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Potential Role of Pathogens in Phragmites Australis Invasive Success

In natural ecosystems, plant pathogens play key roles in regulating plant community dynamics. Diseases often act to limit the dominance of particular species and thus maintain higher diversity. Invasive plants, however, may be initially unaffected by these balances and in many systems pathogens facilitate invasive success. We compared the oomycete pathogen communities of native and non-native Phragmites australis to begin to address whether the invasive success of non-native P. australis is in part facilitated by pathogen interactions.

We found that native and non-native P. australis have distinct oomycete communities, characterized by differences in species composition and relative abundance. These oomycete communities were rich and dominated by species of the genus Pythium, which are generalist seed and seedling pathogens. In testing the pathogenicity and virulence of these isolates, we found that most were pathogenic to a range of seedlings of marsh wetland plant species, both native and invasive. Seedlings of non-native P. australis appeared equally susceptible to these pathogens as native P. australis however, for some Pythium species, individuals collected from non-native P. australis were more virulent. Our results indicate that the pathogens associated with non-native P. australis are distinct from those associated with native P. australis and suggests that these differences may differentially impact a wide range of native marsh wetland plant species.