Keeping Ranch Wetlands Wild– February 20, 2018

Research led by Dr. Betsey Boughton at Archbold's MacArthur Agro-ecology Research Center (MAERC), together with a team from University of Central Florida has been addressing how Florida ranchers might maintain and enhance wetlands found on their ranches. About one-third of the headwaters of the Everglades is ranchland, like MAERC, and we all benefit from valuable natural services provided by wetlands on ranches.

Mac-Arthur Agro-ecology Research Center. Photo by: Patrick Bohlen

Dr. Boughton said "Thousands of small, isolated wetlands lie embedded in improved pastures as well as in the semi-native pastures across Florida ranches. Plants and animals found in these wetlands are very species-rich and the wetlands are known as biodiversity hotspots. Natural services include production of forage for grazing animals, cleaning water, and retaining or holding back water from high rainfall events, reducing flooding downstream." Improved pastures are those that were historically planted in commercial forage grasses, fertilized, and more extensively drained, whereas semi-native pastures support more native grasses, were generally not fertilized, and have less drainage. These seasonal wetlands would have burned historically as a result of lightning-caused fires, and are now often managed by ranchers and land managers using prescribed burns.

To investigate what management practices might influence wetland quality, 10 years ago the researchers established 40 wetlands across MAERC as a giant experiment, quarter with grazing, quarter with prescribed burning, quarter with neither, and quarter with both fire and grazing.

Wading birds are attracted to wetlands under restoration. Photo by Becca Tucker.

Dr. Grégory Sonnier, a Postdoctoral Fellow at Archbold is studying the outcomes of wetland restoration at MAERC. Dr. Sonnier emphasized that “Data collected over a four year period showed that either low level cattle grazing or fire is required to maintain wetland communities. Fenced and unburned wetlands lose diversity and plant communities degrade over time. Furthermore, restoration of wetlands embedded in improved pastures is more difficult than restoration of wetlands in semi-native pastures because of different starting conditions, including fewer native wetland plants, more exotic plants, and higher soil nutrients. Without fire or grazing plant diversity declines. So land use, like management of improved pasture, continues to exert influences on wetland ecology through nutrient loading and plant communities even when grazing is removed.” Boughton added “Our study to date shows that wetland vegetation previously altered by improved pasture management largely continues to resist changes with common restoration management. In contrast, wetlands within semi-native pastures were more responsive to restoration. We expect more results over the coming months as we collect another year’s data this year, and will analyze longer-term 10 year results from this project, to see if these effects still hold over a longer timeframe.”

Dr. Betsey Boughton, Agro-ecology Research Program Director at MAERC, collects a wetland water sample with an intern. Photo by Carlton Ward.

Dr. Hilary Swain, Archbold Director, added “This research, which was supported by the US Department of Agriculture, is important for ranchers and other land managers, especially those involved in wetland management and restoration.”