when excessive Snow present!

Cut surface/stump

- Cut stem then apply herbicide to cut surface
  - Entire surface for small plants
  - Outer surface for large plants
    - cambium and root collar area
  - Several herbicide options
    - Glyphosate: treat immediately after cut (mix in water)
    - Oil based solutions: apply within 4 hours of cut (Garlon)
  - Do not apply when excessive snow present or heavy sap flow

Some to herbicides to consider

Herbicide	Active ing.	Cost	Selectivity	Best uses
Roundup (liquid)	glyphosate	$	Not-selective, no residual	Spot treatment, broadcast in winter, cut stump
Garlon 4 (liquid)	Triclopyr	$$$	Safe to grasses, short residual	Cut stump, basal bark, selective foliar treatment
2,4-D (liquid)	2,4-D	$	Safe to grasses, short residual	Cut stump, basal bark, selective foliar treatment
Crossbow (liquid)	2,4-D + triclopyr	$$	Safe to grasses, short residual	Cut stump, basal bark, selective foliar treatment
Escort (dry)	metsulfuron	$$	Safe to grasses, residual can be long	Selective foliar treatment

Let’s discuss some of your specific questions

- Different winter management tools and techniques with pros and cons for each (basal bark, cut stump, girdling, mowing)
  - Basal bark
    - good IPT treatment with small diameter trees
    - bad if lots of trees, and if you want to cut them down after treatment
  - Cut stump
    - Good, effective on larger diameter trees
    - Bad, takes more time to cut down trees, remove stems
  - Girdling
    - Very time consuming, likely more cost/time efficient techniques
    - Other have had success with creeping perennial trees
  - Mowing
    - Good site prep for future treatment, but few species killed without follow-up trt

Let’s discuss some of your specific questions

- How will sites respond after clearing out trees and shrubs?--managing the flush of weeds and woody seedlings after the initial woody removal.

- Response will be site specific, but if infested for long periods expect seedlings to appear and develop a plan.
  - Long-term , focusing on goal of land
  - Remember you have time to manage
    - Many won’t survive

Let’s discuss some of your specific questions

- Pros and cons of different herbicides (garlon, roundup) and which herbicides are recommended for which species.
  - Both can be effective, the devil is in the details
    - Species
    - Site
    - Land management goals….

Let’s discuss some of your specific questions

- Using herbicides to treat woody vegetation in wet areas—what are good options in these sensitive environments?

- This is complicated, but I can discuss some of the recommendations I have given in the past….

Summary

- Woody invasive plants can be effectively controlled

- Things you need to do to maximize success
  - Identify species on the property and the goal of the site
  - Map the area so you know the good and bad species present
  - Develop a plan that includes
    - Management for multiple years
    - Accounts for desirable plants present
    - Incorporates restoration/revegetation
    - Limits recruitment/reinfestation

Any other questions?