SUPPORTING INFORMATION

Assimilation of oil-derived elements by oysters due to the Deepwater Horizon oil spill

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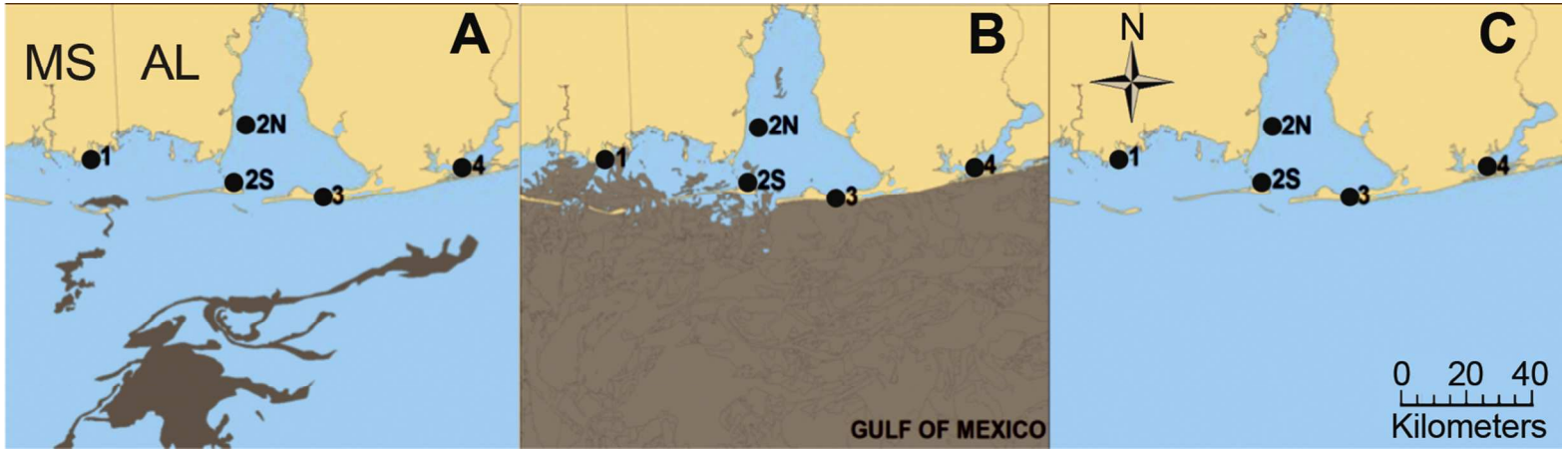
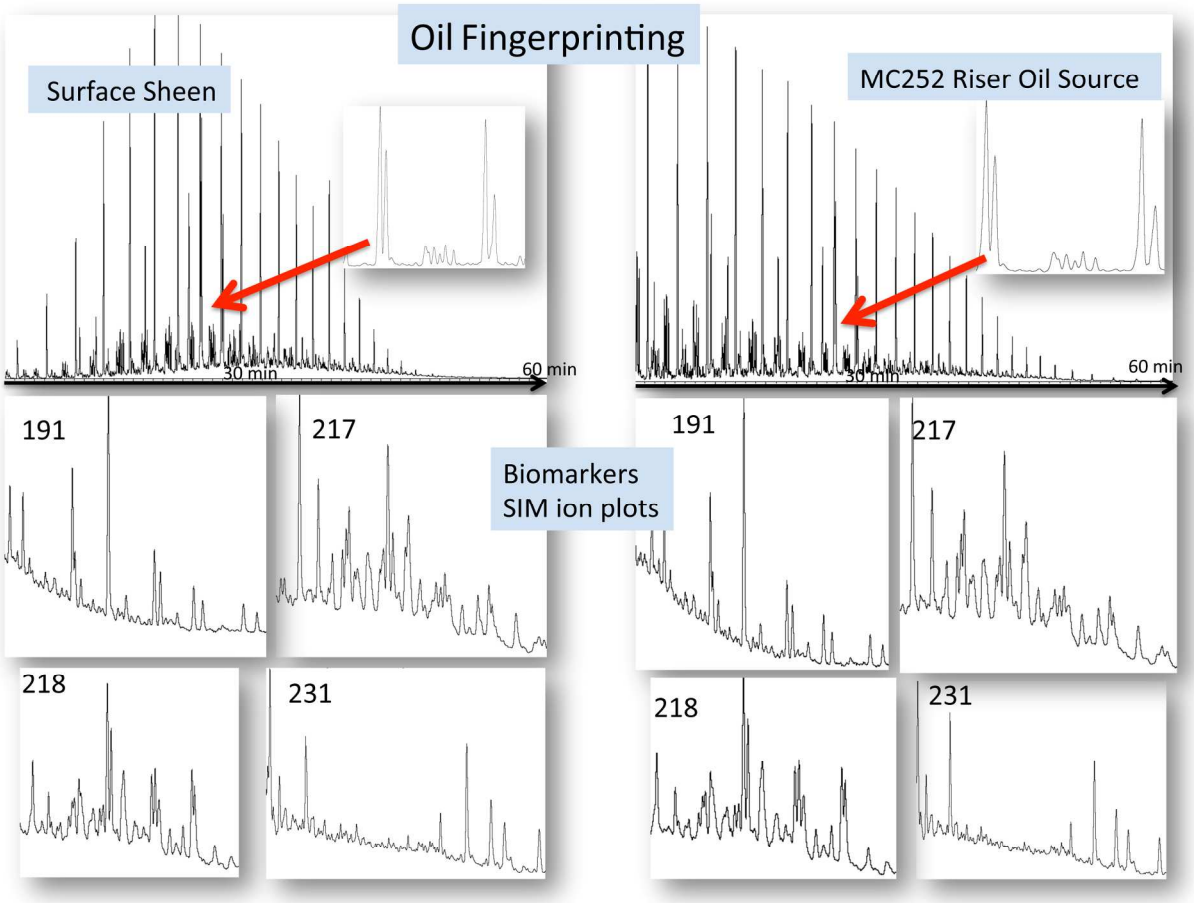
6 Pages:

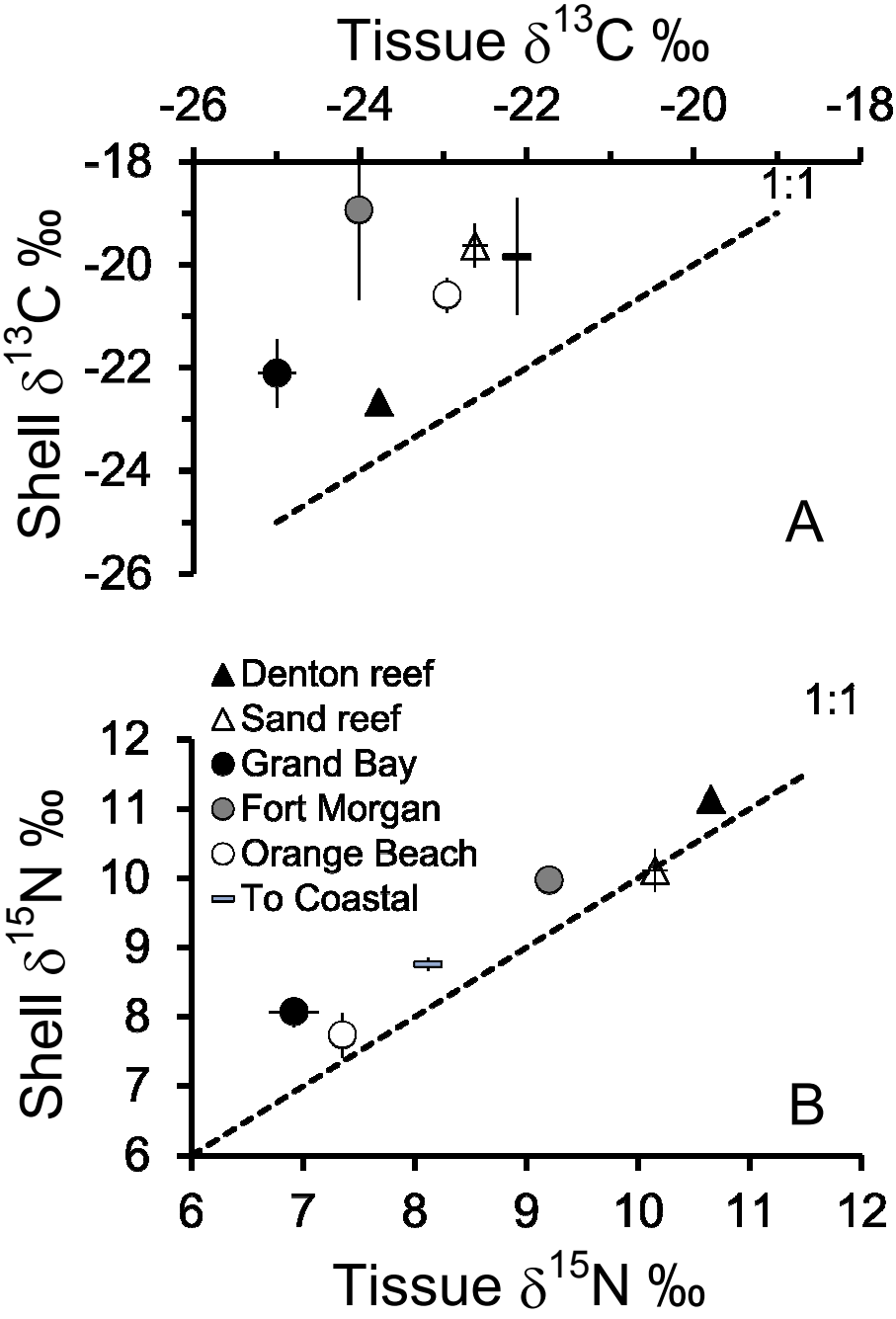


SI-Figure S1. Composite surface oil distribution reported by NOAA[20] compared to study sites along the Mississippi (MS)-Alabama (AL) coastline for three time periods when oysters were deployed: A) 20 April -14 May 2010 (Unlikely Exposure), B) 30 June – 20 July (Possible Exposure), and C) 5 – 25 August 2010 (Post-Exposure). These data were used to estimate oil exposures reported in Table 1 for time zero (T_0) and transplanted oysters.



SI-Figure S2. Example of a conclusive source oil match applied to analysis of weathered oil samples in this study. Ion plots from the gas chromatography-mass spectrometer (GCMS) analysis of a sample of DWHOS source oil taken from the riser fluids collected by surface vessels during the spill (MC252 riser oil source) compared to a suspect sample from surface sheen near the Deepwater Horizon rig. The upper ion plots show the hydrocarbon distribution of mostly saturate compounds with the insert showing detail of that portion of the chromatograms where C17/pristine and C118/phytane elute from the capillary GC column. The four ion chromatograms in the lower portion of the figure represent quantities of hopanes (ion *m/z* 191), diasteranes and regular steranes (ion *m/z* 217), 14β(H) steranes (ion *m/z* 218), and triaromatic steroids (ion *m/z* 231), in the two samples. These polycyclic compounds are not readily digested

by oil degrading microbes, and are therefore used to identify a suspect sample. Near identical ratios of peak areas in each pair of ion plots mean that the non-degradable compounds in the suspect sample have near exact same composition as source oil. This similarity constitutes a match between suspect and source, an oil component match independent of weathering, which is commonly called an oil “fingerprint match”.



SI-Figure S3. Mean (± se) A) $\delta^{13}C$ ‰ and B) $\delta^{15}N$ ‰ in adductor muscle compared to shell of oysters transplanted along the Mississippi-Alabama coast during and after the DWHOS, including data for time zero (T_0) oysters before planting at coastal sites. Dashed line indicates the 1:1 line of perfect fit. Where no error bars are visible, error is smaller than the symbol.

SI-Table S1. Mean (± standard error) temperature and salinity at each transplant site during the study period.

Site	Temperature (°C)	Salinity
Denton reef	31.1 ± 0.0	15.1 ± 0.2
Sand reef	31.4 ± 0.1	20.5 ± 0.4
Grand Bay	22.2 ± 4.7	21.8 ± 3.9
Fort Morgan	22.1 ± 2.1	14.6 ± 2.4
Orange Beach	24.8 ± 0.8	14.5 ± 2.6

SI-Table S2. Mean carbon and nitrogen stable isotope values (± standard error) determined in weathered oil collected from the sediments near oyster transplant sites in Mobile Bay and along the Mississippi-Alabama coast, and values in fresher crude oil, including MC252 source oil, Massachusetts (MASS) surrogate oil and oil from the surface (OFS), reference oil for the DWHOS.

	$\delta^{13}C$	$\delta^{15}N$
Weathered oil		
Mobile Bay sites	-27.26 ± 0.06	2.91 ± 0.49
Coastal sites	-27.13 ± 0.04	1.73 ± 0.38
Crude oil		
MC252	-27.50 ± 0.02	1.56 ± 0.70
MASS	-27.46 ± 0.05	1.15 ± 0.01
OFS	-27.43 ± 0.02	0.59 ± 0.40
Mean	**-27.4 ± 0.1**	**1.6 ± 0.4**

SI-Table S3. Growth in terms of shell height (measured from umbo to outer margin along the longest axis) for oysters at each transplant site during periods of possible and post-spill exposure (defined in Table 1).

	Growth (mm d^{-1})	
Site	**Possible exposure**	**Post-spill exposure**
Denton reef	0.09 ± 0.02	0.12 ± 0.02
Sand reef	0.21 ± 0.04	0.16 ± 0.02
Grand Bay	0.29 ± 0.05	0.17 ± 0.03
Fort Morgan	0.18 ± 0.01	0.13 ± 0.03
Orange Beach	0.20 ± 0.02	0.04 ± 0.03