



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

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## Aquatic Nuisance Species Task Force Meeting

November 5, 2014 | Falls Church, Virginia

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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



# First Steps

- Hired RightBrain Networks
- Compiled a list of 167 species of concern



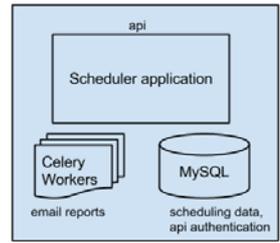
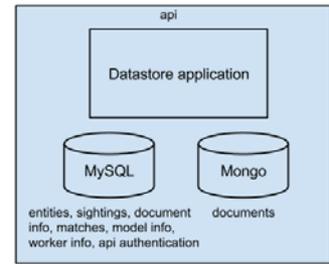
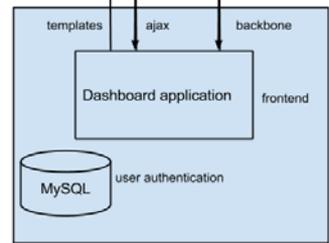
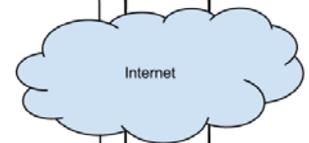


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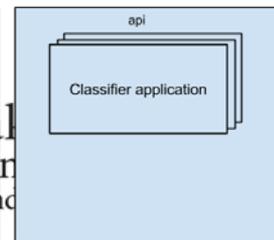
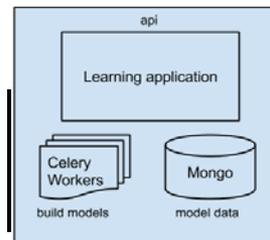
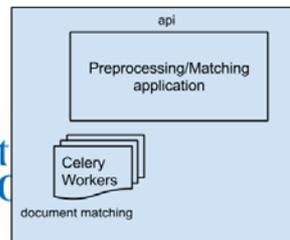
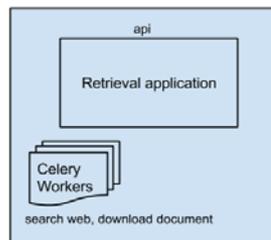
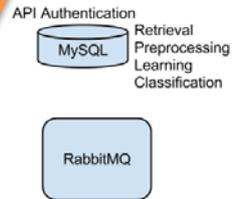
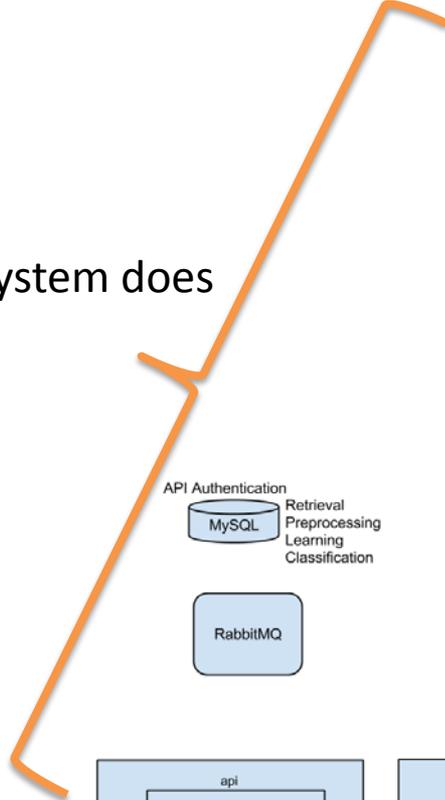
What the user sees



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

Great Lakes Commission des Grands Lacs Home Species Reports

### Species Watch List

Regulated In: All Regulated FED IL IN

Expand All Collapse All

- Algae
- Amphibians
- Annelids-Polychaetes
- Bryozoans
- 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

Report - Sightings by Species

Report - Sighting Statuses

Report - Domain Sightings

<a href="#">Crustaceans-Crabs</a>	0
<a href="#">Crustaceans-Crayfish</a>	15
<b>Cherax destructor</b> (Scientific)	4
1. <a href="http://www.aquascapeonline.com/products/blue-pearl-lobster-2in-3in-cherax-destructor.html">http://www.aquascapeonline.com/products/blue-pearl-lobster-2in-3in-cherax-destructor.html</a>	Matched on: cherax destructor
2. <a href="http://www.aquascapeonline.com/prodView.asp?idproduct=266">http://www.aquascapeonline.com/prodView.asp?idproduct=266</a>	Matched on: cherax destructor
3. <a href="http://www.fishworld.com.au/product.php?id_product=780">http://www.fishworld.com.au/product.php?id_product=780</a>	Matched on: cherax destructor
4. <a href="http://www.liveaquaria.com/product/prod_display.cfm?c=1075+1662&amp;pcatid=1662&amp;cmpid=13cseYY&amp;subref=AA&amp;CAWELAID=560506383">http://www.liveaquaria.com/product/prod_display.cfm?c=1075+1662&amp;pcatid=1662&amp;cmpid=13cseYY&amp;subref=AA&amp;CAWELAID=560506383</a>	Matched on: cherax destructor
<b>Yabbie</b> (Common)	2
1. <a href="http://www.fishworld.com.au/product.php?id_product=780">http://www.fishworld.com.au/product.php?id_product=780</a>	Matched on: yabbie
2. <a href="https://www.azgardens.com/p-219-lobster-australian-blue-yabbie-freshwater-lobster.aspx">https://www.azgardens.com/p-219-lobster-australian-blue-yabbie-freshwater-lobster.aspx</a>	Matched on: yabbie
<b>Cherax tenuimanus</b> (Scientific)	1
1. <a href="http://www.aquascapeonline.com/products/australian-blue-lobster-4in-5in-cherax-tenuimanus.html">http://www.aquascapeonline.com/products/australian-blue-lobster-4in-5in-cherax-tenuimanus.html</a>	Matched on: cherax tenuimanus
<b>Marron</b> (Common)	2
1. <a href="http://www.aquascapeonline.com/products/blue-pearl-lobster-2in-3in-cherax-destructor.html">http://www.aquascapeonline.com/products/blue-pearl-lobster-2in-3in-cherax-destructor.html</a>	Matched on: marron
2. <a href="http://www.aquascapeonline.com/prodView.asp?idproduct=266">http://www.aquascapeonline.com/prodView.asp?idproduct=266</a>	Matched on: marron
<b>Marmorkrebs</b> (Scientific)	10
1. <a href="http://www.bobstropicalplants.com/shop/en/crabs-crayfish/482-marmorkrebs.html">http://www.bobstropicalplants.com/shop/en/crabs-crayfish/482-marmorkrebs.html</a>	Matched on: marmorkrebs
2. <a href="http://www.alphaprobreeders.com/procambarus-marmorkrebs-self-cloning-cray-4/">http://www.alphaprobreeders.com/procambarus-marmorkrebs-self-cloning-cray-4/</a>	Matched on: marmorkrebs
3. <a href="http://www.aquariumadvice.com/forums/t128/red-cherry-shrimps-marmorkrebs-chocolate-shrimps-260969.html">http://www.aquariumadvice.com/forums/t128/red-cherry-shrimps-marmorkrebs-chocolate-shrimps-260969.html</a>	Matched on: marmorkrebs
4. <a href="http://www.alphaprobreeders.com/procambarus-clarkii-sp-red/">http://www.alphaprobreeders.com/procambarus-clarkii-sp-red/</a>	Matched on: marmorkrebs
5. <a href="http://www.alphaprobreeders.com/procambarus-clarkii-sp-red-babies-4/">http://www.alphaprobreeders.com/procambarus-clarkii-sp-red-babies-4/</a>	Matched on: marmorkrebs
6. <a href="http://www.alphaprobreeders.com/categories/Crayfish/">http://www.alphaprobreeders.com/categories/Crayfish/</a>	Matched on: marmorkrebs
7. <a href="http://www.aquabid.com/cgi-bin/auction/closed.cgi?view_closed_item&amp;food1401758405">http://www.aquabid.com/cgi-bin/auction/closed.cgi?view_closed_item&amp;food1401758405</a>	Matched on: marmorkrebs
8. <a href="http://www.bobstropicalplants.com/shop/es/crabs-crayfish/482-marmorkrebs.html">http://www.bobstropicalplants.com/shop/es/crabs-crayfish/482-marmorkrebs.html</a>	Matched on: marmorkrebs
9. <a href="http://for-sale.yowcow.com/live-crayfish">http://for-sale.yowcow.com/live-crayfish</a>	Matched on: marmorkrebs
<b>Marbled Crayfish</b> (Common)	4
1. <a href="http://www.bobstropicalplants.com/shop/en/crabs-crayfish/482-marmorkrebs.html">http://www.bobstropicalplants.com/shop/en/crabs-crayfish/482-marmorkrebs.html</a>	Matched on: marbled crayfish
2. <a href="http://www.aquabid.com/cgi-bin/auction/closed.cgi?view_closed_item&amp;food1401758405">http://www.aquabid.com/cgi-bin/auction/closed.cgi?view_closed_item&amp;food1401758405</a>	Matched on: marbled crayfish
3. <a href="http://for-sale.yowcow.com/live-crayfish">http://for-sale.yowcow.com/live-crayfish</a>	Matched on: marbled crayfish
<b>Orconectes rusticus</b> (Scientific)	0
<b>Rusty crayfish</b> (Common)	0
<b>Procambarus clarkia</b> (Scientific)	0
<b>Red swamp crayfish</b> (Common)	0
<a href="#">Crustaceans-Mysids</a>	0

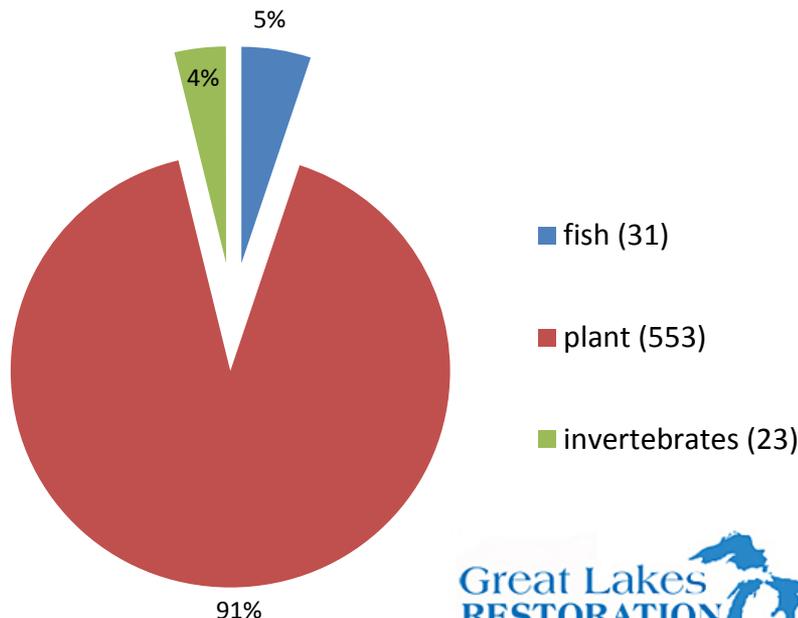


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## Preliminary Findings At-a-Glance

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

Distribution of sale pages by taxa (N = 607)



### 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



# Acknowledgments

- GLC staff...  
Tim Eder, Christine Manninen, Guan Wang, Jeff McAulay, Katherine Hollins, Bryan Comer, Margaux Valenti, Lisa Denys, Amanda Sweetman
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