



# Cape May Plant Materials Center

United States Department of Agriculture

Natural Resources Conservation Service

Plant Materials Program

Technical Note 99-01

*Proudly Serving the Conservation Needs of the U.S. Mid-Atlantic Region from Massachusetts to North Carolina.*

## Bayberry (*Myrica pensylvanica*) Die-out in the Coastal Mid-Atlantic



### Observations

Local coastal municipalities contacted the USDA Cape May Plant Materials Center (PMC) inquiring about the die-out occurrences of bayberry (*Myrica pensylvanica*) along the New Jersey shoreline. In response to such inquiry, PMC staff surveyed the extent of this species die-out within the state. Once it was determined that bayberry was affected throughout the New Jersey shoreline, staff traveled along the Mid-Atlantic coastline through Delaware, Virginia, and North Carolina.

Stand decline and die-out was exhibited from Brigantine, New Jersey to Carolina Beach State Park, North Carolina. In addition, wax myrtle (*Myrica cerifera*) was also exhibiting similar types of vigor decline. In many areas where the die-out was noted, phragmites was observed to have moved into the areas. This is possibly due to the loss of the shrub leaf canopy and the increased amount of sunlight penetrating into the stand. This phragmites invasion was particularly apparent along the Delaware and New Jersey shoreline.

### Professional Discussions and Theories of Cause

During exchanges of dialogue with diverse professionals within this field of discipline, some offered that the rise in sea level was the cause of this situation. This explanation would seem logical and acceptable “IF” the die-out occurrences were limited to a depressed trough zone in the back dune areas that were minimally above

sea level. Unfortunately, *Myrica* stands were dying in the trough zones of back dunes and also in high dunes 20'- 40' above sea level. Others offered the explanation that increases in storm frequency and storm waves over washing the dunes would cause increased salt concentration thus affecting the species. This would not explain the higher elevation stand declines and it would not explain stand declines occurring in mixed shrub stands deep in the back of the Coastal Dune Eco-system where other salt sensitive species are co-existing without evidence of salt burn.

## Results

Due to the geographic extent of the stand decline associated with the *Myrica* genus, a "one size fits all" explanation will not account for such widespread decline across a diverse multi-state area. It is more likely that many contributing factors collectively are to be considered. Such factors would include and not be limited to: stand age and natural decline, increased soil salt levels due to storm over wash into back dunes; soil pH changes affecting rhizobium bacteria populations; global climate changes and more.

## Recommendations to Coastal Municipalities

Some municipalities have resorted to amending the dune soil with inorganic forms of commercial fertilizer. This may be a wasted use of resources since bayberry is a legume shrub. As such, bayberry has a symbiotic relationship with soil micro-organisms. Rhizobium bacteria convert atmospheric nitrogen into a food source that benefits the plant. Populations of these beneficial bacteria are detected by the nodules or lumps on the finer roots of the plant. Technically, adding fertilizer sources of nitrogen to a legume plant will usually result in the plant abandoning its beneficial relationship with the micro-organism. Shrub stands may initially exhibit a positive response to the fertilization. However, it has been documented in some legumes that stand longevity may also decrease.

## For Additional Information Contact....

During a literature search on this subject matter, the following professor was the most frequently listed author in investigations pertaining to this species. PMC staff has personally spoken with Dr. Young and he has expressed receptivity in being contacted and in also discussing some additional monitoring work that may be of interest. Professor Donald R. Young, Director Graduate Program in Biology, Virginia Commonwealth University, Department of Biology, 816 Park Avenue, P.O. Box 84012, Richmond, Virginia 23284-2012. Phone: (804) 828-1562, Fax (804) 828-0503, or by E-mail: [DYOUNG@SATURN.VCU.EDU](mailto:DYOUNG@SATURN.VCU.EDU)

For more information about this and other conservation plants, contact your local NRCS field office or Conservation District.

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