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## Surpassing two decades of support for plants

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Archbold research intern, Maria-Paula Mugnani, measures a Scrub Blazing Star (*Liatris ohlingerae*), one of the long-term datasets funded by the Florida Endangered and Threatened Plant Conservation Program.

STEPHANIE KOONTZ PHOTO

This summer, the Plant Ecology Program at Archbold Biological Station received its 21st award from the Florida Endangered and Threatened Plant Conservation Program. This program has supported two-decades of continuous data collection, following tens-of-thousands of individually marked rare plants. It has provided opportunities for more than 40 research internships, many of whom published their first peer-reviewed scientific

paper from research done at Archbold and are now employed in agencies, consulting firms, non-governmental organizations and universities across the country. Furthermore, research supported by this funding has helped guide landscape-level management decisions on how to best manage our native plants.

The Florida Endangered and Threatened Plant Conservation Program is funded through grants from the US Fish and Wildlife Service to help conservation and recovery actions for federally listed species on non-federal lands. Applications are competitive and are evaluated by the Endangered Plant Advisory Council, which makes recommendations to the Florida Department of Agriculture and Consumer Services. The Council advises on the endangered, threatened and commercially exploited status of native plants of Florida. Grant recipients provide scientific data on the basic biology and ecology of these plants so the Council can review and update their status and inform strategies for their recovery and management.

With this grant support, Program Director Eric Menges and his team at Archbold have been able to better understand life-history strategies, habitat requirements, seed ecology, and pollinator interactions of some of the most imperiled Florida scrub plant species. “One species that has benefited from this funding is the critically endangered Avon Park Harebells (*Crotalaria avonensis*), found only near Avon Park and Sebring,” explains Menges. “We have been able to examine many life history aspects of this species including its responses to fire, but also to human-made disturbances such as off-road vehicles. We have observed pollinators and monitored seed set. With our collaborators at Cincinnati Zoo and Botanical Garden, we now know patterns of genetic diversity of this rare plant.”

Armed with this information, Menges’ program has successfully planted and established two new protected populations.

“Without the knowledge gained in the first 20 years, we would have been guessing on critical components and most likely, our introductions would have failed,” Menges said.

Another rare species that has benefited from this long-term support is the Highlands Golden Aster (*Chrysopsis highlandsensis*). “This species is more or less restricted to Highlands County, with a few populations in southern Polk and northern Glades Counties,” describes Research Assistant Scott Ward. “Twenty years of data have shown that, contrary to popular belief, plants move! We have noticed declines in many of our permanent annual monitoring plots. However, range-wide censuses done every five years show new plants recruiting nearby, maybe 50–100 yards away. This plant disperses seeds (known as achenes) with the wind, so plant ‘patches’ appear to move slowly across the landscape. This is important for land management, recommending that, for this species, both the occupied habitats and a surrounding buffer area needs to be managed appropriately.”

Beyond single species research, grant funding has supported broader questions. Archbold's Population Dynamics of Endemic Plants project (PDEP, pronounced P-DEP), documents the response of multiple rare plant species to management such as mowing, tree thinning and prescribed burns. "In our PDEP project, we document the presence and abundance of specific rare plants prior to a management activity, and then one-, two-, and five-years after the activity is completed," said Research Assistant Stephanie Koontz. "The take-home message from this project has been, it is hard to replace Florida's natural disturbance, fire, but mechanical treatments are sometimes necessary to make applying prescribed burns safe for land managers and the general public."

The Florida Endangered and Threatened Plant Conservation Program promotes engaging in educational opportunities. This funding has been instrumental in training the next generation of scientists through Archbold's research internship program. "This funding supports two interns for nine months," said Menges. "While these interns are vital in helping us collect our long-term data, one of the biggest rewards is watching them grow as young scientists as they learn about ecology and conservation of the Florida scrub. They bring a fresh set of eyes, ideas, and perspectives into our research." Interns are required to develop their own independent projects, which they then present to the scientific community through seminars and scientific publications. The independent research project is frequently cited as one of the top reasons students apply for Archbold internships and is often a highlight during their experience.

The long-term support from the Florida Endangered and Threatened Plant Conservation Program has produced new science, tests of land management techniques, and development of young scientists. It has expanded the depth and reach of Archbold's Plant Ecology Program and helped point the way for future research, conservation, and education. "We are thankful for their continued support. Much of what we have accomplished over the last 20+ years would not have been possible without it," remarks Menges. "I hope this program will continue to support research programs such as ours, with a common goal of conserving the native plants of Florida."