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Palmetto



Dancing With Pines • Pine Hyacinth • I Remember Rosemary • A Conversation With Ellie Whitney



I Remember Rosemary

by Nancy Kohfeldt

*As I stood looking at the swath of remaining 40 foot sand pines (*Pinus clausa*), the developers eagerly awaited my answer. The question was, "Would my regulatory agency (Natural Resources) allow the removal of the large (greater than 10" diameter at breast height) standing pines and the pines that had fallen during the hurricane"? Could the sand pines be replaced by something prettier, perhaps, live oak (*Quercus virginiana*) or a smaller tree like queen palm (*Arecastrum romanzoffianum*, aka: *Cocos plumosa*)? Of course they would irrigate the innately xeric area so things would grow. Also, the undergrowth had to be removed to "clean up" that messy natural vegetation. My question was, "What could be more beautiful than Florida scrub?"*

*Turning away from the pines, I looked at the remains of a small rosemary (*Ceratiola ericoides*) bald all around me. The rosemary was a remarkable part of the sand pine association which held the monster sand pine trees in question. As the discussion continued, my mind returned to a familiar place and remembered the rosemary phase of Florida scrub. Quietly, I reflected...*

As my scrub boots hit the stark white sugar sand in the dead of a Florida summer, I began my research. I could always tell when it was hotter than 100 degrees. The intense heat pressed against my face and the distance shimmered. My pasty, white skin burned from the sun. Sun block melted off my face at a rapid rate. My frozen water was already melting. Good thing, if I didn't drink frequently I'd begin to get irritable and the day would be lost. Peeling off my equipment gave some relief to the heat. Picking up my pin and reel, a course was decided for my vegetation sampling. I decided to go straight through the middle of the longest point of the rosemary (*C. ericoides*) Bald. The name of this particular rosemary bald was Anne's Bald. The name always made me smile. Anne wasn't really bald she had just spent a lot of time doing research here. Then, I dropped my transect line and began to locate my stratified random points. It felt good, the first line of the day.

What I knew about Florida scrub was that due to the nature of its beginnings, it is like no other ecosystem in the southeastern United States. Florida vegetation developed far from glaciers and encroaching ice advance, thus, the vegetation had remained, with only moderate shifts in species composition, for tens of thousands of years (Watts, 1994). Florida scrub is comprised of remnant sand dunes left over from a time when parts of Florida were submerged beneath tidal waters. As the water receded, through time, mounds of sand were left where the waves had lapped ancient shore lines. Pure white quartz (sugar) sand remained, depleted of nutrients from constant washings and able to retain little moisture because of its porosity. As a result, the heat adapted, water preserving vegetation that existed on these ridges developed differently than in other, less xeric parts of Florida.

The largest and best known scrub ridge forms a backbone for the Florida peninsula. On this ridge, known as the Lake Wales Ridge, for a period of three years, I became mesmerized with the unique vegetation and its ability to reproduce and survive such a harsh environment. Florida scrub ranges from dense thickets of scrubby flatwoods to more open, occasionally bare areas of Florida rosemary (*C. ericoides*) (Abrahamson et al. 1984). The dominant vegetation consists of shrubby evergreen oaks like sand live oak (*Quercus geminata*), Chapman's oak (*Q. chapmannii*), myrtle oak (*Q. myrtifolia*), and scrub oak (*Q. inopina*). These oaks have curved leaves and/or waxy coats to help them avoid water loss in the high temperatures that occur in the Florida scrub. Many shrubs from the heath/blueberry family such as rusty lyonia (*Lyonia ferruginea*) and low-bush blueberry (*Vaccinium myrsinites*) flourish in the acid conditions of the sterile sand. Slash pine (*Pinus elliotii* var. *densa*) and sand pine (*Pinus clausa*) exist in some shrubland areas but are completely absent in others. Florida rosemary is often found in the higher elevations of sugar sand areas. It is a member of the relatively small Crowberry family and can be easily identified by its heathlike shrub form, its acicular branches and, pungent odor. Herbaceous plant species do not dominate in shrublands; however, they persist and sometimes flourish in open spaces.

Fire is a common disturbance in the scrub ecosystem. Lightning strikes from seasonal thunderstorms ignite scrub vegetation and cause frequent to infrequent wildfires. Therefore, fire plays a key role in scrub

vegetation's survival strategy. Some plants (i.e. scrub oaks) simply resprout after fire while other species die and persist by regenerating through soil seed banks (i.e. Florida rosemary). Some species are able to both resprout and reseed themselves (i.e. saw palmetto, *Serenoa repens*). Various plant populations increase or decrease between fires. For example, (Highlands scrub St. John's-wort, *Hypericum cumulicola*) populations decline as the time since fire increases (Quintana-Ascencio et al. 2003). The same can be said for wedge-leaved button snakeroot (*Eryngium cuneifolium*) (Menges et al., 2004).

For some Florida scrub plant species, a flush of seed germination occurs soon after fire (Whelan 1988). For example, Lake Placid scrub mint (*Dicerandra frutescens*) is killed during fire and returns by germinating seeds in the soil. Seedlings appear to do well after fire and most of the population's growth is seen within the following 10 years (Menges 1992). The annual, Carter's mustard (*Warea carteri*) is also strongly tied to fire, with an explosion of germination in the years following fire and rapidly decreasing germination and/or increasing seedling mortality each year thereafter (Menges and Gordon 1996). For these species, fire plays a critical role in their procreation. These seeds' genetic prowess in the face of disturbance sparked my curiosity and led me to study the germination strategies of several scrub species.

A phenomenon that affects the germination of Florida's scrub seeds is allelopathy. Allelopathy is the ability some plants have to release chemicals (allelochemicals) and deter germination or growth of another plant. A plant can emit a chemical that is harmful to the plants surrounding it. Florida rosemary scrub (part of Florida scrub where rosemary is found) produces allelochemicals which can be harmful to the germination of seeds. A recent study shows that the germination of rosemary scrub specialists *Eryngium cuneifolium* and *Hypericum cumulicola* was reduced when their seeds were exposed to Rosemary leachate (Hunter and Menges 2002).

An interesting seed bank is found in Florida's rosemary scrub or the rosemary phase of sand pine scrub as described by Abrahamson et al in 1984. It is affected by fire with interval estimations of 10-100 years (Meyers 1990) to narrower interval estimations of 15-25 years (Menges 1999). When fire occurs many species recover by recruiting seedlings (Menges and Kohfeldt, 1995) from soil seed banks. Several species, *Ceratiola ericoides*, *Calamintha ashei*, *Eryngium cuneifolium*, *Hypericum cumulicola*, *Lechea deckertii*, and *Lechea cernua* produce seeds that can remain dormant for more than one year, thus forming a soil seed bank (Kohfeldt and Menges unpublished data). Rosemary scrub's seed bank consists of many rare and endemic obligate and facultative seeder species. At least eleven other species are post-fire obligate seeders (i.e., their means of seedling recruitment are through seed germination) (Menges and Kohfeldt, 1995).

The dominant shrub of rosemary scrub, *Ceratiola ericoides*, is an obligate seeder. Fire kills the adult plant and seeds in the soil germinate shortly thereafter (Johnson 1982). Rosemary germination has also been seen in areas that have been mechanically scraped. Using sandpaper to scrape the seeds speeds germination of Florida rosemary (Johnson 1986).

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I Remember Rosemary

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Increased light, scarification, or other mechanisms not associated with fire may also be stimuli for rosemary seed germination.

I heard my name and reluctantly turned back to the discussion. I came back to the present still in scrub boots and field clothes. Some things never change. I was out of place (in appearance as well as opinion) next to the pressed shirts and dress shoes standing next to me. The answer to the developers was that although the upright sand pines formed a naturally vegetated buffer for the future residents of the subdivision and they were greater than 10" diameter at breast height, removing them would be allowable. The removal of the downed pines was also allowed by my agency. The ecological contributions (i.e. critter and seedling cover, heat sink, soil conservation, etc.) of the downed trees would never occur.

I pulled out my inspection report and noted the date of the meeting and who attended. As always, to no avail, I noted my agency's suggestions and a directive. Let the downed and upright sand pines remain. Then, the 15 foot wide, 100 foot long stretch of sand pine scrub could remain and regenerate naturally. With the stroke of my pen I was causing the loss of this incredibly ancient, beautiful ecosystem. No law governed the protection of this Florida scrubland which I had known and loved for as long as I could remember. After I signed my report, I turned, my scrub boots hit the stark white sugar sand in the dead of a Florida summer and I remembered the beauty of rosemary. ♻️

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