SCOPE OF WORK

Project Title: Lake Superior Coastal Wetland Invasive Species Early Detection and Rapid Response (LS3)

Project Principle Investigators: Amy Eliot, Assistant Scientist
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Project Location: Coastal Wetlands through Lake Superior Basin as identified at
http://dnr.wi.gov/topic/wetlands/coastal/SiteListLakeSuperior.html

Background

Many of the Lake Superior Coastal wetlands have been assessed through nearshore monitoring conducted by LSRI with direction and through a partnership with the WDNR. Results of this monitoring concluded:

> *"…conditions in the Lake Superior basin are relatively good, although not always pristine as described in some publications. Ecosystems in the basin that are exhibiting degraded conditions, presence of AIS, or exceeding state water quality standards should be investigated further.*"

The *Lake Superior Coastal Wetland Invasive Species Early Detection and Rapid Response* project funded through an EPA GLRI Coastal Wetland grant addresses the concerns of AIS in Lake Superior nearshore areas. This project will determine the extent and impact of known invasive species infestations; discover pioneer populations through early detection; work with partners to share information on previous monitoring/management efforts; and implement rapid response and invasive species management in Lake Superior's coastal wetlands.

The project area for this work includes coastal wetlands in the Beartrap-Nemadji and St. Louis watersheds. These areas are identified in the following figure.

1	*Allouez Bay, Wisconsin Point	15	Iron River Mouth	29	Poplar River Estuary
2	*Amnicon River Estuary	16	Little Sand Bay	30	*Port Wing
3	Bad River/Kakagon Slough	17	Long Island	31	Raspberry Bay
4	*Bark Bay	18	*Lost Creek	32	Red Cliff Bay
5	Bay City Creek	19	Lower Nemadji River Marshes	33	*Red River Breaks-St. Louis River Marshes
6	*Bayview Beach	20	Middle River Estuary	34	Reefer Creek Mouth
7	Big Bay	21	Montreal River Mouth	35	Saxine Creek
8	Big Sand Bay	22	*Mouth of the Brule River	36	Siskiwit River
9	Cranberry River	23	Nemadji River Bottoms	37	Stockton Island Tombolo
10	Dutchman Creek	24	Oliver Marshes	38	Sultz Swamp
11	Fish Creek	25	Onion River Estuary	39	*Superior Airport-Hill Ave Wetlands
12	*Fish Creek Slough	26	Outer Island Sand Spit and Lagoon	40	*Superior Municipal Forest
13	Frog Bay	27	Pikes Creek Slough	41	Thompson Creek
14	Graveyard Creek	28	*Pokegama-Carnegie Wetlands	42	Whittlesey Creek

Twelve coastal wetlands within the project area have been selected for monitoring. Selected wetlands were prioritized based on public ownership, IS presence, past efforts, and local significance of wetland (use and familiarity). As part of the project, a Stakeholder Group will be convened by the WDNR Project Manager to provide input into the coastal wetland selections prior to the start of the assessments and to raise awareness about the effort.

Wetland AIS monitoring protocols have been developed by the WDNR and are currently being piloted by WDNR staff. These protocols will be used for coastal wetland AIS early detection monitoring but may be adjusted based on needs of this project as approved by WDNR. Protocols to be used will be included in the approved QAPP.

WDNR staff will be responsible for providing training to field staff in the use of these new protocols. In addition, Floristic Quality Assessments (FQA) will be conducted using a time meander protocol. The technical team will assist in devising a sampling scheme that will enable detection of pioneer and established stands of AIS species as well as provide an indication of native vegetative quality, which will be useful in understanding the impact of the invasive species in the wetland and for understanding the impact of any AIS control efforts.

Key project objectives are to:

- Determine if AIS is present/absent in target wetlands
- Determine if AIS present is a pioneering or established populations
- Determine the extent of AIS infestations in target wetlands
- Determine the impact of AIS on the target wetlands through use of pre/post FQAs
- Prioritize control work in infested wetlands
- Identify control methods in infested wetlands
- Conduct control work in infested wetlands
- Monitor rate of success of control work through post FQAs
- Identify need for future control work and monitoring.

Project Scope:

The Lake Superior Research Institute (LSRI) will work with the WDNR Project Manager (PM), the Stakeholder Group, and the AIS Technical Team to prioritize wetlands, define the sampling protocols, conduct vegetative assessments, and coordinate control efforts in the Beartrap-Nemadji and St. Louis watersheds.

The WDNR Project Manager will convene and coordinate all Stakeholder Group meetings and will provide updates as the project progresses. The Stakeholder Group will consist of a local, state and federal resource and property managers. The purpose of the Stakeholder Group is to provide feedback on the location of the assessments; assist with gaining access to non-public wetlands; and to assist with any permits required for the project. LSRI will attend all Stakeholder Group meetings and will work directly with stakeholders as needed to coordinate access to wetlands and gain permits and approvals for proposed control work.

LSRI will convene and lead an AIS Technical Team (AIS-TT) to assess the monitoring plan, methods and results. The AIS-TT will also assist with identifying rapid response priorities, strategies, control and restoration areas, and developing an AIS Management Plan for Lake Superior Coastal Wetlands. A minimum of three technical team meetings will be held during the project period.
LSRI will assist the WDNR Project Manager in acquiring and summarizing pertinent background information for the selected wetlands. Information may include aerial imagery collected by WDNR, FQAs from previous vegetative assessments, AIS or endangered species occurrence data from state herbarium

or other public databases, known anthropogenic stressors, and known AIS travel routes, such as roads and trails.

LSRI will conduct coastal wetland assessments in 10 of the selected wetlands per year. Assessments will include some combination of FQA and AIS Early Detection Monitoring and Rapid Response time meander protocols as determined by the AIS Technical Team. The LSRI will provide assessment and control data to the WDNR in written and electronic formats. These data will be used to prioritize control efforts in coastal wetlands with known AIS populations.

LSRI will coordinate control and/or restoration efforts through sub-contract or perform the work internally. All control and restoration work will be done in accordance with federal and state regulations. Follow up FQAs using a time meander method may be used in year 2 in areas controlled in year one.

The final report produced through this work will be used by WDNR to develop a coastal wetland AIS monitoring and response strategy that may be used to guide future control and restoration work.

LSRI Deliverables:

The project will follow the following workflow (partner involvement and action responsibilities for collaborating agencies are addressed within each deliverable):

1. Attend all stakeholder meetings convened by the WDNR Project Manager including initial meeting to finalize priority wetlands
2. Attend a minimum of 3 coordination meetings per year with WDNR Project Manager to refine project schedules, objectives, and address project issues or conflicts, etc.
3. Coordinate field monitoring schedule
4. Develop a QAPP with assistance from the WDNR Project Manager. WDNR Project Manager will work with Great Lakes Quality Assurance staff to obtain EPA approval.
5. LSRI will convene an AIS Technical Team to guide project decisions. Invitations to participate on this team will be sent to: the WDNR Project Manager, Bayfield and Douglas County Conservation Departments, Great Lakes Indian Fish and Wildlife Commission, USFS, USFWS, NPS, and NCWMA, state wetland and climate change professionals. Others may be invited if deemed necessary by LSRI and the WDNR Project Manager.
6. LSRI will hire staff with botanical expertise and ability to lead crews on vegetative assessments. An intern/student will also be hired to assist with field work, entering data, and providing GIS mapping support.
7. LSRI will perform early detection monitoring and FQA time meander assessments at 10 sites/year
8. LSRI will quantify presence of priority species using protocols and datasheets identified by the WDNR Project Manager and/or AIS Technical Team.
9. Data Entry & Analysis. LSRI will record AIS results on DNR wetland monitoring forms and report monitoring results in SWIMS at least once per field season and to monthly to WDNR Project Manager via email. FQAs will be reported as Mean C to the WDNR Project Manager in an excel spreadsheet or other suitable method. WDNR Project Manager will provide training to LSRI staff responsible for data entry.
10. LSRI will produce maps of at least 12 coastal wetlands that identify the location and results of the monitoring effort (i.e of monitoring path (GPS waypoints or track) with points showing where any priority invasive species populations were found).

11. Work with the AIS Technical Team to plan needed response actions
12. Obtain needed permissions and perform or sub-contract control and restoration work approved by WDNR
13. LSRI will coordinate at least three AIS Technical Team meetings including:
    a. Meeting 1 (2017): Establish priority species; WDNR presentation and introduction to invasive species risk assessment and prioritization model; finalize planned monitoring protocols/methods and schedule.
    b. Meeting 2 (2017): Assess year-1 monitoring results and determine species and areas targeted for control
    c. Meeting 3 (2018): Present results of year 1 control; year 2 assessments; and recommendations for drafting invasive species monitoring and control strategy
14. LSRI will submit progress reports to WDNR project manager. Progress reports will include the following:
    o Project budget and amount of the funds expended to date.
    o Activities/products completed this quarter, for example: meetings held, summary of data collected, progress made on deliverables, etc.
    o Problems/Issues: any issues or concerns for completing the project on time or within budget will be noted.
    o Activities planned for next 6 months will be noted.
15. Final Report. LSRI will complete a final report which will include a summary of the project objectives, methods, maps, results, and a discussion of effective monitoring and control strategies along with future recommendations for monitoring and control. Cost estimates for future control and restoration work should be included in the final report. The final report will also include a brief summary of current predictions for impacts of climate change and invasive species associated with these changes.

Schedule:

1. Coordinate AIS Technical Team: January 1, 2017-September 31, 2018.
2. Conduct field-based wetland invasive species early detection and any FQAs: July 1, 2017 - October 31, 2017 and July 1, 2018- September 31, 2018.
3. Data analysis beginning in October 2017 and on-going through project
4. Conduct invasive species response monitoring/population extent assessment: August 2017 and ongoing to include times of year when wetland areas more accessible, i.e. ground freeze
5. Seek landowner access permission and permits for control: By May 15th, 2017 & 2018
6. Perform control work: September 1, 2017 & 2018 – October 31, 2017 &2018
7. Progress Reports – March 31, 2017; September 30, 2017; January 30, 2018; March 31, 2018; And September 30, 2018
8. Consolidate data and report results: October 31st, 2018.
9. Final Report - December 1, 2018.

Budget Summary:

	January 1, 2017 – December 31, 2017	January 1, 2018 – November 30, 2018	Total
Salaries & Wages	$40,416	$36,993	$77,409
Fringe Benefits	$15,251	$13,964	$29,215
Equipment & Other Capital			
Supplies	$357	$335	$692
Contractual	$5,000	$5,000	$10,000
Travel – Domestic	$2,000	$2,000	$4,000
Other Direct Charges	0	0	0
Direct Costs	**$63,024**	**$58,292**	**$121,316**
Indirect Costs (15%)	$8,350	$7,644	$15,994
Total Costs	**$71,374**	**$65,936**	**$137,310**

Note: Initial award will encompass year 1 funds. Additional funds for Year 2 will be awarded based on results and output of the first year.

Budget Narrative:

This project will be contracted with LSRI to manage the project and conduct the assessment. The cost estimate for contractual includes working with an AIS Technical Team convened by LSRI; coordination and preparation for a minimum of 3 AIS Technical Team meetings, meeting a minimum of 6 times with the WDNR Project Manager to coordinate project details; drafting a QAPP with WDNR Project Manager assistance; attending all Stakeholder Group meetings convened by the WDNR Project Manager; leading and coordinating data collection and analysis; creating project maps; drafting progress and final reports; overall project management, attending WDNR trainings, hiring, supervising and training all LSRI staff and UWS students. The budget includes salaries and wages, fringe benefits and a 15% indirect cost, which is the agreed rate for UWS/WDNR projects with federal pass-through dollars. Travel costs of $4000 include truck rental, mileage, gas and per diem reimbursements. Supply costs of $692.19 include batteries and miscellaneous office supplies. $10,000 will be used for control work through a sub-contract, or alternatively with LSRI staff if a suitable sub-contractor cannot be found. Indirect costs cover office overhead such as computers and IT support, ArcMap licensing, office space, waders and other field gear, use of GPS units, flow meters, cameras and other miscellaneous equipment.