



EMERGING INVASIVE PLANTS THREATENING OUR FORESTS

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Emerging Species

- Oriental Bittersweet
- Japanese Barberry
- Winged Euonymus
- Multiflora Rose
- Autumn Olive
- Japanese Knotweed
- Garden Valerian

Oriental Bittersweet - *Celastrus orbiculatus*

- Woody, twining vine, up to 60' long & 6" in diameter
- Leaves, alternate, finely toothed, elliptical to ovoid & shiny
- Yellow capsules around red berries develop at leaf nodes
- Found in Duluth, Metro &, SE



American bittersweet (native)

Orange capsules



Berries at end of branch



Leaves unroll like a scroll



Similar Leaves

Oriental bittersweet (invasive)

Yellow capsules



Berries at each leaf axil

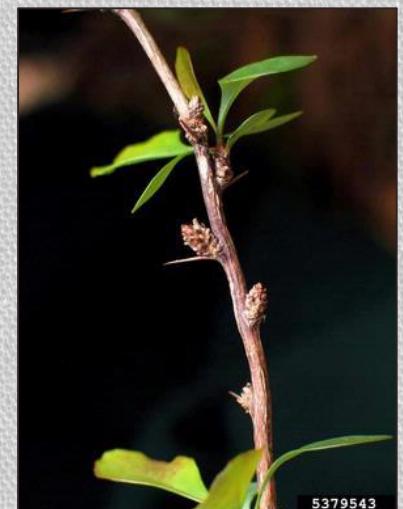


Leaves unfold like a book

MDA Photos

Japanese Barberry – *Berberis thunbergii*

- Small rounded leaves, in clusters above single spines
- Yellow flowers, in clusters in May
- Red, egg-shaped berries, in pairs
- Seeds dispersed by birds
- Spreads vegetatively - lower branches root freely.
- Naturalized plants may have green rather than purple leaves.



Japanese Barberry – Continued

Winter Characteristics

- Purple-red fall foliage on multi-stemmed spiny shrub, 3-6' tall
- Arching grooved or angular stems
- .5” spine at each leaf node
- Berries can persist through the winter



Winger Euonymus – *Euonymus alatus*

- Also known as ‘burning bush’ or ‘winged spindle’
- Upright, multi-stemmed, 5-10’ tall w/ corky, often winged stems
- Opposite. 1-3” leaves, finely serrate
- Beware of the native Eastern Wahoo, *E. atropurpureus*



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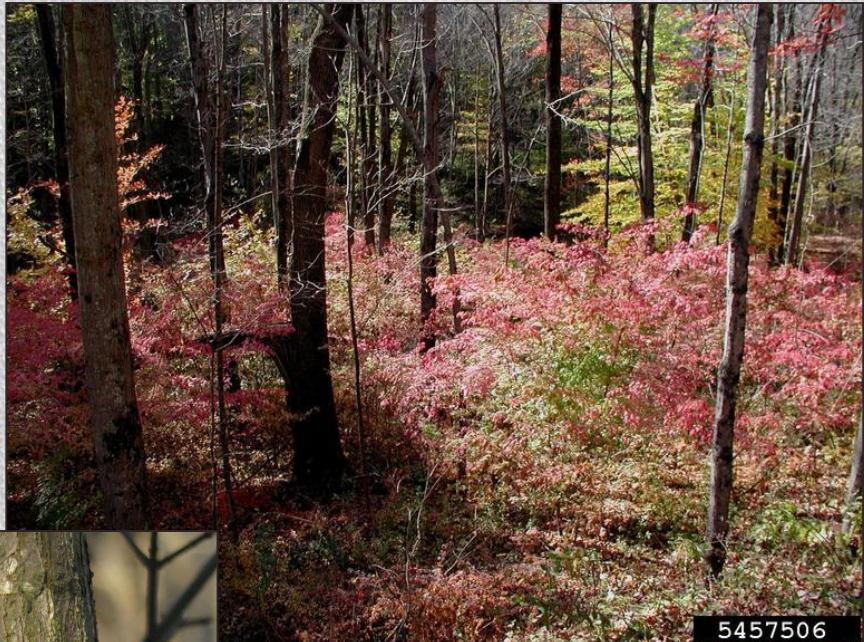
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Winger Euonymus – Continued

- Inconspicuous flower, red-purple berries through fall
- Brilliant red fall leaf color



Multiflora Rose – *Rosa multiflora*

- Perennial shrub, 4–10' tall forming large thickets
- Pinnately compound, alternate leaves, 5–11 oval dark green leaflets, serrated margins, with frilled stipules
- Stems, long & arching, without hairs, having stout curved red/brown thorns throughout



Multiflora Rose – Continued



- 5 petaled showy, fragrant white (sometimes pink) flowers in June
- Fruits bright red, .25", visible fall & winter
- Reproduces primarily by seed
- Can sprout from roots & canes touching the ground
- Thorns curve backwards like cats' claws



Autumn Olive – *Elaeagnus umbellata*

- Perennial shrub or small tree also known as Japanese silverberry or spreading oleaster
- 3.5m tall w/ a dense crown
- Sharp thorns on spur branches
- Alternate leaves, green above, silvery pubescent below w/ wavy margins



Autumn Olive – Continued

- Fragrant yellow-white flowers at leave axils, 4-lobed
- Unripe fruit are silvery, turning red dotted w/ silver or brown
- Berries are edible, tart, make good dried fruit



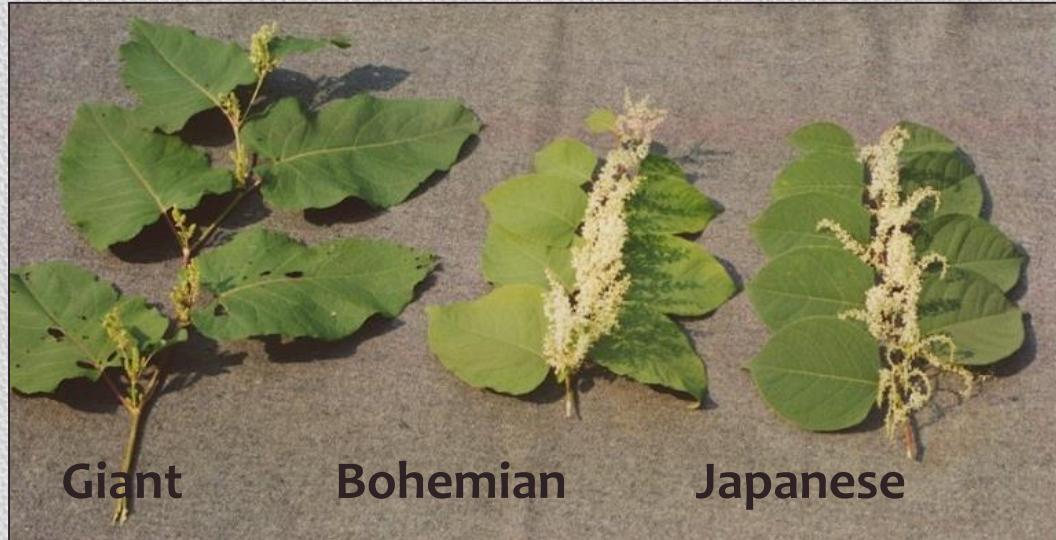
Knotweeds – *Polygonum* spp

- Japanese 6-9' tall
- Fast growing, hollow, bamboo-like stems
- Large, alternate simple leaves
- Tufts of white flowers in Aug & Sept
- Flower stalks longer than leaf blades
- Spreads by stem & root pieces & rhizomes



Knotweeds – Continued

- Giant >12'; Bohemian = Japanese x Giant, more likely to produce viable seed
- Leaves underside hairy on Giant knotweed
- Bohemian leaf midribs have hairs
- Giant flower stalks shorter than leaf blades



Garden Valerian – *Valeriana officinalis*

- Also known as garden heliotrope
- Herbaceous perennial, 1-4' tall
- Tolerates both dry & wet sites
- Emerges in early spring
- Readily self-seeds



Garden Valerian – Continued

- Opposite, pinnately compound leaves, hairs on underside
- Pungent, fibrous roots with rhizomes
- Pubescent stems
- Fragrant umbel-like flowers



Tobacco root – *V. ciliata* or *V. edulis* var. *ciliata*

- Threatened (1984) native, moist fen, meadow & prairie spp
- Long-lived perennial, but spreads only by seed
- 5-petaled whitish flowers May-Sept, 3 stamens & 3-lobed stigma.
- Sepals are distinctive feather-like bristles that expand when seed matures.
- Leaves are thick w/ parallel veins, fringed with marginal hairs



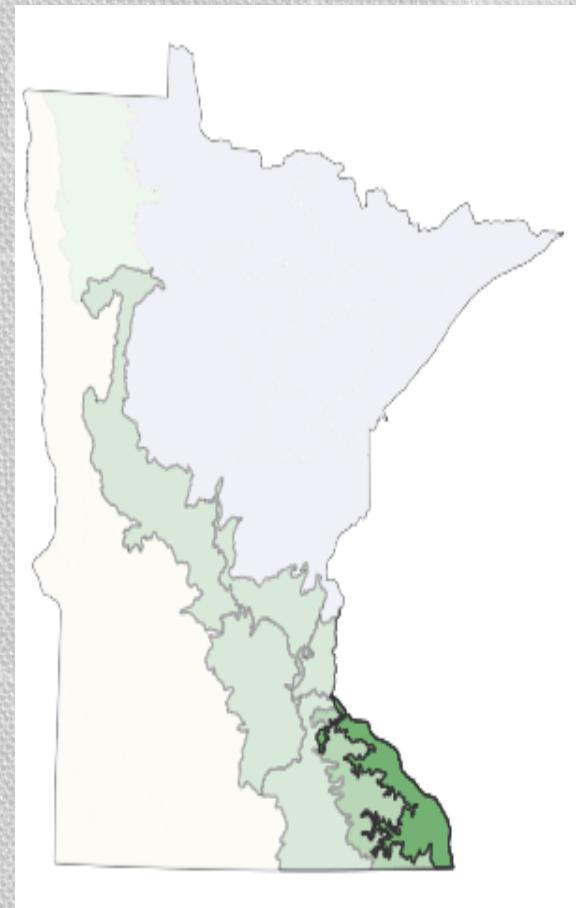


Val Green, MNDNR, Forestry

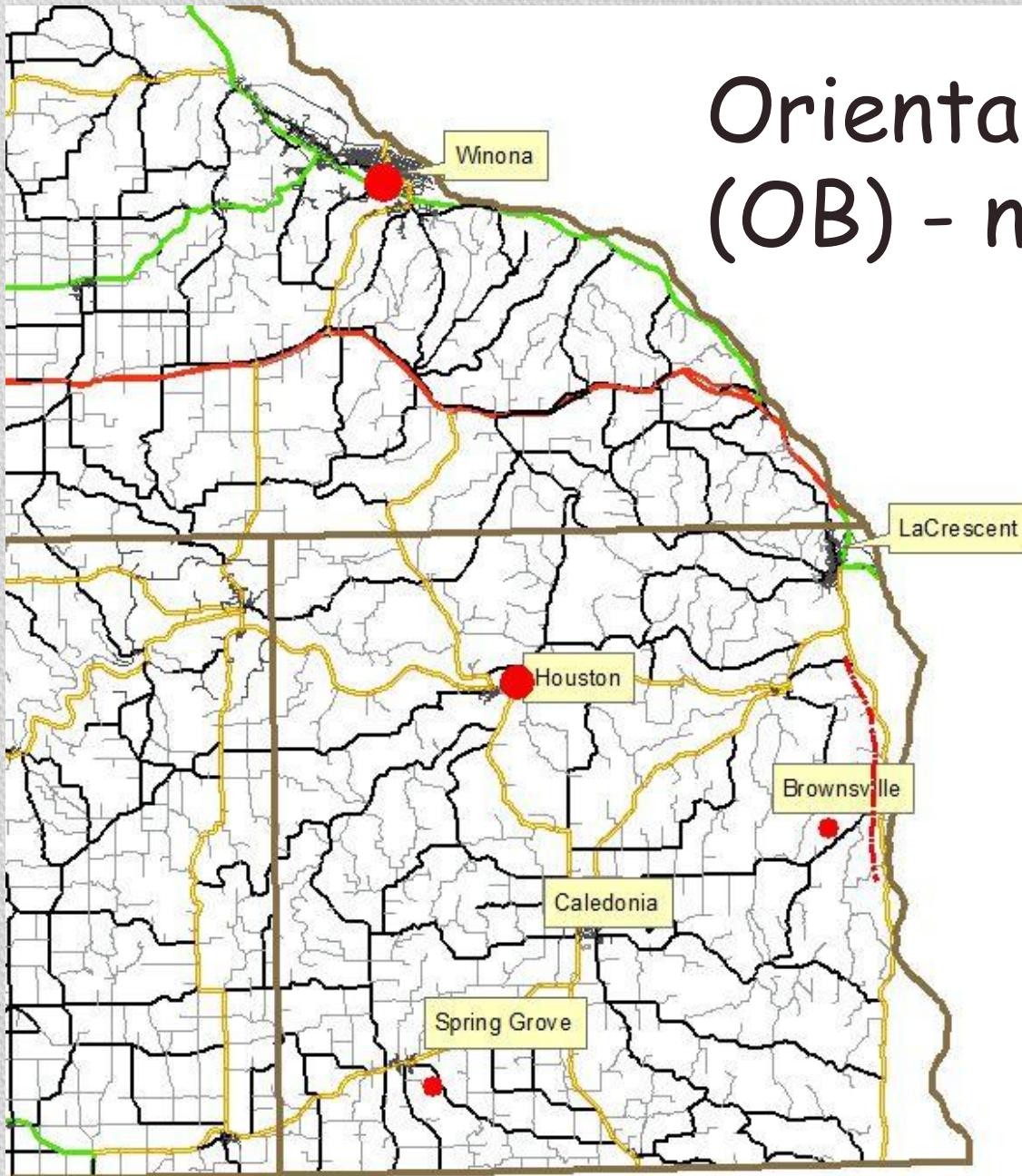
EMERGING INVASIVE PLANTS IN SE MN

“Newer” Woody Invasive Exotics in SE MN (Driftless)

- Oriental Bittersweet
- Japanese Knotweed
- Japanese Barberry
- Multiflora Rose



Oriental Bittersweet (OB) - newest exotic



OB in Winona



OB - pine plantation



Highway 26 (along Mississippi)



Oriental Bittersweet Control Options

- burns??
- Pull small seedlings; leave no root parts
- Triclopyr (Garlon) basal on larger plants and foliar on small at same time

Japanese Knotweed - Beyond “usual” effects

Japanese knotweed invasion is halting house sales as buyers are denied mortgages on blighted properties

- Homeowners are facing bills of up to £20,000 to remove plant before they can sell
- Weed can grow more than 9ft in just ten weeks and can damage foundations and drains
- Barclays Bank declines mortgage applications unless the knotweed is removed

By LARISA BROWN FOR THE DAILY MAIL

PUBLISHED: 17:52 EST, 19 July 2013 | UPDATED: 20:13 EST, 20 July 2013

Knotweed-near Hokah



Minn Dept of Ag

Knotweed at Hokah bridge



Knotweed NW of Houston



Japanese Knotweed Control

>3 years

- Mowing/cutting/pulling
-only if repeated AND
clippings are collected
& burned
- ?? Smother with very
heavy black plastic
- Cut stem or stem
injection-50%
glyphosate (Roundup)
(IA)
- Foliar: aminopyralid
(Milestone) only when
flowering or
- Foliar: imazapyr
(Arsenal or Polaris);
best results Sept
before frost or

Japanese Barberry - Beyond "usual" effects



The Frederick News-Post

Japanese Barberry and Ticks

By the Frederick County Forestry Board Sep 22, 2013 0

Barberry higher moisture microclimate increases deer ticks:
<https://www.youtube.com/watch?v=ZA7r2kMO2Z0&feature=youtu.be>

Barberry-near Brownsville & Hokah



Barberry near Hokah & New Albin IA



Multiflora Rose (MFR)

- “Living fence”
- Throughout Houston County and whole SE
- Somewhat less shade intolerant than barberry
- Former pastures

MFR-many locations



MFR & Barberry Control Options

- Grazing repeatedly
- Repeated low mowing for years
- Grubbing
- Hot burns
- Basal: Triclopyr (Garlon 4 Ultra)

- Foliar: Metsulfuron methyl 60% (Escort)
- Foliar: aminopyralid + 2,4-D (Grazon)

Mechanical reduction



MFR Biological- rose rosette disease



Caused by a virus carried by an eriophyid mite.



Observed Downfalls

- Goats killing larger cherry and apple trees
- Foliar applications when uptake was poor (powdery mildew)
- Inadvertent spread of seed/pieces
- Damage to non-targets

Get 'Em Early & Small





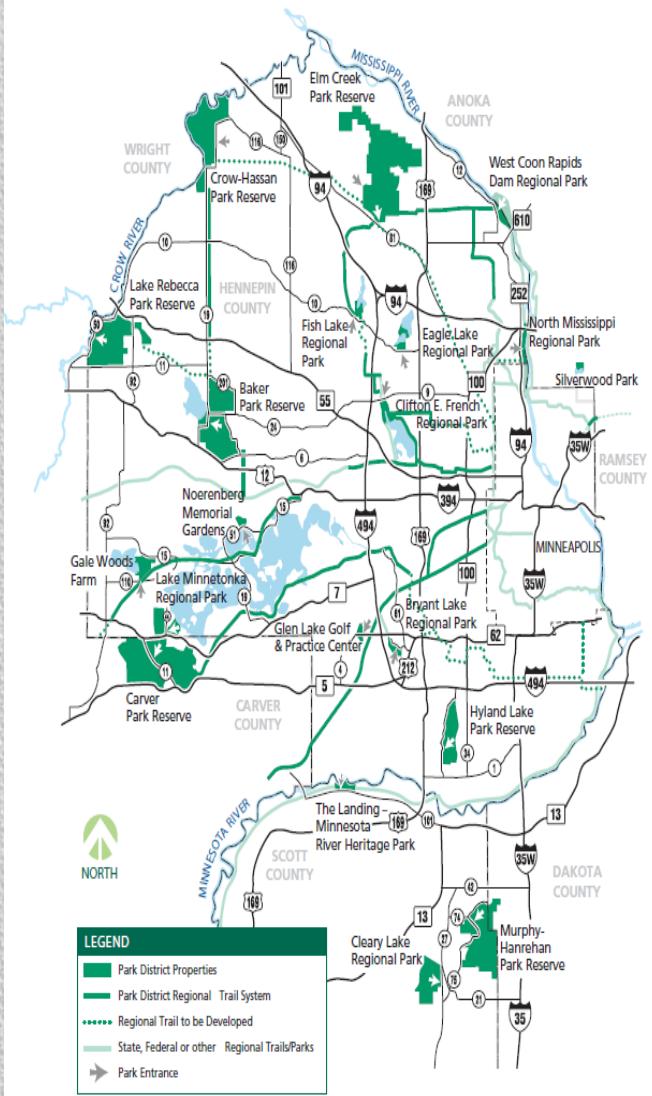
Angela Isackson, Three Rivers
Park District

EMERGING INVASIVE PLANTS IN THE METRO AREA OF MN



ThreeRivers PARK DISTRICT

- Hennepin, Carver, Scott, Ramsey, and Dakota County
- Over 20 Parks (7 Park Reserves) totaling over 27,000 acres
- Invasive Species Coordinator new position started in 2013
 - Dedicated Conservation Corp Crew serves various projects



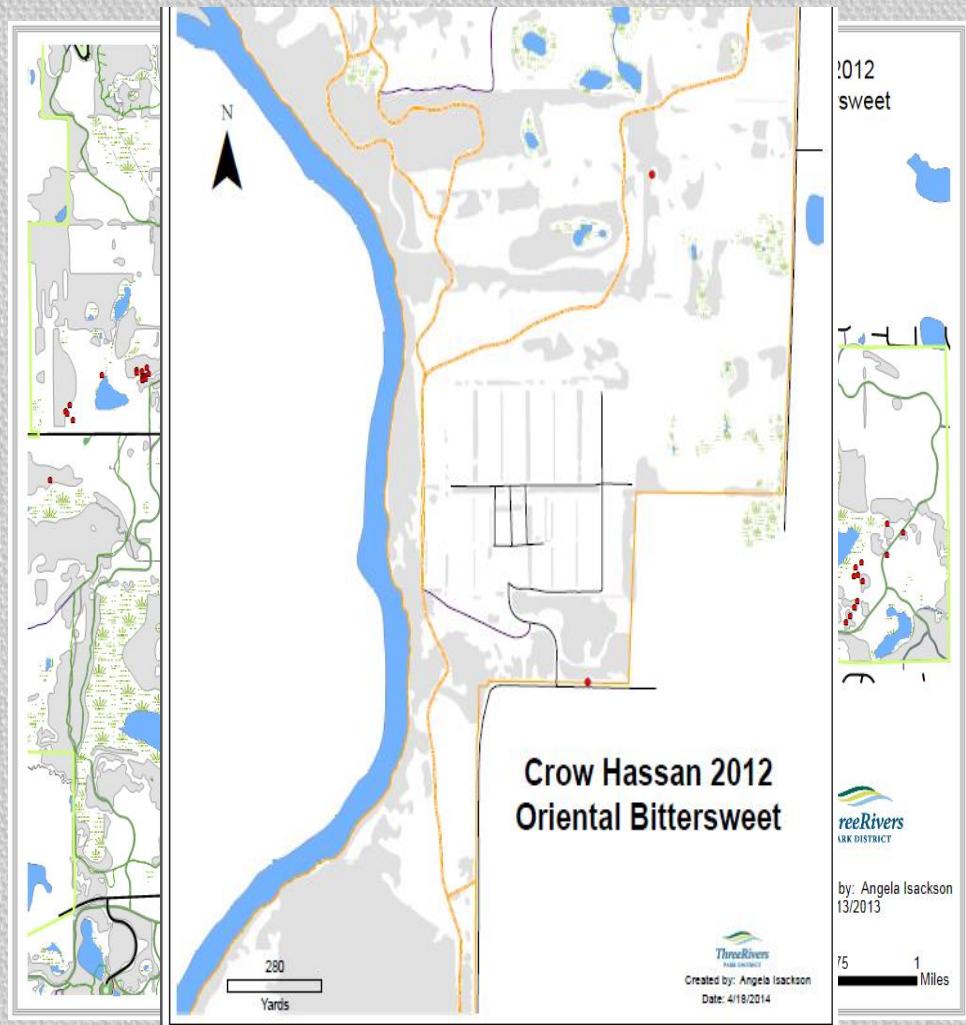
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Oriental Bittersweet

Initial Find

- Crow Hassan Park Reserve – 2011
- Elm Creek Park Reserve - 2012
- Started with approximately 4 known infestations at 2 parks



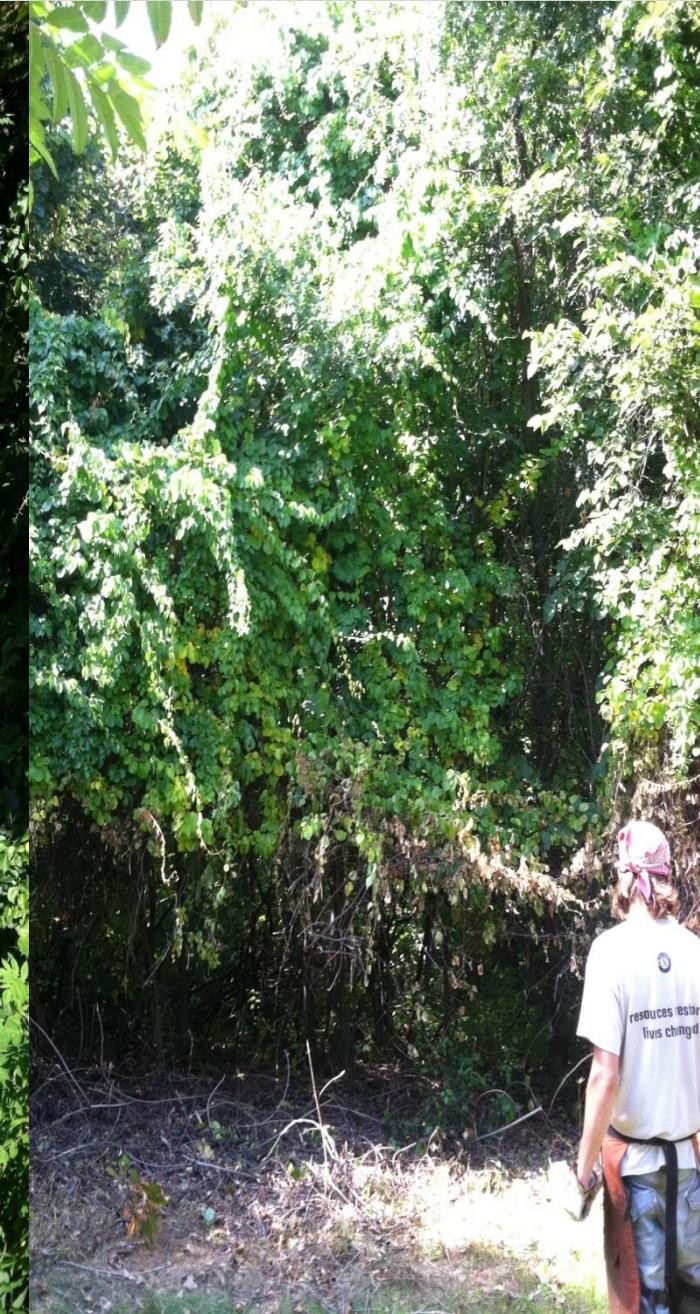
Oriental Bittersweet

Results

- Elm Creek – 40 acres
- Carver – 1 acre
- Baker - .5 acres
- Lake Rebecca - .5 acres
- Crow Hassan - .5 acres







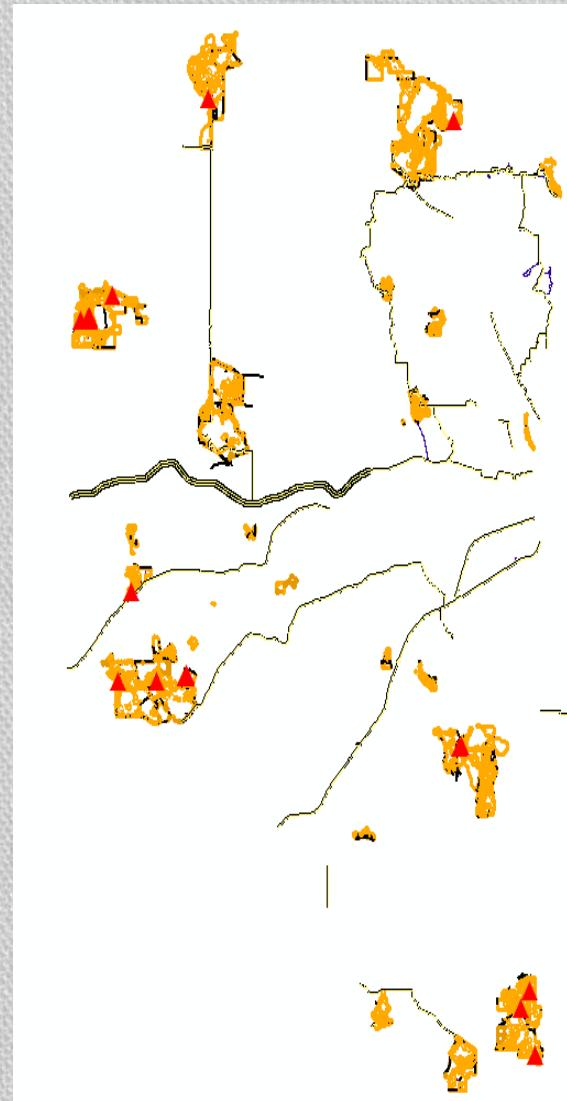
- Eliminate Largest Mature Seed Producers (hand work)
- Clear Cutting to make Accessible (Fecon, Brushsaw, Brushcat)
- Follow up Foliar (Garlon 3A & 4)
 - Best results Garlon 4 in late summer/fall at 3%



Future Work Sites



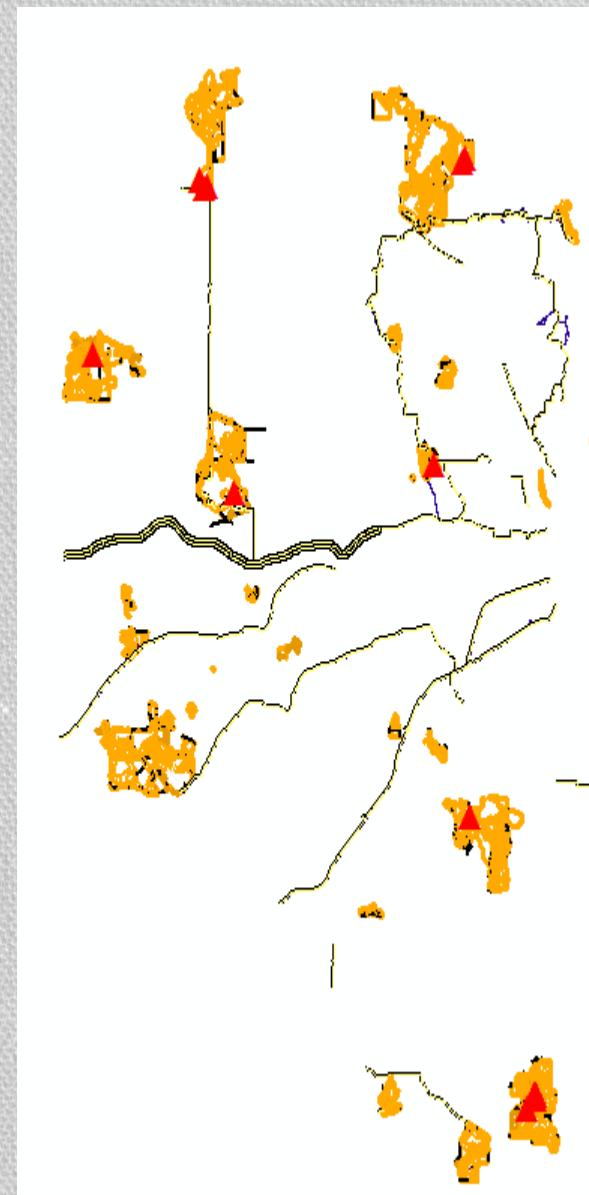
Japanese Barberry





- Homestead Sites
- Seems occasional and innocent at first...
- Cut/stump with Garlon
- Follow up with hand pulling on rain days

Winged Euonymus





- Homestead Sites
- Seems occasional and innocent at first...
- Cut/stump with Garlon
- Follow up with spot spraying and fire

Autumn Olive

Findings

- 5 Parks with confirmed Autumn Olive
- Fast growing and spreading quickly; over 40 acres infested at Crow Hassan Park Reserve
- Promoted as wildlife food in earlier plantings







- Birds spread it, check open early successional areas and under cedar trees
- Nasty to cut, thorns, tends to die back and resprout, loves to grow in prickly ash
- Not as shade tolerant as Buckthorn



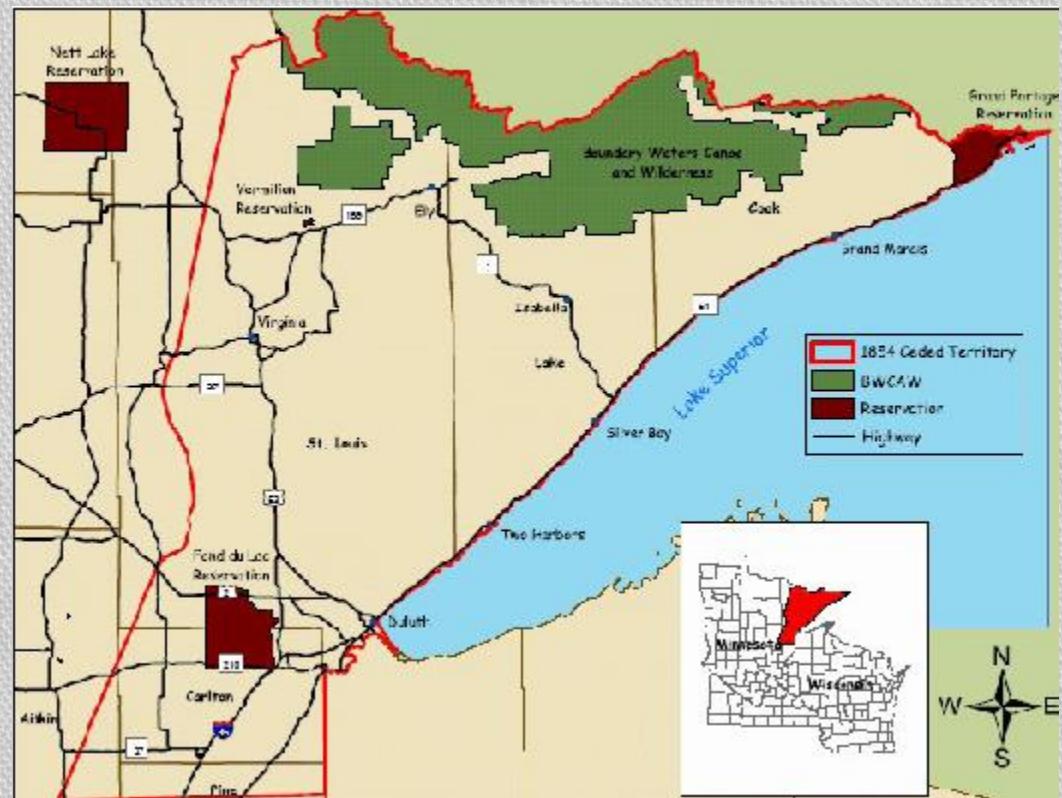
Jeffrey Flory, 1854 Treaty
Authority

EMERGING INVASIVE PLANTS IN NE MN

1854 CEDED TERRITORY MINNESOTA'S ARROWHEAD REGION

What are some
of our up-and-
coming invasive
species?

- Japanese Barberry
- Knotweed species
- Garden Valerian
- Oriental Bittersweet
- *Pimpinella saxifraga*
- European Highbush Cranberry



5.5 million acres of land within the ceded territory

Japanese Barberry

- Many escaped cultivation
- Five miles SW of Two Harbors, MN is another story:



Jeffrey Flory – taken at private property near Two Harbors, MN on 9/21/2015

- 3 acres of dense, monoculture thickets
- A minimum of 8 acres of low density, possibly more

Japanese Barberry - continued

Treatment Efforts

- 1854: cut and treat or basal bark treat with triclopyr

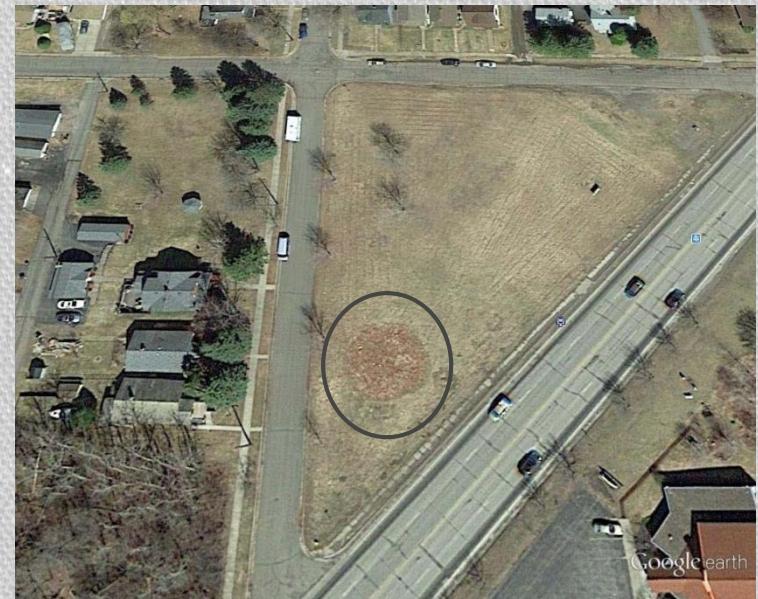
Lake County Invasives Team and SWCD have a large challenge to overcome:

- Initial effort - foliar sprayed with glyphosate
- Fall of 2015 - crews performed three cuts; high, medium, then a low cut
- Debris left on site
- Contractor removed JB and will restore the woodland habitat
- Will continue work (5 - 7 years)
- LCIT and Lake SWCD conducting outreach

Knotweeds

Japanese Knotweed – City of Duluth

- The City of Duluth had 17 documented sightings
- 1854 conducted surveys
- In 2015 – found 96 patches
- So far in 2016 - found another 59 patches
- Mainly invades open habitats
- can grow within woodlands
(though height is stunted)



Google Earth – Knotweed patches can be seen by satellite, diameter roughly 50 feet

Knotweeds - continued

History

- Theories don't fully explain population numbers
 - Many residences planted Knotweed
 - Flood event in 2012 spread root and stem fragments
 - Bohemian Knotweed (possibly fertile) could explain population
- Minnesota Department of Agriculture conducted survey in 2016
 - Took 40 samples
 - About 7 were Japanese Knotweed
 - Rest are suspected to be Bohemian Knotweed (flowers had anthers)
- Expert will confirm identification
- Seeds might be collected to test for viability



Jeffrey Flory – knotweed anthers, taken in Duluth

Knotweeds - continued

Treatment Efforts

- The City of Duluth and their Duluth Invaders and R²ED (Rapid Response, Early Detection) Team have been fighting a few patches on public property



Mike Nordin (City of Duluth) – volunteers treating knotweed along Skyline Road



Mike Nordin in this picture, demonstrating the size of the knotweed cane

Knotweeds - continued

Treatment Efforts

- They cut the stocks and apply 18 – 20% glyphosate using buckthorn blasters (city policy for their volunteers)



Buckthorn Blaster



Mike Nordin - Treated Knotweed stem



Mike Nordin - Knotweed can re-root where nodes are touching soil

Knotweeds - continued

Treatment Efforts

- These efforts have treated patches at varying degrees, some just once, others multiple times (up to 4 – 5 times) and foliar sprayed at the end of the year
- The patches still survive, but are reduced when they resprout



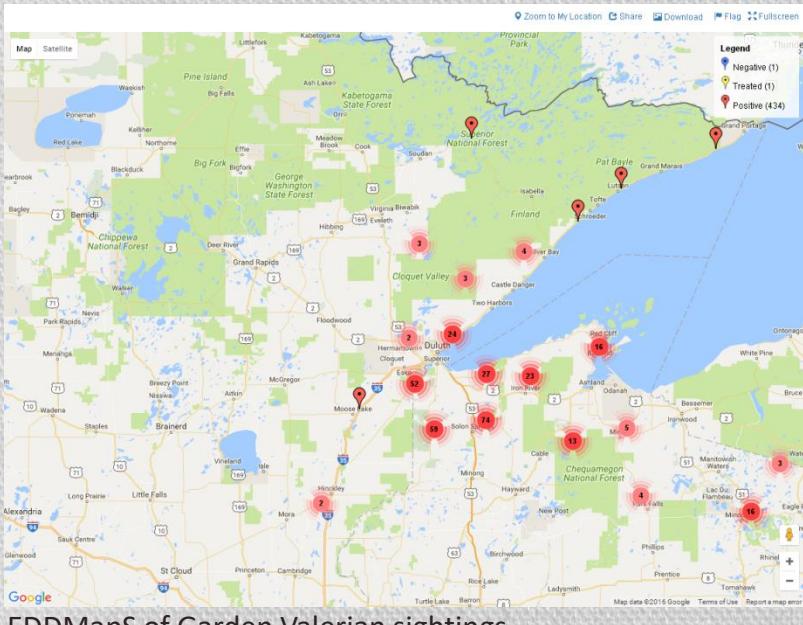
Mike Nordin – volunteers cut and treating knotweed in Duluth



Mike Nordin – volunteers cut and treating knotweed in Duluth

Garden Valerian

- Duluth appears to be the epicenter in Minnesota
- It has been spreading its fingers along highways
- Lawn mowers and construction are two main vectors
- Others are now finding it in other areas of Minnesota



Jeffrey Flory - found growing in Superior National Forest

Garden Valerian - continued

Observations:

- Prefers wetlands, but can also grow in:
 - Upland habitats
 - Woodland and forests
 - Stays with basal leaves if too shaded
 - Bolts when canopy opens after storms or declining trees
- Along roadways and trails
- Competes well against:
 - Reed Canary Grass, Common Tansy, and Invasive Cattails



Jeffrey Flory – dense patch growing along Hwy 53, spreads easily along roadways

Garden Valerian - continued

Treatment Efforts

- Not much effort has gone into controlling GV within Duluth
- 1854 has only targeted GV at Moose Mountain SNA (Scientific Natural Area)
- Milestone and Escort did not faze it
- Internet research results
 - WI DNR recommends triclopyr and glyphosate
- Two successful treatments occurred at Moose Mountain SNA with triclopyr



Jeffrey Flory – Thick stand of Garden Valerian along Highway 61 on July 31st, 2015

- USFS has successfully treated the two of the known patches in Superior National Forest

Infestation in a Woodland: How many Garden Valerian individuals do you think are in this picture?



Jeffrey Flory – June 7th, 2016 at Moose Mountain SNA

Garden Valerian Infestation in a Woodland:



There are 25 individual Garden Valerians within this picture

Oriental Bittersweet

- Thought to be too far north for it to survive our cold winters
- MN DOT found a large patch within Duluth in 2015
- Another two patches found nearby in 2016
- City employee found it on their friend's property
 - In the process of having it treated and area scouted
- Found growing on a building nearby Tower, MN
 - Treated – scouting will occur this winter



Jeffrey Flory – Oriental Bittersweet individuals, near Tower, treated on August 9th, 2016



Discussions

EMERGING INVASIVE PLANTS IN YOUR AREA OF THE STATE