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Applying a Microbial Approach to Phragmites Control

Conventional methods (e.g., repeated herbicide, burning, flooding) to control invasive *Phragmites australis* on the North American landscape are resource-intensive and often ineffective. Innovative control methods, including those based on symbiotic relationships, are needed to develop more sustainable landscape-level control and habitat restoration solutions. We know that all plants form associations with microbes; the microbial associations formed (e.g., mutualisms) greatly influence the colonizing success of many plants. Thus, if the associations between invasive *Phragmites* and its microbes can be disrupted, the competitive advantage of *Phragmites* may be reduced and native plant assemblages can be maintained. Our work seeks to define the role of symbiosis between *Phragmites* and its endophytic fungi and explore opportunities to disrupt or enhance those symbiotic relationships. Early results from greenhouse and limited field studies indicate that eliminating the fungal endophytes from *Phragmites* reduces the growth of new stems, which has great implications for habitat restoration efforts. Based on our preliminary data, we are prepared to perform large field experiments to test the response of *Phragmites* to fungal inhibitors. These experiments will provide proof of concept to the idea that *Phragmites* plants grow better when associated with fungal communities and may lead to other options for *Phragmites* control during habitat restoration projects.