



ARCHBOLD MARCH 2018 NEWS for curious minds



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South Florida Tortoise Tracking



Gopher Tortoise using flooded burrow in flatwoods of south Florida.

The range of Gopher Tortoises (*Gopherus polyphemus*) in Florida spans the temperate northern panhandle through the subtropical south. **In southern Florida, they face a troublesome trade-off: the dominant pine flatwoods feature great forage but subpar soils for burrowing, whereas the sandy Florida scrub has great soils but subpar forage.** To find out how these contrasting conditions affect the lives of tortoises, Traci Castellon, a former Archbold postdoctoral researcher, and Dr. Betsie Rothermel,



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Archbold Herpetology Director, radiotracked Gopher Tortoises in both flatwoods and Florida scrub at Avon Park Air Force Bombing Range. Teaming up with colleague Javan Bauder, they analyzed and published their results in the [March 2018 issue of the journal *Herpetologica*](#). Contrary to their predictions, they **'found no evidence of shifts by either sex (in flatwoods) to drier habitats during the peak summer wet season, nor did females relocate to drier habitats for nesting.** Rather, both sexes maintained strong fidelity to home ranges in flatwoods, despite the fact that most burrows were partially flooded year-round.' However, in flatwoods there were more instances of a burrow being used sequentially (and sometimes concurrently) by multiple tortoises, suggesting there may be competition for burrows because the soils are rarely dry enough to permit excavation of new burrows. Finally, the female tortoises in scrub did not respond to the relative scarcity of forage by using larger areas or moving more frequently between burrows. Instead, 'some females in scrub were extremely sedentary, remaining in a single burrow for six months and using as few as two burrows per year.' This study contributes essential new information about the fascinating lives of Gopher Tortoises, a state threatened species.

Digital Ranch



A scene at Buck Island Ranch just before the rain.

Archbold's Buck Island Ranch, home to the [MacArthur Agro-ecology Research Center](#), holds a treasure chest of data spanning over thirty years including everything from species lists to long-term

Archbold Press

"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

Public Events

Mar 10: 3:30pm-4:30pm
30 Years on the Trail of
Ants
Book Signing & Talk
Mark Deyrup, Archbold

Mar 24: 8:00am-10:00am
Natural History of the
Florida Scrub-Jay
Walking Tour
Reed Bowman, Archbold

April 7: 9:00am-11:00am
A Walk Through Time
Walking Tour
Fred Lohrer, Archbold

All events meet in/at the
Frances Archbold
Hufty Learning Center.

datasets on water quality, soil nutrients, burn history, weather, spatial GIS, and wetland biodiversity. **All these data are beginning to go online thanks to Archbold's new Data Manager, Shefali Azad.** The ranch is part of the [US Department of Agriculture's Long-term Agroecosystem Research Network \(LTAR\)](#). Azad shared, 'As part of the network, we want to make sure our data are available for cross-site analyses among agroecosystems in the United States. To facilitate this, LTAR sites are being asked to provide a "phone book" of what data are available so scientists can plan large nationwide analyses to understand the sustainability of agriculture'. Creating a phone book for Buck Island Ranch research is no small endeavor with many challenges like meeting federal government standards for publishing data. Azad is up to the challenge having received her training in biotechnology engineering at the University of Mumbai, India and a statistics-focused Wildlife Biology graduate program at Clemson University. Azad added, '**It's exciting that Archbold is part of this national initiative to disseminate a variety of agroecology research that will inform research and management strategies across the continental United States.**'

Oak Gall Partners



Dr. Jim Cronin holding an oak leaf with galls while in the scrub at Archbold with Dr. Warren Abrahamson.

Long ago, in evolutionary timescales, tiny cynipid gall wasps learned to lay eggs inside plant tissue, like scrub oaks. In response, the oak forms an enigmatic [gall](#) that nourishes and protects the developing wasp larvae. Not

Seminars Open to Public

Mar 15: 3:30pm-4:30pm
Special Speakers Seminar
Orou Gaoue, University of Tennessee

April 5: 3:30pm-4:30pm
Special Speakers Seminar
Oden Keynan

April 19: 3:30pm-4:30pm
Special Speakers Seminar
Kara Lefevre, Florida Gulf Coast University

Executive Assistant Vacancy Announcement

Archbold is seeking a detail oriented individual to provide administrative support to the Executive

so long ago, another relationship formed at Archbold between Dr. Warren Abrahamson, Archbold Research Associate and Bucknell University Professor, and Dr. Jim Cronin, Louisiana State University Professor.

Abrahamson first met Cronin back in 1987 at Archbold when Jim was Dr. Mark Deyrup's Research Assistant. Cronin grew up in Lake Placid (10 miles north of Archbold) and, with his early exposure to field biology at Archbold, went onto a career in evolutionary biology. He returned to Archbold for the first time in thirty years this past January-February to begin a new research collaboration with Abrahamson. Abrahamson said, 'We share a love of Florida scrub, being outdoors, and a desire to better understand how species interact, especially host plants and herbivorous insects.' **Together, they are examining which gall wasp species are present on oaks at various points in time and space after intensive fires.**

Cronin said, 'High-intensity burns likely reset local gall wasp populations to zero. Within about two years, a few species begin recolonizing oaks. And within six years, it appears that most of the gall wasp species become re-established.' There are 80 species of gall wasp at Archbold that, according to Abrahamson, 'literally manipulate its host plant's genes to produce a unique structure. These gall structures are unique'. So is this Abrahamson-Cronin collaboration.

Director. Incumbent must enjoy multi-tasking, have strong creative writing skills with experience working with social media, and be able to work independently under pressure in a fast-paced environment. Click [here](#) for more information.

The Return of the Burrowing Spiders



Burrow of Burrowing Wolf Spider (*Geolycosa hubbelli*) found by Dr. Jim Carrel during his 32nd annual spider census in 2018.



Check out our Youtube Videos!



Dr. Jim Carrel returned to Archbold this February for his 32nd annual census of rare Burrowing Wolf Spiders (*Geolycosa xera archboldi* and *G. hubbelli*). Carrel, Archbold Research Associate and [retired Professor at University of Missouri](#), learned in the beginning of his study how burrowing wolf spiders respond to fire. He shared, **'After a fire, the population of the burrowing wolf spiders goes up.** Then, the scrub regenerates and starts filling in. Leaf litter accumulates. And so spider numbers plummet'. In the last 17 years, he has seen how burrowing wolf spiders respond to unusually wet rainy seasons. In 2017, he recorded just 10 occupied burrows down from a peak of 200-500 in the 1990s. At first, he said, 'I felt dejected. But then, I thought, wow, this is occurring naturally. It probably happens every 50 years or so when you get years of repeated rains. So, they (burrowing wolf spiders) may disappear from my study site. But, they are elsewhere on the Station. They can recolonize though it may take years.' Carrel sees the big picture which reminds him of a James Taylor song: 'I've seen fire and I've seen rain and I've seen days of endless sun.' He said, 'That is pretty much what life out here for these spiders is like'. [Watch a short video here](#) **to learn more about the longest running study of spiders in the world from a real-life spiderman, Dr. Jim Carrel.**

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Confluence of Scientists and Managers



Dr. Hilary Swain shows the group land conservation strategies in the headwaters of the Everglades watershed.

The Lake Wales Ridge and Southeast Florida Ecosystem Working Groups held a joint meeting

Directions to Archbold Biological Station

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



on February 7 at Archbold to share exciting new discoveries. These working groups meetings are great opportunities 3-4 times a year for regional scientists and managers to exchange information about how best to achieve conservation results. **Dr. Mark Deyrup, Archbold Entomologist, led the way sharing news of six species of tiny beetle the size of a sesame seed he found in a rotting Laurel Oak after Hurricane Irma.** Despite 75 years of beetle study at Archbold, these species had never been seen before. Emily Angell, Archbold Avian Ecology Research Assistant, shared how Hurricane Irma felled nest trees of the endangered Red-cockaded Woodpecker leading to a group discussion how the hurricane impacted conservation lands throughout the Lake Wales Ridge and Southeast Florida. **Dr. Hilary Swain, Archbold Executive Director, gave a sweeping overview of conservation achievements and proposed new easements and acquisitions for the Headwaters of the Everglades region,** which includes the Lake Wales Ridge. After a lunch in the beautiful Archbold facilities, Dr. Reed Bowman, Archbold Avian Ecologist, gave an update on how genetic variation among populations can be used to decide which groups of Florida Scrub-Jay should be translocated (moved) to smaller jay populations to best reduce inbreeding yet maintain genetic integrity of regional populations. Kelly O'Connor (Florida Fish & Wildlife Conservation Commission) gave a Gopher Tortoise update. Finally, Dr. Jen Korn (formerly with Florida Fish & Wildlife Conservation Commission) gave a Florida Panther update. Using tracking data and great trail camera shots, Korn shared exciting news about male and breeding female panthers north of the Caloosahatchee River.

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.

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