

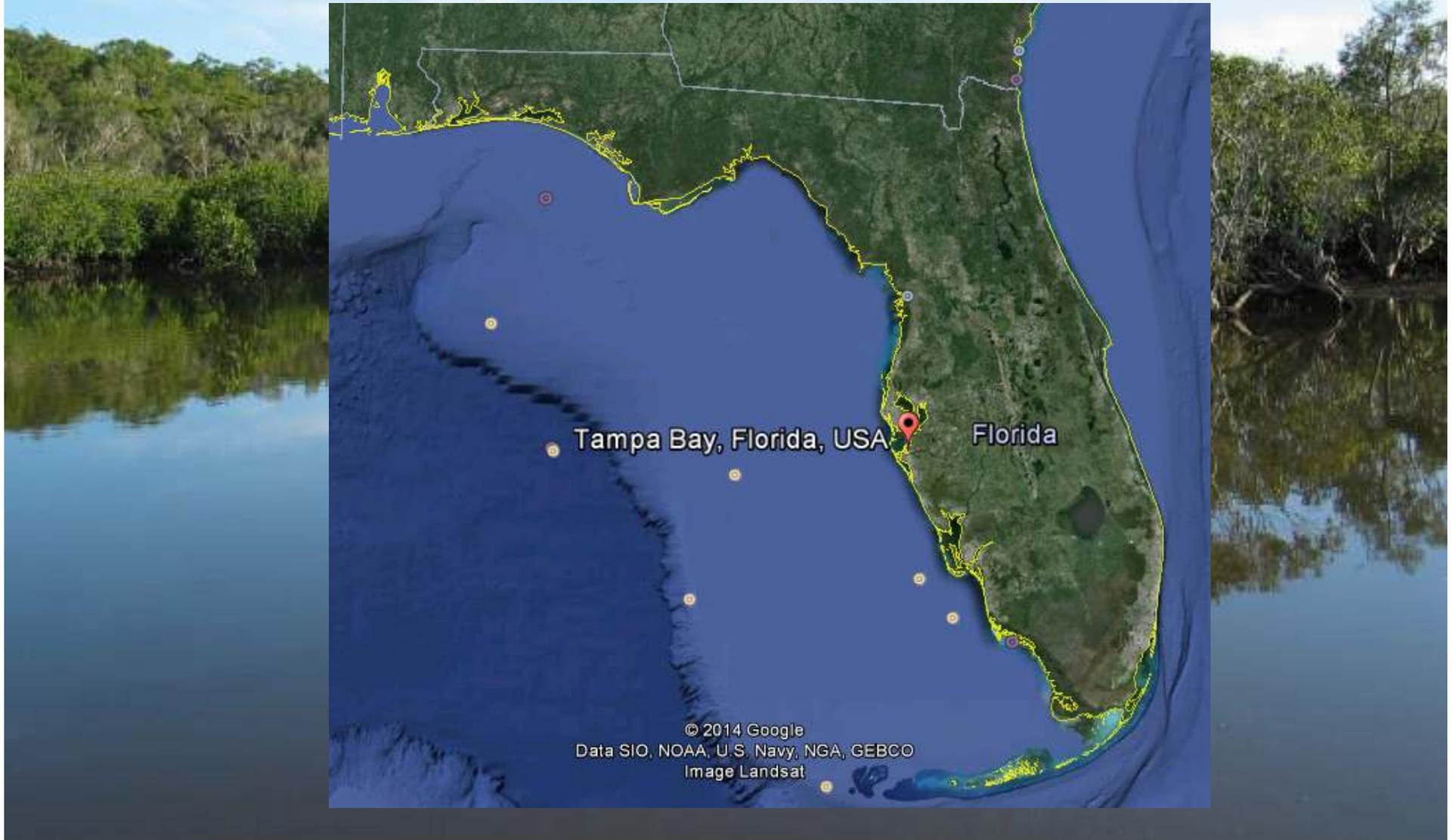


MangroveWatch

Tampa Bay

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Christopher Miller, Ph.D.

Mangroves are a Significant Coastal Habitat in Florida



Shoreline Monitoring and the Challenge of Scale



Remote sensing

Field studies



Shoreline Monitoring and the Challenge of Scale



Remote sensing

Field studies



Large Spatial Extent
Limited Resolution

Costly?



Limited Spatial Extent
High Resolution

Costly?

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?



Limited Spatial Extent
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Shoreline Video Assessment Method



MangroveWatch – the 6 step cycle



*Training & support
from mangrove
experts*

Step 1: Select area
of mangroves or
shoreline to monitor

Step 2: Film shoreline

Step 3: Track position

Step 6: Feedback on your
mangroves health will be sent
back to you



Data assessment

Data collection



Step 4: Send video and GPS
track to mangrove experts

Step 5: Repeat Steps 1 to 4 -
every 6 months



What do we look for?



VEGETATION FEATURES

MANGROVE

DENSITY

HEIGHT

DOMINANT SP.

DIEBACK

Intensity

DIEBACK

Scale

FOREST TYPE

FALLEN TREES

EXPOSED
ROOTS

SEEDLING

DENSITY

TERRESTRIAL

DENSITY

HEIGHT

DOMINANT SP.

HEALTH

FALLEN TREES

EXPOSED ROOTS

ASSESSING

ECOSYSTEM VALUE & CONDITION

& Identifying threats & drivers of change

BANK FEATURES

BANK MORPHOLOGY

SUBSTRATE

PHYSICAL PROCESS

HABITAT

PRESSURES

DIRECT

CUTTING

GRAZING

RECENT
REMOVAL

INDIRECT

HARDENED BANK

OPEN DRAIN

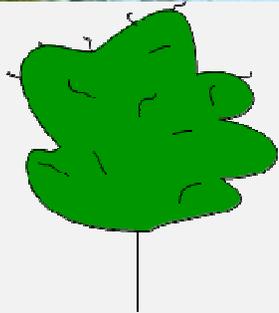
ADJACENT
LANDUSE

BUILT
STRUCTURES

LITTER

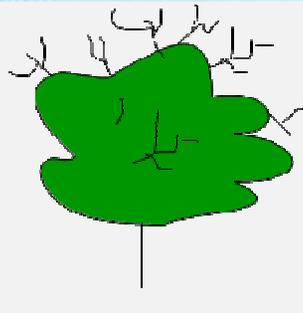
BOATS

An example: Dieback Intensity



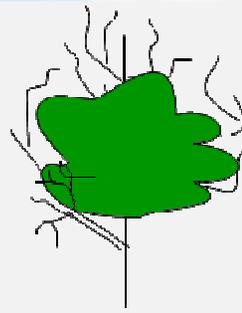
- 5%**
(DB Present)
- Dead Twigs visible
 - No dead branches
 - Leaves green
 - <5% of tree affected

1



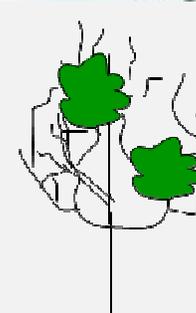
- 25%**
(DB Noticeable)
- Dead Twigs obvious
 - 1-2 Branches dead
 - Leaves light green
 - <25% of tree affected

2



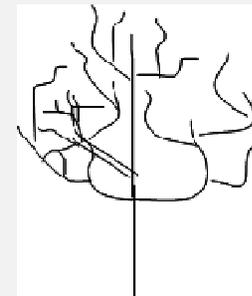
- 50%**
(DB Obvious)
- Dead Twigs obvious
 - Some Whole Branches Dead
 - Crown retreat
 - Leaves light green/yellow

3



- 75%**
(DB Very Obvious)
- Tree mostly dead
 - Only a few leaves/ sparse coverage
 - Leaves yellow/necrotic

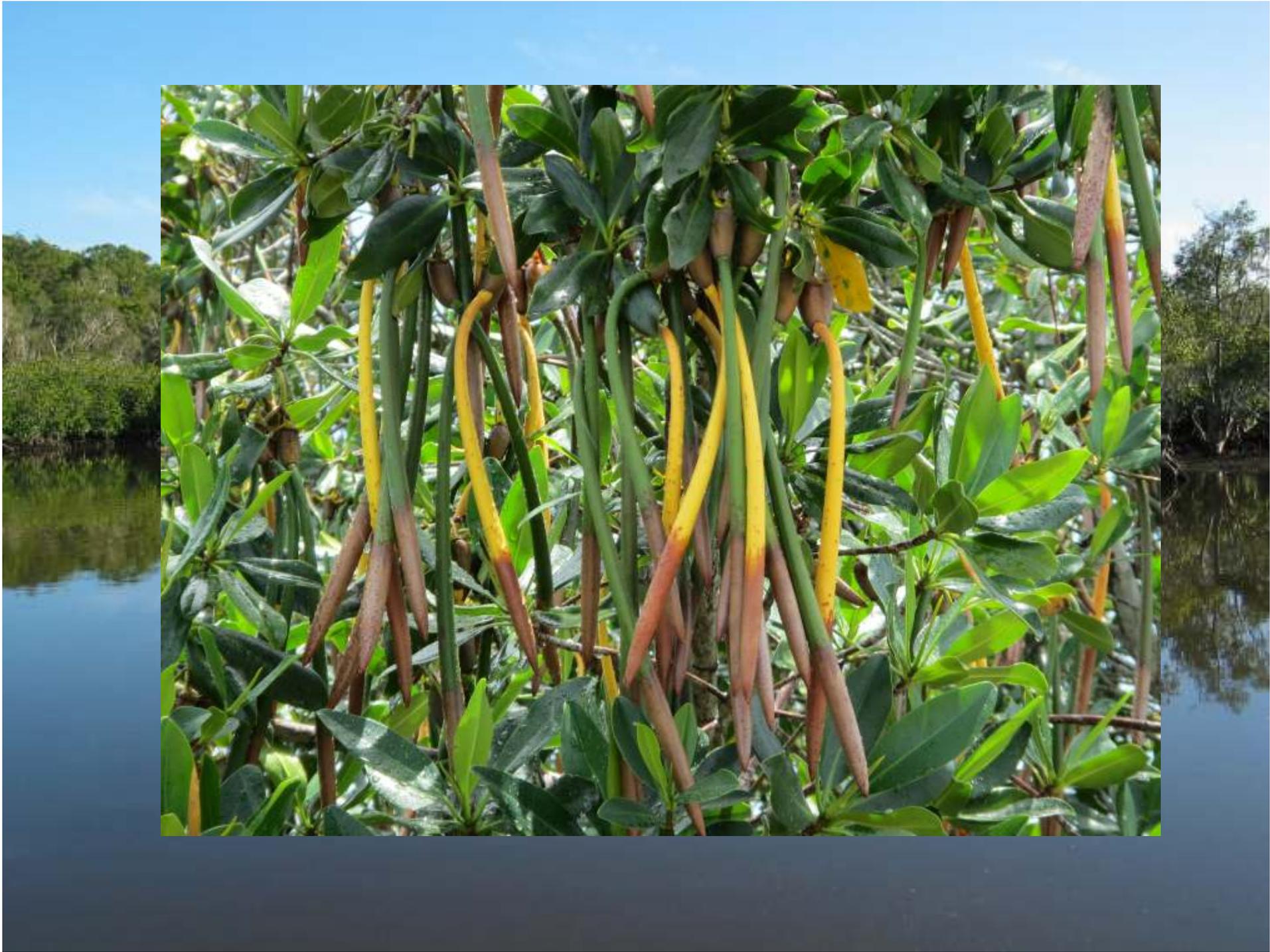
4

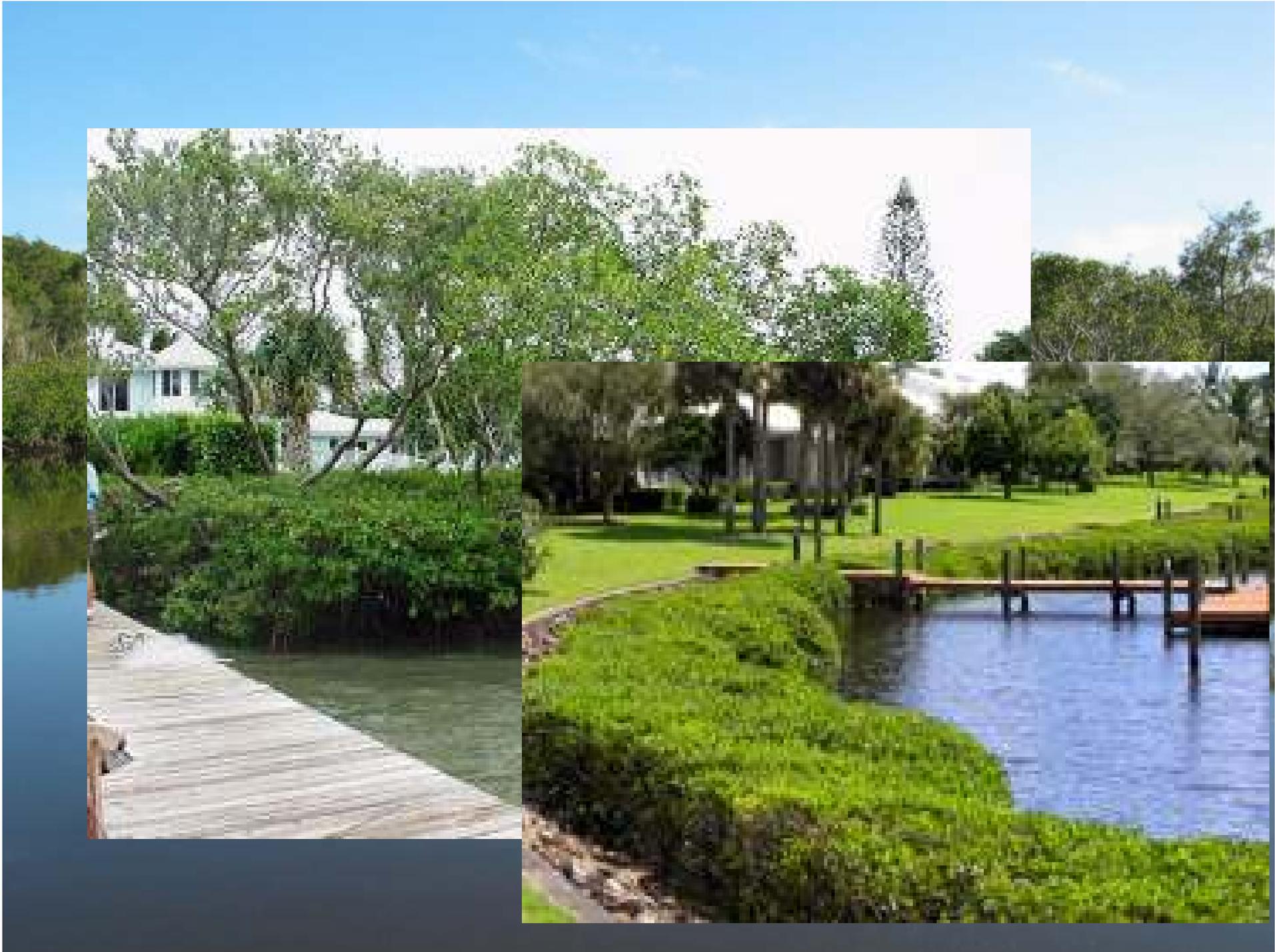


- >90%**
•Very few leaves

5







High Value Shoreline Mangrove Habitat Condition Lower Estuary

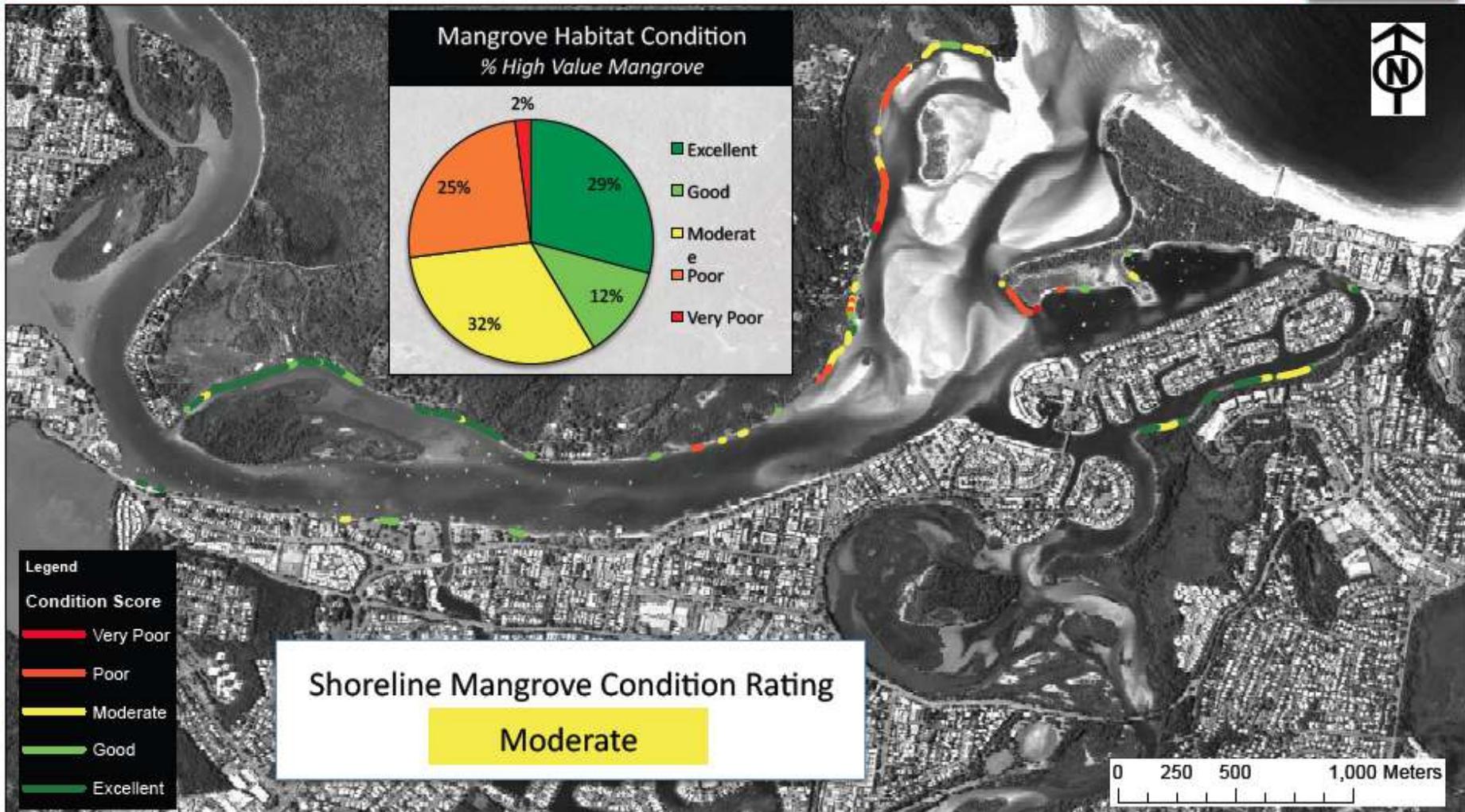


Figure 26: Map of Mangrove Habitat Condition score in the lower Noosa estuary



Drought Recovery

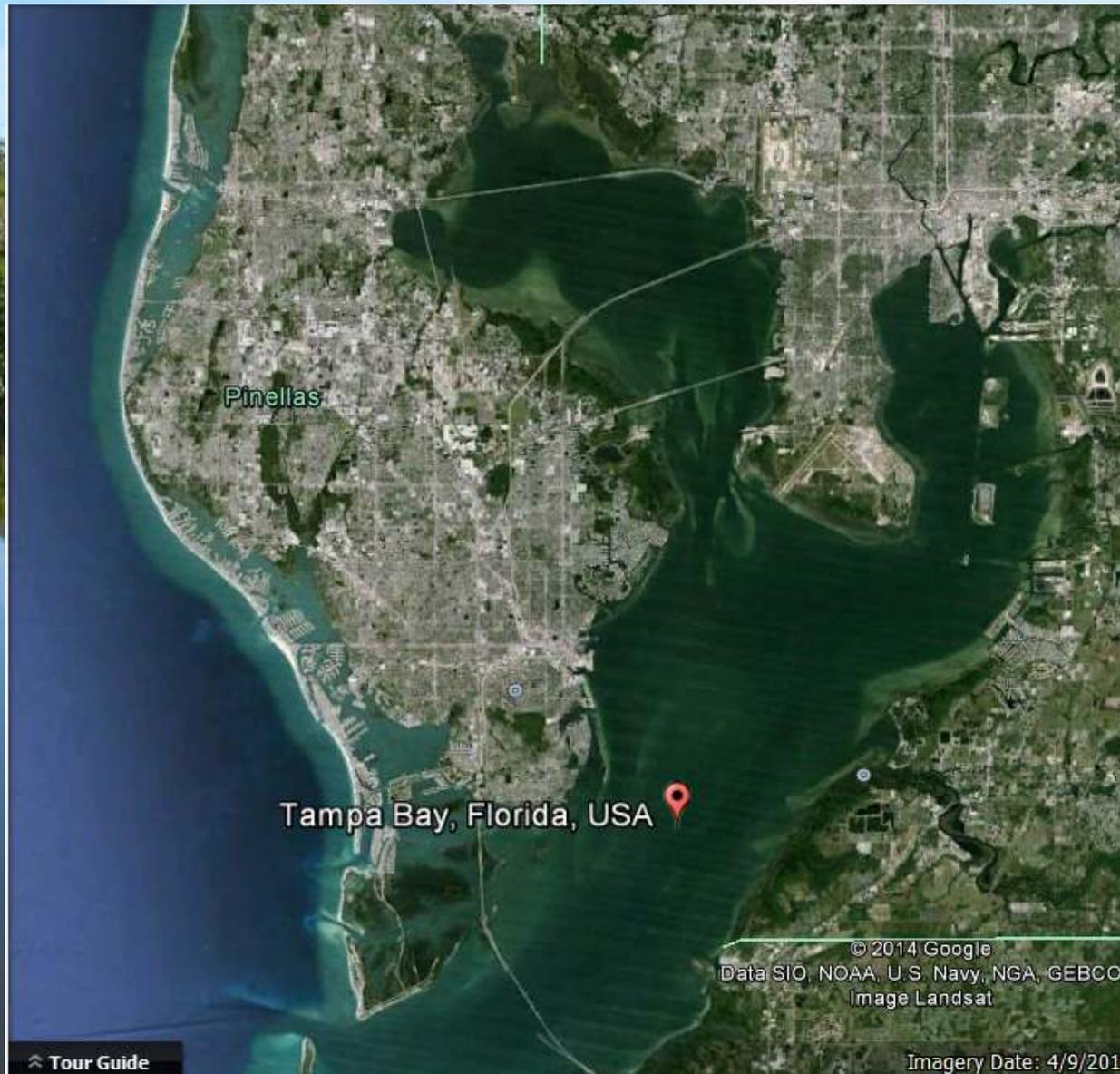
2009



2011



Where we've monitored.



Moving Forward: Measurements of Vegetation Stress

Measurement

Leaf Area Index

Canopy Cover

Chlorophyll Content

Evapotranspiration

Method/Equipment

Photosynthetic Active
Radiation (PAR) meter

Spherical Densiometer &
Hemispherical photography

Spectral reflectance &
fluorometry

Leaf Porometry



We are looking for partners!



I am a

MangroveWatcher

see: www.mangrovetwatch.org.au