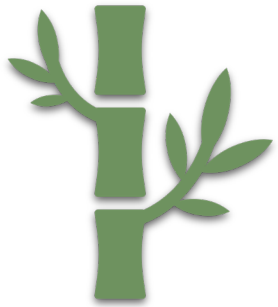
Gardening For Wildlife: Invasive Plant Management

Presented by:
Levi Morris, Stewardship Specialist

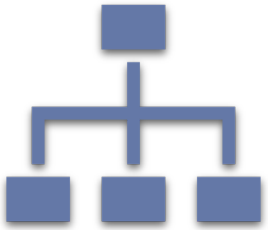


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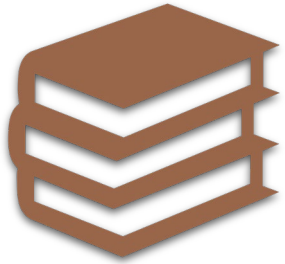
Overview



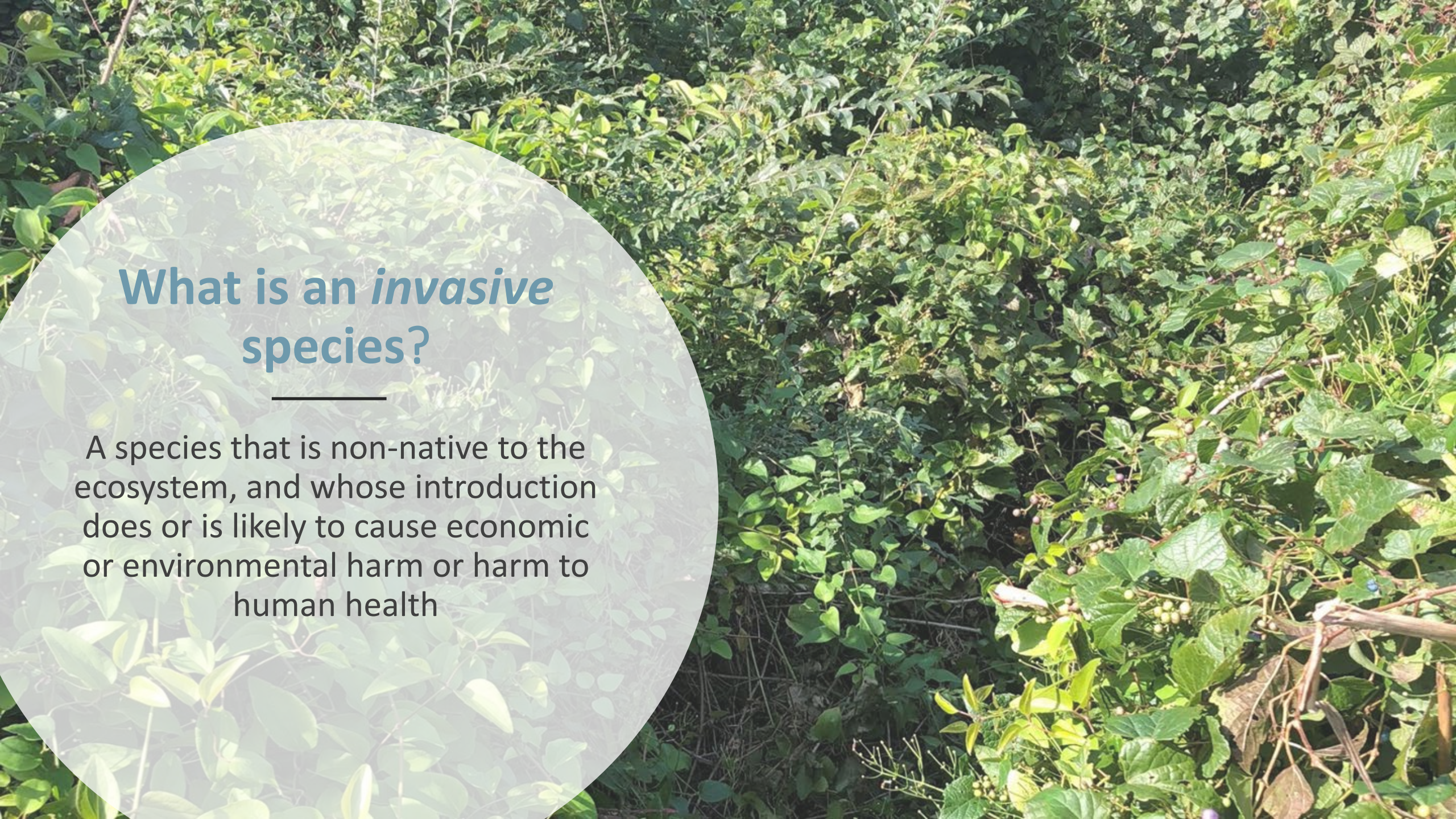
Invasives Overview



Management



Resources



What is an *invasive* species?

A species that is non-native to the ecosystem, and whose introduction does or is likely to cause economic or environmental harm or harm to human health

Impact of Invasive Species

- **$21 billion annual estimated economic and health-related costs of invasive species in the United States (USGS)**
- **Reported to be a leading cause in biodiversity decline**
- **Reduce resources available for native species**
- **Limited value for native insects & pollinators**

Characteristics

Generalist – tolerate a variety of conditions

Grow and reproduce rapidly

Compete aggressively for resources

Few to no natural enemies

How did they get here?



ACCIDENTALLY INTRODUCED



ORNAMENTAL PLANTINGS



INTENTIONALLY INTRODUCED

New Jersey Invasive Species Strike Team
Summary of Invasive Species in NJ

NJISST Threat Code	Description	Number of Species	2022	2021	2020
Plants - Mild	Mildly threatening to natural areas	7	7	7	7
Plants - Moderate	Moderately threatening to natural area	78	77	73	73
Plants - High	Highly threatening to natural areas	107	107	109	105
Animals, Insects, Pathogens - Mild	Mildly threatening to natural areas	5	5	5	5
Animals, Insects, Pathogens - Moderate	Moderately threatening to natural areas	26	25	24	24
Animals, Insects, Pathogens - High	Highly threatening to natural areas	68	67	67	63
	Totals	**291**	**288**	**285**	**277**

Invasive Plants in Natural Areas

NJISST Threat Codes for Natural Areas

Mild
Mildly threatening to natural areas

Moderate
Moderately threatening to natural area

High
Highly threatening to natural areas



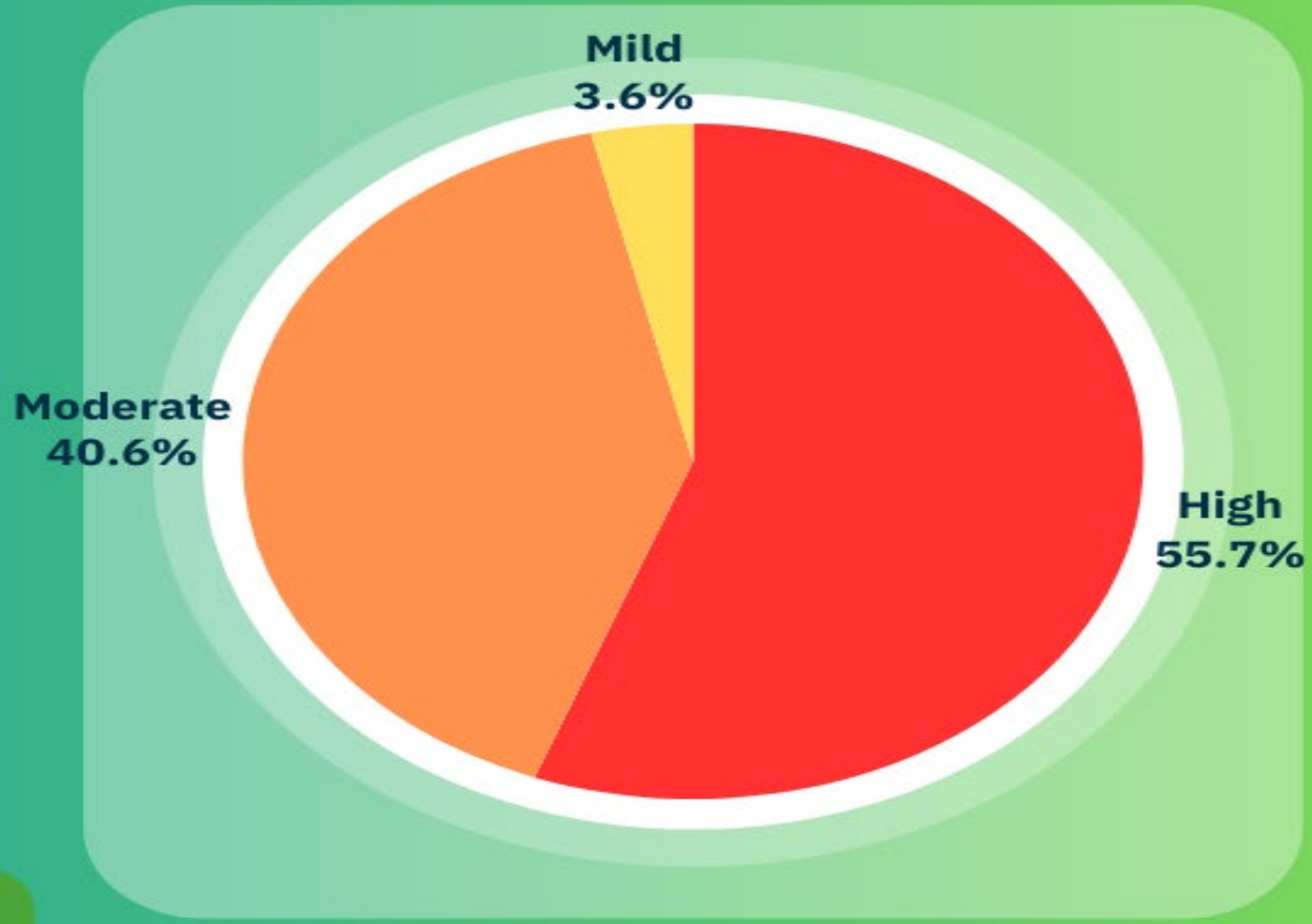
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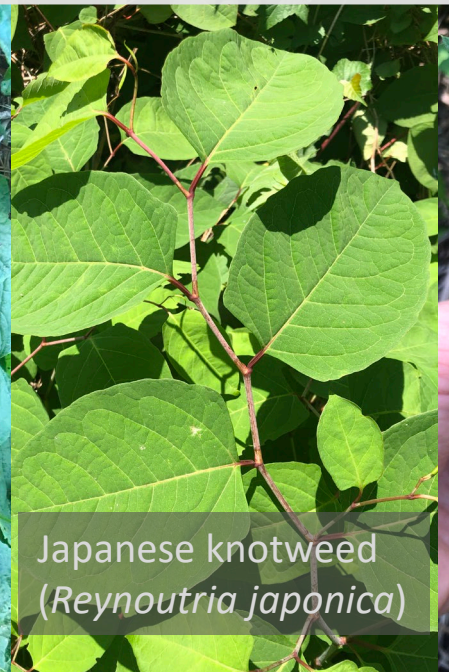


Forbs & Grasses


Lesser celandine
(*Ficaria verna*)


Japanese stiltgrass
(*Microstegium vimineum*)


Garlic mustard
(*Alliaria petiolata*)

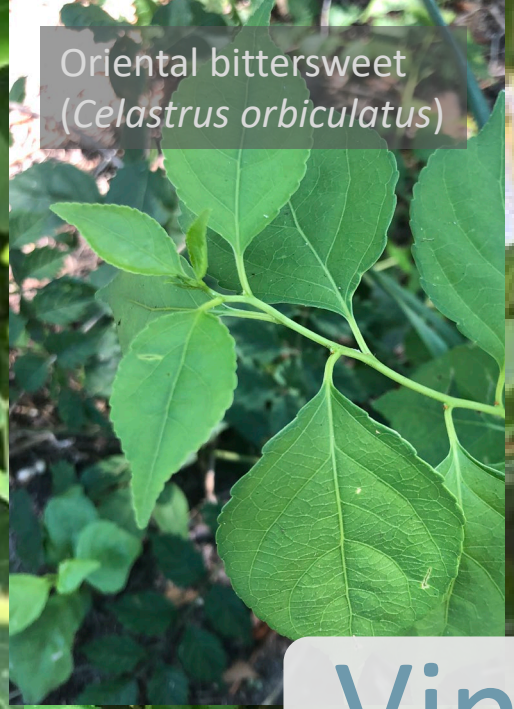

Japanese knotweed
(*Reynoutria japonica*)


Mugwort
(*Artemisia vulgaris*)


Chinese bushclover
(*Lespedeza cuneata*)

Vines


Kudzu
(*Pueraria montana*)


Oriental bittersweet
(*Celastrus orbiculatus*)


Japanese honeysuckle
(*Lonicera japonica*)


Porcelain berry
(*Ampelopsis brevipedunculata*)


Sweet Autumn clematis
(*Clematis turniflora*)


English Ivy
(*Hedera helix*)


Mile-a-minute
(*Persicaria perfoliata*)


Privet
(*Ligustrum spp.*)
Japanese barberry
(*Berberis thunbergii*)
Bush honeysuckle
(*Lonicera spp.*)
Burning bush
(*Euonymous elatus*)
Shrubs
Butterfly bush
(*Buddleia davidii*)
Autumn olive
(*Eleagnus umbellata*)
Mutliflora rose
(*Rosa multiflora*)

Trees


Bradford/Callery pear
(*Pyrus calleryana*)


Chinese elm
(*Ulmus parvifolia*)


Tree-of-heaven
(*Ailanthus altissima*)


Norway maple
(*Acer platanoides*)


Mimosa
(*Albizia julibrissin*)


Japanese maple
(*Acer palmatum*)

Management

Main Types

1. Mechanical
2. Chemical

The Goal:

Ideally? Eradication.

Realistically? To manage the invasive species to a point where native species are not being outcompeted for resources.

Mechanical

= physical removal

- Hand pulling
- Digging
- Cutting
- Mowing
- Solarizing
- Girdling
- Torching
- Grazing









Solarization

Uses heavy duty clear plastic (4mL-6mL thickness) and the sun to bake the soil, prevent ventilation, and reduce photo activity to kill any undesirable plants







Girdling

- Severs the bark, cambium, and sometimes the sapwood in a ring extending entirely around the trunk of the tree
- Can be done using a chainsaw or axe



Torching

- Passes a flame over the plant briefly to heat the plant tissues just enough to kill them - goal is not to burn up the weed, but to destroy plant tissue so that the weed dies
- Requires a propane torch or other specialty weed torching equipment
- Works best for annual plants

Grazing





Additional Considerations

- Requires persistence
- Good option for smaller areas
- Know your plants
- Timing
- Seeds and roots





Chemical

- The use of herbicides to help kill a portion or the whole plant
- Designed to only work on plants
- Efficient and effective
- Proper use offers a low environmental risk

Important Terms

- Emergent vs pre-emergent
- Selective vs non-selective
- Systemic vs non-systemic





Treatment Methods

- Foliar spray
- Cut-stump
- Basal bark
- Hack and squirt
- Soil Drench
- Granule



Herbicide Product Types

- Ready to use
- Concentrate
- Granule

Considerations

- PPE
- Label & Safety

  THE LABEL IS THE LAW!
- Weather
- Non-target plants
- Timing
- Storage



NJ Invasive Species Strike Team

FoHVOS
FRIENDS OF HOPEWELL VALLEY OPEN SPACE

About Us | Advocacy | Explore Hopewell | Get Involved | Stewardship | Donate | Strike Team

Info Center

Quick Links

Do Not Plant List

Landscape Planting Pledge

Species List with Control Recommendations

Herbicide Use Suggestions and Mixing Table



What Are Invasive Species?

Learn about what constitutes an invasive species and why they pose a threat to native species.



Fact Sheets

View our fact sheets for information on identifying individual invasive species and recommendations for eradicating them.



Eradication

Learn about methods employed by the Strike Team to eradicate invasive plant species and information about herbicide use.



Interactive Map

Check out our interactive map for information about



Smartphone App

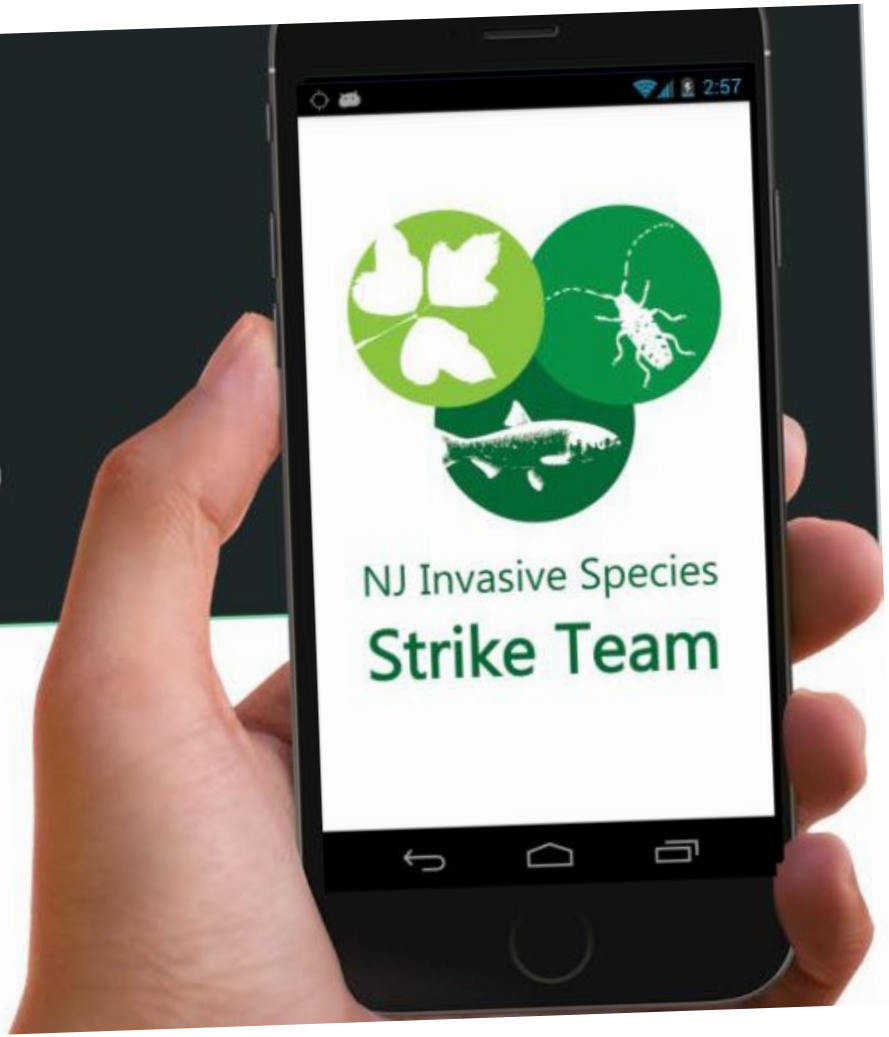
Learn how to use the NJ Invasives app to report



Resources

Find publications by the Strike Team, helpful links, and

FoHVOS
NJ Strike Team
Smartphone App



FoHVOS

FRIENDS OF HOPEWELL VALLEY OPEN SPACE





PictureThis

NEW JERSEY AUDUBON

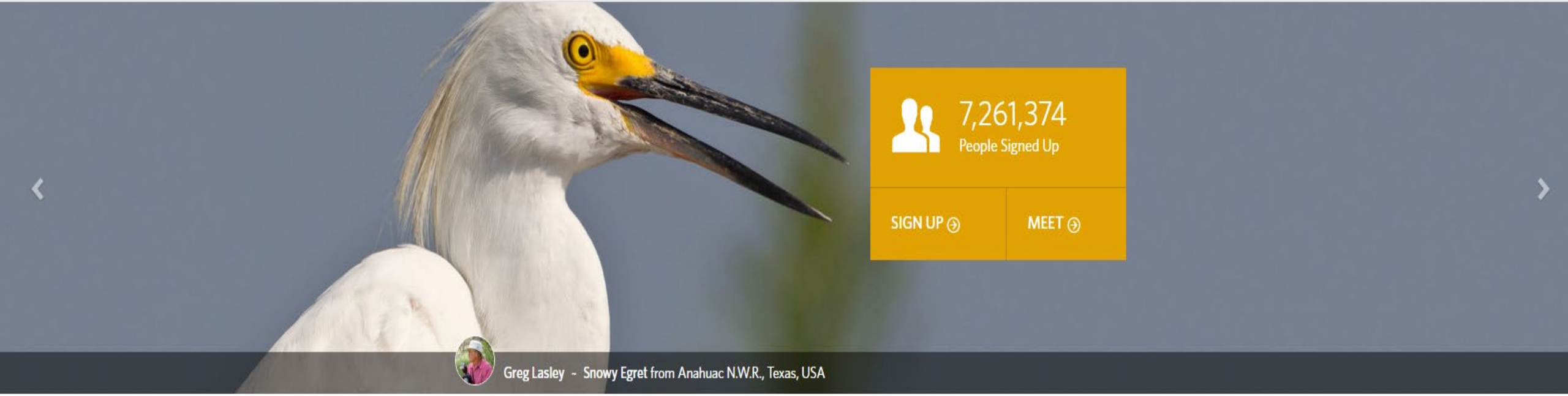


Identifying the Problem





Pl@ntNet



How It Works



1. Record your observations
2. Share with fellow naturalists
3. Discuss your findings







Would you prefer to view common names used in the United States? Yes No

Garlic Mustard (*Alliaria petiolata*) Research Grade

Edit

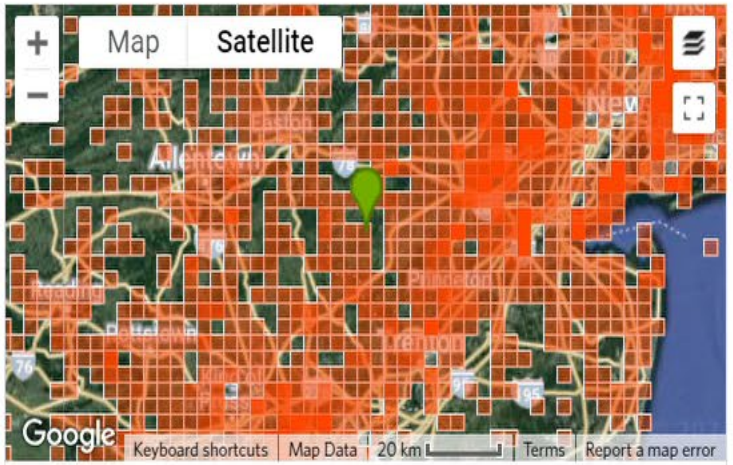




levimorris
331 observations

Observed:
May 12, 2020 · 8:19 AM EDT

Submitted:
May 14, 2020 · 1:14 PM EDT



Delaware Township, NJ, USA Details

Be the first to fave this observation!

New Jersey Invasive Species Strike Team
2023 DO NOT PLANT LIST
PLANTS ON THIS LIST ARE *COMMONLY AVAILABLE* FOR PURCHASE

Common Name	Scientific Name	Problem Type
Herbaceous Plants		
American sweetflag	Acorus calamus	Widespread
beefsteakplant	Perilla frutescens	Emerging
black fountain grass	Cenchrus purpurescens	Potential
black fountain grass	Cenchrus setaceus	Potential
blackberry lily	Belamcanda chinensis	Potential
blue plantain lily	Hosta ventricosa	Emerging
blue-green sedge	Carex flacca	Potential
Bohemian knotwed	Reynoutria x bohemica	Widespread
Brazilian waterweed	Egeria densa	Emerging
Carolina fanwort	Cabomba caroliniana	Emerging
chameleon-plant	Houttuynia cordata	Potential
Chinese silvergrass	Miscanthus sinensis	Emerging
common tansy	Tanacetum vulgare	Potential
common water hyacinth	Eichhornia crassipes	Emerging
creeping buttercup	Ranunculus repens	Potential
creeping waterprimrose	Ludwigia peploides (ssp. glabrescens)	Emerging
creeping yellow loosestrife	Lysimachia nummularia	Widespread
Dame's rocket	Hesperis matronalis	Potential
Eurasian water-milfoil	Myriophyllum spicatum	Widespread
European waterclover	Marsilea quadrifolia	Emerging
Flowering Rush	Butomus umbellatus	Potential
giant knotweed	Reynoutria sachalinensis	Widespread
giant reed	Arundo donax	Potential
goutweed	Aegopodium podagraria	Emerging
hardy pampas grass	Saccharum ravennae	Potential
Hispanic hyacinthoides	Hyacinthoides hispanica	Potential
Italian arum	Arum italicum	Potential
Japanese chaff flower	Achyranthes japonica	Potential
Japanese knotweed	Reynoutria japonica	Widespread

Common Name	Scientific Name	Problem Type
Shrubs		
Amur honeysuckle	Lonicera maackii	Widespread
amur privet	Ligustrum amurense	Potential
autumn olive	Elaeagnus umbellata	Widespread
Beale's barberry	Mahonia bealei	Emerging
beautybush	Kolkwitzia amabilis	Potential
border privet	Ligustrum obtusifolium	Widespread
butterflybush	Buddleja davidii	Emerging
California privet	Ligustrum ovalifolium	Emerging
common barberry	Berberis vulgaris	Emerging
cutleaf blackberry	Rubus laciniatus	Emerging
dog rose	Rosa canina	Emerging
European privet	Ligustrum vulgare	Widespread
European spindletree	Euonymus europaeus	Emerging
five-leaf aralia	Eleutherococcus sieboldianus	Emerging
fuzzy pride-of-Rochester	Deutzia scabra	Emerging
garden red current	Ribes rubrum	Emerging
glossy buckthorn	Frangula alnus	Emerging
Guelder-rose	Viburnum opulus	Emerging
hardy orange	Citrus trifoliata	Emerging
Himalaya blackberry	Rubus armeniacus	Emerging
holly osmanthus	Osmanthus heterophyllus	Potential
Japanese barberry	Berberis thunbergii	Widespread
Japanese snowball	Viburnum plicatum	Emerging
Japanese snowbell	Styrax japonicus	Emerging
Japanese spiraea	Spiraea japonica	Emerging
jetbead	Rhodotypos scandens	Emerging
linden viburnum	Viburnum dilatatum	Widespread
memorial rose	Rosa lucieae	Potential
Morrow's honeysuckle	Lonicera morrowii	Widespread

Mistaken Identity?

Invasive Plants and their Native Look-Alikes

an Identification Guide for the Mid-Atlantic

NJ Audubon Homeowner Herbicide Guide

Homeowner Herbicide Guide

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- Hack and Squirt 3
- Basal Bark 3

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- Woody Species 8
- Broadleaves 8
- Grasses 8

Treatment Methods

Herbicides can be applied in a variety of ways with each method exhibiting its own suite of strengths and weaknesses. Please note that these are all chemical methods and do not mention mechanical or biological methods of control.

Foliar Spray

In this method the herbicide is diluted with water and sometimes diesel fuel (although, many residential products are pre-mixed and ready to go). From here they are sprayed to the point of runoff, meaning that every leaf is wetted but not dripping. Foliar spray formulations contain the lowest percentage of active ingredients as they are taken in through a much larger surface area than the other methods. This method should only be used for plants that are below shoulder height. Any higher increases the risk of spray drift. Foliar spray is highly effective when treating large areas as it is efficient on time and cost. On the other hand, this method may lead to the accidental damage of non-target plants from spray drift and use more chemical than other treatment methods.

Cut-stump

This method involves the cutting of the invasive plant completely at its base (the closer to the ground the better) using a cutting tool (lopper, chainsaw, hand saw). Herbicide is then sprayed or painted onto the exposed cut stump. Plants will begin to start sealing the wound as soon as it is cut. Due to this, absorption rates will dramatically decrease as time passes. For maximum effectiveness, ideally, apply herbicide to the stump as soon as it is cut, or within 15 minutes. This method is best when trying to minimize the amount of herbicide applied. However, this method can be time consuming.

Hack and Squirt

In this method, an axe or hatchet is used to cut into sapwood tissue inside the trunk, immediately "squirting" herbicide down these slots. Cuts should point at a downward 45-degree angle. This will prevent the herbicide from draining out of the cut. It is important to not girdle the tree, that is create a connected ring of cuts that will cut off the flow ultimately responsible for transporting the herbicide to the rest of the plant. This method is highly effective in reducing the amount of herbicide used and exhibits a low risk to non-target plants. However, this method creates stands of dead trees, or "snags" which may or may not match up to the homeowner's goals. Additionally, this method can only be used on woody plants such as shrubs or trees, on stems larger than 1 inch in diameter.

Basal Bark

For this method, an oil soluble herbicide is mixed with an oil carrier such as diesel fuel or basal oil. The mixture is sprayed around the full circumference of the plant's trunk or stem, starting at the base to 40 cm or

Considerations

There are a number of factors to consider when applying an herbicide. It is critical to always adhere to herbicide label instructions. There can be implications when the label instructions are not followed, or if the following factors are not considered.:

Personal Protective Equipment

Personal Protective Equipment or PPE is one of the most important aspects of herbicide application. It ensures the safety of the applicator and those around them. Herbicide labels will always provide minimum PPE requirements when mixing and applying the product. The general goal of PPE is to provide a barrier between the applicator and the chemical. Keeping this in mind, only wearing some but not all required PPE will open up the applicator to unnecessary risk. PPE is only effective when all parts are worn in conjunction with each other.

Rubber Gloves: Glove materials can vary in their protective abilities. It is important to pay careful attention to the glove types specified on the herbicide label. Chemical resistant gloves can come in many different forms, made from materials like nitrile, neoprene, and butyl rubber. Oftentimes, the herbicide label will list examples of suitable glove types.

Clothing: A long sleeved shirt and pants will protect the applicator's limbs and body from accidental spillage and sprays. Shorts and short sleeved shirts will not offer enough protection.

Footwear: At a minimum, closed toe shoes are to be worn. If available, rubber boots are a better option as they will not absorb chemical and are easy to clean.

Eye Protection: Eye protection should always be worn when mixing or applying herbicide. At a minimum, eyeglasses or sunglasses can worn if on hand. Heavier protection can range from shielded safety glasses, goggles, a face shield, or a full-face respirator. Applicators that wear glasses can wear googles or eye-glass conscious safety glasses.

Respirator and Headgear: Herbicide labels will specify if a respirator and/or headgear is required. When picking out the respirator, ensure that it is approved by National Institute for Occupational Safety and Health (NIOSH). Proper headgear does not include baseball hats or any other casual headgear, it will always refer to chemical resistant hats or hoods.

Additional Resources

- Penn State Extension
  - Forest Management: Competing Plants | Penn State Extension (psu.edu)
- Rutgers Cooperative Extension
  - Rutgers New Jersey Agricultural Experiment Station (Rutgers NJAES)
- NC State Extension
  - Search Results | NC State Extension (ncsu.edu)
- State of Indiana Cooperative Invasives Management (Sicim)
  - SICIM Homepage

In a Nutshell

- Prevention is key – Do Not Plant list
- Assess the situation
- Get to know your plants
- Determine the best form of control
- Be persistent and be patient
- Combine mechanical and chemical control
- Replant with natives!

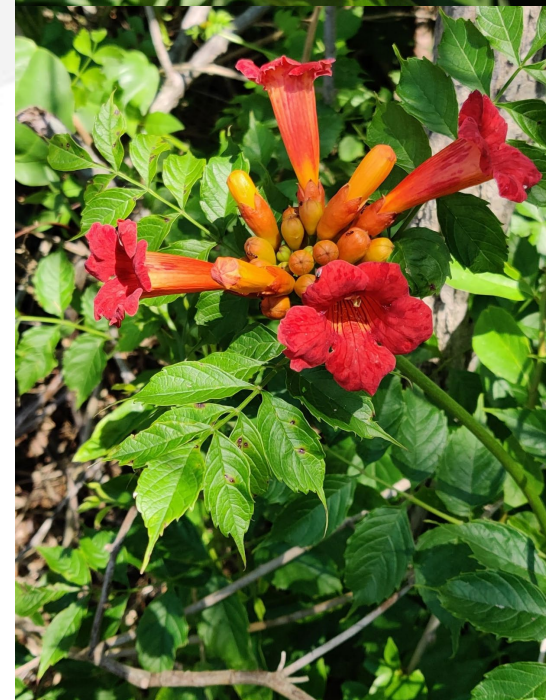
Additional Steps You Can Take:

Ask local nurseries to carry native plants

Take care not to transport seed when hiking

Eat them! Research edible invasive plants






Questions?
Email: levi.morris@njaudubon.org