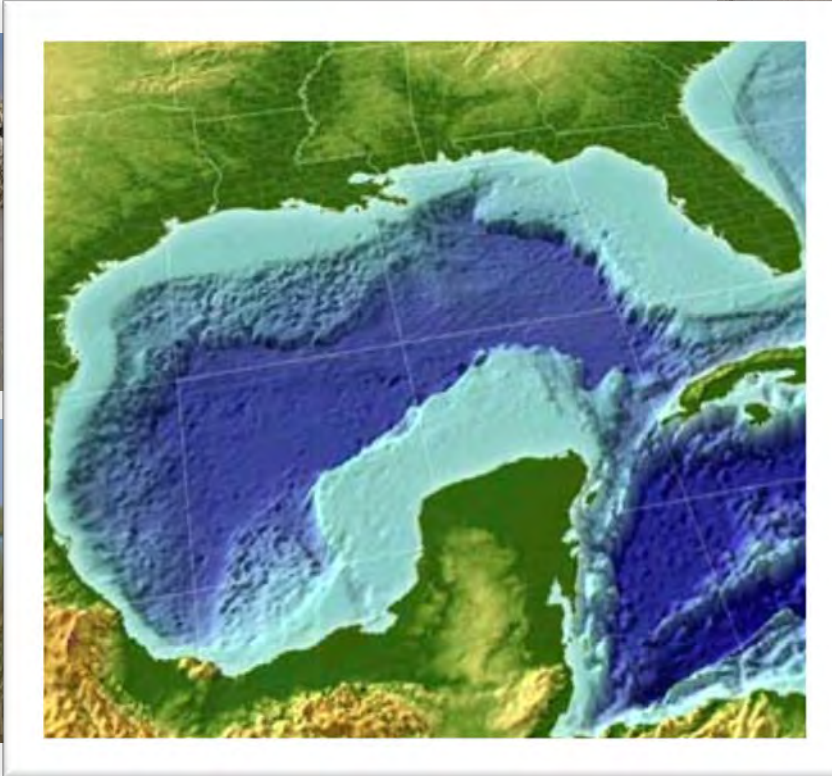
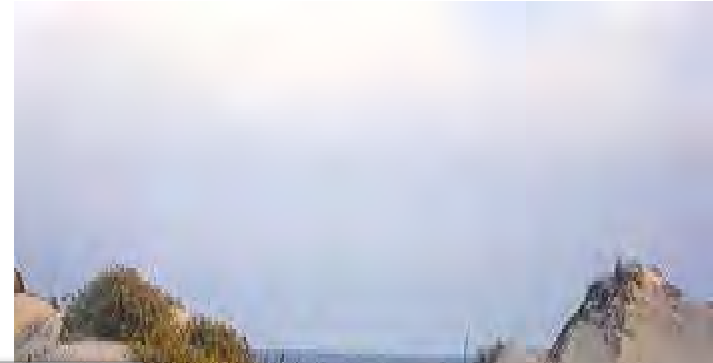




# Ecological Studies of Biogenic Habitats in the Gulf of Mexico





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# Buried Oil Layers in GOM Beach Sand (Pensacola, DI)

by Markus Huettel and Joel Kostka

- Sampling oiled beaches (Pensacola, Dauphin Island) & reference site (St. George Island)



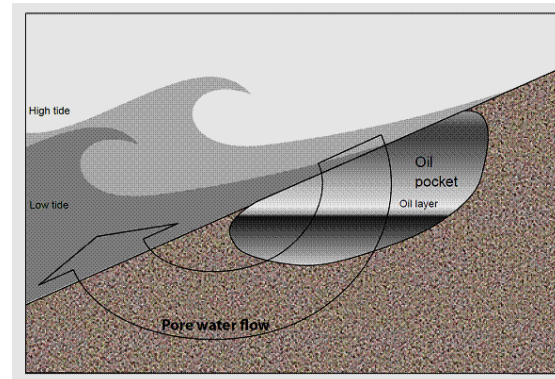
Pensacola Beach oil  
25 cm thick



Sand deposited on oil



Compressed oil  
55 cm deep



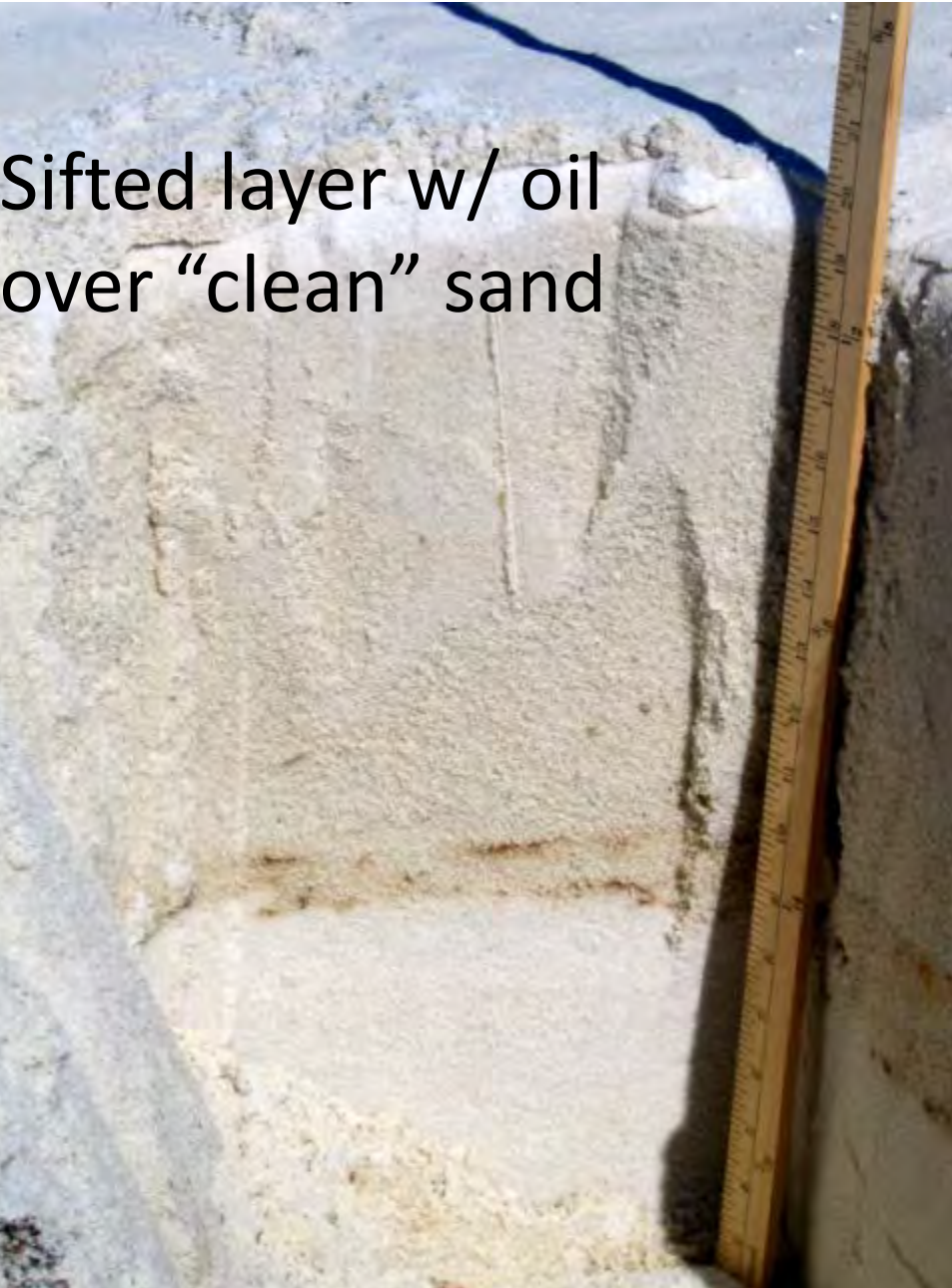
O<sub>2</sub> consumption



Sediment permeability

= microbial activity

Sifted layer w/ oil  
over "clean" sand



## The Deep Clean



## The View



1. Removed concentrated oil layers, replaced w/ sand layer mixed with small oil particles.
2. Oil in sifted sand = 1 order mag ↓ conc. layers,  $O_2$  consumption ↓ by 1/2

# Coastal Dune Vegetation Survey

by T. E. Miller

Barrier Island vegetation census @ 7 sites  
from MS to Anclote Key FL

**Q:** How does dune vegetation and oil impact  
differ across sites?

## Approach:

- Establish permanent sites to monitor (10 y)
- Quantify soil characteristics
- Quantify current levels of oil residues

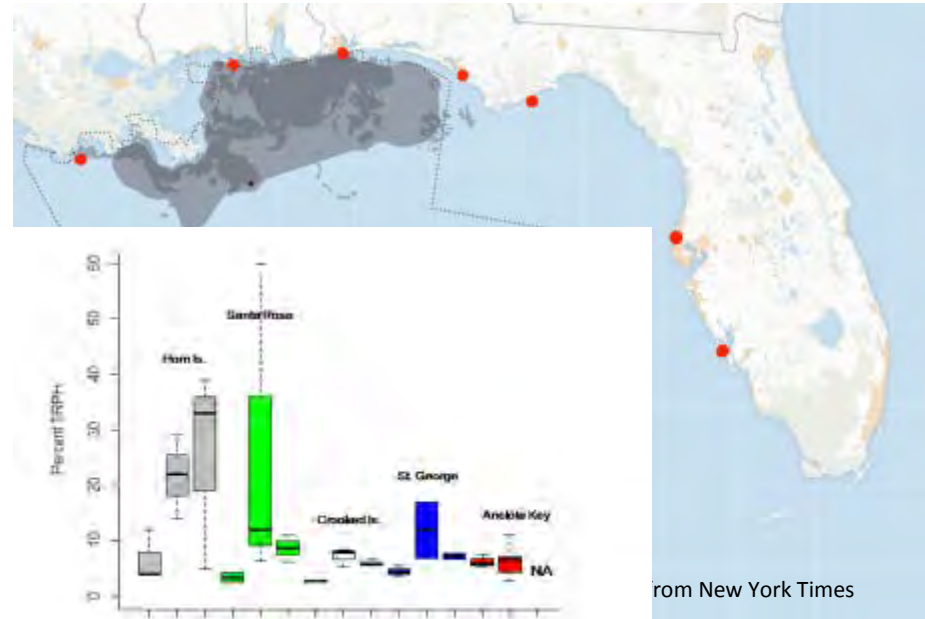
## Results:

Edaphics - foredunes = dry/nutrient poor  
Interdune –less so, backdune heterogenous,  
intermediate

## Oil residues rel. low at all sites

- Horn, Santa Rosa - tarballs
- Crooked Island – no oil
- St. George, Anclote Key, and Cayo Costa– no reported oil.

Higher in inter- and backdune areas than in  
foredunes



from New York Times



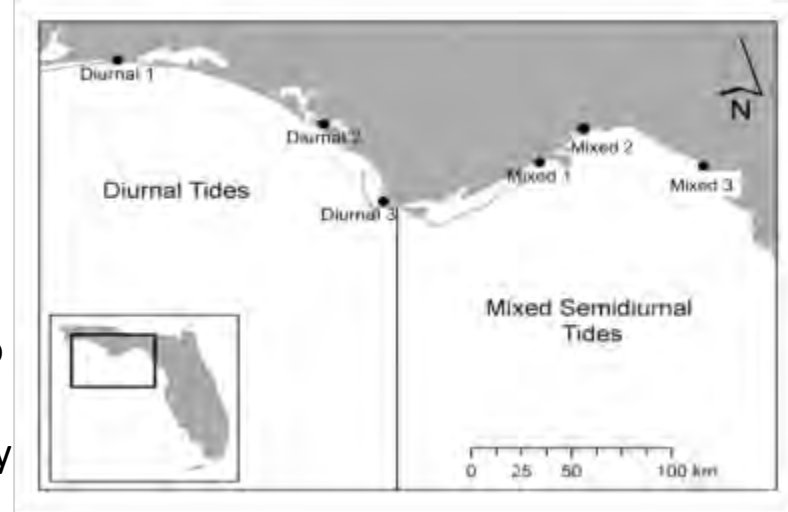
# Saltmarsh Response to DwH, Nutrient Additions

by Randall Hughes & David Kimbro

**Q** – How does marsh community structure influence impact from oil?

## Approach –

- (1) quantified plant species diversity, soil conditions, plant performance, herbivores at 6 sites (400 km, Ft. Walton to Keaton Beach);
- (2) Experimentally tested influence of diversity on community structure (St. Joe Bay);
- (3) Experimentally tested effects of nutrient additions and plant height on consumer pressure (*Spartina alterniflora*)

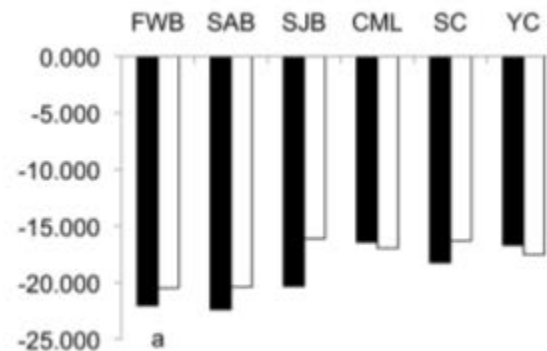


## Results –

- No visible oil. Carbon stable isotopes = oil exposure at western sites: bays of Ft Walton, St. Andrews, St. Joseph Bay (none in May in St. Joe )
- Spatial/temporal variation across sites signif. For abiotic charact., plant, community measures.
- Consumers pref. fertilized vs. unfertilized plants (exac. recov)

## Follow on –

- Need to identify oil source
- Sampling continues



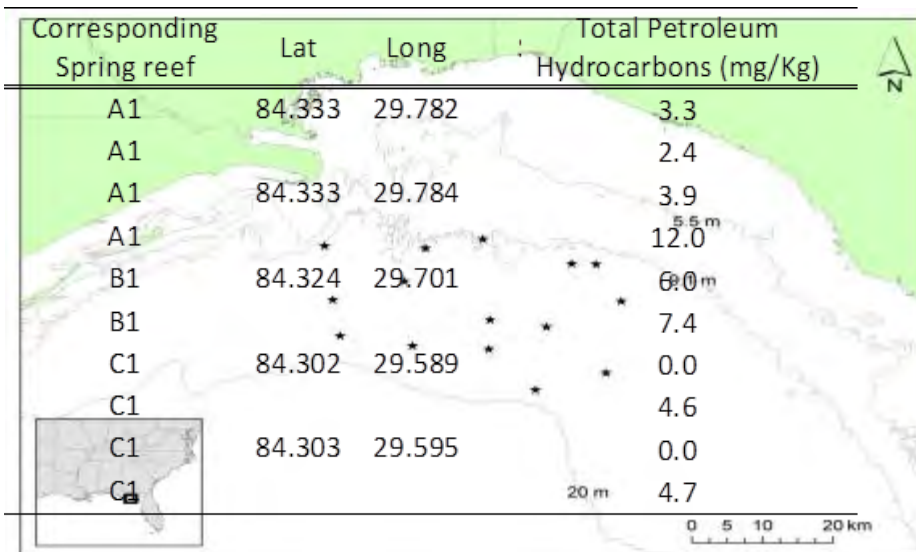
# NEGOM reefs: Map, Describe Shallow Reef Communities

by Christopher Stallings, Christopher Koenig et al.

- Q** -Do shallow reef communities vary in space, time, with geomorphology?  
 -What community charact. indicate environ. change?  
 -Has the DWH oil affected reefs measurably?

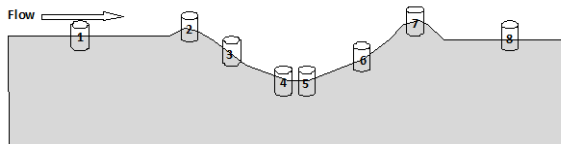
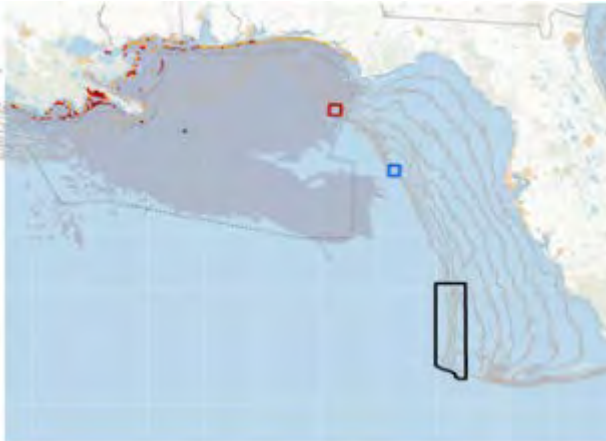
## Approach:

- conducted systematic transect surveys of geomorphology, sessile invertebrate species, fish fauna
- took sediment samples and found oil at low levels; source not clear



# Potential for crude oil pollutants to concentrate in shelf-edge habitat engineered by Red Grouper

by Christopher Koenig, Markus Huettel, Felicia Coleman



**Q:** Does DWH dispersed or particulate crude oil reach pits excavated & maintained by RG?

## Rationale:

- Red grouper = high commercial & recreational value; excavate and maintain pits on WFS edge
- Pits act as natural sediment traps to accumulate particles

**Approach:** Sediments from RG pits in Steamboat Lumps Marine Reserve sampled

- in May 2009 (pre-spill) (OE NURC divers)
- In July 2010 (post-spill) (FAU submersible)
- Sediments analyzed for
  - petrol hydrocarbs, volatile, semi-volatile hydrocarbs
  - potentially toxic polyaromatic hydrocarbons
  - Nickel, Vanadium as indicators for prior oil contamination

**Result - No prob**



# Tracing the intrusion of the oil spill in GOM marine food webs with radiocarbon and stable isotopes

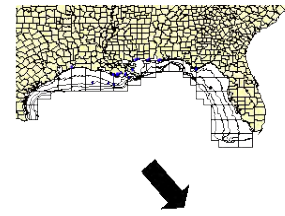
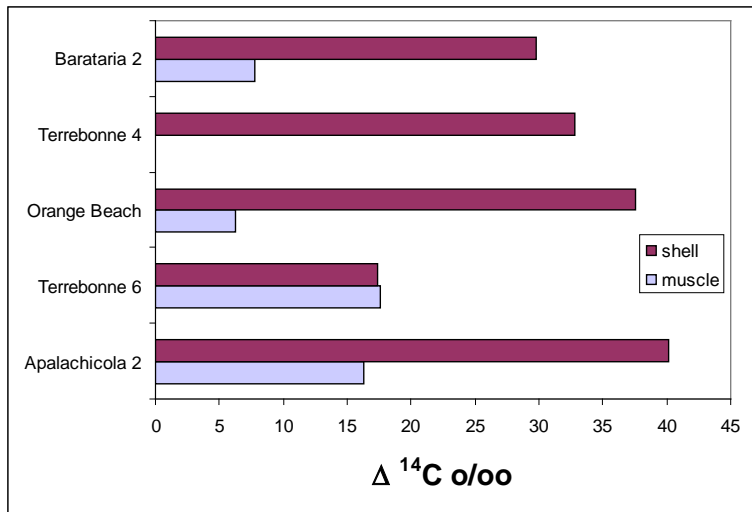
By Jeff Chanton and Kevin Craig

**Q:** Does oil/dispersant enter the food web via microbial consumption or through more direct route of filter and deposit feeding organism

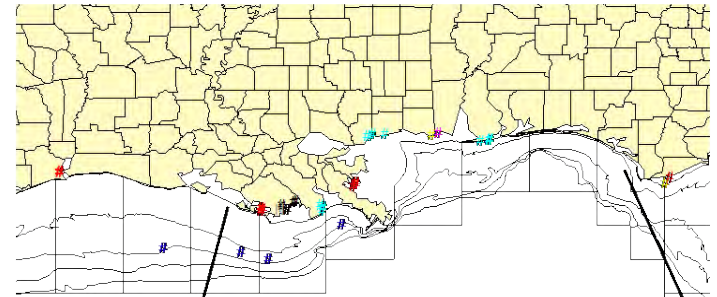
**Approach** – Examined effects on fishery-associated food web dynamics using  $^{14}\text{C}$  (radiocarbon) and  $^{13}\text{C}$ ,  $^{15}\text{N}$  &  $^{34}\text{S}$  as tracers across spatial gradient LA

- baseline pre-impact sampling
- post-impact sampling

**Result** – All sampling conducted; analysis backlogged for months



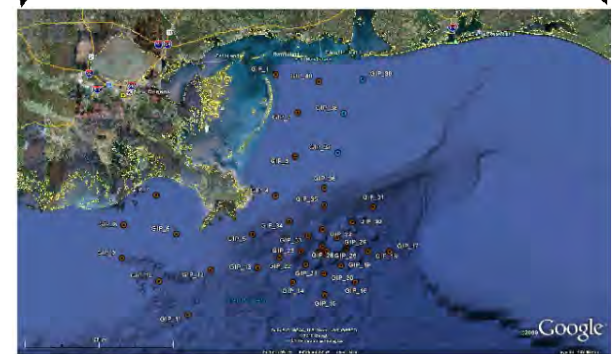
2010 Sampling Locations



2010 samples (sediment, fish, oysters)

- Mar
- Jun
- Jul
- Aug
- Sep
- Oct
- Monthly

October R/V Hatteras Cruise  
20, 50+ cm cores from MC252 wellhead to slope





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