

## KEEP THE WILD ALIVE SPECIES RECOVERY FUND

### SOUTH CAROLINA NATIVE PLANT SOCIETY PONDBERRY FINAL REPORT

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The goal of our project was to restore the pondberry population at the proposed Research Natural Area near Honey Hill, SC, in the Francis Marion National Forest. This population, once the largest in SC and perhaps the world, had declined precipitously. In the late 1980's Rayner and Ferral (1988) reported a total population estimated in the tens of thousands distributed across 54 distinct colonies within an extensive network of limesink depressions. Subsequent monitoring by USFS biologists Robin Roecker and Danny Carlson indicated progressive losses of stems, colonies, and vigor of surviving colonies. At her last survey prior to the initiation of this project, Roecker (2001) estimated a total population of less than three hundred stems in nine surviving colonies. We aimed to reverse the decline by (a) improving conditions for the surviving plants, and (b) re-initiating the extirpated colonies by propagation and out-planting. We further proposed to monitor the status of both existing and out-planted stems.

As it turned out, we were unable to proceed with the out-planting part of the project. Much to our regret, we have been unable to obtain a propagation permit from USFWS despite submitting a permit request immediately after our proposal was accepted by NWF as well as numerous subsequent telephone conversations and e-mail exchanges. Apparently the hold-up is that under recently revised USFWS regulations propagation is to be considered only as an absolutely final resort. As we understand the USFWS position, before qualifying for a permit to propagate we first need to demonstrate that attempts to restore the Honey Hill population by improving conditions for surviving colonies will be inadequate.

This decision by USFWS prevented us from proceeding with what we had planned to be the major initiative of our project. This could have been disastrous, but in fact was somewhat fortuitous. This is because our detailed quantitative field surveys, initiated shortly after we received the grant award, revealed that Roecker (2001), while correct in her general assessment of population and colony declines, had somewhat over-estimated the severity of the decline. Using the map and numbering system from Rayner and Ferral (1988), we have determined that approximately 27 of the 54 colonies recognized by those authors as being present on USFS land are still extant, though some colonies are represented by just a few stems. This includes Rayner and Ferral (1988) colonies 1-2,5-7,13,15-18,31-33,43,45, and 50-61. Colonies 8-11,40-41, and 46 are on adjacent private land and were not included in our survey, though several of these are also known to still exist. Note that we use the word "approximately" to describe our findings since we found both sinks and colonies to be considerably less discrete than Rayner and Ferral's (1988) results suggested.

In addition to increasing the number of extant colonies, we also found many more stems than had been estimated by Roecker (1991). Whereas she estimated a maximum of 300 surviving plants, we tagged and measured 1048 pondberry stems. This total is still much less than the tens of thousands of stems present historically (Rayner and Ferral 1988). However it probably represents a sufficiently large and well-distributed population with which to at least begin a restoration. It should be emphasized that most of the surviving stems were very small, i.e. 53% less than 10 cm tall and 100% less than 60 cm tall for a shrub capable of reaching heights of 2 m or more. It is therefore not surprising that Roecker (1991) overlooked the more diminutive individuals in her qualitative surveys. It is also clear that there is some justification to the USFWS position that the first priority, in this particular case at least, should be to improve conditions for these suppressed plants.

Over the course of grant period it has therefore been a major effort on the part SCNPS volunteers and USFS workers alike to open over-story canopy gaps and reduce under-story competition in the vicinity of the surviving pondberry stems. Clearing techniques primarily involved hand felling by chainsaw. Much of the work was accomplished during monthly workdays during this last winter and early spring (see attached

photos). Thus far we estimate that we have created approximately 0.4 ha of canopy gaps. Seventy one percent of the known stems are located within these recently created canopy openings whereas another 9.9% are probably close enough to benefit from lateral light and reduced root competition. If we then add in earlier smaller scale openings created by Roecker and Carlson and thinning strips through adjacent uplands (another technique used by Roecker and Carlson to reduce competition near pondberry populations), approximately 93% of pondberry stems have, presumably, benefited from our habitat improvement efforts.

Are these efforts paying off in terms of improved population performance? Preliminary results suggest an affirmative answer. This is shown most clearly by looking at numbers of stems in different size ranges. In the pretreatment data, collected during late summer and fall 2002, only 47% of stems (403 plants) exceeded ten cm in height and only 1.6% (23 stems) exceeded 30 cm. In comparison, results from the most recently completed census in May 2003 show a distinct shift to larger size classes. The number of stems exceeding 10 cm has now increased to 483 (57.3% of total) while the number exceeding 30 cm has increased by ten to 33 (2.6%). While these are modest gains, they at least represent an improvement over a two-decade or longer pattern of decline. We should acknowledge that in addition to our habitat improvement efforts, another important factor is an improvement in climate and hydrology. A prolonged drought was broken this past winter and the Honey Hill lime-sinks are full for the first time in several years. Most of the pond-berry stems are located just above the water line and are therefore experiencing ideal soil moisture conditions. The combination of reduced canopy competition and improved hydrology most likely explains the positive results we are seeing.

In conclusion, we would like to emphasize that we intend to continue our monitoring and restoration activities into the foreseeable future. Activities planned for the coming 1-2 years include (1) continued canopy clearing around known colonies, (2) mechanical thinning of surrounding uplands, (3) reintroduction of natural fire regimes, (4) continued population monitoring, and (5) press releases to educate the general public about our work. Lastly we do intend to go forward with propagation and out-planting to re-initiate the extirpated colonies. This assumes: (a) that we can eventually get USFWS permission, and (b) extant pondberry plants at Honey Hill increase in vigor sufficiently to justify taking of cuttings or seeds for propagation directly from the site itself.

USFS has indicated that they are hoping to be able to provide funds to continue our restoration efforts. However, we will also seek continued funding from other sources. Finally, we would like to once again express our appreciation to NWF for financial support of pondberry restoration at Honey Hill.

#### LITERATURE CITED

- Rayner, D.A. and D.P. Ferral. 1988. Honey Hill lime-sinks final report South Carolina Heritage Program, Columbia, SC.
- Roecker, R. 2001. Pondberry (*Lindera melissifolia*) monitoring in Honey Hill Limesinks, Francis Marion National Forest. USDA Forest Service unpublished document.