

Hawaiian Plant Threatens South Carolina Dunes

by Robin Roecker and Tommy Socha

photos by: Will Conner, Baruch Institute of Coastal Ecology and Forest Science

During the 1960's, a plant was sought that would help protect and build ocean-side fore dunes in South Carolina. The plant had to be drought resistant, sand and salt tolerant, and fast growing.

Beach vitex (*Vitex rotundifolia*), native to Korea, Hawaii, Japan, and China, was chosen. The prolific and resilient plant now is taking over the natural vegetation along the South Carolina shore. Beach vitex threatens native plants along primary beach dunes, including sea oats (*Uniola paniculata*), sweet grass (*Muhlenbergia filipes*), and sea beach amaranth (*Amaranthus pumilus*). It also threatens loggerhead sea turtles. Recent state and local newspapers have deemed it "a predatory plant," "a killer of sea-turtle nests," and the "kudzu of the coast." Fortunately, major efforts are underway to document the occurrence and spread of the plant, to increase public awareness of its invasiveness, and to explore methods of control while restoring native beach dune vegetation.

The South Carolina Exotic Pest Plant Council (SC EPPC) has requested a grant from the *Pulling Together Initiative* (a public/private partnership for invasive and noxious plant management coordinated by the National Fish & Wildlife Foundation) to coordinate efforts to control beach vitex in South Carolina. This effort involves cooperation among various federal and state agencies, non-profit groups, and private landowners comprising a beach vitex task force, and is a pilot for the National Early Detection and Rapid Response System for Invasive Plants in the U.S.

For the last eight years, Tommy Socha, a plant specialist for the U.S. Army Corps

of Engineers, Charleston District, has observed the growth of beach vitex along frontal dunes in South Carolina. Socha first noticed the sprawling shrub with blue-purple flowers while working on a Corps project to replenish 25.6 miles of the South Carolina coast from the north end of North Myrtle Beach to Garden City Beach. Socha observed healthy beach vitex growing below the high tide line, mingled among native sea oats and bitter panicum. Later, while evaluating beach vitex for use on dune stabilization projects, Socha and others, including Bob Eplie and Randy Westbrook, then with the U.S. Department of Agriculture's Animal and Plant Health Inspection Service, Plant Protection and Quarantine, observed beach vitex overtaking another aggressive non-native plant, silverberry (*Elaeagnus* sp.), and creating a monoculture on the frontal dunes. They found multiple runners (stolons) on the beach vitex, with some measuring more than 10-meters long. Later they learned that this location had been landscaped with more than 500 beach vitex plants at the request of the homeowner. The plant also was noticed a couple of years ago by sea turtle volunteer Betsy Brabson, who observed it spreading quickly up and down the beach in Georgetown County, SC. Last year, Betsy documented that the plant was indeed spreading when she counted 167 new plants in a 0.4-mile stretch on DeBordieu



Beach vitex showing blue-purple flowers.

Beach heading towards Hobcaw Beach. Betsy and other sea turtle volunteers have since noticed the plant spreading in or near turtle nesting areas, where its fibrous roots have the potential to trap turtles and destroy eggs.

Planting on the dunes in South Carolina is regulated by the state Department of Health and Environment, Office of Ocean and Coastal Resource Management (DHEC-OCRM), which requires a permit before planting in dunes under its jurisdiction. Permits are only granted for planting sea oats, American beach grass, and panic grass, though there is no requirement that other plants be removed.

Beach vitex, also known as roundleaf chastetree, chasteberry, Monk's pepper, or kolokolo kahakai (as well as numerous other Hawaiian names), typically grows to 6-8 feet in spread diameter and six inches to two feet tall, but can reach four feet in height and twelve feet in width when protected from wind and salt spray. The round leaves are gray-green to silvery, 1 to 2 inches long, and have a spicy fragrance. The flowers are typically one inch wide, bluish



Beach vitex going dormant.

purple, and produced in small clusters at branch tips throughout the growing season. The round fruits are about 1/4 inch in diameter and bluish purple to black when ripe. *Vitex* species are now placed in *Lamiaceae*, the mint family (e.g. Weakley 2002); they were long considered part of *Verbenaceae*, the vervain or lantana family (e.g., Radford et al. 1968). There are about 250 species of trees and shrubs in the *Vitex* genus, mostly tropical but a few in temperate zones. Only two species of *Vitex*, both non-native and widely sold as ornamentals, are known from the Carolinas: *Vitex rotundifolia* and *V. agnus-castus* (lilac chaste tree).

Beach vitex was carried early to Europe and used medicinally, particularly as a remedy for female ailments. In Roman times, women whose husbands were abroad spread the aromatic leaves on their couches to reduce sexual desire. During the Middle Ages, the berries were a food spice at monasteries, hence the names Monk's pepper or Cloister pepper. It also was used in Europe as an important remedy for regulating the female reproductive system, controlling acne in teenagers, easing menopausal changes, and easing pain during childbirth. According to one modern herbal web site (Holistic-online.com), beach vitex stimulates and normalizes pituitary gland functions.

The focus of the beach vitex task force and SC EPPC over the next couple of years will be to document the occurrence and spread of the plant along coastal dunes, to inform private landowners, local nurseries, and others regarding the invasiveness of the plant, to document impacts to native plants and animals, and to hand-pull seedlings occurring on coastal dunes, with

landowner permission. More active restoration of coastal dunes is being explored.

Beach vitex is being used as a field test for the National Early Detection and Rapid Response System, developed by the Federal Interagency Committee for the Management of Noxious and Exotic Weeds (FICMNEW 2003) (see http://ficomnew.fws.gov/FICMNEW_EDRR_FINAL.pdf). As part of this effort, an ecological assessment will be conducted to document impacts to native plants and animals and to sand dunes on South Carolina beaches. A regulatory assessment will be conducted to determine if beach vitex should be listed as a state noxious weed.

The Charleston District of the Corps of Engineers is in position to play an active role in coordinating control and restoration activities on federal and state lands. Removing the deep-rooted plant will most likely involve herbicides; digging them out may create too much disturbance in the fragile beach dune ecosystems.

Partners with SC EPPC on the beach vitex task force include the SC Native Plant

Society; the SC Turtle Volunteer network; SC Department of Parks, Recreation, and Tourism; the SC Department of Natural Resources; the Belle Baruch Foundation; the University of South Carolina's North Inlet – Winyah Bay National Estuarine Research Reserve, Baruch Marine Field Laboratory; the SC Department of Health and Environmental Control Office of Ocean and Coastal Resource Management (DHEC-OCRM); the U.S. Fish and Wildlife Service; Clemson University Departments of Plant Industry; of Forestry and Natural Resources; and of Horticulture; the U.S. Geologic Survey (USGS); the Natural Resources Conservation Service (NRCS); Friends of Huntington Beach State Park; and area newspapers.

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References cited:

- Hawaiian Native Plant Propagation Database, College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa, pdc.ctahr.hawaii.edu
- Radford, A.E., H.E. Ahles and C. Ritchie Bell. 1968. *Manual of the Vascular Flora of the Carolinas*. University of North Carolina Press, Chapel Hill, NC. 1,183 pp.
- Weakley, A.S. 2002. Working Draft, *Flora of the Carolinas and Virginia*. Curator, University of North Carolina Herbarium, Chapel Hill, NC.



Beach vitex showing habitat.