The mission of the Blue Ridge PRISM is to reduce the impact of invasive species in our targeted geography.

Supported by the Virginia Environmental Endowment

PRISM = Partnership for Regional Invasive Species Management
Welcome and Today’s Agenda!

• Welcome attendees!
• PRISM introduction (Q&A)
• Invasive fundamentals
• Common local invasives
• Identification (Q&A)
• Control methods and tools
• Summaries
• Final Q&A
Welcome to our first season of webinars
We had intended to try doing webinars, so now we are being forced to learn how
Hope you are all getting by and finding lots of time to spend outdoors
All these challenges tend to slow us down, but the plants aren’t slowed at all!
The mission of the Blue Ridge PRISM is to reduce the impact of invasive species in our targeted geography.

- 10 counties
- Almost 3 million acres
- Includes the 200,000-acre Shenandoah National Park
- Roughly 50,000 landowners with 5 acres or more
The People Involved are from:

- Shenandoah National Park Trust
- VA Native Plant Society
- Piedmont Environmental Council
- Shenandoah National Park
- Smithsonian Conservation Biology Institute
- VA Dept of Forestry
- VA Dept of Cons & Rec
- VA Cooperative Ext
- Private landowners
- The Nature Conservancy
- Virginia Master Naturalists
- Virginia Master Gardeners
- TJ Soil & Water Cons Dist
- Virginia Env Endowment
- The Farm at Sunnyside
- VDOT
- US Forest Service
- Rockfish Valley Foundation
- Ivy Creek Foundation
- 500 Year Forest Foundation
- NRCS
- Tree Stewards
- RappU
- Other volunteers
Two PRISM Core Activities

✓ FOCUS ON OUR HOME GEOGRAPHY
  ✓ Educate, inspire, and facilitate landowners in our 10 counties to undertake the removal and replacement of invasive plants

✓ BROADEN OUR IMPACT
  ✓ Take actions to help solve the invasive plant problem across the entire state
Landowner Activities + Info

✓ **Quarterly meetings** – via video conference for now
✓ **Tabling events** – TBD
✓ **Speaking engagements** – we are available for video conference speaking engagements for your group
✓ **Workshops** - Check our website for the schedule
  ✓ Traditionally 3 times a year at 3 locations
  ✓ Included both classroom and field walks
  ✓ Will now do the classroom sessions via webinar
  ✓ Field walks will be separately scheduled as circumstances permit
✓ If you have plant ID questions, send photos of the plants to info@blueridgeprism.org
✓ **Newsletters** – will still be published quarterly
✓ **PRISM materials** – download from our website
Landowner Activities

✓ Landowner financing:
  ✓ NRCS Regional Conservation Partnership Program
    ✓ $640,000 funding for 94 landowners to treat 2,000 acres – 3 years
    ✓ Conversations with NRCS on designing a better program
    ✓ New proposal submitted
  ✓ DuPont Settlement grant
    ✓ $250,000 for 5 years of treatment for 6 wavyleaf sites
    ✓ Third year’s work being implemented
  ✓ US Forest Service grant via DOF
    ✓ $45,000 for 3 years of wavyleaf treatment at sites to be determined
    ✓ First year’s work being implemented
✓ 1600+ people on our mailing list
Key Activities - Statewide

✓ Most state-level activities have slowed or stopped
  ✓ Legislative session distracted everyone
  ✓ Then the virus struck

✓ As circumstances permit, we will re-engage with:
  ✓ Office of the Secretary of Natural Resources
  ✓ Office of the Secretary for Agriculture and Forestry
  ✓ VDOT, DGIF, DCR and First Lady, Pamela Northam

✓ More nominations for the VA Noxious Weed List
  ✓ Ailanthus, porcelainberry, bittersweet, mile-a-minute, hydrilla and incised fumewort are in the approval process
  ✓ Next round of nominations being prepared
  ✓ Volunteers welcomed to help nominate more plants

✓ Drone project with UVA continues to progress

✓ Help is available to form other PRISMs

✓ Regional summit in August
Fundraising

✔ Volunteer driven, no government funding of operations
✔ To fund the PRISM for 2020, we received two challenge grants, one from the Virginia Environmental Endowment and one from a family foundation.
  ✔ We needed to raise the funds to match those two grants.
  ✔ It took 8 months, but we crossed the goal line last week!
  ✔ Thank you to all who contributed
  ✔ Now we need to start working on funding for 2021!
Any questions for this section?

Look for the replay of the April 28, 8pm episode of Virginia Home Grown that features 10-12 minutes on the Blue Ridge PRISM with weed warrior superstar Jim Hurley!!
Bittersweet Problems vs Solutions
Identifying and Controlling Nonnative Invasive Plants in Virginia’s Forests and Fields in Spring
What Are Nonnative Invasive Plant Species?

- A species that evolved in a different ecosystem from where it is now found, and flourishes in the new ecosystem at the expense of native species

- Weeds, invasives, exotics, noxious plants, etc.
How Do Invasives Kill Native Plants?

• Starves them
  – Compete for nutrients and water
  – Block sunlight, impeding photosynthesis

• Stresses them by adding weight
  – Increase sail effect

• Poisons them
  – Toxins in roots/leaves stunt growth

• Smothers new growth
  – Disrupts natural ecosystems and succession
  – Lose new native plant growth, but also . . .
  – Larvae, lose insects; lose what eats them
Why Are Nonnative Invasive Plants a Problem?

- **Unimpeded** by animals, insects, fungi, etc. that normally keep plants in check and create an equilibrium, these plants have no enemies, multiply out of control, and overwhelm the native plants that are held in check.

- Equally important is that most non-native invasive plants provide no food of value as part of the ecosystem, thereby disrupting the locally evolved web of life and leading to declines in all manner of wildlife.
Planning to Control Invasives

- Define your objective/end state, e.g., reset
- Inventory/assess the site and make a plan
- Map your control locations
- Eradicate, control or contain
- Rehabilitate and reclaim site
- Prevent re-entry and spread
- Monitor, monitor, monitor...
- Persistence! 5-10+ years
Middle Mountain Farm
Oriental Bittersweet
Fundamentals

• Take action when plants are young
• Pull, cut, or treat when seeds absent
• Be meticulous about sanitation
• Conduct manual activities when soil is moist to aid removal of roots

• *Read and obey herbicide labels carefully!*
Be Aware of How They Spread

• Creeping
• Birds and animals eat fruit, spread seeds
• Wind
• Rain water
• Streams
• Shoes, boots, pants, socks
• Vehicle tires – bikes, ATVs, cars, tractors
• Animal fur and paws/hoofs
• Clean your gear!
Common Local Invasives

- **Vines:**
  - English Ivy
  - Japanese Honeysuckle
  - Oriental Bittersweet
  - Porcelainberry
  - Winter Creeper
  - Kudzu
  - Five-leafed Akebia
  - Non-native Wisteria

- **Grasses and Forbs:**
  - Japanese Stiltgrass
  - Garlic Mustard
  - Periwinkle (*Vinca*)
  - Ground Ivy
  - Bamboo
  - Arthraxon
  - Wavyleaf
  - Lady’s Thumb
  - Lespedeza Cuneata
  - Perilla
Common Local Invasives

• Trees:
  – Ailanthus
  – Bradford Pear
  – Mimosa
  – Paulownia

• Shrubs:
  – Autumn Olive
  – Multiflora Rose
  – Chinese Privet
  – Japanese Barberry
  – Wineberry
  – Burning Bush
  – Bush Honeysuckle
  – Japanese Knotweed
  – Japanese Spirea
Identification
Vines
English Ivy
Immature and Mature Ivy
Oriental Bittersweet
Oriental Bittersweet
Oriental Bittersweet
Oriental Bittersweet
Oriental Bittersweet Roots
Japanese Honeysuckle
Japanese Honeysuckle
Japanese Honeysuckle
Japanese Honeysuckle
Japanese Honeysuckle
Winter Creeper / Climbing Euonymus
Winter Creeper / Climbing Euonymus
Kudzu
Porcelain Berry
Porcelain Berry
Wild Grape (native)
Roundleaf Greenbrier (native, not invasive)
Roundleaf Greenbrier (native, not invasive)
Poison Ivy (native, not invasive)

Hairy vine. No friend of mine.
Shrubs / Bushes
Autumn Olive
Autumn Olive
Autumn Olive Leafing Out
Multiflora Rose
Multiflora Rose
Multiflora Rose
Chinese Privet
Japanese Barberry
Japanese Barberry
Wineberry
Wineberry
Burning Bush
Bush Honeysuckle
Grasses and Forbs
Japanese Stiltgrass
Japanese Stiltgrass
Japanese Stiltgrass with Deer’s Tongue
Garlic Mustard in Early Spring
Garlic Mustard in Late Spring
Periwinkle (Vinca)
Ground Ivy
Trees
Invasive Trees

• Ailanthus altissima;
  – ãchòuchūn; literally: "foul smelling tree"

• Paulownia

• Bradford (Callery) Pear
A Young Ailanthus Tree’s Seeds
Cantaloupe (Snakeskin) Bark
Paulownia -- Princess Tree

Bark

Fruit Capsules
Bradford Pear
Bradford Pear Leaves and Flowers
Bradford Pear Naturalizing
Any plant ID questions?
Control
Hand-pulling Thistle in Yosemite
Removal/Treatment

1 - Physical
   Hand-pulling, mowing or cutting, and grubbing

2 - Chemical only
   Herbicides

3 – Combination (physical and chemical)
   Cut stump, hack and squirt, cut now spray later

4 - Biological (e.g., insects, fungi and goats!)
1 - Physical

• Hand pulling

  – Only if you can get it out completely with its roots

  – Pull when the soil is wet

  – Wiggle it around a little to see if it will come without breaking roots

  – If it doesn’t want to come out, use cut stump or spray
Physical

• Mowing or cutting
  – Usually have to repeat
  – Often followed with herbicides
  – Timing is critical - seeds
Forest Mulcher
Physical

• Grubbing
  – Kudzu
  – Sever crown from tuber ("root")
Removing Kudzu: Grubbing
(Separate the Crown from Root)
Kudzu Below Ground
Sever Crown from Tuber (root)
Kudzu Crown and Tuber
2 - Chemical Only Treatment

- Protect native plants
- Primary herbicides
- Herbicide safety
- Herbicide concentrations
Using Herbicides – Yikes!
Protecting Native Plants When Using Herbicides

• Use specific products
  – Right product for the species
    • Grass or broadleaf specific
  – Right product for the time of year
    • Pre- or post-emergent
  – Right product for the site
    • Aquatic herbicides for control near water bodies
Protecting Native Plants
When Using Herbicides, cont’d

• Right technique for the species
  – Little applied: drip bottle or hand sprayer
  – Larger sprayers: low pressure, flat fan nozzle to control spray drift
  – Your technique can eliminate or minimize impact on nearby vegetation

• What if you don’t use them at all?
Ailanthus tree toppled in storm
Primary Herbicides

• Non-specific - (kills everything): Glyphosate (Roundup, Rodeo, Accord, Ranger, many cheaper generics)

• Broadleaf-specific: Triclopyr amine (Garlon 3A); Triclopyr ester (Garlon 4), oil based, basal bark; 2,4-D and Triclopyr (Crossbow, Candor)

• Grass-specific: Sethoxydim (Poast); Clethodim (Envoy); Fluazifop (Fusillade).
Herbicide Safety

• FOLLOW ALL HERBICIDE LABEL DIRECTIONS!

• Read about their use

• Wear impervious gloves when preparing and using herbicides

• Keep them safely out of reach when stored
Herbicide Concentrations

• Foliar Spray
  – Usually only 1-4% active ingredient is necessary but more volume of material is sprayed

• Cut stump / hack and squirt / basal spray
  – Higher concentration of active ingredient needed (20-50%) but much smaller amount is used
  – Less collateral damage

• These herbicides are one-shot and generally are not active in soil
3 - Combination Techniques

• Cut stump
  – Completely cut the stem and apply herbicide to stump

• Girdling
  – Make a ringed cut completely around the trunk (through the cambium layer) and apply herbicide

• Hack and squirt (frill girdling)
  – Make spaced cuts through bark and apply herbicide

• Cut now, spray later
  – Cut now and apply herbicide next season
Cut Stump Method for Hanging Vines
Winter Creeper
Cut Stump Method for Attached Vines
Cut Stump for Shrubs
You Don’t Have to Cut it Down!
Hack and Squirt
Leave Space Between Cuts --
You Don’t Have to be Neat
4 - Biological Approaches

• Insect releases
  – Controlled by Federal agencies, experimental, usually not available to the public

• Fungi, viruses, etc.
  – Experimental and research-only based

• Animal “partners”
Biological Approach
Tools
Cutting Tools and Sprayers

1 - Manual cutting tools – hand tools
2 - Power cutting tools – motorized tools, e.g.,
   string trimmer, brush cutter (various blades), reciprocating saw, chainsaw
3 - Spraying – drip bottle vs. spray bottle,
   pressurized containers (backpack sprayer), broadcast sprayers
1 - Hand Pruning Tools
Tool Carrier
Efficiency – Time and Effort
2 - Brush Cutter/String Trimmer
Weed Wrench
Heavy Equipment
3 - Herbicide Application Techniques

• Directed Foliar Spray and drip bottle

• Basal Spray

• Broadcast
Spot Spraying and Dripping
Basal Bark Spraying
Broadcast Spraying
Dye Marker in Herbicide
Non-Native Invasive Plant Species Control Treatments
Timing, Methods and Herbicide Rates

This is a list of management tactics for major invasive plants, not a comprehensive control plan. For recommendations specific to your property, consult a professional forester or land resource manager. Follow all label prohibitions, precautions and safety requirements during herbicide transport, storage, mixing and application.

<table>
<thead>
<tr>
<th>INVASIVE PLANT</th>
<th>CONTROL TIMING</th>
<th>CONTROL METHOD</th>
<th>HERBICIDE RATES</th>
<th>NOTES</th>
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</thead>
<tbody>
<tr>
<td><strong>GRASSES</strong></td>
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<tr>
<td>Japanese Stiltgrass</td>
<td>Prior to seed maturity</td>
<td>Manual – hand pull</td>
<td></td>
<td>Remove all roots</td>
</tr>
<tr>
<td></td>
<td>Prior to seed maturity</td>
<td>Mechanical – mow/cut repeatedly</td>
<td></td>
<td>To reduce seed formation</td>
</tr>
<tr>
<td></td>
<td>Early summer</td>
<td>Foliar spray</td>
<td>Glyphosate 0.1%</td>
<td>Several years needed to control seed bank</td>
</tr>
<tr>
<td></td>
<td>Late spring – late summer</td>
<td>Foliar spray</td>
<td>Sethoxydim 1.5% or Glyphosate 0.5%-2%</td>
<td>Several years needed to control seed bank</td>
</tr>
<tr>
<td>Wavyleaf Grass</td>
<td>Prior to seed maturity</td>
<td>Manual – pull small areas</td>
<td></td>
<td>Follow-up treatment required</td>
</tr>
<tr>
<td></td>
<td>Late spring – fall</td>
<td>Foliar spray</td>
<td>Glyphosate 2%</td>
<td>Several years (as needed)</td>
</tr>
<tr>
<td></td>
<td>April – June</td>
<td>Foliar spray</td>
<td>Sethoxydim or Clethodim 1%</td>
<td>Several years (as needed); inconsistent control</td>
</tr>
<tr>
<td><strong>HERBS/FORBS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garlic Mustard</td>
<td>Late spring – early summer, prior to any seedpods maturing to brown</td>
<td>Manual – hand pull and remove taproot</td>
<td></td>
<td>Do not leave flowering plants on ground, seeds will form; bag/remove flowering plants</td>
</tr>
<tr>
<td></td>
<td>March – June, before seedpods</td>
<td>Mechanical – mow or cut</td>
<td></td>
<td>To reduce seed formation</td>
</tr>
<tr>
<td></td>
<td>Late fall – winter is best, but susceptible any time</td>
<td>Foliar spray on evergreen leaves</td>
<td>Glyphosate or Triclopyr 2%</td>
<td>Dormant season timing protects many other species</td>
</tr>
<tr>
<td>Gen. Recommendations for All Vines</td>
<td>All year when soil is moist</td>
<td>Manual – hand pull small vines</td>
<td></td>
<td>Remove as many roots as possible to prevent resprouts</td>
</tr>
<tr>
<td></td>
<td>Any</td>
<td>Manual or mechanical – cut to “treatable” height</td>
<td>Glyphosate 2%-3% or Triclopyr 2%-5%</td>
<td>Follow-up with foliar herbicide applied to resprouts</td>
</tr>
<tr>
<td></td>
<td>June – October, through winter for evergreen species</td>
<td>Foliar spray</td>
<td>Triclopyr ester 20%-25%</td>
<td>Several years (as needed)</td>
</tr>
<tr>
<td></td>
<td>June – February</td>
<td>Basal spray</td>
<td>Triclopyr ester 20%-25%</td>
<td>Follow-up usually required</td>
</tr>
<tr>
<td></td>
<td>June – August</td>
<td>Foliar spray</td>
<td>Metsulfuron 2-4 oz./acre</td>
<td>Several years (as needed)</td>
</tr>
<tr>
<td>Japanese Honeysuckle</td>
<td>Before seed formation</td>
<td>Foliar spray</td>
<td>Glyphosate or Triclopyr ester 20%-25%</td>
<td>Follow-up usually required; highly selective and uses minimal herbicide</td>
</tr>
<tr>
<td></td>
<td>June – February, late summer – fall ideal</td>
<td>Cut stump</td>
<td>Glyphosate 2%-3% or Triclopyr 2%-5%</td>
<td>Treat evergreen leaves on warm days in winter</td>
</tr>
</tbody>
</table>
Work/Woods Safety

• Personal Protective Equipment (PPE): Wear impervious gloves, eye protection, hat, long pants and long-sleeved shirt when spraying herbicides

• Wear boots and leather gloves -- for prickers/thorns
  – Multiflora rose, wineberry, roundleaf greenbriar, autumn olive

• Poison ivy can be on the ground and mixed with invasive vines

• Watch your step – vines/rose/deadfalls will trip you; snakes

• First aid kit

• Never pull vines out of tall trees
Cuttings / Debris

• Seed propagation: remove when risk is low
  – Look up times to avoid on VDOF herbicide chart

• Be diligent regarding sanitation – bag plants that have seeds

• Decide what to do with cuttings before you start removal

• Propagation determines disposal: many vines will re-root
Control Summary: Trees

- Ailanthus
- Bradford Pear
- Paulownia

Treat summer through winter (see VDOF chart)
Control Summary: Shrubs

- Autumn Olive
- Multiflora Rose
- Chinese Privet
- Japanese Barberry
- Wineberry
- Burning Bush
- Bush Honeysuckle

Hand pull young growth
Cut / mow with follow-up treatment
Cut and paint woody stems
Control Summary: Vines

- English Ivy
- Winter Creeper
- Oriental Bittersweet
- Japanese Honeysuckle
- Porcelainberry
- Kudzu

Hand-pull young growth
Cut now, spray regrowth later
June onwards: cut stump, basal spray and foliar spray
Control Summary: Grasses/Forbs

Japanese Stiltgrass - Hand pull any time; June onwards foliar spray; mow to the ground late summer

Garlic Mustard – Hand pull and remove taproot. Foliar spray any time.

Periwinkle (Vinca) - Foliar spray any time

Ground Ivy – Hand pull or spray any time.
Control Summary: Miscellaneous

- Leatherleaf Mahonia
- Chickweed
- Spotted Knapweed
- Wineberry
- Purple Deadnettle
- Hairy Bittercress
- Nonnative thistle

Basal rosettes

Hand-pull young growth
Foliar spray
Getting Started

✔ Understand what you have
✔ Set priorities and objectives
✔ Create a plan
  ✔ Species, methods, locations, time of year
  ✔ Experiments and pilot sites
  ✔ Restoration work
✔ Decide what you can do and where you need help
✔ Line up assistance, if needed
  ✔ Get bids if appropriate
✔ Execute over and over again
Learning What to Do

✓ PRISM workshops
  ✓ Multiple times of year - seasonally appropriate content
  ✓ Plant ID, control methods, equipment, plant walks
  ✓ BYOP

✓ Quarterly meetings

✓ Have your DOF area forester come visit

✓ Have your NRCS District Conservationist visit

✓ Prepare a forest management plan

✓ Hire a professional if you have a lot to do

✓ Ask about financial assistance

✓ See the VDOF summary treatment chart
Other Useful Information

✔ Factsheets on the website
✔ Contractor list
✔ Sources for supplies
✔ Various books on native and invasive plants
✔ VA Dept of Conservation and Recreation list of invasive plants
✔ Learn about assistance available from our partners
  ✔ See our upcoming quarterly meeting in July
Restoration Principles

- Minimize disturbance
- Eat the deer
- Inventory plants & animals
- Create plant palettes
- Pick plant communities
- Use nearby seeds
- Think long term
- Keep invasives out of where they aren’t now
- Clean/protect best areas first
- Build strong edges
- Remove invasives for 3 years before major plantings
- Break up compacted soils
- For new light gaps (e.g. ash trees) kill stiltgrass etc in year 1 to prevent a seed bank
- Mow really low in July
Get Help!
Get Inspired!
Reminders

• July 15, 2020
  – Quarterly meeting featuring PRISM updates and mini-presentations from organizations offering assistance

• Donations or questions: See our website

• Need a speaker for your group?

• Create a neighborhood group to defend your borders

• We will help you form another PRISM
Questions?

Launch the evaluation poll
Identification and Control Resources

- Plant Invaders of Mid-Atlantic Natural Areas
  - National Park Service
  - U.S. Fish and Wildlife Service

- A Management Guide for Invasive Plants in Southern Forests
  - James H. Miller, Steven T. Meentzing, and Stephen E. Emble

- Field Guide to Invasive Plants in Southern Forests
  - James H. Miller, Elwine B. Chambers, and Nancy J. Loewenstein

All currently out-of-print, but available as free PDF downloads
ALERT: Spotted Lanternfly

Invasive Alert!!!
Spotted Lanternfly

Early detection and rapid response needed

We need you to report sightings of this new, destructive, nonnative, insect pest

Report sightings to:
VA Office of Plant Industry Services
(804) 786-3013

- Found first in Berks County, Pennsylvania, in September 2014. Found for the first time in Virginia in Frederick County during January 2018. This Asian insect is a serious agricultural pest in Korea and is now threatening orchards and vineyards in PA. The threat to forests is unknown but of great concern.

- Adults (1 inch long) lay eggs in fall on smooth-barked trees such as tree-of-heaven, but also on smooth surfaces such as cars, furniture, stones, etc. Egg masses (1 to 1.5 inches long) are visible all winter, and hatch in spring. Spotted lanternfly infestations spread when egg masses laid on vehicles, firewood, stones, and other objects are moved to new locations.

- Nymphs cluster and feed primarily on leaves and branches of 70 tree species, especially orchard fruits and grape vines (wild and cultivated) from May into July. The pests exude honeydew sap, which attracts sooty mold that ruins fruit crops. Nymphs feed, but less heavily, on forest and landscape trees.

- Adults primarily feed on branches and trunks of tree-of-heaven and willow, but also on other forest and landscape trees, from July to November. Feeding causes weeping wounds and reduces tree vigor.

- Prefers, and may even require, tree-of-heaven (ailanthus) trees to complete its lifecycle—current recommendations are to kill 90% of these trees and trap spotted lanternflies on the remaining ones. See Blue Ridge PRISM factsheet for how to control the nonnative, invasive tree-of-heaven.

For more see: https://pubs.ext.vt.edu/ENTO/ENTO-18e/ENTO-18e.html www.BlueRidgePRISM.org