



ARCHBOLD APRIL 2018 NEWS

for curious minds



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Buried Carbon



The pulse-chase experiment inside a grazing enclosure on September 10th, 2016 with Jesse Wilson.

Almost 1/4 of terrestrial ice-free land on Earth is pasture or rangeland occupied by large herbivores. As our planet warms due to human-caused climate change (e.g., burning fossil fuels), understanding the greenhouse gas cycle in pastures is critical. While much research focuses on aboveground herbivore-grassland dynamics, not much is known about the world belowground of plant roots, plant tissues, carbon, microbes, and soil all interacting with each other. In response, Dr. Chris Wilson, at the University of Florida, along with coauthors just published 'Grazing Enhances Belowground Carbon Allocation, Microbial Biomass, and Soil Carbon in a Subtropical Grassland' in the [Global Change Biology](#) journal based on work at Archbold's [MacArthur Agro-ecology Research Center](#) at Buck Island Ranch. Sequestering carbon in soils reduces carbon dioxide, a greenhouse gas, in our atmosphere. However, we do not know the most efficient way of promoting soil carbon in pastures. Wilson's team analyzed plants, microbes, and soil responses in grazed and ungrazed pastures at Buck Island ranchland including a sophisticated pulse-chase experiment



Archbold Biological
Station Website

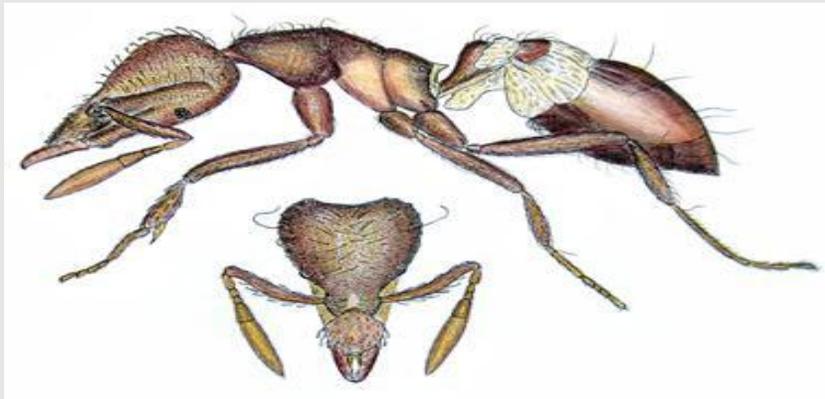
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"Archbold Biological Station is one of America's iconic centers of continuous research and

(i.e. controlled gas exchange chamber). They discovered much more carbon belowground in grazed pasture, in both plant roots and soils, in comparison with ungrazed pasture. They conclude, 'Overall, it is clear from our results that large herbivores can be critical for maintaining belowground carbon stocks in subtropical pasture, which should be carefully considered when evaluating grazer impacts on global change and their potential to contribute to greenhouse gas mitigation via soil carbon sequestration.'

On the Trail of Ants



Dr. Mark Deyrup's drawing of the Mustache Ant (*Strumigenys archboldi*). Deyrup said, 'The name is a tribute to the Station's research on Florida ants, including the discovery of species new to science.'

From his childhood marveling at Pavement Ants living in the cracks of New York City cement to today, Dr. Mark Deyrup has followed ant trails professionally for 30 years. Deyrup is the [Archbold Entomologist](#) nicknamed the Hubble Telescope of the scrub by Dr. Tom Eisner. On March 10th, Dr. Deyrup served up some fascinating Florida ant stories to a public audience at the Frances Archbold Hufty Learning Center. Deyrup told the story of how the infamous Red Imported Fire Ant (*Solenopsis invicta*) won the battle when a government program failed to eradicate them with mirex chemical spraying. Less familiar were the fungus farmer ants (*Trachymyrmex*). These ants eat only one kind of fungus. After the queen brings the fungal inocule, the colony cultivates the edible fungus with fertilizer while controlling other competing fungi with ingenious fungicides (e.g., a bacteria on the head of the ant grows a fungicide). Deyrup told the audience about Florida scrub ants that are blind and spend their whole lives underground. To the delight of Dr. Deyrup, the function of many curious aspects of ant anatomy remains elusive. To learn more about the 239 ant species known to inhabit Florida, check out Deyrup's masterpiece '[Ants of Florida: Identification and Natural History](#)' published in 2016. The book features scientific illustrations of all these ants by Deyrup bringing the intricate, tiny body designs up to scale for us all to see. Deyrup ended his talk by saying, 'Every

education in field biology. It is a prototype of what we need all across America."
— Edward O. Wilson

Seminars Open to Public

April 19: 3:30pm-4:30pm
Special Speakers Seminar
'South Florida's Integral Role
in a New Era of Avian
Migration Research'
Kara Lefevre, Florida Gulf
Coast University

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

square inch of Florida is crawling with ants. They are everywhere'. He would know. While most of us walk by ants blissfully ignorant and unaware, one special person spent his whole life getting to know them.

Dr. James N. Layne Collection



North wall of the Collection Room showing archival boxes of Dr. Layne's data and the 91 volumes of his field notes shelved above them.

In 1967, Richard Archbold appointed [Dr. James N. Layne](#) as the first Director of Research at Archbold Biological Station. Right away, Dr. Layne initiated long-term, mark-and-recapture projects for all of the small and large mammal species, Gopher Tortoises, snakes, and some birds. Dr. Layne said, 'Many field projects will be conducted on a long-term basis with the objective of obtaining a better understanding of the biology of important species. In addition to their intrinsic value, such data will contribute to overall knowledge of the ecosystems represented.' Dr. Layne had the foresight to establish rigorous, long-term monitoring programs and records on geology, geography, land-use history, fire history, hydrology, climate, vegetation, and animal species. In his shirt pocket he always had pens, pencils, and 3x5 cards to immediately record field observations. Dr. Mark Deyrup, Archbold Entomologist since 1983, said, 'In his alert and respectful attention to the natural world Jim Layne was a model to us all.' Beginning in 2011, and with the help and support of his family, Dr. Layne donated materials from his professional career, which are now a part of the 'Dr. James N. Layne Collection'. The myriad data contained in the Layne Collection are under active archival care and are open for use by Archbold staff and visiting researchers. These essential data continue to inform some of Florida's critical environmental trends as well as contributing to many other scientific studies.

Payroll Clerk Vacancy Announcement

Archbold is seeking a detail oriented individual with advanced Excel skills and strong understanding of accounting for accounts payable / payroll position. Associate Degree in accounting with 3 years of experience or 5 years accounting experience preferred. This is a full-time position with excellent benefits. Click [here](#) for more information.

Jay Personality Test



A sentinel Florida Scrub-Jay keeping vigilance for predators in taller, overgrown Florida scrub.

All animals must balance the need to eat against the need to not be eaten. Dr. Reed Bowman, [Archbold Avian Ecology Program](#) Director, said, 'The risk of predation increases for Florida Scrub-Jays as scrub gets taller and denser without fire. As it becomes harder to detect and evade predators in the scrub, we expected jays to invest more time and energy in vigilance.' Over the past few years, the Avian Ecology Program has studied how jays allocate time to foraging or vigilance. As expected, jays increase vigilance in taller scrub. However, the Archbold team also discovered the individual personality of each jay influences their response. Heather Kenny, a previous Avian Ecology intern, found that as predation risk rose in taller scrub, the 'shy' jays greatly increased their vigilance, but the 'bold' birds did not, choosing to allocate the same amount of time to foraging regardless of predation risk. Furthermore, shy jays appear more sensitive to the social composition of their family group. For example, they might act bolder when bold birds are present. These behavioral observations suggest that shy Florida Scrub-Jays are more behaviorally flexible, and thus, might be more successful across a longer time-since-fire period than bold jays. Bowman said, 'Like humans living and adapting in a dynamic environment, a variety of jay personalities might also help them survive.'



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Okeechobee Music Festival



Archbold booth staff at the Okeechobee Music Festival. Left to right in back: Phoebe Judge, Amartya Saha, and Logan Clark. Left to right in front: Dustin Angell, Deborah Pollard, and Kate Bezany.

Last month, Archbold took part in the four-day long Okeechobee Music Festival. 35,000 music lovers descended on the beautiful Sunshine Grove Ranch, just 40 miles from [Archbold's Buck Island Ranch](#). Archbold set up a booth in a special non-profit area known as Participation Row alongside 10 other non-profits invited by the festival sponsor. Dustin Angell, Archbold Education Coordinator, said, 'We decided to engage people at our booth with music from science. It worked! Festival attendees joined our drum circle around a table made from old pine where we introduced the concept of creating music from data rhythms. For example, the alternating years of fast growth verses slow growth in tree rings is a data rhythm. Visitors loved viewing the [TEDx video by Dr. Evelyn Gaiser, Florida International University](#), where she presented her live music composition based on annual temperature fluctuations from Archbold's Lake Annie data. When people listened to the sounds of the lake data, their eyes lit up.' Visiting the Archbold booth at the Festival, Dr. Gaiser was thrilled with the reactions to her musical approach to data saying, 'We need more scientists participating in events such as these to bring together the arts and the sciences.'

Directions to Archbold Biological Station

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

