

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 mantel 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

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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
<i>unknown</i>	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