John M. Diaz, University of Florida. “Partnering with the Military to Achieve Landscape-Scale Conservation.” john.diaz@ufl.edu (ORAL PRESENTATION)

At one time, most of our nation’s military installations were located in rural areas, far from the subdivisions and shopping malls of today. The rapid pace of development in recent years, however, is pushing communities closer to perimeter fences, challenging the military’s access to lands and airspace needed for training. Encroachment—development that’s incompatible with military needs—can limit the use of training ranges, present obstacles to low-flying aircraft, cause light pollution that interferes with night training and degrade communication frequencies. Meanwhile, working lands and wildlife habitat near bases are threatened, too. Lands used for farming, ranching and forestry are vital to sustaining agricultural productivity and safeguarding natural resources. Despite a variety of state programs, the country annually loses 1 million acres of farmland to development. In addition, the loss of wildlife habitat is transforming military bases into unlikely refuges for more than 300 threatened and endangered species. Through this presentation, I will explain how the U.S. Departments of Defense, Agriculture and the Interior, along with state, local and private actors, are hoping a new effort called the Sentinel Landscapes Partnership will be a win-win for all involved. The partnership’s goals are to protect working lands, preserve wildlife habitat and sustain military readiness by focusing on places where these priorities overlap. It will reward landowners for management practices that benefit the land and their own livelihoods while helping to sustain military training ranges and airspace.

Jerald Pinson, University of Florida, Jennifer Possley, Fairchild Botanical Garden, and Emily Sessa, University of Florida, “Florida’s Sinkholes, and the Separation of Generations in Ferns.” Jbp4166@ufl.edu (ORAL PRESENTATION)

Ferns and lycophytes are the only lineages of plants in which both stages of the life-cycle, the sporophyte (diploid) and gametophyte (haploid), are independent and free-living. In approximately 10% of ferns, the gametophytes can also be long-lived, many of which have a spatial separation of the two generations, in which the gametophytes never produce sporophytes in at least part of their range. There are several such species in eastern North America that likely haven’t produced a viable sporophyte for thousands of years and yet still maintain large ranges throughout several states. It is currently unknown what inhibits the production of sporophytes in fern species that show a spatial separation of generations, but there is evidence to suggest that fine scale micro-climatic conditions may be driving this pattern in several species.

In southern Florida, Lomariopsis kunzeana is known to grow as gametophytes in the moist crevices of solution holes, some of which support sporophytes and some of which do not, making it an ideal system in which to study the effects of environmental conditions on sporophyte production. We measured both light and temperature in these sinkholes in an attempt to determine what environmental factors preclude the production of sporophytes in ferns.

Teresa Cooper, teresamariedreams LLC, “Save Florida’s Bromeliads Conservation Project.” tmd@teresamariedreams.com (ORAL PRESENTATION)
The Mexican bromeliad weevil (*Metamasius callizona*) is an invasive bromeliad-eating weevil first discovered in Florida in 1989, already established on wild, native bromeliad populations. Since then, the weevil has spread to fill its new potential range and has caused great damage to several native bromeliad species. This presentation will discuss the origin and history of the Mexican bromeliad weevil in Florida; early weevil infestations on native bromeliad populations and the weevil’s spread across central and southern Florida; seasonality of the weevil and type of infestation on different bromeliad species; bromeliad mortality, natural versus that caused by the weevil; and other effects caused by the loss of Florida’s bromeliads. A brief history of what has been done to try to control the weevil will be discussed, as well as what the Save Florida’s Bromeliads Conservation Project, a group of land managers, organizations, scientists, and volunteers working together, are doing now to save Florida’s bromeliads.

**Stephanie M. Koontz**, Archbold Biological Station, **Carl W. Weekley**, Archbold Biological Station, **Eric S. Menges**, Archbold Biological Station. "Trials and errors of successful germination of rare species." skoontz@archbold-station.org. (ORAL PRESENTATION)

An important component of rare plant conservation is understanding the germination requirements of a species which can be vital for building a successful management plan. *Polygala lewtonii* is an endemic herb found in yellow sandhill habitats which are maintained by frequent fire. Long-term demographic research has shown that, while this species is killed by fire, recruitment pulses occur following fire or warm wet winters. Since 2002, we have performed 14 experiments focused on identifying the germination cues associated with these recruitment pulses. We have exposed seeds to smoke, and heated and burned seeds. We have manipulated season, sowing depth, sowing medium, and seed age. We have removed elaiosomes, and scarified and soaked seeds in water or smoke water. Here, we review variables tested and outcomes of successful and not so successful germination experiments. Germination success has been low (mean 8.6%) but has ranged from <1% to 61%. Germination cues associated with fire showed smoke typically increased germination (17%) compared to heat and fire itself (<3%). Weather cues showed germination was highest for spring settings (14%) in a growth chamber compared to winter (7%). Soaking seeds, simulating wet years, decreased germination (<7%). Physical cues such as removal of the elaiosome, a fatty appendage, decreased germination, although not always significantly (3-45% vs. 3-38% control). Scarification by piercing the hard seed coat significantly reduced germination (8%) compared to unscarified seeds (35%). Storing seeds in the ground to allow them to after ripen increased germination for seeds stored for 12 months sown at 5 cm (61%). To date, germination has been low with some success seen with year old seeds, seeds exposed to smoke, and seeds grown under spring conditions but fully understanding germination requirements and limitations are vital for improving management plans for this species.

**Christopher Krieg**, University of Florida, and **Emily Sessa**, University of Florida, “How Understanding Niche Evolution in Cycads Can Improve the Conservation of Threatened and Endangered Species.” ckrieg@ufl.edu (ORAL PRESENTATION)

Cycads are among the most endangered plant group on Earth, with ca. 60% of species threatened with extinction, yet we know little about the physiology of this group and how it impacts their ecology and distribution in the wild. Understanding the physiological ecology of a plant species is critical for building effective conservation programs and particularly important to understand how a species will respond in a changing global climate. Despite the clear need for this research, no studies have incorporated these data
in a comprehensive assessment of vulnerability of cycad species. The aim of this work is to understand the evolutionary physiology and climate niche evolution in cycads to assess the vulnerability of threatened species in a changing climate. To accomplish this, we integrated large and diverse datasets from several published studies and databases, which we expanded with our own data. DNA sequences will be used to build a phylogeny of cycad species and map ecophysiological traits to determine if traits that make a species either vulnerable or resilient to climate change, may be phylogenetically structured. To identify the species most vulnerable to climate change, we will model the species distributions under projected climate change scenarios. Many gardens and conservation agencies recognize the importance of ex situ cultivation and conservation of threatened and endangered cycad species, yet there is little information about the ecophysiology of this group available to those gardens and agencies. This study is the first to integrate evolutionary physiology to help conserve this imperiled group of plants.

Amber Gardner, Graduate Student, Héctor E. Pérez, Associate Professor, University of Florida - Environmental Horticulture Department, “Germination Ecology of Harperocallis flava McDaniel (Tofieldiaceae), a federally endangered Florida endemic.” apouncey@ufl.edu (ORAL PRESENTATION)

The University of Florida, U.S. Fish and Wildlife Service and Florida Wildflower Foundation began collaborating in 2015 to study the germination ecology of Harperocallis flava. Our research addresses many knowledge gaps identified in the species recovery plan and we can now answer some of these critical questions. Our results indicate that H. flava produces viable seeds capable of germination across a range of simulated seasonal and constant temperatures. Incubation at alternating temperatures of 22/11°C or constant 20°C resulted in the highest germination (99%). Alternatively, less than 5% germination occurred at 33/24°C and constant 10 and 30°C. Seeds collected from post-burn capsules germinated from 12-35%. It is unclear whether the fire itself or the timing of the fire had the bigger impact on reduced germination. We buried a subset of seeds from post-burn capsules and exhumed these after three months. Seed survival ranged from 24-40%. Incubation at 25°C resulted in rapid germination to 84-98% for viable exhumed seeds. An in situ germination phenology study has produced promising results with the emergence of a small number of seedlings along with concurrent environmental conditions. Finally, a desiccation experiment shows that H. flava seeds tolerate considerable desiccation stress and germinate to relatively high percentages. This stress response is essential for germplasm storage. The information generated from these experiments can help guide future studies and conservation efforts outlined in the species recovery plan.

Sarah Webber, Johnson Engineering. “Symbiotic Relationships – Opportunities through public-private partnerships” (ORAL PRESENTATION)

Johnson Engineering is a private for-profit company that has a successful track record of developing public-private partnerships that have promoted restoration and preservation of natural areas and rare plants. One example is Seminole Wayside Park in Miami-Dade County, which Johnson Engineering adopted in 2012. Our team has worked closely with County staff to secure grants that have allowed restoration of the park’s pine rockland habitat, increased community involvement, and will augment an existing federally endangered plant population, as well as introduce a new federally endangered plant to the park. This presentation will provide an overview of this and other partnerships and the work involved. We will highlight how non-traditional partnerships can be a benefit to the community and how we can promote coordination between public and private entities.
Houston Snead, Jacksonville Zoo and Gardens Horticulture Technician II, “Platanthera chapmanii Conservation in SE GA and NE FL.” sneadh@jacksonvillezoo.org (ORAL PRESENTATION)

In 2009 environmental observations of Platanthera chapmanii were made in SE GA for the first time since the late 1940s. That same year Matt Richards with Atlanta Botanical Garden (ABG) began collecting seed from these populations for safeguarding. A conservation strategy was developed for these extant populations involving local utilities, state and county representatives, a local conservation group (Coastal Wildscapes), and volunteers from the Georgia Plant Conservation Alliance.

In the spring of 2015 while in the Fakahatchee Strand Preserve State Park, assisting with an ABG project outplanting Cyrtopodium punctatum, I met Matt Richards. He invited me to accompany him on the 2015 fall floristic survey for P. chapmanii. We decided that partnering in the conservation of P. chapmanii would provide a unique opportunity to secure funding from the Jacksonville Zoo and Gardens (JZG) and expand conservation efforts for this species into NE FL. JZG funded this project in 2016 and I have worked closely with Matt in the field building capacity for JZG to champion this project for years to come.

In May of 2016 we conducted floristic surveys for associated species of P. chapmanii, to find suitable habitat, with very little luck. Returning to the field in August when P. chapmanii is known to be in flower, we broke off into teams and surveyed NE FL for populations of P. chapmanii with GIS maps built by ABG. We found five populations of P. chapmanii and are now working with local agencies to develop conservation strategies in Florida.

Emily B. Sessa, University of Florida, Sally M. Chambers, University of Florida, and Ben Baiser, University of Florida. “Florida Ferns: Community phylogenetics and traits.” emilysessa@ufl.edu (ORAL PRESENTATION)

Community phylogenetic methods enable us to examine the dynamics of plant community and ecosystem assembly in the context of species’ evolutionary histories. Combined with ecological, functional, and climatic data, we can take an integrated approach to understanding the various biotic, abiotic, and evolutionary components driving patterns of diversity in communities at different temporal and spatial scales. The state of Florida has the richest fern flora of any state in the continental U.S. It is home to 149 species of ferns, including ~120 that are thought to be native. We are using community phylogenetic methods to investigate community structure and trait associations for these species at the county level. We have built a phylogeny for all species of Florida ferns using chloroplast markers, and have used text-recognition and character matrix generation software to build a matrix of trait data for all species from the text of morphological descriptions. Preliminary analyses demonstrate that phylogenetic diversity and species richness are strongly correlated, as expected, across the state of Florida, and several traits show strong phylogenetic signal. We are also evaluating the distribution of functional and ecological traits across the state, and using phylogenetic comparative methods to evaluate whether there are correlations between particular traits and spatial diversity. Future analyses will focus on identifying traits that differ between rare and common species, and how rare species will fare under future climate change scenarios.

Sally M. Chambers, University of Florida, Ben Baiser, University of Florida, Emily B. Sessa, University of Florida. "Distributions and environmental divergences of Florida ferns." smstev2@ufl.edu (ORAL PRESENTATION)
Florida is characterized by subtropical and tropical climates, spanning a latitudinal gradient that generates natural variation in climatic conditions, such as annual temperature and precipitation. Currently, there are roughly 150 fern species known to occur in Florida, with most of the species diversity occurring in the southern portion of the state. This is likely because tropical ferns found in Central and South America can extend their ranges into similar climate regimes that characterize south Florida. Species distribution models can be used to examine the contemporary geographic ranges of these species and the climatic factors that may be responsible for these distribution patterns. These models can also be used to forecast anticipated shifts in distribution in response to global climate change. We are using species distribution models to quantify the climatic niches of all fern species found in Florida, and to examine what environmental factors are driving the distribution of each species. We are also projecting these distribution models into the future to predict species' responses to future climatic changes. Preliminary results from a principal components analysis indicate that species diverge in their tolerance for warmer temperatures and greater amounts of precipitation. These divergences display a phylogenetic pattern of niche conservatism, with species from the same genus occupying similar temperatures or precipitation regimes. Thus far, projected distributions for the year 2070 indicate that very few species will expand their distributions in the future, but the vast majority of Florida fern species will experience severe reductions in their geographic distributions. These results have critical implications relating to the conservation of these species, and will help elucidate responses of rare and threatened species in their responses to global climate change.

Michael E. Kane, University of Florida, Nguyen H. Hoang, University of California, Lawrence W. Zettler, Illinois College, Larry Richardson, U.S. Fish & Wildlife Service (retired), and Mark Danaher, U.S. Fish & Wildlife Service, "Integrated Conservation of the Ghost Orchid (Dendrophylax lindenii): An Update." micropro@ufl.edu (ORAL PRESENTATION)

Conservation of endangered orchid species requires an integrated interdisciplinary approach involving an understanding of the ecology, physiology, mycorrhizal fungal relations, pollination biology, and propagation of the target species. Through a cooperative research partnership between the University of Florida, Illinois College, and the U.S. Fish & Wildlife Service, significant progress has been made toward developing an integrated plant conservation plan for the ghost orchid Dendrophylax lindenii. Symbiotic seed culture studies indicated enhanced seed germination and early seedling development in the presence of a Ghost orchid fungal strain Dlin-394 isolated from mature ghost orchid roots. This putative mycobiont has been identified to the genus level (Ceratobasidium) using ITS sequencing. Preliminary greenhouse acclimatization procedures for asymbiotically cultured seedlings have been developed. An out planting experiment using 71 symbiotically cultured mature plants (27 months post-germination) was initiated in June 2015 at the Florida Panther National Wildlife Refuge, Collier County, FL. A 77.5% survival rate was observed 20 months post out planting. Acclimatized plants, rapidly produced new roots which attached to the host trees within two months. One year post out planting, plants exhibited significant changes in root number, and architecture which approximated naturally occurring plants. Effects of using Ghost orchid fungal isolates to enhance ex vitro greenhouse acclimatization and establishment following out planting is currently being examined.

Cheryl L. Peterson, Bok Tower Gardens, Whitney Costner, Bok Tower Gardens. “Non-traditional partnerships help preserve the rare Clasping Warea and Scrub lupine.” cpeterson@boktower.org (ORAL PRESENTATION)
Increasing demands for infrastructure have increased stresses on remaining habitats and species. There are numerous impact areas with road, railway and utility line easement areas which are not developed, but have been so severely disturbed that they are not functional ecosystems that support species diversity, and often become overgrown and sinks of invasive species. To maintain access, management of these areas has routinely involved roller-chopping, broadcast herbicide applications and/or mowing, all of which further reduces habitat quality and diversity. However, there has been a positive trend towards viewing these impact areas for their conservation value as corridors for wildlife and refugia for declining species. Restoring functional habitat to impact areas can help preserve rare species and biodiversity, and provide critical habitat, while benefitting companies by facilitating utility line access and reducing management costs. Bok Tower Gardens develops mutually-beneficial partnerships with development and industry, typically considered non-traditional partners for conservation. Partnering with Bok Tower Gardens, corporations contribute to their communities by supporting recovery of degraded habitat and re-introduction of species. Our team responds to scientific questions and conservation needs in an impact area linked to construction and operating practices, through appropriate experimental designs, restoration and introduction activities, and long-term monitoring protocols. We will review three projects currently underway with non-traditional partners for the restoration of critical Scrub and Sandhill habitat with populations of rare plant species.

Eric S. Menges, Archbold Biological Station, Suzanne Kennedy, Floravista, Inc., Stacy A. Smith, Archbold Biological Station, Stephanie M. Koontz, Archbold Biological Station “Demography of the narrow endemic mint Dicerandra thinicola: patterns and drivers based on 15 years of data from its largest wild population.” emenges@archbold-station.org (ORAL PRESENTATION)

The mint genus Dicerandra is the rarest of any in the southeastern US, and the narrow endemic D. thinicola is restricted to one wild population on public land. Since 2001, we studied ca. 9K plants and 15K annual transitions in permanent plots in Florida scrub and roadsides to assess the health of this population and potential drivers of demographic change. Plant numbers have fluctuated widely, largely due to variably large pulses of winter seedling recruitment, but the overall trend has been upward, especially along sandy roadsides and in burned scrub. Land management (roller chopping and fire) in 2007 affected many plants. Chopping killed 91% of plants and chopping followed by burning killed 100%. However, recruitment in these treated plots was 3-4 fold higher in the three years after treatments than the three years before treatments; no such differences were seen in untreated plots. Post-treatment plants grew faster and flowered earlier than other plants. Consequently, after several years, plant numbers in the treated areas had increased 4-8 fold while plant numbers in untreated areas remained similar. Across the dataset, annual survival (mean 68%) varied among habitats (being highest along roadsides) and among years. About half of seedlings died before their second year, the maximum observed lifespan has been 12 years, and fewer than 6% of plants survived 10 years. This state-endangered plant is short-lived and depends heavily on disturbance (ideally fire) for recruitment and population growth. It is threatened not only by its narrow distribution but by insufficiently aggressive land management.

Jason Downing, Fairchild Tropical Botanic Garden. "The Million Orchid Project: A non-traditional approach to restoration". jdowning@ufl.edu (ORAL PRESENTATION)

With the help of students and volunteers from the local community, Fairchild Tropical Botanic Garden is working to restore some of South Florida’s rare and endangered orchid species into our urban landscape.
For two years, the Micropropagation Laboratory at Fairchild, and mobile STEMLab, has been generating large quantities of native orchid plants from seed. We are now propagating eight species of native orchids with the goal to re-establish them within South Florida’s public landscapes, around schools, on street trees, and in city parks. The Million Orchid Project is unique in its scale, its exclusive focus on public landscapes, and its involvement of the local community from the beginning. At its core, The Million Orchid Project is a massive living science experiment that allows us to make important discoveries about how native orchids grow and reproduce, and help us develop more general strategies for rescuing rare plants within a highly developed urban environment.

Glen Bupp, UF/IFAS Brevard County Extension, “Propagating Conservation: How can commercial horticulture and plant conservation work together?” gbupp@ufl.edu. (ORAL PRESENTATION)

Loss of habitat, whether due to development or climate change is one of the leading threats to rare plant populations in Florida. Numerous conservation strategies have been suggested in the past for dealing with these issues including moving plant species many miles into protected habitat and even rewilding with Pleistocene megafauna. However, these strategies are far too complex and costly to be realistic. I suggest the possibility of plant conservation through the plant trade. While the topic has been debated before, a fresh approach considering the pros and cons surrounding genetics, propagation, ecological relationships, marketing, conservation needs, and psychology will be useful for reanalyzing how we can successfully protect rare plant species from extinction and give meaning to their existence.

POSTER PRESENTATIONS

Jessica Hong, Department of Forest Resources and Conservation, University of Florida, Héctor E. Pérez, Department of Environmental Horticulture, University of Florida “Germination Ecology of Euphorbia deltoidea ssp. deltoidea.” (POSTER PRESENTATION).

Unlike other ecosystems that rely on soil as the prime substrate for plants, the Pine Rocklands ecosystem, located in south Florida, consists of an herbaceous layer which roots on limestone rock. The limestone outcrops, tropical climate region, and a fire regime of 3-7 years make the nexus of this unique ecosystem. Euphorbia deltoidea ssp. deltoidea or deltoid spurge, an endemic species to the Pine Rocklands ecosystem, is a federally listed endangered species since 1985. As the Pine Rocklands are negatively impacted by urban development and fire suppression, the deltoid spurge’s habitat conditions become impaired. The objectives of this study are to quantify seed viability, determine optimal conditions for germination, and compare germination trends between populations. To accomplish this, a germination assay was conducted involving seeds from three different populations: Larry and Penny Thompson Park, Ned Glenn Nature Preserve, and Ludlam Pineland. The germination treatments lasted 28 days with 12-hour photoperiod and were simulated in chambers set to four different seasonal temperatures: fall (27/15°C), spring (29/19°C), winter (22/11°C), summer (33/24°C) and room (25°C).

Germination occurred in Ned Glenn Nature Preserve and Ludlam Pineland at room temperature and Ludlam Pineland in the summer temperature. After the germination treatments, tetrazolium tests were administered to check for seed viability. Overall, there was low germination and low seed viability across all populations. Additional experiments involving genetics should be conducted to provide better management and conservation plans for this species.
Colette Jacono, UF Herbarium, Walter Judd, University of Florida, Taylor Sprengle, Lucas Majure, Desert Botanical Garden, and Gretchen Ionta, Georgia College. "Vascular plants of North Key and Seahorse Key, Cedar Keys National Wildlife Refuge: a preliminary flora." colettej@ufl.edu. (POSTER PRESENTATION)

North Key and Seahorse Key are neighboring offshore islands in the Cedar Keys National Wildlife Refuge protected for their high value avian nesting habitats. The Cedar Keys region has long been recognized for its plant diversity due to the geographical convergence of temperate and tropical species of plants. Nevertheless only eleven species had been vouchered from Seahorse Key (from 1942 to 1997), North Key remained unexplored, and an inventory of the plants that define the nesting and island habitats never produced. We initiated a comparative survey of the plants of North and Seahorse Keys in 2004 and resumed botanical survey in 2008, 2012, and 2015. Plants vouchered at the UF Herbarium total 163 species, 2 varieties and 1 hybrid. 93 species (57%) occur on both North Key and Seahorse Key. Included are two state threatened species, nine shrubs of tropical affinity, and four non-native plant species. By 2008 all three species of mangrove had become well established, demonstrating patterns of distinct zonation on North Key. Tree diversity and canopy height of the maritime hammock were greater on North Key. Cherry laurel was the primary contributor to a lower canopy of Seahorse Key, especially in the nesting area. With predicted change already observed on the islands, completion of this baseline flora is crucial. To access the digital specimen inventory: http://www.flmnh.ufl.edu/herbarium/cat/catsearch.htm then type Cedar Keys National Wildlife Refuge in “Locality Name” and under "Search Type" highlight the circle "containing text".


Cyrtopodium punctatum is an epiphytic orchid species restricted and endemic to south Florida. Its population (11 to 100 natural sites) has been decimated by habitat fragmentation and overharvesting, making it a state-listed endangered species with legally protected status in Florida (Stat. No. 581.185 subsection 2(a)). The Institute for Regional Conservation and Florida’s Natural Areas Inventory both list this species as critically imperiled, with a Coefficient of Conservatism of “10” (prominent concern). This orchid’s sexual reproductive potential is extremely depressed, placing natural populations at risk. Presently, 21 sites house this species (botanical gardens or private collections) for conservation. This study developed an optimal encapsulation matrix to produce artificial seeds for this orchid using 4% sodium alginate with 75 µM of calcium chloride (CaCl₂). Protocorm like bodies (PLBs) were encapsulated before applying the pre-culture treatments, which consisted of ½ strength liquid MS media agitated over the artificial seeds supplemented with 0.5, 0.75, 1.00 and 1.25 moles, prepared by combining 29.4, 44.1, 58.8 and 73.5 g of sucrose, respectively, for an interval of 3 days. PLBs were then exposed to liquid nitrogen (LN) for 1 hour and thawed in a hot water bath. Viability of the germplasm was validated using tetrazolium chloride (TTC) assays and post-growth stage development following two weeks. In conclusion, the favorable concentration of 58.8 g (1 mole) of sucrose as a pre-culture treatment in conjunction with the optimal encapsulation matrix can support long-term storage of C. punctatum’s genetic material. Through this study, an alternative ex-situ strategy has been established to safeguard the survival of this rare Floridian orchid.

of *Linum arenicola* seeds to constant and simulated seasonal temperatures” andresochoa777@gmail.com

*(POSTER PRESENTATION)*

*Linum arenicola*, known as sand flax, is an endemic species to southeastern Florida and reached endangered status in September 2016. A considerable knowledge gap occurs regarding the seed biology of this species and this represents a current challenge for conservation. The aim of my research is to understand how seeds of *L. arenicola* react to variation in temperature and abiotic stress in terms of viability, germination and soil seed banking. Preliminary studies suggest germination is sensitive to relatively small changes in constant and alternating temperature. To assess that relation, we placed seed samples in incubators at alternating temperature regimes to simulate seasonal temperatures for the summer (33/24° C), early fall or late spring (29/19° C), early spring or late fall (27/15° C) and winter (22/11° C) throughout Florida. The results suggest that 29/19° C promoted germination while germination decreased at lower or higher temperatures. Alternatively, a set of seeds were held at constant temperature to examine the germination response using a thermo-gradient table (19.9° C, 21.6° C, 26.1° C, 30.6 ° C). In this case, the results suggest that the lowest temperature (19.9° C) promoted germination. These trials in combination with further studies will help us determine cardinal germination temperatures (i.e., minimum, optimal and maximum germination temperatures) and other functional traits (e.g., germination timing, soil seed bank formation) which are important for the conservation of *L. arenicola*. 