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Worldwide Grassroots Science

Archbold Biological Station Dec 6, 2017



DUSTIN ANGELL PHOTO Archbold researchers collect plant biomass for a NutNet experiment at Buck Island Ranch.

Collaboration is increasingly a key to successful science and conservation. Many of Archbold Biological Station's research collaborations occur at local or regional scales, involving working with other scientists or institutions who can offer complementary expertise, or share facilities, resources, or study sites. Some questions, however, are best answered through larger collaborative networks. The Nutrient Network (NutNet) is bringing together grassland researchers from around the world to contribute data from individual locations to a multi-year planet-wide ecology experiment, and Archbold is part of the network and the project.

Archbold's Director of Agro-ecology Research, Dr. Betsey Boughton oversees the NutNet experiment at Archbold's MacArthur Agro-ecology Research Center (MAERC) at Buck Island Ranch. She explains, "We are participating in a grassland experiment where the same experiment is being conducted in more than 60 grasslands around the globe."

The network was founded by a group of young scientists twelve years ago, who were frustrated that there had been no globally coordinated experiment to track changes in grasslands. These scientists explains that, "NutNet's strength comes from conducting exactly the same experiment at partner sites who volunteer to participate. Ecology is a powerful tool for describing Earth's systems of living and non-living things that we call ecosystems, but field work is site specific and so are many of its findings. For example, even if you can show that conditions in one place resulted in an observable outcome, how do you know for sure that the same is true elsewhere? NutNet's grassroots approach to collaboration solves that problem, because the same questions are being asked in different places and the results can be compared. Betsey Boughton adds, "I really enjoy being in the network because I get to interact with ecologists all over the world. Sharing data with others is a fulfilling part of my job."

Highlands County's grasslands support some of the highest numbers of cattle in the state. These working ranches provide us with jobs, food, and community, as well as wildlife habitat and water management. Archbold's Education Coordinator, Dustin Angell leads swamp buggy tours at Buck Island Ranch. He says, "Florida's ranches look more like parks than they do most people's expectations of agricultural lands. When I give tours for people who are new to Florida's heartland, they are surprised by the beauty of the ranch landscape. They even ask me where all the cows are. We have 3,000 head of cattle, but they have a lot of room to spread out over our grasslands and woods."

People in Florida and around the world rely on grasslands and these ecosystems are changing due to human activities. NutNet scientists say they, "want to understand how land management practices like fertilizer use and grazing techniques are affecting grassland ecosystems." Archbold is stepping up their involvement in

NutNet. Betsey Boughton says, “2017 was our third year in the network, but our second year of adding different combinations of nitrogen, phosphorus, and potassium fertilizer and excluding deer and rabbits from some of the plots. All plots will be exposed to occasional cattle grazing and prescribed fire every 2 or 3 years. The plots are also valuable for our research interns to conduct short-term projects. One of our current interns, Jaide Allenbrand from Kansas, is going to investigate the role of beneficial root fungi of the grass in the experimental plots.” The University of Florida Range Cattle Research and Education Center in Ona is also participating in Ona.

Archbold Biological Station’s interest in understanding and preserving Florida’s ranches and their ecosystems is part of their long-term commitment to Buck Island Ranch. For nearly 30 years, Archbold has operated the 10,500-acre ranch as a working cow-calf operation and biological field station. Researchers study plants and wildlife, water and air quality, and the environmental effects of ranching practices. The ranch also hosts visiting researchers from around the country and it partners with scientists, agencies, and neighboring ranchers toward conservation goals. NutNet is an example of how collaboration is making Highlands County ranches part of a global effort towards sustainable management.

Photos:

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Archbold researchers collect plant biomass for a NutNet experiment at Buck Island Ranch.

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Dr. Betsey Boughton collects samples form a NutNet experiment.