RARE PLANTS OF THE UNITED STATES NAVAL OBSERVATORY RICHMOND PINELAND COMPLEX

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INTRODUCTION

A comprehensive field survey was undertaken to determine the status of rare plant taxa on the U.S. Naval Observatory Property in the Richmond Pineland Complex.

METHODS

1. Field Survey Methods. Two researchers (George Gann and Keith Bradley, or Keith Bradley and Steven Woodmansee) walked parallel transects across pine rockland units and along fire roads. These researchers are experts in the identification of pine rockland plants and looked for rare plant taxa tracked by FNAI. These transects were ca. 3 m apart and allowed for the detection of most populations of rare plant taxa, even if only a few individuals were present. While most taxa were simply counted during these transects because they were widespread and abundant, the following taxa were mapped on a 1:300 Dade county aerial photograph: *Brickellia eupatorioides* var. *floridana*, *Ipomoea microdactyla*, *Ipomoea tenuissima*, *Poinsettia pinetorum*, *Pteris bahamensis*, *Tetrazygia bicolor*, and *Tripsacum floridanum*.

Field Surveys were conducted on the following days: April 23, May 3, May 7, May 23, and May 24, 1996.

2. Data Analysis. Counts of rare plant taxa were tabulated and estimates of the total site population were made. Readjustments of count totals were based on the probability of each taxon's detection, based on the authors' field experience. Count totals were multiplied by a factor of 1 to 4 for each taxon.

RESULTS

Twenty-two rare plant species were observed on the property. Two species, *Chamaesyce deltoidea* ssp. *deltoidea* and *Pteroglossaspis ecristata* were not mapped. *Chamaesyce* was previously mapped by Dade County (DERM 1994). *Pteroglossaspis* will be mapped in September when flowers and leaves are present. Total population sizes and discussions of each taxon are given in Table 1. Also attached is Map 1, showing mappable populations of rare plants.

DISCUSSION

1. Geology and Soils: Soils on the U.S. naval Observatory are mapped as Opalocka-Rock outcrop complex (U.S.D.A. in prep.).

2. Brief History Of Botanical Surveys. Previous botanical work on this property is restricted to surveys undertaken by Keith Bradley and Debra Duvall while mapping populations of *Chamaesyce deltoidea* and *Polygala smallii* in the pine rocklands of the Richmond Pineland Complex (DERM 1994).

3. State And National Significance Of Site's Rare Plant Species. Many of the rare plant taxa that occur on this site are actually locally abundant in Dade or other counties. Among these are: *Byrsonima lucida*, frequent in Dade and the Florida Keys and also occurring in the Caribbean; *Coccothrinax argentata*, common in Dade and the Florida Keys and also occurring in the Caribbean; *Crossopetalum ilicifolium*, common in Dade and the lower Florida Keys and also occurring in the Caribbean; *Jacquemontia curtissii*, common in Dade and the Florida Keys and also with populations in mainland Monroe County, Collier, Hendry, and Palm Beach Counties; *Melanthera parvifolia*, common in Dade and the lower Florida Keys; *Phyllanthus pentaphyllus*, common in Dade and the lower Florida Keys; *Poinsettia pinetorum*, common in Dade and the lower Florida Keys; *Pteroglossaspis ecristata*, frequent throughout Florida; *Rhynchosia cinerea*, frequent throughout peninsular Florida; *Rhynchospora floridensis*, common in Dade and the lower Florida Keys and also occurring in the Caribbean and Central America; *Stillingia sylvatica* ssp. *tenuis*, common in southern peninsular Florida; *Tetrazygia bicolor*, common in Dade county; *Tragia saxicola*, common in Dade county and the lower Florida Keys. *Tripsacum floridanum* is frequent, though rarely abundant, in Dade and Collier Counties and the lower Florida Keys.

Two species are common in southern Florida but are threatened by hybridization with exotic taxa. *Lantana depressa* var. *depressa* hybridizes with *Lantana camara*. Many of the plants observed at the site were undoubtedly of hybrid

origin. *Pteris bahamensis* hybridizes with the Asian *Pteris vittata* producing *P.* X *delchampsii*. Only one pure *Pteris bahamensis* was found during this survey, while several hybrids were found.

Several taxa are rare on a state or global level. *Brickellia eupatorioides* var. *floridana* is endemic to Dade County. It is known from approximately 18 pine rockland fragments and does not occur in Everglades National Park. *Chamaesyce deltoidea* ssp. *deltoidea* is endemic to Dade County. It is known from 19 pine rockland fragments. The largest populations occur within the Richmond Pineland complex in and around the Naval Observatory. *Galactia pinetorum* is endemic to Dade County. Its status is unknown in Dade but it is believed to be rarer than *Galactia smallii* which is listed by the U.S. Fish and Wildlife Service as Endangered (J. O'Brian, pers. comm.). *Ipomoea tenuissima* and *Ipomoea microdactyla* are rare members of the pine rockland communities of Dade County but are also found in the Caribbean.

4. Descriptions And Management Recommendations For Site's Rare Plant Species A comprehensive management program has already been developed for pine rocklands of the U.S. Naval Observatory and the surrounding Richmond Pineland Complex (DERM 1994). For rare plant taxa to persist on this property this plan must be implemented. This plan focuses on exotic pest plant control (primarily *Neyraudia reynaudiana* and *Schinus terebinthifolius*), prescribed fire, and restoring the canopy of slash pine.

For populations of *Lantana depressa* var. *depressa* to persist on this property populations of *Lantana camara* must be eradicated. Hybrids between the two taxa also must be destroyed. Similarly, for *Pteris bahamensis* to persist, populations of *Pteris vittata* must be destroyed, as well as the hybrids.

REFERENCES:

DERM. 1994. Management Plan for the Richmond Pine Rocklands. Unpublished document available from Dade County Department of Environmental Resources Division, Miami, FL.

U.S. Department of Agriculture. In preparation. Dade County Soil Survey.

TABLE 1

U.S. NAVAL OBSERVATORY
ESTIMATED RARE PLANT POPULATIONS AND DISCUSSION

Note: Numbers are based on counted individual plants. Numbers in parentheses are estimates of total population.

Brickellia eupatorioides* var. *floridana (*B. mosieri*)	Pine Rockland: 31	Roads: 0	Total: 31

Discussion: Rare throughout pine rockland, except on southern and eastern edges. Most common in association with stands of young pines. Mainly solitary individuals are found. Colonies of a few plants to 14 were also observed.

Byrsonima lucida	Pine Rockland: 120	Roads: 0	Total: 120

Discussion: Uncommon throughout site. Most abundant east of observatory buildings. Typically found as isolated individuals, but occasionally colonies of over a dozen plants are found. Often found on road edges.

Chamaesyce deltoidea* subsp. *deltoidea	Pine Rockland: N/A	Roads: N/A	Total: N/A

Discussion: Mapped by Dade County DERM. Common in many areas of site.

Coccothrinax argentata	Pine Rockland: 1997 (4000)	Roads: 25	Total: 2022 (4000)

Discussion: Abundant throughout site. A common understory palm throughout property.

Crossopetalum ilicifolium	Pine Rockland: 397 (600)	Roads: 170	Total: 567 (800)

Discussion: Uncommon throughout property in pine rocklands and roads.

Galactia pinetorum	Pine Rockland: 1423 (2800)	Roads: 167	Total: 1590 (3000)

Discussion: Abundant throughout site in pine rockland and in roads.

Ipomoea microdactyla	Pine Rockland: 11	Roads: 4	Total: 15

Discussion: Rare throughout site in pine rockland and in roads.

Ipomoea tenuissima	Pine Rockland: 33	Roads: 0	Total: 33

Discussion: Rare throughout site in pine rockland.

Jacquemontia curtissii	Pine Rockland: 1234 (2500)	Roads: 351	Total: 1585 (2800)

Discussion: Abundant throughout site in pine rockland and in roads.

Lantana depressa* var. *depressa	Pine Rockland: 1320 (2000)	Roads: 439	Total: 1759 (2400)

Discussion: Abundant throughout site in pine rockland and in roads. *Lantana depressa* is known to hybridize with the exotic *Lantana camara*. Hybrids are often difficult to distinguish, especially when sterile. Many of the plants that were counted were undoubtedly of hybrid origin. Pure *Lantana depressa* may be disappearing from this property due to hybridization.

Melanthera parvifolia	Pine Rockland: 968 (1900)	Roads: 583	Total: 1551 (2500)

Discussion: Abundant throughout site in pine rockland and in roads.

Phyllanthus pentaphyllus* ssp. *floridanus	Pine Rockland: 2927 (4400)	Roads: 2486 (2500)	Total: 5413 (6900)

Discussion: Most abundant in fire breaks. Somewhat rare in undisturbed pine rockland, more common in pine rockland with minor soil disturbance.

Poinsettia pinetorum	Pine Rockland: 48	Roads: 0	Total: 48

Discussion: Rare throughout site. Typically occurs as solitary plants or in small colonies. Several plants of *Poinsettia* were observed that appeared to be hybrids between *P. pinetorum* and the weed *P. cyathophora*. *Poinsettia pinetorum* was found throughout the site at low densities. It was most frequently observed in association with stands of young pines.

Pteris bahamensis	Pine Rockland: 1	Roads: 0	Total: 1

Discussion: Only one individual of pure *Pteris bahamensis* was observed. This species hybridizes frequently with the Asian *Pteris vittata* which is also present on the site, producing *Pteris* X *delchampsii*. Several of these hybrids were observed on the site.

Pteroglossaspis ecristata	Pine Rockland N/A	Roads: N/A	Total: N/A

Discussion: This species must be mapped in September when flowering. Dead flowering stems were noticed in several low sand pockets in pine rockland.

Rhynchosia cinerea	Pine Rockland: 318 (600)	Roads: 907	Total: 1225 (1500)

Discussion: Frequent throughout pine rockland and less commonly in roads.

Rhynchospora floridensis (*Dichromena floridensis*)	Pine Rockland: 519 (2100)	Roads: 968 (1000)	Total: 1487 (3100)

Discussion: Uncommon in pine rockland, abundant in fire roads. Our estimate is probably low for this species. Much of the population was not yet in flower, making them difficult to detect.

Stillingia sylvatica* ssp. *tenuis	Pine Rockland: 391 (600)	Roads: 3	Total: 394 (600)

Discussion: Frequent throughout the pine rockland, particularly in sandy soils. Rare in roads.

Tetrazygia bicolor	Pine Rockland: 11	Roads: 0	Total: 11

Discussion: The population of *Tetrazygia* on this property was burned by freezes in the winter of 1995-1996. This made plants difficult to find since at the time of surveys they were just beginning to resprout at the base of the plant.

Tragia saxicola	Pine Rockland: 109	Roads: 0	Total: 109

Discussion: Only observed in the easternmost pine rockland blocks where it was frequent on pinnacle rock.

Tripsacum floridanum	Pine Rockland: 26	Roads: 0	Total: 26

Discussion: Only observed in the eastern-most blocks where it grows at the sites lower elevations near the edge of a transverse glade which formerly occurred at the extreme eastern edge of the site.

Vernonia blodgettii	Pine Rockland: 41	Roads: 17	Total: 58

Discussion: Rare throughout site. Only small isolated colonies were observed. The total count of *Vernonia* on the site is probably low. Plants lie dormant as underground rhizomes during winter and at the time of the survey were just beginning to emerge.