SLELO PRISM
St. Lawrence Eastern Lake Ontario Partnership for Regional Invasive Species Management
Teaming Up to Stop the Spread of Invasive Species

Salmon River Initiative Progress

By Rob Williams, SLELO PRISM Coordinator

The Salmon River, located along the eastern shore of Lake Ontario, is a valuable cultural and natural resource worthy of protection from the habitat-altering impacts of invasive species. As a cultural resource, the Salmon River is a multi-million dollar fishery hosting in excess of 100,000 anglers annually. Angling enthusiasts travel from across the United States and Canada, as well as from throughout the world, to fish the river. The Salmon River is also an integral part of the Lake Ontario ecosystem as it is directly linked to the overall Great Lakes ecosystem. This 17-mile river system is rich in habitat diversity and provides, both in the upstream reaches and within the estuary, spawning and nursery grounds for pacific salmon (Chinook, Coho and Steelhead) and the native Atlantic salmon. The estuary provides shorebird nesting habitat for important species such as the Least Bittern (*Ixobrychus exilis*).

Photo By Rob Williams

Recognizing the increasing dominance of Japanese knotweed (*Fallopia japonica*), an aggressive invasive riparian plant, along sections of the Salmon River, partners of the SLELO-PRISM initiated a three year strategic effort known as The Salmon River Initiative.

This initiative included three key components: suppression of Japanese knotweed, native plant restoration and education and outreach.

The 2015 field season marks the final year of major efforts under this initiative. Although some work will continue (site monitoring, restoration and education), the suppression of knotweed along the river has come to a close.

Towards this end the SLELO PRISM has suppressed approximately 10.6 total acres of knotweed with an estimated 65% suppression rate of knotweed populations. 21 sites were re-seeded to native grasses and three key sites were actively restored using a combination of seeding and live staking. One site being actively monitored shows a 100% reduction of knotweed stems after three annual treatments. These factors lead us to believe that the overall project objectives have been successful.

Moving forward, the SLELO PRISM partners will continue supplemental education and outreach efforts by way of a river steward and may even provide supplemental restoration through the Trees -For-Tribs program offered by the NYS DEC Saratoga Tree Nursery.

Environmental DNA and Early Detection

By Rob Williams

In recent years new technology has been emerging that involves the detection of aquatic invasive species at a molecular level. Known as environmental DNA or eDNA, this technology has been and continues to be tested primarily out of research interests. The SLELO PRISM and TNC will be among the first to evaluate eDNA as a genuine early detection tool rather than a singular research effort.

Aquatic organisms shed tissue and body fluids which contain genetic material. This DNA can be extracted from water samples, filtered and amplified using a technique known as q-PCR extraction (quantitative polymerase chain reaction).

Using a $70,000 grant from the U.S. Fish and Wildlife Service PRISM partners will use this methodology on four tributaries along eastern Lake Ontario to include the Oswego, Salmon, Chaumont Rivers and French Creek North. This effort will focus on technology that uses DNA from aquatic invasive species combined with high resolution underwater video surveillance as practical tools in the early detection of aquatic invasive species while at the same time engaging in new citizen science based partnerships.

The objectives of this project include: 1) *Incorporate Environmental DNA and video technology to test its usefulness as an aquatic invasive species early detection tool.* 2) *Engage citizen scientists towards a better understanding of the importance of early detection*, 3) *Develop a citizen science reference guide to further utilize these technologies on a broader scale.* One key element of this work will be to obtain genetic testing results in a timely manner, such as days versus weeks or months.

A Van Dorn style water sampler is used to collect water samples which are then transported to the lab for genetic testing.

Spread Prevention Through Control
2015 Season Progress

PRISM partners can't possibly treat all of the invasives wherever they occur, therefore we focus our control/ spread prevention efforts in **P**riority **C**onservation **A**reas where we will likely gain the most benefit. This years control work was done on 130 sites in 11 Priority Conservation Areas including:

Giant Hogweed Control
- 47 private sites

Phragmites Control
- Little John WMA = 2 sites

Swallow-wort Control
- Black River Trail = 2 sites
- Chaumont Barrens = 31 sites
- Deer Creek = 23 sites
- ElDorado = 26 sites.
- Lakeview = 1 site
- Mud Bay = 4 sites
- OBI Couch = 3 sites
- Limerick Cedars = 4 site
- Three Mile Creek = 1 new site
- Salmon River Knotweed= 21 sites

Additional work has been done on controlling **autumn olive, buckthorn and honeysuckle**; results are pending.

Water Chestnut Biological Control

By Rob Williams

In New York State alone, 32 counties representing nearly 60% of the state now have water chestnut populations that continue to impact the health and balance of freshwater resources. Chestnut populations are found in nine states in the northeastern U.S. and at least two Canadian provinces. Populations are now free-floating in Lake Ontario. Tremendous monetary and human resources continue to target the control of water chestnut (*Trapa natans*). In the Oswego River alone nearly half a million dollars have been spent on treatments, including both mechanical and chemical.

Each year PRISMs across New York are asked to submit research priorities to the NYS Invasive Species Coordination Unit. Although many are submitted, we are pleased to announce that we have been instrumental in securing **$250,000** from New York State to further the development of *Galerucella birmanica* as a biological control agent for water chestnut.

The funding is being provided to the New York Invasive Species Research Institute at Cornell University for research and quarantine purposes. Dr. Bernd Blossey will lead the effort.

Current regulations for developing a biological control agent are much more stringent than in the past, and now require source-to-destination quarantines, formal host specificity testing involving 40-50 native species, and approvals from the Technical Advisory Group (TAG, within USDA/APHIS).

We are hopeful that in the years to come we will have a new tool in the toolbox to help manage the highly invasive water chestnut.

Galerucella birmanica
Photo by: Jianqing Ding, Cornell University

Our PRISM Prevention Species

Hydrilla
(*Hydrilla verticillata*)
Mile a Minute Vine
(*Polygonum perfoliatum*)
Didymo
(*Didymosphenia geminate*)
Asian Long Horned Beetle
(*Anoplophora glabripennis*)
Hemlock Woolly Adelgid
(*Adelges tsugae*)

New Zealand Mud Snail
(*Potamopyrgus antipodarum*)
Hemimysis
(*Hemimysis anomala*)
Asian Clam
(*Corbicula fluminea*)
Kudzu
(*Pueraria lobate*)
Water Hyacinth
(Eichornia crassipes)

Porcelain Berry
(*Ampelopsis spp.*)
Water Soldier
(*Stratiotes aloides*)
Rusty Crayfish
(*Orconectes rusticus*)
Silver, Big head and Grass Carp
(*Ctenopharyngodon spp.*)
European Boar
(*Sus scrofa Linnaeus*)

Species Profile & Rapid Response
Water Hyacinth
(*Eichhornia crassipes*)

This summer our partners at DEC Region 6 were on their toes when they discovered a population of water hyacinth in a creek adjacent to the Dexter Marsh. Their response was commendable resulting in a day-long hand harvest of this population.

The water hyacinth (*Eichhornia crassipes*) is native to South America but is now found in many warm areas including: Central America, North America (California and southern states), Africa, India, Asia, Australia, and New Zealand. Its abundance in New York State and the northeastern U.S. is limited with only a few vouchered samples on record.

Photo Credit: Wilfredo Robles, Mississippi State University, Bugwood.org

Its potential impacts to our native habitats may be substantial due in part, to the hyacinths explosive growth rate—it can double its population in just two weeks [1]. As with many aquatic invasive species, water hyacinth can swiftly out-compete native plant species resulting in a reduction of biological diversity and habitat degradation. Plant respiration and seasonal biomass decay may result in oxygen depletion and fish kills. One report suggests that a single acre of water hyacinth can deposit as much as 500 tons of rotting plant material on the bottom of a waterway within one season[2].

The plant is relatively easy to identify. It is a floating plant that forms clusters of large rounded glossy leaves (rosettes). The leaf stalks have large, noticeable bulbous stems (petioles) which aids in floatation.

Photo Credit: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

The roots are thick and feathery and hang beneath the plant. The flowers emerge above the height of the rosette and are typically lavender-blue and showy with six petals. The seeds are usually formed within submerged and withered flowers .The most effective control measures reported include: aquatic herbicides, mechanical harvesting and some biological controls; herbicides are the more effective control measures. Mechanical controls such as harvesting have been used for many years in Florida, but are expensive and reportedly cannot keep pace with the rapid growth of this plant especially in large water systems.

Three insects have been released in southern states for the biological control of water hyacinth including two weevil species (*Neochetina* spp.) and a moth (*Sameodes albiguttalis*). Insect predation reduced plant height and seasonal growth and decreased the number of seeds produced. This in turn allowed better boat access into plant mats, reduced use of herbicides, and resulted in fewer plant problems. In Louisiana, the seasonal growth of water hyacinth was reduced from a high of over 400,000 hectares per year to a low of only about 80,000 hectares.[3]

Partners of the SLELO PRISM have placed this species onto our watch list and will conduct enhanced surveillance for this species beginning in 2016.

~ Rob Williams

[1] *J. Masterson, Smithsonian Marine Station.*
[2 & 3] *Center for Aquatic and Invasive Plants, University of Florida*

Partner Spotlight
Soil & Water Conservation Districts of the SLELO PRISM

Land Conservation Districts (called Soil and Water Conservation Districts in New York State) were created in this country in response to the horrific natural devastation that occurred in the 1930s from the Dust Bowl. The extreme drought produced severe erosion of one of our greatest resources - top soil. The sky over Washington, D.C. was tinted by blowing soil particles from the Midwest.

In 1935, federal leaders passed legislation creating the federal Soil Conservation Service; individual states were encouraged to do the same. In 1940, New York State followed quickly and created a state level structure with allowance for counties to form Soil and Water Conservation Districts (SWCDs) .

SWCDs in New York State were given wide authority to preserve soil and water resources through many recognized venues that would protect and promote the health, safety and general welfare of the people of the New York State.

Many SWCDs today have broadened their traditional methods of natural resource preservation by incorporating invasive species control, both aquatic as well as terrestrial. SWCDs have for a long time worked with not only the private property owners but many local, state and federal agencies and NGOs. SWCDs are well versed in dealing with putting conservation onto the land - controlling for invasive species is just another facet of that effort.

The Oswego County SWCD has made great strides in 2015 for controlling water chestnut in the Oswego River. Just a few years ago well over 200 acres were in need of some form of treatment. This year about 60 acres of the original 200 required treatment.

That being said, this office has recently been apprised of other water chestnut outbreaks in need of chemical treatment. Other sites still remain where hand- pulling is the recommended method of control. For example, the 5th Annual water Chestnut Hand Pull at Port Ontario/Salmon River was conducted on July 11th. This event partnered with the SLELO PRISM, who provided an educational opportunity on the importance of controlling invasive species. Nearly twenty volunteers assisted with harvesting, even though the plant numbers were down from previous years' totals. This was a sign that we are making a difference here through hand pulling. We must retain a vigilant effort in the years to come.

The successes of water chestnut control have come about through the assistance and hard work of many people over a number of years. The Oswego County SWCD wishes to thank them all for their investment and commitment towards invasive specie control.

~John DeHollander
Oswego County SWCD

Note: the Jefferson County SWCD, Oneida County SWCD and the Lewis County SWCD are also partners of the SLELO PRISM.

The St. Lawrence County Soil and Water Conservation District has worked to discourage the planting of invasive species. This is done through education during our annual tree and shrub program. We have partnered in several efforts to educate the public and municipalities about emerald ash borers and the damage/costs associated with them. The SWCD also did a project to put up signs of invasive aquatic species at every boat launch in the county. We are currently working with a group at Black Lake in an effort to do Eurasian watermilfoil eradication.

~Dawn C. Howard
St. Lawrence SWCD

TILT Volunteer Field Trips

The Thousand Islands Land Trust hosted community members at Carleton Island on July 13 and Grenadier Island on August 27 to learn about the history and management of swallow-wort. Resources were shared on how to identify invasive species, particularly swallow-wort, and ways communities may get involved in managing for invasive species. In addition, participants ventured into the field to see first hand the impact of swallow-wort on the landscape and how community members may work together to restore habitats.

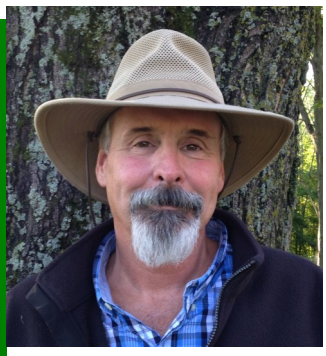
A special thanks to: the SLELO Partnership, Sandy Bonanno, Sue Gwise, Lindsey Milbrath, Mike & Irene Chisholm and John & Libby Comerford for making the trips possible.

Group photo of volunteers from Grenadier Island ; July 13th

Group Photo from the Field ; August 27th.

Invasive Species Handbook 3.0

One of the SLELO PRISM'S most popular educational and outreach items is the 63 page Invasive Species Handbook. This handbook covers 25 invasive species and includes descriptions and management options. Now in its third printing, SLELO partners have added four new pages making this booklet even more functional. New pages include a section on stopping aquatic hitchhikers using the "Clean, Drain, Dry" protocol, the "Don't Move Firewood" campaign, Site Development and Topsoil Relocation, and Invasive Species Disposal Methods. To view a copy visit the Educational Material page of our website at **www.sleloinvasives.org**.



Coordinators Column

Early Detection & Rapid Response

During our original strategic planning phase our Ranger Team suggested that we not only conduct voluntary efforts to survey and control invasives but to also have a team in place that would conduct surveillance and responses to low abundance populations of invasives.

Stemming from this philosophy we then established an ED/RR protocol that has resulted in the early detection and rapid response of multiple, low abundance populations of invasives. Although most of these early detections have been for target management species, e.g. those that already exist within our region, these early detection initiatives help to contain invasive species.

Since our PRISM was formalized in 2011,we have benefitted from having a seasonal team conducting these initiatives. Deliberate early detection work takes place on all 24 of our identified Priority Conservation Areas. This occurs on a two year rotation and uses an HPA protocol for efficiency (Highly Probable Areas). Rapid responses are then organized based on the most appropriate type of response.

Too often the work of our seasonal teams goes unrecognized or at least not at the level they deserve. Whether its' logging hundreds of miles by land or by sea, bushwhacking through thick vegetation or dealing with that occasional swarm of annoying (and hungry) insects, our teams persevere.

I wish to take this opportunity to express our gratitude for the hard work of our seasonal employees over the past four years and to acknowledge this year's team for a job well done!

Mike Parks, Ed Miller
Caitlin Muller and
Benjamin Hansknecht

~Rob Williams
PRISM Coordinator

SLELO PRISM Partners

- Cornell Cooperative Extension County Offices
- The Nature Conservancy
- NYS Department of Environmental Conservation
- NYS Office of Parks, Recreation & Historic Preservation
- NYS Department of Transportation
- NY Sea Grant
- Ducks Unlimited
- County Soil & Water Conservation Districts
- Fort Drum Military Installation
- Tug Hill Tomorrow Land Trust
- Tug Hill Commission
- Save The River
- Audubon - Central NY Chapter
- Thousand Islands Land Trust
- NY Power Authority
- CNY Regional Planning & Dvlp. Board

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