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Garrett's Mint a rare breed

Plant was discovered in Sebring in 1940s

Highlands County is home to one of the highest concentration of rare plants in North America. Most of these rare species occur in Florida scrub, the shrubby habitat many Highlands County residents see every day, from the undeveloped lot in residential neighborhoods to the intact expanses at conservation sites. Among these rare species, some are the rarest of the rare. "There are a handful of plants in this area so close to extinction that human intervention is necessary for their survival," states Stacy Smith, Research Assistant in the Plant Ecology Program at Archbold Biological Station. "Interventions to help these rare plants, such as the creation of new populations (introductions), or adding new plants to existing populations (augmentations), have been carried out by Archbold over the past few decades. One species requiring this special treatment is an odoriferous (strong smell) shrub called Garrett's Mint (*Dicerandra christmanii*)."

Garrett's Mint is one of five mint species in the *Dicerandra* genus occurring in Florida, and one of two that occur solely in Highlands County. First collected in 1948 by botanist Ray Garrett in Sebring, Garrett's Mint was not described in the science literature as a distinctive species until 1989 by a botanist and local Highlands County resident, Kris DeLaney and colleagues. Smith said, "Garrett's Mint is known from only at a handful of sites near Sebring and is threatened to near extinction by fire suppression of its primary habitat, oak-hickory scrub."

Garrett's Mint is a fragrant short-statured shrub, with several stems branching from a woody base. Its leaves, which are retained throughout the year, are dotted with glands that emit a unique eucalyptus-like odor that differentiates this mint from its sister species the Scrub Balm (*Dicerandra frutescens*). Smith explains, "The essential oils accounting for these odors were analyzed by a group of scientists led by Dr. Thomas Eisner (1929-2011) at Cornell University, NY, that discovered a chemical compound previously unknown in nature. The oils, or terpenes, from the mints were thought to have evolved to deter insects or animals that feed on plants. Terpenes particular to the *Dicerandra* species were shown to repel insects in laboratory experiments."

The creamy white flowers of Garrett's Mint are specked with purple lines and spots and are produced between July and November. Smith states, "Garrett's Mint is predominately pollinated by bee-flies, whose weight and distinct way they land and enter the flower perfectly release pollen from the mint's yellow-spurred anthers. Seed production is critical for survival, as the life of Garrett's Mint is short-lived." Movement of seeds to other places happens slowly for this species, as seeds of Garrett's Mint typically fall close to the maternal plant.

Only one wild population of Garrett's Mint occurs on existing conservation lands. Eric Menges, Program Director of the Plant Ecology Program at Archbold, has been studying this population since 1994 and has found it is in "steady decline with most of the remaining plants occurring along the sandy roadsides and few plants found now in the interior because it is now overgrown, fire-suppressed scrub". Researchers at Archbold also discovered that Garrett's Mint is particular in its habitat preferences. Most plants are intolerant of shade and occur primarily in open sandy patches among low growing shrubs. Although plants are killed by fire, the more open conditions after fire are needed for the populations to increase through seedling recruitment.

"To prevent further decline in Garrett's Mint's only protected population, Archbold augmented the existing population by adding plants and seeds in 2010, under the guidance of the US Fish and Wildlife Service and assistance from horticulturists at Bok Tower Gardens," says Smith. Before planting, Archbold staff created open areas within overgrown fire-suppressed scrub. Vegetation was clipped and herbicided to open up the canopy and leaf litter was raked and removed from the ground to expose bare sandy patches. Transplants, cultivated by Bok, and seeds, collected by Archbold staff, were planted in the opened areas. "Building upon the success of this experience, Archbold carried out a second introduction in 2012, creating an entirely new population of Garrett's Mint at another protected conservation site in Highlands County, increasing the number of protected populations from one to two," Smith adds.

After planting, observations revealed that transplants flowered within the first year of planting. Transplant survival was high and flowering was nearly immediate. Transplants began to set seed in the first year after planting, and seed germination began in the third year after the introduction. Within five years after planting, both new populations were determined to be self-sustaining.

Conservation of rare species is a collaborative effort. In the case of Garrett's Mint, multiple agencies, nonprofits, volunteers, and student interns assisted in various aspects of the project. However, all work is not done at the time of planting, Archbold staff still monitors both introduced populations annually to provide management recommendations. Smith states, "By integrating research into conservation actions for Garrett's Mint, we are ensuring our efforts are successful at protecting and reducing its risk of extinction here in our own backyards".

Photo 1: Flower of the Garrett's Mint. Note the yellow spurred anthers protruding from the white speckled petals. Photo by Reed Bowman



Photo 2: The branching nature of a flowering Garrett's Mint. Photo by Jesse Wheeler.



Photo 3: Archbold Plant Ecology Research Intern Cari Ficken counting stems of Garrett's Mint during the annual demographic census. Photo by Sarah Haller Crate.

