

ABSTRACT OF THE THESIS

The Successional Displacement
of Andropogon scoparius Michx.
by Myrica pensylvanica Loisel.

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Myrica pensylvanica (bayberry) can successfully establish within and break up pure, long-persisting stands of Andropogon scoparius (little bluestem) in old-fields on the New Jersey Piedmont, leading to Andropogon displacement and facilitating development of a young forest. Possible mechanisms involved in this interaction (shading, allelopathy, physical effects of litter, and competition for resources) were tested through field and greenhouse experiments. In the field, Myrica seeds had a higher germination percentage within Andropogon stands, and mature plants reproduced vigorously by asexual subterranean stems which penetrated into the surrounding Andropogon from the periphery of established Myrica clumps. Within the clumps, Andropogon seedling growth was inhibited, and mature plant occurrence and living crown area were reduced. In the greenhouse, Andropogon seedling growth was reduced significantly in pots with mature Myrica, and was slightly lower when placed in shaded conditions. Mature Andropogon growth was also lower in shade. No allelopathic effects of Myrica on Andropogon seed germination or mature plant

growth were found; however, growth of seedlings in Andropogon litter was slightly lower when treated with Myrica litter leachate. No inhibitory physical effects of Myrica litter on Andropogon seedlings or mature plants were found. The principal mechanism involved in Andropogon displacement, therefore, appears to be the adverse effects of Myrica shade.