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Preserving Plants: Archbold's Leonard J. Brass Herbarium

Opening the door to one of several imposing, hunter green cabinets, Stephanie Koontz carefully pulls out some large folders labeled with plant names. She sets them on the table and gently opens one up. “A herbarium is more than just sheets of pressed and dried plants” says Koontz, a Research Assistant in the Plant Ecology Program at Archbold Biological Station. “It is a record documenting changes in individual plants and plant communities over time.” Herbariums are collections of preserved plant specimens that are organized by plant species name. The large sheet of special archive paper has a dried and flattened plant glued to it. In the bottom right corner is a label with the plant name, collection date, who collected it, and location information about where the collection was made. “This sheet here was collected back in September 1945 by Leonard Brass, Archbold’s first botanist appointed by Richard Archbold when the Station was founded in 1941,” states Koontz. “Look at its excellent condition! When properly collected and pressed, these records will last at least a 100 years.”

Housed at Archbold, the Leonard J. Brass Herbarium, named in honor of its principal collector, holds more than 4,000 specimens, most of which were collected in central and south Florida. The herbarium is also dedicated to long-time resident of Lake Placid, Dorothy Mundell, who volunteered for many years preparing specimens, entering collection data, and organizing cabinets. “Most herbariums are housed at large universities or museums and contain more than 100,000 records. Ours is much smaller but is specific to our region and therefore serves as a library of knowledge with an emphasis on the plants of the Florida scrub. It provides historic records for what habitats and plants occurred in the area before widespread conversion to agriculture and residential areas,” says Koontz. Herbarium records have been helpful for habitat

and species restoration. For example, they were used to determine the original range of the highly endangered plant, the Florida Ziziphus. “Florida Ziziphus is endangered mostly because of habitat loss. The herbarium records helped us identify where the species used to occur” says Plant Ecology Program Research Assistant Stacy Smith. “Using current and historic locations, we were able to determine its original range and then identify potential areas of remaining habitat where we could search for new occurrences. Using this approach, the past decade has seen the discovery of several previously unknown populations of Florida Ziziphus, almost doubling the number of known plants!”

Herbarium records have many other uses. Scientists in the Northeastern USA analyzed herbarium records and found several tree species are flowering earlier in the spring than they did historically, in response to warmer temperatures. “Some ways we use herbarium records at Archbold include observing shifts in wetland plant communities following wet and dry years. Scientists from around the world may request a small sample of a specimen for DNA analyses. We also use herbarium records to teach our interns how to identify rare plants and to help us identify unknown plants we find during field research” says Koontz. “We also get many visiting scientists and college students who use the herbarium to find potential areas for the occurrence of a target plant species.” The Brass Herbarium is a continuous collection with new records added every year. “It is important to keep collecting,” says Plant Ecology Program Director Eric Menges, “but we also must collect responsibly.” There are several rules Archbold scientists follow when collecting a plant specimen. “We only make a collection when there are several individual plants in an area and, with larger species, we only collect a portion of the plant so the rest may survive. The plant must also have good characteristics for identification such as leaves, flowers, fruits, or seeds. We never collect on private lands without the landowner's permission. Nor do we collect a specimen of a rare species without important scientific justification and the proper state and federal permits,” explains Menges.

Herbarium sheets are intended to be preserved for hundreds of years, however repeated handling can accelerate the degradation of the specimens. “Every time we take a specimen out of the cabinet for viewing, we risk damaging it,” explains Koontz. “Bits of dried flowers or leaves may fall off, stems break, and open cabinets let insects inside that can damage specimens.” This is a problem all herbariums face. In 2015, Archbold was awarded funding from the National Science Foundation to make all its collections digitally available. “We photographed everything!” explained Koontz. Information from the plant specimen labels was entered into a computer database and everything was uploaded to the Internet through the North American Network of Small Herbaria. “Now anyone in the world can access and view our herbarium,” explains Koontz. “Our data are available to anyone to use, helping preserve the longevity of our collections here at Archbold.” You can view the collections of Archbold's Herbarium online by visiting www.nansh.org and clicking “Search Collections”. Select “Archbold Biological Station” and then select a criteria. You could pick a favorite plant species, county or state, and search for what Archbold has collected in your area.

Photo 1. A specimen of the rare Lake Placid Scrub Balm collected by Leonard J. Brass in September 1945 in Lake Placid, Florida. Photo by Stephanie Leon.



Photo 2. The Plant Ecology Program successfully photographed more than 4,000 specimens for digitization. Front l to r: Joanna McCaffrey, Devon Picklum, Stephanie Koontz. Back l to r: Jamie Peeler, Gil Nelson, and Eric Menges. Photo by Archbold Biological Station.

