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"Kudzu of the beach" threatens Carolina Dunes

During the 1960s an interest developed in finding a plant that would help protect and build front beach sand dunes. These plants had to be drought resistant, tolerant of salt and blowing sand, and fast growing. Just such a plant was discovered in Korea. This plant is the beach vitex or 'Vitex rotundifolia.'



Vitex rotundifolia in bloom

Unfortunately, the plant's prolific nature and resilience are now causing it to take over the natural vegetation along the South Carolina shore.

For eight years, Tommy Socha, plant specialist for Charleston District, has observed the growth of this plant. He was concerned about its growth because it had taken over and created a monoculture (a community of only one plant) by shading out native vegetation.

This summer Socha joined the South Carolina Exotic Plant Council and brought beach vitex to their attention. Socha suggested a study be done to see if this plant should be placed on the noxious plant list, or somehow keep it from being planted on the beach.



Vitex rotundifolia in full bloom and growing in the dunes along the South Carolina coastline.

Socha first noticed the plant while working on a Corps project to rebuild 25 miles of the South Carolina coast from North Myrtle Beach to Garden City Beach. In spring of 1996, the Corps planted two plots to test dune stabilization plant materials. The Corps spent more than \$2 million on grass and fencing to establish frontal dunes along the South Carolina coastline, and the dunes were doing exceptionally well. In some areas they have grown to more than seven feet tall with a bottom width of 30 feet.

So the last thing the Corps wanted was this dune system to be placed in danger.

In plant material planted in a beach side yard of a residence on Pawley's Island, Socha noticed a vine plant with beautiful blue flowers. This plant was below the high-tide line and healthy. It surrounded the test plants, which were mingled sea oats and bitter panicum.

Then, a couple of years ago in Georgetown County, Betsy Brabson, a sea turtle volunteer, saw beach vitex spreading quickly on the beach near her home. Last year, Brabson documented that the plant was spreading when she counted 167 new plants in less than half a mile of DeBordieu Beach. Brabson and other sea turtle volunteers have observed the plant spreading in or near turtle nesting areas, where its fibrous roots can trap turtles and destroy eggs.

Socha invited Dr. Robert Eplie and Randy Westbrook from the U.S. Department of Agriculture's Animal and Plant Health Inspection Service Plant Protection and Quarantine, and Gene Hardee, Alex Johnson, and Debbie Mann from the Natural Resource Conservation Service (NRCS) to identify and evaluate this plant for possible use in the dune stabilization project.

After a short time of examining the plant, both Westbrook and Eplie strongly agreed that this plant should not be used. They discovered that on the backside of the dune, the beach vitex had overtaken silver leaf eleagnus, itself an aggressive plant. The beach vitex was creating a monoculture on the frontal dunes.

Additional sites along the beach were identified where beach vitex was well established. Its runners measured more than 10 meters (about 33 feet) long, and may have been longer but the plants were so thick that team members could not go any further to measure. It was learned later that this location had been landscaped with more than 500 vitex plants at the request of the homeowner.

Eplie identified this plant as beach vitex. Robin Roecker, President of the South Carolina Exotic Plant Council, researched the plant and found out that it is a member of the mint family, a sprawling, woody shrub native to Hawaiian and Korean beaches. It was introduced to the South Carolina coast in the 1980s to control erosion, and as a salt-tolerant, fast-growing landscape plant. Beach vitex appears to thrive in full sun, sandy soils, and moderate temperatures.

Also known as chasteberry, kolokolo kahakai, or monk's pepper, beach vitex typically grows up to eight feet in diameter and from six inches to two feet tall, but it can reach four feet tall and 12 feet wide when protected from wind and salt spray. The round leaves are gray-green to silvery, one to two inches long, and have a spicy fragrance. The flowers are typically bluish-purple, one inch wide, and grow in small clusters at the branch ends. The round fruits are about a quarter-inch in diameter and bluish-purple to black when ripe.

Documentation of impacts of this plant to the dune ecosystem is ongoing. Besides impacts on sea turtles, beach vitex could threaten sea beach amaranth, and sea oats.

Any beach vitex occurring on the dunes was either planted illegally or arrived there from nearby landscaped yards. It has been seen on Pawleys Island, Debordieu, Garden City, Surfside, Litchfield, and Isle of Palms. The plant is still being sold in local nurseries, as well as wholesale growers in Texas, Virginia, and Alabama.

Planting on the dunes is regulated by the state Office of Ocean and Coastal Resource Management, which requires people to get 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.

Today, beach vitex appears to be taking over primary beach dunes. It has been described in news articles as the "kudzu of the coast." Major efforts are underway to document the occurrence and spread of beach vitex, to increase public awareness of its potential invasiveness, and to explore methods of control while restoring native beach dune vegetation.

Charleston District is working with invasive species researchers at the Engineering

Research and Development Center. They are working with Clemson University and the U.S. Geological Survey to determine the best procedure to rid the beach of beach vitex. Removing the deep-rooted plant will likely involve herbicides or digging, which could be tricky in the fragile beach dune ecosystems.

The district is trying to implement an environmental restoration project. This would entail identifying the problem areas, determining how to deal with beach vitex, write plans and specifications, award a contract to remove the plant, and inspect contractor work.

Charleston District is working with the U.S. Geological Survey, Clemson University, the South Carolina Exotic Plant Council, NRCS, Office of Ocean & Coastal Resource Management, Georgetown County, U. S. Fish and Wildlife, a private contractor, chemical manufacturers, and sea turtle volunteers like Betsy Batson to remedy the problem created by beach vitex.

(Tommy Socha, a plant specialist with Charleston District, and Robin Roecher, a forest ecologist and botanist with the Francis Marion and Sumter National Forest corroborated on this article.)

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