Beyond business as usual – transforming our thinking about pine rocklands

Pine Rockland Working Group Symposium
October 21, 2020

George D. Gann
www.regionalconservation.org
www.ser.org

International Policy Lead

Chief Conservation Strategist

Acknowledgments

Setup: Jennifer Possley, Joy Klein, Sarah Martin, Michelle Smith, Cara Abbott, Lydia Cuni

Concepts: Chris Bergh, Kathy Freeman, Janet Gil, Robin Gray-Urgelles, Dallas Hazelton, Tim Joyner, Kevin Kalasz, Joy Klein, Jimmy Lange, Kirk Linaje, Naqqi Manco, Sarah Martin, Jennifer Possley, Alex Seasholtz, Michelle Smith, Christina Stocking & Luis Moreno, Jonathan Taylor, Alicie Warren, and others

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Funding and Collaborators: US Fish & Wildlife Service, US DOD, Fairchild Tropical Botanic Garden, Miami-Dade County EEL and NAM, Jacksonville Zoo and Gardens, The Nature Conservancy, Miami Beach Garden Club, NABA, private donors, and many more.

Outline

- My background
- IRC background and mission
- IRC's work in pine rocklands
- Conservation context
- Transformative change
- Conversation!

My Background and Pine Rocklands

George Washington Turner

Thelma Turner

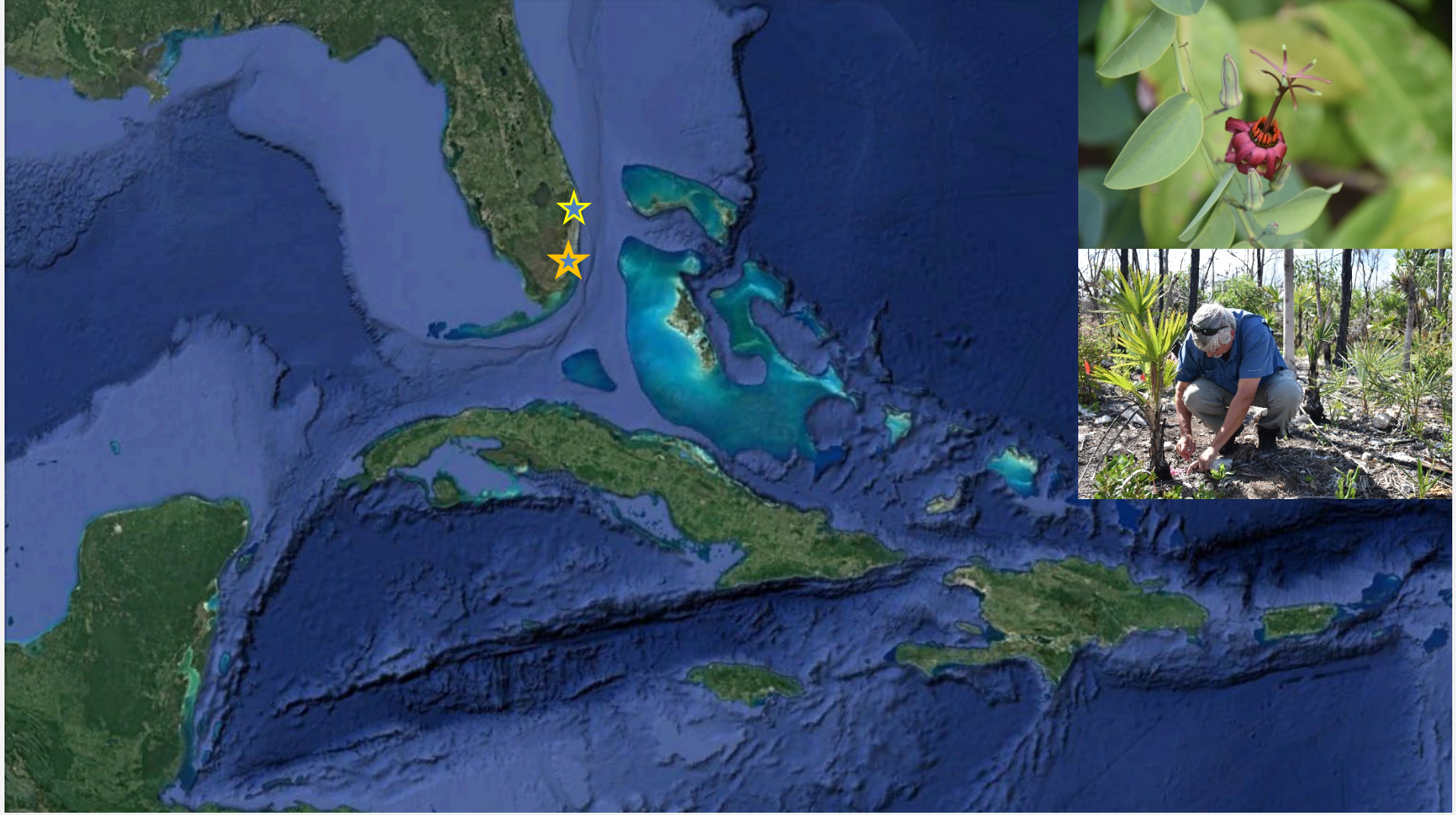
Hedwig Rutzke birthplace

My ancestors arrived in 1910 as agricultural pioneers. Miami-Dade County had just 11,933 residents.

Don & Joyce Gann - Real Florida Natives!

Commissioner Daniella Levine Cava, Joyce, Don, Janet Gil, Joy Klein – Don & Joyce Gann Day February 11, 2019

Pioneer families, tomato farmers, international travelers, native plants growers



My Neighborhood

Global and Local Perspectives

SER SOCIETY FOR ECOLOGICAL RESTORATION

The Institute for Regional Conservation

World Conference on Ecological Restoration
Cape Town, South Africa 2019

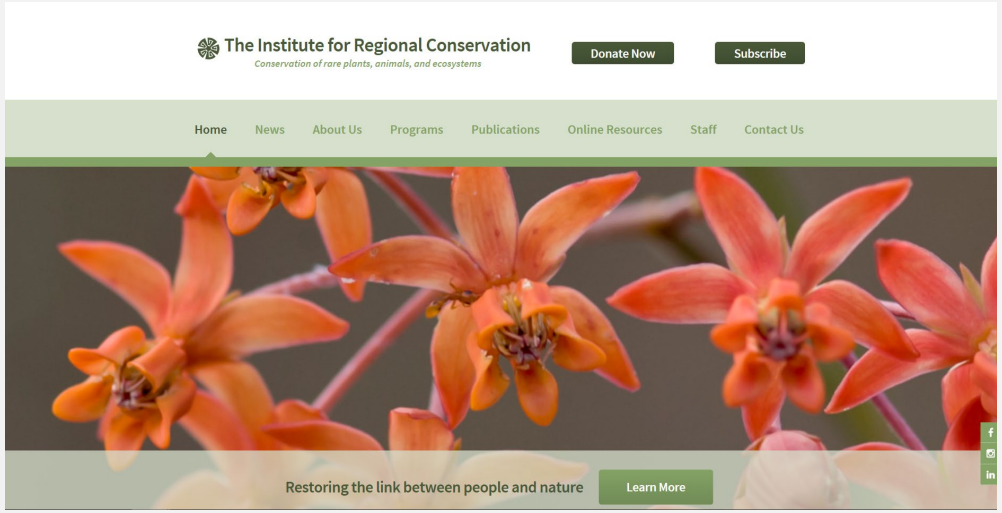
International Policy Lead

Restoration site, No Name Key
National Key Deer Refuge, FL, USA

Chief Conservation Strategist

Growing up in Redland

IRC Background and Mission



Our mission is to protect, restore and manage all biodiversity on a regional basis, and to **prevent local extinctions of native plants, animals and ecosystems**. All conservation is ultimately local. **2019 was our 35th Anniversary Year.** Staff of 7, 13 Associates and 7 Board Members.

Floristic and faunistic inventories

Rare species research

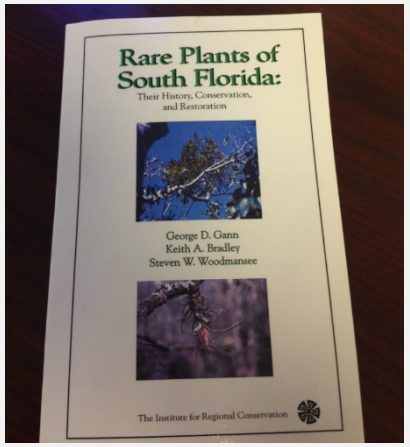
Ecological restoration design and implementation

Educational training and workshops

Online tools and resources

International policy

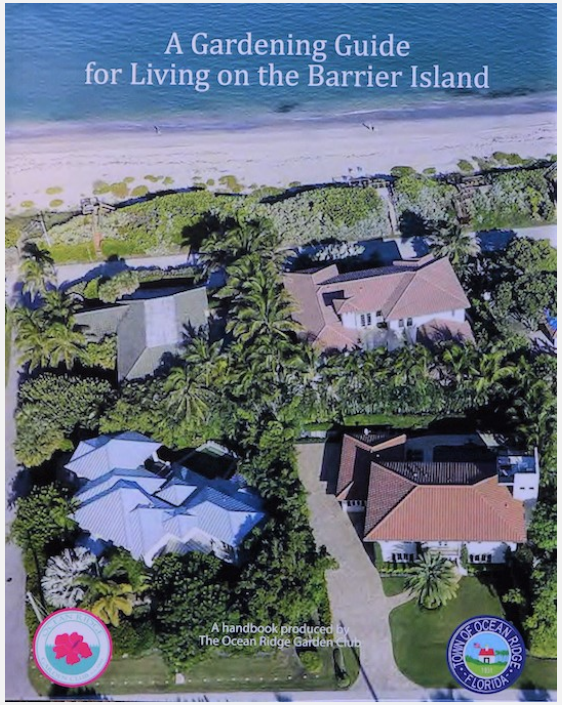
Some IRC Resources



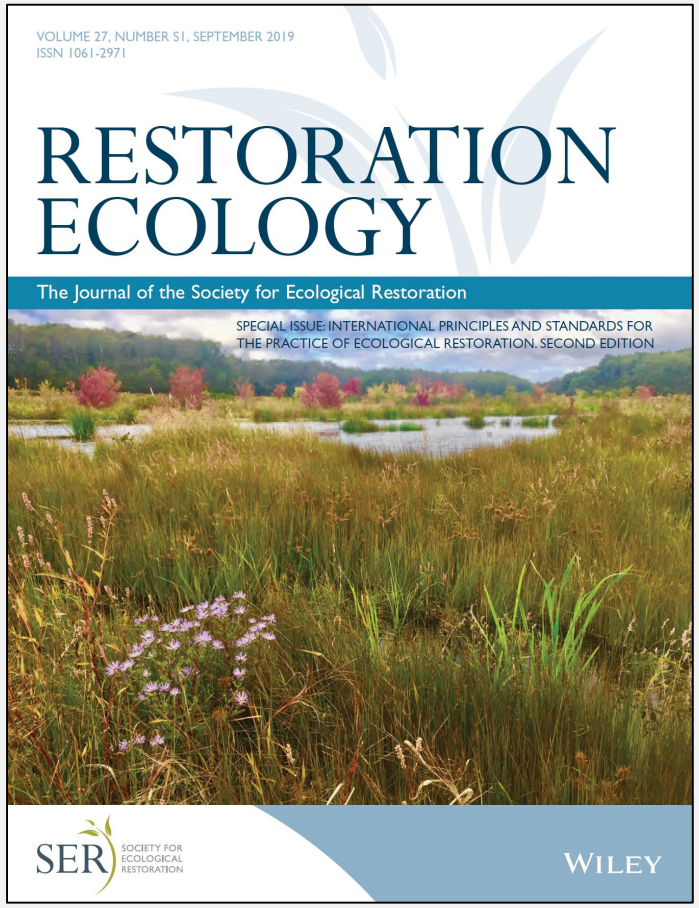
South Florida

The Floristic Inventory of South Florida
Conservation of rare plants, animals, and ecosystems

Plantas de la Isla de Puerto Rico
Plants of the Island of Puerto Rico
Un servicio para la conservación de flora / A conservation service for the flora
The Institute for Regional Conservation



Ecological Restoration and Community Outreach



International Policy Work on Ecological Restoration, Conservation, and Sustainability

SER SOCIETY FOR ECOLOGICAL RESTORATION AUSTRALASIA

The Institute for Regional Conservation

www.ser.org/Standards

IRC’s Work in Pine Rocklands

Floristic Inventories

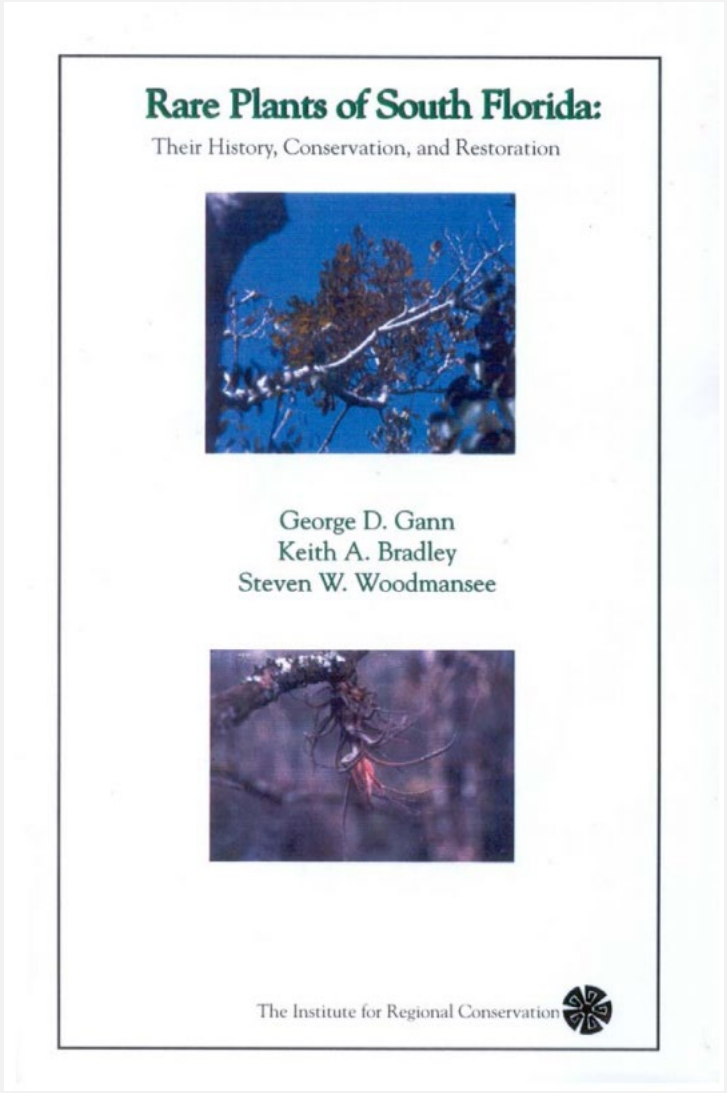
RARE PLANTS OF THE UNITED STATES NAVAL OBSERVATORY
RICHMOND PINELAND COMPLEX
11820 S.W. 166 St.
Miami, FL

Prepared by:
Keith Bradley, Research Associate
and
George Gann, Director

The Institute for Regional Conservation
22601 S.W. 152 Ave.
Miami, FL 33170

June 1996

Rare Species Floristics



A Collaboration of Many

Afield celebrates…

80 Species To Be Added to Florida's Endangered Species List

Miami Herald Thursday, April 5, 2007, Front Page

CONSERVATION | RARE PLANTS

Soldiers of nature

TRIO'S MISSION: TO PRESERVE, PROTECT AND DEFEND ENDANGERED SOUTH FLORIDA PLANT LIFE

REDLAND SANDMAT

CLASPING ASPER

LOCUSTBERRY

QUAILBERRY

BY GEORGIA TASKER
gtasker@MiamiHerald.com

Keith Bradley and George Gann have considered posting a sign that says "Rattlesnake Preserve" to keep intruders out of this ragged two acres in Goulds.

But it is not rattlesnakes they are preserving.

This day, they are looking for the remnants of the Redland sandmat, a minuscule plant found only in a handful of pinelands between Southwest 216th Street and Florida City. It flattens itself so tightly onto surfaces of bare oolitic limestone that you'd think raising one tiny leaflet would expose it to sure death.

You'd be right. It is critically imperiled. And Bradley, Gann and botanist Steve Woodmansee are its godfathers.

For more than a decade, the three have fought the destruction of South

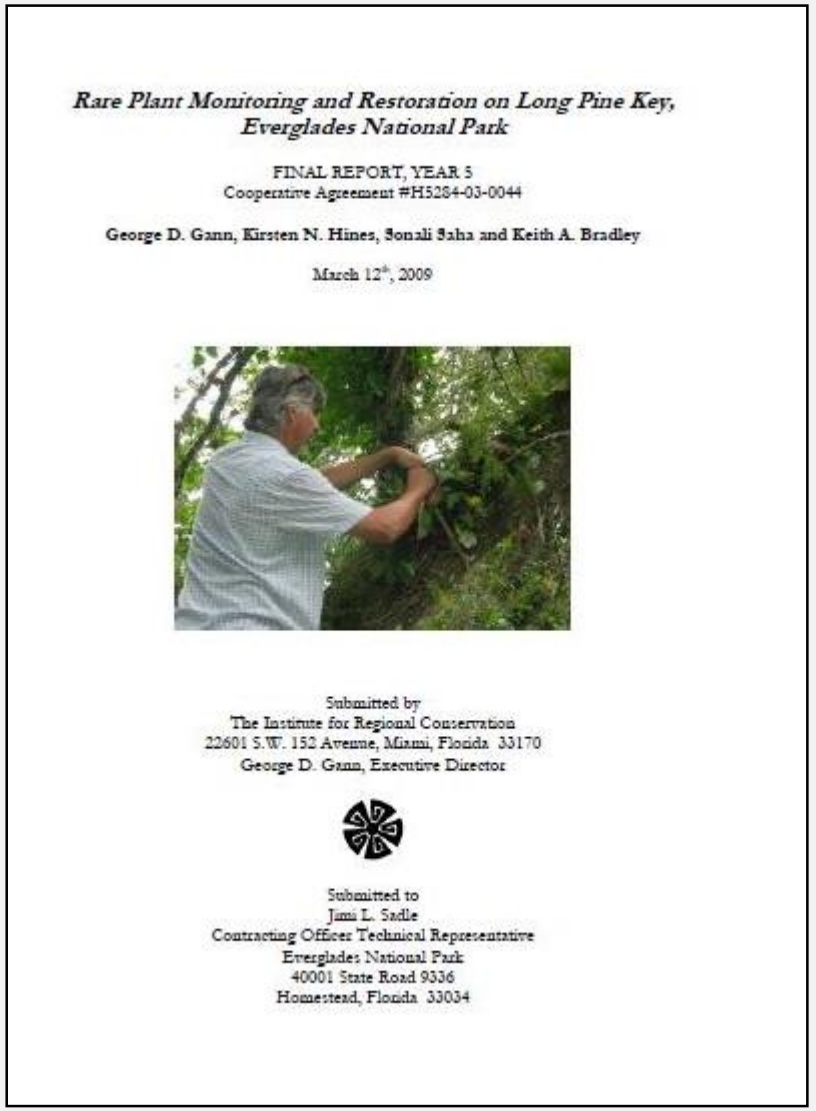
*TURN TO PLANTS, 4A

MIAMIHERALD.COM: CLICK ON TODAY'S EXTRAS TO SEE A SLIDE SHOW OF RARE NATIVE PLANTS

SURROUNDINGS INSPIRE: On ground like this Goulds pineland, from left, Steve Woodmansee, George Gann and Keith Bradley seek out rare plants they intend to preserve.

2003-2008, Long Pine Key

- **31 species studied**, 21 thought to be present, and 10 thought to be possibly extirpated.
- One terrestrial orchid species (***Ponthieva brittoniae***) **was rediscovered**.
- 79 long-term **monitoring plots** and 24 monitoring **transects** were installed.
- **596 rare plant stations** with coordinates were recorded.
- 12 species were identified as **candidates for augmentation or reintroduction**.
- **Trials** were initiated with 9 species in collaboration with Marie Selby Botanical Garden, FTBG, Miami-Dade county and others.



Rare Plant Monitoring and Restoration on Long Pine Key, Everglades National Park

FINAL REPORT, YEAR 5
Cooperative Agreement #H5284-03-0044

George D. Gann, Kirsten N. Hines, Sonali Saha and Keith A. Bradley

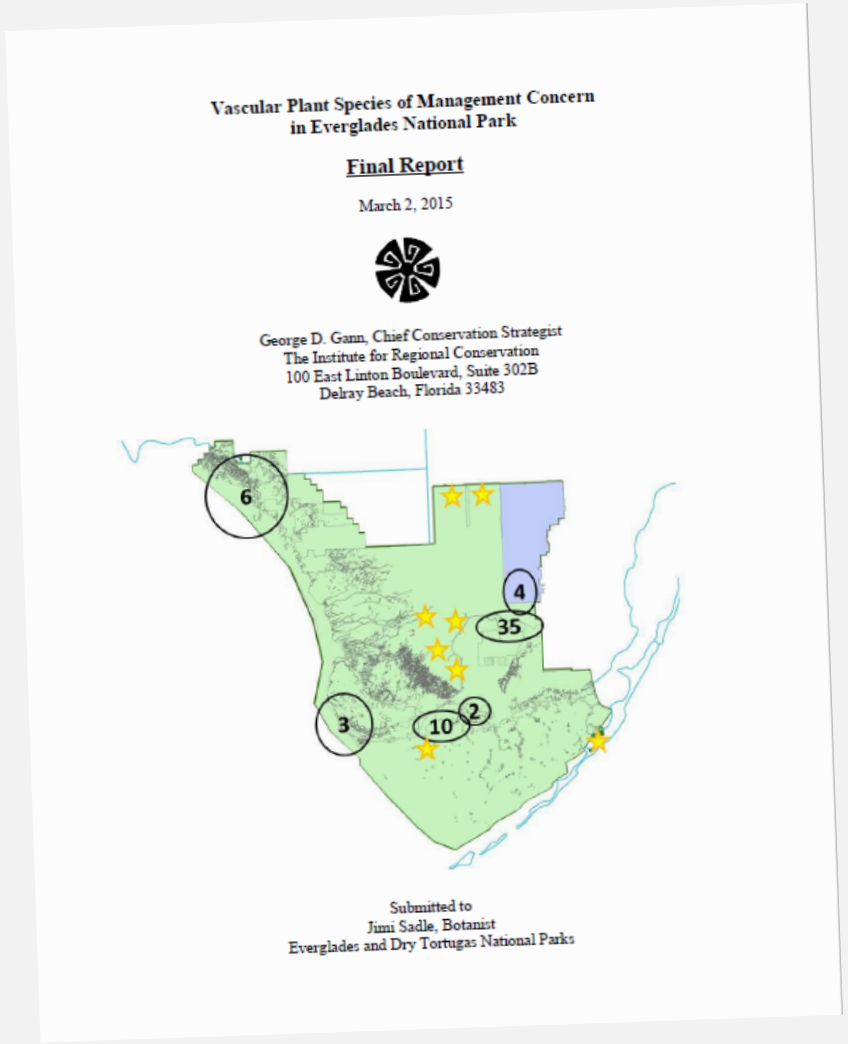
March 12th, 2009

Submitted by
The Institute for Regional Conservation
22601 S.W. 152 Avenue, Miami, Florida 33170
George D. Gann, Executive Director

Submitted to
Jami L. Sadle
Contracting Officer Technical Representative
Everglades National Park
40001 State Road 9336
Homestead, Florida 33034

Rare plants are “COMMON” on Long Pine Key

Rare Plants of Everglades National Park - 2015



Vascular Plant Species of Management Concern
in Everglades National Park

Final Report

March 2, 2015

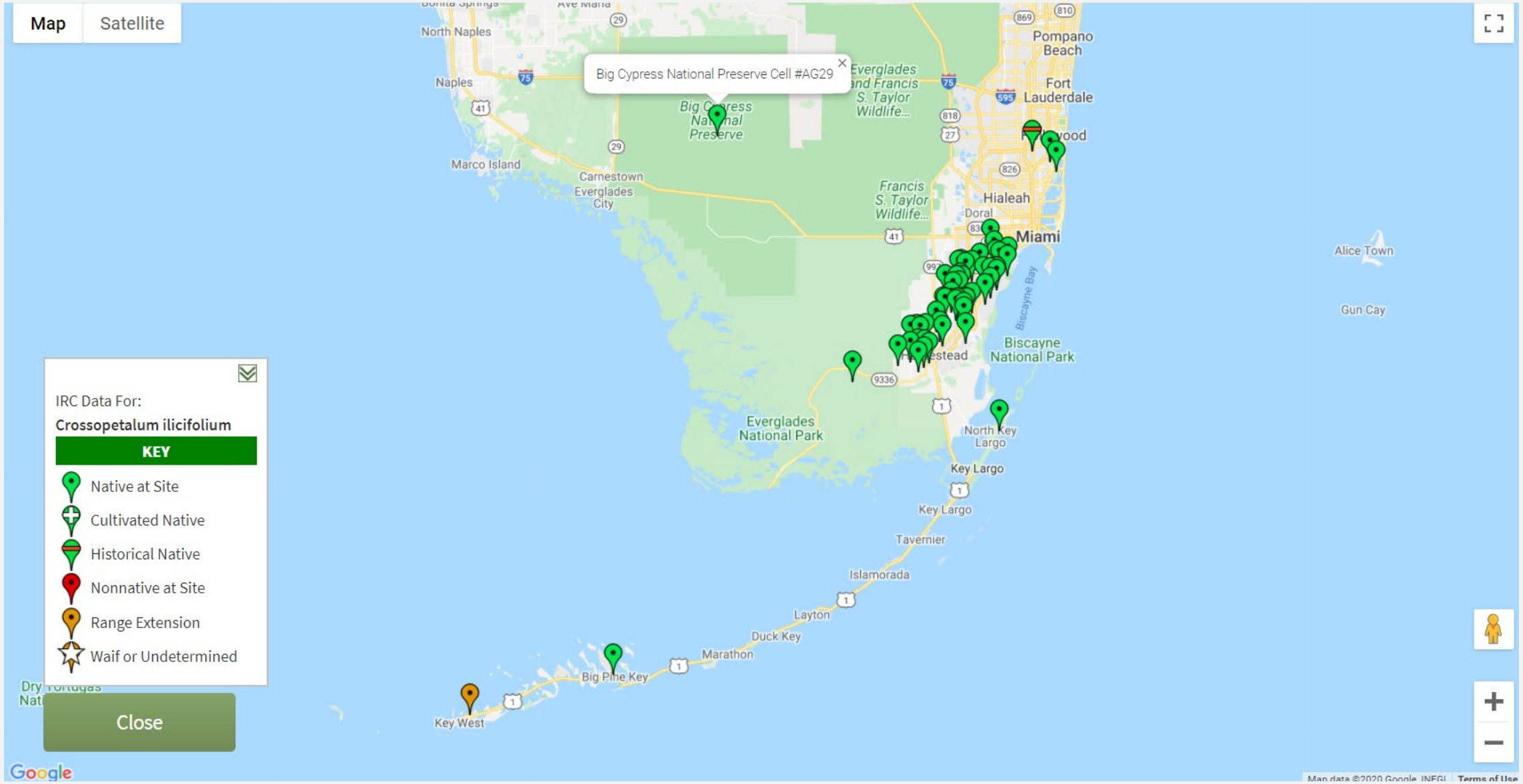
George D. Gann, Chief Conservation Strategist
The Institute for Regional Conservation
100 East Linton Boulevard, Suite 302B
Delray Beach, Florida 33483

Submitted to
Jimi Sadle, Botanist
Everglades and Dry Tortugas National Parks

Washington Post, March 2015

25% of SOMC’s occur in pine rocklands.

Woodmansee & Hodges
Pine Rockland Cell in Big Cypress



Pine Rockland Mapping in Miami-Dade

Mapping of Rare Plant Species in the Natural Forest Communities of Miami-Dade County

South Florida Ecosystem Threatened/Endangered Species Recovery Program
2004 Request for Proposals

January 30, 2004

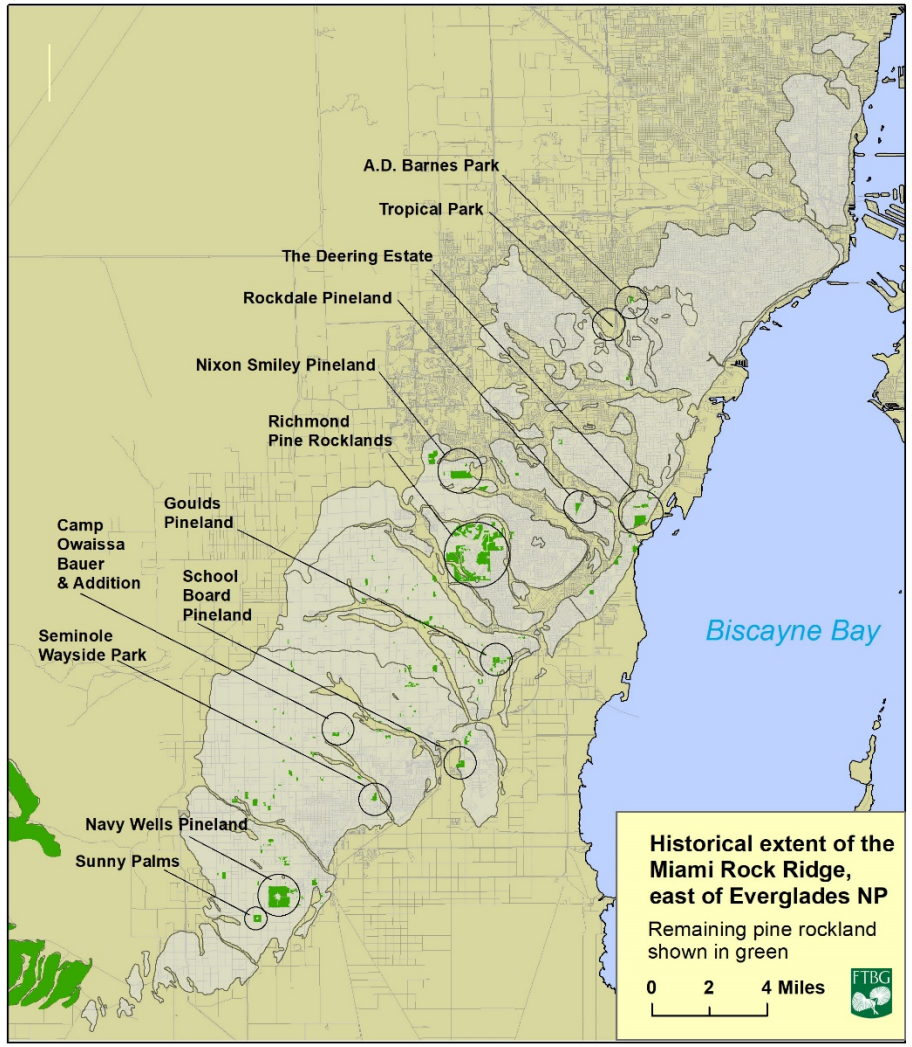
Principle Investigators: Keith A. Bradley and George D. Gann
The Institute for Regional Conservation[1]

Project Location: Miami-Dade County, Florida

Objective: Augment the Natural Forest Communities mapping and plant inventory program by mapping populations of rare plant species.

Project Background:

Pine rocklands and rockland hammocks are two important plant communities for federally-listed species in South Florida. Pine rocklands are globally rare, occurring only in South Florida and the Bahamas. In South Florida, pine rocklands are primarily limited to Miami-Dade and Monroe counties. Pine rocklands are habitat for 10 federally-listed and 103 state-listed species of plants and animals (Bradley & Gann 1999a; U.S. Fish and Wildlife Service 2000). The Institute for Regional Conservation (IRC) has identified additional regionally rare plant species in pine rocklands (Gann et al. 2002). In Miami-Dade County, less than 2% of the pine rocklands remain outside of Everglades National Park due to extensive urban and agricultural development. Five federally-listed plant species reside in this remaining 2% of habitat; three of these (*Amorpha herbacea* var. *crenulata*, *Chamaesyce deltoidea* (including subsp. *deltoidea* and *adhaerens*), and *Galactia smallii*) are endemic to pine rocklands in Miami-Dade County outside of Everglades National Park. *Chamaesyce garberi* is also found in the Florida Keys (U.S. Fish and Wildlife Service 2000) and *Polygala smallii* ranges north to St. Lucie County (Bradley & Gann, 1995). In addition, there are seven plant species which are considered candidates for federal listing (Bradley & Gann, 1999b). Rockland hammocks historically covered a much smaller area than pine rocklands. Many of the rockland hammocks scattered among



Natural Forest Community Mapping Project, Miami-Dade County, 2004-2006

The Institute for Regional Conservation

Pine Rockland Initiative

The Pine Rockland Initiative is a key program of the Institute for Regional Conservation (IRC) in Miami-Dade and Monroe counties, Florida. The goal of the IRC Pine Rockland Initiative program is to help protect, restore, and manage the remaining pine rockland fragments and the species that occur within them. We also advocate for "Expanding the Footprint", to increase the total pine rockland area. The program is especially designed to assist landowners and land managers through applied conservation science and research, education and outreach, volunteer opportunities, and on-the-ground activities such as invasive plant control, hardwood reduction, and the protection and recovery of rare species. This is a collaborative program with significant funding from the U.S. Fish and Wildlife Service, and in partnership with Miami-Dade County, Fairchild Tropical Botanic Garden, and many others.

What is a Pine Rockland?

Pine Rocklands are a globally imperiled ecosystem that exists only in southern Florida and parts of the Bahamas. They are home to many rare plant and animal species, including more than a dozen Federally endangered plants and animals. A typical pine rockland is characterized by limestone outcroppings, a canopy of Florida Slash Pine, and a diverse, shrub and herbaceous understory. In South Florida, pine rocklands have all but disappeared outside of Everglades National Park.

Perhaps 2% of the original pine rocklands within Miami-Dade County's urban corridor and in the lower Florida Keys remain. Existing fragments are threatened by habitat destruction, invasive species, fire suppression, and sea level rise.

Pine Rockland Initiatve Activities:

Reintroduction of the Natural Fire Cycle

Removal of Invasive Species

Planting of Native Species

The Institute for Regional Conservation

Pine Rockland Initiative

Why Get Involved?

You can help conserve and restore a critically imperiled ecosystem unique to South Florida and the Bahamas that is home to many rare and endangered species.

How Can I Get Involved?

Private landowners, public land managers, students, educators, scientists, nature enthusiasts, and other conservation stewards can get involved in a variety of ways. Contact us for more information about conservation and restoration activities, workshops, and volunteer opportunities.

305-247-6547
pri@regionalconservation.org
www.regionalconservation.org/PRI.asp

Can I Donate to the Pine Rockland Iniative?

Tax deductible donations can be made specifically to the Pine Rockland Initiative on the IRC website at: www.regionalconservation.org or mailed to:
100 E. Linton Blvd. Suite 302B, Delray Beach, FL 33483.
IRC is a 501(c)3 non-profit organization.

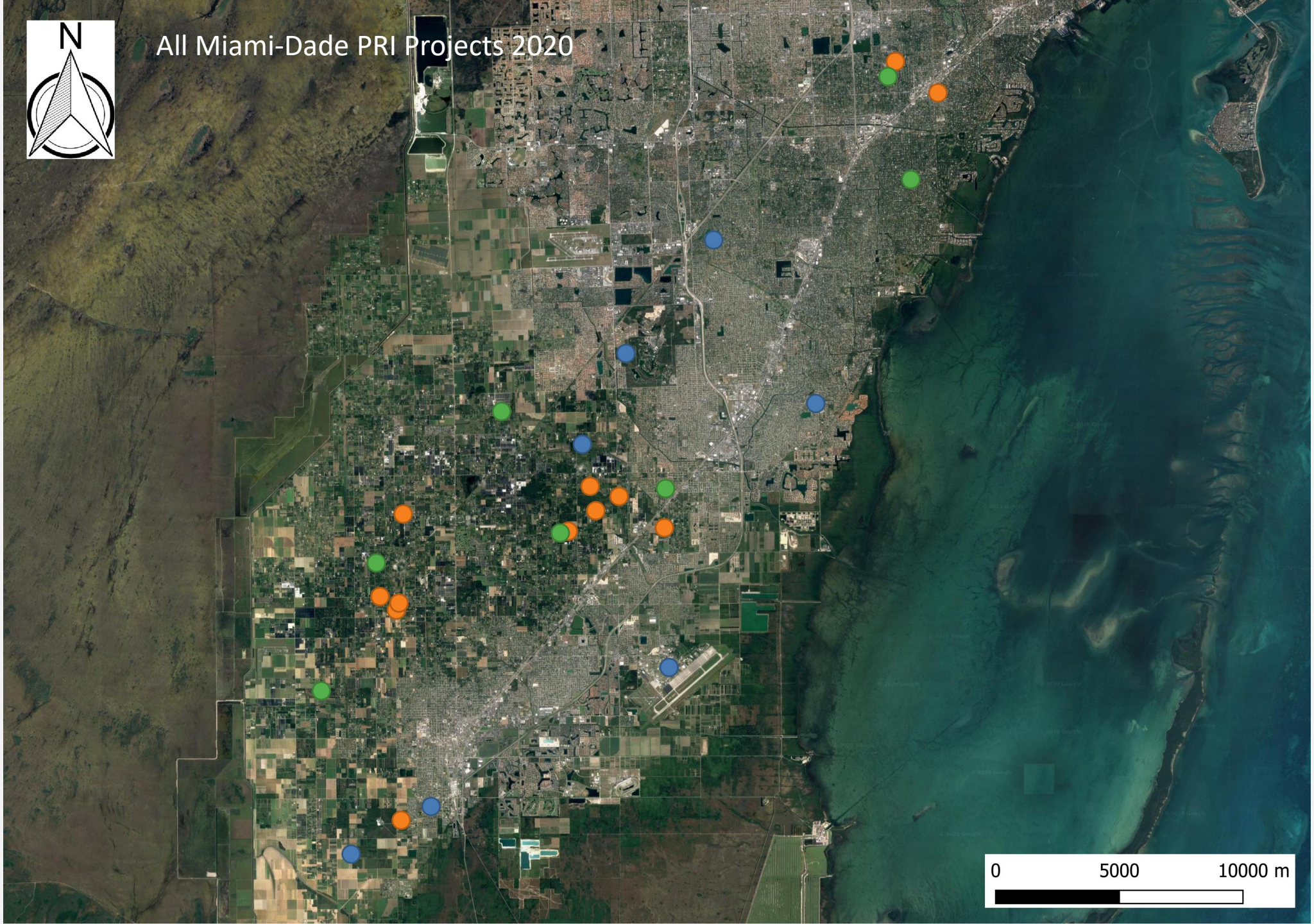
We Thank You For Your Support!

Initiated in 2005, to provide management support for private owners of pine rocklands, specifically invasive species control.

Expanded over the years to include management of any pine rockland, as well as supporting activities, such as rare species surveys, mapping, ecological restoration design, and outreach.

Primary funding has come from US Fish and Wildlife Service, Coastal and Partners Programs.

Collaborators include Miami-Dade County, Fairchild Tropical Botanic Garden and others.


N
All Miami-Dade PRI Projects 2020
0
5000
10000 m


National Key Deer Refuge Sites 2020
N
CL - DS 5 & 6
CL - Plots A, B, C
CL - DS 3 & 4
Hardwood Reduction
CL - Plots D & E
No Name Key Rockpit
Fence Lane
Raccoon Run - North
CL - DS 7 & 8
Raccoon Run
CL - DS 9 & 10
19th Street
Hibiscus Drive
CL - DS Plots 1 & 2
0
500
1000 m

IRC George N. Avery Pineland Cleanup, 2008

Floristic Inventory of South Florida
Pine Rockland Flora

Plants of South Florida · Plants by Conservation Area · Plants by County · Plants by Habitat
Quick Search · Advanced Search

Pine Rockland

There are 557 taxa reported for the Pine Rockland habitat.

Flatland with exposed limestone substrate; mesic-xeric; subtropical; frequent fire; south Florida slash pine, palms and/or hardwoods, and mixed grasses and herbs.

Habitats:

Scientific Name:	Common Name:	South Florida Native Status:
Abildgaardia ovata	Flatspike sedge	Native
Abrus precatorius	Rosary-pea, Crab-eyes	Not Native, Naturalized
Acacia auriculiformis	Earleaf acacia	Not Native, Naturalized
Acalypha chamaedrifolia	Three-seeded mercury, Bastard copperleaf	Native
Aeschynomene viscidula	Sticky joint-vetch	Native
Agalinis fasciculata	Beach false foxglove	Native
Agalinis obtusifolia	Tenlobe false foxglove	Native
Agave sisalana	Sisal-hemp	Not Native, Naturalized
Albizia lebbeck	Woman's tongue, Rattlepod	Not Native

Natives For Your Neighborhood
Pine Rockland Plants for ZIP Code 33170


Brownhair snoutbean — Rhynchosia cinerea


Butterflyweed, Butterfly milkweed △ — Asclepias tuberosa


Candyweed, Showy milkwort — Polygala violacea


Chapman's goldenrod △ — Solidago odora var. chapmanii


Clasping aster, Scaleleaf aster △ — Symphyotrichum adnatum


Coastal plain hawkweed — Hieracium megacephalon


Coontie, Florida arrowroot ■ — Zamia integrifolia

Pine Rockland Restoration Guidance

GUIDELINES FOR PLANTING
A PINE ROCKLAND IN SOUTH FLORIDA

George D. Gann
The Institute for Regional Conservation
www.regionalconservation.org

Version 1.0
March 16, 2007

Why plant a pine rockland? Pine rockland is a globally imperiled plant community that has been heavily impacted by urban development and agriculture. Less than 2% of the original pine rocklands remain in Miami-Dade County outside Everglades National Park. Pine rocklands of the lower Florida Keys have also been heavily impacted by development. Creating a pine rockland is not easy or simple, but it is very rewarding. Pine rocklands provide wonderful habitats for native plants and wildlife, including many species of very rare native plants. They are also aesthetically pleasing and provide year-round color for the yard.

Background. Pine rocklands are coniferous forests with a single species of tree in the canopy – South Florida slash pine (*Pinus elliottii* var. *densa*). They are found on limestone substrate with little or no organic material on the surface. They are open forests with the understory dominated by a diverse mix of grasses and other herbs, palms and shrubs, primarily of West Indian origin. Pine rocklands are similar throughout their range, although the flora and vegetation varies according to type of limestone, hydrological conditions, local climate, and other ecological factors. In their natural form, pine rocklands are maintained by regular fire, which kills back shrubs and hardwood trees that would otherwise take over and shade out the understory.

In South Florida, pine rocklands were historically found in areas of elevated limestone that were maintained by frequent fire: along the Miami Rock Ridge from the mouth of the Miami River south and west to Long Pine Key in Everglades National Park; in the lower Florida Keys in and around Big Pine Key; and in the Lostmans Pines area of the Big Cypress Swamp. A tiny pine rockland was historically present on North Key Largo in the upper Florida Keys. Pine rocklands have received significant protection in Everglades National Park, Big Cypress National Preserve, and the National Key Deer Refuge; however, this habitat has been severely impacted by development throughout the remainder of the Miami Rock Ridge and in significant areas in and around the National Key Deer Refuge in the lower Florida Keys.

GUIDELINES FOR PLANTING
A PINE ROCKLAND IN MIAMI-DADE COUNTY, FLORIDA

George D. Gann, Jennifer Possley,
Steven W. Woodmansee

Version 2.0
October 2020

Why plant a pine rockland? Pine rockland is a critically imperiled ecosystem that has been heavily impacted by urban development and agriculture. Found only in South Florida and the Bahama Archipelago, less than 2% of the original pine rocklands remain in Miami-Dade County outside of Everglades National Park. Pine rocklands of the lower Florida Keys have also been heavily impacted by development, sea level rise, and flooding from hurricanes and tropical storms. Creating a pine rockland is not easy or simple, but it can be extremely rewarding. Pine rocklands provide wonderful habitats for native plants and wildlife, including many species of very rare plants, butterflies, bees and other pollinators, and songbirds. If well-planned and managed they can also be aesthetically pleasing.

Expanding the Pine Rockland Footprint Workshop

1 May 2018
Fairchild Tropical Botanic Garden
10:00 am – 12:00 noon

Organized by The Institute for Regional Conservation, Miami-Dade County,
U.S. Fish & Wildlife Service and Fairchild Tropical Botanic Garden

Draft Agenda

Pine Rockland Business Plan
Team Kickoff Meeting
7.2.19

US Fish and Wildlife Service, TNC, IRC, Miami-Dade County, FTBG +

Ecological Restoration Sub-Team

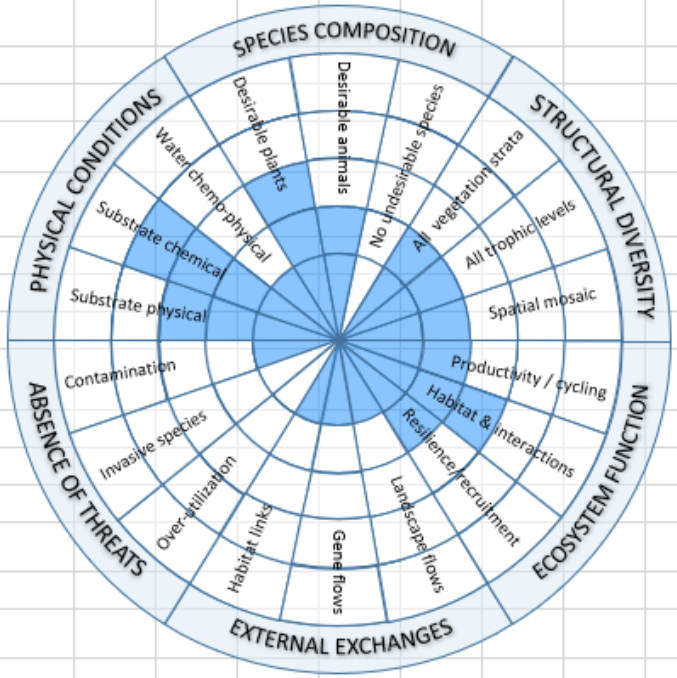
BASELINE FOR PINE ROCKLAND RECOVERY - MIAMI-DADE PINE ROCKLANDS OUTSIDE OF EVERGLADES NATIONAL PARK (DRAFT)

ASSESSOR: George Gann, et al.
SITE: All Pine Rocklands combined
DATE: 2020-7-10

ATTRIBUTE CATEGORY	BASELINE (1-5)	Recovery Target	EVIDENCE FOR RECOVERY LEVEL (e.g., INDICATORS)
ATTRIBUTE 1. Absence of threats			
Over-utilization	0	5	Ceasation of habitat destruction
Invasive species (external)	0	4	Reduction of seed rain, invasion
Contamination	1	4	Reduced contamination (e.g., dumping, insect spraying)
ATTRIBUTE 2. Physical conditions			
Substrate physical	2	5	No dumped material; see Indicators table
Substrate chemical	4	5	No soil contamination
Water chemo-physical	1	4	No saltwater intrusion where possible; no chemical pollutants affecting root zone
ATTRIBUTE 3. Species composition			
Desirable plants	3	5	see Indicators table
Desirable animals	2	5	Diversity of fauna; carnivores; pollinators
No undesirable species	0	4	No exotic, invasive or ruderal plants or animals; see also Indicators table
ATTRIBUTE 4. Structural diversity			
All strata present	2	5	See Indicators table
All trophic levels	2	4	Herbivory, predation
Spatial mosaic	2	5	Mosaics of pines, palms, hardwoods, open ground
ATTRIBUTE 5. Ecosystem function			
Productivity, cycling etc (Fire)	2	5	Fires every 2-7 years
Habitat & interactions	3	4	Presence of key host/nectar plants for pollinators
Resilience, recruitment etc	2	5	Pine, rare species recruitment
ATTRIBUTE 6. External exchanges			
Landscape flows	1	3	Stepping stones across private and non-conservation landscapes
Gene flows	1	3	Movement of animals, seeds, pollen between fragments
Habitat links	1	3	Ecotones with wetlands/rockland hammocks

See also, Gann et al. 2019 Tables 3 and 4.

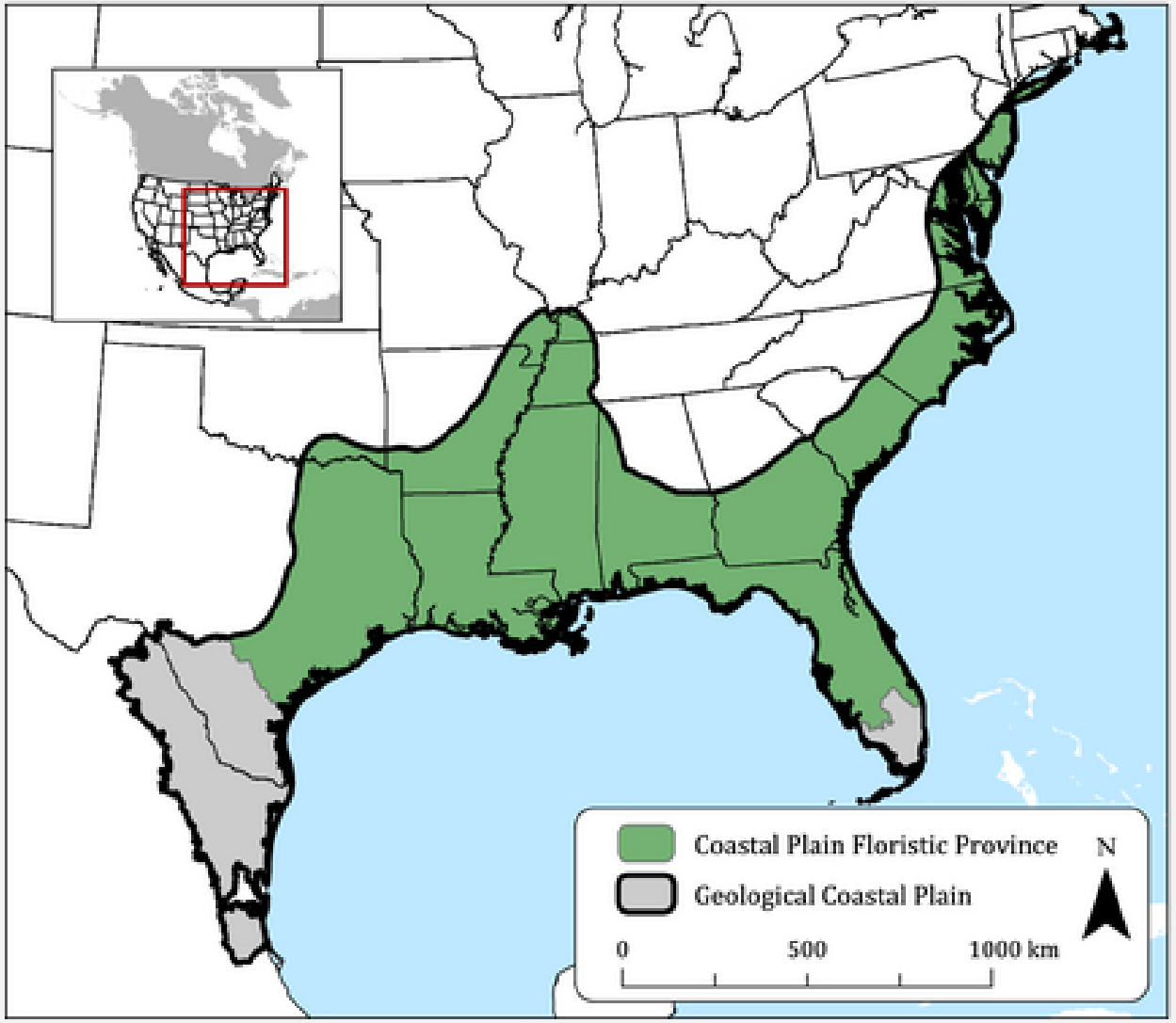
Dicsuss water table.



Update recovery wheel

Template Source: Gann G, McDonald T, Walder B, et al. (2019) International principles and standards for the practice of ecological restoration. Second edition. *Restoration Ecology* *27*(S1): S1-S46, doi: 10.1111/rec.13035.
Artwork: Little Gecko Media. **Excell file formulated by** Simone Pedrini.

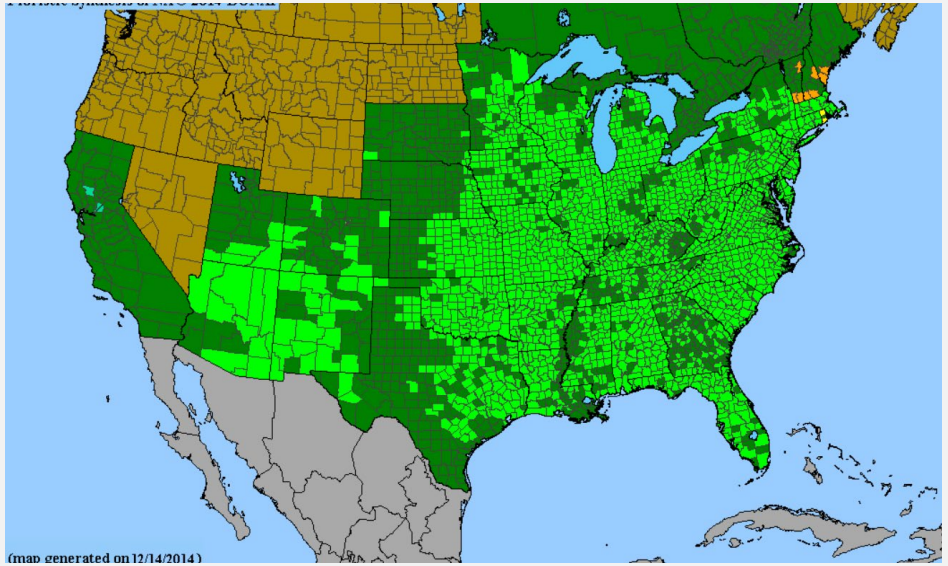
Conservation Context



North American Coastal Plain Global Hotspot

Noss et al. 2014

South & North Range Limits in South Florida



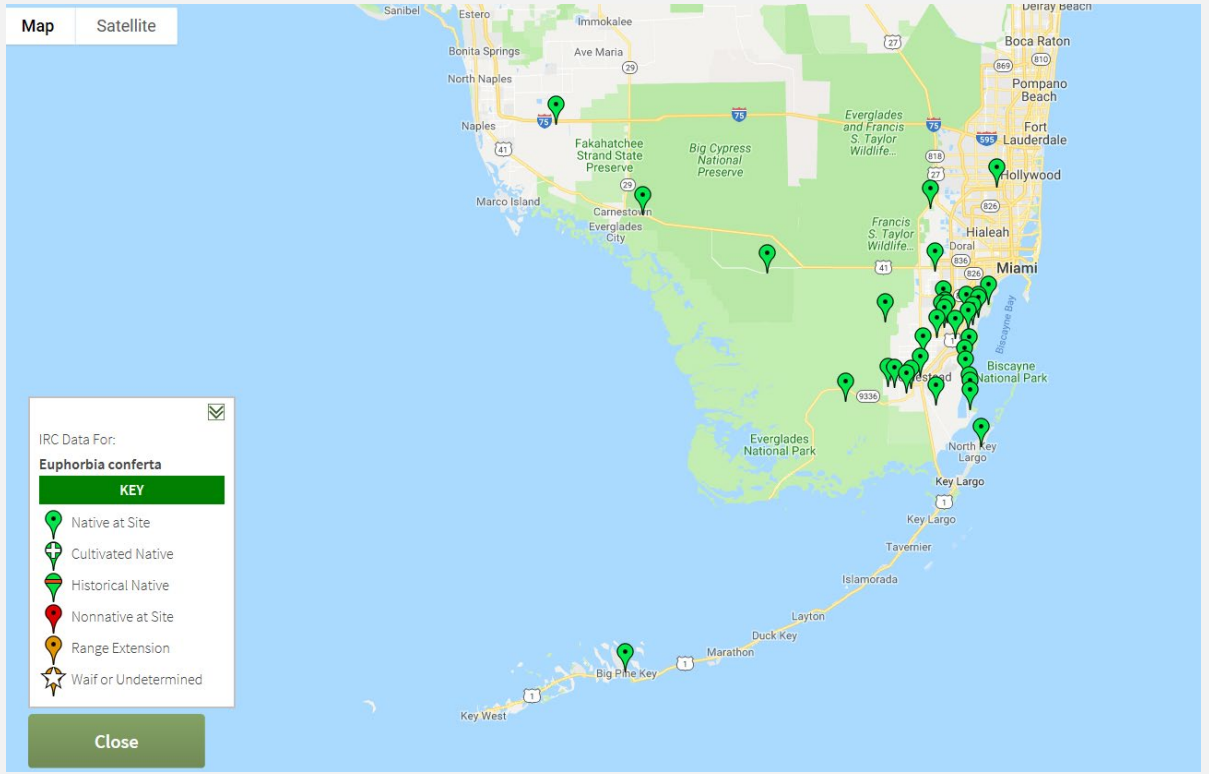
Asclepias tuberosa (BONAP.org)

K. Bradley

Cyrtopodium punctatum (GBIF.org)

J. Johnson

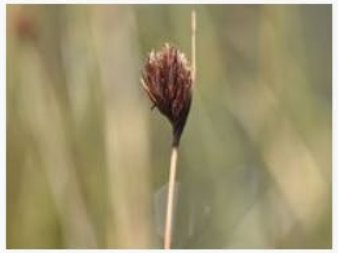
Euphorbia conferta
(*Chamaesyce conferta*)



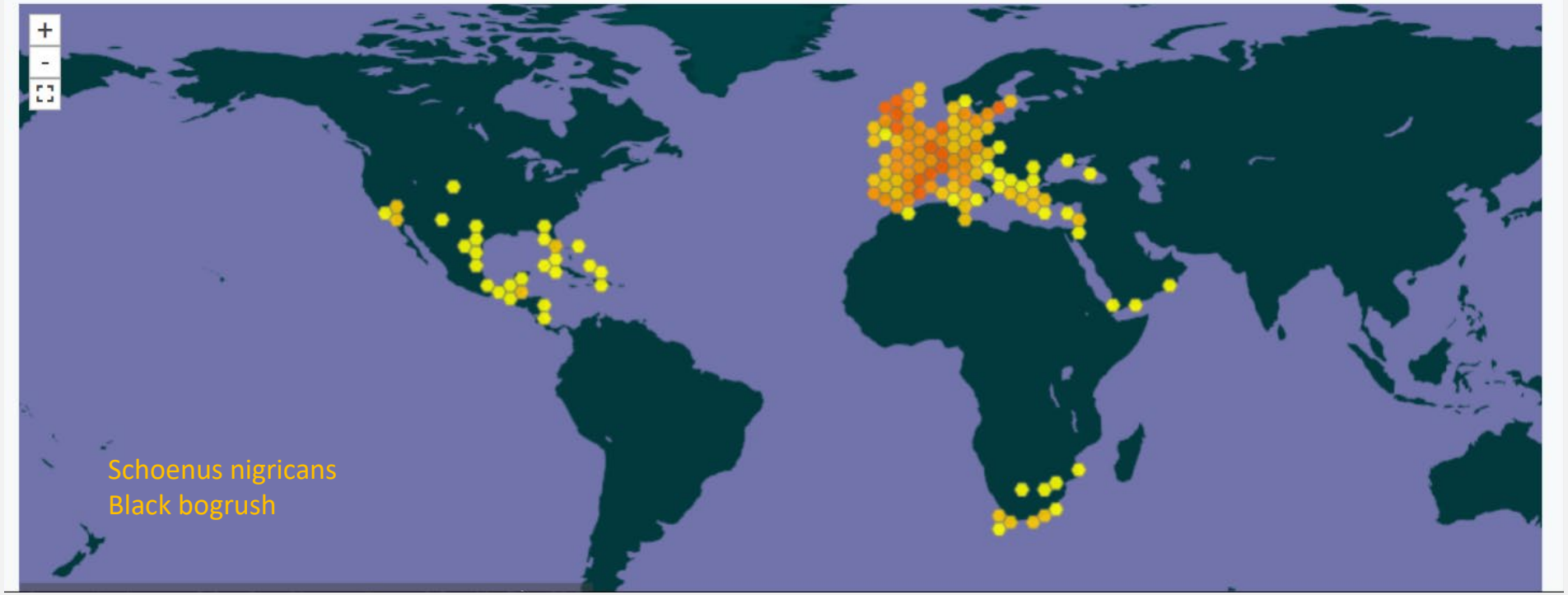
South Florida and Florida Endemics,
>110 taxa in South Florida

1,311 OCCURRENCE RECORDS WITH IMAGES





22,294 GEOREFERENCED RECORDS



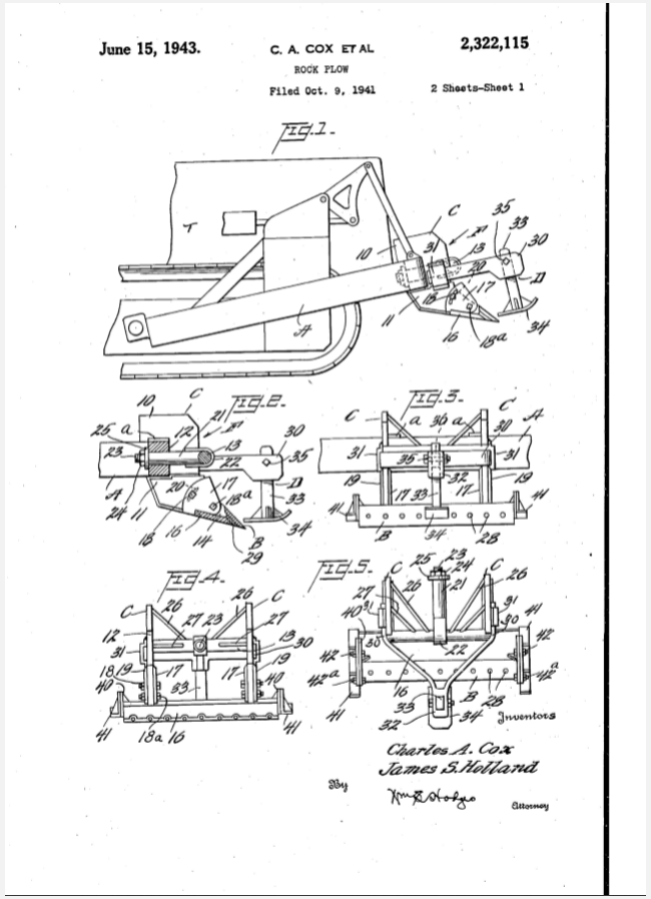

Local Biodiversity Matters
©Shirley Denton

Plant Biodiversity is Key to Animal Biodiversity (and visa versa)

>50% of region in conservation; United Nations Convention on Biological Diversity (CBD) 2020 Protected Areas Target = 17%. So everything should be great.

Pine Rockland Loss

Large Scale Clearing



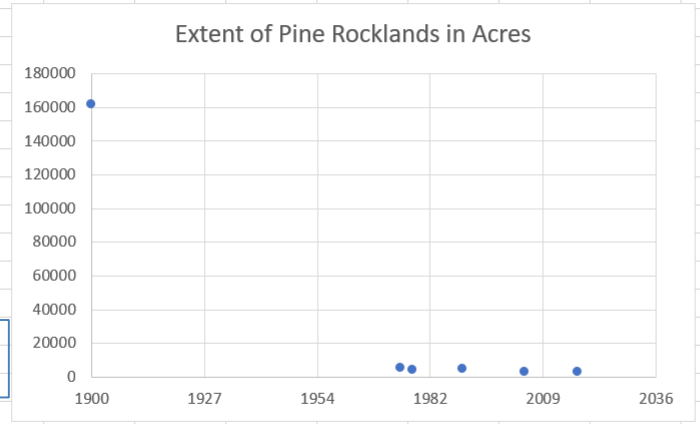
Coral Gables, 1922. https://www.floridamemory.com

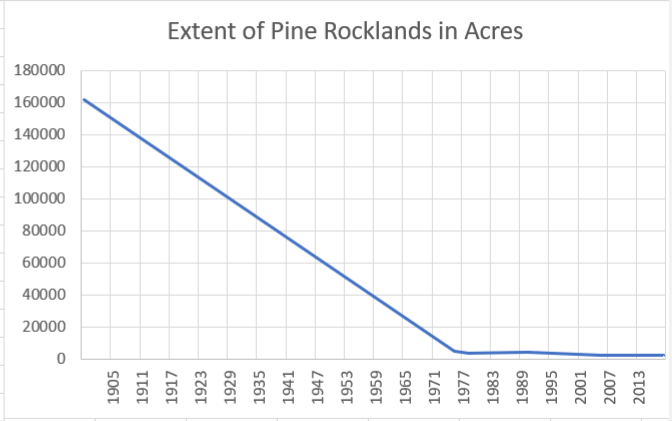
Extent of Pine Rocklands outside of Everglades National Park
From Loope et al. (1979; NPS) and subsequent

Raw data points

Date	Acres	
1900	161660	NPS
1975	5268	Shaw
1978	3977	Daugherty
1990	4400	DERM
2005	2950	IRC
2018	3017	DERM

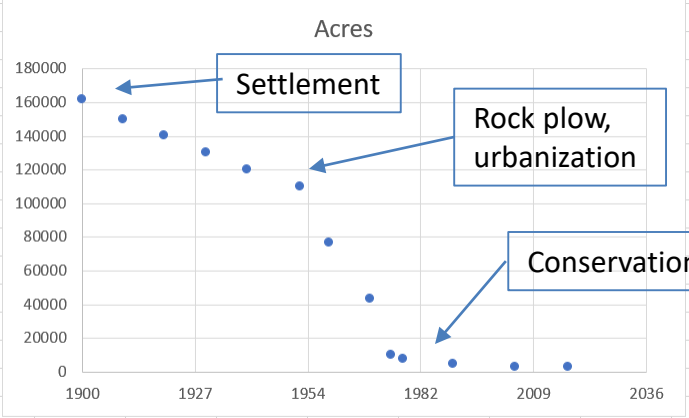
<2% remaining

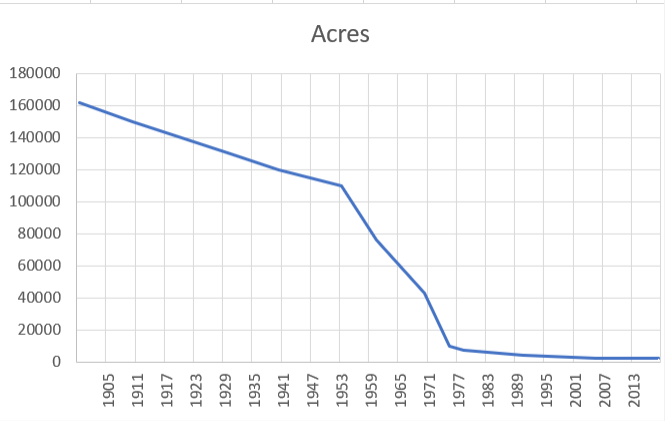




Fuzzy estimates of actual impact

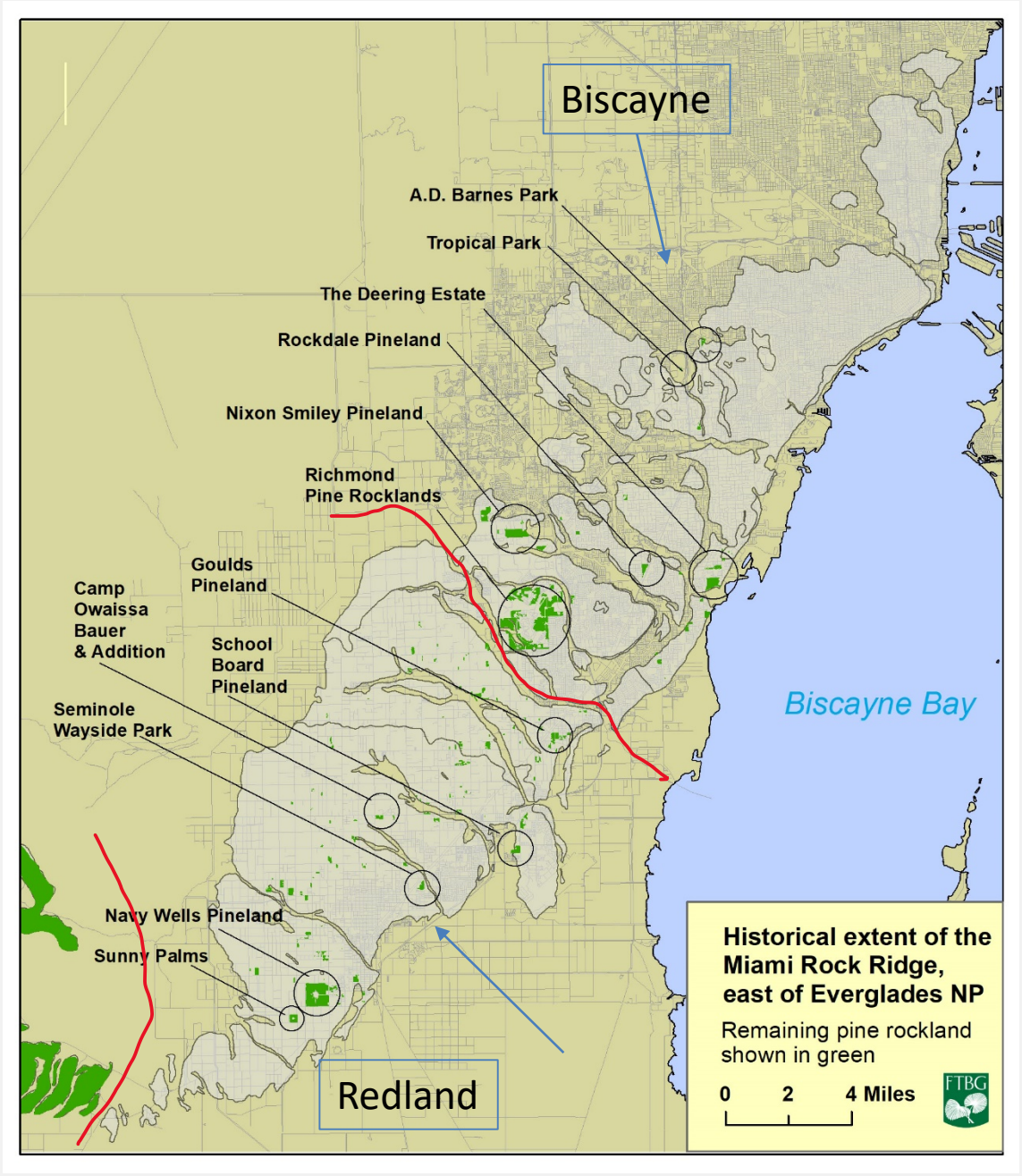
Date	Acres
1900	161660
1910	150000
1920	140000
1930	130000
1940	120000
1953	110000
1960	76667
1970	43334
1975	10000
1978	7500
1990	4400
2005	2950
2018	3017





Gann 2018, unpublished

Network of Public and Private Conservation Areas



Adapted from FTBG

Long Pine Key

Miami Rock Ridge Pinelands

(Gann 2018 unpublished)

Vascular Plants

Estimated native taxa – 420

Unique Taxa

Long Pine Key – 4
Redland and Biscayne - 119
Redland – 5
Biscayne – 52

S FL Endemics*

In Pine Rocklands – 28
On MRR only – 11
Outside LPK only - 7
Redland only – 2
Biscayne only – 2

Miami-Dade County restored overgrown pine rockland at Larry and Penny Thompson Park. Patrick Farrell - Miami Herald Staff

OP-ED

Miami-Dade Commission should not betray our environmental legacy by destroying pine rocklands

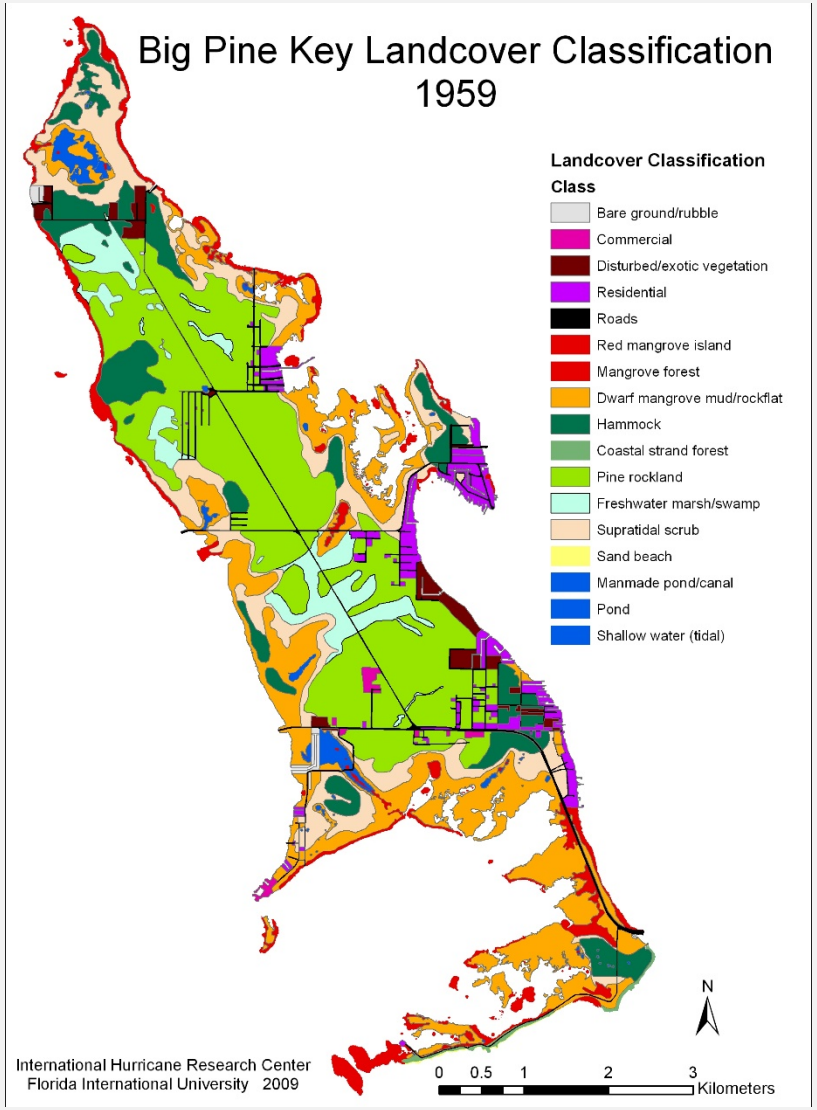
BY JAESON CLAYBORN
jclay010@fiu.edu

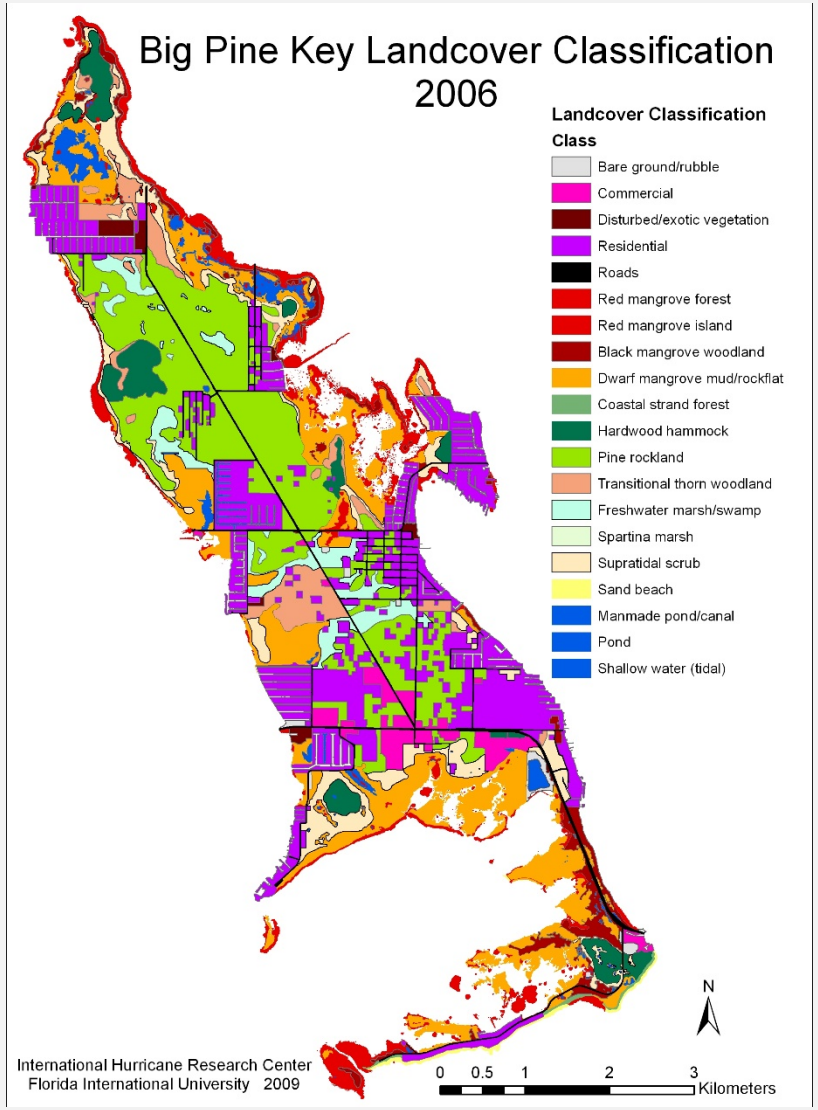
ENVIRONMENT

Miami Wilds water park lease gets green light from Miami-Dade county commissioners

Continuing Issues: Pine Rockland Loss and Community Response

Losses on Big Pine Key



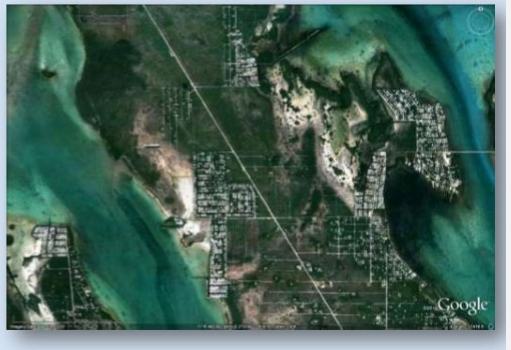


From Zhang K, Ross M, Ogurcak D, Houle P. 2010. Lower Florida Keys Digital Terrain Model and Vegetation Analysis for The National Key Deer Refuge. U.S. Fish and Wildlife Service National Key Deer Refuge, Big Pine Key, FL.

Pine Rocklands in the Florida Keys

Threats to pine rocklands

- Development
- Improper fire regime
- Exotic species
- Sea level rise

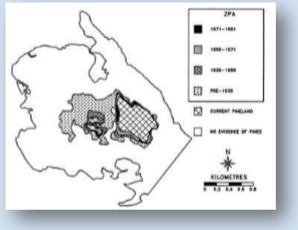


Jim Snyder
USGS

SLR impacts on pine rockland

- Taylor Alexander (1976)
  - Pine stumps in mangroves on Key Largo
- Ross, O'Brien, and Sternberg (1994)
  - Shrinking pineland on Sugarloaf Key
  - <15 cm SLR resulted in loss of 35% of pineland

46 ha in 1935
30 ha in 1991



Jim Snyder
USGS

Climatic Change
July 2011, 107:169 | Cite as

Hurricane effects on subtropical pine rocklands of the Florida Keys

Authors | Authors and affiliations

Sonali Saha, Keith Bradley, Michael S. Ross, Phillip Hughes, Thomas Wilmers, Pablo L. Ruiz, Chris Bergh

Article
First Online: 10 May 2011

1 Shares | 1.2k Downloads | 8 Citations

Abstract

We investigate the effects of Hurricane Wilma's storm surge (23–24 October 2005) on the dominant tree *Pinus elliottii* var *densa* (South Florida slash pine) and rare plant species in

Management Challenges

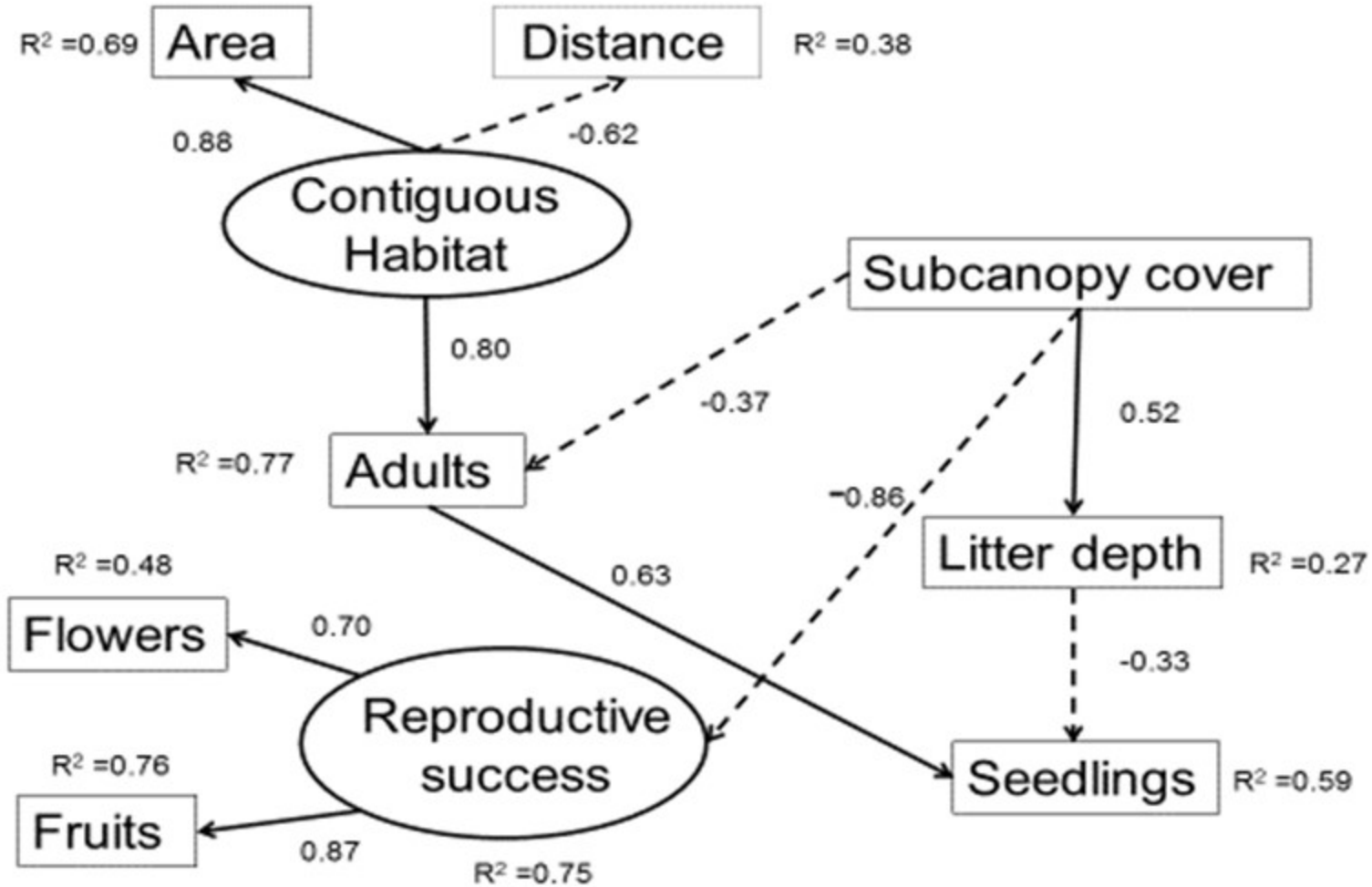
Prescribed Fire

There are never enough resources or support
so we are continuously losing ground

Native Hardwoods and Palms

Slash Pine Density and Cover

Structural Equation Modeling shows it!



Barrios Roque, Koptur, and Sah 2016
The effects of habitat fragmentation on the reproduction and abundance of *Angadenia berteroi*.
Journal of Plant Ecology
Pp. 1–9 doi:10.1093/jpe/rtw024

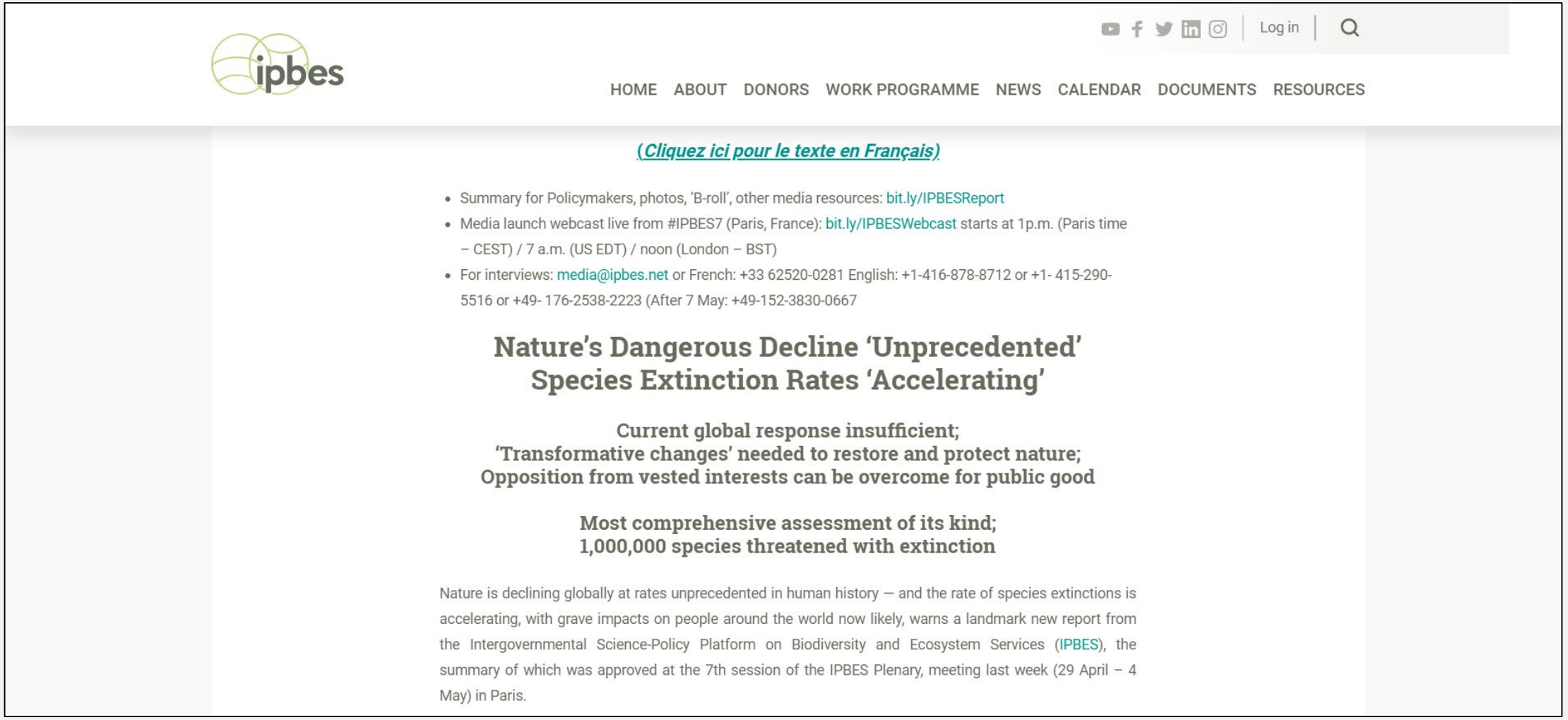
Courtesy of Suzanne Koptur, 2020

Expanding Exotics and Native Vines

Species Loss

Transformative Change

Globally, more than 1 million species threatened with extinction



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(Cliquez ici pour le texte en Français)

- Summary for Policymakers, photos, 'B-roll', other media resources: bit.ly/IPBESReport
- Media launch webcast live from #IPBES7 (Paris, France): bit.ly/IPBESWebcast starts at 1p.m. (Paris time – CEST) / 7 a.m. (US EDT) / noon (London – BST)
- For interviews: media@ipbes.net or French: +33 62520-0281 English: +1-416-878-8712 or +1- 415-290-5516 or +49- 176-2538-2223 (After 7 May: +49-152-3830-0667

Nature's Dangerous Decline 'Unprecedented' Species Extinction Rates 'Accelerating'

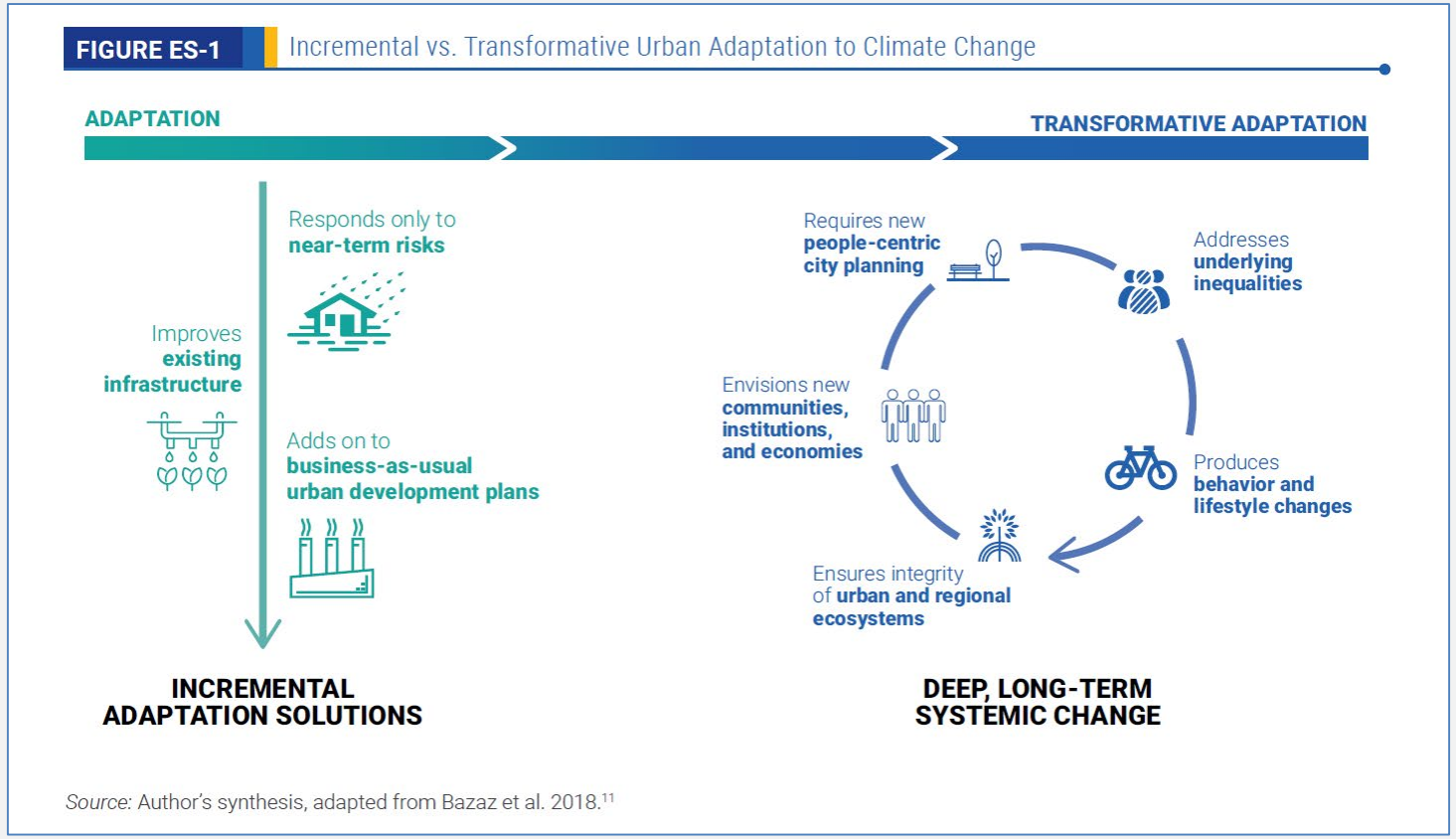
Current global response insufficient; 'Transformative changes' needed to restore and protect nature; Opposition from vested interests can be overcome for public good

Most comprehensive assessment of its kind; 1,000,000 species threatened with extinction

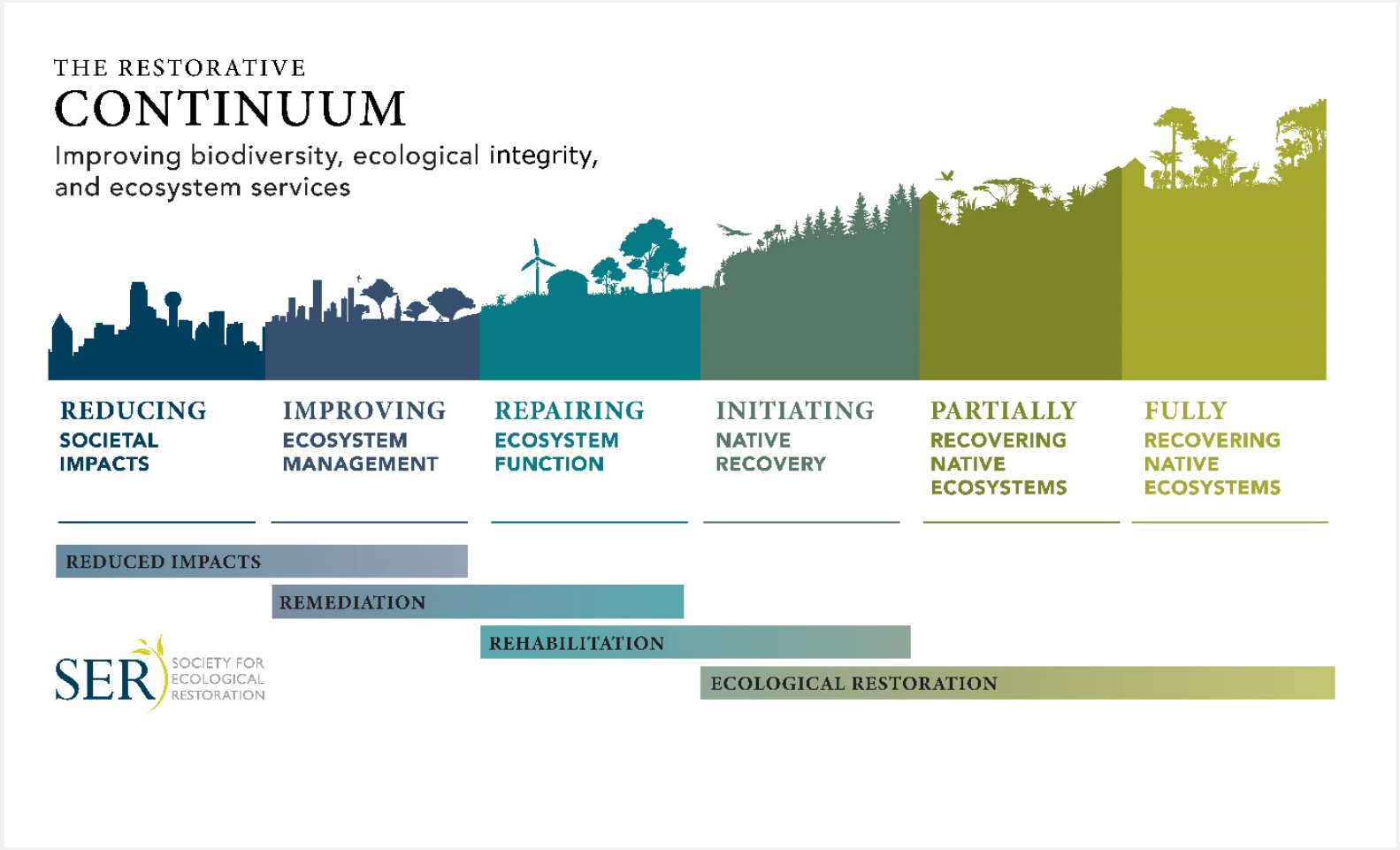
Nature is declining globally at rates unprecedented in human history — and the rate of species extinctions is accelerating, with grave impacts on people around the world now likely, warns a landmark new report from the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), the summary of which was approved at the 7th session of the IPBES Plenary, meeting last week (29 April – 4 May) in Paris.

May 2019

Communicating Transformative Change



From: Chu, E., A. Brown, K. Michael, J. Du, S. Lwasa, and A. Mahendra. 2019. "Unlocking the Potential for Transformative Climate Adaptation in Cities." Background Paper prepared for the Global Commission on Adaptation, Washington, DC and Rotterdam. Available online at www.gca.org.



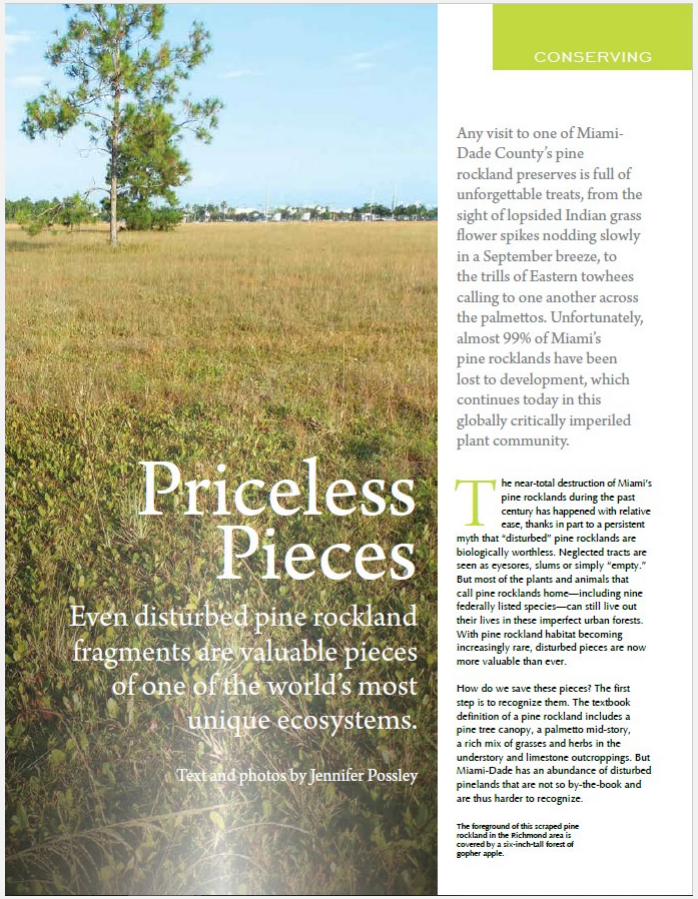
All restorative activities matter, no matter how small. But some activities many not be restorative at all (e.g., some mitigation, afforestation of native savanna).

We Must Aspire to More!

Stipulation –
We can’t fix everything
(e.g., sea level rise).

1) Re-Think what is a Pine Rockland

Jennifer Possley 2015



CONSERVING

Priceless Pieces

Even disturbed pine rockland fragments are valuable pieces of one of the world's most unique ecosystems.

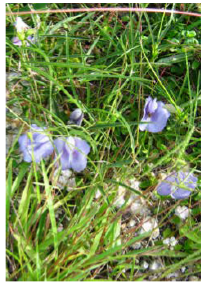
Text and photos by Jennifer Possley

Any visit to one of Miami-Dade County's pine rockland preserves is full of unforgettable treats, from the sight of lopsided Indian grass flower spikes nodding slowly in a September breeze, to the trills of Eastern towhees calling to one another across the palmettos. Unfortunately, almost 99% of Miami's pine rocklands have been lost to development, which continues today in this globally critically imperiled plant community.

The near-total destruction of Miami's pine rocklands during the past century has happened with relative ease, thanks in part to a persistent myth that "disturbed" pine rocklands are biologically worthless. Neglected tracts are seen as eyesores, slums or simply "empty." But most of the plants and animals that call pine rocklands home—including nine federally listed species—can still live out their lives in these imperfect urban forests. With pine rockland habitat becoming increasingly rare, disturbed pieces are now more valuable than ever.

How do we save these pieces? The first step is to recognize them. The textbook definition of a pine rockland includes a pine tree canopy, a palmetto mid-story, a rich mix of grasses and herbs in the understory and limestone outcroppings. But Miami-Dade has an abundance of disturbed pinelands that are not so by-the-book and are thus harder to recognize.

The foreground of this scraped pine rockland in the Richmond area is covered by a six-inch-tall forest of gopher apple.



Today, with frequently burned pinelands so rare, these long-ago scraped pinelands can be important refuges for flora and fauna that require sunny, open habitat.

TOP
Native pine rockland species can persist for decades in disturbed pine rocklands. At least four native species are pictured here in this scraped area underneath power lines: butterfly pea, mouse pineapple, blue paspalum and three-seeded mercury.
Photo by Jane Woodhouse.

ABOVE
This fire-suppressed pine rockland is gaining shrubby hardwoods at the expense of understory grasses and herbs.

There are two major types of disturbed pine rocklands. First are **scraped** areas, where heavy equipment was used decades ago to scrape away vegetation and jagged limestone. These often look like old fields and can be found under power lines, alongside railroad tracks or canals and in vacant lots. Many of these scraped areas likely will never again support saw palmetto, pine rockland's most common shrub species. However, because pine rocklands hold most of their plant diversity in the understory—more than 300 species—the loss of one species is not catastrophic. In fact, most of the diverse plants that make pine rocklands special are still present in scraped pinelands. This includes some of the rarest plants, such as deltoid spurge and Carter's sand flax. Today, with frequently burned pinelands so rare, these long-ago scraped pinelands can be important refuges for flora and fauna that require sunny, open habitat.

The second type of disturbed pine rocklands are those that are **fire-suppressed**, meaning that fires have not been allowed to burn in the area for years. Pine rocklands are dependent on, and thrive with, fire—so without fire every three to seven years, a parcel can begin to transition to a hardwood-dominated forest or to a stand of exotic plants such as Burma reed or Brazilian pepper. But fire-suppressed parcels are far from doomed. Like scraped pinelands, they also provide critical habitat for native plants and animals. Some understory plant species can persist for decades without fire (though they will rarely reproduce). Even dense weeds can be conquered, and the combination of chainsaws and fire can release the soil seed bank and diverse herbaceous layer from the smothering pressure of overgrown hardwoods. When partners like Miami-Dade County's Natural Areas Management Division, the Florida Forest Service or The Institute for Regional Conservation work together to remove exotic vegetation and reintroduce fire to a preserve, a pine rockland can be reborn, seemingly overnight, through a process known as ecological restoration. In short, fire-suppressed pine rocklands can almost always make a complete recovery.

Pine Rocklands Are Resilient

Cleared, c. 1970 or earlier

2) Protect All Intact and Restorable Pine Rocklands

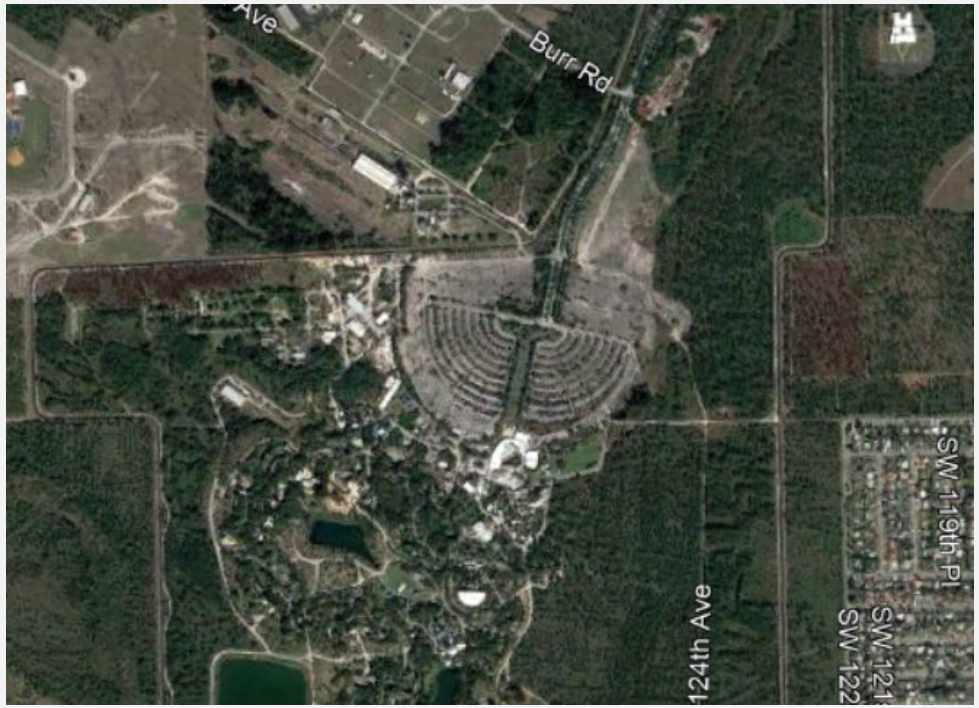
Miami-Dade County restored overgrown pine rockland at Larry and Penny Thompson Park. Patrick Farrell - Miami Herald Staff

OP-ED

Miami-Dade Commission should not betray our environmental legacy by destroying pine rocklands

BY JAESON CLAYBORN
jclay010@fiu.edu

3) Don’t Fragment, Defragment



ENVIRONMENT

Miami Wilds water park lease gets green light from Miami-Dade county commissioners

Parking Lot at Future Miami Wilds

“**From a policy perspective, we cannot assume it’s ‘already gone’**,” said Botanist George Gann, who has worked on projects to restore pine rockland habitats and serves as president and chair of the Board of The Institute for Regional Conservation. “**I look at it as pine rockland with asphalt over it.**” Miami Herald, 2020

4) Burn Wherever and Whenever Possible

Pine Ridge Sanctuary
Redland, Florida

Cutler Bay News

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Cutler Bay News
March 27 ·

A controlled burn is taking place at the Ned Glenn Preserve in Whispering Pines.

Town of Cutler Bay
March 27 ·

Like Page

Don't be alarmed if you notice fire and smoke at the Ned Glenn Nature Preserve next to Whispering Pines Park.

This is a controlled burning where both Miami-Dade Fire Rescue & Miami-Dade County

Cutler Bay News, Events and Opinions

Local Independently run page by Cutler Bay residents Barbara and Tom Condon, not affiliated with Com...

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Page created - September 5, 2010

Page manager location: United States

Related Pages

5) Support both Public and Private Conservation Efforts

IRC's Pine Rockland Initiative
Private Pine Rockland Owners' Summit, October 2018

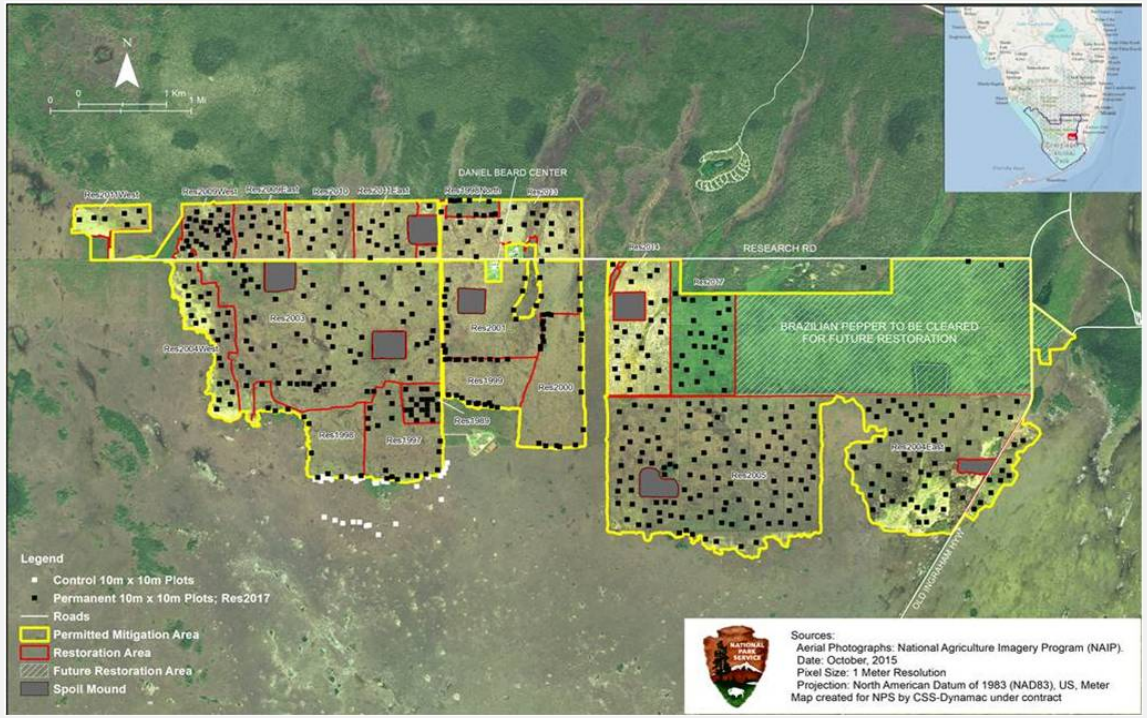
6) Document Potential for Natural Recovery

Figure 91. Bruce Holst of Marie Selby Botanical Gardens and EVER Botanist Jimi Sadle showing length of *Sporobolus clandestinus* inflorescence near Osteen Hammock in EVER, 2012.

153

Long Pine Key, Everglades National Park

Former Scraped Site, SOCSOUTH



Hole-in-the-Donut
Everglades National Park

7) Identify All Restoration Opportunities

Restoration Opportunities

refers to the restoration of both **the extent** (e.g. expanding the footprint) and **the quality** (e.g., integrity) of pine rocklands, including degraded or "transitional" pinelands not currently measured.

What do we really have?

What do we really want?

CHANGING THE CONVERSATION

Is this Destroyed or a Restoration Opportunity?

Florida City, 2018

Opportunities: Scraped Sites

Richmond Pine Rocklands

National Key Deer Refuge

Opportunities: Highly Fire-suppressed or “Transitional” Pinelands

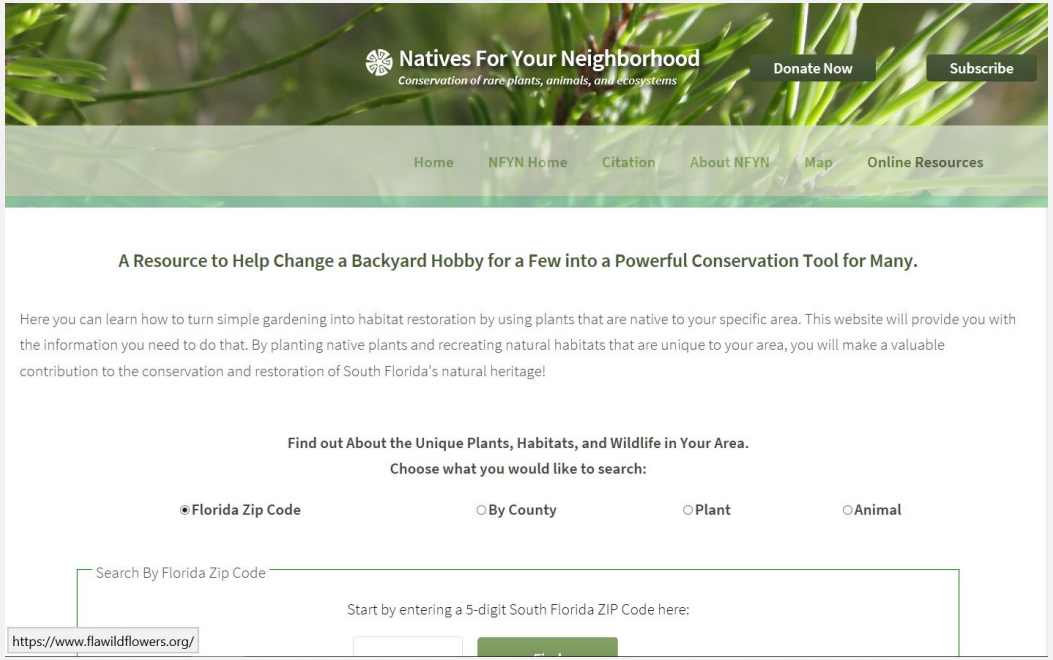
National Key Deer Refuge

Florida City Pineland

Opportunities: Other Highly Degraded Sites

North Edge, Sunny Palms

8) Support Restoration in the Urban Zone



9) Don’t be Afraid to Try New Tools and Techniques

Skid Steer with Forestry Mulcher

Billy Goat Brush Cutter

Galactia smallii response to mechanical hardwood reduction

Galactia smallii, *Linum arenicola*, *Croton linearis* ~6 weeks after conservation mowing

Post-wildfire Hardwood Reduction, National Key Deer Refuge, Big Pine Key

Saw palmetto reduction at Pine Shore

Palm removal at AD Barnes, December 2019

Courtesy Jennifer Possley, 2020

Pine thinning at Florida City Pineland

Burma reed control

- Glyphosate (Roundup) very effective at 50% “cut-stem”
- Graminicides Fluazifop and Sethoxydim also very effective at lower rates

Courtesy Jennifer Possley, 2020

Direct Seeding Trials: Nixon Smiley Pineland Preserve

Figure 1. 10 X 10 m plots at different stages during the Nixon Smiley restoration study. a) Applying seed treatments within a control plot July 14, 2010. b) NAM staff removing dead vegetation from an herbicide plot July 14, 2010, 16 days following the application of the herbicide treatment. c) A plot following a mechanical scrape on June 10, 2010. d) A control plot Feb. 4, 2011. e) An herbicide plot Feb. 4, 2011. f) A scrape plot Feb. 4, 2011. g) Control plot on July 17, 2012 showing tall Napier grass. h) An herbicide plot July 13, 2012 showing heavy West Indian dropseed and woody species cover. i) A scrape plot April 24, 2012.

From Krueger, unpublished

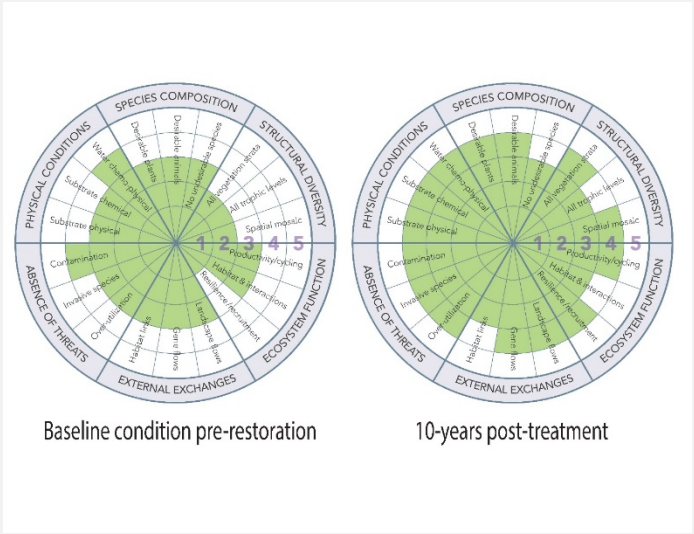
Direct Seeding Trials + Modified Applied Nucleation Concepts
SOCSOUTH

Spring 2019

Spring 2020

Modified Applied Nucleation Planting
SOCSOUTH

10) Develop Measurable Targets and Document Success!



From Gann et al. 2019.
International Principles and Standards for the Practice of Ecological Restoration.

SOCSOUTH

7-2018

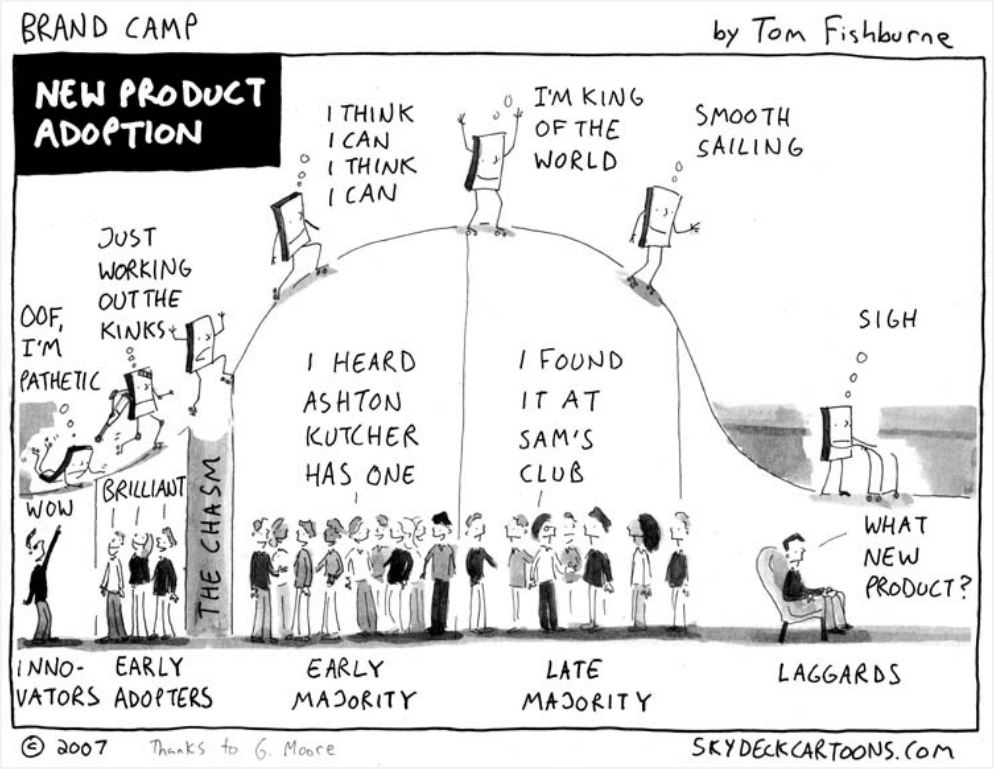
1-2019

7-2019

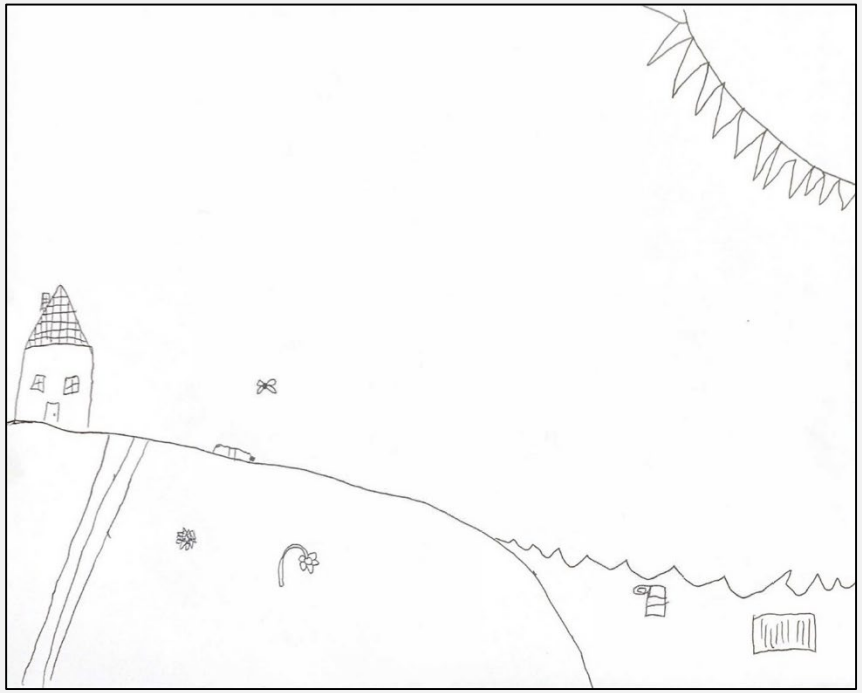
1-2020

Closing Thoughts

Play the Long Game



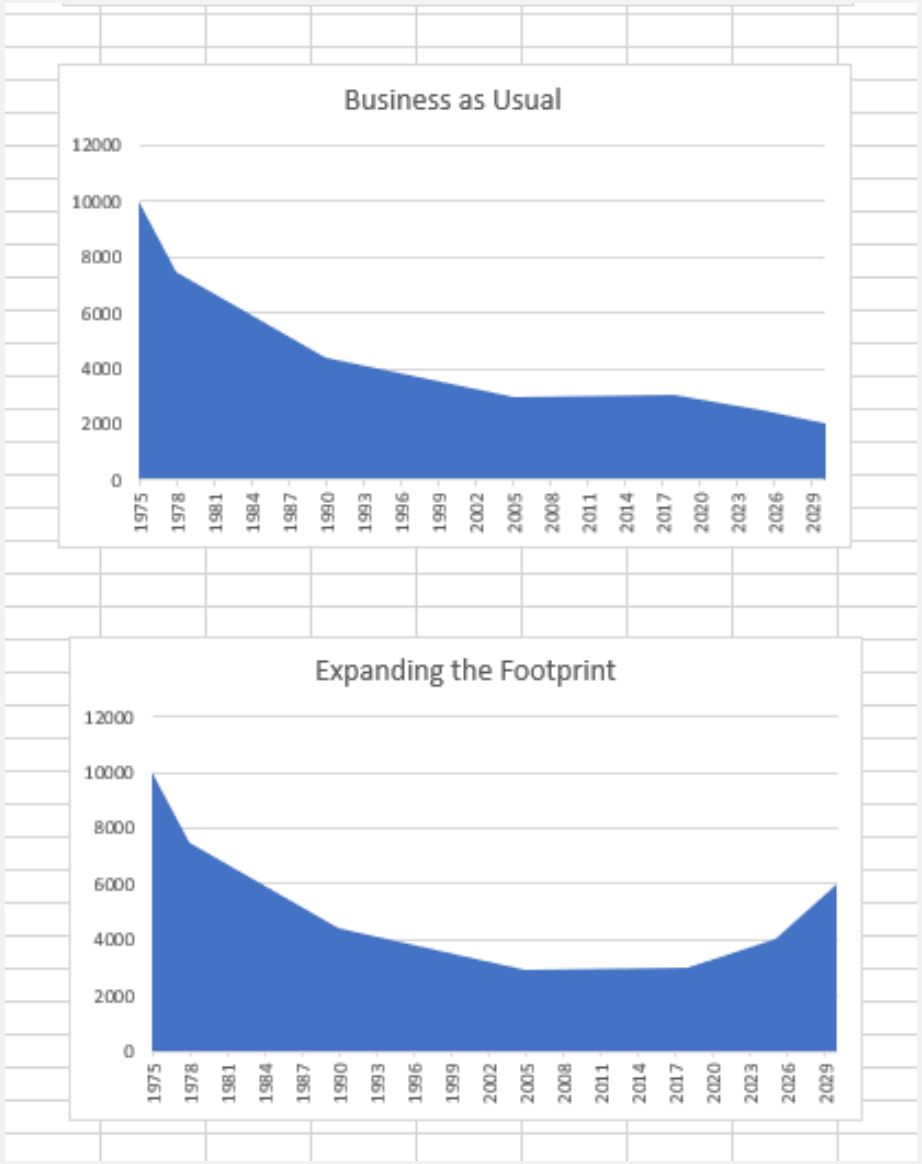
Degraded Dune



Banyan Creek Elementary Kindness Matters Club
February 2020

Restored Dunes

The Choice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THANK YOU!

Please Consider Supporting IRC and The Pine Rockland Initiative