

Project Goal: To develop a suite of specific environmental indicators that can be used to:

1. Describe Bay and watershed conditions in an easily understood format to use in communication with the public;
2. Ensure accountability and track progress in achieving environmental and management goals set forth in the integrated plan for the Narragansett Bay region;
3. Provide a basis for refining environmental monitoring strategies to ensure information needed for sustainable management of the Bay and its watershed is available.

Goals for this workshop:

1. Develop consensus around communicating **invasive species** to the public in April 2012
2. Identify monitoring and research priorities for advancing an indicator of invasive species in the Narragansett Bay watershed

Background. The invasive metric was included in the first year of Watershed Counts. At the December 2010 workshop, David Gregg presented a draft metric. The participants were concerned that the draft metric mixed presence of invasives with management. After the meeting, the RINHS decided to rethink the metric and distinguish on the ground impacts from management response.

Criteria for indicator or metric species

1. Be a species (or genus or family for unclassified organisms)
2. Be an invasive species. Executive Order 13112, approved by the Invasive Species Advisory Council (ISAC) in 2006, defines an *invasive species* as “**an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.**” The National Invasive Species Management Plan further clarifies invasive species as “**a species that is non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.**” Species that become invasive have the ability to survive a multi-step process of arrival, establishment and dispersal and establishment. They have the biological potential for dispersing over spatial gaps, existing in high numbers away from intensively managed habitats, be widespread in RI or at least common in a region or habitat type. They have numerous individuals in any one population; have the potential for rapid reproduction and establishment in natural communities.
3. Have potential to change in distribution, prevalence, impact or manageability over time
4. Have a significant impact
5. Has a reasonable chance of occurring in RI

Q&A. How were lists created? Who is making the determination? Scientists looked at species present in the state and those that are known in neighboring states. Understanding of what is “invasive” is

influenced by studies in neighboring areas. It is also influenced by the power of stakeholders who are concerned about certain species.

Example species that illustrate the differences among invasives

Hydrilla. Aquatic FW plant.

Environmental impact – threat to fisheries. Decreases DO, impacts macroinvertebrate populations.

Health – stagnant water becomes breeding ground for mosquitoes. Really a problem in southern states like Florida. Also substrate for cyanobacteria that has impacted bald eagles in other areas.

Economic – management, clogging inflow pipes, restricting travel in waterways

Prevalence – in ME, MA and CT. MA spends \$40,000 per year on one pond since 2002 to eradicate hydrilla. On the Potomac spend \$ 1200 per acre to clear boat lanes.

Vectors – aquarium trade and boats and birds. (not as explosive in NE as it is in the south, but as climate warms, may be more of a problem here)

Not currently present in RI, but present in Mystic CT and Cape Cod.

Example of an early detection species. Could be used to develop early detection and rapid response plan.

Eichornia crassipes, water hyacinth

Similar environmental impacts as hydrilla. Decaying leaves impact DO, surface mats shade bottom.

Health – leaves and roots are efficient absorbers of heavy metals.

Economic – rapid growth in south. Clogs intakes and spillways.

Vectors – aquarium trade, water garden trade. Seems to be put in waterbodies because people think it will improve fishing.

Only in RI on a seasonal basis. Reported to be able to survive mild freezes. Might be helpful to track re climate change.

Polygonum cuspidatum, Japanese knotweed

Mortgage lenders claim Japanese knotweed reduces the value of property. Mortgages have been refused in Europe based on presence of knotweed.

Environmental impacts – rapidly growing, threat to habitats along roadways, rivers, salt marshes.

Outcompetes native plants, reduces microorganism diversity in soil, increases erosion potential because it kills everything else then goes dormant in winter creating a layer of litter on top of soil which water can flow under.

Present in Narrow River on edges of salt marsh – in 3 different locations. (Just identified last year).

Economic impact – state highway crews spend time and money removing knotweed. State uses mowing and herbicide application, although not effective (and mowing serves as vector for spread).

Widespread in RI. Present in Allens Cove in Barrington.

Berberis thunbergii, Japanese barberry

Grows densely in forests, covers forest floor.

Health – ticks thrive where floor is covered. Also provides good cover for mice and voles that carry ticks.

Vector – mainly animals. Fruits eaten by small mammals and bird and spread. Also used as an ornamental. Most wide spread in areas of the state that were developed in 80s and 90s where barberry

was used in landscaping trade. It is scarce in Narragansett in the Chafee preserve, perhaps because the development was earlier (70s).

Banned in MA but not CT.

Relatively easy to control. Control efforts in place and could track success. Present at Trustom Pond, Potters Pond (old plants).

Berberis vulgaris, common barberry

In 1918, there was an effort to eradicate common barberry because it hosts the wheat rust.

It is present in landscape and is increasing. It also hybridizes with Japanese barberry. It has less environmental impact because it grows upright and doesn't cover forest floor and provide good habitat for ticks, but hybrids often do. Common barberry is also dispersed by mammals eating seeds.

Econ impact. Wheat rust and new variety of wheat stem rust also appearing and of concern. Wheat stem rust continues to change genetically on host barberry.

RI does not produce wheat, so many not be of concern, but wheat is used as cover crop. It is also of concern because of impacts on the rest of the country.

Zebra mussel (*Dreissena polymorpha*)

Poster child for invasives, widely known, primarily freshwater and brackish waters.

Has potential for change over time if introduced to RI.

Has economic impacts in waters where it is found.

Is there a reasonable chance of occurrence in RI? Yes, but is it likely? Zebra mussels have specific water quality requirements – including needing Calcium for shell production. Range from 8 – 40 mg/l. RIDEM risk analysis looked at 12 mg/l as a Calcium threshold and used Watershed Watch data to assess what RI waters are susceptible. RIDEM only identified a small number of waterbodies at risk (Brickyard Pond, Barrington only one at high risk). Also looked at growth based on mean hardness and mean pH and only found 2 waterbodies that would support good growth. Zebra mussels are currently in western CT and western MA. It may be good species to look at for management because risk analysis has identified waterbodies for education and outreach.

Discussion of possible invasives

The group considered the list of species brought forward by RINHS (and listed in the memo attached to this report) and placed them into the following matrix:

FRESHWATER SPECIES

<p>Does not occur but could: Zebra mussel Chinese mitten crab Hydrilla</p>	<p>Limited : Asiatic clam Water Hyacinth Parrot feather Eurasian water nymph Rusty crayfish</p>
<p>Somewhat widely distributed Water chestnut</p>	<p>Widely distributed/under management Fanwort Purple loosestrife Variable milfoil phragmites</p>

More information needed: snakehead, didymo, Chinese mystery snail, New Zealand mud snail, swan, Canada goose

Species by species discussion:

Latin Name	Epithet		Discussion
Fresh Water			
<i>Cabomba caroliniana</i>	fanwort		Ubiquitous but under management
<i>Carassius auratus</i>	goldfish/black salty		Pass. We have RI regulations to address
<i>Channa sp.</i>	snakehead fish		Not in RI. In MA (couple of ponds). Education (TU)
<i>Corbicula fluminea</i>	Asiatic clam		Easy to ID. Limited occurrence
<i>Didymosphenia geminata</i>	didymo, rock snot		Likes high quality, clean water, cold. It is not in RI although it is listed in Marilyn Harlan's book
<i>Dreissena sp. (polymorpha & others)</i>	zebra (& quagga) mussel		We have good information on the risks and the places where we can look for it.
<i>Egeria densa</i>	Brazilian waterweed		It is hard to distinguish from hydrilla. It is on the pet owner brochure because it is sold for aquariums
<i>Eichhorcia crassipes</i>	water hyacinth		Dies off in winter. Problematic in CT and MA ponds
<i>Hydrilla verticillata</i>	hydrilla		NEANS priority
<i>Hydrocharis morsus-ranae</i>	European frog-bit		pass
	Chinese mitten crab		In Hudson, not RI. Early detection is important. It is used in the Asian live food trade
	Mud mat		In RI, hard to monitor. pass
<i>Hypophthalmichthys sp.</i>	Asian carp		Not east of Mississippi. pass
	European carp		Not well studied/monitored. Occurs somewhat widely. pass
<i>Iris pseudacorus</i>	yellow iris		
<i>Lythrum salicaria</i>	purple loosestrife		Widely found, under management

	<i>Myosotis scorpiodes</i>	forget-me-not		Not problematic
	<i>Myriophyllum aquaticum</i>	parrot feather		In 1 pond in Johnston, under management, in aquarium and water garden
	<i>Myriophyllum heterophyllum</i>	variable milfoil		Widely distributed. Working on management. The management goal is to reduce impacts
	<i>Myriophyllum spicatum</i>	Eurasian watermilfoil		skip
	<i>Najas minor</i>	European water-nymph		Limited dist. It is in MA and is tracking along the MA turnpike
		American water lotus		In 3 spots including NK water garden
	<i>Nymphoides peltata</i>	yellow floating heart		In 2 spots. skip
	<i>Orconectes rusticus</i>	rusty crayfish		DEM fisheries is monitoring
	<i>Phragmites australis</i>	common reed		Has been dealt with in coastal restoration. Has water quality value at stormwater outfalls. With climate change may have value. It is a concern in Taunton and Palmer. Not a clear consensus on management strategy
		Reed canary grass		Limited but present. No management interest
	<i>Potamogeton crispus</i>	curly pondweed		Found. Some management. Like Eurasian milfoil
	<i>Rorippa nasturtium-aquaticum</i>	watercress		Moves. It is a problem in the West River (trib to Blackstone)
	<i>Trapa natans</i>	water chestnut		Have hope for management
	<i>Utricularia inflata</i>	inflated bladderwort		Difficult to identify except when flowering. Sporadic problem
		Mute swan		Species is charismatic. Not a good one to start with for communication about invasives
		Canada geese		Species is charismatic. Not a good one to start with for communication about invasives
	<i>Viviparus malleatus</i>	Chinese mystery snail		

TERRESTRIAL SPECIES

Does not occur but could: Asian longhorn beetle	Limited : Aisatic sand sedge
Somewhat widely distributed Garlic mustard	Widely distributed/under management barberry

Detailed discussion:

Terrestrial				
	<i>Achatina sp.</i>	African giant snails		skip
	<i>Adelges tsugae</i>	hemlock woolly adelgid		skip
	<i>Agrilus planipennis</i>	emerald ash borer		skip
	<i>Alliaria petiolata</i>	garlic mustard		RI distribution in E Bay. Now found in W Bay and moving inland. Found in MA. Simple

			protocol to manage.
<i>Ampelopsis brevipedunculata</i>	porcelain berry		Coastal in RI. Also inland. Hard to get rid of.
<i>Anoplophora glabripennis</i>	Asian longhorn beetle		Poster child. WC should include video on tracking on web site.
<i>Berberis thunbergii & vulgaris</i>	Japanese & common barberry		
	Devils walking stick		Tricky to differentiate the native from non-native. Useful for amateur naturalist monitoring.
<i>Carex kobomugi</i>	Asiatic sand-sedge		In Middletown, E Beach, controls are in place
<i>Celastrus orbiculatus</i>	Asiatic bittersweet		Everywhere. Unlikely to change
<i>Centaurea sp.</i>	knapweed species		E Bay, pasture week. Looking into biocontrol
	Scotch broom		Thrives in certain habitats. Very popular in nursery industry
	Spotted wing drosophila		Agricultural pest. We need to examine the economic impacts for ag pests.
<i>Elaeagnus umbellata</i>	autumn olive		
<i>Euonymus alatus</i>	burning bush		

(this is as far as we were able to get in the list)

Next Steps:

RINHS will examine these findings and recommend next steps.

Attendees

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DATE: 01 December 2011
 TO: Rhode Island invasive species leaders
 FROM: David Gregg, Rhode Island Natural History Survey
 RE: Watershed Counts Invasive Species Indicator

I'm writing to you as part of the Survey's commitment to develop the Watershed Counts invasive species indicator that many of us were involved in starting a year ago. The purpose of this communication is to solicit your input into the next cycle of what is intended to be an iterative, cumulative process of indicator development. Your contributions at this point will be incorporated into material circulated to a larger group of stakeholders later this month. Responses to that cycle will in turn be incorporated into the indicator as we move towards another Watershed Counts public event in April, similar to the one held last year. Hopefully we will be creating an indicator that will resonate with the public while constructively guiding all the diverse work being done at our organizations, agencies, and elsewhere.

Discussions since summer with some of you have encouraged me to pursue a double-barreled indicator that will reflect on the one hand empirical information on the status of invasives and their impact on resources, and on the other Rhode Island's collective management capacity and response to deal with the invasives issue. At this point we will pursue each side of the metric using course, relative scales applied to each species in a relatively small basket of invasive species. For practical reasons and because risk and response differ so greatly between different types of invasives, the basket of indicator species will be further broken down into three separate lists based on primary habitat: a) freshwater, b) saltwater, and c) terrestrial species.

Thus:

risk/impact	Fresh Water	Salt Water	Terrestrial
preparedness/response	Fresh Water	Salt Water	Terrestrial

While we will develop all three categories of indicator together, to maximize our chances of success, we will focus our effort initially on the fresh water species, an area that has recently been the focus of considerable resources by RIDEM, URIWW, and RINHS, among others, and that has promising avenues for practical management improvements.

Before we select a dozen or so indicator species for each category, I'd like us to "nominate" as many prospective indicator species as possible. By beginning with a large list, we won't forget any obvious species. Also, because we each tend to work on our own issues, we may not have a good feel for the species that most worry others. I've started the nomination list and attached an Excel table that lists invasives species broken down by habitat category. Please review this list and add species you think should be nominated. Because we're trying to start with as big a list as possible and not to prejudge species in others' areas of expertise, please don't spend too

much time at this point arguing for or against particular species (but do take notes for yourself on that question for later discussions). My starter list was made up from readily available sources (listed below) using pretty general criteria (also listed below).

NOMINEE SOURCES CONSIDERED

To prime the pump, I looked at the following sources and either included all their species or selected species using the criteria:

1. RIISC invasive plant list
2. Mass. list of banned plants
3. RINHS/URIWW/RIDEM freshwater invasives training handbook
4. IPANE invasive plant list
5. Cooperative Agricultural Pest Survey (CAPS) 2011 list
6. Northeast Integrated Pest Management Working Group list of species of concern
7. NBNERR marine invasives website

Obviously there are many additional sources that could be checked and an almost infinite number of species that COULD go on the list, but the goal here is to end up with a small selection of species for which regular monitoring and reporting will give a good picture of the status and trends of invasive species generally.

NOMINATION CRITERIA

The criteria for nomination are pretty indistinct at this point, but a good nominee should:

1. be a species (or genus or family for unclassified or cryptic organisms...i.e. distinguishable as a unique taxon using objective criteria);
2. be an invasive species (Last December we agreed to use a pretty basic definition: “a species living and multiplying without intentional human intervention outside its native range to the detriment of native species or natural communities.”);
3. have potential to change in distribution, prevalence, impact, or manageability over time (there’s no point in making something an indicator species if there’s little or no chance its status will change...if it is already ubiquitous or if there’s no reasonable method of management);
4. have an impact or potential impact that’s pretty significant to someone or some constituency (not much point in indicator species that no one cares about, conversely indicator species with lots of economic, environmental, or recreational impact will ensure our work gets lots of attention);
5. has a reasonable chance of occurring in Rhode Island (...is in commerce, occurs in areas where Narr. Bay bound-shipping originates, etc....not much point in putting stuff on the list that can’t survive in Rhode Island even given some climate change)

NEXT STEPS

Later in December, I will use an internet poll to query a larger number of stakeholders about the nominees. I will also solicit ideas for the indicator scales.

Invasive Indicator Workshop morning of January 12, location and exact time TBD: It is important to refine the invasive species indicator through a process that reinforces the cooperative way invasive species preparedness has been handled in Rhode Island in recent years. In that vein, once we get more feedback from you and the larger stakeholder survey we will hold a workshop in the morning of Thursday January 12, with an agenda that includes:

1. finalize the basket of indicator species from the nominee species
2. agree on indicator scales
3. decide on the process for generating the indicator for the 2012 report
4. delegate the work

In discussing this project for the last year, I've been hopeful it would present an opportunity to revive the Rhode Island Invasive Species Council (RIISC). For this workshop, then, our group will adopt/re-claim the mantle of the Rhode Island Invasive Species Council (RIISC). For several years in the early 2000's this was a designation used by a group of self-identifying invasive species stakeholders that met voluntarily under the chairmanship of the RINHS Executive Director Lisa Gould. At that time it was supported financially by the URI Agricultural Research Station but funding disappeared when Lisa retired in 2007 and the RIISC has been dormant ever since. By "reactivating" the RIISC, even without specific funding for the purpose, we will give our group a convenient name or "handle." I hope it will also enhance the profile of our work by association with past good work and by using a name that is analogous to important functions in other states. Finally, I hope that re-starting the RIISC will help attract financial support that invasive species preparedness deserves. The January meeting will be billed as a meeting of the RIISC, however please remember this is a self-identifying group with no "official" mandate or responsibilities at this time outside the context of the indicator project. There is no process by which anyone is "appointed" to it so if you're interested, save that date.

If you have questions, want to provide feedback, or want to talk about any part of this project, please don't hesitate to contact me: David Gregg, RINHS, PO Box 1858, dgregg@rinhs.org, 401-874-5800.

FULL DISCLOSURE

RINHS's work on invasive species management is paid for by RINHS general mission funds, by a grant from the Rhode Island Conservation Stewardship Collaborative Endowment at the Rhode Island Foundation, and by funds made available through cooperative agreements or memoranda of understanding with the Narragansett Bay Estuary Program (USEPA), US Fish & Wildlife Service Coastal Program, and the Coastal Resources Management Council (NEANS)

	Latin Name	Epithet			Primary Habitat	Habitat Modifier	Form
	Fresh Water						
	<i>Cabomba caroliniana</i>	fanwort			Fresh Water		Plant
	<i>Carassius auratus</i>	goldfish/black salty			Fresh Water	brackish	Animal
	<i>Channa sp.</i>	snakehead fish			Fresh Water	brackish	Animal
	<i>Corbicula fluminea</i>	Asiatic clam			Fresh Water		Animal
	<i>Didymosphenia geminata</i>	didymo, rock snot			Fresh Water		Plant
	<i>Dreissena sp. (polymorpha & others)</i>	zebra (& quagga) mussel			Fresh Water		Animal
	<i>Egeria densa</i>	Brazilian waterweed			Fresh Water		Plant
	<i>Eichhoria crassipes</i>	water hyacinth			Fresh Water		Plant
	<i>Hydrilla verticillata</i>	hydrilla			Fresh Water		Plant
	<i>Hydrocharis morsus-ranae</i>	European frog-bit			Fresh Water		Plant
	<i>Hypophthalmichthys sp.</i>	Asian carp			Fresh Water		Animal
	<i>Iris pseudacorus</i>	yellow iris			Fresh Water	emergant	Plant
	<i>Lythrum salicaria</i>	purple loosestrife			Fresh Water	emergant	Plant
	<i>Myosotis scorpiodes</i>	forget-me-not			Fresh Water	emergant	Plant
	<i>Myriophyllum aquaticum</i>	parrot feather			Fresh Water		Plant
	<i>Myriophyllum heterophyllum</i>	variable milfoil			Fresh Water		Plant
	<i>Myriophyllum spicatum</i>	Eurasian watermilfoil			Fresh Water		Plant
	<i>Najas minor</i>	European water-nymph			Fresh Water		Plant
	<i>Nymphoides peltata</i>	yellow floating heart			Fresh Water		Plant
	<i>Orconectes rusticus</i>	rusty crayfish			Fresh Water		Animal
	<i>Phragmites australis</i>	common reed			Fresh Water	emergant	Plant
	<i>Potamegaton crispus</i>	curly pondweed			Fresh Water		Plant
	<i>Rorippa nasturtium-aquaticum</i>	watercress			Fresh Water		Plant
	<i>Trapa natans</i>	water chestnut			Fresh Water		Plant
	<i>Utricularia inflata</i>	inflated bladderwort			Fresh Water		Plant
	<i>Viviparus malleatus</i>	Chinese mystery snail			Fresh Water		Animal
	Salt Water						
	<i>Asciidiella aspersa</i>	European sea squirt			Salt Water		Animal
	<i>Botrylloides violaceus</i>	sheath tunicate			Salt Water		Animal
	<i>Botryllus schlosseri</i>	star tunicate			Salt Water		Animal
	<i>Caulerpa taxifolia</i>	caulerpa			Salt Water		Plant
	<i>Crassostrea gigas</i>	Pacific oyster			Salt Water		Animal
	<i>Didemnum vexillum</i>	tunicate/sea-squirt			Salt Water		Animal
	<i>Diplosoma listerianum</i>	compound sea squirt			Salt Water		Animal

	<i>Eriocheir sinensis</i>	Chinese mitten crab		Salt Water	brackish	Animal
	<i>Grateloupia turuturu</i>	red algae		Salt Water		Plant
	<i>Haplosporidium sp.</i>	SSO, MSX, oyster protozoan		Salt Water		Pathogen
	<i>Hemigrapsus sanguineus</i> or <i>H. takanoi</i>	Asian & brush-clawed shore crabs		Salt Water		Animal
	<i>Membranipora membranacea</i>	lace or crust bryozoan		Salt Water		Animal
	<i>Perkinsus marinus</i>	dermo		Salt Water		Pathogen
	<i>Poryphyra yezoensis</i>	nori		Salt Water		Plant
	<i>Pterois volitans</i>	lionfish		Salt Water		Animal
	<i>Rapana venosa</i>	veined or Asian rapa whelk		Salt Water		Animal
	<i>Roseovarius crassostreae</i>	juvenile oyster disease		Salt Water		Pathogen
	<i>Styela clava</i>	club tunicate, Asian sea squirt		Salt Water		Animal
	<i>Synidotea laevidorsalis</i>	Asian isopod		Salt Water		Animal
	unknown	QPX, quahog parasite		Salt Water		Pathogen
	Terrestrial					
	<i>Achatina sp.</i>	African giant snails		Terrestrial		Animal
	<i>Adelges tsugae</i>	hemlock woolly adelgid		Terrestrial		Animal
	<i>Agrilus planipennis</i>	emerald ash borer		Terrestrial		Animal
	<i>Alliaria petiolata</i>	garlic mustard		Terrestrial		Plant
	<i>Ampelopsis brevipedunculata</i>	porcelain berry		Terrestrial		Plant
	<i>Anoplophora glabripennis</i>	Asian longhorn beetle		Terrestrial		Animal
	<i>Berberis thunbergii</i> & <i>vulgaris</i>	Japanese & common barberry		Terrestrial		Plant
	<i>Carex kobomugi</i>	Asiatic sand-sedge		Terrestrial	beaches	Plant
	<i>Celastrus orbiculatus</i>	Asiantic bittersweet		Terrestrial		Plant
	<i>Centaurea sp.</i>	knapweed species		Terrestrial		Plant
	<i>Elaeagnus umbellata</i>	autumn olive		Terrestrial		Plant
	<i>Euonymus alatus</i>	burning bush		Terrestrial		Plant
	<i>Euonymus fortunei</i>	climbing euonymus		Terrestrial		Plant
	<i>Exomala orientalis</i>	oriental beetle		Terrestrial		Animal
	<i>Fallopia japonica</i> & <i>F. j. x s.</i>	Japanese knotweed & hybrid		Terrestrial		Plant
	<i>Halyomorpha halys</i>	brown marmorated stinkbug		Terrestrial		Animal
	<i>Heracleum mantegazzianum</i>	giant hogweed		Terrestrial		Plant
	<i>Lepidium latifolium</i>	perennial pepperweed		Terrestrial		Plant
	<i>Ligustrum sp.</i>	privet		Terrestrial		Plant
	<i>Lonicera japonica</i>	Japanese honeysuckle		Terrestrial		Plant
	<i>Lonicera sp.</i>	shrub honeysuckles		Terrestrial		Plant
	<i>Lymantria dispar</i>	gypsy moth		Terrestrial		Animal
	<i>Microstegium vimenium</i>	Japanese stiltgrass		Terrestrial		Plant

<i>Miscanthus sinensis</i>	eulalia			Terrestrial		Plant
<i>Operophtera brumata</i>	winter moth			Terrestrial		Animal
<i>Persicaria perfoliata</i>	mile-a-minute vine			Terrestrial		Plant
<i>Phellodendron sp.</i>	cork tree			Terrestrial		Plant
<i>Phytophthora ramorum</i>	sudden oak death			Terrestrial		Pathogen
<i>Pueraria montana var. lobata</i>	kudzu			Terrestrial		Plant
<i>Pyrrhalta viburni</i>	viburnum leaf beetle			Terrestrial		Animal
<i>Rhamnus frangula & catharica</i>	glossy & common buckthorn			Terrestrial		Plant
<i>Robinia pseudoacacia</i>	black locust			Terrestrial		Plant
<i>Rosa multiflora</i>	multiflora rose			Terrestrial		Plant
<i>Rubus phoenicolasius</i>	wineberry			Terrestrial		Plant
<i>Tetropium fuscum</i>	brown spruce longhorned beetle			Terrestrial		Animal
<i>Vinca minor</i>	periwinkle			Terrestrial		Plant
<i>Vincetoxicum nigrum & rossicum</i>	swallowwort, black & pale			Terrestrial		Plant