Ecological Impacts of Climate Change on the Benthic and Terrestrial Communities in Key West

March 24, 2010

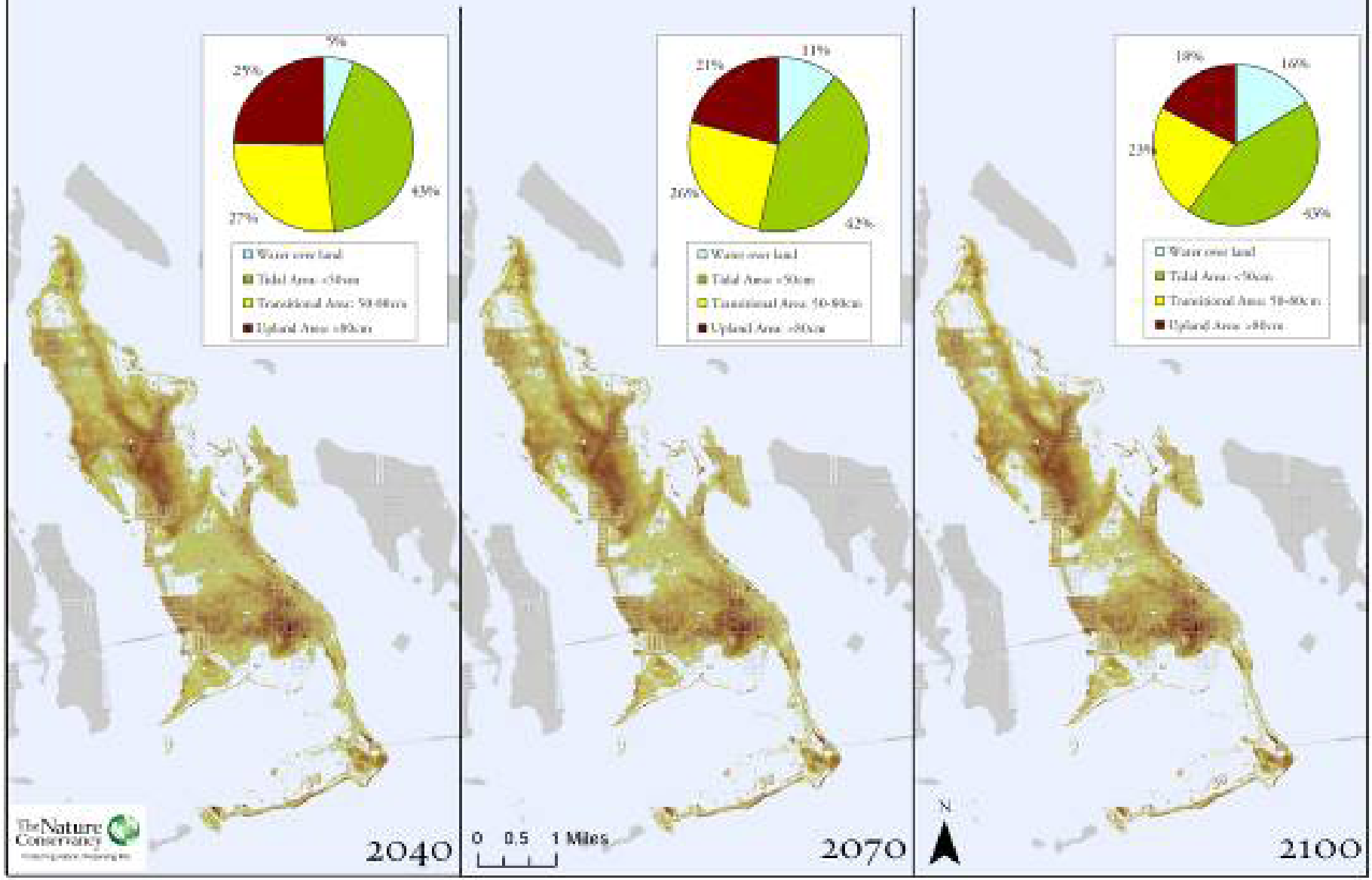
Alison Higgins
The Nature Conservancy

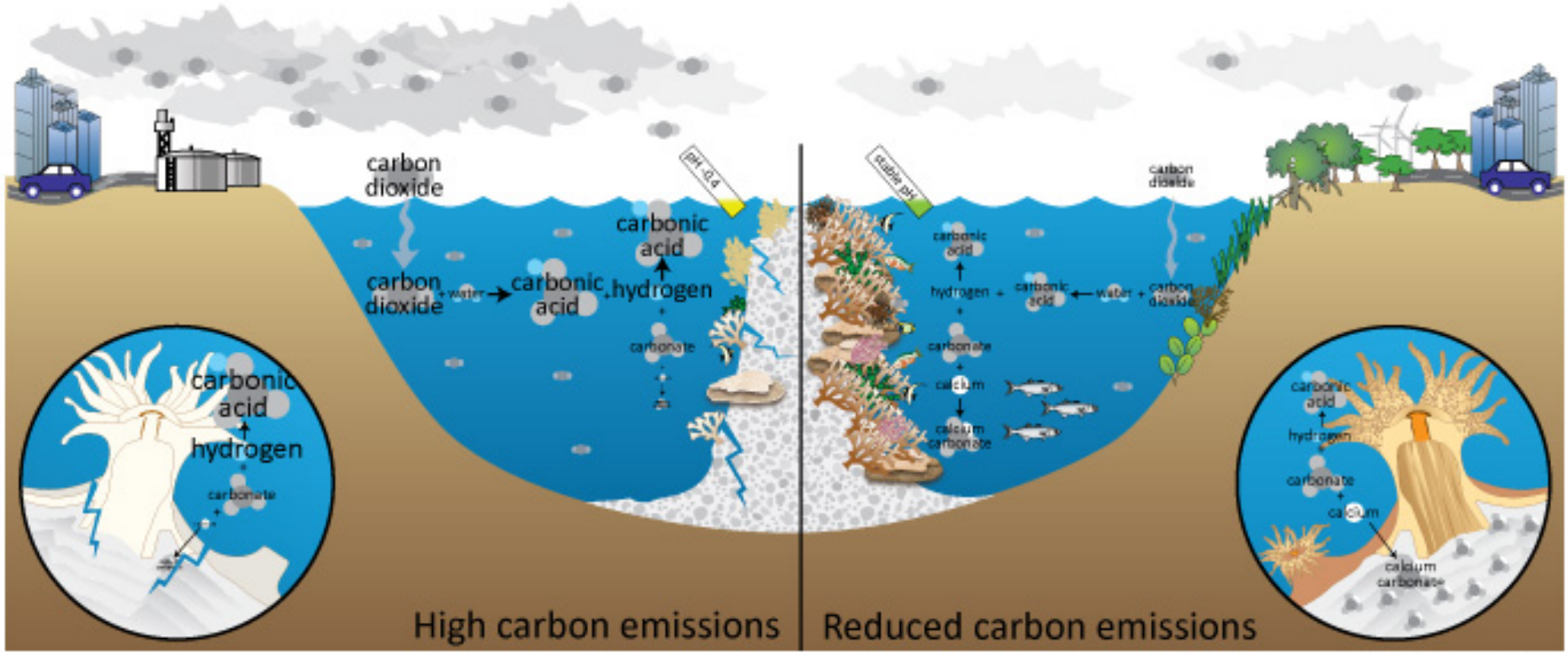
Coastal Resources

- Biodiversity
  - On the Land
  - In the water

- Ecosystems
  - Habitat in Inches
  - Today’s Flood is tomorrows high tide.

Big Pine Key Scenario 1: +18 cm (7 in.) 2040, 2070, 2100 Time Series
Best of the Best Case IPCC Scenario (B1): +18 cm (7 in.) to +38 cm (15 in.)





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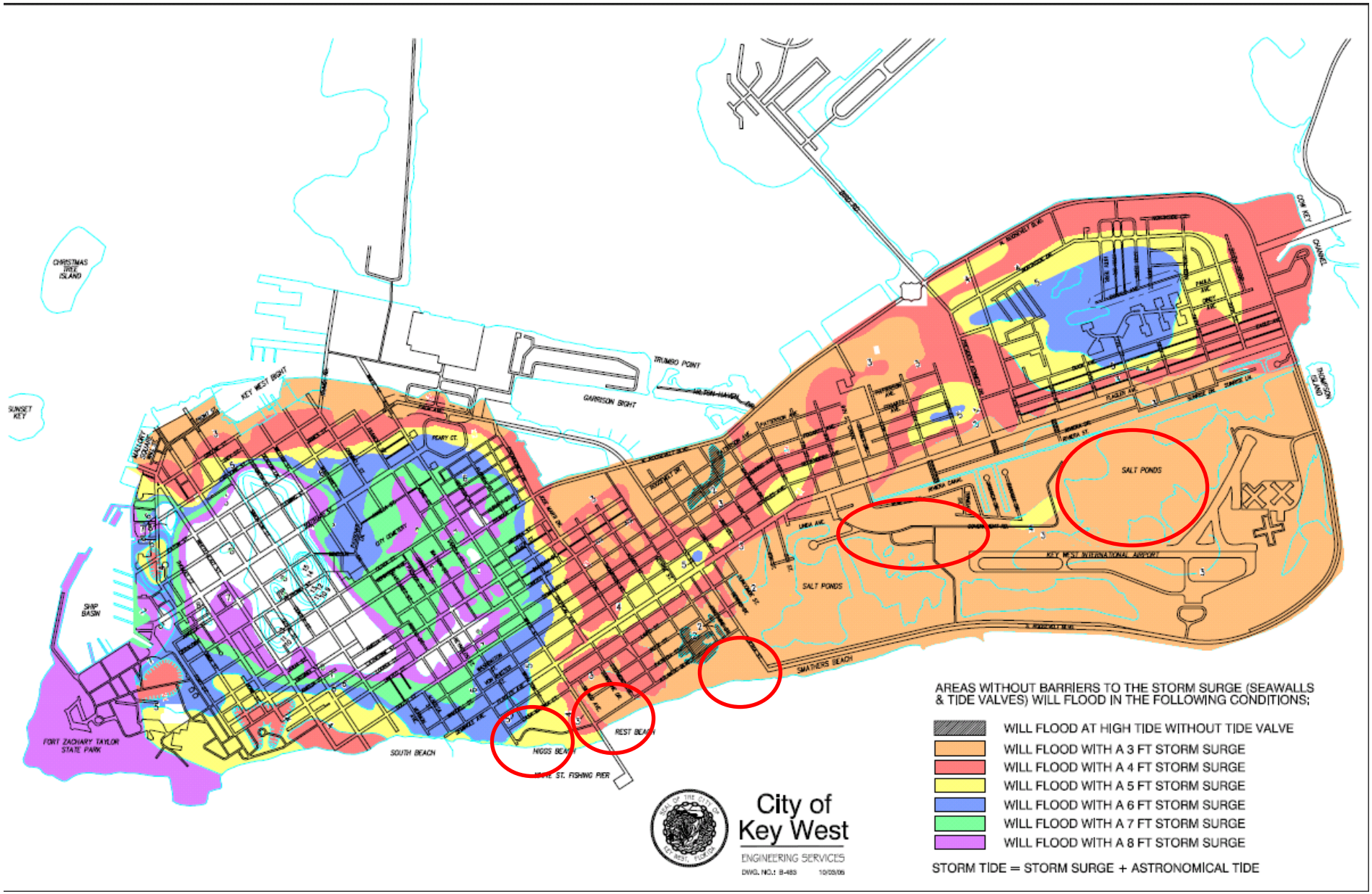
Enhancing resilience to undesirable change

- Identifying and protecting conservation areas and built areas with inherently high resilience
  - elevation,
  - representation,
  - replication,
  - connectivity, and
  - effective management
- Implementing “no regrets” strategies for effective management
  - controlled burning,
  - invasive species control, and
  - wetlands/groundwater restoration
  - flood-proofing/storm-proofing buildings
  - storm water management


CHRISTMAS TREE ISLAND
SUNSET KEY
KEY WEST BIGHT
TRUMBO POINT
GARRISON BIGHT
CON KEY
CHANNEL
THOMPSON ISLAND
SALT PONDS
KEY WEST INTERNATIONAL AIRPORT
SMATHERS BEACH
SHIP BASIN
FORT ZACHARY TAYLOR STATE PARK
SOUTH BEACH
HIGGS BEACH
REST BEACH
HOWE ST. FISHING PIER
AREAS WITHOUT BARRIERS TO THE STORM SURGE (SEAWALLS & TIDE VALVES) WILL FLOOD IN THE FOLLOWING CONDITIONS;
WILL FLOOD AT HIGH TIDE WITHOUT TIDE VALVE
WILL FLOOD WITH A 3 FT STORM SURGE
WILL FLOOD WITH A 4 FT STORM SURGE
WILL FLOOD WITH A 5 FT STORM SURGE
WILL FLOOD WITH A 6 FT STORM SURGE
WILL FLOOD WITH A 7 FT STORM SURGE
WILL FLOOD WITH A 8 FT STORM SURGE
STORM TIDE = STORM SURGE + ASTRONOMICAL TIDE
City of Key West
ENGINEERING SERVICES
DWG. NO.: B-483
10/05/06

Adapting to unavoidable change

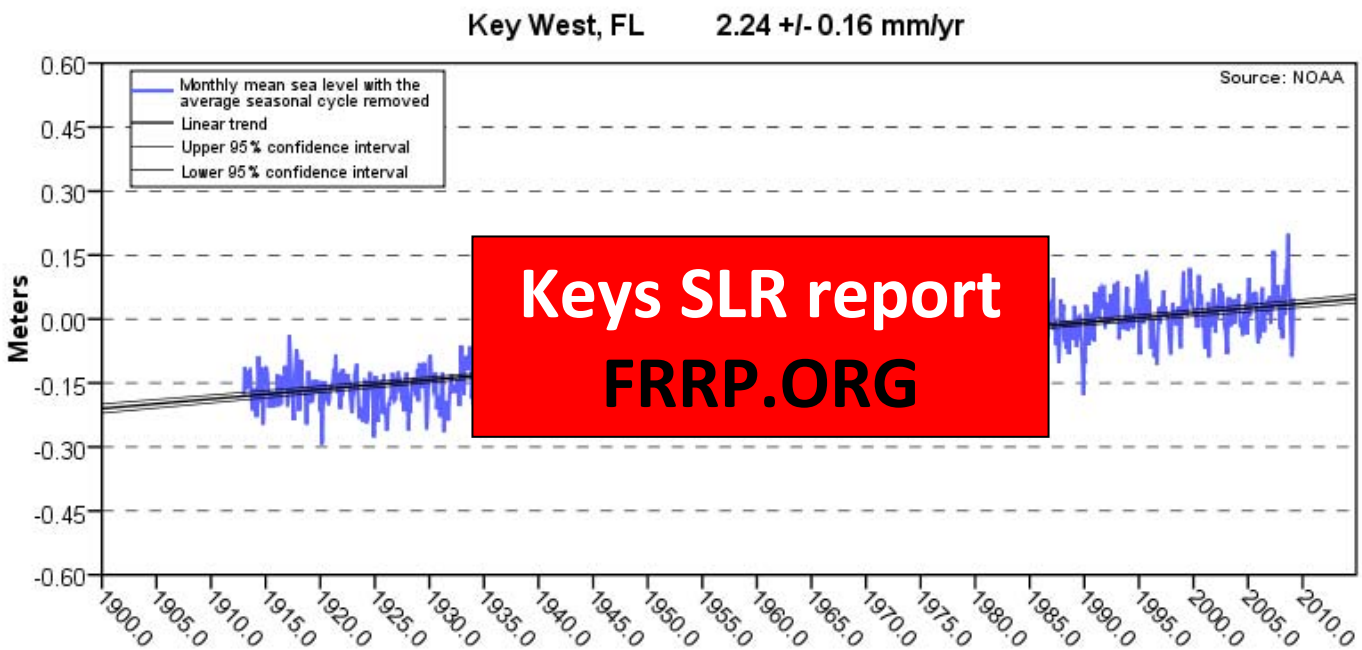
- Implementing ex-situ conservation measures if necessary and warranted
  - captive breeding for imperiled animals
  - seed banking for imperiled plants
- Managing today for tomorrow’s marine ecosystem
  - removing pollutants prior to inundation
  - removing artificial surfaces once they are obsolete

Planning ahead

- Integrate resilience and adaptation planning for the natural and built environment to minimize natural areas degradation and maximize ecosystem service benefits to people
  - Key West Adaptation Plan
  - Monroe County Green Initiatives Task Force
  - Southeast Florida Regional Climate Change Compact
  - South Florida Water Management District
  - U.S. Army Corps of Engineers
  - Comprehensive Everglades Restoration Program
  - Etc., etc., etc.

The sky is not falling, but the sea is rising.

How will the Florida Keys adapt?



Keys SLR report
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The Nature Conservancy

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