

Salt, Fire, Water and the Fate of an Ecosystem



David Rudnick

**South Florida Natural Resources Center
Everglades National Park**

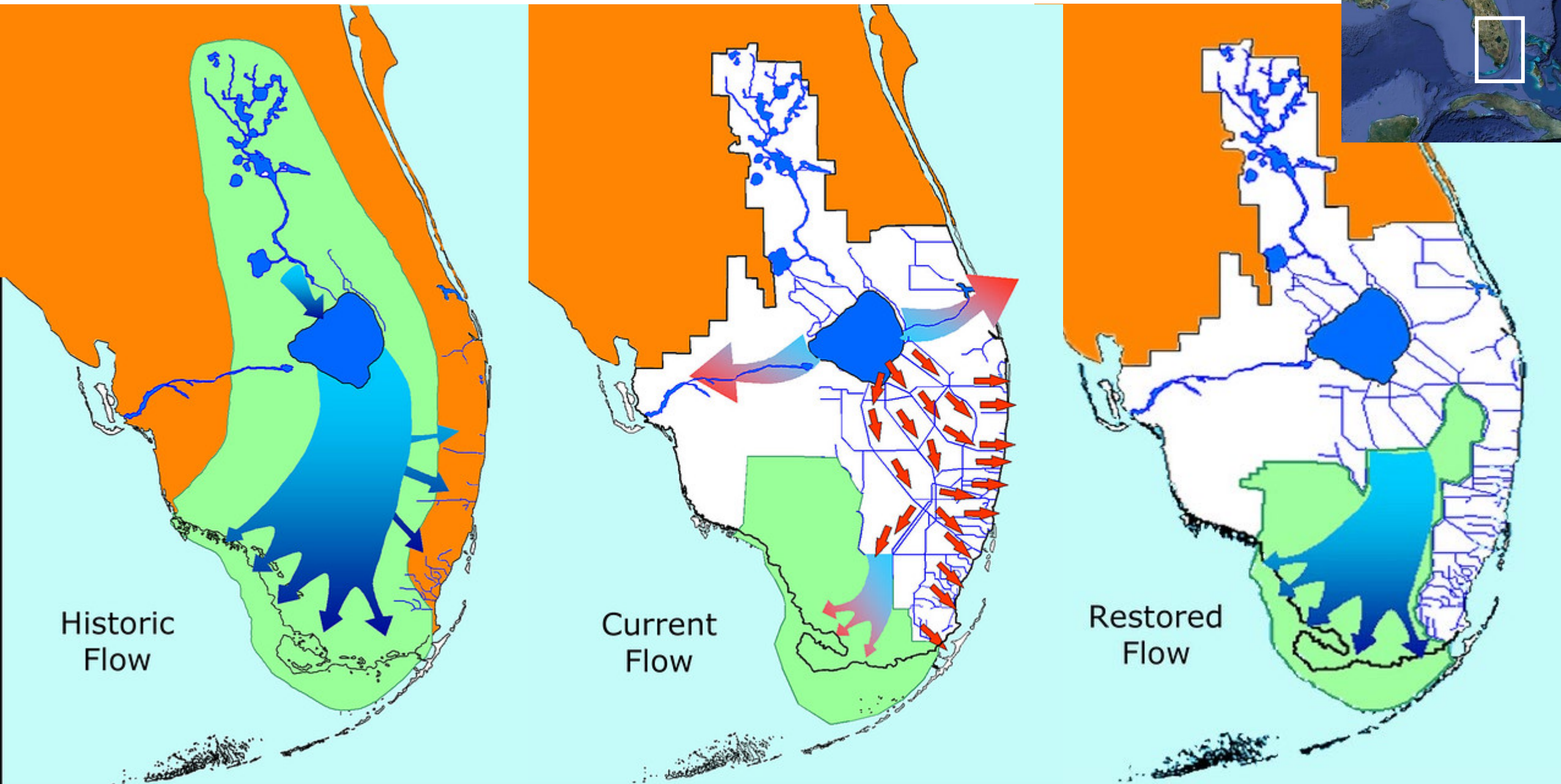
Greater Everglades Ecosystem Restoration Conference

Coral Springs, FL

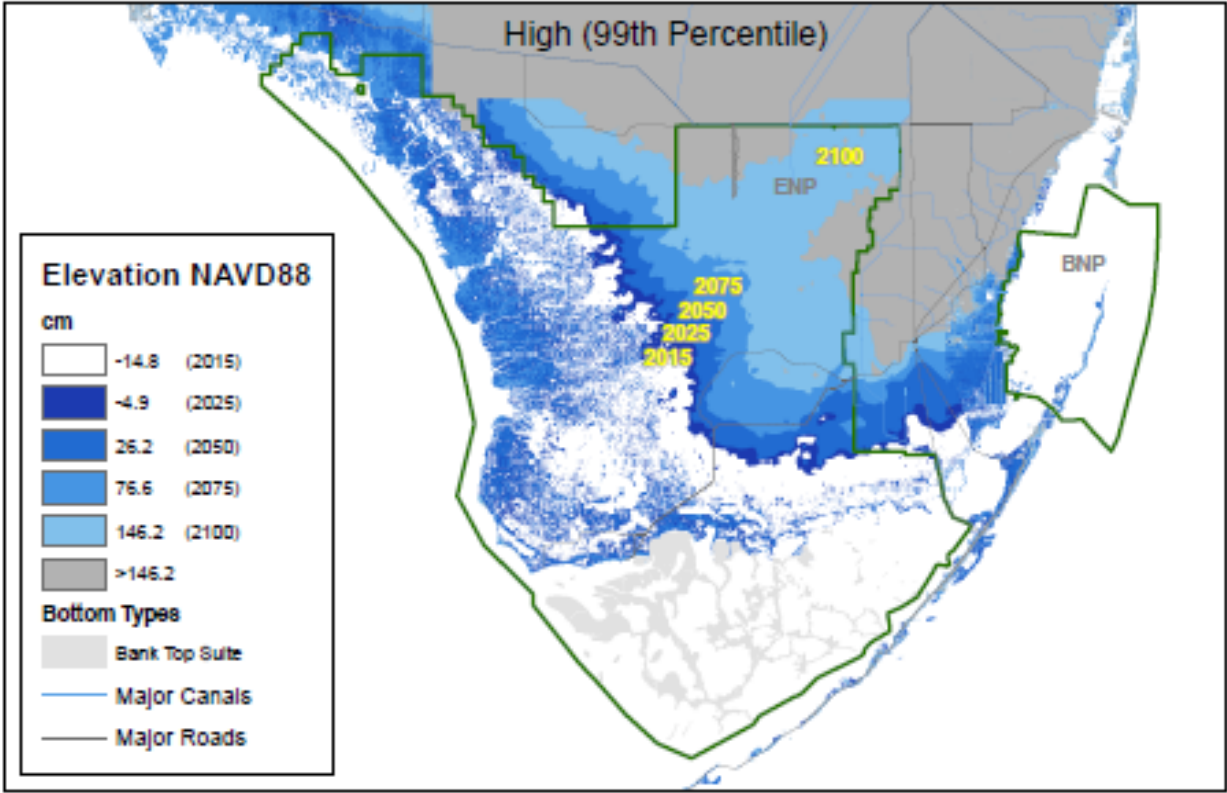
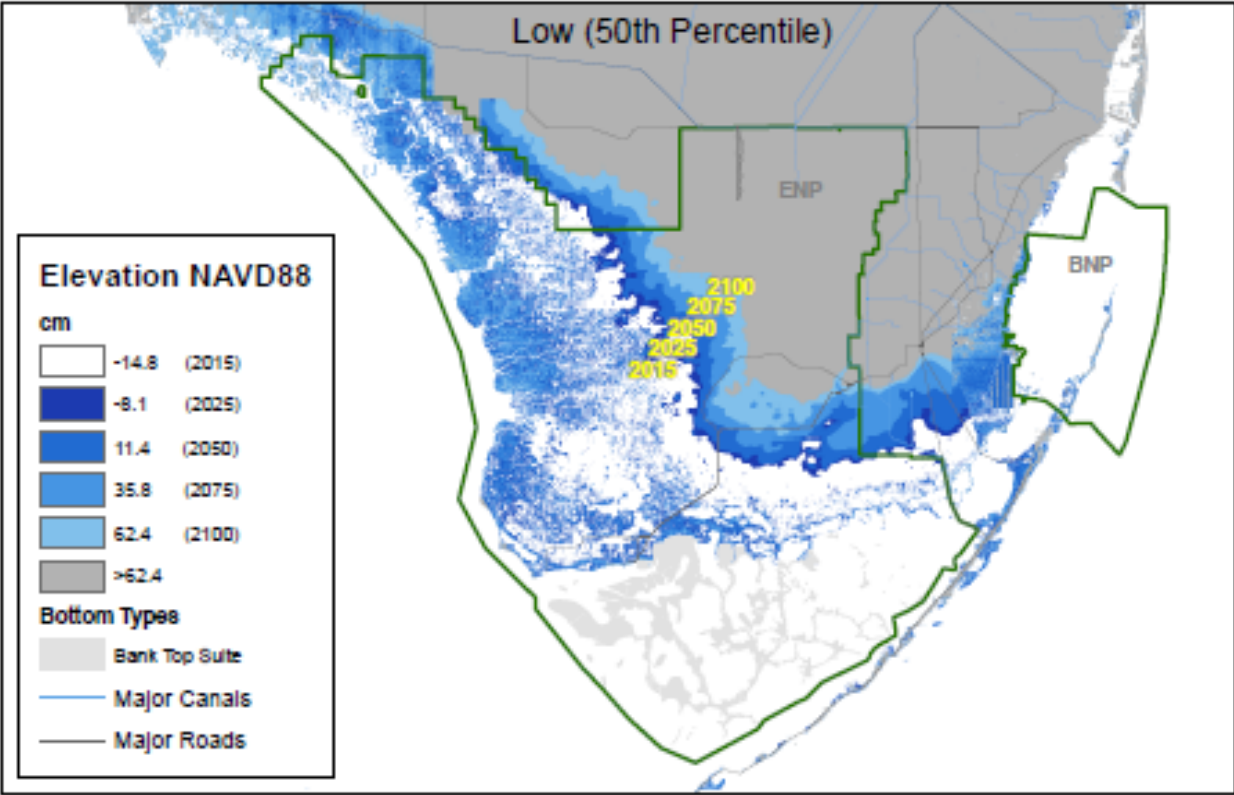
April 23, 2019



A Vision of Everglades Restoration



Scenarios of Everglades Inundation from Sea-level Rise (with no ecological feedback)





Mangrove-dominated Coastal Wetlands Cover Half of Everglades National Park's Land Area

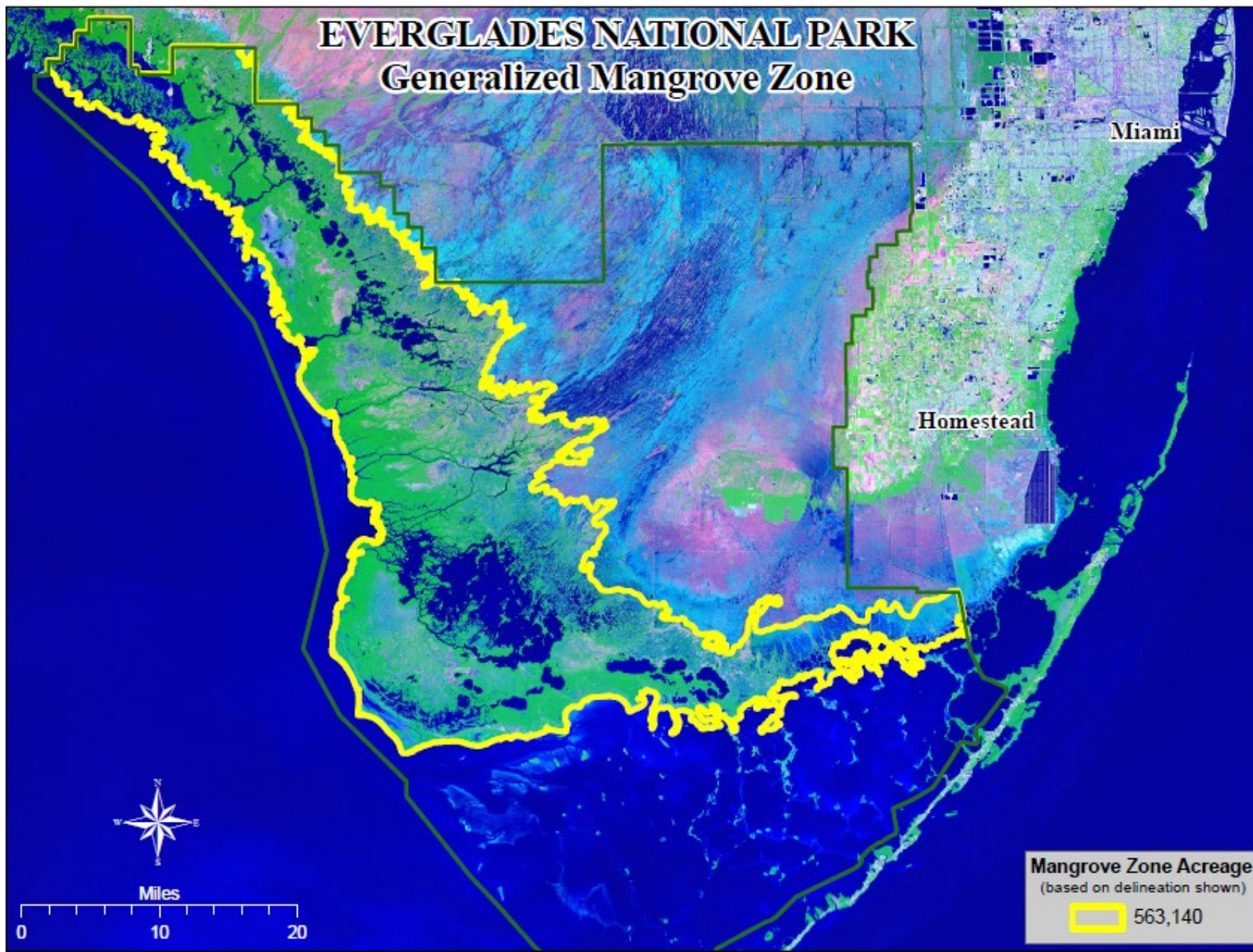




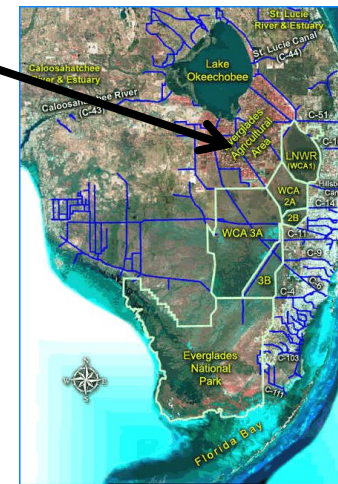
Photo by
Franco
Tobias



Organic Soil Oxidation: 80 Year Elevation Loss



Everglades Agricultural Area
ground surface was at the
post's top in 1924



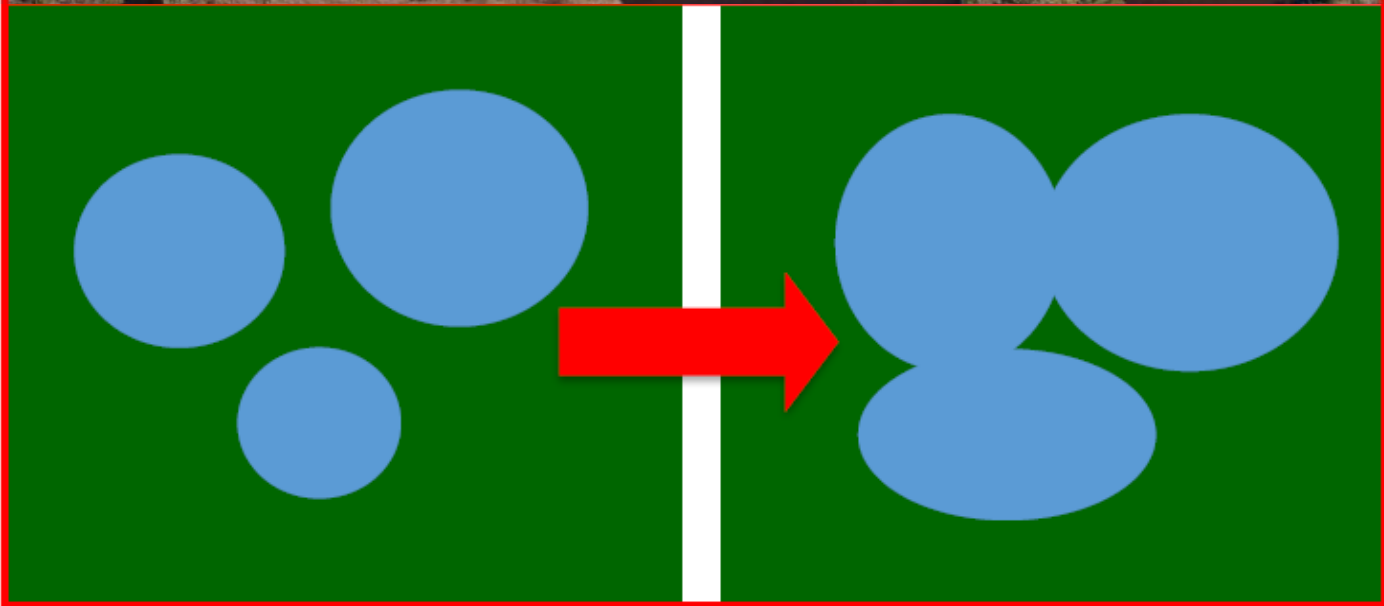
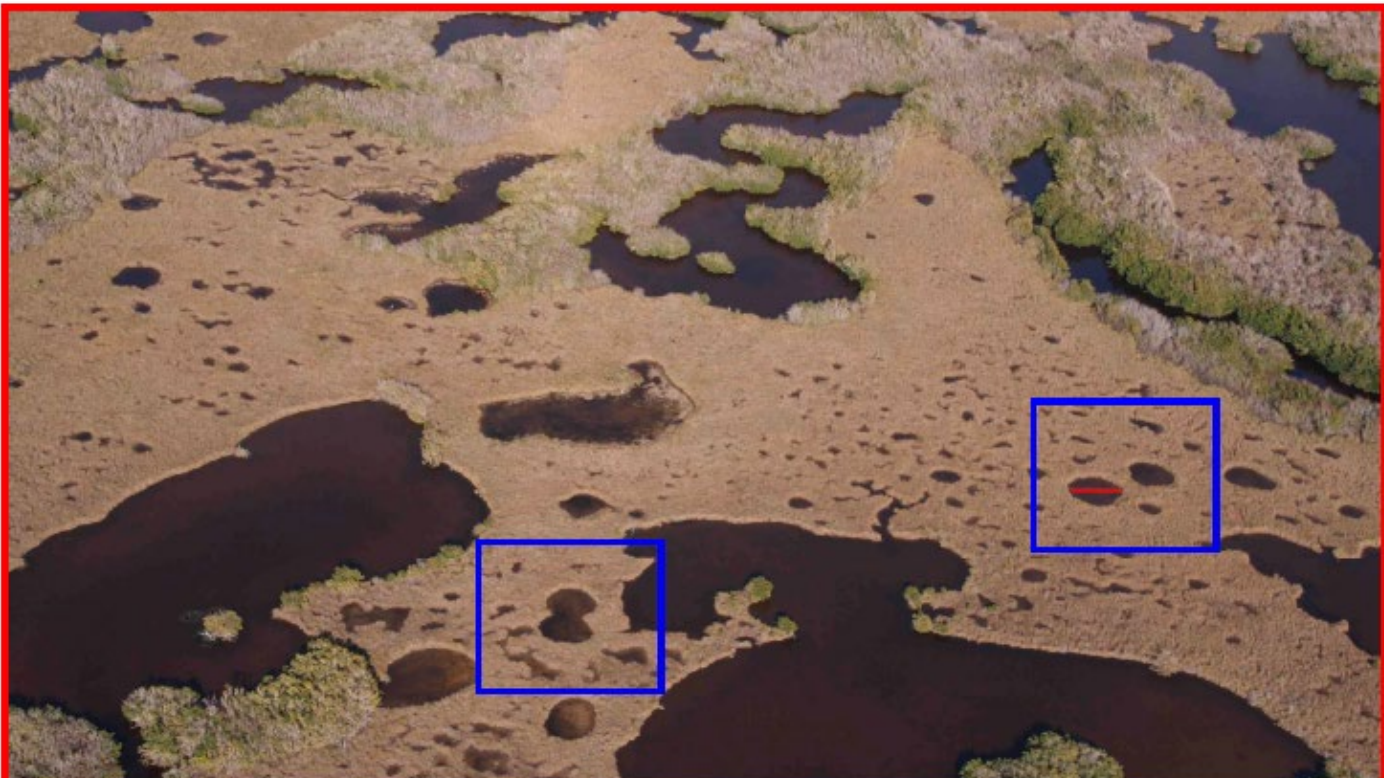
From Snyder, G. H. (2004)

Peat Collapse Apparent in Brackish Marshes



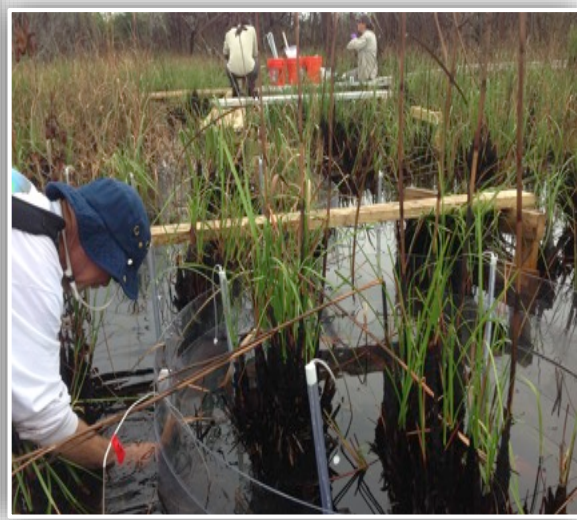
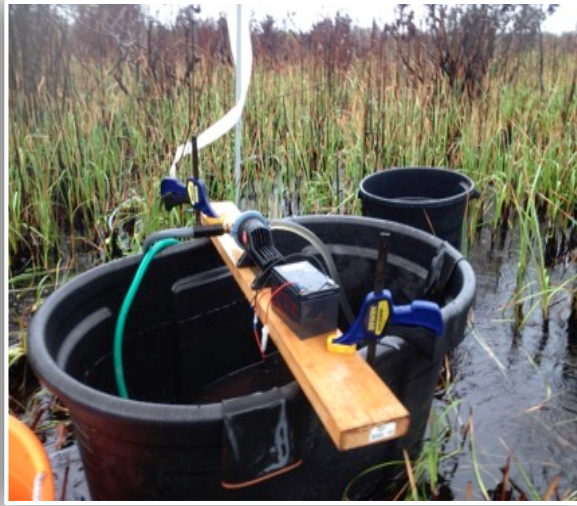
from:
Ben Wilson,
2018

Collapse of Salt Marshes, Expansion of Ponds Documented

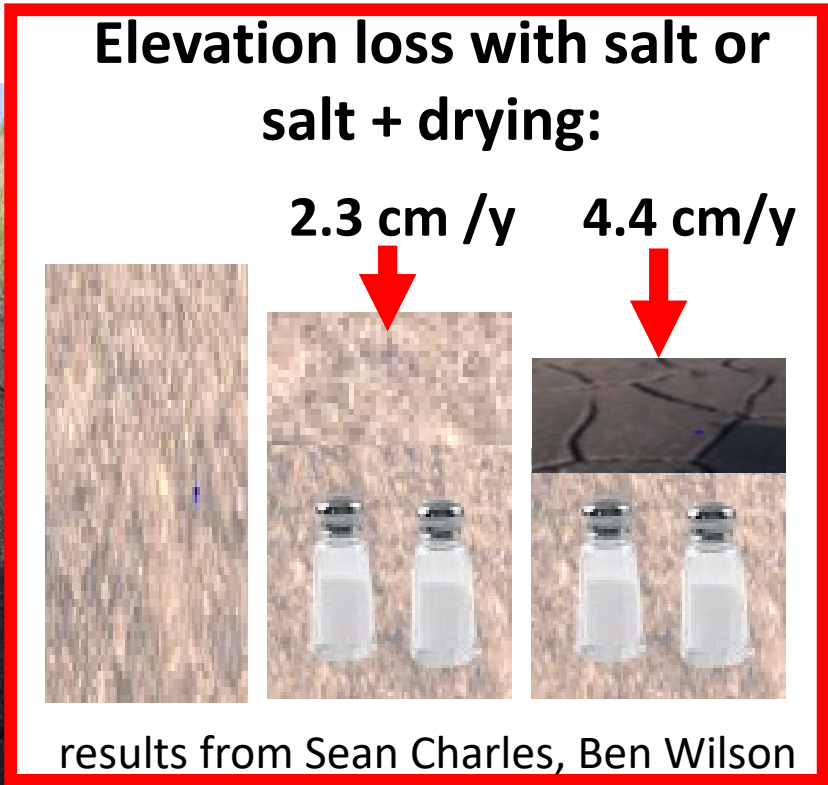
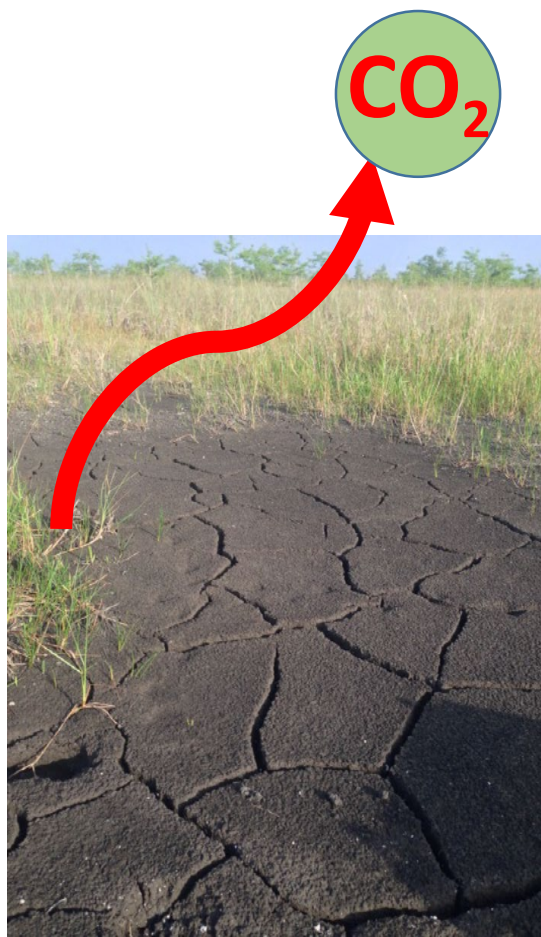
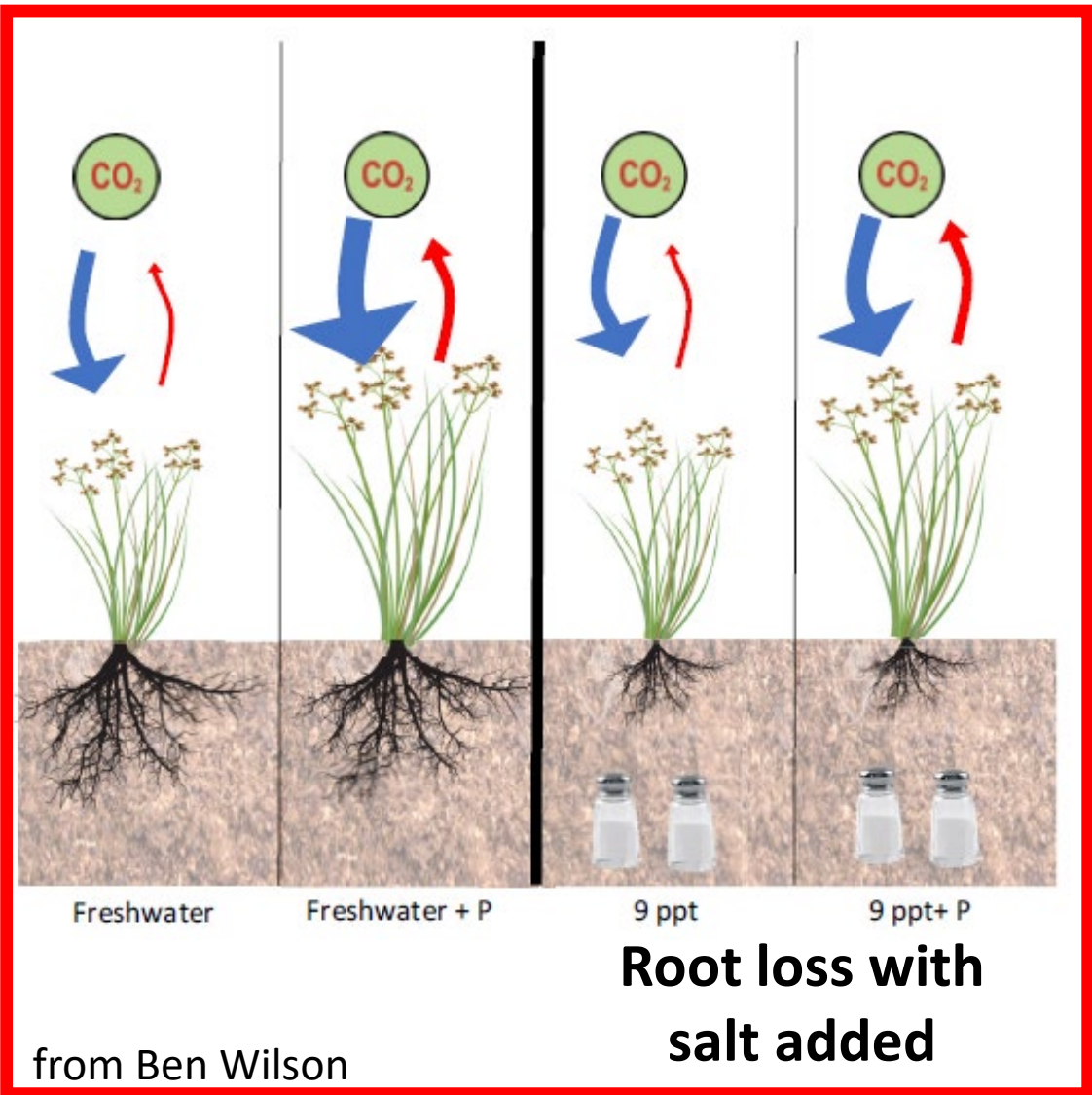


From: Kim Andres, 2016

Causes of Peat Collapse? .. Experiments with Seawater Dosing



Experimental Results: Salt & Drying can Cause Wetland Soil Elevation Loss



modified from Ben Wilson

Soil Collapse & Erosion can Impact Coastal Ecosystems via Nutrient and Particle Export



Before seagrass die-off



After seagrass die-off with
algal bloom in Florida Bay

Fire Management Affects Coastal Wetland Plant Communities – and may Inhibit Mangrove Establishment and Expansion



Above photos by Nicole Sebesta
Left photo by Michael Gu



photo by
Clyde Butcher
(used with
permission)