



Protecting the Great Lakes from the Internet Trade of Aquatic Invasive Species

Great Lakes Panel on Aquatic Nuisance Species Meeting

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Erika Jensen
Project Manager
Great Lakes Commission





Internet as a Pathway for AIS

What We Know

- Organisms in trade
 - Intentional and unintentional releases of live organisms that are bought and sold for use in aquariums, nurseries, water gardens, classrooms, aquaculture, as live bait, etc.
- Internet facilitates trade
- WWW is vast and changing
- Species of concern to Great Lakes region are being sold

What We Don't Know

- Who...
 - Is selling species we're concerned about?
- What...
 - Species are available for sale?
- Where...
 - Websites
 - Physical location
- How...
 - Many?
 - Are regulations/potential invasiveness communicated?



Project Objectives

- Develop and demonstrate software to assess the availability of invasive species via Internet sales
- Provide information and management tools
- Present information on the Internet marketplace, including risks and options for management

Funding: FY12 Great Lakes Restoration Initiative EPA grant

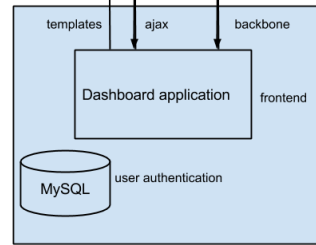
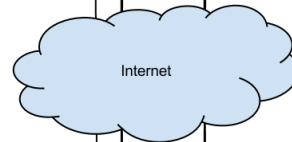


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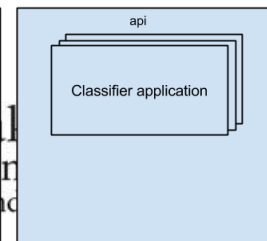
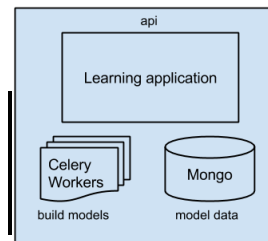
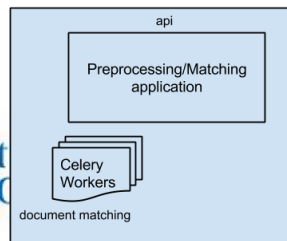
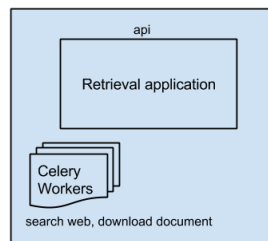
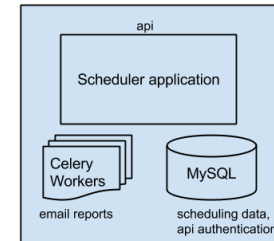
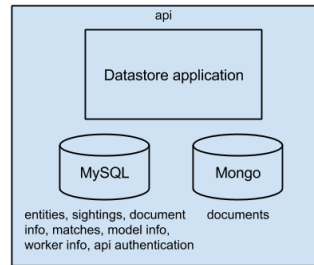
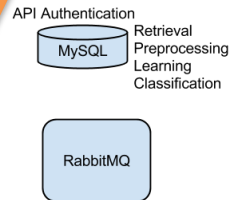
What the user sees



IS2DS viewed in user's browser



What the system does



Species Watch List

Regulated In:

- All Regulated
- FED
- IL
- IN

- + Algae
- + Amphibians
- + Annelids-Polychaetes
- + Bryozoans
- + Crustaceans-Amphipods
- + Crustaceans-Cladocerans
- + Crustaceans-Copepods
- + Crustaceans-Crabs
- + Crustaceans-Crayfish
- + Crustaceans-Mysids
- + Fishes
- + Mollusks-Bivalves

Expand All Collapse All

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Home Species Reports

Species Watch List

Regulated In:

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Expand All Collapse All

- Algae
- Amphibians
- Annelids-Polychaetes
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- Crustaceans-Amphipods
- Crustaceans-Cladocerans
- Crustaceans-Copepods
- Crustaceans-Crabs
 - Ericocheir sinensis
 - Chinese mitten crab
- Crustaceans-Crayfish
- Crustaceans-Mysids
- Fishes
 - Hypophthalmichthys harmandi
 - Largescale silver carp
 - Hypophthalmichthys molitrix
 - Silver carp



SPECIES REPORT

Sighting Location:

- Everywhere
- IL
- IN
- MI

Sighting Date:

From: 2014-08-01

To: 2014-08-31

- species
- [Algae](#)
- [Amphibians](#)
- [Annelids-Polychaetes](#)
- [Bryozoans](#)
- [Crustaceans-Amphipods](#)
- [Crustaceans-Cladocerans](#)
- [Crustaceans-Copepods](#)
- [Crustaceans-Crabs](#)
- [Crustaceans-Crayfish](#)
- [Crustaceans-Mysids](#)
- [Fishes](#)
- [Mollusks-Bivalves](#)
- [Mollusks-Gastropods](#)
- [Plants](#)

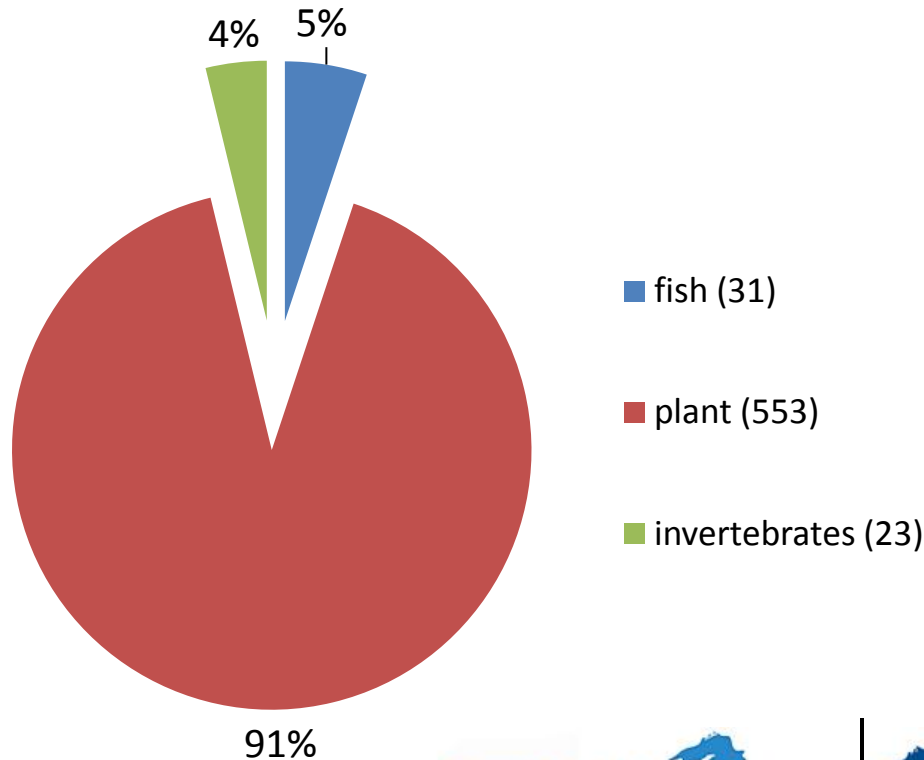
Schedule	
Report Schedule	Crustaceans-Crabs 0
Report - Sightings by Species	Crustaceans-Crayfish 15
Report - Sighting Statuses	<p>Cherax destructor (Scientific) 4</p> <p>1. http://www.aquascapeonline.com/products/blue-pearl-lobster-2in-3in-cherax-destructor.html Matched on: cherax destructor</p> <p>2. http://www.aquascapeonline.com/prodView.asp?idproduct=266 Matched on: cherax destructor</p> <p>3. http://www.fishworld.com.au/product.php?id_product=780 Matched on: cherax destructor</p> <p>4. http://www.liveaquaria.com/product/prod_display.cfm?c=1075+1662&pcatid=1662&cmpid=13cseYY&subref=AA&CAWELAID=560506383 Matched on: cherax destructor</p> <p>Yabbie (Common) 2</p> <p>1. http://www.fishworld.com.au/product.php?id_product=780 Matched on: yabbie</p> <p>2. https://www.azgardens.com/p-219-lobster-australian-blue-yabbie-freshwater-lobster.aspx Matched on: yabbie</p> <p>Cherax tenuimanus (Scientific) 1</p> <p>1. http://www.aquascapeonline.com/products/australian-blue-lobster-4in-5in-cherax-tenuimanus.html Matched on: cherax tenuimanus</p> <p>Marron (Common) 2</p> <p>1. http://www.aquascapeonline.com/products/blue-pearl-lobster-2in-3in-cherax-destructor.html Matched on: marron</p> <p>2. http://www.aquascapeonline.com/prodView.asp?idproduct=266 Matched on: marron</p> <p>Marmorkrebs (Scientific) 10</p> <p>1. http://www.bobstropicalplants.com/shop/en/crabs-crayfish/482-marmorkrebs.html Matched on: marmorkrebs</p> <p>2. http://www.alphaprobreeders.com/procambarus-marmorkrebs-self-cloning-cray-4/ Matched on: marmorkrebs</p> <p>3. http://www.aquariumadvice.com/forums/f128/red-cherry-shrimps-marmorkrebs-chocolate-shrimps-260969.html Matched on: marmorkrebs</p> <p>4. http://www.alphaprobreeders.com/procambarus-clarkii-sp-red/ Matched on: marmorkrebs</p> <p>5. http://www.alphaprobreeders.com/procambarus-clarkii-sp-red-babies-4/ Matched on: marmorkrebs</p> <p>6. http://www.alphaprobreeders.com/categories/Crayfish/ Matched on: marmorkrebs</p> <p>7. http://www.aquabid.com/cgi-bin/auction/closed.cgi?view_closed_item&food1401758405 Matched on: marmorkrebs</p> <p>8. http://www.bobstropicalplants.com/shop/es/crabs-crayfish/482-marmorkrebs.html Matched on: marmorkrebs</p> <p>9. http://for-sale.yowcow.com/live-crayfish Matched on: marmorkrebs</p> <p>Marbled Crayfish (Common) 4</p> <p>1. http://www.bobstropicalplants.com/shop/en/crabs-crayfish/482-marmorkrebs.html Matched on: marbled crayfish</p> <p>2. http://www.aquabid.com/cgi-bin/auction/closed.cgi?view_closed_item&food1401758405 Matched on: marbled crayfish</p> <p>3. http://for-sale.yowcow.com/live-crayfish Matched on: marbled crayfish</p> <p>Orconectes rusticus (Scientific) 0</p> <p>Rusty crayfish (Common) 0</p> <p>Procambarus clarkia (Scientific) 0</p> <p>Red swamp crayfish (Common) 0</p>
Report - Domain Sightings	Crustaceans-Mysids 0



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Preliminary Findings At-a-Glance

Distribution of sale pages by taxa (N = 607)



Number of species found	57 (of 166)
Plants	40
Fishes	11
Invertebrates	6
Number of sale pages	607



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Great Lakes Governors/Premiers “Least Wanted” AIS	Number of sale pages
Brazilian elodea (<i>Egeria densa</i>)	37
Hydrilla (<i>Hydrilla verticillata</i>)	4
Parrot feather (<i>Myriophyllum aquaticum</i>)	18
Water chestnut (<i>Trapa natans</i>)	4
Water soldier (<i>Stratiotes aloides</i>)	17
Grass carp (<i>Ctenopharyngodon idella</i>)	1
Yabby (<i>Cherax destructor</i>)	5

25 species most frequently found	Number of sale pages
Yellow flag iris (<i>Iris pseudacorus</i>)	48
Flowering Rush (<i>Butomus umbellatus</i>)	44
Fanwort (<i>Cabomba caroliniana</i> and <i>C. aquatica</i>)	40
Yellow floating heart (<i>Nymphoides peltata</i>)	39
Brazilian elodea (<i>Egeria densa</i>)	37
Water Lettuce (<i>Pistia stratiotes</i>)	27
Sacred lotus (<i>Nelumbo nucifera</i>)	26
Japanese celery (<i>Oenanthe javanica</i>)	25
Graceful cattail (<i>Typha laxmannii</i>)	21
Giant Reed (<i>Arundo donax</i>)	19
Ambulia (<i>Limnophila sessiliflora</i>)	19
Purple loosestrife (<i>Lythrum salicaria</i>)	18
Parrot feather (<i>Myriophyllum aquaticum</i> and <i>M. brasiliensis</i>)	18
Forget-me-not (<i>Myosotis scorpioides</i>)	17
Water soldier (<i>Stratiotes aloides</i>)	17
Indian swampweed (<i>Hygrophila polysperma</i>)	14
Curlyleaf pondweed (<i>Potamogeton crispus</i>)	13
Water hyacinth (<i>Eichhornia crassipes</i>)	11
Chinese waterspinach (<i>Ipomoea aquatica</i>)	11
Marbled crayfish (<i>Marmorkrebs</i>)	10
Oriental weatherfish (<i>Misgurnus anguillicaudatus</i>)	9
Oxygen weed (<i>Lagarosiphon major</i>)	9
Common reed (<i>Phragmites australis</i>)	9
Bur reed (<i>Sparganium erectum</i>)	9
European frogbit (<i>Hydrocharis morsus-ranae</i>)	7



Preliminary Observations

- Getting hits on species that are a threat to the region; confirming that Internet trade is a problem
 - Seems consistent w/ what is known about species common to trade pathway (e.g., popular water garden and aquarium plants)
- It is not clear yet which species are being sold within the region or can be shipped to the GL region
 - E.g., websites based in UK, Australia, etc.; may not ship to U.S. (**Next step in analysis)
- Good warning tool; useful as an indicator of what is in trade, inc. emerging species of concern



Next Steps

- Continue to develop findings
- Work with Federal, state and provincial partners to take action on confirmed findings
- Hold workshop to share findings and discuss management options and recommendations
- IS2DS “roll-out”
- Develop final report



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