Landscape Invaders: Ornamental Problem Plants and Native Alternatives

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West Cook Wild Ones
Oak Park, IL, Sept. 17, 2017
OVERVIEW

- Introduction to MIPN
- What are invasive plants?
- Why are they a problem?
- How do they get here?
- What can I do as a gardener/steward?
MIDWEST INVASIVE PLANT NETWORK

- Started in 2003 to coordinate among agencies & organizations across the region
- Our mission: To reduce the impacts of invasive plants in the Midwest
WHAT’S AN INVASIVE SPECIES?

- Non-native or “alien” to an ecosystem
  - A species can be native to the country but “alien” to a specific region or ecosystem

- Introduction causes harm
  - Environmental
  - Economic
  - Human health
HOW DO INVASIVE PLANTS TAKE OVER?

- Competitive advantages over natives
  - Reproductive advantage
    - Seed production, survival, transport
    - Vegetative reproduction
  - High tolerance levels
    - Predator browsing
    - Ecological conditions
    - Hardiness/early leaf-out (phenology)
  - Biological advantages
    - Allelopathy
    - High rate of growth
REPRODUCTIVE ADVANTAGE
HARDINESS
ALLELLOPATHY
WHY INVASIVE HERE & NOT AT HOME?

- Ecological systems are complex
  - *Key relationships are missing*
    - Predator relationships
    - Competitive relationships
    - Disease relationships
ECOSYSTEM IMPACTS

- Native species are out-competed
  - System diversity decreases

- Structural ecosystem changes
  - Leaf litter/nutrient cycling/soil formation
  - Hydrology
  - Habitat - food and nesting opportunities
  - Ecological succession altered
HOW DO THEY GET HERE?

- **Purposeful introduction**
  - Ornamentals
  - Crops

- **Accidental introduction**
  - Contaminated seed
  - Seeds on boots, clothes, animals, etc.
  - Global markets
WHY IMPORT ORNAMENTALS?

- Home country nostalgia
- Fast growth
- Accept wide range of conditions
- Low maintenance
- Aesthetically pleasing
- Ignorance of potential impacts
  - Not all exotic plants cause ecosystem impacts
  - Plant Risk Evaluator
WHAT CAN I DO AS A GARDENER?

1. Inventory (Plant ID and classification)
2. Set goals
3. Set a budget
4. Make a plan (choose natives)
5. Implement and experiment
6. Maintenance
INVENTORY

- Identify all the plants on your property, to species if possible
- Classify according to:
  - Type (tree/shrub/forb/grass, etc.)
  - Invasive/exotic/native
  - Health of plants
INVASIVE MAPLES (Norway & Amur)

- *Acer platanoides, Acer ginnala*
- Native range: Europe/NE Asia
  - Introduced in 100’s as ornamentals
- Identification tips (Amur):
  - Large shrub - small tree
  - Multiple stems common
  - Dark green, narrow, double-toothed leaves w/ 3 shallow lobes
  - Small (1”) reddish samaras
NATIVE MAPLE LOOK-ALIKES?

- Sugar maple (*Acer saccharum*)
WHITE MULBERRY

- *Morus alba*
- Native range: China
  - Introduced in 1600’s as silkworm chow
- Identification tips:
  - Med-large tree with wide crown
  - Irregularly shaped leaves, glossy on top, hairless on bottom
  - Fruits (drupes) 1-2cm long, white-to-red-to-black in color
NATIVE MULBERRY LOOK-ALIKES?

- Red mulberry (*Morus rubra*)
CALLERY PEAR

- *Pyrus calleryana*

- Native range: Southeast Asia
  - Introduced in early 1900’s to aid in fire blight resistance experiments

- Identification tips:
  - Medium-to-large tree (50’ max)
  - Alternate heart-shaped or round leaves, turn dark red/purple in fall
  - Early, white 5-petaled flowers
  - Small (1/2”) green or brown fruits
NATIVE CALLARY PEAR LOOK-ALIKES?

- Native small flowering fruit trees
- Basswood
AMUR CORKTREE

- *Phellodendron amurense*
- Native range: East Asia
  - Introduced in mid-1800s as ornamental
- Identification tips:
  - Medium-to-large tree, very wide crown
  - Dioecious (male and female flowers occur on separate individuals)
  - Opposite, compound leaves
  - Distinctive craggy bark
  - Small black fruits on females
NATIVE CORKTREE LOOK-ALIKES?

- Black walnut and hickories
- ...but not really
COMMON BUCKTHORN

*Rhamnus cathartica*

Native range: Europe, NW Africa, Western Asia

- Introduced as ornamental in 1800’s

Identification tips:

- Large shrub - small tree (25’ max)
- Shiny, greyish bark, prominent bumps
- Egg shaped, toothed leaves w/ few veins following leaf edge
- Black pea-sized fruits
- Thorns on twig ends
GLOSSY BUCKTHORN

Frangula alnus

Native range: Europe, NW Africa, Western Asia

- Introduced as ornamental in 1800’s

Identification tips:

- Large shrub - small tree (20’ max)
- Grey-brown bark, not shiny
- Glossy, oblong leaves - parallel veins that curve at edge
- Black pea-sized fruits
- No thorns
NATIVE BUCKTHORN LOOK-ALIKES?

- Lance-leaved buckthorn
- Dogwoods
- Speckled alder
EURASIAN BUSH HONEYSUCKLES

*Lonicera sp.*

Native range: Eastern and Central Asia

- Introduced in 1800’s as ornamental, wildlife forage, erosion control

Identification tips:

- Large shrub (20’ max)
- Opposite oval leaves
- White, red, or pink fragrant flowers
- Red or orange fruits on short stems
JAPANESE HONEYSUCKLE

*Lonicera japonica*

Native range: Eastern Asia
- Introduced in 1800’s as ornamental, wildlife forage, erosion control

Identification tips:
- Long (up to 60’), twining, woody vine
- Opposite oval leaves
- Semi-evergreen
- White-to-yellow fragrant flowers
- Black fruits on short stems
NATIVE HONEYSUCKLE LOOK-ALIKES?

- Ash seedlings
- Native honeysuckle vines
JAPANESE BARBERRY

**Berberis thunbergii**

- Native range: East Asia
  - Introduced as ornamental in late-1800’s

**Identification tips:**

- Medium shrub (3’ avg)
- Smooth, club shaped leaves in clusters
- Individuals vary in color (green, red, purple)
- Fine, needle-like thorns
- Inner wood is brilliant yellow
NATIVE BARBERRY LOOK-ALIKES?

- American barberry (*Berberis canadensis*)
BURNING BUSH

- *Euonymus alatus*
- Native range: Southeast Asia
  - Introduced as ornamental in mid-1800’s
- Identification tips:
  - Medium to large shrub (10’ avg)
  - Winged stems
  - Opposite (or sub-opposite) leaves
  - Brilliant fall foliage in full-sun
  - Orange fall fruit
NATIVE BURNING BUSH LOOK-ALIKES?

- Eastern Wahoo (*Euonymus atropurpureus*)
EUROPEAN PRIVET

- *Ligustrum vulgare*

- Native range: Europe, NW Africa, Western Asia
  - Introduced for hedgerows in 1800’s

- Identification tips:
  - Medium to large spreading shrub (8-20’)
  - Opposite, smooth, narrow oval leaves
  - Clusters of white, tubular flowers
  - Clusters of small, round black fruit
NATIVE PRIVET LOOK-ALIKES?

Nope! Just invasive bush honeysuckles
AUTUMN OLIVE

- *Elaeagnus umbellata*

- Native range: Eastern Asia
  - Introduced as an ornamental in 1800’s

- Identification tips:
  - Medium to large shrub (8-20’)
  - Alternate, dull green leaves bearing brown or silvery scales (most dense on underside)
  - Clusters of white, tubular flowers
  - Clusters of small red fruits close to stem
NATIVE AUTUMN OLIVE LOOK-ALIKES?

- Nope! Just other species of invasive olive
ORIENTAL BITTERSWEET

*Celastrus orbiculatus*

Native range: Southeast Asia
- Introduced as ornamental in mid-1800’s

Identification tips:
- Woody vine - often grows over shrubs or trees
- Alternate, glossy, rounded leaves
- Green flowers form at leaf axils
- Yellow-green fruits open to reveal red berry when ripe
NATIVE BITTERSWEET LOOK-ALIKES?

- American bittersweet (*Celastrus scandens*)
DAME’S ROCKET

- *Hesperis matronalis*

- Native range: Eurasia
  - Introduced as ornamental in 1600’s

- Identification tips:
  - Biannual; rosette in year one, flowering stem in year two
  - Alternate, toothed leaves w/ no discernable leaf stem
  - Four petaled white-to-purple flowers
  - Seeds in long, narrow pods
NATIVE DAME’S ROCKET LOOK-ALIKES?

Phlox!
WILD DAYLILY

- *Hemerocallis fulva*
- Native range: Asia
  - Introduced as ornamental in late 1800’s

Identification tips:
- Grows in clumps (spreads by rhizomes)
- Burnt-orange flowers, no spots
- Round, smooth stems
- Long, thin leaves grow in pairs from base of stem
NATIVE DAYLILY LOOK-ALIKES?

- Native lilies
COMMON ST. JOHN’S WORT

- *Hypericum preforatum*

- Native range: Europe, Asia, Northern Africa
  - Introduced as ornamental/medicinal in mid-1800’s

- Identification tips:
  - Tall perennial herb w/ woody stem bases - branching above
  - Opposite stemless leaves with translucent spots
  - Bright yellow clustered flowers w/ 5 petals
NATIVE COMMON ST. JOHN LOOK-ALIKES?

- Native St. John’s Worts
FIG BUTTERCUP

*Ficaria verna*

Native range: Northern Eurasia

- Introduced as ornamental & medicinal in 1800’s

Identification tips:

- Spring ephemeral, grows in carpet formation
- Whorled, glossy, kidney-shaped leaves
- Yellow flowers with 8-12 radial petals and 3 light green sepals
- Underground bulblets
NATIVE FIG BUTTERCUP LOOK-ALIKES?

- Marsh marigold (*Caltha palustris*)
REED CANARY GRASS

- *Phalaris arundinacea*

- Native range: Europe and N. America
  - European genotypes introduced in early 1900’s for ag forage

**Identification tips:**
- Tall grass (3-5’) with seed-heads considerably taller than leaves
- Blue green leaves at 45 degree angle from stem
- Coarse, membranous ligules
- Reproduces by rhizomes & seed
NATIVE REED CANARY LOOK-ALIKES?

- Blue joint grass (*Calamagrostis canadensis*)
JAPANESE STILTGRASS

*Microstegium viminimum*

- Native range: SE to far Eastern Asia
  - Introduced in early 1900’s in packaging

**Identification tips:**

- Delicate, creeping grass (roots at stem nodes)
- Pale blue-green leaves w/ slivery midrib
- Leaves asymmetrical around midrib
- Grows in shaded areas
NATIVE STILTGRASS LOOK-ALIKES?

- White grass (*Leersia virginica*)
ADDITIONAL PLANT ID RESOURCES
ENTER ID’d PLANTS INTO AN INVENTORY

<table>
<thead>
<tr>
<th>A</th>
<th>Species</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Morus alba</strong></td>
<td>Invasive</td>
<td>Poor</td>
<td>~25</td>
<td>18&quot; (split)</td>
<td>Split trunk, berries make a mess in yard but make birds and critters happy</td>
</tr>
<tr>
<td>2</td>
<td>White mulberry</td>
<td>Invasive</td>
<td>Poor</td>
<td>~25</td>
<td>18&quot; (split)</td>
<td>Split trunk</td>
</tr>
<tr>
<td>3</td>
<td><strong>Acer negundo</strong></td>
<td>Native (L)</td>
<td>Moderate</td>
<td>~25</td>
<td>20&quot; (split)</td>
<td>In utility easement</td>
</tr>
<tr>
<td>4</td>
<td>White pine</td>
<td>Native (H)</td>
<td>Good</td>
<td>~15</td>
<td>7&quot;</td>
<td>In utility easement</td>
</tr>
<tr>
<td>5</td>
<td><strong>Pinus strobus</strong></td>
<td>Native (L)</td>
<td>Moderate</td>
<td>~25</td>
<td>8&quot;</td>
<td>May be prone to DED, strange growth form due to proximity of other trees</td>
</tr>
<tr>
<td>6</td>
<td>American elm</td>
<td>Native (M)</td>
<td>Moderate</td>
<td>~20</td>
<td>8&quot;</td>
<td>Plant extremely close to spruce</td>
</tr>
<tr>
<td>7</td>
<td>Norway spruce</td>
<td>Exotic</td>
<td>Moderate</td>
<td>~20</td>
<td>10&quot;</td>
<td>May not receive enough sun</td>
</tr>
<tr>
<td>8</td>
<td><strong>Acer rubrum</strong></td>
<td>Native (M)</td>
<td>Moderate</td>
<td>~15</td>
<td>6&quot;</td>
<td>In parkway</td>
</tr>
<tr>
<td>9</td>
<td>Red maple</td>
<td>Native (M)</td>
<td>Moderate</td>
<td>~15</td>
<td>4.5&quot;</td>
<td>Closest to house, seems overgrown/in need of pruning. Cardinal nest.</td>
</tr>
<tr>
<td>10</td>
<td><strong>Malus sp.</strong></td>
<td>Exotic (?)</td>
<td>Moderate</td>
<td>~20</td>
<td>12&quot; (split)</td>
<td>Closest to house, seems overgrown/in need of pruning. Cardinal nest.</td>
</tr>
</tbody>
</table>

Note: Species in bold are invasive species.
<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Species</td>
<td>Status</td>
<td>Health</td>
</tr>
<tr>
<td>2</td>
<td><em>Euonymus alatus</em></td>
<td>Invasive</td>
<td>Moderate</td>
</tr>
<tr>
<td>3</td>
<td>Winged burning bush</td>
<td>Invasive</td>
<td>Moderate</td>
</tr>
<tr>
<td>4</td>
<td><em>Cornus alba</em></td>
<td>Exotic</td>
<td>Poor</td>
</tr>
<tr>
<td>5</td>
<td>Siberian dogwood</td>
<td>Exotic</td>
<td>Poor</td>
</tr>
<tr>
<td>6</td>
<td><em>Cornus alternifolia</em></td>
<td>Native (H)</td>
<td>Moderate</td>
</tr>
<tr>
<td>7</td>
<td>Pagoda dogwood</td>
<td>Native (H)</td>
<td>Moderate</td>
</tr>
<tr>
<td>8</td>
<td><em>Lonicera maackii</em></td>
<td>Invasive</td>
<td>Moderate</td>
</tr>
<tr>
<td>9</td>
<td>Amur honeysuckle</td>
<td>Invasive</td>
<td>Moderate</td>
</tr>
<tr>
<td>10</td>
<td><em>Rhamnus cathartica</em></td>
<td>Invasive</td>
<td>Moderate</td>
</tr>
<tr>
<td>11</td>
<td>Common buckthorn</td>
<td>Invasive</td>
<td>Poor</td>
</tr>
<tr>
<td>12</td>
<td><em>Taxus sp.</em></td>
<td>Exotic</td>
<td>Poor</td>
</tr>
<tr>
<td>13</td>
<td>Yew</td>
<td>Exotic</td>
<td>Poor</td>
</tr>
<tr>
<td>14</td>
<td><em>Buxus sp.</em></td>
<td>Exotic</td>
<td>Poor</td>
</tr>
<tr>
<td>15</td>
<td>Boxwood</td>
<td>Exotic</td>
<td>Poor</td>
</tr>
<tr>
<td>16</td>
<td><em>Juniperus sabina</em></td>
<td>Exotic</td>
<td>Poor</td>
</tr>
<tr>
<td>17</td>
<td>Sabin juniper</td>
<td>Exotic</td>
<td>Poor</td>
</tr>
<tr>
<td>18</td>
<td><em>Weigela florida</em></td>
<td>Exotic</td>
<td>Poor</td>
</tr>
<tr>
<td>19</td>
<td>Weigela</td>
<td>Exotic</td>
<td>Poor</td>
</tr>
</tbody>
</table>
SET GOALS

- Minimize invasive plant species
- Reduce lawn area by X%
- X% native plant species (by species # or by area)
- Native plant density (X# per sq yd)
- Total native plant species diversity (#)
- X# rare native species
- Aesthetic goal (X# native flowering forbs)
- Habitat (food or nesting) for target animal species
- Replication of specific habitat type (forest, savanna, prairie...)
SET BUDGET

- Research various costs (plant material, equipment rental, labor, etc.)
- What can you do yourself vs. where do you need professional assistance?
- How much can you devote to the project on an annual basis?
  - It’s okay if this has to change over time
- Do your goals need to change when they meet the reality of your budget?
DRAW/WRITE A PLAN
CHOOSING NATIVE PLANTS

There are SO MANY great plants to choose from.

They key = right plant in the right place.

- Right soil (nutrients, compaction, acidity)
- Right moisture level (can be supplemented with watering)
- Right light exposure
- Right neighbors (assemblages & consideration of allelopathic effects)
CHOOSING NATIVE PLANTS - TREES

- What native trees are your neighbors NOT planting?
- Some lovely, under-represented trees:
  - Oaks (species other than northern red)
  - Hickories (species other than shagbark)
  - Kentucky coffee tree
  - Bald cypress
  - Buckeyes
  - American hornbeam
  - Dogwood trees (flowering, pagoda)
  - Redbud
  - Serviceberry
CHOOSING NATIVE PLANTS - SHRUBS

- Eastern wahoo
- Viburnums
- Elderberry (can grow in wet areas)
- Shrub dogwoods (some species like wet areas)
- Ninebark
- Spicebush (can tolerate heavy shade)
- Buttonbush
- Witch hazel
CHOOSING NATIVE PLANTS - FULL SHADE

- Ferns (maidenhair, ostrich, cinnamon, marginal wood, lady & more - some prefer wet areas)
- Sedges (so many! - some prefer wet areas)
- Spring ephemerals (hepatica, bloodroot, trilliums)
- Wild ginger
- Virginia bluebells
- False & true Solomon’s seal
- Jack-in-the-pulpit & green dragon
CHOOSING NATIVE PLANTS - PART SHADE

- Rudbeckias
- Zig-zag and elm leafed goldenrods
- Boneset, spotted & sweet joe-pie
- Meadow rue
- Tick-trefoil
- Culver’s root
- Golden Alexanders
- Rye grasses
CHOOSING NATIVE PLANTS - FULL SUN

- Coneflowers
- Bee balm
- Milkweeds
- Asters
- Blazing star
- Indian plantain
- Siphiums (compass plant, cup plant, prairie dock)
- Big & little bluestem
CHOOSING NATIVE PLANTS - RESOURCES

- Morton Arb, Chicago Botanic Garden, Missouri Botanic Garden online plant finder tools
- WildOnes website & print resources
- IL Native Plant Society
- OakSavannas.org/seeds-planting.html
- MIPN’s Landscape Alternatives app
  - IDs natives (& exotic non-invasives) that are similar to popular invasives
STEP 1: DOWNLOAD

http://apps.bugwood.org/apps/landscape-alt/
(or search Google Play Store, Apple App Store)
STEP 2: BROWSE

27 invasive species
STEP 3: SELECT SPECIES
EXOTIC INVASIVE SPECIES
- **Japanese barberry**
  *Berberis thunbergii*

EXOTIC NON-INVASIVE ALTERNATIVES
- **Alpine currant**
  *Ribes alpinum 'Green Mound'*
- **Boxwood**
  *Buxus spp.*
- **Landscape roses**
  *Rosa spp.*
- **Redleaf rose**
  *Rosa rubrifolia*
- **Smoke bush**
  *Cotinus coggyria*
- **Spreading cotoneaster**
  *Cotoneaster divaricatus*

NATIVE ALTERNATIVES
- **Large fothergilla**
  *Fothergilla major*
- **Winterberry holly**
  *Ilex verticillata*

NATIVE CULTIVAR ALTERNATIVES
- **Ninebark**
  *Physocarpus opulifolius 'Diablo', 'Summer Wine', 'Coppertina' and 'Center glow'*
- **Ninebark**
  *Physocarpus opulifolius 'Diablo'
STEP 4: VIEW SPECIES PROFILES

**Japanese barberry**

Berries. Single or in clusters on narrow stalks. Mature in mid-summer and persist on shrub into winter. Dispersed by birds.

**Roots:** Spreads vegetatively through horizontal lower branches that root freely when they touch the ground. Roots are yellow inside.

**Ecological threat:**

- Japanese barberry forms dense stands in natural habitats including forests, woodlands, oaksavannas, wetlands, pastures, and meadows. It prefers well-drained soils.
- It appears to alter soil pH and nitrate levels, creating conditions that are beneficial for its growth.
- White-tailed deer avoid browsing on Japanese barberry, preferring to feed on native plants, which gives barberry a competitive advantage.
- Japanese barberry was introduced from Japan around 1875. It is commonly planted for ornamental purposes, as well as for wildlife and erosion control. Some cultivars produce fewer seeds than others.
Greenish-white flowers form in leaf axils in late spring.

**Fruits & Seeds**

Bright red berries 0.25" in diameter form in late summer to fall and will persist through winter.

**Planting Zones**

3-9

**Landscape Uses**

Erosion control, hedge, rain garden, winter interest

**Cultivation Requirements**

Winterberry is a low maintenance plant that grows well in full sun to part shade, though fruit is most prevalent on plants in full sun. It prefers moist, acidic soil conditions, and it tolerates clay soil, wet soil, and air pollution. It should be pruned to shape in early spring. Fruit forms only on pollinated female plants; one male plant is needed for every 9-10 female plants for pollination.
OR SEARCH BY SPECIES

Click back button to browse all species in app
ADDITIONAL FEATURES
IMPLEMENT THE PLAN

- Remove invasives and other undesirables
  - First line of offense: elbow grease and a good saw
  - Second line of offense: judicious use of herbicide
- Bust some turf (if it’s in your plan)
- Get your soil tested and amend as necessary
- Buy seeds and/or live plants and install
- Keep good notes of what works & what doesn’t
- Have fun!!!
MAINTAINANCE

- Stay vigilant for invasives
- Return organic matter to the soil (compost, mulching, etc.)
- Prune trees and shrubs according to species needs (timing varies)
- Avoid bare ground by re-planning and re-planting any failed areas
QUESTIONS???

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