

GLOBAL RE-INTRODUCTION PERSPECTIVES

Re-introduction case-studies from around the globe



**Edited by
Pritpal S. Soorae**



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Cover photo: Clockwise starting from top-left:

- Formosan salmon stream, Taiwan
- Students in Madagascar with tree seedlings
- Virgin Islands boa

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Contact

Details: Pritpal S. Soorae, Editor & RSG Program Officer
E-mail: psoorae@ead.ae

An adaptive approach to translocating and augmenting the rare scrub mint to Savannas Preserve State Park, Florida, USA

Cheryl L. Peterson¹, Greg Kaufmann² & John Bradford³

¹ - Conservation Program Manager, Bok Tower Gardens, 1151 Tower Blvd. Lake Wales, Florida, 33853 USA (cpeterson@boktower.org)

² - Resource Management Specialist, Florida Park Service, 3900 Commonwealth Blvd. MS-530 Tallahassee, Florida 32399 USA (greg.kaufmann@dep.state.fl.us)

³ - 695 NE Savanna Vista, Jensen Beach, Florida 34957 USA (cyclura@bellsouth.net)

Introduction

Savannas mint, *Dicerandra immaculata* Lakela var. *savannarum* Huck (Lamiaceae), is a rare mint endemic to xeric, oak-hickory scrub communities with sandy, well-drained soils along the Atlantic Coastal Ridge in extreme southern St. Lucie County, Florida. The genus *Dicerandra* has been reported as the highest ranked genus of rare southeastern endemic plants (Estill & Cruzan, 2001). Savannas mint is a variety of the rare Lakela's mint, *D. immaculata* var. *immaculata*, which occurs 25 km to the north. *D. immaculata* is listed as Federally Endangered by the U.S. Fish & Wildlife Service and State Endangered by Florida Department of Agriculture and Consumer Services. Savannas mint was discovered in 1995 by George Gann and Keith Bradley of the Institute for Regional Conservation (IRC). A 2007 survey by IRC indicated only 81 remaining individuals of Savannas mint (Woodmansee *et al.*, 2007). Savannas Preserve State Park (SPSP) encompasses approximately 6,500 acres and contains a mosaic of fire dependent natural communities including pine flatwoods, wet prairie, basin marsh and scrub. The park is home to many species of rare and endangered plants and animals, including endemic scrub plant species. The translocation project area within SPSP is located approximately 5 km north of the originally described population.

Goals

- Goal 1: Have all germplasm remaining in the naturally occurring species represented within the introduced population.
- Goal 2: Establishment of multiple, distinct colonies on protected lands as to minimize risk of potential negative impacts of stochastic events



Savannas mint (*Dicerandra immaculata* Lakela var. *savannarum*)



Close-up of savannas mint flower

(e.g. hurricanes, wildfires).

- Goal 3: Create self-sustaining populations, with demographic dynamics mirroring wild populations of the closely-related Lakela's mint (*Dicerandra immaculata*) as outlined by USFWS Recovery Plan.
- Goal 4: Examine specific microsite parameters and survival of translocated populations to provide guidance for future re-introduction efforts through an adaptive approach.

Success Indicators

- Indicator 1: Survival and vigor of planted individuals.
- Indicator 2: Recruitment of Individual seedlings.

Project Summary

Feasibility: The scrub habitats within SPSP are part of the larger Atlantic Coastal scrub ridge, a relict dune system in which the naturally occurring population of Savannas mint exists. SPSP habitat is suitable in that it contains coastal scrub with many of the same microsite characteristics as the location of the originally described population. SPSP represents the closest protected conservation lands available to protect, monitor, and manage Savannas mint. The relocation site is also located out of pollination distance of other closely-related endemic Florida mint species, so hybridization should not be an issue. The original range of this species is unknown because of its more recent discovery, and not having been described by Huck until 2001. Historic agricultural practices until the mid 1900s as well as habitat conversion for residential homes does not allow for extrapolation of historic range. However, survey efforts for individual plants on private property have yielded no additional populations. The originally discovered population occurs partially along a roadside within private parcels slated for housing development and partially within an area heavily disturbed with the encroachment of exotic invasive plants such as Brazilian pepper and rosary pea. The native component consists of scrub oaks and scrub hickory. Fire has been suppressed in the area, resulting in an unnaturally high vegetation canopy cover. Overshading as a result of increased canopy cover has been known to limit habitat occupancy of some *Dicerandra* species (Menges, 1999). For these reasons, long-term survival of the naturally occurring population is unlikely.

Implementation: Clonal propagation was achieved through apical cuttings taken during new spring growth, from February through May. However, since there are very few 'parent' plants and only up to five cuttings can be taken from each plant

annually without a measurable negative effect on plant survival and seed production, only roughly 300 cuttings are taken each year. Cuttings are rooted in greenhouse conditions using auxin-based plant growth regulators and a 1:1 native soil:Fafard mix in cell pots under plastic domes. Rooting takes place in two to four weeks. Rooted cuttings are potted into quarts and grown for two to four months. Two weeks prior to outplanting the potted clones are removed from greenhouse conditions to 'harden' in outdoor conditions. All reproductive structures are removed prior to outplanting to ensure no hybridization with other species has occurred. The success rate of propagation through cuttings varies from 50% - 75%, yielding only about 200 clones for an introduction each year. Annual seed germination trials can yield another 100 - 200 individuals for the introduction each year. Plants are transplanted within the translocation site with the use of hydrating gel granules and sufficiently watered in. Research plots have been established to monitor microsite variables. Regular irrigation continues for approximately two months depending on local rain events.

Post-release monitoring: Annual monitoring of the translocated population is conducted in November to coincide with peak flowering. Data is collected on individual survival, vigor (flowering and seed production), and recruitment. Initial monitoring efforts indicate a 51% survival rate. Of those plants that survived initial planting, 83% were observed to have flowering or seed capsules. A total of 67 new seedlings were also observed one-year post planting. It is expected that additional recruitment will occur as time passes and the seed bank is established. Long-term monitoring will determine microsite habitat preference and if the population will be able to self sustain in perpetuity or if future plantings are required. To date the translocation project has occurred at one site within SPSP. The monitoring results being collected from the site will help dictate future translocation sites within SPSP. Future microsite selection will be based on optimal conditions observed as a result of the initial planting data with respect to canopy cover and presence of leaf litter vs. open sand areas. Having such an adaptive approach will maximize the understanding of the biology of this species while still being able to proceed with translocation efforts preventing potential extinction.

Major difficulties faced

- Obtaining private landowner permission for collection of seeds and cuttings.
- During drought years there can be insufficient new growth for the taking of cuttings.
- Limited knowledge of species as a whole (e.g. historic range).
- Residential development pressures on naturally occurring population.

Major lessons learned

- Successful translocations must be a multi-year project in order to minimize impact on wild remaining individuals, to include representatives from all parents within the new population and to track ongoing success.
- Collaboration with local agencies, citizens, and conservation organizations is key to a comprehensive approach.

Success of project

Highly Successful	Successful	Partially Successful	Failure
√			

Reasons for success/failure:

- Good collaboration and communication between agencies involved in introduction project.
- The vigor of Savannas mint.

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