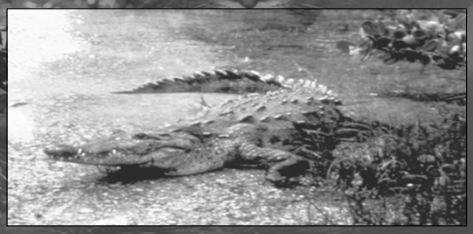
Conservation Planning



15 – Other Perspectives – Tribal, Non-Governmental Organization, and LCCs

Steve Traxler Senior Biologist
South Florida Ecological Services, U.S. Fish and Wildlife Service

Impacts of Climate Change on Terrestrial Systems in Florida

Logan Benedict - Climate Adaptation Biologist - FWRI

Steve Traxler – USFWS, Bob Glazer – FWRI, Chris Bergh – TNC, Beth Stys – FWRI, Jason Evans – Stetson University

Keys Terrestrial Adaptation Planning

Threatened and Endangered species

Threatened and Endangered Species

Mammals

- Key deer - E
- Key Largo cotton mouse - E
- Key Largo woodrat - E
- Lower Keys marsh rabbit – E
- Rice rat – E

Birds

- Roseate Tern - T

Reptiles

- American crocodile - T
- Indigo Snake - T

Invertebrates

- Miami blue butterfly - E
- Schaus swallowtail - E
- Florida leafwing - E
- Bartram's hairstreak - E
- Stock Island tree snail - T

Plants

- Semaphore cactus - E
- Big Pine partridge pea - E
- Keys tree cactus - E
- Cape Sable thoroughwort - E
- Blodgett's silverbush - T
- Garber's spurge - T
- Sand flax - E
- Wedge spurge - E

Why is This Pilot Project Needed?

- Climate and other conditions are expected to continue to change in the future.
- Scope and intensity of change uncertain.
- Insure the long-term success.
- Implementing reasonable adaptation actions now could reduce potential negative impacts in the future.

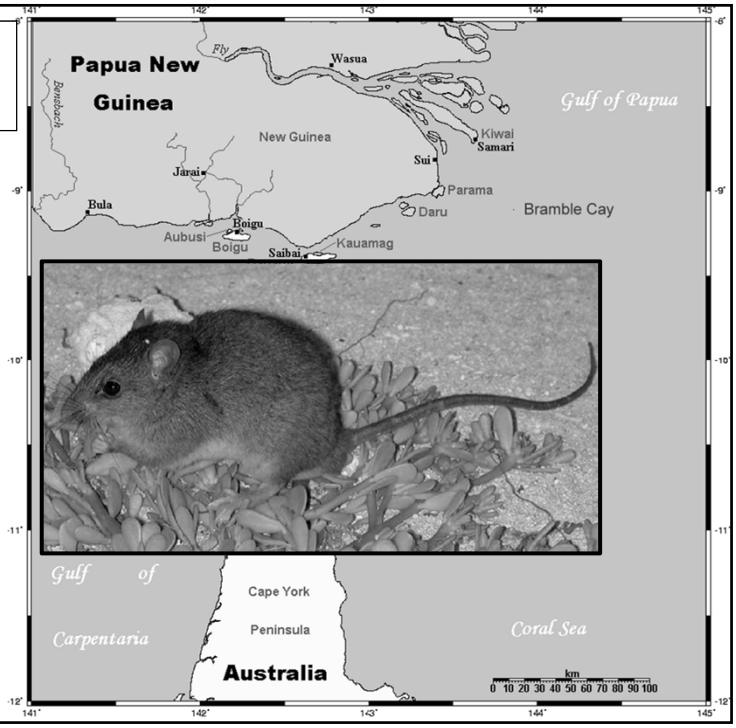
Bramble Cay Melomys

(*Melomys rubicola*)

Declared first mammal to go extinct due to climate change

Bramble Cay – Small island off the Great Barrier Reef

Estimated 97% of habitat lost due to climate change



What is Included in this Project?

- Two webinars
  - Review existing species information
- Two workshops
  - Impacts/consequences due to SLR
  - Evaluate species management
  - Develop adaptation strategies
    - Realistic first steps
    - Long term decisions
    - Determine trigger points
      - In-situ vs ex-situ

Project Process

- **Pre Workshop Meeting** (October 25th 2016)
- **Webinar 1 –** Background needed for Workshop 1
- **Workshop 1** (February 28th – March 1st 2017) – Species and habitat experts. 2 day meeting
- **Webinar 2 –** Background needed for Workshop 2
- **Workshop 2** (April 2017)– Land managers and policy makers. 2 day meeting

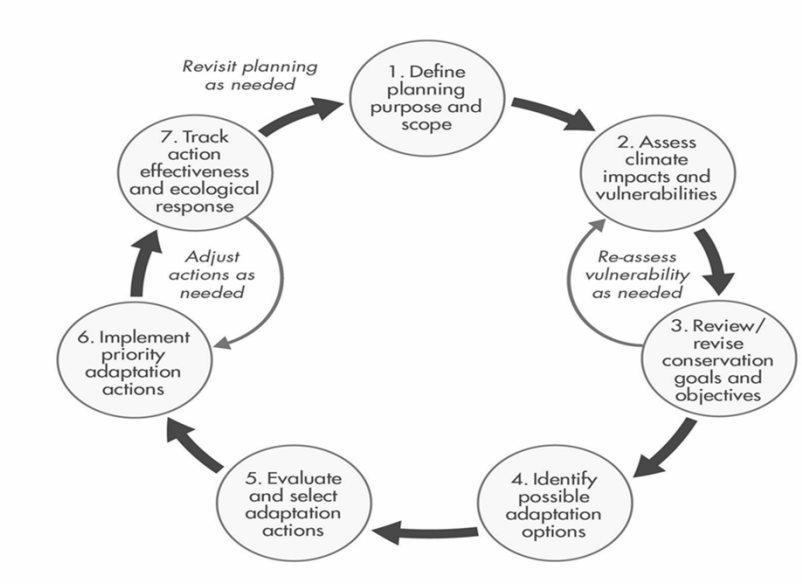
Addressing Adaptation & Creating a Process

The challenge is ours

- Working across lines
- Determining consequence of inaction
- Creating adaptation plans
- Creating a vetted process

Climate-Smart Conservation Cycle

A Generalized Framework for Adaptation Planning and Implementation



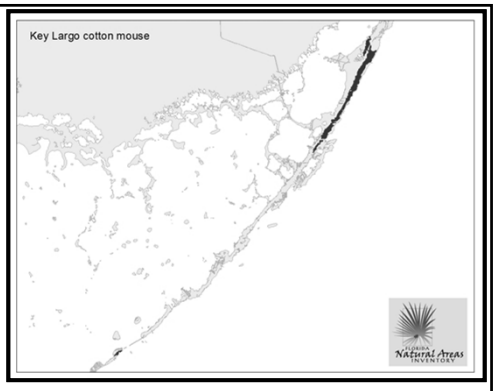
Workshop 1 – February 28th- March 1st

February 28th

12:30 – 5:00 PM

- Climate change research/data review
- What Changes Are You Seeing?
- Climate Change Scenario review
- Breakout Groups: Brainstorming Impacts to T&E Species & their habitats
- Report out
- Breaks

Workshop Tools



- Vetted species distribution maps
  - Florida Natural Areas Inventory
  - Florida Museum of Natural History
  - Species experts
- Sea Level Affecting Marsh Models (SLAMM)
  - Jason Evans
- Worksheets and flip charts
- Your expertise and knowledge

Workshop 1 results

Workshop 1 Results and Recommendations

Below are the results of Workshop 1. Each section table details the consequences of sea level rise to each species, proposed adaptation actions to account for these consequences, and proposed monitoring efforts and trigger points. The consequences section of each table will aid you in filling out the Pre Workshop Worksheet. The consequences are outlined in intervals of sea level, and refer specifically to the populations of the focal species and not the island as a whole.

Focal Species	Breakout Exercise 1: Consequence Information

Garber's Spurge	• Found in multi habitat types
	• Ephemeral species
	• There are populations on mainland as well as the Keys
	• Adaptable to shifting habitat
	  ○ 1 ft. Long key gone, Lower Matecumbe Key gone, Boca Chica gone
	  ○ 2 ft. Big Munson Island gone
	  ○ 3 ft. Cudjoe gone
	  ○ 4 ft. Marathon population ok, Bahia Honda population ok, Northern Keys Population ok. Big Pine gone

	Breakout Exercise 2: Adaptation Actions
	• Obtain counts from seeds already in storage (Colorado) to determine the available resources for reintroductions or transplanting • Research needed to find suitability of populations and seeds for reintroductions or transplanting (salt tolerance, genetics) • Continued to manage areas of occurrence
	Breakout Exercise 3: Trigger Points and Monitoring
	• Seed collection amount and location may change based on information from research • Salinity tolerance research results may change priority genetics to preserve • Genetic work to compare keys populations and mainland populations will determine whether or not translocation of Keys populations is necessary • Believe this species has a strong ability to adapt on its own • Need for annual monitoring of populations to assess next steps

Workshop 2

Keys Terrestrial Climate Adaption Workshop 2

'Moving Forward with Adaptation for Threatened and Endangered Species in the Florida Keys'

State of Florida Office Building, Marathon, Florida

April 5th & 6th, 2017

DRAFT AGENDA

Workshop Leader: Logan Benedict

Sponsors: US Fish and Wildlife Service, Florida Fish & Wildlife Conversation Commission, & The Nature Conservancy

Workshop Goal:

1. Using scenarios and other best available science, develop climate change adaptation strategies and actions for the terrestrial federally threatened and endangered species throughout the Florida Keys for agencies and other conservation interests to consider in their immediate and long-range planning efforts.

Workshop Objectives:

1. Determine area specific adaptation actions to push forward
2. Generate area specific potential adaptation actions

Items to review prior to meeting:

1. Agenda & Definitions
2. Webinar on Workshop 1 results

Wednesday April 5th, 2017

Arrive in time to be ready to start at 12:30 PM

Time	Agenda Topic	Process	Desired results
12:30	Welcome and Opening Statements	• Bob give everyone a welcome • Welcome • Introductions • Overall Projects Goals ○ Why the Keys?	Participants have been introduced and understand the meeting purpose and objectives. Participants have been informed about the

Big Pine partridge pea Results

Consequences of Sea Level Rise	• Big Pine Key population
	  ○ 1 ft. 10% of population gone
	  ○ 2 ft. 50% gone
	  ○ 3 ft. 75% gone
	  ○ 4 ft. 90% gone
	• Lower Sugarloaf Key and Cudjoe Key
	  ○ Both populations are already considered lost

Proposed Adaptation Actions	• On Cudjoe and Sugarloaf Key: No proposed augmentation because habitat is no longer suitable (dead pines after Wilma) • Big Pine Key: Improve existing habitat using prescribed fire • No Name Key: Recommend exploring habitat manipulation through mechanical disturbance and fire. After habitat manipulations, reintroduce new populations within its historical range. • Little Pine Key: Possibly can execute same actions as on No Name Key.

Trigger Points and Monitoring	• Refine projections of habitat availability spatially (maps). Provide feedback from field observations on habitat shifts over short periods to improve model projections. • Study C. lineata species complex taxonomy • Research on potential recipient community impact (mainland) should be done now, so species might be introduced to mainland (or additional sites) • At 50% reduction (2 ft & depending on a positive result of previous recipient site study) • Improve habitat on No Name Key & Little Pine Key once deemed appropriate habitat by criteria (Reintroduce populations now)
Priority Actions	Now • Study potential impact of translocation • Build resiliency through fire now • Survey on No Name Key and Little Pine Key for reintroduction possibility, and potential for active fire management • Continue seed storage • Nursery propagation for planting on higher elevation lands Trigger at 2 feet • Increase intensity of fire and other habitat treatments • Begin translocation if studies determine this action is viable

Questions?

Cabinet meeting of the island nation, Maldives

Steve_Traxler@fws.gov