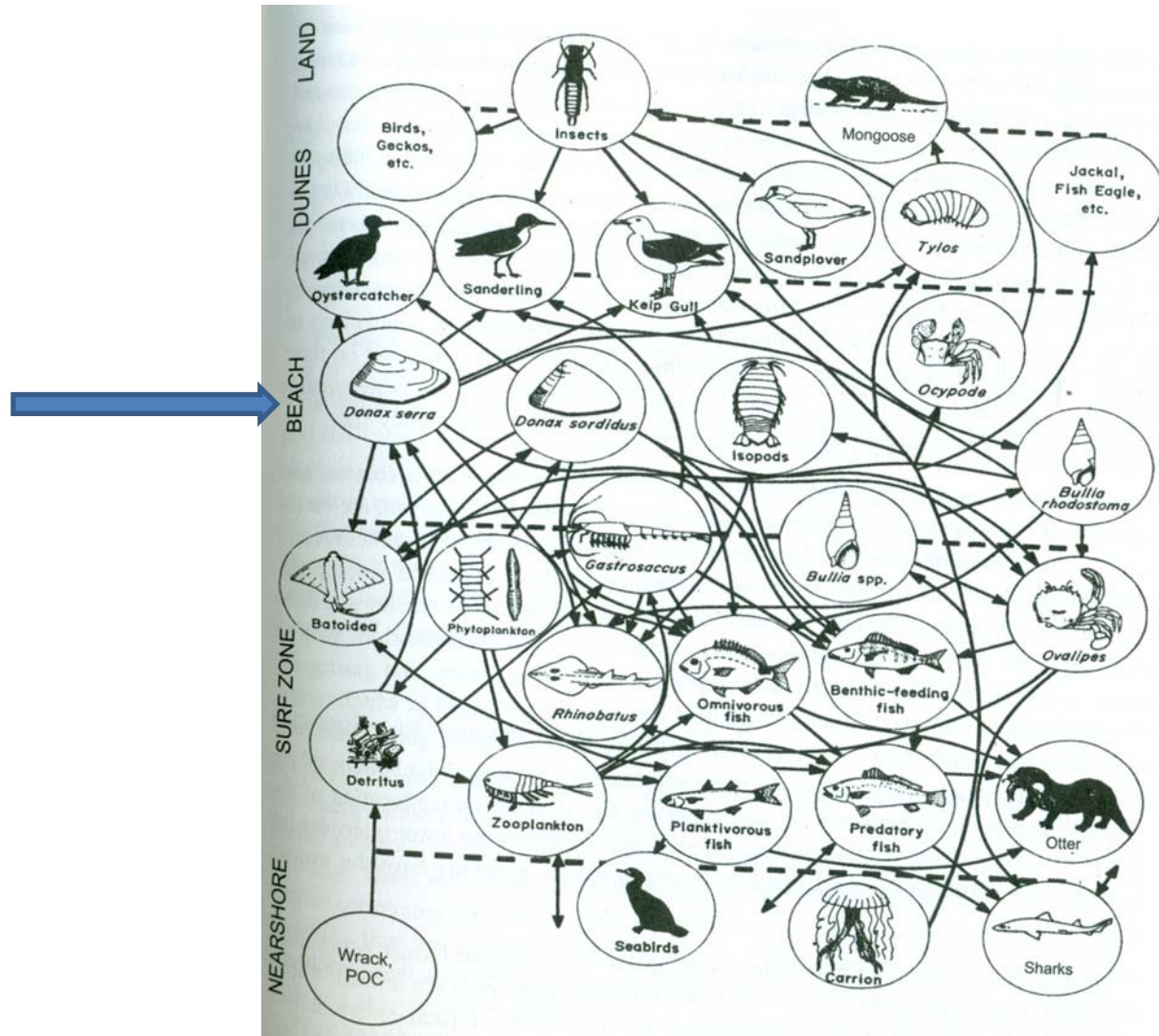


Documenting and characterizing oil in swash zone sediments of beaches impacted by the DWH oil spill: a short and long term view



Susan S. Bell, Alex Tewfik and Kristina Morrow
Department of Integrative Biology
University of South Florida
Tampa, FL 33620-5200

Our initial efforts have investigated potential impacts of oil from the DWH spill on dominant infauna of beaches.





Our sampling is largely conducted by sediment coring of the swash zone along a series of sandy beaches-some oiled, many not.



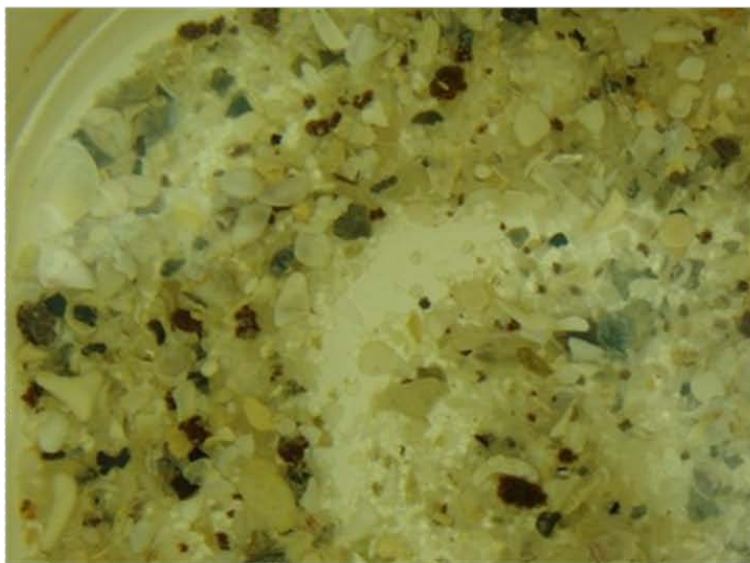


Clean-up of oil from upper shore zones on impacted beaches along NE Gulf coast in fall 2010 was directed at removal of oil from beach sands but oil removal was not attempted in the swash zone, a tidal area with active wave run up and backwash.

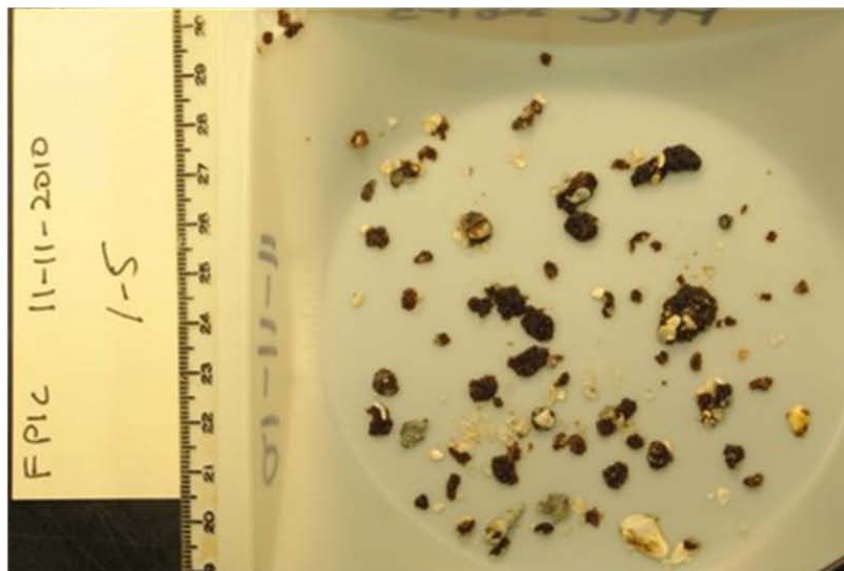


Some clean up by hand of visible LARGE tarballs in intertidal too.

While processing sediment cores we encountered a large amount of tar/oil products. We expanded our sample processing to gather detailed information on the quantity and physical features of oil present in swash zone sediments and changes in morphology of oil products from Fall 2010 through September 2011.



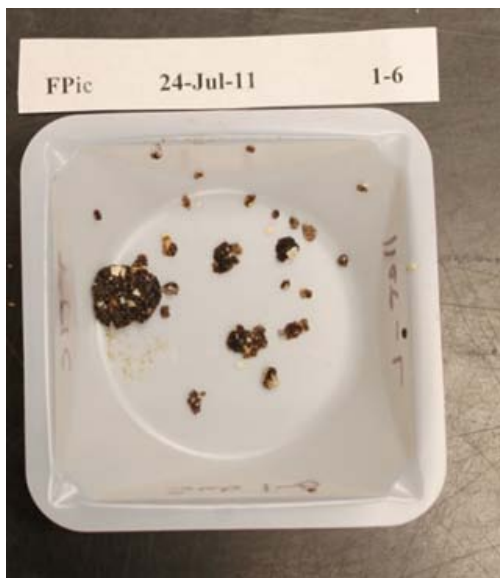
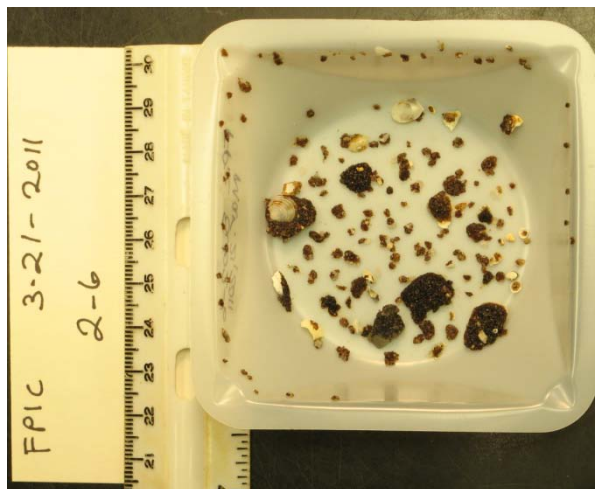
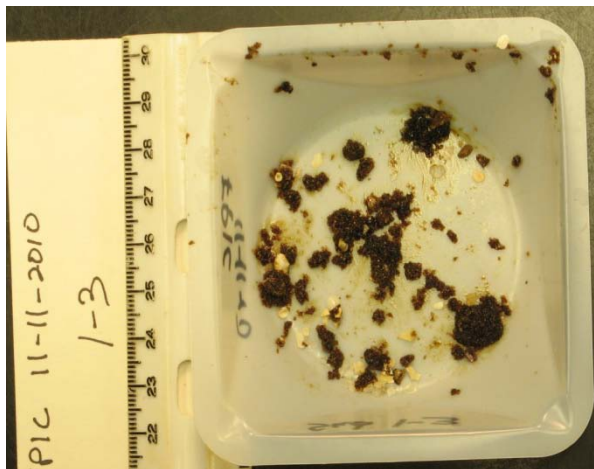
Sediments awaiting processing



Example of oil products removed from core sediments.

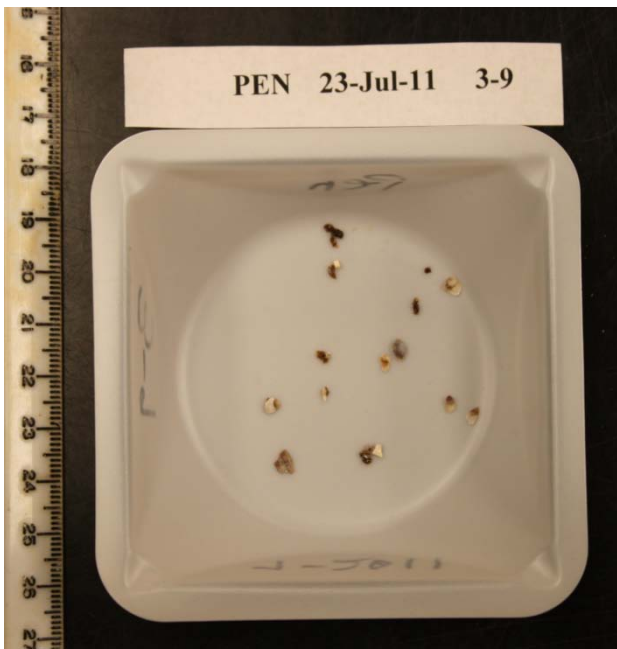
Of special interest was how oil products would change over time at a selected oiled beach- Ft Pickens. Also, we recorded data on oil products at 3 additional beaches both before and after Tropical Storm Lee. On each sampling date we acquired 9 samples in each of the high , mid and low swash zones per beach. Findings presented here reflect patterns in mid and lower swash zones.

Ft. Pickens – Nov 2010, March 2011, July 2011 and September 2011- a long term view



Example of oil products from sediment cores.

But are these patterns limited to the one beach? Expanded examination of oil to 3 additional sites.

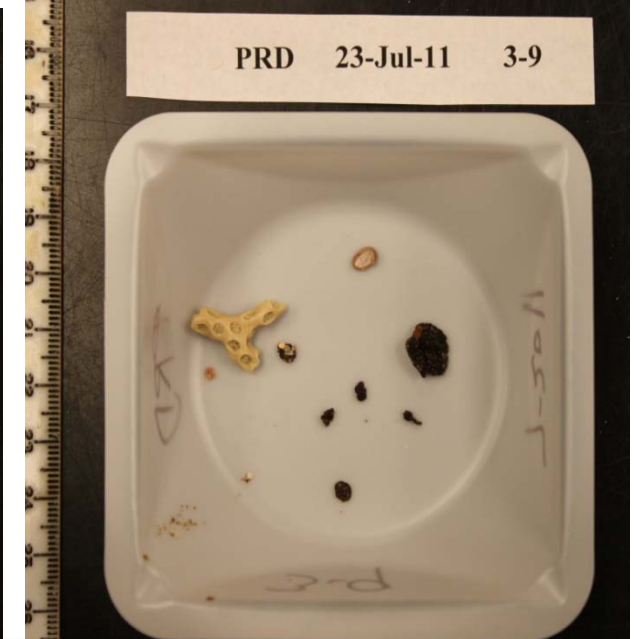
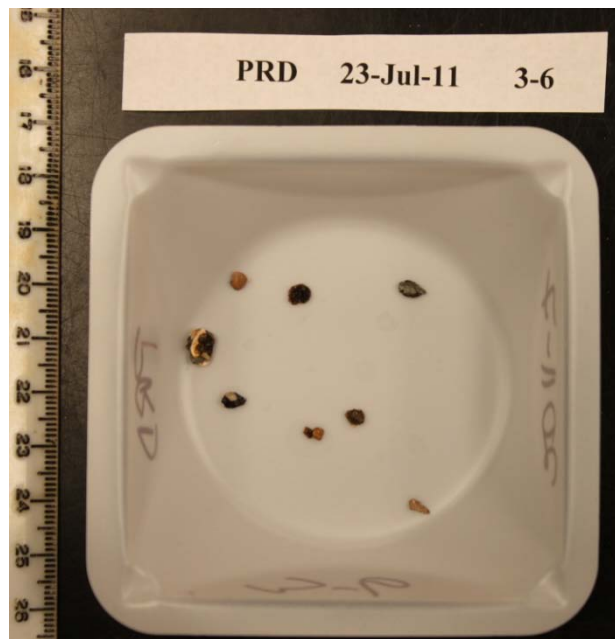


Pensacola Beach

September 2011

July 2011





Perdido Beach

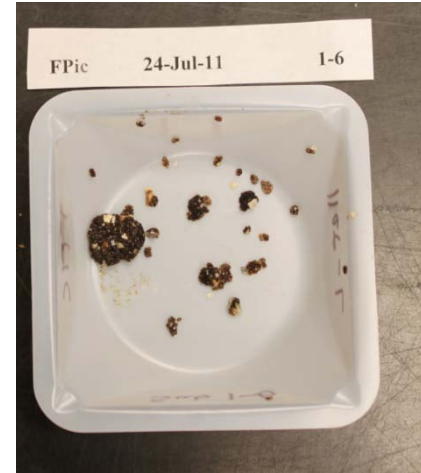
July 2011

September 2011

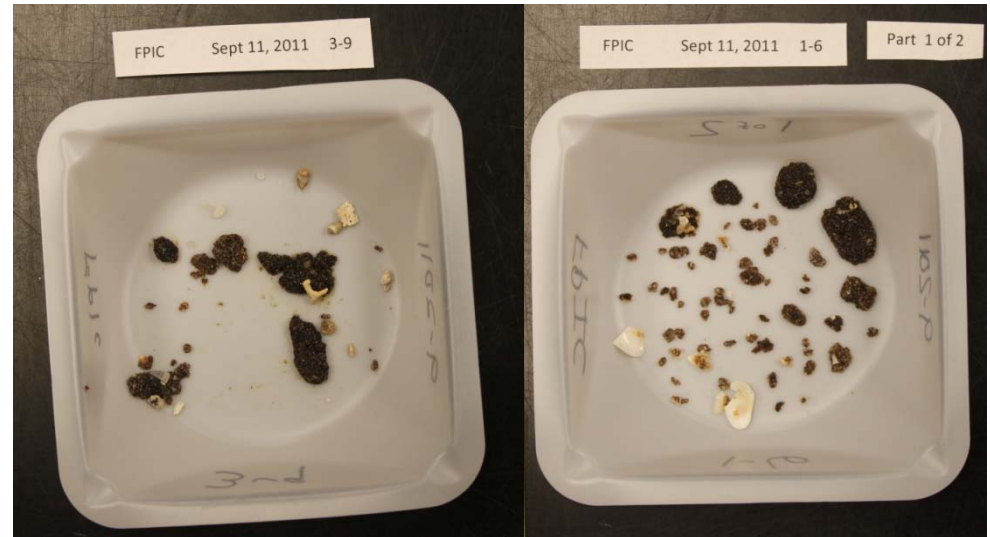


Fort Pickens

July 2011



September
2011



Summary of oil products in sediment cores from mid and low swash zones in oiled beaches. Mean density (# x m⁻²)/ largest diameter of oil product (mm) for July and September 2011.

	July 2011	September 2011
Sites FT. PICKENS ★	7360/ 16.7	10304/ 90
ORANGE	386/ 4.6	736/ 2.6
PENSACOLA ★	1840/ 7.0	9200/ 28.2
PERDIDO ★	1472/ 12.7	1656/ 34



No oil reported from 11 other beach sites from central West or Southwest Florida beaches on which similar sampling was conducted in fall 2010 and summer 2011.

In three of 4 beaches examined, oil products increased in size and abundance in samples collected post Tropical Storm Lee compared to samples collected in July 2011. Also, while a decline in number and size of oil products was observed at Ft Pickens from Nov. 2010 to July 2011, oil products post -storm reversed this trend.

Challenge is to identify the reservoir of oil that appeared on beaches after the storm.

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Identifying oil products- what to do with oil clumped into shell pieces?



Infauna clam (*Donax*) which dominates swash zone and oil products extracted from the same core.

Sediment grain size (mm) along vertical varies across beaches in survey within swash zones. Those highlighted in green are part of focal survey.

PEN FPIC SGSP IND HMN CC BOW FPier AV ANA AUG

<0.125

0.125-0.25

0.25-0.5

0.5 - 1

1 - 2

2-4

> 4

