

# IRC Pine Rockland Initiative and the U.S. Fish and Wildlife Coastal Program Report 2011-2012

## Accomplishments

Previous to receiving funding from the USFWS Coastal Program, IRC treated 582 acres of pine rockland habitat (338 public, 244 private) on 37 enrolled sites (29 private, 8 public) for FLEPPC Category I and II invasive species in Miami-Dade County under the ARRA Stimulus. This acreage represents exotic plant control on approximately 20% of the pine rockland habitat on mainland Florida outside Everglades National Park distributed across nearly the entire remaining range of pine rockland in urban Miami-Dade County. Upon completion of the ARRA Stimulus treatments, these sites were in need of follow up treatment to prevent re-infestation and to deplete the invasive seed bank. Thus, IRC applied for funding from the USFWS Coastal Program and Partners Program to provide follow-up treatment on these sites. Between 2011 and 2012 the IRC habitat restoration team successfully provided retreatments to these sites and thus improved habitat quality for this globally imperiled ecosystem. Attached are reports detailing the work completed between 2011 and 2012 under the IRC Pine Rockland Initiative funded by the USFWS Coastal Program.

## Pine Rockland Background

Pine Rockland is a globally imperiled ecosystem. It occurs only in south Florida and the Bahamas and is important habitat for six federally listed plant taxa and eight federal candidate plant taxa (Table 1), as well as other species of rare plants. There are a number of rare animals which also live in pine rockland habitat, including the Bartram's hairstreak (*Strymon acis bartrami*), Florida leafwing (*Anaea floralis*), and rim rock crowned snake (*Tantilla oolitica*). In Florida, pine rocklands are primarily limited to Miami-Dade and Monroe counties. Pine rocklands are habitat for a diversity of Caribbean plant species that are at the northern ends of their ranges, temperate plant species at the southern ends of their ranges, and endemic species with small ranges in southern Florida. Pine rocklands contain dozens of plant and animal species found nowhere else in the United States. The forest canopy is dominated by a single species, south Florida slash pine (*Pinus elliottii* var. *densa*), the subcanopy is dominated by palms and tropical hardwoods, and the ground cover is dominated by a rich diversity of herbs and grasses.

In Miami-Dade County, pine rocklands occur along the Miami Rock Ridge, a Pleistocene deposit of oolitic limestone. The southern quarter of the Miami Rock Ridge is protected in Everglades National Park and the northern three quarters extends from the Park boundary some 45 miles northward into the vicinity of the City of Miami. Three of the six federally listed plant taxa found in the area are endemic and are not found or protected in Everglades National Park. In addition, there are eight plant species that are candidates for federal listing in the project area (Bradley and Gann 1999) and 74 state-listed plant species.

The 45 miles of Miami Rock Ridge outside of Everglades National Park has been almost completely developed. Only small isolated fragments of pine Rockland remain, representing less than 2% of the original pine rockland in this area (Figure 1). Over 2.5 million people live in

Miami-Dade County, and pine rocklands are found only as small, isolated patches of habitat surrounded by homes, agricultural lands, and industrial parks. Based on data collected in 2004 by IRC there are only 680 acres of pine rockland in private ownership in 114 fragments. With an additional 2,267 acres on public lands, less than 2% of the historical pine rockland habitat remains in this area. Most of the larger sites are subdivided into multiple parcels, with several to many landowners. Significant declines in acreage of pine rockland habitat are the result of the combined effects of habitat destruction, exotic plant invasions, fire suppression, and overall lack of management. Human population growth and development pressures in Miami-Dade County continue to cause clearing and degradation of the remaining privately owned pine rockland fragments.

One regulatory mechanism is in effect that provides very limited protection to private pine Rockland fragments: Miami-Dade County's Natural Forest Community (NFC) ordinance. This ordinance, enacted in 1984, limits development in pine rocklands and other upland plant communities, yet does not provide a mechanism for their management or sustainability. Since most NFCs are already very small, any substantial clearing, legal or illegal, can effectively destroy the ecological integrity of the site due to loss of area, cause species extirpations, and increase degradation due to edge effects. Given the highly fragmented status of these sites and the lack of resources for management, the implementation of this program is critical to recovering this globally imperiled ecosystem and the species that are dependent on this habitat.

Much of the publicly owned pine rockland in Miami-Dade County is being managed by Miami-Dade County, which manages the majority of parcels in County ownership. This network of managed County lands provides for a mosaic of larger high quality habitats across the County. Unfortunately there are many other publicly owned lands, including some County lands, as well as many privately owned fragments, which are not managed at all. The proper management of these neglected parcels will contribute greatly to the overall conservation of pine rockland habitat by not only increasing the value of the fragments themselves, but by increasing connectivity between fragments allowing for pollinator movement and germplasm dispersal.

To address the problems of neglected forest fragments and connectivity the "Pine Rockland Initiative" was created initially in 2005 to restore pine rockland habitat on private lands in Miami-Dade County. The receipt of ARRA funding has allowed for a major expansion of the program to additional private lands and for the first time public lands. The goal under the agreement has been to remove exotic pest plant populations on 200 acres of private lands and 300 acres of public lands.

# Florida Keys Aqueduct Authority Pine Rockland

Owner: The Florida Keys Aqueduct Authority  
PO BOX 1239, Key West, FL 33040



**Site Map:** The Florida Keys Aqueduct Authority Pine Rockland is part of the Navy Wells pine rocklands, which are located in Florida City, just east of Everglades National Park. The southern and western fragments connected to the Florida Keys Aqueduct Authority Pine Rockland are owned and managed by Miami-Dade County.

**Species Benefited:** At least forty three state-listed plants are present on the site as well as the federally endangered plant *Galactia smallii*, the candidate plants *Chamaesyce deltoidea* subsp. *Pinetorum*, *Brickellia mosieri*, and *Sideroxylon reclinatum* subsp. *austrofloridense*, and the candidate animal the Bartram's hairstreak butterfly. Its habitat for two federal-candidate animals, the Florida leafwing butterfly which was formerly known from the site, and rimrock crowned snake.

**Acres Treated Under the Coastal Program: 80.4**

**Site Description:** This pine rockland is part of a 102-acre property owned by the Florida Keys Aqueduct Authority. It is one of the last remaining large rockland fragments of pine rockland occurring just east of Everglades National Park along the Miami Rock Ridge, and is connected to 271 acres of intact pine rockland owned and managed by Miami-Dade County as the Navy Wells Pineland. The Florida Keys Aqueduct Authority Pine Rockland is in overall very good condition, with the primary exotic invader being Brazilian-pepper (*Schinus terebinthifolius*). The substrate is intact throughout the site, although the north, west, and southeast borders of the pineland are dominated by thick infestations of Brazilian-pepper; there is also disturbance surrounding buildings and old ditches. The understory is very diverse throughout the site where there have been some small wildfires, and there are many small solution holes throughout the landscape that contain additional rare species.

**Pre-Coastal Program Management:** Prior to IRC management the Florida Keys Aqueduct Authority Pine Rockland have been largely untouched except by occasional wildfire. In September 2011 the IRC habitat restoration team provided initial treatment to the Florida Keys Aqueduct Authority Pine Rockland under the ARRA Stimulus.

**Coastal Program Management Activities:** This site received two follow up treatments under the USFWS Coastal Program 2011-2012. The primary species treated was Brazilian-pepper. This site is in need of future treatments to reduce the invasive seed bank. In addition, there is a large border of Brazilian-pepper surrounding the perimeter of most of the pineland, which must be addressed, or it will continue to act as a major seed source. The Florida Keys Aqueduct Authority environmental managers are very interested in conducting a prescribed fire in the pine rockland in the near future.

Invasive Treated	Scientific Name	Treatment Method	Herbicide Used
Burmareed	<i>Neyraudia reynaudiana</i>	Cut Stump	N/A
Brazilian-pepper	<i>Schinus terebinthifolius</i>	Cut Stump	N/A
Woman's tongue	<i>Albizia lebeck</i>	Cut Stump	N/A
Leadtrees	<i>Leucaena leucocephala</i>	Cut Stump, Hand-pull	N/A
Natal Grass	<i>Melinis repens</i>	Hand-pulled and bagged	N/A

**Photos:**



Brazilian-pepper was cut to the base with machetes and chainsaws.



Chapman's wild sensitive plant, *Senna mexicana* var. *chapmani* and other plants endemic to pine rocklands are prevalent in the open areas of the Florida Keys Aqueduct Authority Pine Rockland.



State endangered shrub eupatorium (*Koanophyllon villosum*) in bloom attracting several species of native pollinator species.



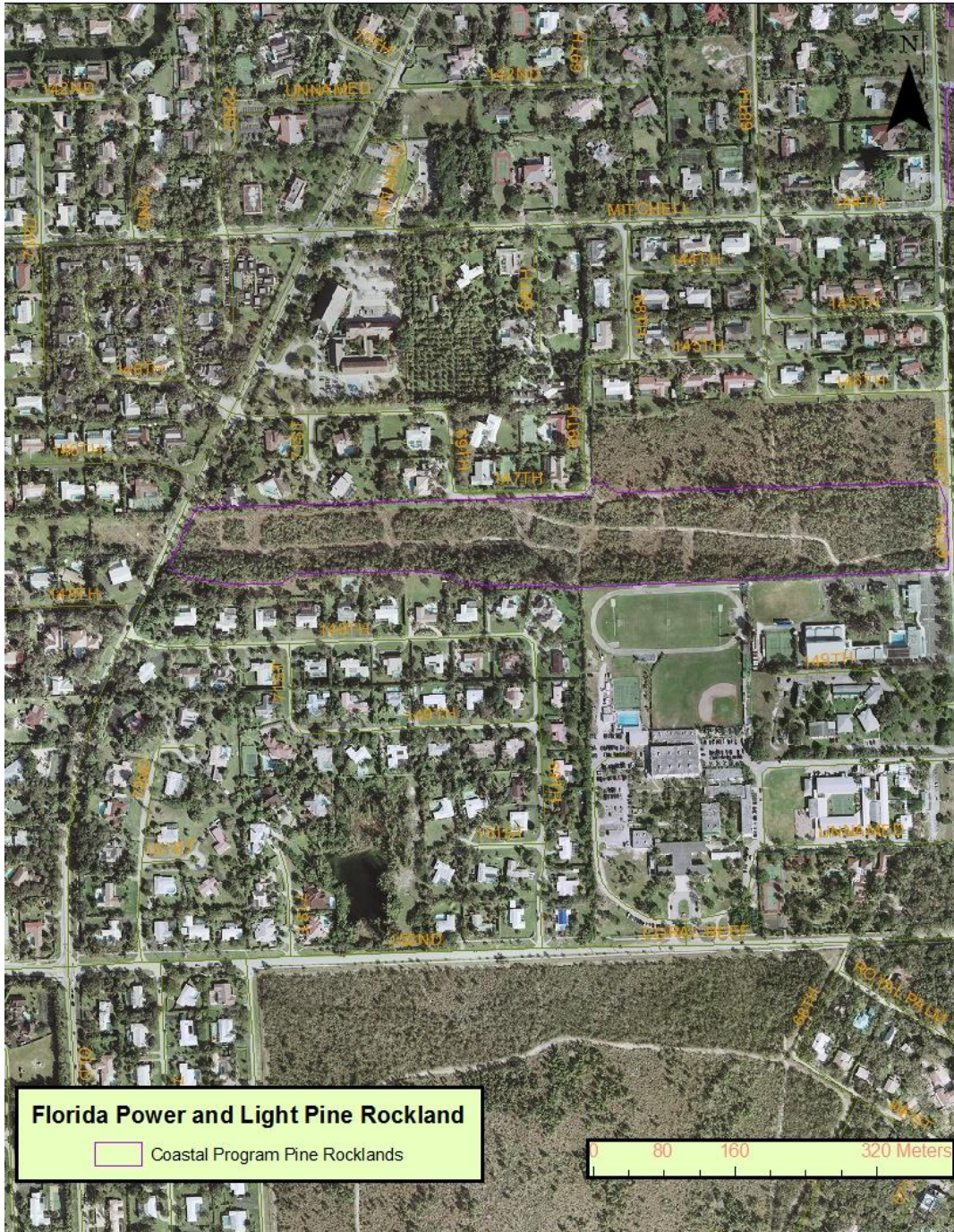
Blazing star (*Liatris tenuifolia*), amidst Florida silver palm (*Coccothrinax argentata*) poisonwood (*Metopium toxiferum*) and other pine rockland species on pinnacle rock.



Florida Keys Aqueduct Authority Pine Rockland has large, diverse, open stretches of native grasses and herbs where small wildfires have occurred.

# Florida Power and Light Pine Rockland

Owner: Florida Power & Light & Co.  
P.O. Box 14000  
Juno Beach, FL 33408



**Site Map:** The Florida Power and Light Ludlum Pine Rockland is geographically connected to the 9-acre Miami-Dade County owned and managed Ludlum Pine Rockland.

**Species Benefited:** There are at least 21 state listed species present on this site as well as the federally endangered tiny polygala (*Polygala smallii*) and wedge sandmat (*Chamaesyce deltoidea* subsp. *deltoidea*), and is habitat for three federal-candidate animals (Florida leafwing butterfly, Bartram’s hairstreak butterfly, and rimrock crowned snake).

**Acres Treated Under the Coastal Program: 20**

**Site Description:** This 26-acre property contains approximately 21 acres of pine rockland habitat with power-lines running through the entire length of it. The pineland is adjacent to the Miami-Dade County owned and managed Ludlum Pineland. The Ludlum Pineland is in excellent condition due to frequent fires and exotic plant control, but the Florida Power and Light Ludlum Pine Rockland is not managed for invasive species and they are threatening the diverse assemblage of native species present on this site. The northeast edge of Florida Power and Light Pine Rockland has a dense infestation of Burmared (*Neyraudia reynaudiana*) occurring along the firebreak and continues to provide an invasive seed source to the relatively well-managed and invasive-free Miami-Dade County Ludlum Pine Rockland, due to its geographic proximity. There have been several small wildfires which have been have promoted habitat for a diverse variety of native grasses and herbs to thrive. FPL crews routinely prune the tops of taller south Florida slash pine (*Pinus elliotti* var. *densa*) to protect the powerlines that run through the entire length of the property.

**Pre-Coastal Program Management:** The Florida Power and Light Pine Rockland has not received treatment for invasive species prior to IRC’s management efforts. During the last quarter of IRC’s ARRA Stimulus project, IRC’s habitat restoration team treated the Florida Power and Light Ludlum Pine Rockland for FLEPPC Category I and II species on 20 acres.

**Management Activities Completed:** This site received two follow-up treatments for FLEPPC Category I and II invasive plant species under the Coastal Program 2011-2012 through the interior of the pineland. There is a large infestation of invasive hardwoods such as Brazilian-pepper, leadtree, woman’s tongue and Queensland umbrella tree growing along the southern border of the property that must be removed to prevent re-infestation of the pineland. Future treatments of the pineland to deplete the invasive seed bank are highly recommended.

**Species Treated:**

Invasive Treated	Scientific Name	Treatment Method	Herbicide Used
Burmared	<i>Neyraudia reynaudiana</i>	Foliar	Glyphosate 3%
Brazilian-pepper	<i>Schinus terebinthifolius</i>	Cut Stump	Garlon 4 20%
Woman's tongue	<i>Albizia lebeck</i>	Cut Stump	Garlon 4 30%
Gold Coast jasmine	<i>Jasminum dichotomum</i>	Cut Stump	Garlon 4 20%
Shoebutton ardisia	<i>Ardisia elliptica</i>	Cut Stump, Hand-pull	Garlon 4 20%
Lantana	<i>Lantana camara</i>	Cut Stump, Hand-pull	Garlon 4 20%
Natal Grass	<i>Melinis repens</i>	Foliar	Glyphosate 3%
Leadtree	<i>Leucaena leucocephala</i>	Cut Stump, Hand-pull	Garlon 4 30%
Australian-pine	<i>Casuarina glauca</i>	Cut Stump	Garlon 4 20%



**Photos:**



Power-lines run through the Florida Power and Light Pine Rockland, so FPL crews routinely prune the tops of taller south Florida slash pine (*Pinus elliotti* var. *densa*).



Exotic plants such as Brazilian-pepper (*Schinus terebinthifolius*) intermingled with native plants around the borders of the Florida Power and Light Pine Rockland were treated by the IRC habitat restoration team.



The FPL Ludlum pine rockland had a medium-sized infestation of suckering Australian-pine (*Casuarina glauca*), which the restoration team cut-stump treated and hauled out the cut debris.



Burmareed heavily invaded the northwest border of the FPL Ludlum pine rockland, which the IRC restoration team brush-cut.



With the help of Miami-Dade College student volunteers, the IRC restoration team loaded and hauled out the cut-biomass of the Burmese reed and Australian pines to encourage a more rapid return of native plants on the forest floor.



The state-listed and rare pineland clustervine (*Jacquemontia curtisii*), endemic to south Florida, was prevalent in the interior of the pineland.



Removal of invasive plants by the IRC habitat restoration team, combined with some recent wildfire events has drastically improved the FPL Ludlum pine rockland habitat for rare and endemic pineland species to thrive.



*Liatrix chapmanii*



Endangered *Chamaesyce deltoidea*  
subsp. *deltoidea*



Along with finding lots of great native plant species in the FPL pineland, the team also came across several burrows of the federally-listed gopher tortoise (*Gopherus polyphemus*) which has been found in pine rockland fragments located in the northern range of the Miami Rock Ridge.



With continued management, the Florida Power and Light Ludlum Pine Rockland has the potential to persist as healthy pine rockland habitat and home for a plethora of rare and native species.

# Girl Scouts Camp Choe Pine Rockland

Owner: Girl Scout Council of Tropical Florida, Inc.  
11347 SW 160<sup>th</sup> Street, Miami, FL 33157



**Site Map:** The Girl Scouts Camp Choe Pine Rockland is located adjacent to the Florida Turnpike, which runs along its western border; and surrounded by private residences to the north, south and east.

**Species Benefited:** The federal-candidate plant *Brickellia mosieri* and sixteen state-listed plants are present on the site. The federally-listed plant *Chamaesyce deltoidea* subsp. *deltoidea* formerly occurred on the site. It is habitat for one federally-listed plant (*Polygala smallii*), and two federal-candidate plants (*Argythamnia blodgettii* and *Linum arenicola*), and for three federal-candidate animals (Florida leafwing butterfly, Bartram's hairstreak butterfly, and rimrock crowned snake).

#### **Acres Treated Under the Coastal Program: 14**

**Site Description:** This Girl Scouts Camp Choe Pine Rockland is part of a 20- acre property owned and operated by the Girl Scout Council of Tropical Florida, Inc. Much of the site is developed as a facility for Girl Scout programs and activities. The property is bordered on three sides by dense residential housing and on the west by the Florida Turnpike. Other than some trail development, the pine Rockland that remains is more or less left alone. Due to the high chain link fence, abundant adult supervision, and security of the site maintained for the safety of the Girl Scout Council's program participants, this pine rockland is unusually free of litter, illegal dumping, and other problems commonly encountered at other parks and preserves. The highest quality habitat is located in at the north end and northeast corner of the property. The site has an overly dense slash pine canopy and suffers from fire suppression, which has created a dense layer of pine duff and other organic material, which has drastically reduced habitat for native grasses and herbs. There is dense grove of mature woman's tongue (*Albizia lebeck*), which present a hazard to neighboring homes as their large branches have grown over the roofs and power-lines of the adjacent houses and should be removed by an expert large tree removal service.

**Pre-Coastal Program Management Activities:** The Girl Scouts Camp Choe Pine Rockland was treated initially under the ARRA Stimulus Program for FLEPPC Category I and II species by the IRC habitat restoration team in 2010. Management activities included exotic plant control and construction of fire breaks (by the Florida Division of Forestry). Because of the size of the site and density of exotics the site was not yet in maintenance condition.

**Coastal Program Management Activities:** Two follow-up treatments were provided with funding from the USFWS Coastal Program, mainly for Burmared (*Neyraudia reynaudiana*), Brazilian-pepper (*Schinus terebinthifolius*), earleaf acacia (*Acacia auriculiformis*), woman's tongue (*Albizia lebeck*), and air-potato (*Dioscorea bulbifera*). There is a large wall of Brazilian-pepper running along the western border of the pineland that must be treated in the future to prevent re-infestation.

## Species Treated:

Invasive Treated	Scientific Name	Treatment Method	Herbicide Used
Earleaf acacia	<i>Acacia Auriculiformis</i>	Cut Stump, Hand-pull	Garlon 4 20%
Rosary pea	<i>Abrus precatorius</i>	Cut Stump, Hand-pull	Garlon 4 20%
Woman's tongue	<i>Albizia lebbek</i>	Cut Stump	Garlon 4 30%
Shoebuttan ardisia	<i>Ardisia eliptica</i>	Cut-Stump	Garlon 4 20%
Bishopwood	<i>Bischofia javanica</i>	Cut-Stump	Garlon 4 20%
Indian Rosewood	<i>Dalbergia sissoo</i>	Cut-Stump	Garlon 4 20%
Air potato	<i>Dioscorea bulbifera</i>	Hand-pull/bagged	N/A
Jasmine	<i>Jasminum fluminense</i>	Cut Stump, Hand-pull	Garlon 4 20%
Lantana	<i>Lantana camara</i>	Cut-Stump	Garlon 4 20%
Leadtree	<i>Leucaena leucocephala</i>	Cut Stump, Hand-pull	Garlon 4 30%
Burmareed	<i>Neyraudia reynaudiana</i>	Foliar and Cut Stump	Glyphosate 3% Garlon 4 20%
Napier grass	<i>Pennisetum purpureum</i>	Foliar	Glyphosate 3%
Bowstring hemp	<i>Sansevieria hyacinthoides</i>	Cut-Stump	Garlon 4 20%
Queensland Umbrella	<i>Schefflera actinophylla</i>	Cut Stump	Garlon 4 20%
Brazilian-pepper	<i>Schinus terebinthifolius</i>	Cut Stump	Garlon 4 20%
Oyster plant	<i>Tradescantia spathacea</i>	Hand-pull	N/A

## Photos:



In the shade of dense pines, Burmareed (*Neyraudia reynaudiana*) reaches heights of 14 feet or more throughout the Girl Scouts Camp Choe Pine Rockland.





Prior to management, Burmared and Brazilian-pepper along the western border was extremely dense.



Air potato (*Dioscorea bulbifera*) was hand-pulled and the potatoes bagged and properly disposed of.

## NOAA At Richmond Pine Rockland

Owner: National Oceanographic and Atmospheric Administration  
13601 SW 176<sup>th</sup> St., Miami, FL 33170



**Site Map:** The NOAA at Richmond Pine Rockland is located on a historic NOAA radar site in the Richmond Pine Rockland complex in Miami-Dade County.

**Species Benefited:** The federally-listed plant *Chamaesyce deltoidea* subsp. *deltoidea* is present on the site. This site also contains habitat for the federal-candidate plants *Brickellia mosieri* and *Argythamnia blodgettii*, and for three federal-candidate animals (Florida leafwing butterfly, Bartram’s hairstreak butterfly, and rimrock crowned snake), the latter two having been found adjacent to the site at Miami Metrozoo.

**Acres Treated Under the Coastal Program: 9.1**

**Site Description:** The NOAA Radar site houses a large radar dome in a fence compound within a larger fenced compound. Within the inner fence the site is scarified and covered with limestone rock for ease of maintenance. Between the two fences there is approximately 9 acres of undeveloped pine rockland habitat connected geographically to 136 acres of pine rockland and other natural habitat owned and managed by Miami Dade County at their Martinez Pineland. The property is closed to the public and is separated by a chain link fence and canal from an adjacent federal prison pine rockland that was mechanically destroyed by the prison in the 1990’s. The NOAA at Richmond Pine Rockland is in good condition due to occasional fires. The hardwood understory is sparse and the site has a diversity of native grasses and herbs. Generally, the pineland appears to be in very good condition, though seedlings and saplings of *Acacia*, *Albizia*, *Schinus*, and *Schefflera* are scattered throughout the site. More conspicuous are the mature *Neyraudia* scattered throughout even the site’s best habitat.

**Pre-Coastal Program Management:** The National Park Service had previously conducted some exotic plant control on this property prior to 2010. The NOAA at Richmond Pine Rockland received initial treatment for FLEPPC Category I and II species by the IRC habitat restoration team under the ARRA in September 2010.

**Coastal Program Management:** The site has received two follow up treatments under the USFWS Coastal Program. This pine rockland is mainly in a feasible management phase requiring retreatment of the invasive seed bank. We have also treated several adjacent properties in the Richmond Pine Rocklands under the ARRA Stimulus Program and the Coastal Program, including the US Coast Guard, Miami Metrozoo, and Larry & Penny Thompson Park. Together we have performed management on 310 acres of this critically important pine rockland complex.

<b>Invasive Treated</b>	<b>Scientific Name</b>	<b>Treatment Method</b>	<b>Herbicide Used</b>
Burmareed	<i>Neyraudia reynaudiana</i>	Cut Stump	Garlon 4 20%
Brazilian-pepper	<i>Schinus terebinthifolius</i>	Cut Stump	Garlon 4 20%
Woman’s tongue	<i>Albizia lebbek</i>	Cut Stump	Garlon 4 30%
Leadtree	<i>Leucaena leucocephala</i>	Cut Stump, Hand-pull	Garlon 4 30%
Natal Grass	<i>Melinis repens</i>	Hand-pull and bag	N/A
Umbrella tree	<i>Schefflera actinophylla</i>	Cut Stump	Garlon 4 20%
Rosary pea	<i>Abrus precatorius</i>	Cut Stump	Garlon 4 20%

**Photos:**



The NOAA at Richmond Pine Rockland has a rich diversity of shrubs, grasses and herbs.



Adjacent is a federal prison; which mechanically destroyed a pine rockland fragment directly on the other side of the above fence in the 1990's.



The perimeter along SW 137<sup>th</sup> Avenue has a higher persistence of invasive species.

# University of Florida TREC Pine Rockland

Owner: University of Florida Tropical Research and Education Center  
3900 Commonwealth Blvd., Tallahassee, FL 32399



**Site Map:** The University of Florida TREC Pine Rockland is located in the far southwest region of the Redland Agricultural Area of Miami Dade County and is surrounded by agriculture and private residences.

**Species Benefited:** The federal-candidate plant *Brickellia mosieri* is present on the site. It is habitat for the Federally Listed plant *Chamaesyce deltoidea* subsp. *adhaerens*, numerous state-listed pant species, for three federal candidate plants (*Argythamnia blodgettii*, *Linum arenicola*, and *Linum carteri* var. *carteri*), and for three federal-candidate animals (Florida leafwing butterfly, Bartram’s hairstreak butterfly, and rimrock crowned snake).

**Acres Treated Under the Coastal Program: 8.8**

**Site Description:** The University of Florida TREC Pine Rockland is in the middle of an agricultural research station, and the property is surrounded mainly by agricultural lands. The north section of the pineland is succeeding to hammock and is dominated by a wild tamarind (*Lysiloma latisiliquum*). The southeast section and interior has the best pine rockland habitat but is being invaded severely by jaragua (*Hyparrhenia rufa*). There are a variety of other exotic species prevalent at this site, especially on the southern and western borders. This site contains one of the only populations of kudzu (*Pueraria montana* var. *lobata*) in southern Florida.

**Pre-Coastal Program Management:** Prior to IRC’s management, TREC’s pine rockland has been largely neglected in terms of exotic removal and has been invaded by non-native grasses and woody species. Through the efforts of their on-site biologist, one prescribed fire was implemented in 2009 through the Florida Division of Forestry. The IRC habitat restoration team conducted initial treatment of FLEPPC Category I and II species in the seventh quarter of the ARRA Stimulus project. Treatment for exotic species combined with the effects of a prescribed fire in 2009 have brought this pine rockland closer to a more feasible management phase.

**Coastal Program Management:** This site received three follow up treatments under the USFWS Coastal Program 2011-2012. The main treatment challenge is Jaragua grass (*Hyparrhenia rufa*), which continues to invade the entire pineland, threatening the diversity of rare and listed species present at this site. Management of this grass and other invasive species must continue in the future to deplete the seed source.

**Species Treated:**

Invasive Treated	Scientific Name	Treatment Method	Herbicide Used
Jaragua	<i>Hyparrhenia rufa</i>	Foliar	Glyphosate 3%
Burmareed	<i>Neyraudia reynaudiana</i>	Foliar	Glyphosate 3%
Brazilian-pepper	<i>Schinus terebinthifolius</i>	Cut Stump	Garlon 4 20%
Natal grass	<i>Melinis repens</i>	Foliar	Glyphosate 3%
Woman's tongue	<i>Albizia lebbek</i>	Cut Stump	Garlon 4 30%
Shoebutton ardisia	<i>Ardisia elliptica</i>	Cut Stump	Garlon 4 20%
Kudzu	<i>Pueraria montana</i> var. <i>lobata</i>	Foliar	Glyphosate 3%
Gold Coast jasmine	<i>Jasminum dichotomum</i>	Cut Stump	Garlon 4 20%
Governor’s plum	<i>Flacourtia indica</i>	Cut Stump	Garlon 4 20%

**Photos:**



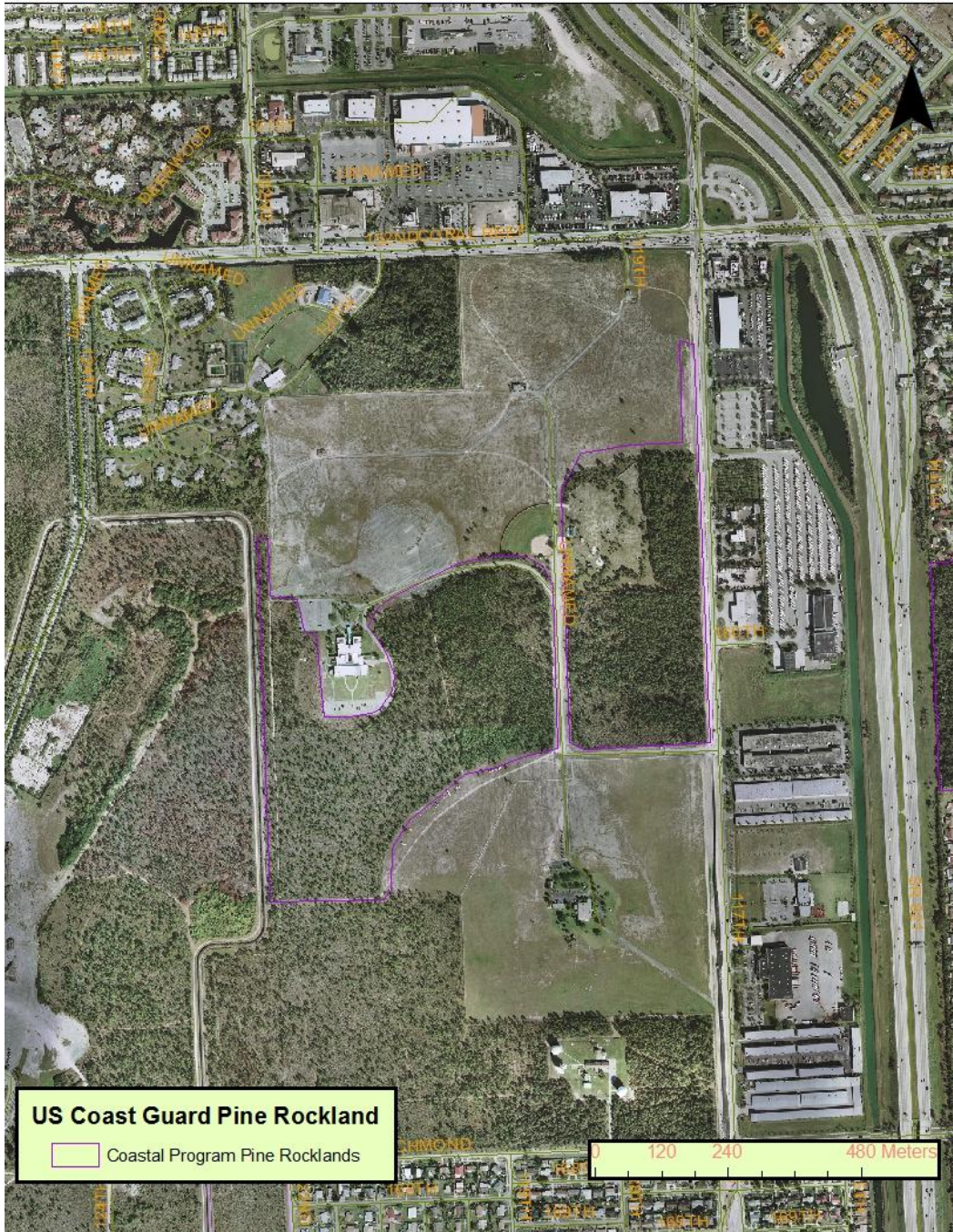
An extremely abundant infestation of jaragua (*Hyparrhenia rufa*) was growing throughout the open interior of the pine rockland mixed in with desirable native grasses and herbaceous species.



The IRC habitat restoration team brush-cut jaragua (*Hyparrhenia rufa*) in the interior of the pineland and removed the cut debris off site to limit impacts to native vegetation.

# U.S. Coast Guard Pine Rockland

United States Coast Guard Communication and Engineering Station  
Owner / Land Manager: United States Coast Guard  
15608 SW 117 Ave, Miami, FL 33177-1609



**Site Map:** Treatment area in the far northeast section of the pineland is the most densely infested section of the property.



**Species Benefited:** This site contains populations of the federally-listed *Polygala smallii* and *Chamaesyce deltoidea* subsp. *deltoidea*. It is also habitat for the Federal candidate *Brickellia mosieri*.

### **Acres Treated Under Coastal Program: 87**

**Site Description:** Bordered by Miami Metrozoo and University of Miami pine Rocklands, this large 221-acre site consists of 90 acres of pine Rockland habitat. The site is divided into sections by security fences and paths, creating well maintained fire breaks throughout. The site is characterized by open areas of pine Rocklands mixed with dense stands of slash pine and tall saw palmettos. Native grasses are present, but compete for space with the many palms. Healthy populations of Small's milkwort (*Polygala smallii*), deltoid spurge (*Chamaesyce deltoidea* subsp. *deltoidea*) and other pine Rockland species are present in places where pines are not too dense. Fire suppression has contributed to the dense coverage (up to 100% in some areas) of slash pine, saw palmetto, and poisonwood, creating dense leaf litter and making access difficult in some areas.

The site is maintained by the property owner who has worked at reducing and preventing invasion of invasive species in the past, including removal of Brazilian-pepper (*Schinus terebinthifolia*), Earleaf acacia (*Acacia auriculiformis*), and umbrella tree (*Schefflera actinophylla*), thus reducing the number of these species on much of the site. Burmareed (*Neyraudia reynaudiana*) is moderately thin in open areas and extremely thick (up to 100% coverage) in disturbed areas and areas of fire suppression. Thick stands of slash pine prevent easy access to scattered but dense stands of Burmareed. Diligence by the property manager has prevented introduction of many invasive plants through prevention of dumping and careful monitoring of the site for new occurrences of invasive plants.

**Pre-Coastal Program Management:** Management was performed by the property owner which included some removal of invasive hardwoods. Fire breaks around the property are well maintained by the property manager. The site had been burned prior to the current property manager's term, but it has been at least 13 years (if not more) since the site was last burned.

Dominant invasive species found consistently throughout the site were Burmareed, along with small hardwoods such as Brazilian-pepper, Earleaf acacia, umbrella tree, and Shoebutton Ardisia. Saw palmettos and pines dominate the site, but are small enough in most areas to create gaps for native grasses and small pineland species to occur. Open section of near pristine pine Rockland containing low density Burmareed and occasional invasive hardwoods, adjacent to very dense slash pine. Other areas contain moderate to high levels of Burmareed infestation, and are highest in disturbed areas and edges. Access to large stands of Burmareed is made very difficult where dense pines exist; pines are spaced only feet apart making it extremely difficult to maneuver cutting tools.

**Coastal Program Management Activities Completed:** Two follow-up treatments of FLEPPC Category I and II Invasive-exotic species were performed. The primary treatment method was mowing of Burmareed grass with brush-cutters, followed by foliar treatments of the grass with a 3% glyphosate solution. Invasive-exotic hardwoods such as Brazilian-pepper, Earleaf acacia, Shoebutton ardisia and Umbrella tree were cut-stump treated with a 15% triclopyr solution. Burmareed grass and invasive hardwoods spotted in these areas were cut stump treated with a 30% triclopyr solution.

**Species Treated:**

Invasive Treated	Scientific Name	Treatment Method	Herbicide Used
Earleaf acacia	<i>Acacia Auriculiformis</i>	Cut Stump, Hand-pull	Garlon 4 20%
Rosary pea	<i>Abrus precatorius</i>	Cut Stump, Hand-pull	Garlon 4 20%
Woman's tongue	<i>Albizia lebeck</i>	Cut Stump	Garlon 4 30%
Shoebuttan ardisia	<i>Ardisia eliptica</i>	Cut-Stump	Garlon 4 20%
Bishopwood	<i>Bischofia javanica</i>	Cut-Stump	Garlon 4 20%
Indian Rosewood	<i>Dalbergia sissoo</i>	Cut-Stump	Garlon 4 20%
Air potato	<i>Dioscorea bulbifera</i>	Hand-pull/bagged	N/A
Jasmine	<i>Jasminum fluminense</i>	Cut Stump, Hand-pull	Garlon 4 20%
Lantana	<i>Lantana camara</i>	Cut-Stump	Garlon 4 20%
Leadtrees	<i>Leucaena leucocephala</i>	Cut Stump, Hand-pull	Garlon 4 30%
Burmareed	<i>Neyraudia reynaudiana</i>	Foliar and Cut Stump	Glyphosate 3% Garlon 4 20%
Napier grass	<i>Pennisetum purpureum</i>	Foliar	Glyphosate 3%
Bowstring hemp	<i>Sansevieria hyacinthoides</i>	Cut-Stump	Garlon 4 20%
Queensland Umbrella	<i>Schefflera actinophylla</i>	Cut Stump	Garlon 4 20%
Brazilian-pepper	<i>Schinus terebinthifolius</i>	Cut Stump	Garlon 4 20%
Oyster plant	<i>Tradescantia spathacea</i>	Hand-pull	N/A

**Photos:**



**Photo 1:** *Polygala smallii* (federally listed endangered species) is fairly common throughout the site.



**Photo 2:** IRC's PRI Exotic Removal Team Members treating coming out of the pine rockland after spraying herbicide on Burmared grass infestation.



**Photo 3:** Due to lack of burning, very dense stands of slash pine exist throughout the 65 acre site.



**Photo 4:** PRI Field Supervisor observing a state-endangered Locustberry (*Byrsonima lucida*) growing in the recently treated area.



**Photo 5:** Cut Burmared grass just chemically treated in the pineland.



**Photo 6:** 20-acre parcel 3 months after receiving treatment looks clear of exotic species.



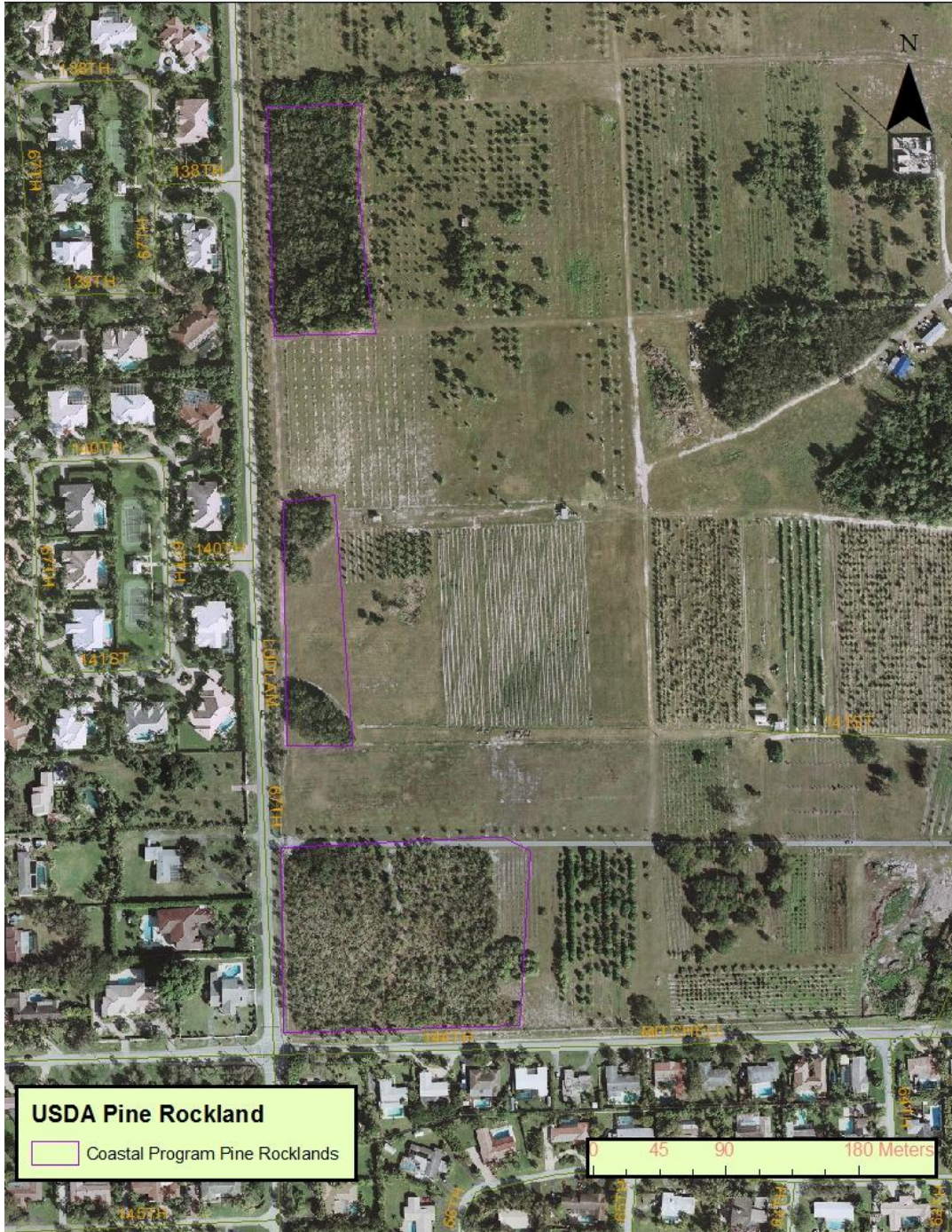
**Photo 7:** Pineland Lantana (*Lantana depressa*) growing in a treated section of the USCGS pine rockland.



**Photo 8:** Note the open area in the foreground adjacent to very dense slash pine in background.

## USDA Chapman Field Pine Rockland

Owner: The U.S. Department of Agriculture Subtropical Horticultural Research Station  
13601 Old Cutler Road, Miami, FL 33156



**Site Map:** The USDA Chapman Field Pine Rockland is located along Old Cutler Road in Miami-Dade County.

**Species Benefited:** This pine rockland contains populations of two federally endangered plants; deltoid spurge (*Chamaecyce deltoidea* ssp. *deltoidea*), Small's milkpea (*Polygala smallii*), and one federal candidate species, Carter's flax (*Linum carteri*). There are at least 23 state-listed

plant species present, and the site is habitat for three federal-candidate animals (Florida leafwing butterfly, Bartram’s hairstreak butterfly, and rimrock crowned snake).

**Acres Treated Under the Coastal Program: 9**

**Site Description:** The USDA Chapman Field Pine Rockland is made up of three separate fragments along Old Cutler Road within the USDA Subtropical Horticultural Research Station. The rare federal candidate species *Linum carteri* var. *carterii* is abundant at this site, and thus management is critical.

**Pre-Coastal Program Management:** These fragments have received no management previous to IRC’s treatment under the Coastal Program. The remaining fragments have been left unmanaged and reduced in acreage of the years by maintenance staff. There have been sporadic, small wildfires in the farthest south fragment.

**Coastal Program Management Activities:** This site received one initial treatment by the IRC habitat restoration team, because it was added at the end of the funding cycle. Future treatment of this site is critical to reduce the invasive seed bank and improve habitat quality for rare and listed species.

<b>Invasive Treated</b>	<b>Scientific Name</b>	<b>Treatment Method</b>	<b>Herbicide Used</b>
Burmareed	<i>Neyraudia reynaudiana</i>	Cut Stump	Garlon 4 20%
Brazilian-pepper	<i>Schinus terebinthifolius</i>	Cut Stump	Garlon 4 20%
Woman’s tongue	<i>Albizia lebeck</i>	Cut Stump	Garlon 4 30%
Shoebuttan ardisia	<i>Ardisia elliptica</i>	Cut Stump, Hand-pull	Garlon 4 20%
Asian sword fern	<i>Nephrolepis multiflora</i>	Foliar	Glyphosate 3%
Oyster plant	<i>Tradescantia spathacea</i>	Hand-pull and bag	N/A
Leadtree	<i>Leucaena leucocephala</i>	Cut Stump, Hand-pull	Garlon 4 30%
Natal Grass	<i>Melinis repens</i>	Hand-pull and bag	N/A
Umbrella tree	<i>Schefflera actinophylla</i>	Cut Stump	Garlon 4 20%
Horseflesh mahogany	<i>Lysiloma sabicu</i>	Cut Stump	Garlon 4 20%
Noyau vine	<i>Merremia dissecta</i>	Hand-pull	N/A