

# Great Lakes Panel on Aquatic Nuisance Species

## Member Updates - Fall 2012

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### U.S. Army Corps of Engineers

#### Detroit District

##### **Sheboygan River AOC Remedial Action Plan (RAP) Coordination, Wisconsin**

Sheboygan River AOC RAP Coordination - Schuchardt Property Aquatic Invasive Species Mapping and Quantification Project, Wisconsin - The Schuchardt Property is a 177-acre site that is owned by the City of Sheboygan. The site is identified as a unique natural area within an urban/suburban environment due to its size, habitats, and natural features. A recent site investigation (2011) identified a number of habitats and natural communities occurring within the site, including wet meadow, riparian wetland forest, deep marsh, sedge meadow, and forested seep – to list a few. The site is located immediately adjacent to the Sheboygan River Area of Concern (AOC). Conservation of the Schuchardt property has been identified as a high priority for maintaining and improving fish and wildlife populations and habitat in the lower area of the Sheboygan River.

Through coordination with the Sheboygan AOC, regional stakeholders indicated that AIS management at this particular site would be beneficial for the restoration of wetland and riparian habitats across the site and within the AOC. It was determined that prior to designing an AIS control and management plan a detailed mapping of AIS would need to be accomplished. The mapping and quantification of AIS was completed during the late summer of 2012. The AIS of particular concern to the function, structure, and integrity of native floral and faunal communities within wetland, riparian, and aquatic habitats on the site include: common reed (*Phragmites australis*), common and glossy buckthorn (*Rhamnus cartartica* and *R. frangula*), bush honeysuckle (*Lonicera* sp.), reed canary grass (*Phalaris arundinacea*), and Japanese knotweed (*Polygonum cuspidatum*).

The completion of the AIS mapping will set the stage for developing a site-specific AIS invasive species control and management plan. The implementation of such a plan could include a multi-year demonstration project for the planning, designing, and implementation of a full-scale project for removing, controlling, and adaptively monitoring AIS. The benefits associated with this project include completing the first step in the control of AIS through detection, mapping, and quantification of invasives. This project and any future follow-on efforts will also ensure the protection of Federal investments that are being made within the Sheboygan River AOC corridor where a number of habitat conservation and restoration projects are under way, including targeted invasive species control, in-stream habitat improvements, and riparian and wetland restoration. Ultimately, the mapping and a demonstration project for AIS control will support the delisting of beneficial use impairments (BUIs) within the AOC, including Degradation of Fish and Wildlife Populations and Loss of Fish and Wildlife Habitat.

#### Buffalo District

##### **Walnut Beach Aquatic Invasive Species Demonstration Project, Ohio**

Walnut Beach Aquatic Invasive Species Demonstration Project, Ohio – Walnut Beach – located within the Ashtabula AOC - is a 43-acre area along Lake Erie in Ashtabula, Ohio. The entire site is comprised of four different wetland community types, and also is characterized by a unique sand dune system that includes a combination of flats, dunes, and transitional sand/beach nourishment areas. This dune system is an example of a now rare coastal community along Lake Erie and has been described as one of the finest remaining beach grass dune communities in Ohio, with areas populated by beach grass (*Ammophila breviligata*) – a state threatened species.

Currently, invasive species have become established in many areas within the Walnut Beach site, encompassing a total of 26.3 acres or over 60% of the site. Invasive species include common reed (*Phragmites australis*), European black alder (*Alnus glutinosa*), and mugwort (*Artemisia vulgaris*). These species are adversely affecting site vegetation diversity by crowding out native species such as beach grass, Canada wild-rye (*Elymus canadensis*), switchgrass (*Panicum virgatum*), and arrowhead (*Sagittaria* sp.). Ecosystem functions are also being reduced through degradation of fish and wildlife habitat quality, including decreased quality forage and nesting for migratory and resident birds.

The demonstration project will plan, design, and implement a full-scale project to implement means of removing, adaptively monitoring, and controlling aquatic invasive plants. While general treatment options identified for implementation include: mechanical removal, chemical treatment; and habitat modification (restoration), the demonstration project will closely evaluate the effectiveness of various treatment options and combinations of treatment options to support the dissemination of invasive species control and management information across the Great Lakes.

The benefits associated with this project include: Identifying and demonstrating new and improved management strategies against invasive aquatic plants, improving Lake Erie shoreline habitat quality and function, restoring native wetland habitats, restoring the unique dune system, minimizing impacts to threatened and endangered wetland species, and supporting delisting of AOCs. This demonstration project will contribute to addressing three delisting criteria for the Degradation of Fish and Wildlife Populations Beneficial Use Impairment (BUI) and three for the Loss of Fish and Wildlife Habitats BUI for the Ashtabula River AOC. The project is in the final planning stage, with invasive species control and management design, and NEPA to be completed in 2012. The project will be "shovel ready" for construction in spring/summer 2013 for Year 1 treatment.

#### **Times Beach Aquatic Invasive Species Demonstration Project, New York**

Times Beach Aquatic Invasive Species Demonstration Project, New York - Times Beach – located within the Niagara River AOC and directly adjacent to the Buffalo River AOC in Buffalo, New York – is a 56 acres site located along Buffalo's Outer Harbor and was originally a confined disposal facility (CDF) for dredged material. The CDF received contaminated dredged sediment from the Federal navigation channels at Buffalo Harbor between 1972 and 1976. The CDF was closed in 1976, which over time resulted in the development of aquatic, wetland, and upland shoreline environments. Times Beach was then returned back the City of Buffalo to use as a nature preserve.

The site is now characterized as a large freshwater, state protected wetland that also includes upland and transitional habitat and is currently used as a wildlife observation area managed by Erie County. The site was designated as a Significant Coastal Fish and Wildlife Habitat by the New York State Department of State in 1987, due to its relatively large, diverse, coastal wetland area, unusual concentrations of migratory birds using the area, and its use of a bird-watching site of regional significance. Times Beach also occurs within the globally significant, internationally recognized Niagara River Important Bird Area (IBA).

Over the approximately the past 10 years, Times Beach has become overrun with a number of aquatic invasive species including common reed (*Phragmites australis*), mugwort (*Artemisia vulgaris*), common buckthorn (*Rhamnus cathartica*), Japanese knotweed (*Polygonum cuspidatum*), and purple loosestrife (*Lythrum salicaria*). Aquatic invasive species have taken over many parts of the site, completing crowding out native species in some area. The total area covered by aquatic invasive species is estimated to be 33 acres, or about 56% of the site. The spread and predominance of invasive species is adversely affecting fish and wildlife habitat within this important Great Lakes migratory bird stopover area.

The 5-year demonstration project will plan, design, and implement a full-scale project to implement means of removing, adaptively monitoring, and controlling aquatic invasive plants. General treatment options include mechanical removal, chemical treatment; and habitat modification (restoration). The demonstration project will specifically evaluate the effectiveness of various treatment options and combinations of treatment options to support the dissemination of invasive species control and management information across the Great Lakes.

The benefits associated with this project include: identifying and demonstrating new and improved management strategies against invasive aquatic plants, improving Lake Erie shoreline habitat quality and function, restoring native wetland habitats, and supporting delisting of AOCs. This demonstration project will contribute to addressing four delisting criteria, including one for the beneficial use impairment (BUI) Loss of Fish and Wildlife Habitat for the Niagara River AOC; and one for Degradation of Fish and Wildlife Populations BUI and two for the Loss of Fish and Wildlife Habitat BUI. This project is currently nearing the end of its first treatment year. Mechanical removal of AIS was initiated in October 2012, with the cutting and removal of *Phragmites* and other species to be completed by end of calendar year. Year 2 treatment will begin in summer of 2013.

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## U.S Coast Guard

US Coast Guard AIS prevention projects using GLRI funds are focused on the implementation of the ballast water management regulation and recently published discharge standard. Treating ballast water prior to discharge is necessary to reduce introductions and spread of non-indigenous species. Current tests of treatment systems are largely conducted using non-standard procedures, resulting in little rigorous data on the efficacy of systems in meeting proposed discharge standards. This project will greatly increase our understanding of the efficacy of systems for reducing risks of ballast water mediated introductions in the Great Lakes. Incentives will be provided to install and test systems in test facilities and on board vessels operating in the Great Lakes. For FY13, the work will inform protocol development for more stringent ballast water discharge standards, continue the development of compliance verification tools, and analyze other potential sources and vectors (e.g. unregulated barges) for the introduction of non-indigenous species.

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## Indiana Department of Natural Resources

Indiana Department of Natural Resources has continued to utilize our GLRI funding this year to combat a variety of Aquatic Invasive Plants. We are wrapping up our 6 consecutive year for a whole-lake Sonar treatment to eradicate hydrilla at Lake Manitou in North Central Indiana. Through 2011 we have achieved a 99.5% reduction in hydrilla tuber abundance. After 4 years the goal of eradication of parrot feather at Meserve Lake, a small natural lake in northeast Indiana looks to have been successful in having no new occurrences since summer of 2010. Another AIS plant we have continued to battle is starry stonewort which is now contracted for control in 6 natural lakes in northeast Indiana. This macroalgae has proven very difficult to control and we continue to try to slow its growth and spread through NE Indiana. Another year of aggressive and selective plant control/ elimination in targeting Eurasian watermilfoil at some of our high use public waters has been undertaken treating 7 different state managed and owned properties.

Two Asian Carp focused projects are underway, One project to continue to understand more about Asian carp movement and stream usage downstream of the inter-basin watershed connection that occurs during flood stage at the boundary between the watersheds of the Maumee River (Great Lakes drainage) and the Wabash River (Mississippi drainage). For a second year Indiana DNR has contracted with Purdue University to continue to assess Asian carp movement and spawning in the upper Wabash. Purdue has tagged/tracked 100 Asian carp in the Wabash River in the 2011, And another 63 Asian carp this year in phase II of the research project. We hope to learn how far up in the Wabash they actually spawn, and preferable habitat use to aid in predicting potential spawning events and future control efforts. We have also contracted Purdue University to complete a third year of tracking with a total of 300 fish total tagged/tracked through this project. A second project focused on Asian Carp is a research project on the Reconnaissance of Pathogens of Silver and Bighead Carp in Upper Wabash River conducted by Purdue University and will start in the spring of 2013.

### Other AIS Activities

Effective August 31<sup>st</sup> 2012 the Indiana Department of Natural resources implemented a new rule that prohibits the sale, exchange, or distribution of 28 Aquatic Invasive plants. Rule language found at: <http://www.in.gov/legislative/iac/20120829-IR-312120050FRA.xml.pdf> . The Division of Fish and Wildlife in partnership with the Division of Entomology and Plant Pathology will be visiting wholesale and retail outlets in the state to assure that prohibited species are not present on site and eliminated if found in trade. Of these 28 species the most popular currently in trade include flowering rush, Brazilian elodea (Anacharis), yellow floating heart, parrot feather, and yellow flag iris. The costs for eradication of Brazilian elodea from Griffy Lake at \$150,000 dollars and the \$50,000 dollar price tag for elimination of Parrot feather from Meserve Lake would not make sense if we continued to have retail stores offering these invasive species for sale.

**Contact:** Eric Fischer, Aquatic Invasive Species Coordinator, Indiana Dept. of Natural Resources, 317-234-3883, efischer@dnr.in.gov

## Michigan Department of Environmental Quality

Michigan's Aquatic Invasive Species (AIS) State Management Plan is currently under revision. The draft plan was released for public review in spring 2012 and the final plan is expected in 2013.

Several rapid response actions regarding Asian carps were recently taken including seizure of live grass carp being sold (a prohibited species in Michigan), responses to live grass carp in two locations- a river and an inland lake, and response to positive silver carp eDNA detections in Michigan waters of Lake Erie. Sampling to detect Asian Carp using eDNA is being planned for 2013 in strategic locations as well as a response mock exercise.

Michigan's AIS Advisory Council, created by law in December 2011, is developing recommendations on AIS and organisms in trade, the management of Phragmites, and funding for the AIS Program. The council submitted to the Michigan governor and legislature recommendations on the state's Section 401 certification of the USEPA's Vessel General Permit as well as the contents of the draft AIS State Management Plan. The AIS Advisory Council is currently focusing efforts on a report and recommendations on organisms in trade that will include the use of risk assessment tools, methods to harmonize prohibited and restricted species lists, a disease/contamination free certification program, an education and outreach program focused on buyers and sellers, etc.

In addition, the Michigan Department of Natural Resources Wildlife Division in partnership with the Michigan Natural Features Inventory received a GLRI grant to monitor and treat populations of several aquatic invasive plants with limited distribution in Michigan. The lessons learned from this project will help further develop Michigan's capabilities for AIS detection and response to infestations.

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## New York State Department of Environmental Conservation

The IS Council, comprising 9 agencies, met November 20 and the IS Advisory Committee, comprising 25 NGOs, met September 25. Training session for iMapInvasives, the state GIS database, were held throughout the state during 2012. Four Partnerships for Invasive Species Management (PRISMs) receive support from New York State, staff are working to contract with the four remaining PRISMs as a result of RFPs released in 2012. Certification conditions were developed for the draft 2013 EPA's Vessel General Permit (VGP) in order to meet NY's water quality standards. A legal challenge against NYS was recently filed. Management of a large hydrilla infestation in the Inlet of Cayuga Lake has been ongoing since 2011, in collaboration with local stakeholders. Additional hydrilla infestations have been confirmed in Tonawanda Creek and Broome County. A literature review of monocious hydrilla was contracted through NEANS, a hydrilla workshop held in August and a symposium convened in September. Several aquatic plant ID workshops were held for local partners during the 2012 season. A statewide manual for boat steward programs will be developed this winter, in collaboration with SeaGrant. Monitoring and management for EAB continues with twenty counties now under quarantine. Law enforcement, in cooperation with Canadian officials, apprehended an individual selling Northern snakehead. Assessments for nonnative animals and plants are underway in preparation for the development of regulations, in cooperation with the Department of Agriculture and Markets, focused on commerce of invasive species. GLRI projects awarded by EPA in 2012 to NY partners include Lake Ontario Headwaters Watercraft Inspection Program, Assessing Aquatic Invasive Species Risk in the Erie Canal Corridor, Aquatic Invasive Species Prevention and Monitoring in the Eastern Great Lakes Basin, Working with Recreational Anglers and Boaters to Prevent the Spread of Invasive Species, and Improving the Early Detection of Invasive Ponto-Caspian Fishes in the Great Lakes.

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## Ohio Department of Natural Resource, Division of Wildlife

### Great Lakes Restoration Initiative Activities

- Ohio is currently monitoring for Asian carp in the Ohio River and Lake Erie using traditional collection methods and eDNA. Both bighead and silver carp have been observed in the Ohio portion of the Ohio River and although both silver and bighead carp eDNA has been detected in Western Lake Erie, no live fish have been detected in recent surveys using traditional sampling gear.
- Ohio is working closely with the USACE to determine the threat of AIS passing between the Mississippi and Great Lakes Basins at two hydraulic connections in Ohio. The Long Lake connection in Akron and the Little Killbuck Creek connection in Medina County are currently being evaluated to determine possible solutions to prevent passage of AIS.
- Ohio continues to work with several partners to combat Phragmites and Hydrilla in the Lake Erie Basin.

### Other AIS Activities

- Ohio is currently revising their AIS State Management Plan (SMP) which will address the quickly changing landscape. The Plan has gone through both internal and external review and is currently being reviewed by the ANSTF. We hope to have a positive vote at the ANSTF meeting in November.
- Ohio is also working on a Rapid Response Plan which will be incorporated into the SMP. We are currently working with USEPA and Tetra Tech on this plan and hope to have a draft by the end of the year.
- Ohio and Indiana hosted a Rapid Response table-top exercise in Ft Wayne, Indiana on August 28<sup>th</sup> and 29<sup>th</sup>. State, federal, university, and NGO's participated in this exercise that included instruction on the Incident Command System and a mock planning exercise dealing with a scenario where snakeheads were detected at Eagle Marsh.

**Contact:** John Navarro, Ohio Department of Natural Resources, Division of Wildlife, 614-265-6346, john.navarro@dnr.state.oh.us.

## Ontario Ministry of Natural Resources

- The Ontario government released the Ontario Invasive Species Strategic Plan in July. The plan is led by the Ontario Ministry of Natural Resources (OMNR) in collaboration with the provincial ministries of Transportation, Agriculture, and Environment. The plan outlines Ontario's approach to both terrestrial and aquatic invasive species focusing on the specific goals of prevention, early detection, rapid response, and management/adaptation.
- The OMNR continues to lead control programs for European water chestnut in the Ottawa River and water soldier in the Trent Severn Waterway. In September an aquatic invasive plant management workshop was coordinated with experts from Canada and the United States to share best management approaches and work to improve Ontario's capacity to address these threats.
- In August, OMNR enhanced surveillance programs for Asian carps utilizing both traditional fisheries assessment techniques and eDNA surveillance tools in Lake Erie, Lake St. Clair and the Detroit and St. Clair Rivers. MNR is coordinating its surveillance activities via the bi-national Lake Erie Committee and the Asian Carp Regional Coordinating Committee.
- In August, the Canada/Ontario Invasive Species Centre (ISC) hosted a Terrestrial Invasive Plants Species Conference (TIPS) in Sault Ste. Marie, Ontario. The event included presentations from across North America with participants from academia, resource agencies and NGOs. The program and presentations from the TIPS conference can be viewed at <http://www.tipsconf.ca/>
- In November, the ISC and the Great Lakes-St. Lawrence Cities Initiative hosted an Asian Carp Public Forum in cooperation with the Asian Carp Regional Coordinating Committee and the OMNR and Fisheries and Oceans Canada. The objective of the meeting was to update the Canadian public on the activities occurring within both Canada and the United States to address the threat of Asian Carp. The event was extremely well attended and

included over 160 participants from NGOs, academia, all levels of government, and citizens. The program and presentations at the Forum can be viewed at <http://www.invasivespeciescentre.ca/asiancarp/>

- MNR is conducting internal consultation on a Draft Rapid Response Framework for Aquatic Invasive Species in Ontario. Public input will be solicited over the winter with a posting on the Environmental Registry. It is anticipated the final document will be available in the spring.
- Enforcement of provincial prohibitions of live invasive fish continues to be a provincial priority.
  - In June, cooperative enforcement efforts of the OMNR and Canada Border Services Agency resulted in fines totalling \$50,000 to a fish importing company and its president for possessing live Asian carp in Ontario.
  - A multi-agency investigation known as “Operation Serpent” resulted in fines and penalties exceeding \$90,000 to a Toronto man and a Markham, Ontario area business for selling snakehead. Enforcement agencies involved in the operation included OMNR, Environment Canada’s Wildlife Enforcement Division, U.S. Fish and Wildlife Service, and the New York Department of Environmental Conservation.
- The Canada/Ontario Invasive Species Centre in partnership with the Ontario Ministry of Natural Resources, the Ontario Federation of Anglers and Hunters, and the Ontario Invasive Plant Council recently produced an *Invasive Species Education and Outreach Compendium – Materials and Resources in 2012*. It provides a comprehensive summary of the invasive species communications materials available in Ontario, organized by species and pathways. Electronic copies of the compendium will be available on partners’ websites early in 2013.

**Contact:** Francine MacDonald, Ontario Ministry of Natural Resources, 705-755-5136, francine.macdonald@ontario.ca.

## International Joint Commission

The International Joint Commission received \$150,000 GLRI fund in 2010 to develop a Binational AIS Rapid Response Plan.

### Major Progress and Accomplishment:

- Completed competitive selection process for jurisdictional analysis and pilot aquatic invasive species binational response plan. Four proposals received and evaluated by workgroup, winning proposal selected; contract details negotiated.
- Executed contract with URS Group Inc. for jurisdictional analysis and pilot binational AIS response plan.
- Conducted IJC-funded AIS rapid response workshop during the IJC Biennial Meeting at Wayne State University, attended by approximately 60 people, took the opportunity to report on progress on the 2010 GLRI funded project as well as the IJC funded biennial reports and solicited input from the public.
- Held AIS binational response plan workshop in conjunction with Great Lakes ANS panel meeting; discussed critical factors, alternatives and plan components with state and federal agency representatives and panel experts.
- Received Reports - Analysis of Jurisdictional Roles and Capabilities and A Binational AIS Rapid Response Plan for the Great Lakes – St. Lawrence River Basin – A Pilot Plan for the Lake Huron/ Lake Erie Corridor.
- Held Binational AIS Rapid Response Workshop to discuss draft plan with responsible agencies and next steps in Southfield, Michigan.
- Is in the process of addressing/ incorporating comments received on the draft Jurisdictional Analysis and Rapid Response Plan.

### Future Plans:

Dec 2012 – Jan 2013 Complete contract work, work group report and transmit findings and recommendations to the IJC. Complete proposal and secure funding support for a multi-agency binational AIS tabletop response exercise during the first quarter of 2013.

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## Great Lakes Commission

- The Commission has secured new funding through the Great lakes Restoration Initiative to develop software to assess the availability of invasive species via Internet sales, identify sellers, and develop and implement targeted management activities. This project will provide management tools to decision-makers and regulators, present information on the Internet marketplace, better quantify the risks associated with this pathway, and present options for additional action to effectively prevent AIS via this pathway.
- The Commission has secured new funding to advance long-term separation of the Chicago area waterways that maintains and/or enhances other uses of the system. A stakeholder meeting was convened in July 2012 to provide a progress update and discuss next steps, including the potential for an interim, short-term solution; defining a “preferred” solution; and engagement with the U.S. Army Corps of Engineers efforts on GLMRIS. Discussion at the meeting demonstrated a strong interest in defining a potential interim solution while keeping focused on moving towards a long-term solution.
- The Commission is actively engaged in supporting new legislation (H.R. 5864, the Invasive Fish and Wildlife Prevention Act of 2012) that would strengthen federal screening programs to prevent the importation of potentially harmful non-native fish and wildlife. Specifically, the Commission submitted a letter to the Great Lakes congressional delegation to encourage support for the legislation and participated in legislator meetings and staff briefings in Washington, D.C.
- The Commission has initiated a new partnership with the USGS to lead a regional communications strategy targeting the invasive plant phragmites. An interactive website, webinar series and communication tools intended to engage the resource management community, reduce redundancy, link science and management, facilitate adaptive management and encourage a systems approach to management and conservation are being developed.
- Commission staff recently completed work to update and enhance the Great Lakes Information Network (GLIN) Invasive Species in the Great Lakes Region webpage (<http://glin.net/envt/flora-fauna/invasive/invasive.html>) to include comprehensive information profiling 16 priority invasive species in an effort to support regional species-specific management planning.

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## Department of Fisheries and Oceans & Transport Canada

### GLRI projects:

- Fisheries and Oceans Canada (DFO) is collaborating with Dr. Jeff Ram (Wayne State University) on a GLRI funded project to develop methods for verification of ballast water treatment. The DFO lab tested a variety of fluorescent dyes to assess viability of algae and larger zooplankton, while the Ram lab is focusing on development of molecular methods for testing viability of microorganisms.
- DFO collaborates as a principle investigator and on the Management Transition Board on the University of Notre Dame GLRI projects.

### Other AIS projects:

- DFO, in collaboration with the Ontario Ministry of Natural Resources, McGill University, University of Waterloo, St. Lawrence River Institute and Environment Canada, is conducting research activities in the nearshore of Lake Ontario and the St. Lawrence River to better understand the distribution, abundance, predators, and impacts of the bloody red shrimp (*Hemimysis anomala*) a recent invader of the Great Lakes. Hemimysis has had significant impacts in invaded ecosystems in Europe; however, these are very different ecosystems from the Great Lakes. Current research is aimed at determining if ecological processes in the Great Lakes will moderate previously observed impacts.

- DFO is undertaking a preliminary assessment of the movement of fishes and aquatic invertebrates through the Welland Canal. Fish movement is being studied using acoustic telemetry.
- Fisheries and Oceans Canada's CEARA plans to continue with several pathway risk assessments: aquarium, water garden, baitfish, live food, ballast water and recreational boating, pending funding. The ship-mediated risk assessments for the Great Lakes and Arctic were completed and peer reviewed Spring 2011, while the risk assessment for the Pacific and Atlantic coasts was peer reviewed March 2012. The information from all four areas will feed into a national assessment of the ship-mediated pathway to be peer reviewed in February 2013. Recently completed reports include one for the Biological Supply House project led by Oregon Sea Grant (the Great Lakes is one of the focus areas of that project). The report characterizes this pathway for BC. A biological synopsis has been completed for the lacy crust (or coffin box) bryozoan (*Membranipora membranacea*) and for dark false mussel (or Conrad's false mussel) (*Mytilopsis leucophaeata*). A report summarizing the results of an angler use of live bait survey was also completed. A report summarizing some monitoring work on the recreational boating pathway in Northwestern Ontario is in peer review. Work is continues to complete a national recreational boating pathway, including the Great Lakes, with an aim to have a peer review in 2013, pending funding. Results of the bi-national risk assessment for Bighead and Silver carps for the Great Lakes were released in July 2012 and provides advice on key questions to inform prevention, monitoring and control actions. Note: All completed documents associated with CEARA are available at: <http://www.dfo-mpo.gc.ca/science/coe-cde/ceara/index-eng.htm> . CEARA Contact: Becky Cudmore, [becky.cudmore@dfo-mpo.gc.ca](mailto:becky.cudmore@dfo-mpo.gc.ca)
- Development of early detection and rapid response strategies, evaluation of ANS as part of multiple stressors, and reducing uncertainty in prediction and management of ANS, as part of the renewed NSERC Canadian Aquatic Invasive Species Network; <http://caisn.ca>
- Evaluation of a combination ballast water management strategy (exchange + treatment) for protection of freshwaters.
- Evaluation of filtration technology as a mitigation measure to reduce spread of ANS via domestic ships on the Great Lakes.
- Examination of St. Lawrence River ports as a potential source of ballast-mediated ANS to the Great Lakes.
- Modelling the secondary spread of ANS in the Great Lakes through Laker ballast and recreational boating activities.

**Transport Canada:**

Transport Canada, the US Coast Guard, and both Seaway Corporations continue to cooperate in the joint enforcement program in Montreal. In 2011, 100% of vessels bound for the Great Lakes Seaway from outside the exclusive economic zone received ballast management exams. 7098 ballast tanks (98.5%), during 396 vessel transits, were physically sampled. Vessel compliance rates remained high in 2011 (96.9% of all ballast tanks in compliance). Vessels with non-compliant tanks were required to either retain the ballast water and residuals on board, treat the ballast water in an environmentally sound and approved manner, or return to sea to conduct a ballast water exchange. Vessels that were unable to exchange their ballast water/residuals and that were required to retain them onboard, received a verification boarding during their outbound transit prior to exiting the Seaway.

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## Chippewa Ottawa Resource Authority

Chippewa Ottawa Resource Authority (CORA) represents five tribes in Michigan with regard to the tribes' commercial and subsistence fisheries in the 1836 treaty-ceded waters of Lakes Huron, Michigan and Superior. The tribes which are party to the 1836 Treaty are the Bay Mills Indian Community, Grand Traverse Band of Ottawa and Chippewa Indians, Little River Band of Ottawa Indians, Little Traverse Bay Bands of Odawa Indians and Sault Ste. Marie Tribe of Chippewa Indians.

CORA, through the Inter-Tribal Fisheries and Assessment Program, participates on the Council of Lake Committees under the Great Lakes Fishery Commission and is helping to establish sea lamprey control plans for Lakes Huron, Michigan and Superior. The CORA tribes are also assisting the U.S. Fish and Wildlife Service and partners by providing a staging area for sea lamprey control efforts in the St. Marys River in the summer of 2012. CORA is also assisting with a sea lamprey telemetry project in the St. Marys River in conjunction with the Department of Fisheries and Oceans Canada, U.S. Fish and Wildlife Service and University of Guelph. The results will be used to enhance the effectiveness of alternative control methods such as trapping and barriers by designing and placing structures that take advantage of sea lamprey movement patterns.

**Contact:** Mike Ripley, Environmental Coordinator, Chippewa Ottawa Resource Authority, 906-632-0072, mripley@sault.com.

## Great Lakes Sea Grant Network

### 1) Fishing tournament organizers and professional anglers: Preventing the Spread of AIS by Extending AIS-HACCP and the Stop Aquatic Hitchhikers campaign in the Great Lakes

**RELEVANCE:** Professional fishing tournaments are an untargeted venue that may exacerbate the risk of invasion posed by various aquatic invasive species (AIS), including zooplankton and pathogens; many professional anglers are unaware of simple activities that may reduce that risk. Tournament anglers and directors need a set of best management practices (BMPs) to incorporate AIS prevention steps into their operations.

**RESPONSE:** In 2011–2012, a \$25,966 subcontract from Wisconsin Sea Grant on a coordinated Great Lakes Network-wide project enabled Ohio Sea Grant to work with tournament organizers and identify where AIS prevention steps may be applied. We used the existing, effective "Stop Aquatic Hitchhikers!" (SAH!) brand to relay messages to an influential key audience.

**RESULTS:** In 2012, more than 370 professional anglers were presented information at three tournaments, and we expanded the project to include a new collaboration with an additional national tournament organizer. Anglers were surveyed regarding their awareness and compliance with BMPs. Among anglers surveyed, 100% considered AIS to be at least somewhat of a threat to the environment and angling. In addition, 100% (considerably increased from 2011) claimed to "always" or "usually" comply with at least some of the six listed BMPs, ranging from 100% for "Remove aquatic plants and animals from boats, motors, and equipment" to only 11% "Flush motor's cooling system with tap water" or "Wash/Rinse boat with high pressure and/or hot water." In addition, 24% of anglers at two annual tournaments with which we previously worked signed a voluntary pledge to execute SAH! BMPs.

**RECAP:** The second year of this region-wide effort to inform professional tournament anglers about AIS, showed a marked increase in the use of BMPs. Survey data indicates an ongoing need for continued AIS education of professional anglers and tournament directors regarding some BMPs.

### 2) A Comprehensive Regional Public Outreach Campaign on AIS

**RELEVANCE:** Aquatic Invasive Species (AIS) threaten our nation's inland lakes, rivers, wetlands, estuaries and oceans with more than 180 documented in the Great Lakes alone, many of them carrying tremendous economic costs to the region. The activities of individuals remains a major vector for the spread of AIS.

**RESPONSE:** In 2011, the Great Lakes Sea Grant Network, led by Minnesota, developed a two-year, comprehensive AIS public outreach initiative as one strategy to help stop new AIS introductions. We used the existing, effective "Stop Aquatic Hitchhikers!" (SAH!) brand and others to relay project messages.

OH Results: A two-year \$147,702 subcontract from the University of Minnesota helped Ohio Sea Grant (OHSG) reach an estimated 16,106 individuals (including professional anglers) in 2012 through October with information on AIS, Asian carps, and methods to help stop the spread of AIS. OHSG also began the process of collaborating with the Ohio Department of Natural Resources, Division of Wildlife to update and rewrite the Ohio AIS Management and Rapid Response Plan, and a draft has been reviewed by the state's AIS advisory committee with expected implementation in the coming year. As a result of OHSG education and outreach efforts participants reached with AIS information and responding to post-program surveys, 97.6% reported that they learned new information, 93.5% intend to use the information in future decision making, and 97.1% intend to share the information they learned. In addition, all anglers surveyed in fishing tournaments claimed to "always" or "usually" take at least some preventative actions.

MI Results : MI Sea Grant completed a survey of registered Michigan boaters similar to the study done by the Office of the Great Lakes in 2003 – that report is available at <http://www.miseagrant.umich.edu/files/2012/08/12-205-ANS-Boating-Survey-Report.pdf>.

RECAP: The educational efforts of OHSG on AIS resulted in a significant number of individuals intending to use what they learned about AIS in future decision making and influential professional tournament anglers were more aware of AIS as a result of OHSG outreach efforts.

#### **Ohio Sea Grant Project:**

"The Ohio Department of Natural Resources (ODNR) Division of Wildlife is responsible for maintaining the state's Comprehensive Management Plan for Aquatic Invasive Species (AIS). The state also hosts a diverse committee of interested agency, industry, and private stakeholders to advise the ODNR on AIS policies, programs, and maintenance of its management plan. That committee is co-coordinated by John Navarro, ODNR and Eugene Braig, OSU Extension. Eugene Braig and David Kelch, Ohio Sea Grant were also contracted to assist the ODNR in writing the current revision of the AIS management plan. After approval by the National Aquatic Nuisance Species Task Force, the plan will be implemented to help coordinate AIS management among Ohio's state agencies."

*Other Sea Grant extension activities are incorporated into the respective state reports.*

**Contact:** Rochelle Sturtevant, NOAA Great Lakes Sea Grant Network – Extension, 734-741-2287, [Rochelle.Sturtevant@noaa.gov](mailto:Rochelle.Sturtevant@noaa.gov)

## **North Central Regional Aquaculture Center**

GLP committee member Chris Weeks attended the Upper Midwest Invasive Species Conference Oct 29-31, Lacrosse WI. The meeting was well attended (estimated 1000+) over the 3-day period. Weeks gave a presentation entitled "AIS Impacts on Regional Aquaculture – the Need for Effective but Fair Regulations and a Proactive Industry".

Members of the North Central Regional Aquaculture Center (NCRAC) are forming an exploratory committee to increase industry involvement in AIS management and regulatory issues. Currently we are assessing how AIS HACCP can be better utilized to help monitor and control AIS in the North Central Region (NCR) US. Specifically we are examining potential to develop AIS HACCP into a recognized AIS control certification program (e.g. 3<sup>rd</sup> party). AIS HACCP is a self-inspection system for reducing the risk of spreading aquatic invasive species through aquaculture, hatchery, scientific, natural resource, and baitfish harvesting activities. To date several AIS HACCP workshops have been presented to industry and environmental protection agency personnel across the region through partnerships with Michigan, Illinois-Indiana, Ohio, New York, Pennsylvania, and Wisconsin Sea Grant programs and the North Central Regional Aquaculture Center. More information on AIS HACCP can be found at: <http://www.seagrant.umn.edu/ais/haccp>.

In discussions with commercial aquaculture and baitfish industry members in the NCR, the regulatory environment is the number one impediment to industry expansion. Moreover, there is great concern that potential new AIS regulations could be highly detrimental to these industry sectors. Additional risk assessment including, but not limited to, the following issues appears warranted before tighter restrictions on aquaculture and baitfish commerce are imposed: efficiency to which the intent of control can be realized, boundary characteristics (e.g. size- regional, national,...), watershed connections and natural pathways, comparative risk evaluation of all identified AIS vectors, and opportunity to legitimize industry driven AIS programs such as HACCP. In addition there are major concerns across the aquaculture community arising over the validity and use of eDNA as an AIS management tool: monitoring tool versus integration into

regulatory framework, the OIE Aquatic Animal Health Code, and others (also in reference: Invasive Species Advisory Council white paper “Validation of PCR-Based Assays and Laboratory Accreditation for Environmental Detection of Aquatic Invasive”).

**Contact:** Chris Weeks, Regional Aquaculture Extension Specialist, Michigan State University, 517-353-2298, weekschr@msu.edu.

## The Nature Conservancy

### TNC primary award:

1. Invasive predator suppression on critical spawning reefs: We are testing both innovative and traditional methods to control impacts of key interstitial invasive species in an attempt to enhance natural spawning success of lake trout, cisco and whitefish. Replicate reefs will be treated using integrated control strategies with combinations of trapping and seismic guns prior to fall spawning to suppress populations of invasive goby and rusty crayfish, with the aim of increasing survival of lake trout, cisco, and whitefish eggs and larvae. Demonstrated benefits of successful predator control will be promoted to restore sustainable populations of native reef fish across the basin.
2. Tri-State Aquatic Invasive Species Prevention and Monitoring: We are developing spatially based models that predict aquatic invasive species spread, and conducting monitoring surveys for target aquatic invasive species across New York, northwestern Pennsylvania and eastern Ohio, with a particular focus on *Hydrilla verticillata*. Monitoring data will be used to inform local control projects. We will conduct an invasive species pathway analysis, and conduct a genetic marker baseline study to try and determine the vector of introduction of hydrilla into the project area, specifically Cayuga Lake and Erie canal. We will work with partners to inform the public and stakeholder groups on how to close those pathways.

### Subawards from University of Notre Dame:

3. Forecasting spread and bioeconomic impacts of aquatic invasive species from multiple pathways to improve management and policy in the Great Lakes (Partially funded by GLRI): Investigators are combining scientific, economic, risk analysis, and management expertise to forecast both ecological and economic impact of current and future species invasions (e.g. Asian carp, Eurasian ruffe) and pathways, to identify actions to improve cost effective management of invasive species in the Great Lakes. [NB: Partly funded through NOAA CSCOR and GLRI.]
4. Environmental DNA Surveillance — Applied Early Detection: Investigators are further developing and implementing an early detection invasive species monitoring program using environmental DNA (eDNA) across the basin with a focus on delimiting the extent of Asian carp, Eurasian ruffe and northern snakehead in the Lake Michigan and Erie basins.
5. Preventing Invasions from Trade in Live Aquatic Organisms: Investigators are developing a suite of trait based risk assessment tools for non-native aquatic organisms in the Great Lakes Basin, to identify high risk species in live trades. The aim is to provide managers and policy-makers with objective scientifically defensible data to improve management of the live trades (e.g. water garden, aquarium, live food, and biological suppliers). Currently focusing on rolling out aquatic plant and mollusk risk assessment tools.

### Pending subaward from Central Michigan University:

6. Assessing Erie Canal Corridor invasion risk using environmental DNA: The Erie Canal Corridor’s invasion risk will be assessed by cataloguing non-native species in each basin to identify restricted AIS capable of spread via the Erie Canal Corridor. Environmental DNA surveys will help establish invasion fronts of priority AIS and inform future surveillance needs.

**Contact:** Lindsay Chadderton, Aquatic Invasive Species Director, The Nature Conservancy, 574-631-3618, lchadderton@tnc.org

## St. Lawrence Seaway Development Corporation

On August 2-3, 2012, the U.S. Saint Lawrence Seaway Development Corporation (SLSDC) and the International Joint Commission facilitated the sixth meeting of the Great Lakes Ballast Water Collaborative in Duluth, Minn. The Collaborative was established in 2009 to facilitate the exchange of information and cultivate relationships among the shipping industry, policy makers, scientists, and other stakeholders in the ongoing challenge to maintain a cost-effective modern shipping industry while also preventing invasive species from entering North American waters, specifically the waters of the Great Lakes. A particular emphasis of the Collaborative has been to bring state representatives together with marine industry representatives and respected scientists to discuss workable and effective solutions to the aquatic invasive species challenge as they relate to the Great Lakes St. Lawrence Seaway System. The August meeting focused on discussions of the new U.S. Coast Guard Ballast Water Discharge Standard Final Rule, the U.S. EPA's Draft 2013 Vessel General Permit, issues related to ballast water treatment system performance under the cold and extremely low salinity conditions of the Great Lakes, and methods to reduce the risk of intra- and inter-basin transfer of invasive species by U.S. and Canadian Laker operations. Documents related to the Collaborative are available at:

[http://www.greatlakes-seaway.com/en/environment/ballast\\_collaborative.html](http://www.greatlakes-seaway.com/en/environment/ballast_collaborative.html)

**Contact:** Craig Middlebrook, Acting Administrator, St. Lawrence Seaway Development Corporation, 202-266-0091, [craig.middlebrook@dot.gov](mailto:craig.middlebrook@dot.gov)

## Minnesota Sea Grant

### Outreach

MNSG continues to partner with the National Park Service to promote *Stop Aquatic Hitchhikers!*<sup>TM</sup> awareness and empower communities along the North Shore of Lake Superior to join the fight against the spread of AIS. Staff gave half a dozen talks at lake association meetings, workshops, conferences, and in classrooms that support community efforts to promote awareness. Overall, Sea Grant supported AIS outreach at over a dozen events (county fairs, lake association meetings, and trainings) educating nearly 3,800 people.

The Great Lakes Sea Grant Network (GLSGN) project, led by Minnesota, continues to implement a comprehensive outreach initiative targeting 15 pathways aimed at preventing the spread of AIS. It features *Stop Aquatic Hitchhikers!* (SAH!), *Nab the Aquatic Invader*, *Habitattitude*, *AIS-Hazard Analysis and Critical Control Point (HACCP)* program, and social media communications. During 2012, the GLSGN delivered so far a total of 105 talks at meetings and other events; supported mass media communications efforts by Wildlife Forever and other partners; coordinated production of 37 new *Stop Aquatic Hitchhikers!* educational resources; co-hosted 69 displays at boat, sports, and travel shows and other events; posted education messages via social media such as Tweets, podcasts, RSS feeds, and radio interviews; and issued nine news releases that generated 116 story placements in newspapers, radio, television, and e-news. The youth education component, *Nab the Aquatic Invader* featuring SAH!, taught nearly 17,600 students and teachers through teacher education workshops, stewardship projects, and AIS service learning courses. Together, AIS awareness through the SAH! campaign generated 4.9 million exposures in 2012 for a two-year total of 13.3 million exposures.

Building upon this successful effort, EPA awarded Minnesota Sea Grant, on behalf of the GLSGN, a second two-year GLRI grant to strengthen and broaden regional AIS outreach efforts. Working with partners in the pet and plant industries, the GLSGN is using a variety of marketing and education techniques to broaden the *Habitattitude* campaign partnership. For the Minnesota component, *Habitattitude* was promoted at ten events including the Arrowhead Home and Builders Show (Duluth, April), the Great Lakes Sea Grant Network Conference (Duluth, October), festivals and other events educating 3,041 people; media interviews posts on social media resulted in coverage on radio, television and e-news generated 1.1 million exposures. The campaign involves federal, state, and tribal agencies, businesses, academia, and non-governmental organizations to help them prevent the spread of both terrestrial and aquatic invasive species through HACCP training workshops and new materials (see <http://www.seagrant.umn.edu/ais/haccp>). These entities could spread invasive species through the movement of field equipment or other research or management activities if appropriate actions are not taken. Three HACCP workshops were hosted by GLSGN staff in Erie, PA (April), Ellendale, MN (July), and the Upper Midwest Invasive Species Conference, La Crosse, WI (October).

Based on a grant from the National Oceanic and Atmospheric Administration-National Sea Grant Program, GLSGN, led by Wisconsin, continued a two-year, multi-state outreach effort in partnership with fishing tournament organizers and professional anglers. At least 33 tournaments were attended by GLSGN staff. Key partners include Cabela's Master Walleye Circuit (MWC), Forest L. Wood (FLW), National Professional Anglers' Association (NPAA) and The Bass Federation (TBF). Sea Grant worked with tournament organizers to identify critical control points based on operations. Based on those efforts, a menu of best management practices (BMPs) is in preparation that can be used by tournament organizers. Staff met with professional anglers at rules meetings, distributed education resources from *Stop Aquatic Hitchhikers!* displays during daily weigh-ins and youth fishing clinics. For the Minnesota component, Sea Grant supported four events: The Bass Federation's Northern Division Championship (La Crosse, June), Sportsman's Club of Lake Vermilion *Take a Kid Fishing Day*, which was co-hosted by professional anglers (Cook, July), Silver Bay Salmon Classic (Silver Bay, July), and the 2012 Cabela's Masters Walleye Circuit World Championship (Prairie du Chien, WI, October).

### **Youth Education**

Sea Grant reached nearly 3,381 students and teachers about AIS in the Duluth area and beyond. Events and schools included: *River Quest*; Lake Superior Zoo *Earth Tracks*, Stowe Elementary School Environmental Fair (all Duluth), Mills Fleet Farm *Kids' Fishing Day* (11 locations in Minnesota); Sportsman's Club of Lake Vermilion's 3<sup>rd</sup> *Annual Take A Kid Fishing Day* (Cook, MN); Aitkin Rivers and Lakes Fair (Aitkin, MN); Cabela's Masters Walleye Circuit World Championship *Kids Fishing Clinic* (Prairie du Chien, WI); Woodland Hills Academy (Duluth, MN); School of Environmental Studies (Apple Valley, MN); and Oshki Ogimaag Charter School (Grand Portage, MN).

### **Ballast Water**

Sea Grant provided leadership and support at more than a dozen events related to ballast water and maritime commerce. Staff were actively engaged in many activities related to ballast water AIS outreach, education, and policy development across the Great Lakes, including the GLBWC ([www.greatlakes-seaway.com/en/environment/ballast\\_collaborative1101.htm](http://www.greatlakes-seaway.com/en/environment/ballast_collaborative1101.htm)). Highlights include presentations to the Science Advisory Board, Highway H<sub>2</sub>O, a guest lecture at the Humphrey Institute and Water Resources Center, as well as chairing a special session on ballast water regulations in the Great Lakes at the Upper Midwest Invasive Species Conference in October. In May, the GLBWC held a meeting in Duluth that hosted the most knowledgeable experts on ballast water treatment regulations and technology in North America to discuss options, threats and opportunities. Staff worked closely and Minnesota DNR and Minnesota Pollution Control Agency providing the latest science and regulatory activities at national and international levels that help inform policy objectives for Minnesota and the Great Lakes. Three articles were published for the *Great Lakes Seaway Review* (Jan-Mar; Oct-Dec) and *Seiche* newsletter (Feb).

### **Four New Grants**

The Great Lakes Restoration Initiative (GLRI) awarded the University of Minnesota Sea Grant Program two-year funding through the U.S. Environmental Protection Agency. This funding extends education efforts that span the Great Lakes states with messages about preventing the spread of aquatic invasive species. The GLSGN, led by Minnesota, is working to ensure that people know the alternatives to releasing live bait, aquarium and water garden species, and study specimens through the *Habitattitude* campaign. Through *Stop Aquatic Hitchhikers!*, the Network and its partners have successfully reached boaters and anglers with information about ways to keep aquatic organisms from spreading through recreational activities.

GLRI awarded funding to the GLSGN, led by Illinois-Indiana Sea Grant, for study that complements the project above. Minnesota Sea Grant will support development of a needs assessment for organisms in trade, new outreach tools for aquarium hobbyists, water gardeners, teachers and students, and provide outreach at meeting, shows and other events.

Another GLSGN proposal, led by Wisconsin, received a two-year grant to *Train Local Groups to Inspect and Wash Fishing Tourney Boats*. Tournament organizers often rely on local groups for logistic support. Minnesota Sea Grant will support training volunteers, who likely have a strong desire to protect their home waters, to inspect and clean tournament boats, will help interdict this potential AIS pathway.

GLSGN, led by Ohio, received one-year funding from the National Oceanic Atmospheric Administration to support *Education and Outreach on Asian Carp to Support the Asian Carp Regional Coordinating Committee*.

**Contact:** Doug Jensen, Minnesota Sea Grant, 218.726.8712, [djensen1@umn.edu](mailto:djensen1@umn.edu)

## U.S. Forest Service, Eastern Region

### Outreach and Education

The Forest Service has continued to provide funding to Aquatic Invasive Species (AIS) Outreach and Education exhibits and programming at Shedd Aquarium (Chicago, IL; 2012-present) and Discovery World (Milwaukee, WI; 2011-present). Programming includes summer camps for children and summer jobs for teens to educate them about aquatic invasive species, and give them opportunities to share their knowledge with others. Exhibits include live animals, informative panels, and interactive displays. Approximately 1 million people visit the Shedd Aquarium each year, and Discovery World has 200,000 visitors annually.

The Forest Service is also an important contributor to Wildlife Forever's Threat Campaign partnership in the Great Lakes region (2010-present). The Threat Campaign is a multi-media effort to educate people about how to prevent the spread of invasive species. Outreach materials include billboards, television programs, web advertising, print ads, appearances at trade shows and conventions, and public service announcements on TV and radio. In federal fiscal year 2012 (Oct. 2011 - Sept. 2012, FY12), nearly 46 million public impressions about AIS issues were attributable to Forest Service funding of the Threat Campaign. More details are at <http://go.usa.gov/gb5d>.

### Prevention of Secondary Spread of AIS by Recreational Boaters

In recent years the Forest Service has expanded partnerships with local communities to educate recreational boaters about what they need to do to prevent the spread of AIS, and to provide staff and equipment for boat inspection and decontamination. The Ottawa National Forest in Michigan's western Upper Peninsula began this effort with the acquisition of 4 portable boat washing units in 2010. In 2011 and 2012, with the acquisition of several more boat washing units, this work expanded to the Chequamegon-Nicolet National Forest in northern Wisconsin and the Hiawatha National Forest in the central Upper Peninsula. The Huron-Manistee National Forest in Michigan's Lower Peninsula anticipates purchasing two boat washing units in 2013, subject to GLRI funding availability in FY13.

The Ottawa National Forest also recently completed the construction of a free-standing self-service boat washing station. The station is located at the public access boat launch on Hagerman Lake, near Iron River, MI. This project received GLRI funding in FY10 and FY11. Photos of the completed washing station are available at <http://go.usa.gov/gbjd>.

In addition to boat inspection and washing, the Ottawa National Forest has posted improved AIS signage at all 41 public access boat ramps on the forest. The Hiawatha National Forest and the Huron-Manistee National Forest are in the process of doing likewise. See <http://go.usa.gov/gbRw> for a photo of one of the signs.

### Control and Management through Partnerships

As the Forest Service works with partners to control and manage invasive species on and off National Forests, Cooperative Weed Management Areas (CWMAs) are a valuable organizational tool. CWMAs are local organizations that integrate all invasive species management resources across jurisdictional boundaries to benefit entire communities. Thanks to dedicated staff and volunteers, and to Great Lakes Restoration Initiative funding, all five National Forests in the Great Lakes basin are now working with one or more active CWMAs. Much more information about how National Forests participate in CWMAs is available at <http://www.fs.fed.us/r9/ssrs/story?id=6322>.

### Outreach and Education

Beginning in 2010 and continuing to the present, the Eastern Region of the U.S. Forest Service has worked cooperatively with the National Professional Anglers Association (NPAA) to teach youth and their families about the threat of aquatic invasive species and the steps that individuals must take to prevent their spread. This partnership reached hundreds of people in the region as NPAA pros and Forest Service staff hosted fishing derbies and provided information about aquatic resources and aquatic invasive species.

### Management Activities on National Forests: Control and Prevention

The Eastern Region of the Forest Service recently released a report on terrestrial and aquatic invasive species management activities on National Forests in FY2011. A report for FY2012 will be released soon. The 2011 report is available at <http://go.usa.gov/gbn5>. Some highlights from the report related to AIS on National Forests in the Great Lakes basin include Eurasian watermilfoil control on the Hiawatha National Forest, Phragmites control on the Huron-Manistee National Forest, and rusty crayfish and spiny waterflea surveillance on the Superior National Forest.

**Agency Policy**

The U.S. Forest Service has released a new policy manual on Invasive Species Management (Forest Service Manual 2900, Effective Date: 2/5/2011). Under this policy direction, management activities for aquatic and terrestrial invasive species are based upon an integrated pest management approach on all areas within the National Forest System (NFS) and on areas managed outside of the NFS under the authority of the Wyden Amendment, prioritizing prevention and early detection and rapid response actions as necessary. All NFS invasive species management activities will be conducted within the following strategic objectives: (1) Prevention, (2) Early detection & rapid response, (3) Control & management, (4) Restoration, and (5) Organizational collaboration.

The Forest Service is developing a handbook to accompany the recently released manual. This handbook (Forest Service Handbook 2900) will provide detailed instruction for implementing invasive species management on National Forests and other NFS units. Furthermore, the agency is revising the National Invasive Species Strategic Framework (formerly known as the National Invasive Species Strategy) with a target completion date of late 2012.

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