

*Strategic Framework for Coordinated Management and Control of  
Invasive Phragmites in Michigan*

Iteration II

(Final Draft: August 4, 2011)

Developed as Guidance under the Initiative:

*Phragmites Invasions in Michigan: A Symposium to Build Capacity for Management*

**I. Background and Problem Statement**

*Phragmites australis*, also known as common reed or invasive phragmites, is a non-native perennial grass causing significant ecological and economic impacts across the Great Lakes region. Through rapid growth in dense stands, the non-native strain of phragmites displaces native plant species – including the native strain of phragmites – and reduces habitat diversity in coastal and interior wetlands, riparian corridors, roadside ditches and other disturbed areas. Invasion by non-native phragmites causes severe impacts to native plants, animals and valuable habitat, such as wetlands. The establishment of invasive phragmites also creates societal impacts by degrading shoreline views, impacting resources for recreational use, and creating a fire hazard, among others.

Control of invasive phragmites is highly challenging and currently there is no “silver bullet” (i.e., single most effective control or management strategy) available to solve management problems. Non-native phragmites infestations vary in density, size and landscape type, presenting further challenges to effective management. Management and control of invasive phragmites is also complicated by the presence of native phragmites, which is an important part of native ecosystems and should be protected during efforts to control the non-native strain.

Phragmites has been identified by the Michigan departments of Natural Resources and Environmental Quality as a priority invasive species in the state due to rapid spread over large geographic areas and the associated mounting impacts. The need has emerged for a coordinated approach to phragmites management and control across the state. Although significant work is underway to manage phragmites infestations in specific areas, these efforts are fragmented due to varying local capacity, limited resources and insufficient public awareness and understanding of the problem and its scope. Further, the agencies, academic institutions and other organizations working on phragmites control often lack the capacity to integrate, communicate and market their information and management tools on a systematic, large-scale basis.

**II. Purpose**

The strategic framework presented in this document is part of a collaborative initiative to advance effective and sustainable management of invasive phragmites throughout Michigan. It focuses on coordinated management and control of *Phragmites australis* as a state/regional issue, while recognizing that implementation involves federal, state and local partners. For this reason, the framework is designed as guidance for state agencies for use in coordinating management and control efforts implemented by a variety of partners. In addition, the strategic framework will provide direction in identifying roles, partnerships and opportunities for implementation. To the extent possible, the framework will inform development of similar initiatives in other parts of the Great Lakes region. Note that while this strategic framework focuses on the management of a single invasive species, the approach presented in this document could be used in the control of other invasive species in the region.

The following guiding principles, as outlined in the guidance document, *Meeting the Challenge of Invasive Plants: A Framework for Action*,<sup>1</sup> should be used to guide the development and execution of the strategic framework:

- Use of best available science and commitment to the integration of new information
- Prioritization of management/control based upon societal values, level of threat, distribution, and feasibility benefit cost analysis)
- Collaboration with managers, researchers and landowners to find optimal solutions
- Communication to share resources, knowledge and skills
- Monitoring to ensure efficient and effective use of resources at all levels of organization

In addition to the guidance document mentioned above, several management plans relevant to invasive species currently exist in Michigan, including Michigan's Aquatic Invasive Species Management Plan, the Lake Superior Aquatic Invasive Species Complete Prevention Plan, the Lakewide Management Plans for each Great Lakes. It is recommended that compatibility be maintained among these different plans, to the extent possible.

Further consideration of the Michigan invasive plants framework has been given in the development of the goals and objectives contained in this strategic framework. The relationship between these policy documents is noted under each goal outlined in section IV of the strategic framework. For reference, the goals of the Michigan invasive plants framework are as follows:

- Goal 1: Leadership and Coordination—Ensuring Cost Effective Action
- Goal 2: Assessment and Research—The Pathway to Success
- Goal 3: Prevention—The First Line of Defense
- Goal 4: Early Detection and Rapid Response—The Second Line of Defense
- Goal 5: Control, Management, and Restoration—The Third Line of Defense
- Goal 6: Education and Outreach—Improving and Expanding Success

### III. Implementation

Efforts to implement the strategic framework will be built around the following overarching tasks:

- a) Define strategic actions to address the goals and objectives in the strategic framework
- b) Identify potential stakeholder roles, partnerships, authorities and other opportunities for execution of the framework
- c) Institute a networking capacity among stakeholders
- d) Implement an education/outreach plan to target information to different stakeholder groups on invasive phragmites and outcomes of the strategic framework

### IV. Statewide Invasive Phragmites Management Goals and Objectives

*(Note: Although the goals are listed sequentially here, they are intended to be dynamic and occur simultaneously while providing feedback to one another. This list is not meant to reflect the priority of importance of each goal.)*

***Goal 1: Collaborative management of large- and small-scale infestations is facilitated in areas that are identified as priorities and where success can be achieved*** [Corresponds to Goal 1 of Michigan's invasive plants framework]

Objectives:

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<sup>1</sup> Higman, P., S. Campbell. 2009. *Meeting the Challenge of Invasive Plants: A Framework for Action*. A report prepared by Michigan Natural Features Inventory for the Michigan Dept. of Natural Resources Wildlife Division.

- A. Develop strategies and identify partners to build management capacity for existing and new projects addressing phragmites infestations
  - o Strategic actions:
    - i. Establish and maintain an online database of existing projects documenting: a) geographic scope of infestation(s); b) management and control measures targeting infestation(s); c) state and local groups engaged in management activities
    - ii. Determine where new project work is needed to address large- and small- scale infestations, using the project database for guidance
    - iii. Identify community leaders or local point of contacts to lead/coordinate new project initiatives
    - iv. Identify state agency contacts, if necessary, for assistance in addressing large scale infestation or infestation on state/public lands
    - v. Identify available resources within communities and through partnerships, identifying opportunities for collaboration
    - vi. Designate a project advisory/coordinating team comprised of appropriate parties based on the scale of the infestation(s) (i.e. community-wide, lake-wide, watershed, regional)
- B. Build communication and coordination among those working on small-scale efforts (e.g., property owners) towards establishing phragmites management that is organized on a broader scale
  - o Strategic Actions
    - i. Identify and enable regional champions for each geographic area of the state (e.g., Conservation Districts) to facilitate coordination of management activities (planning, prevention, surveillance, control/management, monitoring, adaptive management) for respective areas
- C. Share information on a collaborative basis with other states, provinces and local communities
  - o Strategic actions:
    - i. Develop an outreach network with resource managers on a multijurisdictional level to provide updates on management and control developments, including a timeline on the status of infestations in response to treatment
- D. Establish a long-term, sustainable approach to phragmites management supported by political will, funding, and institutional capacity
  - o Strategic Actions
    - i. Document success stories and lessons learned as well as challenges as part of project inventory (refer to Strategic Action (i) under Goal 1, Objective A)
    - ii. Conduct local workshops to share/disseminate information on phragmites management and control that are convened based on geographic location and shared watersheds
    - iii. Conduct a statewide initiative to enhance/increase effectiveness of regional phragmites management and to develop a broader management plan for Michigan

***Goal 2: Strategies are developed to prevent the introduction and spread of non-native phragmites on a multiple scales*** [Corresponds to Goals 2, 3 and 4 of Michigan's invasive plants framework]

Objectives:

- A. Assess vectors of introduction and spread of invasive phragmites
  - o Strategic actions:
    - i. Identify vectors/pathways of introduction and spread

- ii. Characterize and determine contributing factors responsible for those vectors/pathways
- iii. Differentiate between controllable vs. uncontrollable (e.g., climate change) vectors
- iv. Evaluate the relative importance of each vector/pathway
- B. Reduce the risk of introduction and spread by these vectors
  - o Strategic actions:
    - i. Identify existing BMPs and develop new BMPs for vector interruption to expand the tool kit for phragmites management and control
    - ii. Implement BMPs and other practices that reduce risks associated with vectors of introduction and spread
    - iii. Assess the level of compliance with existing laws, regulations and ordinances addressing movement of invasive species and increase efforts where compliance is considered lacking
- C. Demonstrate benefits of implementing invasive phragmites rapid response and control in priority areas (i.e. decreased cost of treatment and increased potential for success) to generate political will and incentives for treatment
- D. Institute a sustainable, long-term early detection and rapid response program for invasive phragmites
  - o Strategic actions:
    - i. Utilize existing data sources, namely the Michigan Invasive Species Information Network (MISIN), remote sensing programs and other data resources to determine invasion fronts in Michigan
    - ii. Increase monitoring and surveillance in areas identified as high priority based on criteria such as invasion risk and threat to high quality/value habitat
    - iii. Increase and target resources for rapid response to new invasions
- E. Establish strategies within local communities for the prevention of phragmites infestations
  - o Strategic actions:
    - i. Assess size, scale and impacts of infestation
    - ii. Evaluate and determine appropriate treatment methods
    - iii. Obtain necessary permits and bids for treatment contracts if applicable

***Goal 3: Management and control of established populations are tailored to geographic area and scope, temporal parameters, socioeconomic and ecological conditions*** [Corresponds to Goal 5 of Michigan's invasive plants framework]

Objectives:

- A. Provide resources (information and methodology) needed to identify and prioritize areas for treatment
  - o Strategic actions:
    - i. Guide prioritization for treatment by: 1) assessing impacts from infestations, 2) determining technical and economic feasibility of location-specific treatment (e.g., roadside, lake, wetlands), 3) assessing value of infested habitat
    - ii. Convey outcomes of this process on both a local and state level
- B. Define realistic management goals for infested areas and ensure they are based on desired outcomes and ecological conditions
  - o Strategic actions:
    - i. Apply management goals in the development of treatment plan
    - ii. Implement treatment plan

- iii. Develop post-treatment management plan, such as planting native vegetation or application of prescribed fire
- iv. Following treatment, implement measures to decrease likelihood of other plant invasions
- C. Encourage strategic, collaborative efforts in the process of treating phragmites infestations
  - o Strategic actions:
    - i. Provide opportunities for communities to learn from treatment outcomes, including successes and challenges
    - ii. Look for opportunities for shared resources (e.g., equipment, labor, treatment applicators and chemicals)
- D. Develop long-term, sustainable management strategies for large-scale phragmites invasions
  - o Strategic actions:
    - i. Survey distribution and abundance of large scale phragmites infestations
    - ii. Maintain long-term management plans for previously treated large-scale infestations
- E. Assess effectiveness of control measures to improve overall treatment outcomes
  - o Strategic actions:
    - i. Survey treatment areas before and after treatment
    - ii. Develop opportunities for managers to share information on effective treatments
    - iii. Support research and adaptive management to determine most effective treatment methods
    - iv. Ensure dissemination of results

***Goal 4: Regulatory process advances effective invasive phragmites management and control***

[Corresponds to Goals 1 and 3 of Michigan's invasive plants framework]

Objectives:

- A. Increase dissemination of technical guidance to assist landowners and non-commercial groups in the permitting process
- B. Identify barriers, gaps and inconsistencies regarding the federal and state permitting process and use outcomes as the basis to develop and implement solutions
  - o Strategic actions:
    - i. Establish and conduct regular reviews of the permitting processes for phragmites and identify opportunities to streamline processes while adhering to local, state and federal laws.
- C. Support local governments in developing ordinances to advance efficient treatment of phragmites across ownerships
  - o Strategic actions:
    - i. Review existing ordinances
    - ii. Develop and distribute a model ordinance(s) based on review
- D. Identify, evaluate and improve compliance with existing regulatory process
  - o Strategic actions:
    - i. Ensure that laws, regulations and ordinances pertaining to phragmites management are enforceable
    - ii. Ensure that adequate resources are dedicated to compliance and enforcement, including the field presence of regulatory staff at treatment sites
    - iii. Use targeted outreach efforts to raise awareness of regulatory process

***Goal 5: Understanding of spatial distributions of native and invasive phragmites populations is enhanced and applied to support sound decision-making*** [Corresponds to Goals 2 of Michigan's invasive plants framework]

Objectives:

- A. Strive towards integration of existing monitoring, mapping and tracking systems
  - o Strategic actions:
    - i. Raise awareness of existing regional databases (e.g., MISIN) and potential for use, stressing the importance of temporal (pre and post-treatment) data
    - ii. Integrate mapping required by the permitting process into MISIN
- B. Provide user-friendly access to a centralized database (e.g., MISIN) coupled with distribution maps to inform the work of managers and decision-makers
  - o Strategic actions:
    - i. Increase support to MISIN to provide assistance to user groups
    - ii. Encourage the use of MISIN during permitting and planning processes
- C. Expand the use of surveillance and mapping tools to track native and invasive phragmites populations
  - o Strategic actions:
    - i. Provide instruction and information materials on distinguishing native and invasive strains of phragmites
    - ii. Raise awareness of the need to integrate the native strain of phragmites into surveillance and mapping activities
    - iii. Prioritize areas where phragmites surveillance and mapping will be conducted based on factors related to the value of coastal habitat and extent of invasion, among others
- D. Develop a data management plan to ensure that information remains useful to managers and decision-makers
  - o Strategic actions:
    - i. Guide managers in defining intended uses for spatial data
    - ii. Prioritize data needs based on management objectives

***Goal 6: The effectiveness of treatment regimes is evaluated and adaptive management principles are applied to improve and sustain management and control efforts over time*** [Corresponds to Goal 5 of Michigan's invasive plants framework]

Objectives:

- A. Develop standardized post-treatment monitoring protocols
  - o Strategic actions:
    - i. Develop metrics to measure effectiveness of control efforts
    - ii. Determine options for further action if treatment is unsuccessful
    - iii. Encourage reporting (via MISIN or state agency) of post-treatment monitoring data
- B. Assess the ecological impacts of treatment, not just acres of phragmites eradicated
  - o Strategic actions:
    - i. Support research and monitoring to assess impacts of treatment on other biotic and abiotic components of the ecosystem
- C. Utilize mapping systems/databases to track treatments and their results
  - o Strategic actions:
    - i. Develop treatment tracking protocols for local use

- ii. Develop and implement a treatment tracking system on a statewide spatial scale
- D. Assist local implementers in establishing restoration goals for implementation
  - o Strategic actions:
    - i. Develop guidelines on habitat restoration based on desired state
- E. Establish a feedback mechanism to share lessons learned on treatment outcomes and apply them to future management efforts
  - o Strategic actions:
    - i. Develop a statewide network for phragmites management
    - ii. Develop list of local experts available to consult/provide information

***Goal 7: Communication is established on multiple levels to reinforce implementation of coordinated invasive phragmites management and control*** [Corresponds to Goal 1 and 6 of Michigan's invasive plant framework]

Objectives:

- A. Develop and enhance accessibility to information, education and outreach tools to help in facilitating communication among phragmites stakeholders
  - o Strategic Actions:
    - i. Develop and promote a web-based invasive phragmites information network to provide a gateway to accessible invasive phragmites information and management and policy tools.
    - ii. As part of the information network, establish communication networks connecting key stakeholders, including landowners, resources managers, non-governmental groups among others, needed to mobilize phragmites management and control activities
      - a) Facilitate communication within the network through cost-effective and timely methods such as email list-servs, webinars, and social networking tools
      - b) Provide local communities preparing for phragmites control with access to contact information of other community stakeholders engaged in phragmites treatment
- B. Evaluate the strategic framework, based on goals and objectives to determine the framework's effectiveness
  - o Strategic Actions:
    - i. Request feedback from key players conducting phragmites treatment, including local communities/organizations and state agency managers
    - ii. Identify areas of success, failure and obstacles within the framework