



Butterflies, Botany and Battlefields



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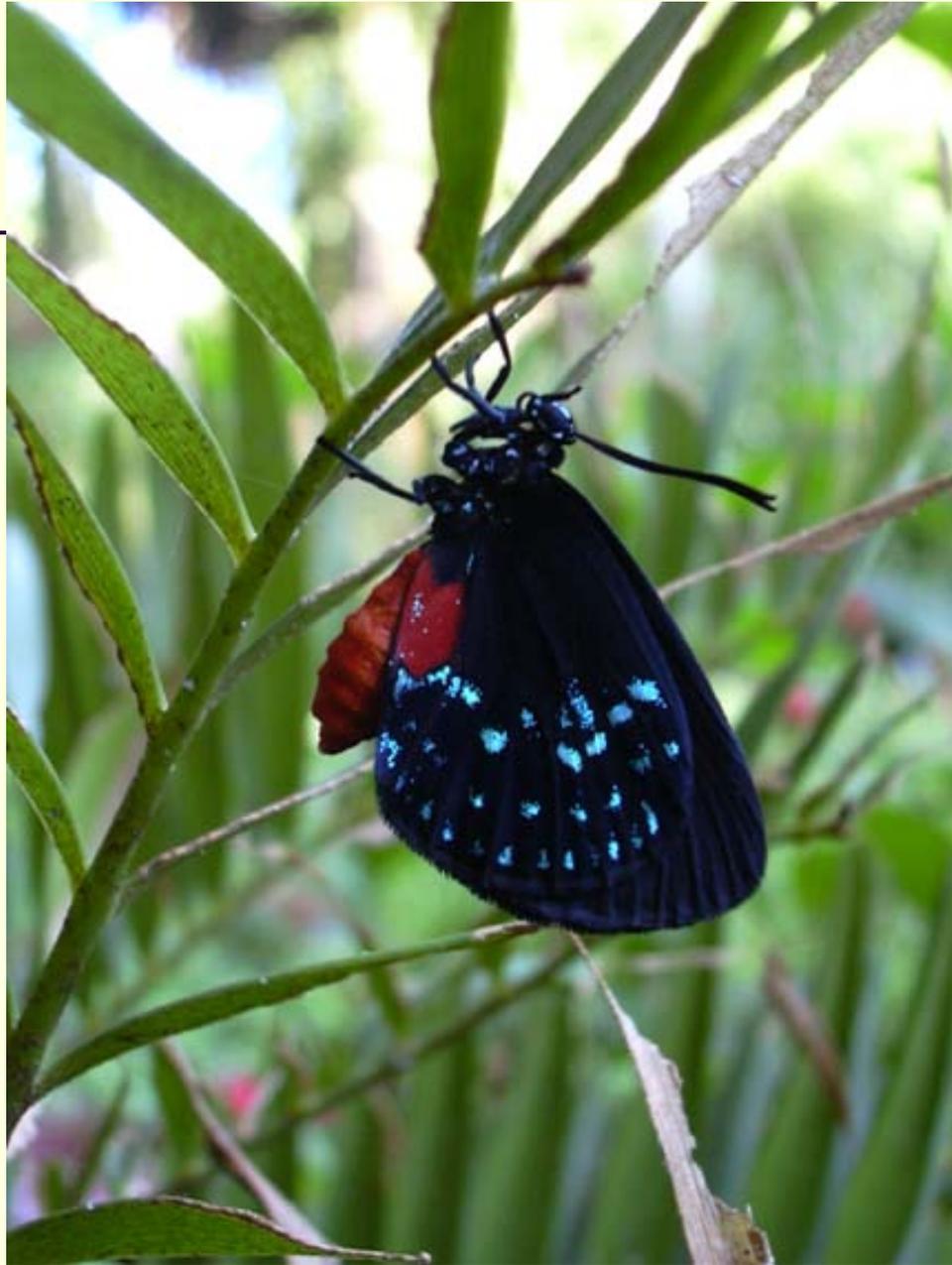


January 2006



**When we try to pick out
anything by itself,
we find it hitched to
everything in the Universe.**

-John Muir



Eumaeus atala florida Roeber

Insecta: Lepidoptera: Lycaenidae:

■ Hairstreak—one of few without tail on hind wing

- Wingspan 1 ¼” to 2”
- Abdomen bright red-orange: aposematic coloration
- Wings blue-black

- Three lines iridescent blue spots underside of forewing,
- Bright red-orange spot on the anal edge of the hind wing



Males have green iridescence
on upper side of wing

Females have blue iridescence
on upper side of wing



Life Cycle

- Eggs are laid in clusters on the larval host plant, *Zamia* species, called “coontie”
- New growth is chosen if possible
- Eggs have tiny red-orange scales from female’s abdomen deposited on top



Life Cycle cont.

- Larvae emerge pale green (Rawson, 1961)
- Change to bright red-orange with two dorsal rows of bright lemon yellow spots—aposematic coloration
 - Gregarious: feed in the open
 - Several instars
 - Larvae may be cannibalistic (Franz: Baggett, 1982)



Life Cycle cont.

- Pupate 4-5 days after last instar, often remaining in clusters
- Larvae often migrate away from coontie to pupate



Life Cycle cont.

- Adults emerge between 10-15 days



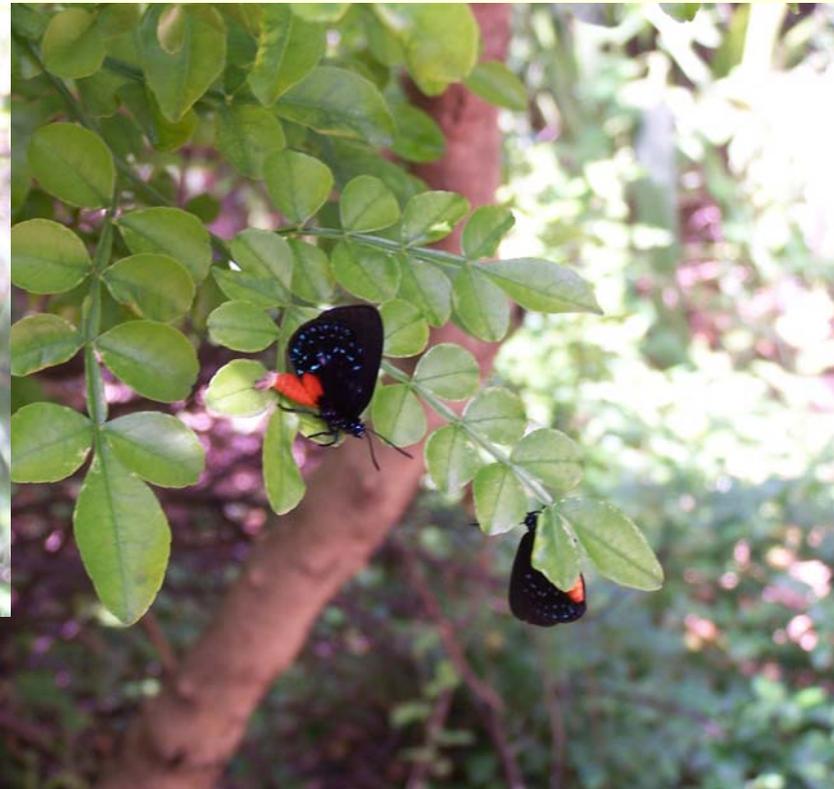
Life Cycle cont.

- Slow flight—unlike most hairstreaks
- Very approachable
- Males wait at nectar sources for females



Life Cycle cont.

- Males evert scent brushes to attract females



Life Cycle cont.





Predators/Oppportunists

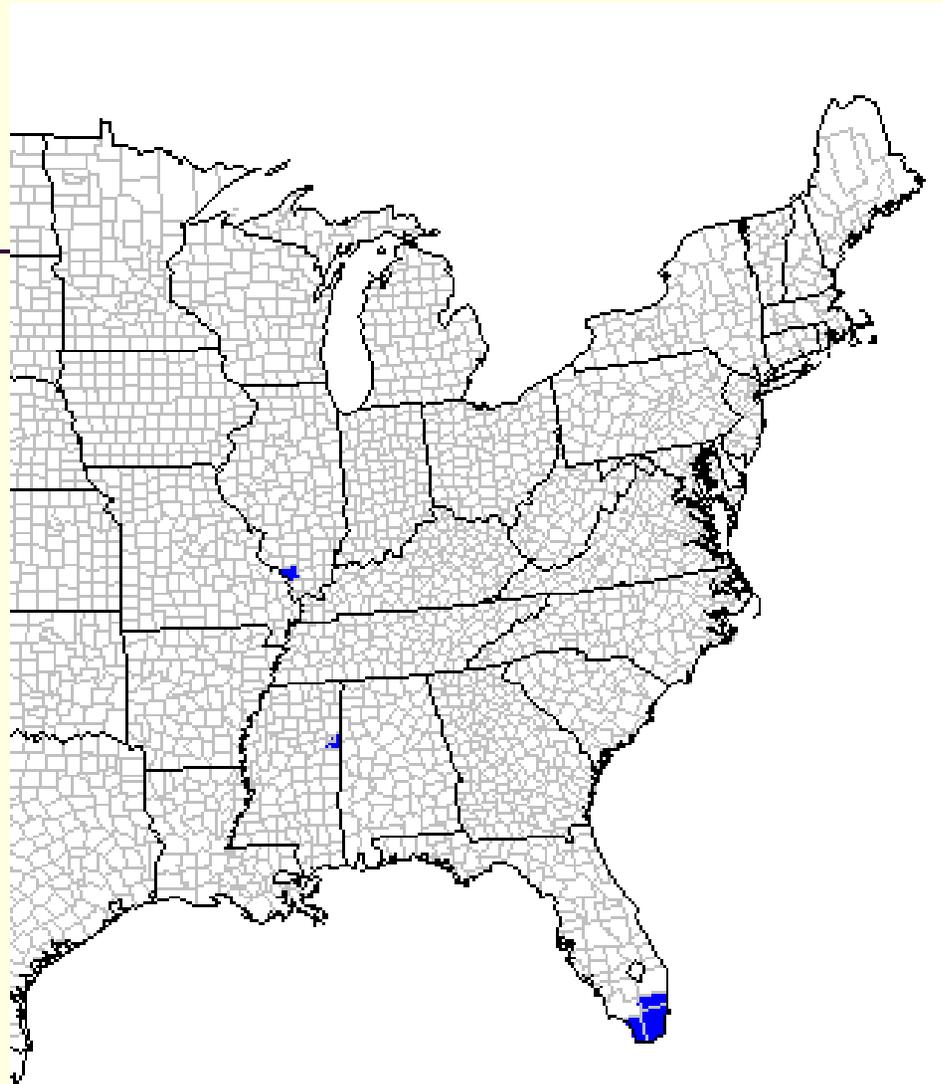
- *Camonotos abdominalis* var. *floridana* (native) (Smith, 2002)
- *C. planatos* (non-native) (Koi, 2005)
- *Pseudomyrmex mexicanus* (native) (Smith, 2000)
- *Wasmannia auropunctata* (native) (Smith 2000)
- *Monomorium floricola* (non-native) (Smith, 2002)
- Assassin Bugs (Reduviidae family) (Smith, 2000)

- *Pheidole megacephala* (non-native) (Koi, 2005)

Habitat and Range

- Pine Barrens, drier oak hammocks, domestic gardens, and parks
- Currently scattered populations in Monroe, Miami-Dade, Broward, Palm Beach; reports in Brevard, Indian River and St. Lucie Counties
- Historically as above, especially Miami-Dade and Broward Counties, Osceola, Florida Keys





 **Confirmed
Records**

 **Unconfirmed or
Dubious Records**

 **Data Not
Yet Available**

Wild Nectar foods



- Shepherd's needle (*Bidens alba*)
- Wild coffee (*Psychotria nervosa*)
- Saw palmetto (*Serenoa repens*)
- Beauty berry (*Callicarpa americana*)
- Sabal palmetto (*Sabal palmetto*)
- Lantana (*Lantana*)

Wild Nectar foods cont.

- White Crownbeard* (*Verbesina virginica*)
- Black Bead* (*Pithocellobium guadelupense*)
- Yellowtops Aster* (*Flaveria linearis*)
- Holly* (*Ilex cassine*)
- Milkweed* (*Asclepius curassavica*)
- Pineland Purple* (*Carphephorus odoratissimus*)



Conservation Status

- Identified as **rare and vulnerable (S3)** by the State of Florida (NatureServe, 2005)
- Listed under the Comprehensive Wildlife Conservation Strategy as one of over 900 species in **greatest need of conservation** (Florida, 2005)
- Considered a **species of management concern** in the South Florida Multi-Species Recovery Plan (US Fish & Wildlife, 1999)
- Classified by the Florida Commission of Rare and Endangered Plants and Animals as a **species of special concern** (Deyrup, 1994)
- Categorized as **vulnerable** (Red List) by the International Union for Conservation of Nature and Natural Resources (Emmel, 1993)
- Not listed by United States Federal Government

Conservation Records cont.

- 1875: Abundant (Scudder)
- 1888: Abundant (Schwarz)
- 1910 Abundant (Healy)
- 1917 Abundant (Grossbeck)
- 1930's-1950's Extinct?



Conservation Records cont.

- 1959-1961 Small populations died out
- 1975 US Office of Endangered Species reviewed status but did not act
- 1979 Virginia Key population discovered (Hammer)
- 2005: Population is locally abundant but rare
 - Populations exist in isolated pockets

Re-introduction sporadic success

- Documented range: limited areas suitable
- It is a **TROPICAL** butterfly, with little tolerance for cold
- Parks and individuals plant *Zamia* spp. as ornamentals
 - Hurricanes/floods/cold fronts
 - Pesticide use
 - Mosquito control by county
 - Habitat destruction
 - Larval plant food decimated by larvae



Zamia spp. Family: Cycadaceae

- Approximately 50 other *Zamia* species: Mexico, Caribbean, Central and South America.
- Only cycad native to United States
- Mesozoic cycad
- Genetic studies being done
- Contains cycasins, azoxyglycosides, & macrozamin poisons

(Yagi, 2004;Schneider, 2002)



Zamia spp. cont.

- ***Zamia floridana*** —
coontie (conti,
compte, comfort
root, arrowroot,
wild-sago,
conti-hateka)



Life Cycle of *Zamia cycads*

- Dioecious—male and female plants develop cones
- Cones emerge in August
- Cones ripen and deteriorate



Life Cycle cont.

- *Z. floridana* may be large in an optimal environment

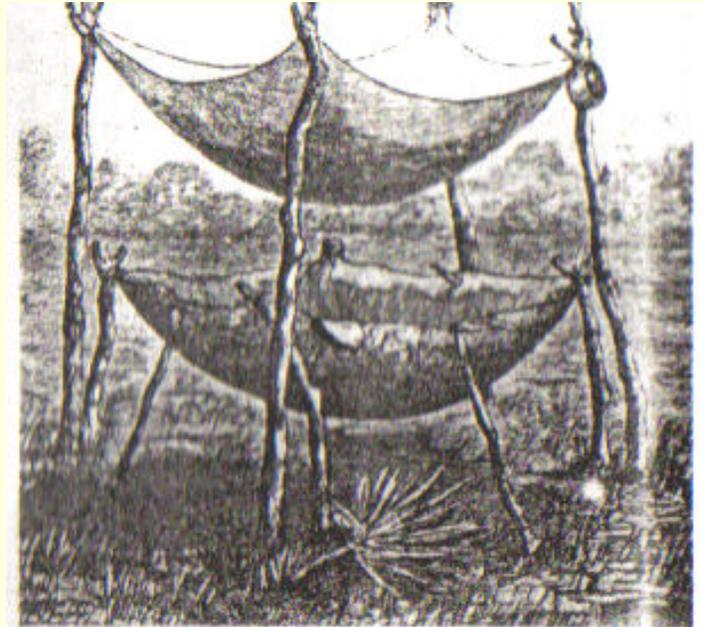
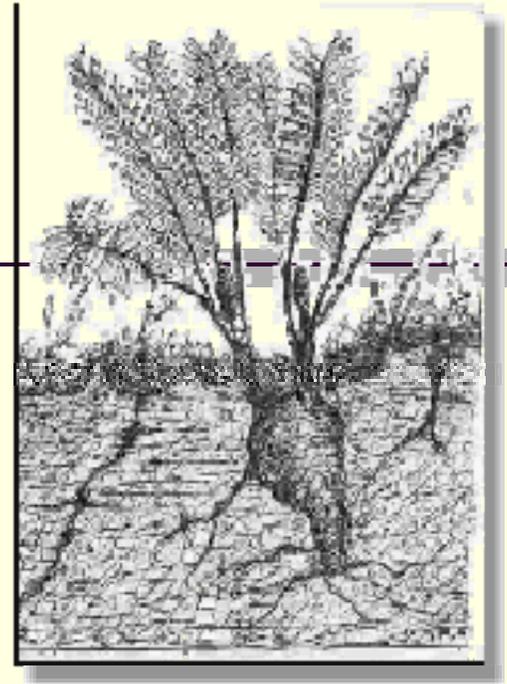


Habitat and Range

- Well-drained sand or soils, pine barrens, coral outcrops near fresh or brackish waters, oak hammocks
- Full sun to partial shade
- Found historically from South Georgia to Florida Keys (Schwarz, 1888)
 - Considered extirpated from Georgia (NatureServe, 2005)

Human Uses

- Rootstock used as a foodstuff by natives
- First natives in Florida and later Seminoles, Europeans and Americans



Time Line cont.

- 1818-1855: Indian-American wars
- 1819: Spain sells Florida to America.
- 1821: Florida becomes a US territory
- 1824: William Cooley arrives at New River
 - Grows corn, sugar, pumpkin, potatoes, lime, coconut, oranges, bananas, etc.
 - Develops a wrecking business



SHIPWRECKS

William Cooley cont.

- Begins first industry: Coontie harvesting and processing
- Invented a water-powered mill:

“The water was pouring from the Everglades through a narrow channel and running so swiftly it taxed our strength to the utmost to paddle the old canoe.” Charles Pierce

William Cooley cont.

- Shipped flour to the Keys, Georgia, North Carolina and to European markets—and the US Army
- Processed **450 pounds flour per day** for **twelve years!** (500 lbs root = 100 lbs flour)
- Used to make biscuits, wafers and bread
 - “Arrowroot”
 - Mold and mildew resistant

New River/Fort Lauderdale

- 1838: New River becomes first Fort Lauderdale
- “Coontie-hatchee” (coontie river)
 - **“Coontie is found in great quantities...it grows in such profusion that [the Indians] come considerable distance to procure it.” (Stroeibel)**
- US army took over processing equipment—food source for the Seminoles—and blocked inlet to the ocean

Time Line cont.

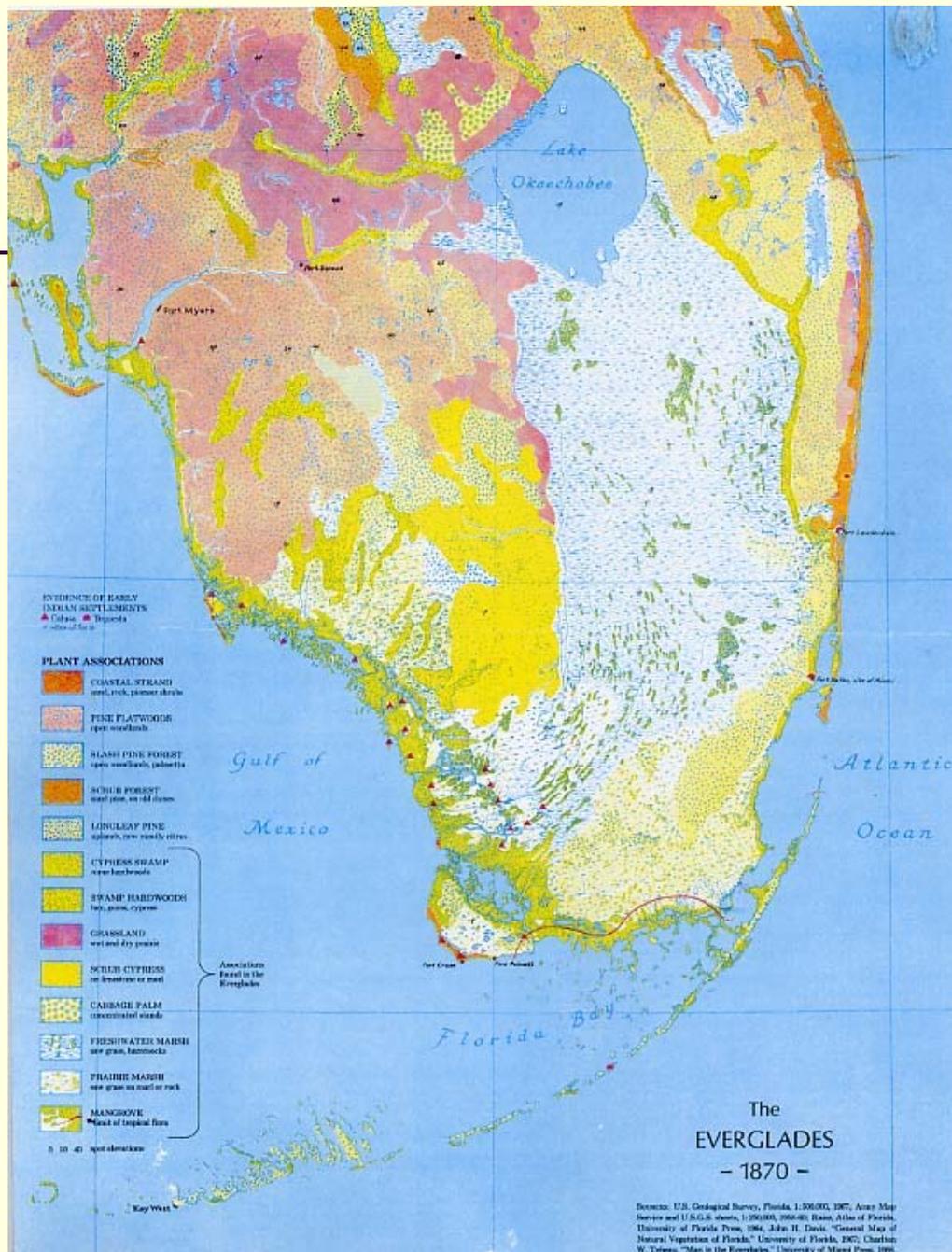
- Commercial harvesting depletes native coontie by 1920's



The A.B. Hurst starch mill operated in 1916 at what now is Northeast 103rd Street and Second Avenue.

Conservation Status

- Listed as a “**Commercially Exploited Plant**” by the Florida Committee on Rare and Endangered Biota (Coile, 2000)
- The re-establishment of the coontie plant has been largely responsible for the recovery of the atala butterfly
- Private gardens help sustain a fragmented atala population (Smith, 2000)



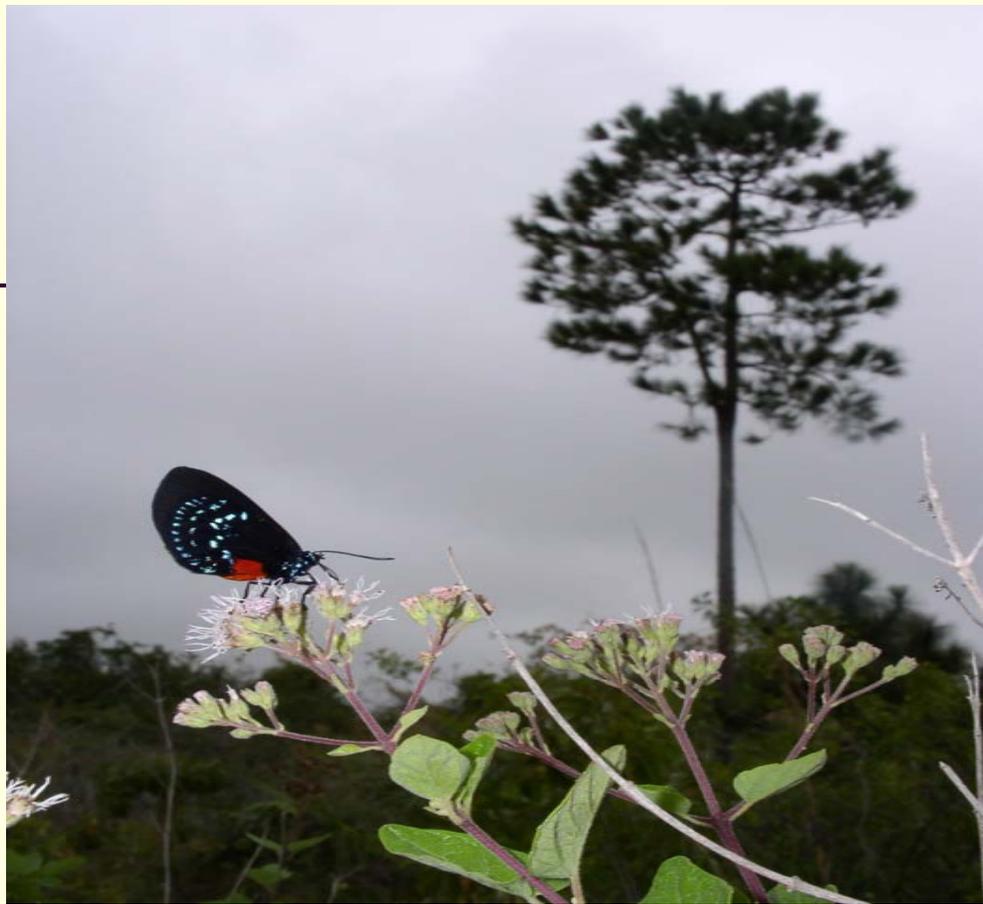




Re-introduction Projects

- Everglades National Park
- Florida State Parks
- Broward Co. Parks
- Miami-Dade Co. Parks
- City Parks
 - Fort Lauderdale
 - Hollywood
 - Wilton Manors
 - Coconut Creek
 - Boca Raton
- Florida Atlantic University, Boca Raton campus
- University of Florida, Davie & Homestead campuses





**In the realm of Nature,
there is nothing trivial, unnecessary
or without purpose.**

-Maimonides