ARCHBOLD JULY 2019 NEWS

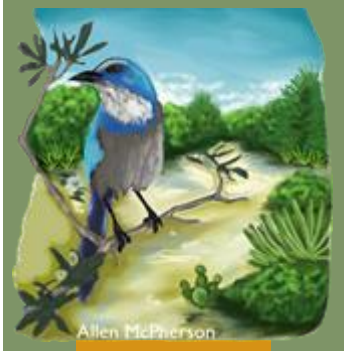
for curious minds

In This Issue:

Micro Fire Effects

Trays of soil after being heat-treated by a prescribed fire at Archbold before genetic analyses.

When a fire burns through Florida scrub, we see the flames, smoke, and plants burning. But, fire can also burn the soil. And soil plays a big part in plant regeneration after a fire. **Dr. Chris Searcy, Dr. Michelle Afkhami, and Dr. Dan Revillini from the University of Miami are exploring links among fire, plants, and microbes in Florida Rosemary scrub at Archbold.** To better understand the responses of tiny soil microbes, the team began by collecting soils from 36 sites with different 'times since fire'. Then, in collaboration with Kevin Main, Archbold Land Manager, and Dr. Eric Menges, Archbold Plant Ecology Director, they placed these soil samples in a prescribed burn at Archbold in early May this year. Revillini shared, "To determine microbial responses to fire, we 'flash froze' the fire-treated soil samples as well as some control samples to preserve the genetic information. We can use these for analysis of genetic material (total RNA) to determine increases or decreases in the amounts of microbial carbon, nitrogen, and phosphorus-cycling immediately after the burn. We are also setting up a greenhouse experiment with all combinations of fire history (36), fire treatment (burned and unburned), microbial effects (live and sterile soil), and 12 scrub plant species to measure germination and growth responses. Some of these plants (e.g., *Eryngium cuneifolium*) respond positively to fire. **Our Joint Genome Institute funded research will help determine if microbial relationships are part of their strategy for success**."



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A Rare Mint

One of the Garrett's Mint propagules planted at Flamingo Villas in 2019 by Archbold's Plant Ecology Program.

Garrett's Mint (*Dicerandra christmanii*) is one of the rarest mints on our planet. This unique little shrub survived the development surrounding its single protected property at the Flamingo Villas Unit of the Lake Wales Ridge National Wildlife Refuge. Similar to Scrub Balm (*Dicerandra frutescens*), Garrett's Mint is found only on fire-maintained yellow sand scrub of the southern Lake Wales Ridge. The Archbold Plant Ecology Program **was awarded three years of funding from the US Fish and Wildlife Service to expand the vulnerable population of Garrett's Mint as part of a larger effort to restore the Flamingo Villas scrub with fire.** Stephanie Koontz, Archbold Plant Ecology Research Assistant, shared, "In 2010, we did our first out-planting of 200 mint propagules at Flamingo Villas. **By 2018, the population had grown to 4,567 individuals!** In 2012, we introduced Garrett's Mint to a second protected site at Carter Creek, also part of the National Wildlife Refuge. This introduction has also flourished including seedling recruitment following a prescribed fire only three years after the introduction. In June 2019, with collaboration from Bok Tower Gardens, we added even more Garrett's Mint seedlings and propagules to the Flamingo Villas site in areas the mint is currently not found. This fall, these plants will be incorporated into our long-term monitoring program which began in 1994 and has followed 19,265 individual Garrett's Mint plants. **Ultimately, our goal is to continue monitoring the expanding population of this rare mint with hopes the population becomes self-sustaining**."

"Archbold Biological Station is one of America's iconic centers of continuous research and education in field biology. It is a prototype of what we need all across America."
— Edward O. Wilson

Disturbance Fairy Tale

The Archbold 'Plant Lab' in 1997 with Pedro at photo left. Eric Menges is at photo right (tallest with glasses). A sequence of chance events beginning with a meeting in Japan then culminating in May of 1994 at a Conservation Biology meeting in Guadalajara, Mexico with Dr. Eric Menges (Archbold Plant Ecology Program Director) would forever change the lives of one special family. Pedro Quintana-Ascencio was a second year PhD student at the State University of New York at Stony Brook with a young family hoping to find a research site to complete his graduate work. Growing up in the tropical lowlands of Mexico, he became interested in the ecological role of disturbance at an early age. He was looking for not only a heterogeneous study site with a disturbance ecology but also a home for his family. "Archbold had all three", according to Pedro: "1: Fire; 2: The scrub; 3: A wonderful group of people. We moved in June 1994 to central Florida." **Pedro, his wife, Marina, and two children, Amarantha and Eréndira, lived in Archbold' s Oak cottage while working in the 'Plant Lab' for three years where he learned to "value collaboration, good data organization, careful thinking, and long-term research."** He went on to accept a faculty position at the nearby University of Central Florida. Returning to Archbold this past June as he has done every year, Pedro continues his work with Eric Menges with whom he enjoys 25 years of friendship and science collaboration in the dynamic Florida scrub. Pedro has gone on to advise multiple graduate students at Archbold including Dr. Betsey Boughton, Archbold' s Agro-ecology Program Director. Looking back, he shared, **"It was like a dream to be in a place where you live among natural areas, amid people with similar interests, and where you can explore your ideas."**

Public Events

Aug 1: 3:30-4:45 PM

Education Program Staff Lectures

1. 'Too School for Cool: My Year as an Education Intern'

Charlie Browning, Archbold

2. 'Sun, Summer, & Science'

Cassie Morris, Archbold

3. 'Eco-Detectives and Future Scientists'

Dustin Angell, Archbold

Inaugural Visiting Scholar

Portrait of Young Ha Suh in the field by Dustin Angell. **Last year, a gift from Archbold' s Dr. Mark Deyrup, Emeritus Entomologist, and his wife Nancy Deyrup, retired Archbold Environmental Education Director, was combined with the generosity of other donors to establish the Archbold Visiting Scholars Award.** The award is designed to provide an early career scientist, either a graduate student or a postdoctoral fellow, with financial support to conduct a minimum of four weeks' field research at Archbold. **Archbold science staff selected Young Ha Suh as the inaugural 2019 recipient of the Visiting Scholars Award.** Suh is a PhD student in the Department of Ecology and Evolutionary Biology at Cornell University and the Cornell Lab of Ornithology. Suh's proposed field work at Archbold will address 'prospecting' in jays, which refers to a jay's process of gathering information about its surroundings to help in habitat selection and reproductive success. Her research will take advantage of new lightweight, solar-powered radio tags and an antennae receiver grid recently installed at Archbold. Suh will be the first user of our new tracking system. She shared, "I'm tremendously excited and honored to be the first recipient of the Visiting Scholar Award. Thank you to the Deyrups and other donors for your gifts. I am humbled by your never-ending passion for research."

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Summer Update-Your Gifts at Work

Archbold Summer Campers strike a pose as scientists and firefighters for Dustin Angell's 'Eco-Detectives' photo project.

If you are on Archbold's mailing list, you may have already received the 2019 Summer Report with our summer fundraising appeal for Archbold highlighting a few of our current projects. This work is thanks in part to the steadfast support of our wonderful donors: Archbold is enhancing land management in our scrub habitats, wetlands, and grazing lands, which serve as home to an incredible diversity of life. Scientists at Buck Island Ranch are working to conserve biodiversity, while at the same time finding solutions to help 'slow the flow' of nutrient enriched waters downstream. As a result of donor support, we elevated our Education Internship to a 10-month position, increasing our capacity to deliver K-12 education. We awarded our first Visiting Scholar Award instigated by the Deyrup' s generosity and matched by supporters like YOU. **Successful projects are possible because of our devoted supporters.** When you give to Archbold, you are fueling exceptional scientific research, advances in education, and cutting-edge conservation. **To help boost Archbold' s Summer Giving appeal, please look for your 2019 Summer Report in the mail**.

The Scrub Blog

Nature and Science from Florida's Heartland

Directions to Archbold Biological Station

Eight miles south of Lake Placid. Entrance is 1.8 miles south of SR 70 on Old SR 8.

If you enjoy these stories from Archbold, please consider a gift to support our research and education programs. Donate now. Your gift really makes a difference.