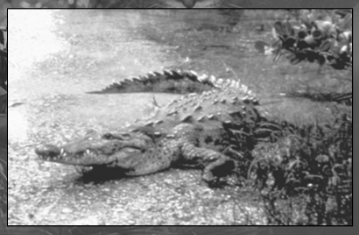
Conservation Planning



05 – Threats (climate, urbanization, exotics/invasives, etc.) .

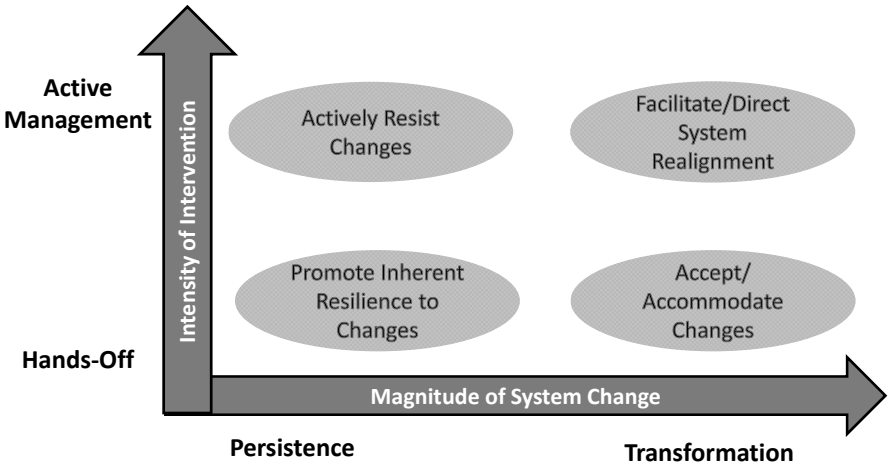
Steve Traxler and Paula Golightly, Senior Biologist
South Florida Ecological Services, U.S. Fish and Wildlife Service

A Continuum of Change

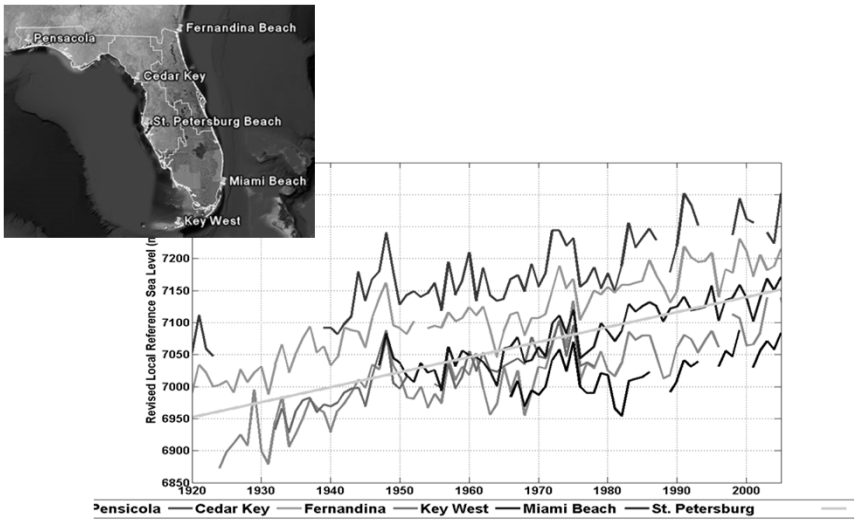
Persistence ⟷ Transformation

- Conservation now mostly focused on persistence of current conditions, or restoration to historical conditions
- Adaptation will often be concerned with determining:
  - when to manage for persistence
  - when to manage for change
  - When (and how) to cycle between the two

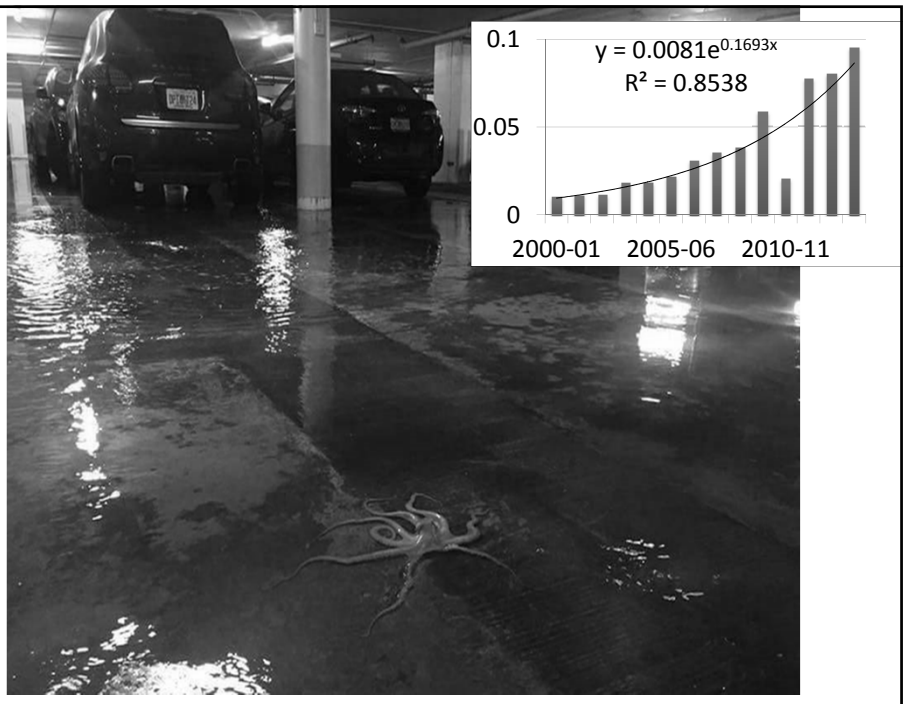
Active vs. Passive Management



Rising Seas around Florida

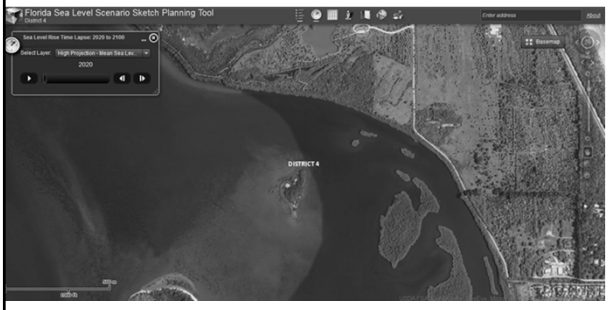


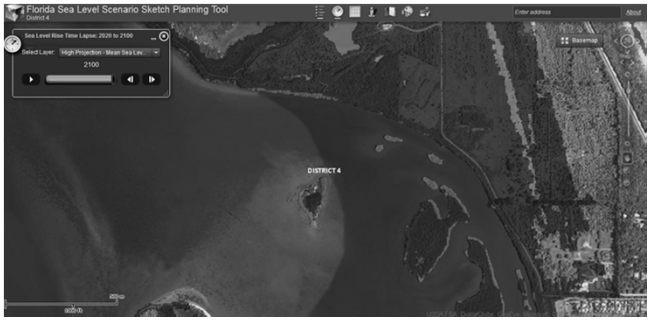
Seeing Impacts Already…



Recent Miami Herald photo

Pelican Island NWR 2020 and 2100





GLOBAL AND REGIONAL SEA LEVEL RISE SCENARIOS FOR THE UNITED STATES

Table 5. GMSL rise scenario heights in meters for 19-year averages centered on decade through 2200 (showing only a subset after 2100) initiating in year 2000. Only median values are shown.

GMSL Scenario (meters)	2010	2020	2030	2040	2050	2060	2070	2080	2090	2100	2120	2150	2200
Low	0.03	0.06	0.09	0.13	0.16	0.19	0.22	0.25	0.28	0.30	0.34	0.37	0.39
Intermediate-Low	0.04	0.08	0.13	0.18	0.24	0.29	0.35	0.4	0.45	0.50	0.60	0.73	0.95
Intermediate	0.04	0.10	0.16	0.25	0.34	0.45	0.57	0.71	0.85	1.0	1.3	1.8	2.8
Intermediate-High	0.05	0.10	0.19	0.30	0.44	0.60	0.79	1.0	1.2	1.5	2.0	3.1	5.1
High	0.05	0.11	0.21	0.36	0.54	0.77	1.0	1.3	1.7	2.0	2.8	4.3	7.5
Extreme	0.04	0.11	0.24	0.41	0.63	0.90	1.2	1.6	2.0	2.5	3.6	5.5	9.7

NOAA Technical Report NOS CO-OPS 083

Landscape Change

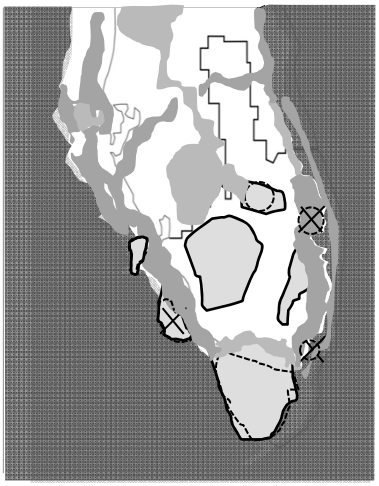
-under climate change and urbanization-

Current urban areas

Strategic Ecological Areas

Existing DOI Conservation Areas

Future protected areas



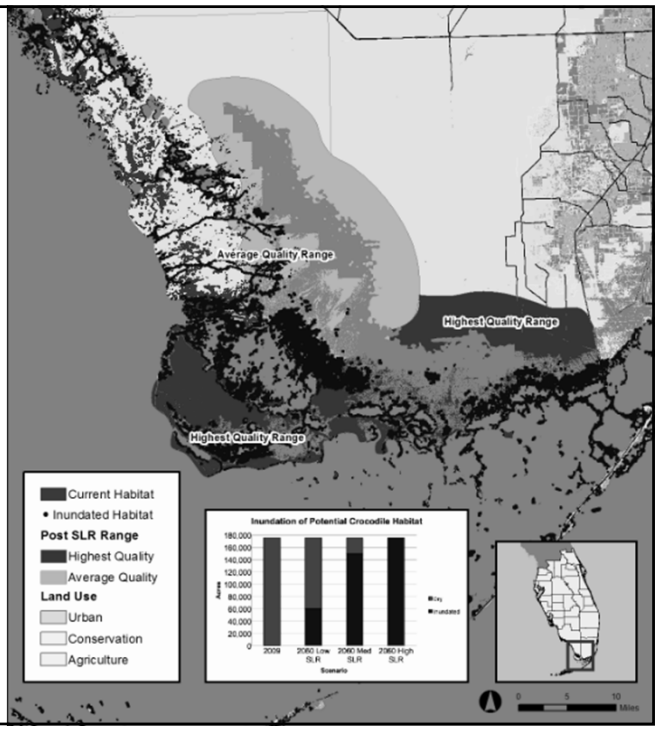
Vargas-Moreno, J.C. 2009. Climate Change and Landscape Planning. MIT

Anticipating movement enables increased future protection

Pilot Project: Climate Vulnerability Assessment

AMERICAN CROCODILLE
Conflict
with low sea level rise

Department of Urban Studies and Planning



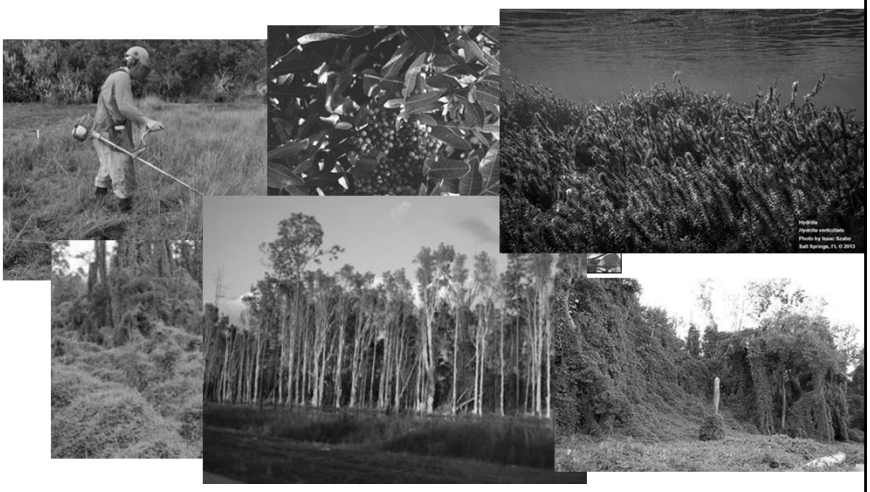
Exotic introduction

Invasive species

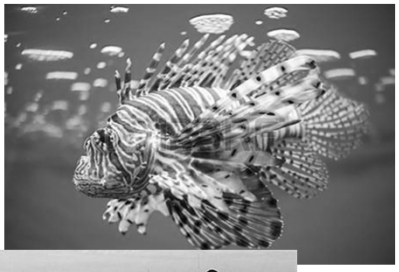
Non-natives

Nuisance species

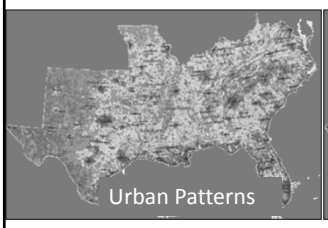
Exotic plants

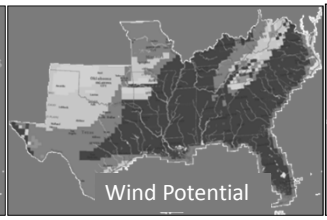


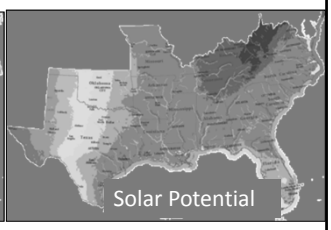
Exotic Animals

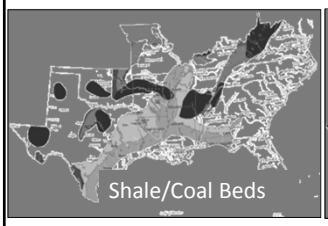


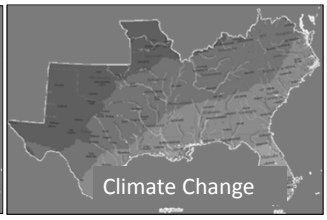
Large Disruptive Changes Impacting Conservation



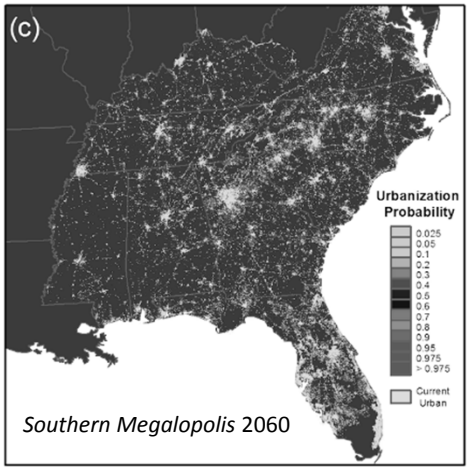


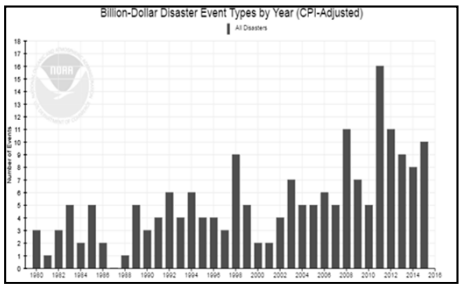


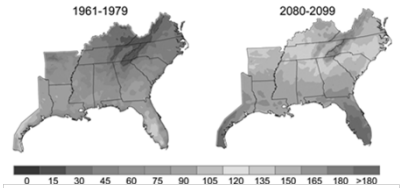




South Eastern Threats







GCVA Study Area

- 6 sub-regions
  - Laguna Madre
  - Western Gulf Coastal Plain
  - Mississippi Alluvial Plain
  - Southern Coastal Plain
  - Central FL Coastal Plain
  - Southern FL Coastal Plain

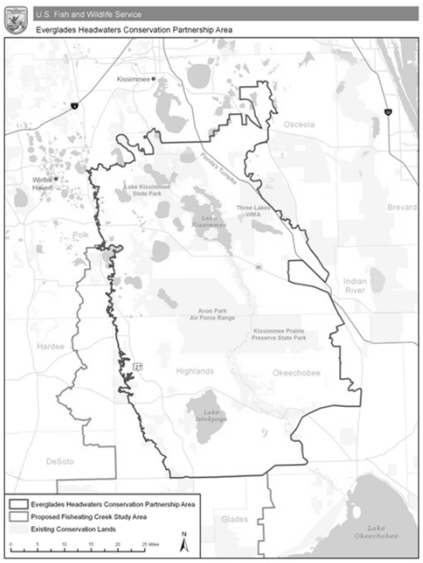
Adaptation in a Nutshell

- Act with intentionality
- Manage for change, not just persistence
- Reconsider goals, not just strategies
- Integrate adaptation into existing work

Everglades Headwaters NWR

Partnerships : Working with The Nature Conservancy, NRCS WRP, and other groups

Everglades Headwaters NWR:
50,000 acres fee,
100,000 acres easements



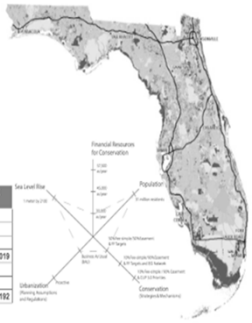
Keys tree cactus adaptation planning

Informing today's partnerships about future conservation pressures

GeoAdaptive
Spatial Technologies • Strategies

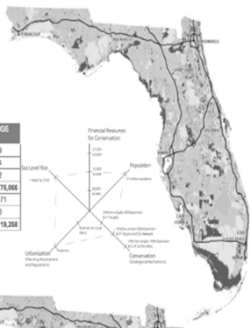
Alternative Futures for Florida 2060

1



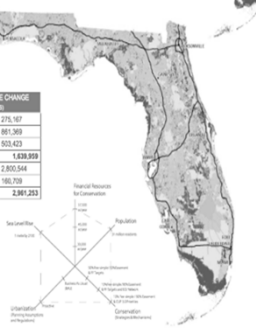
STATEWIDE LAND USE CHANGE 2060 (IN ACRES)	
Urban Development	268,902
Suburban Development	1,912,308
Rural Development	478,809
Total Development	**2,660,019**
Conservation Easements	1,131,090
Fee-Simple Conservation	792,102
Total Conservation	**1,923,192**

2

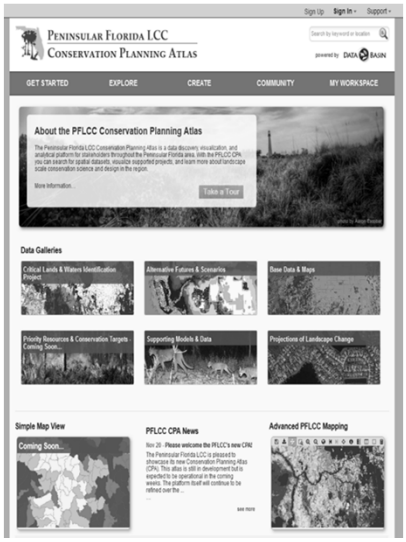


STATEWIDE LAND USE CHANGE 2060 (IN ACRES)	
Urban Development	332,279
Suburban Development	921,544
Rural Development	522,242
Total Development	**1,776,066**
Conservation Easements	1,938,871
Fee-Simple Conservation	280,396
Total Conservation	**2,219,268**

3



STATEWIDE LAND USE CHANGE 2060 (IN ACRES)	
Urban Development	275,167
Suburban Development	861,369
Rural Development	503,423
Total Development	**1,639,959**
Conservation Easements	2,800,544
Fee-Simple Conservation	160,709
Total Conservation	**2,961,253**



The Conservation Planning Atlas

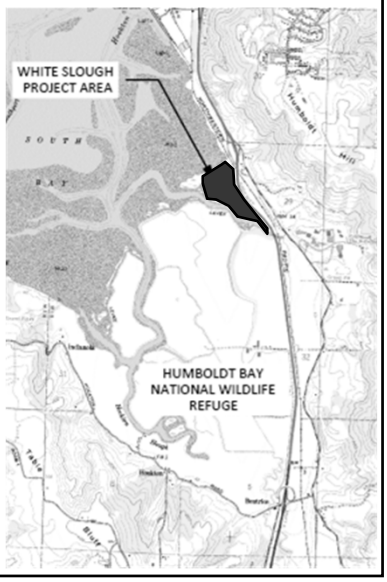
- Runs through DataBasin platform
- Designed by: Conservation Biology Institute
- Designed for showcasing spatial datasets, projects, and efforts
- Will be the home for PFLCC Conservation Design and other deliverables

https://pflcc.databasin.org/

WHITE SLOUGH WETLAND ENHANCEMENT PROJECT HUMBOLDT BAY NATIONAL WILDLIFE REFUGE

INITIAL CONDITION:

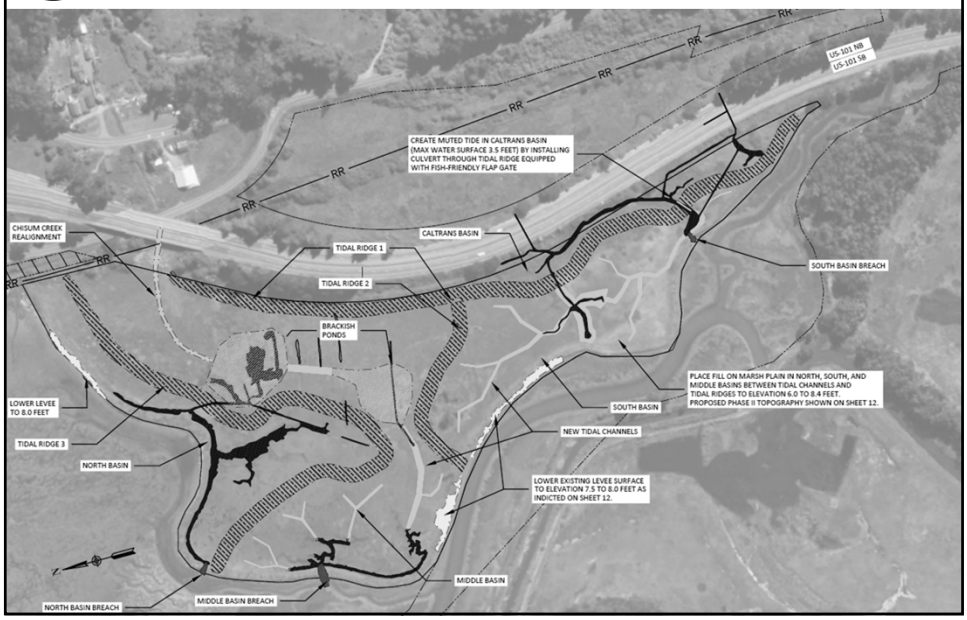
- 41- ACRE DRAINED SALT MARSH
- FAILING LEVEES
- SUBSIDED LANDS
  (3’ – 5’ NAVD 1988)



WHITE SLOUGH PROJECT OBJECTIVES

- PLACE FILL TO RAISE SURFACE TO HIGH SALT MARSH ELEVATIONS (6’ – 8’ NAVD 1988)
- CREATE COMPLEX TIDAL CHANNEL NETWORK WITH TIDAL POOLS AND BRACKISH PONDS
- BREACH LEVEES TO RESTORE FULL TIDAL INFLUENCE
- CONSTRUCT TIDAL RIDGES AS WAVE BREAKS TO PROTECT INFRASTRUCTURE

PROJECT ELEMENTS



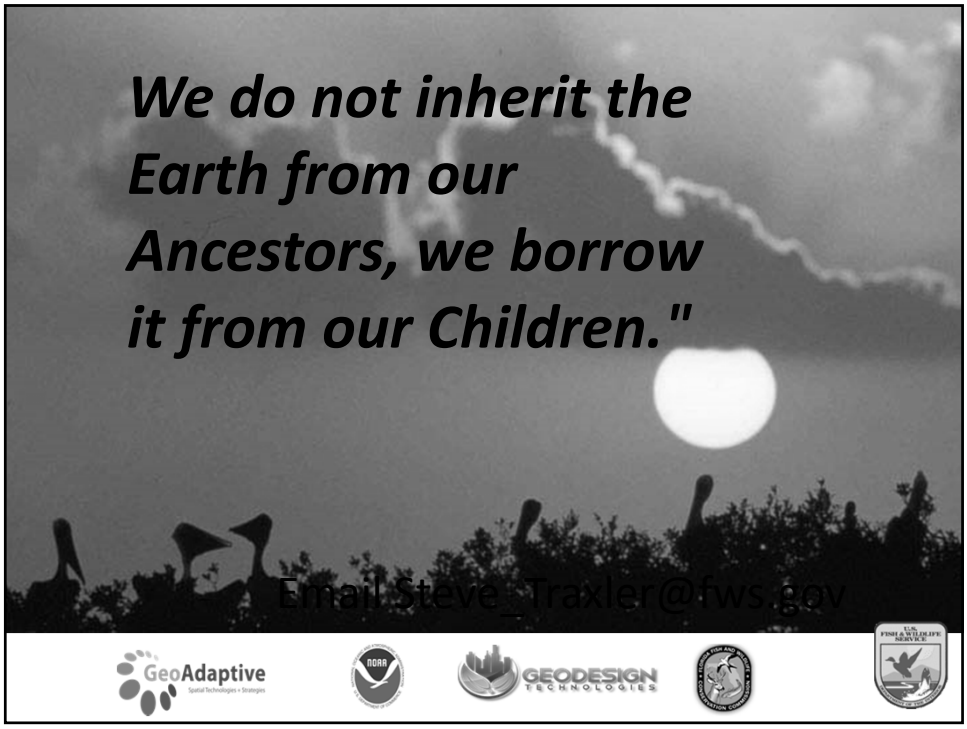
PHASE 1 WORK 2015

TIDAL RIDGE CONSTRUCTION

AQUA DAM REMOVAL

PROJECT STATUS

PHASE 1 – 2015: TIDAL RIDGES
PHASE 2 – 2017/2018: FILL, GRADE & BREACH


We do not inherit the Earth from our Ancestors, we borrow it from our Children."
Email Steve_Traxler@fws.gov
GeoAdaptive
GEODESIGN TECHNOLOGIES