Resilient Lands and Waters Initiative

Southwest Florida: Resiliency as a vehicle for conservation partnerships

Presenter: Steve Traxler, PFLCC Science Coordinator

"policy decisions made in the next few years to decades will have profound effects on global climate ecosystems an human societies – not just for this century, *but for the next 10 millennia and beyond*" *(emphasis mine).*

Nature Climate Change Perspective, February 2016

Today's talk

- Peninsular Florida LCC
- What is the SW Florida Land and water resilience project
- Threats to SW Florida
- Communication tool: SW Florida story map
- SW Florida future projects and partnerships
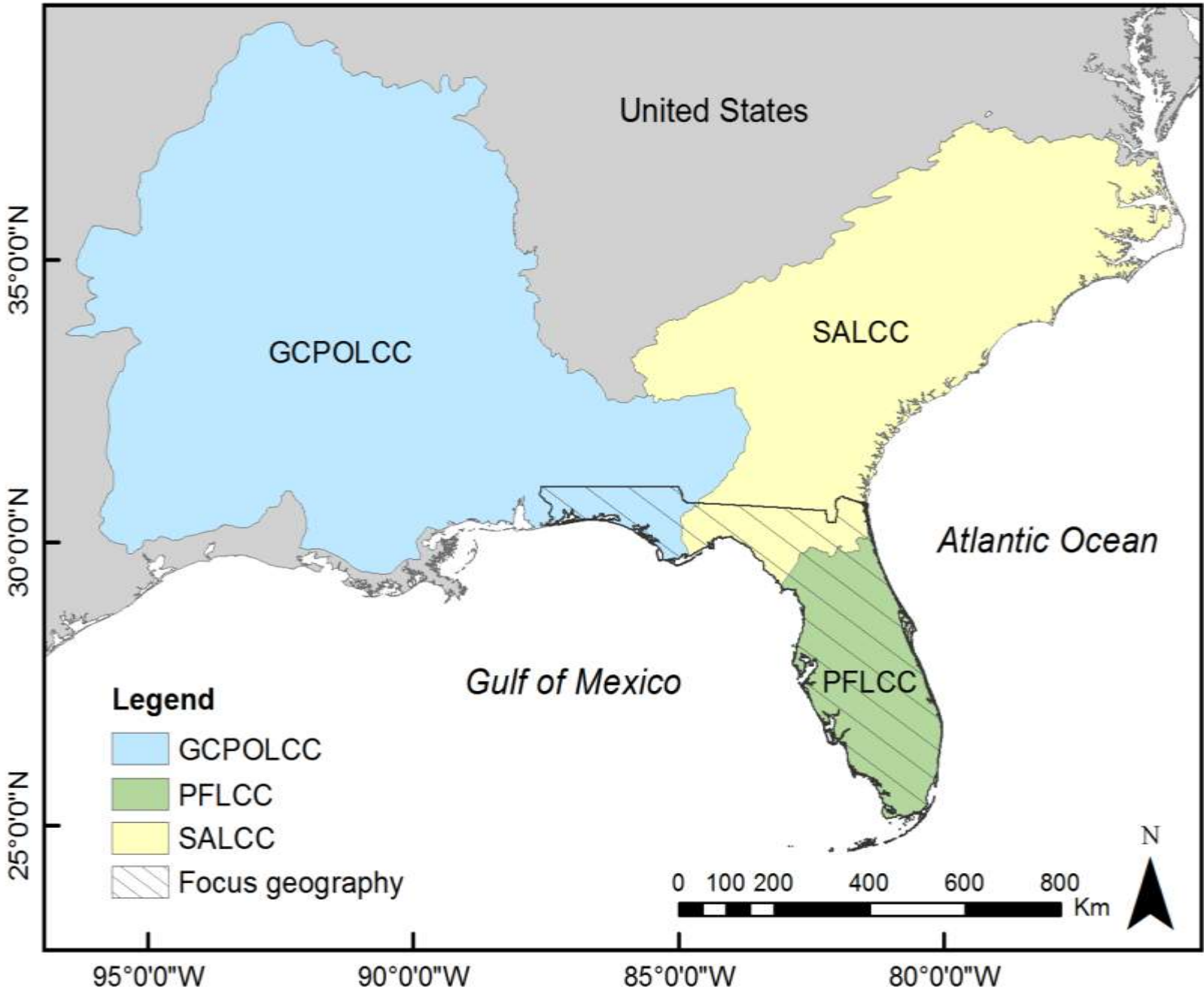
The Landscape Conservation Cooperatives

- 22 individual, self-directed partnerships
- North American continent, Pacific Islands and the Caribbean

Applied conservation science partnerships:

- Federal agencies
- Regional organizations
- State agencies
- Tribes
- NGOs
- Private stakeholders
- Universities
- Other entities

PFLCC: An applied conservation science partnership among local, state, and federal agencies, tribes, non-governmental organizations, universities, and other stakeholders to benefit fish and wildlife and associated habitats.

The function of the PFLCC is to facilitate landscape-level
1) planning,
2) design, and
3) implementation of conservation strategies for fish and wildlife species

Identify Landscape Conservation Priorities to Build Resilience: The first goal of the *National Fish, Wildlife, and Plants Climate Adaptation Strategy* is to build or maintain ecologically connected network of terrestrial, coastal, and marine conservation areas that are likely to be resilient to climate change and support a broad range of fish, wildlife, and plants under changing conditions. Identifying such priority areas also benefits wildfire management, mitigation investments, restoration efforts, and water and air quality. Within six months, Federal agencies working to address ecosystem management issues through LCCs and other multi-stakeholder bodies will work with partners to select flagship geographic regions for which they will identify priority areas for conservation, restoration, or other investments to build resilience in vulnerable regions, enhance carbon storage capacity, and support management needs. Within 24 months, these agencies and their partners will have identified and mapped the initial list of priority areas within each of the selected geographic landscapes or regions.

Full Definition of *resilience:*
1 : the capability of a strained body to recover its size and shape after deformation caused especially by compressive stress
2 : an ability to recover from or adjust easily to misfortune or change.

Climate resilience can be generally defined as the capacity for a socio-ecological system to:
1: absorb stresses and maintain function in the face of external stresses imposed upon it by climate change and
2: adapt, reorganize, and evolve into more desirable configurations that improve the sustainability of the system, leaving it better prepared for future climate change impacts.
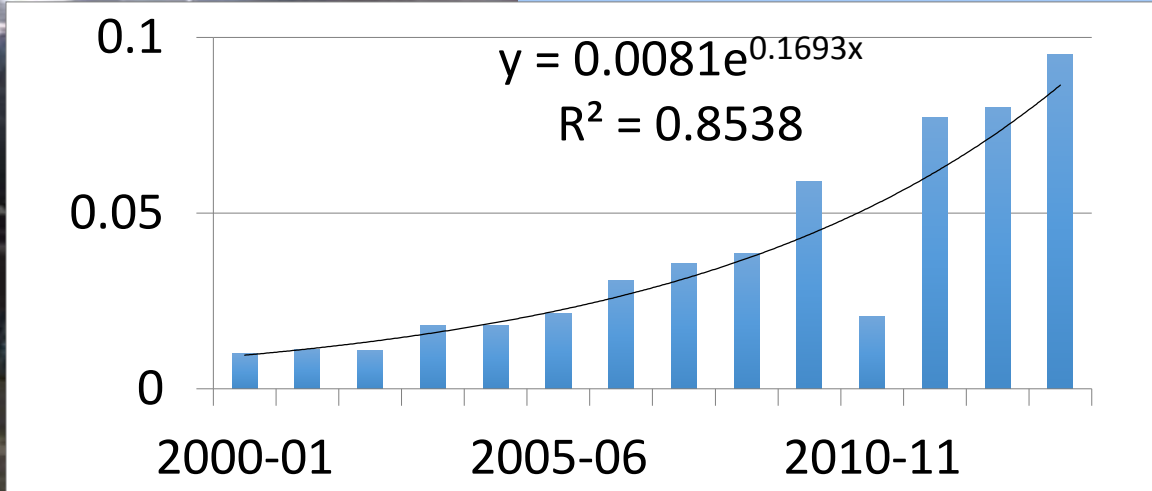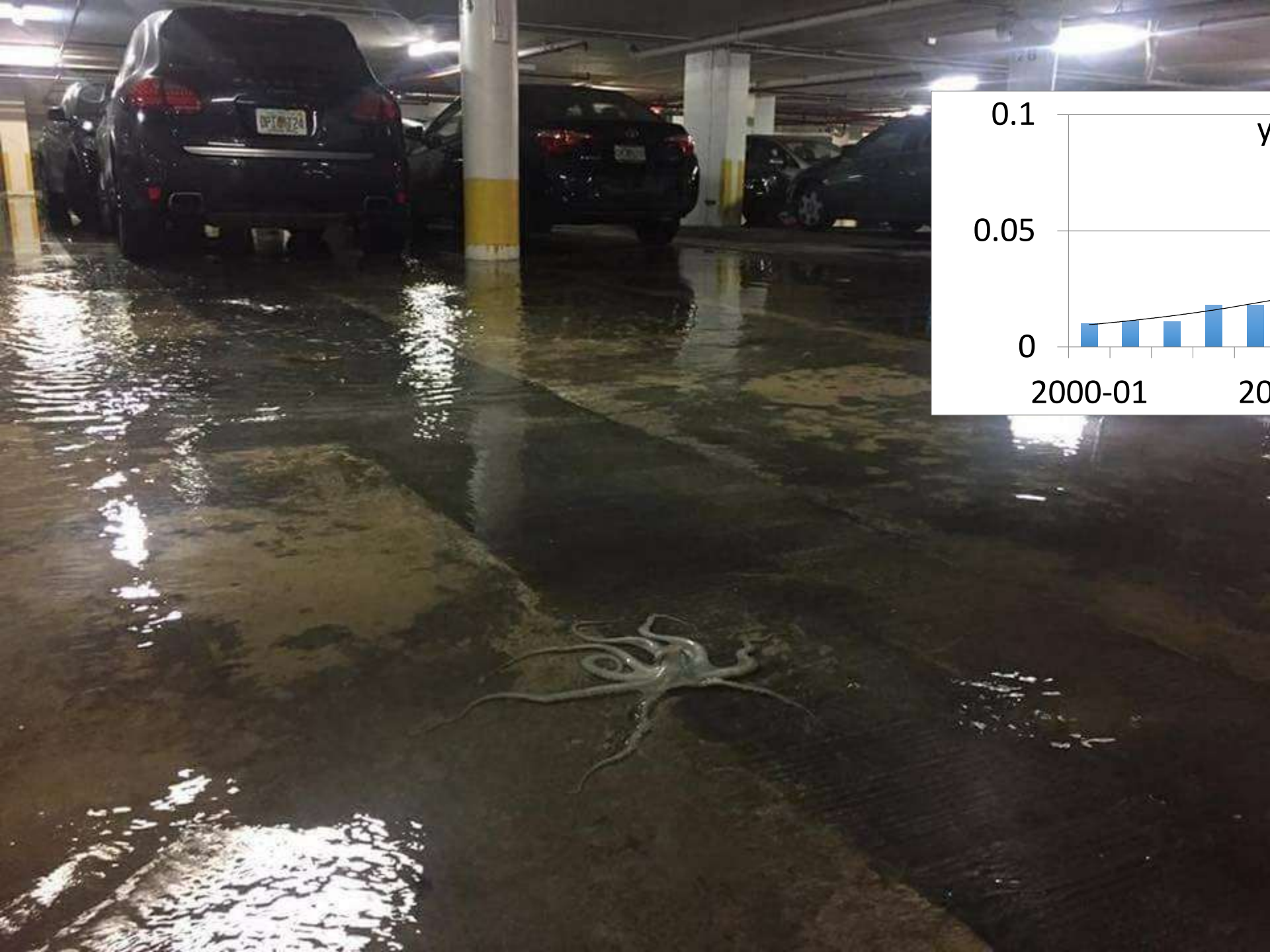
Credit: Scott Lewis

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Photos by **Paul Krashefski**

$y = 0.0081e^{0.1693x}$

$R^2 = 0.8538$

0.1

0.05

0

2000-01   2005-06   2010-11
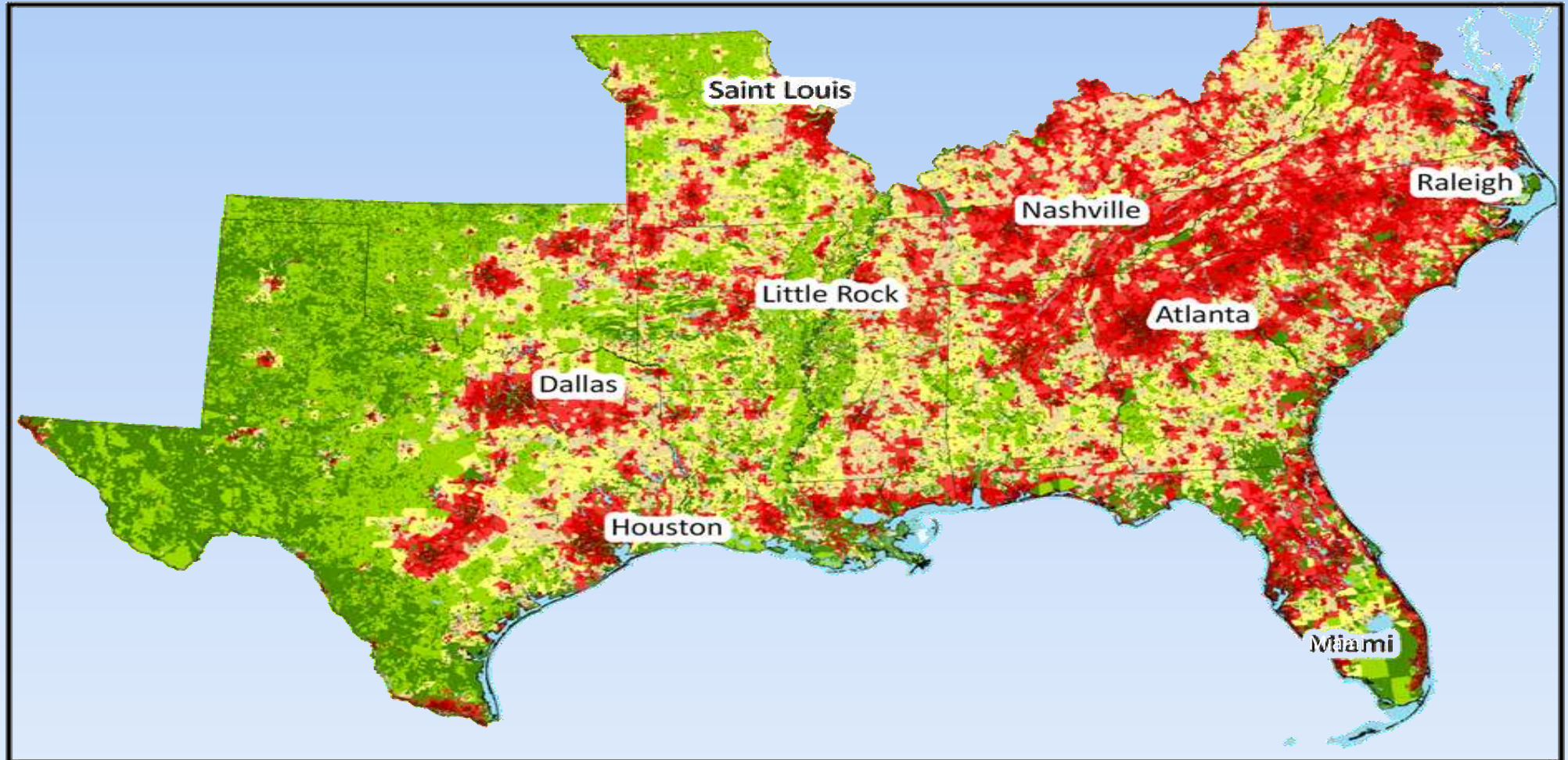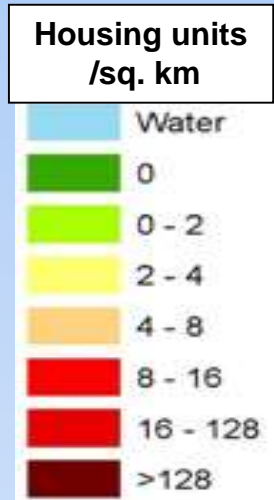
US Population (2000): 304 M

Projected population: 1 Billion by 2100

Urbanization, loss/conversion of Ag-land/Open spaces

2030

Housing units /sq. km

- Water
- 0
- 0 - 2
- 2 - 4
- 4 - 8
- 8 - 16
- 16 - 128
- >128

Saint Louis
Raleigh
Nashville
Little Rock
Atlanta
Dallas
Houston
Miami

The Region

1. Spanning 7 counties in Southwest Florida and 20.3 million people in Florida

2. A region with one of the fastest urbanization rates in the US. 2.2 million people, almost doubling by 2060.

3. 314,724 acres lost to Sea Level rise and urbanization.

4. Home of multiple conservation efforts and emblematic habitats and species. Ex. Everglades' wetlands and Florida panther.

5. Designated by CCB and PFLCC as a focal zone.

6. Strong presence of partnerships with private landowners, federal and state agencies, the SW Florida regional planning council and NGOs such as The Nature Conservancy.

Goals

1. Harness past and existing science partnerships to create a unified assessment of the resiliency of the region.

2. Put forward the value of SW Florida habitats and their ecosystem services in maintaining and enhancing the resiliency of this landscape by simulating the impacts of different future scenarios.

3. Devise an anticipatory planning strategy and prioritize new partnerships by identifying those areas that require new conservation efforts to make SW Florida more resilient.
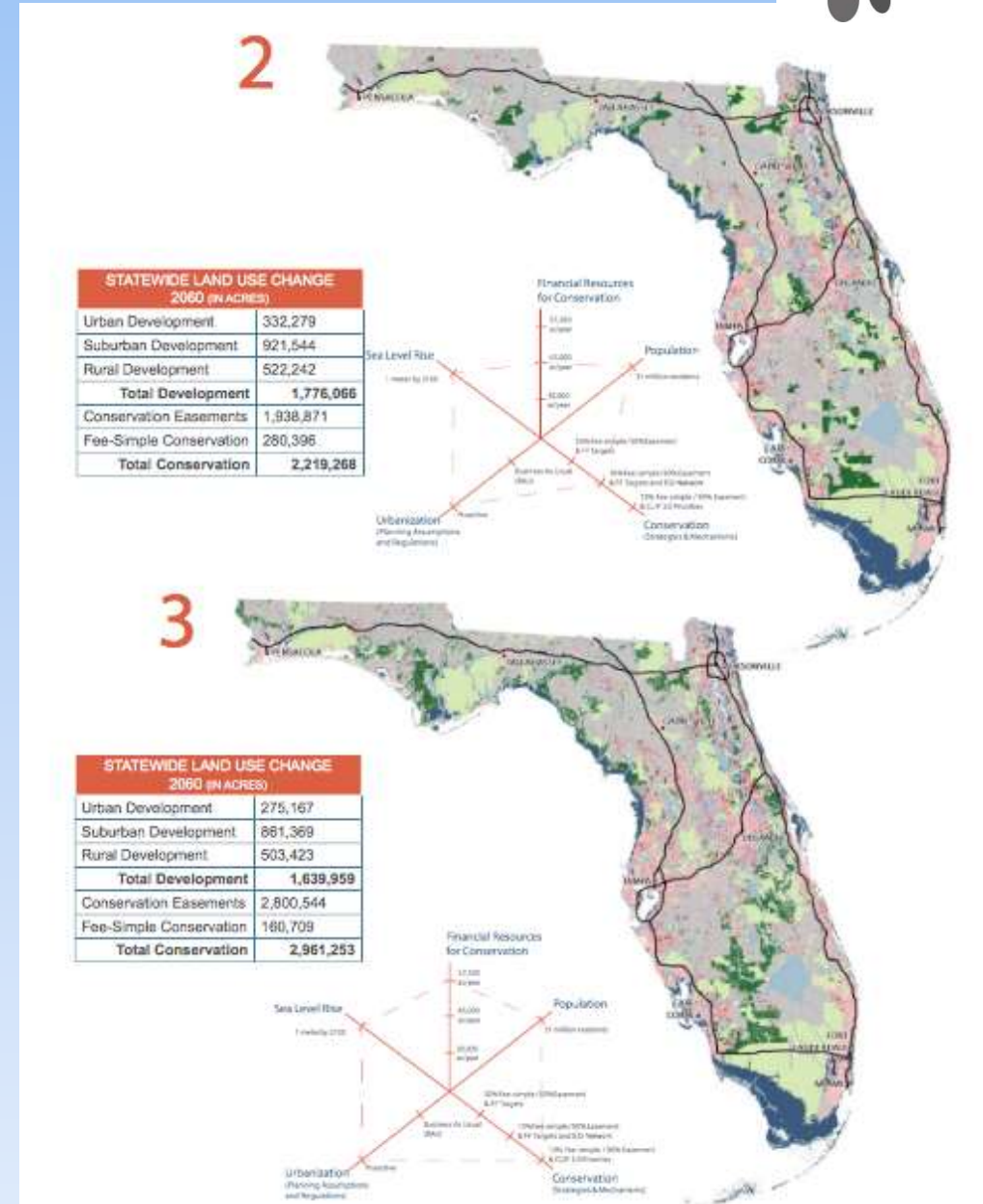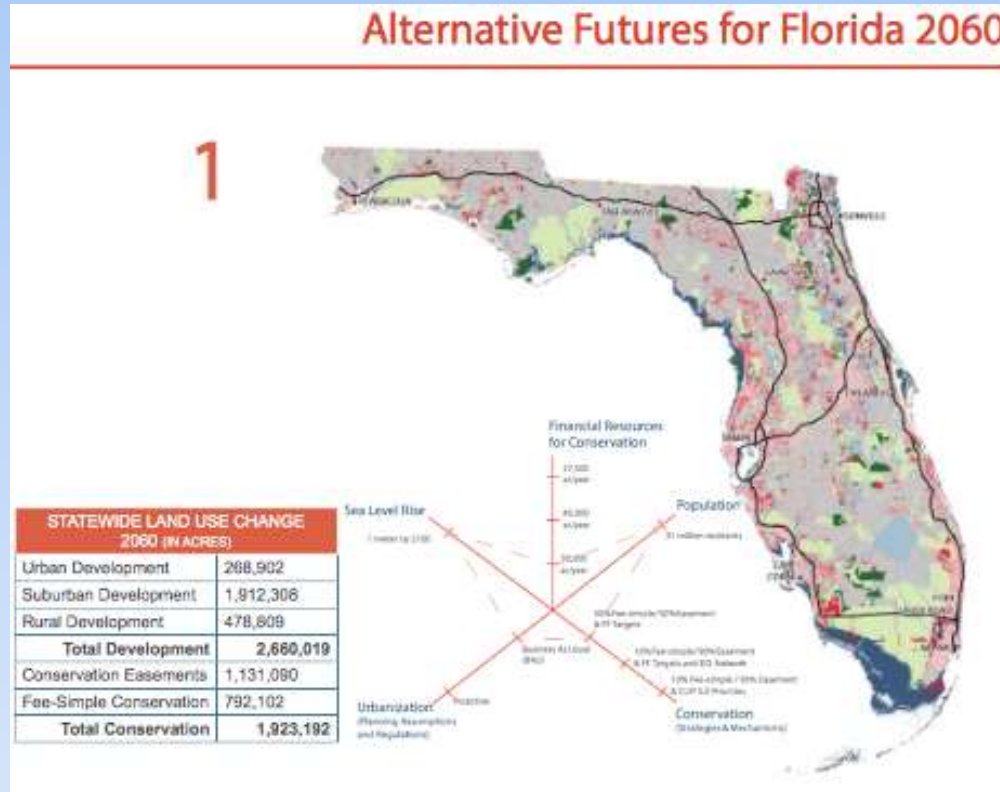
Existing partners

Approach

1. New science for new and stronger partnerships.

2. Using data and past project results to devise a socio-ecological integrated model to assess the resiliency of the region.

3. Identify and prioritize pressing conservation challenges by linking and integrating existing science.

4. Using open-source models to create inclusive and open science development.

   Natural Capital Project's InVEST model, which calculates coastal exposure & population impacts.

5. Increasing outreach by communicating results through web storytelling mechanisms and social media.
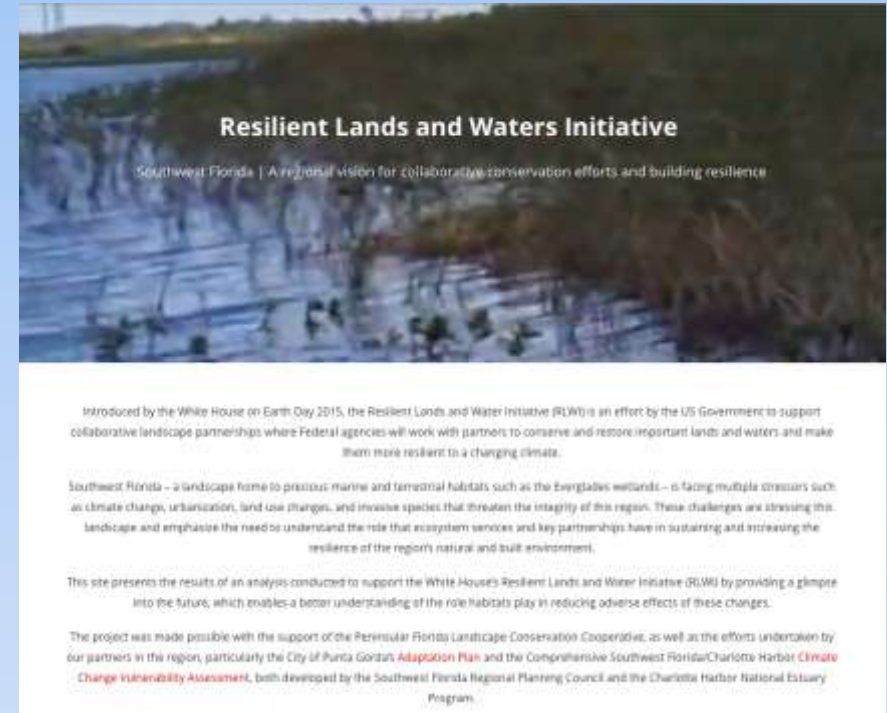
Informing today's partnerships about future conservation pressures

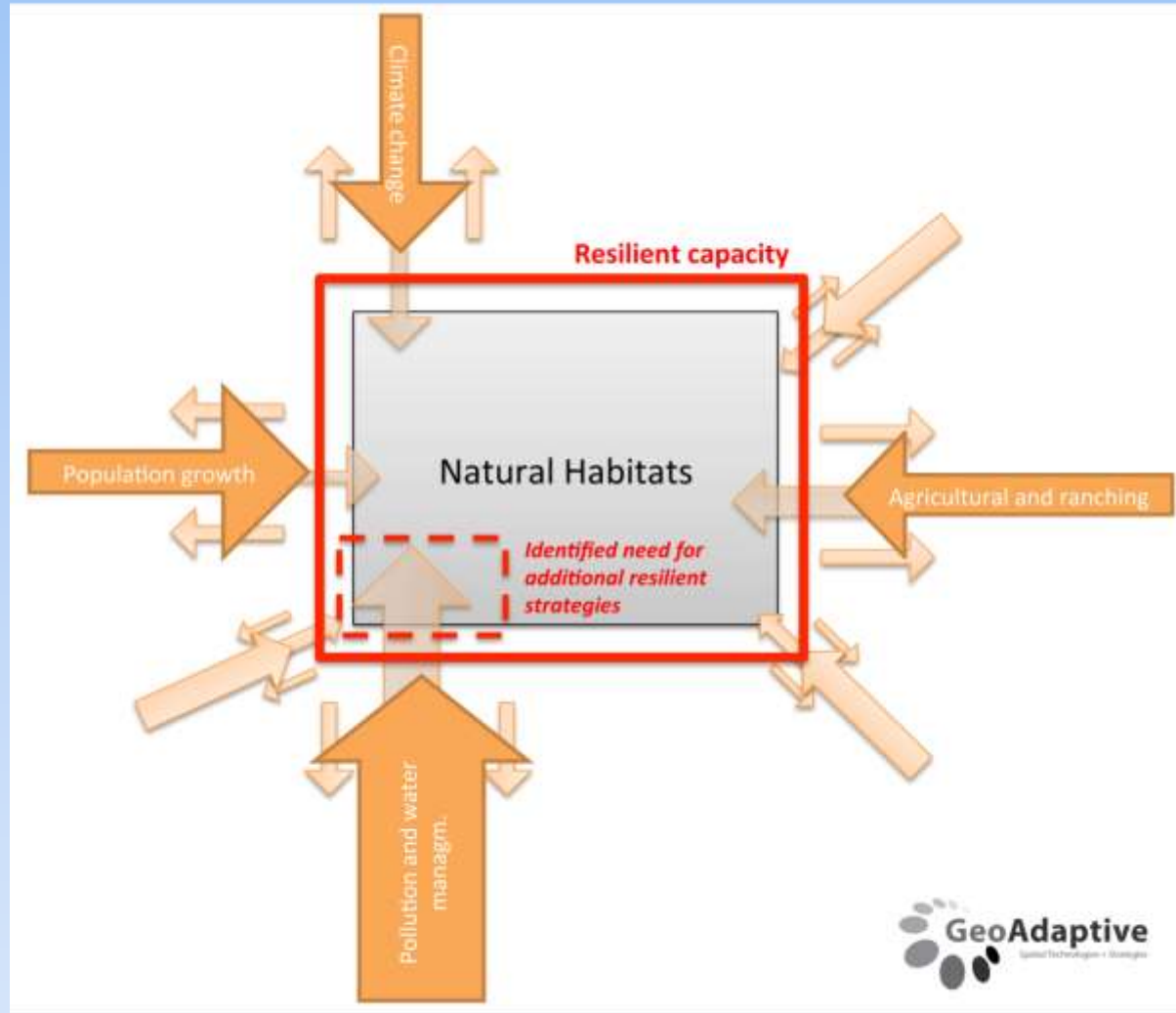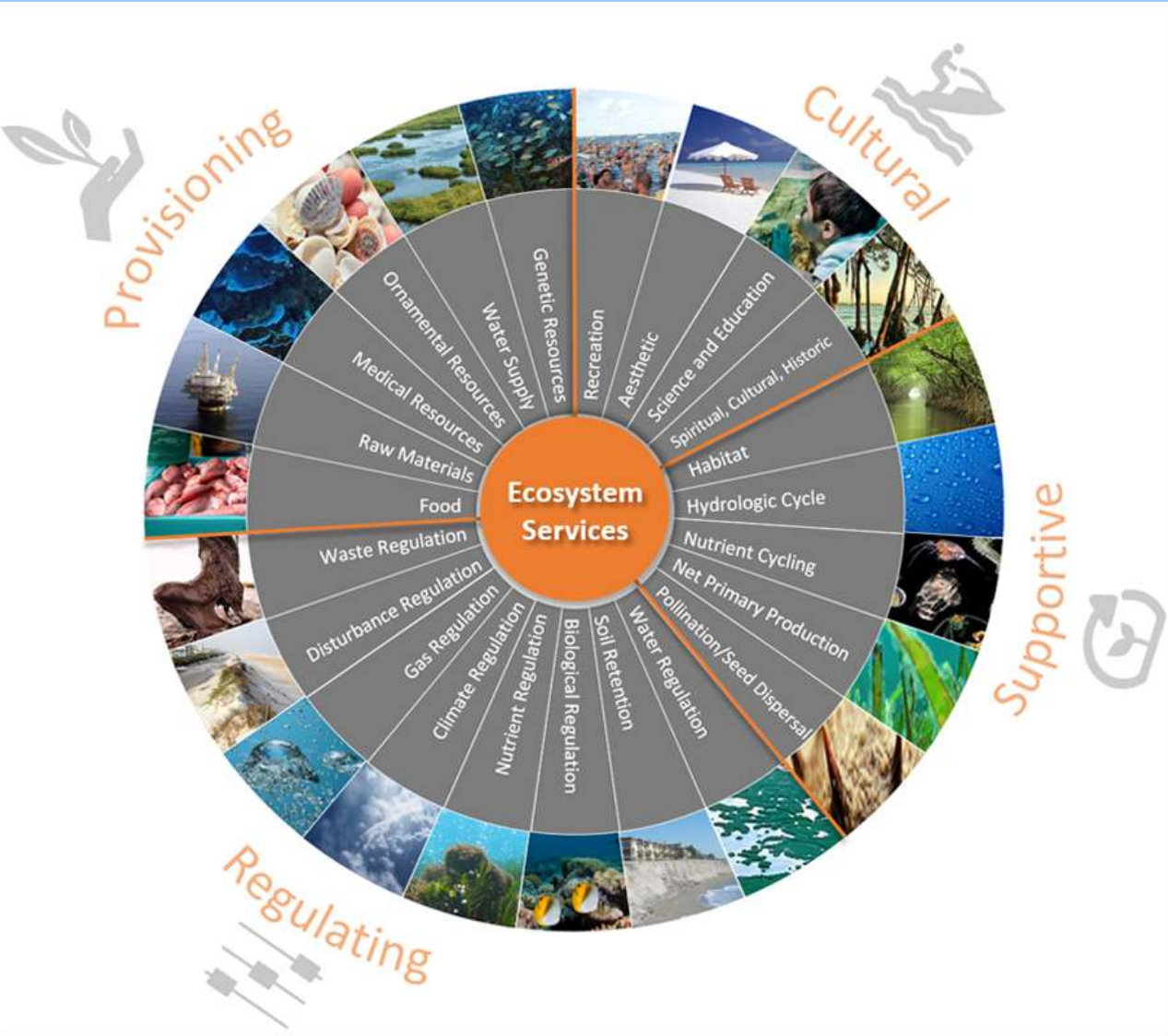# Communicating science to partners

Ecosystem Services

Provisioning — Genetic Resources, Water Supply, Ornamental Resources, Medical Resources, Raw Materials, Food, Waste Regulation

Cultural — Recreation, Aesthetic, Science and Education, Spiritual, Cultural, Historic

Supportive — Habitat, Hydrologic Cycle, Nutrient Cycling, Net Primary Production, Pollination/Seed Dispersal, Water Regulation, Soil Retention

Regulating — Biological Regulation, Nutrient Regulation, Climate Regulation, Gas Regulation, Disturbance Regulation

Climate change

Resilient capacity

Population growth

Natural Habitats

Agricultural and ranching

Identified need for additional resilient strategies

Pollution and water managm.

GeoAdaptive

Impacts on Natural Habitats

The map shows the results of the impact analysis on select Florida Natural Communities based on development projections for each scenario, combined with 0.5 m sea level rise and resulting tidal saline migration.

		Percentage of Natural Habitat Converted (Trend)	Percentage of Natural Habitat Converted (Proactive)
Sea Level Rise		10%	10%
Development		16%	9%
Tidal Saline Wetland Conversion		1.87%	1.87%

Map Legend

- Sea Level Rise
- Suburban Development
- Rural Development
- Urban Development

Considering the results of this assessment, more general recommendations should be provided at this phase. For example, in the Proactive scenario the following resilience strategies are higher priorities for implementation:

- **"Pollution and water management":** develop more restrictive regulations in terms of GHG emissions.

- **"Agriculture and Ranching":** incentivize more sustainable use of land and water resources, support more sustainable economic strategies.

- **"Population growth":** better regulation of water availability.

- **"Climate Change":** protect mangroves along the most exposed coasts.

Enabling future partnerships

PAST (2010 - 2015)	PRESENT (2016)	FUTURE (2017 - 2020)
PHASE A: incorporate stakeholder input for developing the best science		
Florida, Charlotte Harbor NEP, SW FL Regional Planning Council, local government (Ex. Punta Gorda, Lee County)	Conservation targets and landscape design), FWCC, TNC, USFWS, Florida Forestry, USGS,... LCD at the local level USFWS refuges in SW florida, FWCC	Big Bend landscape conservation design, USGS, USFWS, NOAA, Geo-Adaptive, FWC, northeast Florida, and Ocala north are other potential areas
PHASE B: Science development		
All steering committee members of the PFLCC*; research such as State-wide Scenarios and CLIP, GeoAdaptive, GeoDesign Technologies, MIT	PFLCC*, UF, FNAI, FWC, NOAA, USGS, USFWS, GeoAdaptive, GeoDesign Technologies	DOI's Wildland Fire Resilient Land-scapes program, local communities
PHASE C: revisit the stakeholders for both validation and to incorporate in future decision making		

*currently made up of 26 public and private institutions, including private landowners

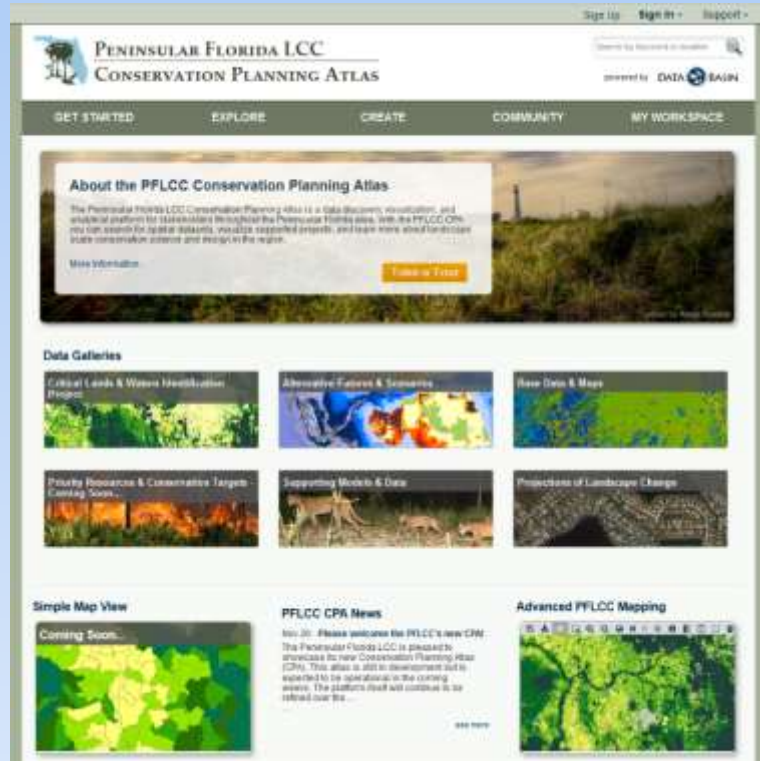# Impact Assessment and Conservation Design for the Florida Panther Wildlife Refuge Contextual Landscape

Roll out at the white house

https://www.wildlifeadaptationstrategy.gov/resilient-lands-and-waters-initiative.php

http://geoadaptive.com/RLWI_Southwest_Florida/

https://pflcc.databasin.org/

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  - Steve Traxler – Steve_Traxler@fws.gov

- PFLCC:
  - Web page - http://peninsularfloridalcc.org/
  - CPA - https://pflcc.databasin.org/

SE Conservation Adaptation Strategy Blueprint v1.0

The Blueprint for SECAS - The Southeast Conservation Adaptation Strategy (Version 1.0 with Protected Areas)