

How Environmental Leaders Can help Restore Biodiversity

Volunteer Stewardship Teams



FoHVOS New Jersey
Invasive Species
Strike Team

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Strike Team Program Director



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Invasive Species
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Our Mission

We work to protect natural lands, with their full abundance and diversity of native plants and animals, from future damage through coordinated strategic invasive species management. Active mapping, data analysis, engaging in community outreach and training, and practicing early detection and rapid response (ED/RR) to new threats; we are the only entity solely dedicated to protecting rare species and special places from invasive species throughout New Jersey.

STEWARDSHIP = *Mitigation of human impacts on natural systems*

Why do we care?



SO MANY GOOD THINGS



The Mess We've Made...

- Habitat Destruction
- Overabundant Deer
- Invasive Species
- Agricultural Soil Modifications

- Altered Fire Regimes
- Altered Stream Flows
- Habitat Fragmentation
- Global Climate Change

An Invasive Plant...

1. Introduced to an area outside of its natural range
2. Grows densely and excludes other species
3. Drastically reduces biodiversity at all levels
4. Interrupts the natural functions of an ecosystem

Pictured: Garlic Mustard Infestation



Attributes of Invasive Plants



- *DEER DON'T EAT THEM*
- Tolerant of wider variety of soil types
- Tolerant of wider variety of light levels
- Mature quickly and produce lots of seeds



Siebold's Viburnum



Garlic Mustard



Japanese Barberry

Why are invasives bad?

A broken web...

Species	January	February	March	April	May	June	July	August	September	October	November	December
Autumn Olive					Flowers				Fruit	Fruit		
Gray Dogwood					Flowers	Flowers			Fruit			
Arrowwood						Flowers			Fruit			
Red Chokeberry					Flowers				Fruit	Fruit		
American Hazelnut				Flowers						Fruit		
Blackhaw Viburnum					Flowers			Fruit	Fruit			
Bayberry					Flowers				Fruit	Fruit	Fruit	
Virginia Rose	Fruit	Fruit	Fruit			Flowers	Flowers			Fruit	Fruit	Fruit
Winterberry	Fruit	Fruit	Fruit		Flowers					Fruit	Fruit	Fruit
Wild Black Cherry					Flowers		Fruit					
Flowering Dogwood				Flowers	Flowers				Fruit	Fruit		
Foxglove Beardtongue	Seeds	Seeds	Seeds			Flowers				Seeds	Seeds	Seeds
Black-eyed Susan	Seeds	Seeds	Seeds			Flowers	Flowers	Flowers	Flowers	Seeds	Seeds	Seeds
Goldenrods	Seeds	Seeds	Seeds						Flowers	Flowers	Seeds	Seeds
Asters	Seeds	Seeds	Seeds						Flowers	Flowers	Seeds	Seeds
Common Milkweed							Flowers	Flowers	Seeds	Seeds	Seeds	Seeds

Invasive plants \neq insect food \neq bird food



How badly is it going for nature?

- **New Jersey – From 1950 to Present**
 - Virtually no invasive species → hundreds of thousands of infested acres
- **Bird Population Decline – 30% since 1970 or 3 billion less birds**
 - Cornell University published research
- **Insect Population Decline – 10% per decade**
 - Multiple research articles, all do not agree though

And...

- **\$120 billion annual damages and losses across the U.S.**
 - Pimentel et al. 2005

The Numbers

10,000+

non-native plant introductions

1,000

established non-native plants

50

widespread invasive plants

100

emerging invasive plants

Work smarter now or whine harder later!

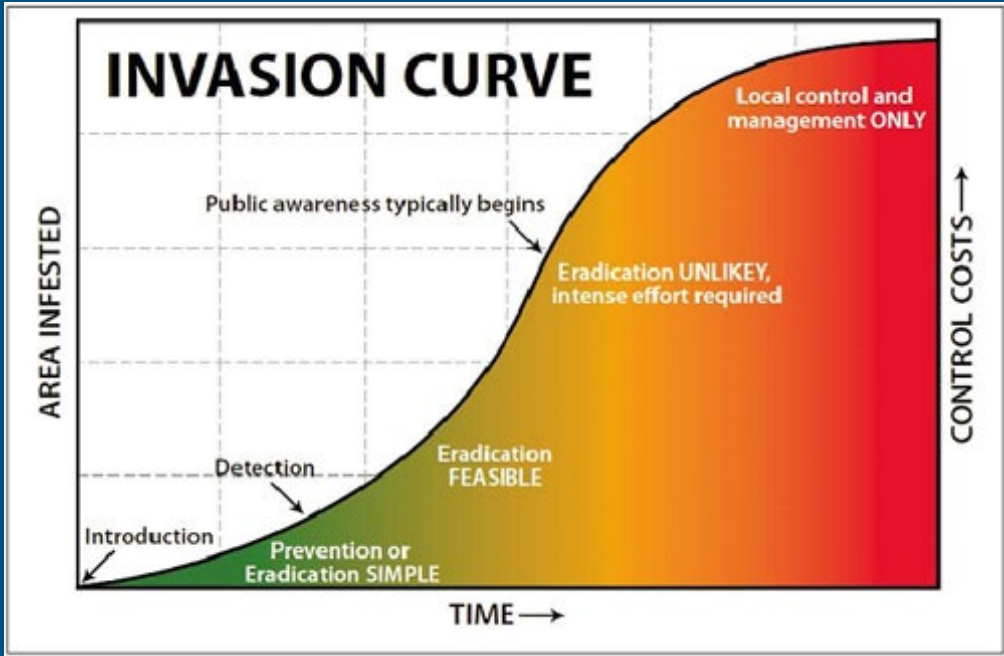


An ounce of prevention...



...can avoid pounds of ecological damage!

Above: A single plant of Chinese silvergrass that was eradicated by the Strike Team. Below: An unchecked infestation located outside of New Jersey.



2024 Target Species

84 plants + 49 “animals”=

133 TARGET SPECIES



Target and Watch Species

- Stage 0 = 131
- Stage 1 = 34
- Stage 2 = 26
- Stage 3 = 14

• 74 Watch Species

• 97 Widespread Species

The Root of the Problem: Deer Overabundance

**Excellent
deer
Habitat**

+

**Insufficient
deer
management**

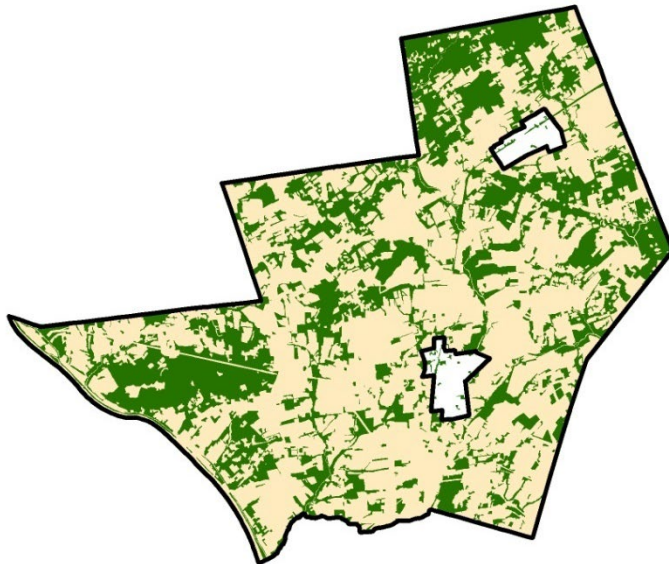
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**Health, Economic,
and Ecological
Damage**

↓
Forest fragmentation
produces excellent deer
forage along with
supplemental feeding from
agriculture and suburbia

↓
Lack of hunting access and
focus on “trophy” bucks.
Herd reduction requires a
shift in focus to does.

↓
Lyme Disease
Deer-Vehicle Collisions
Agricultural Losses
Landscape Planting Losses
Degraded Forests



Forest Fragmentation in Hopewell Valley

While still containing over 15,000 acres of forest habitat (shown in green), forest edges, fields and suburban landscapes are numerous and serve as more productive deer habitat than forest interiors.



The Good...



The Bad...



and The Ugly!

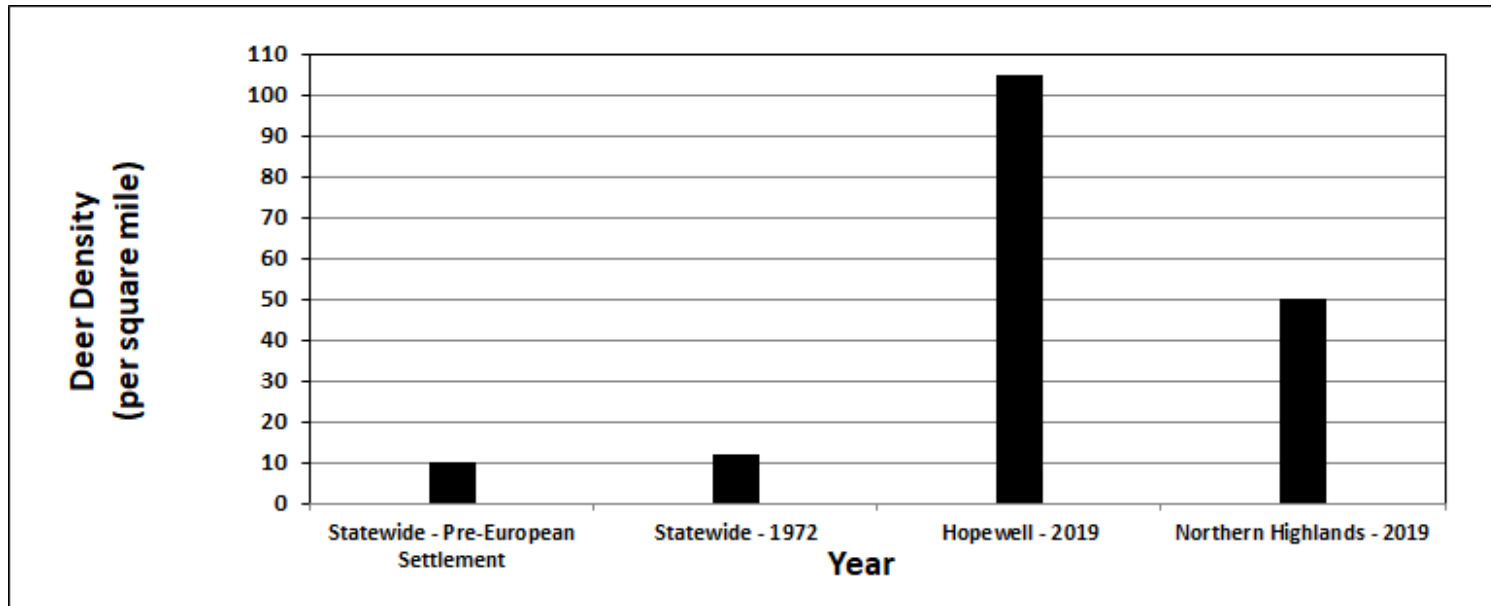
"I now suspect that just as a deer herd lives in mortal fear of its wolves, so does a mountain live in mortal fear of its deer. And perhaps with better cause, for while a buck pulled down by wolves can be replaced in two or three years, a range pulled down by too many deer may fail of replacement in as many decades."

-Aldo Leopold

Damage to Forest Health

- Loss of native shrubs & herbs
- Loss of tree seedlings to replace fallen canopy trees
 - Loss of native fauna dependent upon native flora
- Increase number of invasive plants that are unpalatable to deer

The timing isn't a coincidence...



- Invasive Plant History

- Prior to 1950's: Few species, Japanese Honeysuckle only notable invader. Others included Tree-of-Heaven and Multiflora Rose
- Beginning in 1980's: Growing populations, expansive Japanese Stiltgrass and Japanese Barberry infestations
- Currently: Many widespread species and growing list of emerging species



Where do we go from here?



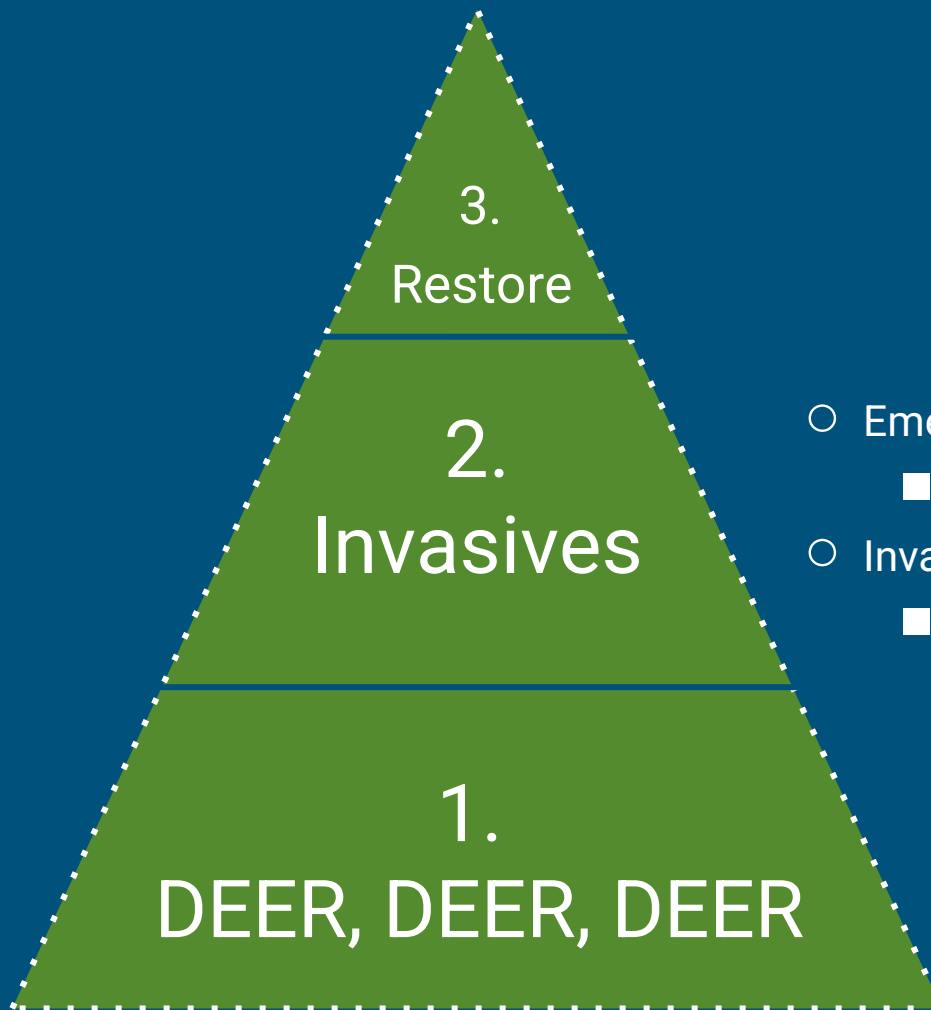
These very small seedlings of
tulip poplar and spice bush
**WILL REGENERATE THIS FOREST
IF THE DEER HERD IS BALANCED.**







The Stewardship Effort Hierarchy



Invasive Species Strategy

- Emerging Invasive Species Control / Eradication
 - Stage 0, then Stage 1, etc.
- Invasives on High Conservation Value Areas
 - Rare species habitat, old forests, etc.

New Jersey Invasive Species Strike Team - 2024 DO NOT PLANT LIST

Scientific Name	Common Name	Invasive Status	Plant Type	Sold for Planting
Trees				
<i>Acer ginnala</i>	Amur maple	Emerging	Tree	Yes
<i>Acer palmatum</i>	Japanese maple	Emerging	Tree	Yes
<i>Acer platanoides</i>	Norway maple	Widespread	Tree	Yes
<i>Acer pseudoplatanus</i>	sycamore maple	Emerging	Tree	Yes
<i>Ailanthus altissima</i>	tree-of-heaven	Widespread	Tree	No
<i>Akebia quinata</i>	chocolate vine	Emerging	Tree	Yes
<i>Abizia julibrissin</i>	mimosa	Emerging	Tree	Yes
<i>Alnus glutinosa</i>	European black alder	Emerging	Tree	Yes
<i>Aralia elata</i>	Japanese angelica tree	Widespread	Tree	Yes
<i>Broussonetia papyrifera</i>	paper mulberry	Emerging	Tree	Yes
<i>Comus kousa</i>	Kousa dogwood	Emerging	Tree	Yes
<i>Maius tozingo</i>	Japanese crabapple	Emerging	Tree	Yes
<i>Paulownia tomentosa</i>	princess tree	Widespread	Tree	Yes
<i>Phellodendron amurense</i>	Amur corktree	Emerging	Tree	Yes
<i>Populus alba</i>	white poplar	Emerging	Tree	Yes
<i>Populus x canescens</i>	gray poplar	Emerging	Tree	Yes
<i>Prunus avium</i>	sweet cherry	Widespread	Tree	Yes
<i>Prunus subhirtella var. pendula</i>	weeping Higan cherry	Emerging	Tree	Yes
<i>Pyrus calleryana</i>	Callery pear (Bradford pear)	Widespread	Tree	Yes
<i>Zelkova serrata</i>	Japanese zelkova	Emerging	Tree	Yes
Shrubs				
<i>Berberis thunbergii</i>	Japanese barberry	Widespread	Shrub	Yes
<i>Berberis vulgaris</i>	common barberry	Emerging	Shrub	Yes
<i>Buddleja davidii</i>	butterflybush	Emerging	Shrub	Yes
<i>Citrus trifoliata</i>	hardy orange	Emerging	Shrub	Yes
<i>Cytisus scoparius</i>	Scotch broom	Emerging	Shrub	Yes
<i>Elaeagnus angustifolia</i>	Russian olive	Emerging	Shrub	Yes
<i>Elaeagnus umbellata</i>	autumn olive	Widespread	Shrub	Yes
<i>Eleutherococcus sieboldianus</i>	five-leaf aralia	Emerging	Shrub	Yes
<i>Euonymus alatus</i>	winged burning bush	Widespread	Shrub	Yes
<i>Frangula alnus</i>	glossy buckthorn	Emerging	Shrub	Yes
<i>Ligustrum obtusifolium</i>	border privet	Widespread	Shrub	Yes
<i>Ligustrum vulgare</i>	European privet	Widespread	Shrub	Yes
<i>Lonicera maackii</i>	Amur honeysuckle	Widespread	Shrub	Yes
<i>Lonicera morrowii</i>	Morrow's honeysuckle	Widespread	Shrub	Yes
<i>Lonicera standishii</i>	Standish's honeysuckle	Emerging	Shrub	Yes
<i>Lonicera tatarica</i>	Tatarian honeysuckle	Widespread	Shrub	Yes
<i>Mahonia bealei</i>	Beale's barberry	Emerging	Shrub	Yes
<i>Photinia villosa</i>	Oriental photinia	Widespread	Shrub	Yes
<i>Rhamnus cathartica</i>	European buckthorn	Emerging	Shrub	No
<i>Rhamnus davurica</i>	Dahurian buckthorn	Emerging	Shrub	No
<i>Rhamnus utilis</i>	Chinese buckthorn	Emerging	Shrub	No
<i>Rhodotypos scandens</i>	jetbead	Emerging	Shrub	Yes
<i>Rosa multiflora</i>	multiflora rose	Widespread	Shrub	No
<i>Rosa rugosa</i>	seaside rose	Emerging	Shrub	Yes
<i>Rubus laciniatus</i>	cutleaf blackberry	Emerging	Shrub	Yes
<i>Rubus phoenicolasius</i>	wine raspberry	Widespread	Shrub	No
<i>Salix atrocinerea</i>	large gray willow	Emerging	Shrub	No
<i>Salix cinerea</i>	gray willow	Emerging	Shrub	No
<i>Spiraea japonica</i>	Japanese spiraea	Emerging	Shrub	Yes
<i>Symplocos paniculata</i>	sapphire berry	Emerging	Shrub	Yes
<i>Viburnum dilatatum</i>	linden viburnum	Widespread	Shrub	Yes
<i>Viburnum lantana</i>	wayfaring tree	Emerging	Shrub	Yes
<i>Viburnum plicatum</i>	Japanese snowball	Emerging	Shrub	Yes
<i>Viburnum setigerum</i>	tea viburnum	Emerging	Shrub	Yes
<i>Viburnum sieboldii</i>	Siebold's arrowwood	Emerging	Shrub	Yes
Vines				
<i>Actinidia arguta</i>	hardy kiwi	Emerging	Vine	Yes
<i>Ampelopsis brevipedunculata</i>	porcelain-berry	Widespread	Vine	Yes
<i>Celastrus orbiculatus</i>	Oriental bittersweet	Widespread	Vine	Yes
<i>Clematis flammula</i>	fragrant clematis	Emerging	Vine	Yes
<i>Clematis terniflora</i>	Japanese clematis	Widespread	Vine	Yes
<i>Dioscorea polystachya</i>	Chinese yam	Emerging	Vine	Yes
<i>Euonymus fortunei</i>	winter creeper	Emerging	Vine	Yes
<i>Hedera helix</i>	English ivy	Widespread	Vine	Yes
<i>Humulus japonicus</i>	Japanese hop	Widespread	Vine	No
<i>Lonicera caprifolium</i>	Italian woodbine	Emerging	Vine	Yes
<i>Lonicera japonica</i>	Japanese honeysuckle	Widespread	Vine	Yes
<i>Parthenocissus tricuspidata</i>	Boston ivy	Emerging	Vine	Yes
<i>Persicaria perfoliata</i>	mile-a-minute vine	Widespread	Vine	No
<i>Pueraria montana var. lobata</i>	kudzu	Emerging	Vine	Yes

New Jersey Invasive Species Strike Team - 2024 DO NOT PLANT LIST

Scientific Name	Common Name	Invasive Status	Plant Type	Sold for Planting
<i>Vincetoxicum nigrum</i>	black swallowwort	Emerging	Vine	No
<i>Vincetoxicum rossicum</i>	pale swallowwort	Emerging	Vine	No
<i>Wisteria floribunda</i>	Japanese wisteria	Emerging	Vine	Yes
<i>Wisteria sinensis</i>	Chinese wisteria	Emerging	Vine	Yes
Herbaceous Plants				
<i>Acorus calamus</i>	American sweetflag	Widespread	Herb	Yes
<i>Alliaria petiolata</i>	garlic mustard	Widespread	Herb	No
<i>Anthriscus sylvestris</i>	wild chervil	Widespread	Herb	No
<i>Artemisia annua</i>	annual wormwood	Emerging	Herb	No
<i>Artemisia vulgaris</i>	mugwort	Widespread	Herb	No
<i>Arrhaxon hispidus</i>	small carpetgrass	Widespread	Herb	No
<i>Cabomba caroliniana</i>	Carolina fanwort	Emerging	Herb	Yes
<i>Callitriche stagnalis</i>	European waterstarwort	Emerging	Herb	No
<i>Cardamine impatiens</i>	narrowleaf bittercress	Widespread	Herb	No
<i>Carex kobomugi</i>	Japanese sedge	Emerging	Herb	No
<i>Carex macrocephala</i>	largehead sedge	Emerging	Herb	No
<i>Centaurea stoebe ssp. micranthos</i>	spotted knapweed	Widespread	Herb	No
<i>Chondrilla juncea</i>	rush skeletonweed	Emerging	Herb	No
<i>Cirsium arvense</i>	Canada thistle	Widespread	Herb	No
<i>Conium maculatum</i>	poison-hemlock	Widespread	Herb	No
<i>Corydalis incisa</i>	purple kaman	Emerging	Herb	Yes
<i>Corydalis solida</i>	spring fumewort	Emerging	Herb	Yes
<i>Didymosphenia geminata</i>	rock snot	Emerging	Herb	No
<i>Dipsacus fullonum</i>	common teasel	Widespread	Herb	No
<i>Dipsacus laciniatus</i>	cutleaf teasel	Emerging	Herb	No
<i>Egeria densa</i>	Brazilian waterweed	Emerging	Herb	Yes
<i>Eichhornia crassipes</i>	common water hyacinth	Emerging	Herb	Yes
<i>Eragrostis curvula</i>	weeping lovegrass	Emerging	Herb	Yes
<i>Falcaria vulgaris</i>	Sickleweed	Emerging	Herb	No
<i>Ficaria verna</i>	lesser celandine	Widespread	Herb	No
<i>Heracleum mantegazzianum</i>	giant hogweed	Emerging	Herb	No
<i>Hesperis matronalis</i>	Dame's rocket	Emerging	Herb	Yes
<i>Hydrilla verticillata</i>	hydrilla	Emerging	Herb	No
<i>Hydrocharis morsus-ranae</i>	European frog-bit	Emerging	Herb	No
<i>Iris pseudacorus</i>	yellow iris	Widespread	Herb	Yes
<i>Lespedeza cuneata</i>	sericea lespedeza	Widespread	Herb	No
<i>Ludwigia peploides (ssp. glabrescens)</i>	creeping waterprimrose	Emerging	Herb	Yes
<i>Lysimachia nummularia</i>	creeping yellow loosestrife	Widespread	Herb	Yes
<i>Lythrum salicaria</i>	purple loosestrife	Widespread	Herb	Yes
<i>Marsilea quadrifolia</i>	European watercress	Emerging	Herb	Yes
<i>Microstegium vimineum</i>	Japanese stiltgrass	Widespread	Herb	No
<i>Miscanthus sinensis</i>	Chinese silvergrass	Emerging	Herb	Yes
<i>Murdannia keisak</i>	marsh dayflower	Emerging	Herb	No
<i>Myosoton aquaticum</i>	giant chickweed	Emerging	Herb	No
<i>Myriophyllum aquaticum</i>	parrotfeather	Emerging	Herb	Yes
<i>Myriophyllum spicatum</i>	Eurasian water-milfoil	Widespread	Herb	Yes
<i>Najas minor</i>	brittleleaf maid	Emerging	Herb	No
<i>Nasturtium officinale</i>	watercress	Widespread	Herb	Yes
<i>Nitellopsis obtusa</i>	starry stonewort	Emerging	Herb	No
<i>Nymphaoides peltata</i>	yellow floating heart	Emerging	Herb	Yes
<i>Oplismenus undulatifolius</i>	wavyleaf basketgrass	Emerging	Herb	No
<i>Phalaris arundinacea</i>	reed canarygrass	Widespread	Herb	No
<i>Phalaris canariensis</i>	canarygrass	Emerging	Herb	No
<i>Phragmites australis</i>	common reed	Widespread	Herb	No
<i>Pistia stratiotes</i>	water lettuce	Emerging	Herb	Yes
<i>Potamogeton crispus</i>	curly-leaved pondweed	Widespread	Herb	No
<i>Ranunculus lingua</i>	greater spearwort	Emerging	Herb	Yes
<i>Reynoutria japonica</i>	Japanese knotweed	Widespread	Herb	Yes
<i>Reynoutria sachalinensis</i>	giant knotweed	Widespread	Herb	Yes
<i>Reynoutria x bohemica</i>	Bohemian knotweed	Widespread	Herb	Yes
<i>Salvia glutinosa</i>	sticky sage	Emerging	Herb	Yes
<i>Salvinia minima</i>	common salvinia	Emerging	Herb	Yes
<i>Salvinia molesta</i>	giant salvinia	Emerging	Herb	Yes
<i>Stratiotes aloides</i>	water soldier	Emerging	Herb	Yes
<i>Tanacetum vulgare</i>	common tansy	Emerging	Herb	Yes
<i>Trapa natans</i>	European water chestnut	Widespread	Herb	No



New Jersey Invasive Species Strike Team - 2024 WATCH LIST

Scientific Name	Common Name	Invasive Status	Plant Type	Sold for Planting
Achyranthes japonica	Japanese chaff flower	Uncertain	Herb	Yes
Aegopodium podagraria	goutweed	Uncertain	Herb	Yes
Agastache rugosa	Korean Hyssop	Uncertain	Herb	Yes
Aldrovanda vesiculosa	water wheel plant	Uncertain	Herb	No
Ambrosia psilostachya	perennial ragweed	Uncertain	Herb	No
Artemisia stelleriana	oldwoman	Uncertain	Herb	Yes
Arum italicum	Italian arum	Uncertain	Herb	Yes
Arundo donax	giant reed	Uncertain	Herb	Yes
Belamcanda chinensis	blackberry lily	Uncertain	Herb	Yes
Berberis julianae	wintergreen barberry	Uncertain	Shrub	Yes
Butomus umbellatus	Flowering Rush	Uncertain	Herb	Yes
Carex flacca	blue-green sedge	Uncertain	Herb	Yes
Cenchrus purpureus	black fountain grass	Uncertain	Herb	Yes
Cenchrus setaceus	black fountain grass	Uncertain	Herb	Yes
Cyperus difformis	variable flatsedge	Uncertain	Herb	No
Cytomium falcatum	Japanese net-veined holly fern	Uncertain	Herb	Yes
Deutzia scabra	fuzzy pride-of-Rochester	Uncertain	Shrub	Yes
Elaeagnus pungens	thorny elaeagnus	Uncertain	Shrub	Yes
Eisholtzia ciliata	Vietnamese Balm	Uncertain	Herb	No
Eriochloa villosa	hairy cup-grass	Uncertain	Herb	No
Euonymus europaeus	European spindle tree	Uncertain	Shrub	Yes
Fallopia baldschuanica	Chinese fleecflower	Uncertain	Vine	Yes
Fatoua villosa	hairy crabweed	Uncertain	Herb	No
Hippophae rhamnoides	seaberry	Uncertain	Shrub	Yes
Hosta ventricosa	blue plantain lily	Uncertain	Herb	Yes
Houttuynia cordata	chameleon-plant	Uncertain	Herb	Yes
Hyacinthoides hispanica	Hispanic hyacinthoides	Uncertain	Herb	Yes
Hydrangea paniculata	panicled hydrangea	Uncertain	Shrub	Yes
Kalopanax septemlobus	castor aralia	Uncertain	Tree	Yes
Kochia scoparia	bassia scoparia	Uncertain	Herb	No
Koeleruteria elegans	golden raintree	Uncertain	Tree	Yes
Kolkwitzia amabilis	beautybush	Uncertain	Shrub	Yes
Lamium galeobdolon	yellow archangel	Uncertain	Herb	Yes
Leucocjum aestivum	snowbell	Uncertain	Herb	Yes
Ligustrum amurense	amur privet	Uncertain	Shrub	Yes
Ligustrum ovalifolium	California privet	Uncertain	Shrub	Yes
Lonicera fragrantissima	sweet breath of spring	Uncertain	Shrub	Yes
Magnolia kobus	Kobus magnolia	Uncertain	Tree	Yes
Morus australis	Chinese mulberry	Uncertain	Tree	Yes
Oenanthe javanica	Java dropwort	Uncertain	Herb	Yes
Osmanthus heterophyllus	holly osmanthus	Uncertain	Shrub	Yes
Pachysandra terminalis	Japanese pachysandra	Uncertain	Herb	Yes
Perilla frutescens	beefsteakplant	Uncertain	Herb	Yes
Persicaria filiformis	Asian jumpseed	Uncertain	Herb	No
Persicaria orientalis	kiss me over the garden gate	Uncertain	Herb	Yes
Pulmonaria officinalis	lungwort	Uncertain	Herb	Yes
Pyrus betulifolia	birchleaf pear	Uncertain	Tree	Yes
Ranunculus repens	creeping buttercup	Uncertain	Herb	Yes
Ribes rubrum	garden red current	Uncertain	Shrub	Yes
Rosa canina	dog rose	Uncertain	Shrub	Yes
Rosa luciae	memorial rose	Uncertain	Shrub	Yes
Rubus armeniacus	Himalaya blackberry	Uncertain	Shrub	Yes
Rubus parvifolius	Western thimbleberry	Uncertain	Shrub	Yes
Saccharum ravennae	hardy pampas grass	Uncertain	Herb	Yes
Salix matsudana	Chinese willow	Uncertain	Tree	Yes
Salsola tragus	tumbleweed	Uncertain	Herb	No
Scilla siberica	squill	Uncertain	Herb	Yes
Silene flos-cuculi	ragged robin	Uncertain	Herb	Yes
Styrax japonicus	Japanese snowbell	Uncertain	Shrub	Yes
Syringa reticulata	Japanese tree lilac	Uncertain	Tree	Yes
Tamarix ramosissima	saltcedar	Uncertain	Shrub	No
Ulmus parvifolia	Chinese elm	Uncertain	Tree	Yes
Ulmus procera	English elm	Uncertain	Tree	Yes
Ulmus pumila	Siberian elm	Uncertain	Tree	Yes
Viburnum opulus	Guelder-rose	Uncertain	Shrub	Yes

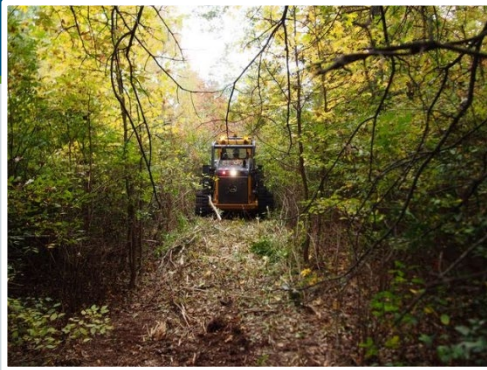


Volunteer Stewardship Teams

- Friends of Great Swamp
- Watchung Reservation Invasive Plant (WRIP) Strike Force
- Ridgeview Woods
- Foote's Pond
- And over 20 more!

“The lesson I take from more than a decade of volunteer and professional land stewardship is that remarkable progress is the predictable result of steady, low-technology land management.”

- Jennifer Hillmer, Land Steward



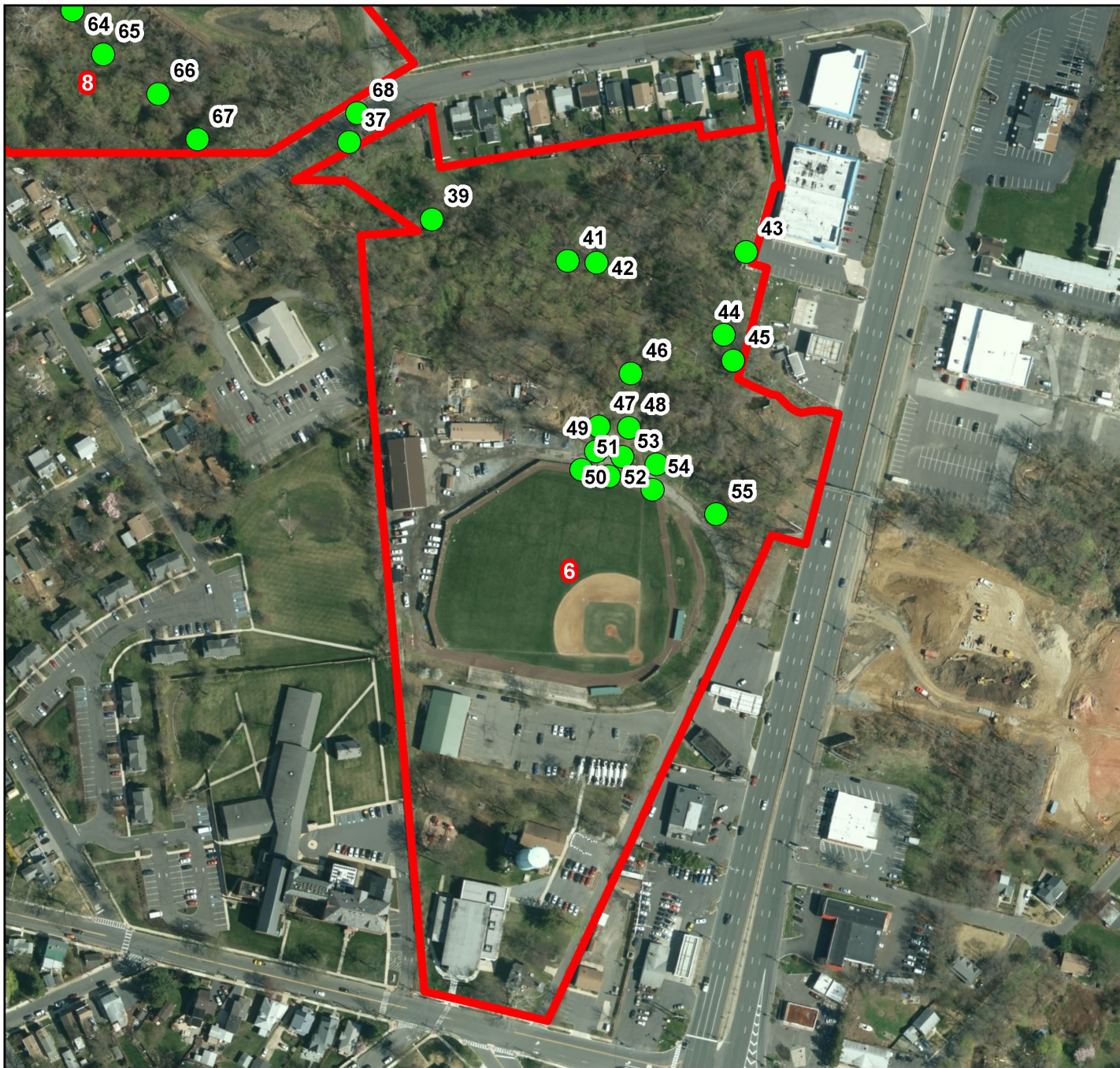
Volunteer Stewardship Teams Secrets to Success



- > Good communication with landowner
- > Core of 1-3 group leaders and a pool of at least 10-15 available volunteers
- > Predictable workdays (e.g., every other Saturday from 9am-Noon) allowing a larger volunteer pool to plug into efforts as their time allows.
- > Create and follow a concise long-term plan with annual work plans that identify digestible tasks that can be ‘checked off’
- > Include the fun stuff too! Invasive control alone is much less rewarding without some planting of native trees, shrubs, and wildflowers.
- > Lean on each other’s expertise!

Site 6. Gilder Memorial Park - Stewardship Summary

Goal	Relative Priority	Description	Volunteers	Public Works	Contractors
1	Very High	Implement an effective Deer Management Plan to allow native species to better compete with invasive species	X - Municipal officials and Environmental Commission		
2	Very High	Eradicate Chinese Yam, Mimosa, Japanese Hops, Callery Pear, Siebold's Crabapple, -- then Japanese Holly, Japanese Knotweed,			X - Herbicide treatments
3	High	Control of Porcelain-berry, Wintercreeper, English Ivy, Japanese Clematis, -- then Border Privet, Mugwort, Multiflora Rose, Wineberry, Amur Honeysuckle, Black Locust, Norway Maple, Japanese Honeysuckle	X - Cut vines out of trees and forest edges		X - Herbicide treatments
4	Moderate	Watch for new establishment and treat as necessary for highly threatening species including Linden Viburnum, Siebold's Viburnum, Oriental Photinia, European Buckthorn, and Japanese Aralia	X - Searching		X - Herbicide treatments as detected



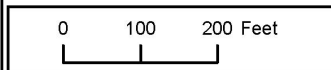
**Bordentown City
Invasive Species
Evaluation**

2021

See Table "Selected
Invasive Species Points"
for point ID key

Legend

- Selected Invasive Points
- Bordentown Properties



If using herbicide, how to do it correctly?

- Option: Municipal staff as NJDEP “Certified Applicator” and volunteer as “Certified Operator”
 - Applicator takes class and two tests
 - Operator takes class and receives training from Applicator
- A volunteer Certified Operator can work without direct supervision
- Non-certified volunteer can work under direct supervision of a “Certified Applicator”, but not under a “Certified Operator”

Recommended Mix Percentages

Percentages (volume/volume)													
General Application Method	NJISST Method ID	Glyphosate ¹	Triclopyr amine ²	Triclopyr ester ³	Clopyralid ⁴	Aminopyralid ⁵	2,4-D ⁶	Prodiamine ⁷	Quizalofop ⁸	Surfactant ⁹	Dye ¹⁰	Water	Oil-based Diluent ¹¹
Foliar Spray	FS-1 - 'General Mix A'	3.75	2.50	--	--	--	--	--	--	0.50	Blue	93	--
Foliar Spray	FS-2 - 'General Mix B'	3.00	--	--	--	--	--	--	--	0.50	Blue	97	--
Foliar Spray	FS-3 - 'General Mix C'	5.00	--	--	--	--	--	--	--	0.50	Blue	95	--
Foliar Spray	FS-4 - 'Broadleaf Mix A'	--	2.50	--	--	--	--	--	--	0.50	Blue	97	--
Foliar Spray	FS-5 - 'Broadleaf Mix B'	--	--	1.70	--	--	2.70	--	--	0.50	Blue	95	--
Foliar Spray	FS-6 - 'Tough Aster Mix A'	--	--	--	0.63	--	--	--	--	0.50	Blue	99	--
Foliar Spray	FS-7 - 'Tough Aster Mix B'	--	--	--	--	0.27	--	--	--	0.50	Blue	99	--
Foliar Spray	FS-8 - 'Grass Mix A'	--	--	--	--	--	--	--	0.38	0.50	Blue	99	--
Basal Bark	BB-1	--	--	25	--	--	--	--	--	--	Red	--	75
Cut Stump	CS-1	50	--	--	--	--	--	--	--	--	Blue	50	--
Cut Stump	CS-2	--	50	--	--	--	--	--	--	--	Blue	50	--
Cut Stump	CS-3	--	--	25	--	--	--	--	--	--	Red	--	75
Hack-and-Squirt	HS-1	50	--	--	--	--	--	--	--	--	Blue	50	--
Hack-and-Squirt	HS-2	--	50	--	--	--	--	--	--	--	Blue	50	--
Hack-and-Squirt	HS-3	--	--	25	--	--	--	--	--	--	Red	--	--
Pre-Emergent	PE-1	--	--	--	--	--	--	*	--	--	*	*	--



Proposed Legislation!

- Senate, No. 2186 – Greenstein and Smith
 - Prohibits sale of 30 invasive plants and re-establishes NJ Invasive Species Council
- Support from NJ Forest Task Force, NJ Nursery and Landscape Association, NJ Farm Bureau, NJ State Board of Agriculture
- Key Proposed Amendments
 - Include all taxa
 - Phase out period: 1 year to stop propagation, 4 years to stop sales
 - Allow sale of proven non-invasive cultivars of listed species (e.g., Japanese Barberry)
 - Additional species listing utilizing existing species evaluations from neighboring states and regional lists
 - Listing mechanism? Funding? Timeline?

Regulated Plant Species List

Norway maple (*Acer platanoides*)
tree of heaven (*Ailanthus altissima*)
mimosa or silk tree (*Albizia julibrissin*)
porcelain berry (*Ampelopsis glandulosa* var. *brevipedunculata*)
Japanese angelica tree (*Aralia elata*)
Japanese barberry (*Berberis thunbergii*)
Japanese clematis (*Clematis terniflora*)
autumn olive (*Elaeagnus umbellata*)
weeping lovegrass (*Eragrostis curvula*)
winged burning bush (*Euonymus alatus*)
English ivy (*Hedera helix*)
Japanese hop (*Humulus japonicas*)
sericea lespedeza (*Lespedeza cuneate*)
European privet (*Ligustrum vulgare*)
Amur honeysuckle (*Lonicera maackii*)
Morrow's honeysuckle (*Lonicera morrowii*)
purple loosestrife (*Lythrum salicaria*)
Japanese crabapple (*Malus toringo*)
Chinese silvergrass (*Miscanthus sinensis*)
Eurasian water-milfoil (*Myriophyllum spicatum*)
Oriental photinia (*Photinia villosa*)
Running Bamboo species (*Phyllostachys* spp.)
Callery or Bradford pear (*Pyrus calleryana*)
common buckthorn (*Rhamnus cathartica*)
jetbead (*Rhodotypos scandens*)
multiflora rose (*Rosa multiflora*)
European water chestnut (*Trapa natans*)
Siebold's arrowwood (*Viburnum sieboldii*)
Japanese wisteria (*Wisteria floribunda*)
Chinese wisteria (*Wisteria sinensis*)

Q & A

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Plants and Birds of Healthy Forests



Clockwise from top left: mountain laurel, witch-hazel, maple-leaved viburnum



Clockwise from top left: blackburnian warbler, black-throated blue warbler, chestnut-sided warbler, ovenbird

