

Determining oil and dispersant exposure in sea turtles from the northern Gulf of Mexico resulting from the *Deepwater Horizon* oil spill

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Endangered Species Research 33: 9–24 (2017)

1.0 Petroleum and petroleum biomarker analyses of external turtles samples

External samples of turtles were extracted using 10 mL cyclohexane, dried with anhydrous magnesium sulfate, and centrifuged to remove residual particulates. If petroleum oil was not visible in the resulting solution, nitrogen gas was used to concentrate the sample down to 1 mL volume.

The extracts were analyzed on an Agilent 6890N GC-FID with 30 meter DB-5 column in accordance with American Society for Testing and Materials (ASTM) Standard Test Method D 3328 and an Agilent 5973 GC/MS-SIM with 30 meter HP-5MS column in accordance with ASTM Standard Practice D 5739. The instruments were routinely calibrated using a crude oil reference standard and ASTM Method D 2887 Calibration Mixture. Solvent blanks and sample duplicates were included in each batch for quality control. DWH source oil collected from the wellhead in May 2010 and naturally weathered DWH oil collected at the surface in July 2010 were processed with each batch of external samples for comparison purposes.

Data generated by GC/FID and GC-MS-SIM were used to determine: (1) if a detectable quantity of petroleum oil was present in each sample, (2) petroleum oil type and weathering assessment, and (3) if the petroleum oil derived from DWH or an unrelated source.

2.0 PAH and alkylated PAH homolog GC-MS analyses of turtle gastroenteric and tissue samples

Tissue and gastroenteric content samples were analyzed for polycyclic aromatic hydrocarbons (PAHs) and alkylated homologs using a gas chromatograph/mass spectrometry method (Sloan et al. 2014). In this method, the turtle samples were: 1) extracted using dichloromethane in an accelerated solvent extraction procedure, 2) pre-cleaned on a single stacked silica gel/alumina gravity flow cleanup column to remove highly polar compounds that potentially could interfere with GC-MS analyses, 3) were further cleaned up by separating the PAH analytes of interest from lipid or other biogenic material using high-performance size exclusion liquid chromatography, and 4) the cleaned up sample extract was analyzed on a low resolution quadrupole Agilent 7890A GC coupled to a Agilent 5975C mass selective detector equipped with a 60-meter DB-5 GC capillary column. The instrument was calibrated using sets of up to ten multi-level calibration standards of known concentrations. Percent lipid was determined gravimetrically as described in Sloan et al. (2014).

Sum “low molecular weight PAHs” (sum LMWAHs) was calculated by summing the concentrations of naphthalene, C1- through C4-naphthalenes, acenaphthylene, acenaphthene, fluorene, C1- through C3-fluorenes, anthracene, phenanthrene, C1- through C4-phenanthrenes/anthracenes, dibenzothiophene, and C1-through C4-dibenzothiophenes. Sum “high molecular weight PAHs” (sum HMWAHs) was calculated by summing the concentrations of fluoranthene, pyrene, C1- through C4-fluoranthenes/pyrenes, benz[*a*]-anthracene, chrysene/triphenylene, C1- through C4-chrysenes/ benz[*a*]anthracenes, benzo[*b*]fluoranthene, benzo[*j*]fluoranthenes/ benzo[*k*]fluoranthene, benzo[*e*]pyrene, benzo[*a*]pyrene, perylene, indeno[1,2,3-*cd*]pyrene, dibenz[*a,h+a,c*]anthracene, and benzo[*ghi*]perylene. Sum PAH concentrations were calculated by summing the levels of sum LMWAHs and sum HMWAHs. For each analyte that was less than the lower limit of quantitation (< LOQ), a value of zero was used in making the mean and standard deviation calculations for sum LMWAHs, sum HMWAHs and sum PAHs.

A method blank and a National Institute of Standards and Technology (NIST) blue mussel Standard Reference Material (SRM 1974b) were analyzed with each sea turtle set as part of a performance-based quality assurance program (Sloan et al. 2006). Concentrations of individual analytes measured in SRM 1974b met the laboratory quality assurance criteria described in Sloan et al. (2006). Surrogate recoveries for all turtle gastroenteric and tissue samples met the laboratory criterion (recovery range 60 - 130%) except for naphthalene-d8 in three colon content samples [BWM2011032303 (52%), BWM2011032304 (45%), BWM2011032305 (47%)]. Based on these results, the concentrations of naphthalene and C1-naphthalenes should be considered as estimates for these three samples; the concentrations of all other parent and alkylated PAHs (including C2 through C4-naphthalenes) analyzed by this method were calculated using either acenaphthene-d10 or benzo[*a*]pyrene-d12 as the surrogate standard.

3.0 Biliary PAH metabolite analyses

3.0a Analyses of bile for fluorescent PAH metabolites

Protein was measured in bile samples prior to analysis by high-performance liquid chromatography-fluorescence (HPLC-F) to evaluate protein-particulate content (da Silva et al. 2006) as protein content > 60 mg/mL has been shown to compromise analysis by HPLC-F. Twenty five sea turtle bile samples had protein values < 60 mg/mL and were thus deemed suitable for PAH metabolite analyses using an HPLC-F method (Krahn et al. 1992, da Silva et al. 2006).

Each turtle bile sample was transferred to a 1 mL insert housed in a 4 mL glass amber vial. The bile was injected directly onto a Waters® high-performance liquid chromatography/fluorescence system equipped with a C-18 reverse-phase column (Phenomenex Synergi™ Hydro). PAH metabolites were eluted with a linear gradient from 100% water (containing trace levels of acetic acid) to 100% methanol at a flow of 1.0 mL/min. Chromatograms were recorded at three wavelength pairs: 1) 292/335 nm where many 2 ring aromatic compounds (e.g., naphthalene) fluoresce, 2) 260/380 nm where several 3 ring compounds (e.g., phenanthrene) fluoresce and 3) 380/430 nm where 4-5 ring compounds (e.g., benzo[*a*]pyrene) fluoresce. The areas of peaks eluting after 9 minutes were integrated and summed. Concentrations of fluorescent biliary PAHs were determined using naphthalene (NPH), phenanthrene (PHN) or benzo[*a*]pyrene (BaP) as external standards and converting the fluorescence response of bile to NPH (ng NPH equivalents/g bile), PHN (ng PHN equivalents/g bile), or BaP (ng BaP equivalents/g bile) equivalents.

As part of the laboratory quality assurance plan (Sloan et al. 2006), a method blank and a fish bile positive control sample (bile of Atlantic salmon exposed to 25 µg/mL of Monterey crude oil for 48 hours) or a pooled bile sample collected from various oiled seals after the 1989 *Exxon Valdez* oil spill were analyzed with each batch of bile samples. Results obtained for the quality control samples in all sample sets met established laboratory criteria.

3.0b Hydroxylated PAH metabolite bile analysis

Hydroxylated PAH metabolites in bile were measured using a modified LC-MS/MS described in Xu *et al.* (2004). In the modified method, approximately 50 to 250 µg was weighed into a 7-mL glass tube and 250 ng of surrogate standard (2-hydroxynaphthalene-d7;) was added to each sample. Each bile sample was treated with a buffered glucuronidase/sulfatase solution (pH 5.0) for 2 hours at 40°C and was then extracted/cleaned up on a conditioned polymeric solid phase cleanup cartridge (Phenomenex Strata™-X, 200 mg), eluting the analytes with 5 mL of methanol. An internal standard (bisphenol A-d₁₆, 250 ng) was added to each sample extract and the sample contents mixed on a vortex mixer. A 100 µL-aliquot of the cleaned extract was transferred to a LC-MS/MS vial containing 400 µL of methanol and the contents were mixed. The following OHPAHs were measured: 1-hydroxynaphthalene, 2-hydroxynaphthalene, 6-methyl-2-hydroxynaphthalene, 1-methyl-2-hydroxynaphthalene + 2-methyl-1-hydroxynaphthalene (estimated sum), 3-hydroxyfluorene, 2-hydroxyfluorene, 2-hydroxydibenzothiophene, 3-hydroxyphenanthrene + 2-hydroxyphenanthrene (estimated sum), 1-hydroxyphenanthrene and 4-hydroxyphenanthrene.

The Waters Acquity UPLC liquid chromatography system coupled with an AB Sciex QTRAP 5500 tandem triple quadrupole mass spectrometer was calibrated using sets of 6-8 multi-level calibration OHPAH

standards of known concentrations. A 10- μ L portion of the diluted extract was injected onto a Waters Acquity UPLC® BEH Shield™ reverse phase column, 50 mm X 2.1 mm id X 1.8 μ m particle size that was operated at 45°C with using a linear gradient elution of water and methanol. The MS/MS analysis was conducted using electrospray ionization and MRM method in negative mode.

As part of the performance-based quality assurance criteria for OHPAH analyses, a method blank and a NIST human smokers' urine Standard Reference Material (NIST SRM 3672) were analyzed with each sample set and the results met the laboratory criteria. Surrogate recoveries for all turtle bile samples were within the laboratory criterion (recovery range 60 - 130%).

4.0 DOSS analysis

Analyses of sea turtle tissues and bile for the dispersant component DOSS was conducted using a QuEChERS (i.e., quick, easy, cheap, effective, rugged and safe) sample extraction procedure (Anastassiades et al. 2003, Ramalhosa et al. 2009) followed by liquid chromatography tandem mass spectrometry (LC-MS/MS) analysis (Benner et al. 2010, Flurer et al. 2010). Briefly, 0.5-2 g of tissue (or 50 μ L of bile) was weighed into a 50-mL QuEChERS extraction tube containing a ceramic mixer and a surrogate standard (d_{34} -DOSS; 10 μ g) was added. Water (5 mL) was added to each tube and the tube was mixed on shaker for 5 minutes. After the addition of 15 mL of acetonitrile to each sample, the tube was placed back on the shaker for an additional 5 minutes. Magnesium sulfate (6 g) and sodium acetate (1.5 g) were added and each tube was again placed on the shaker for 5 minutes. An internal recovery standard (d_{25} -SDS; 10 μ g) was then added, the tube was vortexed on low speed for 1 minute followed by centrifugation at 3400 x g for 10 minutes. A 4-mL portion of the upper acetonitrile layer (containing DOSS) was filtered through a 0.2 μ m polytetrafluoroethylene cartridge filter connected to a 5-mL syringe. A small portion of the filtered extract was diluted (1+14) (v/v) with acetonitrile prior to analysis by LC-MS/MS.

The Waters Acquity UPLC liquid chromatography system coupled with an AB Sciex QTRAP 5500 tandem triple quadrupole mass spectrometer was calibrated using sets of up to seven multi-level calibration standards of known concentrations. A 10- μ L portion of the diluted extract was injected onto a Agilent ZORBAX SB-C18 Rapid Resolution HD 2.1 x 50 mm, 1.8 μ m particle size that was operated at 45°C with a flow rate of 0.30 mL/min. The gradient was composed of a mixture of acetonitrile and water, each of which contained 0.1% (v/v) formic acid.

As part of the performance-based quality assurance criteria for DOSS analyses, a aqueous method blank was analyzed with each sample batch and the sample sets met our laboratory quality assurance criteria. A freeze-dried oyster control material (Pacific oysters exposed to 100 ppm Corexit 9500 in seawater for 24 hours) was also analyzed in each sample batch and the value for the incurred DOSS residue was within \pm 20% of the average historic value for the control material. Surrogate recoveries for all turtle samples and associated quality assurance samples were within the laboratory criterion (recovery range 60 - 130%).

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Table S1: Concentrations of dioctyl sodium sulfosuccinate (DOSS), percent lipid and percent contribution of sum low molecular weight PAHs (LMWAHs) and sum high molecular weight PAHs (HMWAHs) contributing to sum PAHs determined in tissues of postmortem sea turtles from the northern Gulf of Mexico as part of the *Deepwater Horizon* oil spill Natural Resource Damage Assessment.

| Sample type | Animal number | Species | Collection site | Collection date | Postmortem condition code | Visible oiling code | Degree of oiling | % lipid | Percent sum LMWAHs ¹ contributing to sum PAHs | Percent sum HMWAHs ² contributing to sum PAHs | DOSS ³ ng/g, ww |
|-------------------------|---------------|---------------|-----------------|-----------------|---------------------------|---------------------|------------------|------------|--|--|----------------------------|
| Esophagus | MCT2010051201 | Kemp's ridley | Jefferson, LA | 5/12/10 | 2 | Yes | Unk. | 1.3 | 83 | 17 | NA |
| | SDD2010060105 | Kemp's ridley | Offshore, LA | 6/1/10 | 3 | Yes | Heavy | 10 | 84 | 16 | 1,800 |
| | BAS2010060605 | Kemp's ridley | Offshore, LA | 6/6/10 | 1 | Yes | Heavy | 6.3 | 82 | 18 | NA |
| | MCT2010060701 | Kemp's ridley | Jefferson, LA | 6/7/10 | 2 | Yes | Heavy | 5.1 | 78 | 22 | NA |
| | MCT2010060801 | Kemp's ridley | Jefferson, LA | 6/8/10 | 3 | Yes | Heavy | 7.2 | 84 | 16 | NA |
| | AJH2010063001 | Kemp's ridley | Escambia, FL | 6/30/10 | 3 | Yes | Heavy | 1.0 | 79 | 21 | < 5100 |
| | | | | | | | Mean | 5.2 | 82 | 18 | ND |
| | | | | | | SD | 3.5 | 2.6 | 2.6 | ND | |
| Colon contents | MCT2010060701 | Kemp's ridley | Jefferson, LA | 6/7/10 | 2 | Yes | Heavy | 2.1 | 74 | 26 | < 110 |
| | JBT2011031901 | Kemp's ridley | Harrison, MS | 3/19/11 | 2 | No | None | 0.1 | 100 | 0 | < 100 |
| | JKM2011031901 | Kemp's ridley | Harrison, MS | 3/19/11 | 2 | No | None | 2.3 | 80 | 20 | < 110 |
| | BWM2011032201 | Kemp's ridley | Harrison, MS | 3/22/11 | 2 | No | None | 2.4 | 63 | 37 | < 110 |
| | BWM2011032301 | Kemp's ridley | Harrison, MS | 3/23/11 | 2 | No | None | 1.9 | 60 | 40 | < 110 |
| | BWM2011032304 | Kemp's ridley | Harrison, MS | 3/23/11 | 2 | No | None | 3.9 | 89 | 11 | < 110 |
| | BWM2011032305 | Kemp's ridley | Harrison, MS | 3/23/11 | 2 | No | None | 4.1 | 86 | 14 | < 110 |
| | BWM2011032306 | Kemp's ridley | Hancock, MS | 3/23/11 | 2 | No | None | 0.9 | 71 | 29 | < 110 |
| | KLS2011043001 | Kemp's ridley | Nueces, TX | 4/30/11 | 1 | No | None | 0.4 | 47 | 53 | < 110 |
| | TKS2011051801 | Kemp's ridley | Kenedy, TX | 5/18/11 | 1 | No | None | 0.2 | 100 | 0 | < 110 |
| | CED2011051901 | loggerhead | Jefferson, LA | 5/19/11 | 2 | No | None | 0.7 | 83 | 17 | < 110 |
| | MRB2011051901 | loggerhead | Jefferson, LA | 5/19/11 | 2 | No | None | 0.8 | 74 | 26 | < 110 |
| | MAB2011060101 | Kemp's ridley | Offshore, AL | 6/1/11 | 1 | No | None | 3.7 | 91 | 9 | < 110 |
| | JCS2011060701 | Kemp's ridley | Cameron, TX | 6/7/11 | 3 | No | None | 0.2 | 98 | 2 | < 110 |
| | CDD2011081901 | Kemp's ridley | Offshore, LA | 8/18/11 | 1 | No | None | 0.3 | 58 | 42 | < 110 |
| | LSR2011091201 | Kemp's ridley | Nueces, TX | 9/12/11 | 1 | No | None | 0.2 | 91 | 9 | < 110 |
| | | | | | | | Mean | 1.7 | 79 | 21 | ND |
| | | | | | | SD | 1.7 | 16 | 16 | ND | |
| Enteric contents | BAS2010060110 | Kemp's ridley | Offshore, LA | 6/1/10 | 1 | Yes | Heavy | 1.3 | 82 | 18 | NA |
| | BAS2010060102 | Kemp's ridley | Offshore, LA | 6/1/10 | 1 | Yes | Heavy | 1.4 | 71 | 29 | < 110 |
| | BAS2010060109 | Kemp's ridley | Offshore, LA | 6/1/10 | 1 | Yes | Heavy | 0.9 | 84 | 16 | < 180 |
| | KLH2010070901 | Kemp's ridley | Mobile, AL | 7/9/10 | 1 | Yes | Light | 0.8 | 68 | 32 | < 200 |
| | CDD2011032901 | Kemp's ridley | Jefferson, LA | 3/29/11 | 2 | Yes | Unk. | 2.1 | 46 | 54 | < 100 |
| | SMM2011040802 | Kemp's ridley | Jefferson, LA | 4/8/11 | 2 | Yes | Unk. | 11 | 70 | 30 | < 110 |
| | SXC2010050601 | Kemp's ridley | Harrison, MS | 5/6/10 | 2 | No | None | 2.7 | 88 | 12 | < 110 |

| Sample type | Animal number | Species | Collection site | Collection date | Postmortem condition code | Visible oiling code | Degree of oiling | % lipid | Percent sum LMWAHs ¹ contributing to sum PAHs | Percent sum HMWAHs ² contributing to sum PAHs | DOSS ³ ng/g, ww | |
|-------------------------|----------------|---------------|-----------------|-----------------|---------------------------|---------------------|------------------|-------------|--|--|----------------------------|-----------|
| Enteric contents | JNF2010050702 | Kemp's ridley | Hancock, MS | 5/7/10 | 2 | No | None | 15 | 97 | 3 | < 200 | |
| | ANR2010050801 | Kemp's ridley | Mobile, AL | 5/8/10 | 2 | No | None | 3.1 | 86 | 14 | < 110 | |
| | BXJ2010051201 | Kemp's ridley | St. Tammany, LA | 5/12/10 | 1 | No | None | 1.2 | 92 | 8 | < 110 | |
| | MEC2010051401 | Kemp's ridley | Santa Rosa, FL | 5/14/10 | 2 | No | None | 0.7 | 78 | 22 | < 110 | |
| | AXL2010051701 | Kemp's ridley | Orleans, LA | 5/17/10 | 2 | No | None | 1.5 | 87 | 13 | < 110 | |
| | JIB2010052101 | Kemp's ridley | Walton, FL | 5/21/10 | 1 | No | None | 0.9 | 95 | 5 | < 110 | |
| | RLR2010052201 | Kemp's ridley | Mobile, AL | 5/22/10 | 1 | No | None | 5.2 | 100 | 0 | NA | |
| | JJA2010060501 | Kemp's ridley | Terrebonne, LA | 6/5/10 | 2 | No | None | 0.5 | 88 | 12 | < 140 | |
| | MPW2010060701 | Kemp's ridley | Baldwin, AL | 6/7/10 | 2 | No | None | 0.6 | 93 | 7 | < 110 | |
| | LAJ2010061902 | Kemp's ridley | Baldwin, AL | 6/19/10 | 2 | No | None | 0.2 | 73 | 27 | < 110 | |
| | KLH2010062102 | Kemp's ridley | Baldwin, AL | 6/21/10 | 2 | No | None | 0.6 | 89 | 11 | < 110 | |
| | KEG2010062201 | Kemp's ridley | Okaloosa, FL | 6/22/10 | 2 | No | None | 0.5 | 97 | 3 | < 110 | |
| | PRG2010070801 | loggerhead | Santa Rosa, FL | 7/8/10 | 1 | No | None | 0.1 | 100 | 0 | < 110 | |
| | TDB2010071022 | loggerhead | Offshore, LA | 7/10/10 | 1 | No | None | 2.2 | 100 | 0 | < 110 | |
| | MCT2010071201 | Kemp's ridley | Jefferson, LA | 7/12/10 | 1 | No | None | 0.5 | 100 | 0 | NA | |
| | CXF2010071502 | green | Offshore, LA | 7/15/10 | 1 | No | None | 1.1 | 89 | 11 | NA | |
| | KLH2010071902 | Kemp's ridley | Mobile, AL | 7/19/10 | 2 | No | None | 0.4 | 92 | 8 | < 110 | |
| | SDK2010072001 | green | Lafourche, LA | 7/20/10 | 1 | No | None | 0.5 | 72 | 28 | < 110 | |
| | PAK2010072161 | loggerhead | Offshore, LA | 7/21/10 | 1 | No | None | 2.6 | 77 | 23 | < 110 | |
| | CNL20100723133 | loggerhead | Offshore, LA | 7/23/10 | 1 | No | None | 1.0 | 83 | 17 | < 110 | |
| VDS2010080701 | Kemp's ridley | Franklin, FL | 8/7/10 | 1 | No | None | 0.2 | 100 | 0 | < 110 | | |
| XXX20100821XX | loggerhead | Offshore, LA | 8/21/10 | 1 | No | None | 1.4 | 91 | 9 | < 110 | | |
| NME2010082301 | Kemp's ridley | Bay, FL | 8/23/10 | 1 | No | None | 0.4 | 100 | 0 | < 110 | | |
| CAG2010082801 | Kemp's ridley | Mobile, AL | 8/28/10 | 1 | No | None | 0.6 | 96 | 4 | < 110 | | |
| MAN2010101301 | Kemp's ridley | Escambia, FL | 10/13/10 | 2 | No | None | 0.3 | 96 | 4 | < 100 | | |
| SDD2010110301 | Kemp's ridley | Jefferson, LA | 11/3/10 | 2 | No | None | 0.2 | 90 | 10 | < 110 | | |
| | | | | | | | Mean | 1.9 | 87 | 13 | ND | |
| | | | | | | | SD | 3.1 | 12 | 12 | ND | |
| Feces | BWM2011041802 | Kemp's ridley | Harrison, MS | 4/18/11 | 2 | Yes | Minimal | 3.2 | 61 | 39 | < 180 | |
| | KMF2010050106 | Kemp's ridley | Harrison, MS | 5/1/10 | 2 | No | None | 0.6 | 89 | 11 | < 100 | |
| | MPW2010050701 | Kemp's ridley | Baldwin, AL | 5/7/10 | 2 | No | None | 0.9 | 77 | 23 | < 110 | |
| | JMI2010052302 | Kemp's ridley | Baldwin, AL | 5/23/10 | 2 | No | None | 1.7 | 78 | 22 | < 91 | |
| | MXK2010060603 | Kemp's ridley | Harrison, MS | 6/6/10 | 2 | No | None | 3.6 | 85 | 15 | < 84 | |
| | NAD2010062001 | loggerhead | Bay, FL | 6/20/10 | 1 | No | None | 6.4 | 96 | 4 | < 120 | |
| | NME2010091801 | loggerhead | Bay, FL | 9/18/10 | 1 | No | None | 9.4 | 100 | 0 | NA | |
| | | | | | | | | Mean | 3.7 | 84 | 16 | ND |
| | | | | | | | | SD | 3.2 | 13 | 13 | ND |

| Sample type | Animal number | Species | Collection site | Collection date | Postmortem condition code | Visible oiling code | Degree of oiling | % lipid | Percent sum LMWAHs ¹ contributing to sum PAHs | Percent sum HMWAHs ² contributing to sum PAHs | DOSS ³ ng/g, ww |
|------------------|---------------|---------------|-----------------|-----------------|---------------------------|---------------------|------------------|---------|--|--|----------------------------|
| Gastric contents | RAW2010061002 | Kemp's ridley | Harrison, MS | 6/10/10 | 2 | No | None | 1.9 | 92 | 8 | < 110 |
| Liver | MCT2010051201 | Kemp's ridley | Jefferson, LA | 5/12/10 | 2 | Yes | Unk. | 30 | 93 | 7 | < 110 |
| | BAS2010060110 | Kemp's ridley | Offshore, LA | 6/1/10 | 1 | Yes | Heavy | 9.1 | 98 | 2 | < 210 |
| | BAS2010060102 | Kemp's ridley | Offshore, LA | 6/1/10 | 1 | Yes | Heavy | 6.5 | 100 | 0 | < 110 |
| | BAS2010060109 | Kemp's ridley | Offshore, LA | 6/1/10 | 1 | Yes | Heavy | 16 | 96 | 4 | < 110 |
| | BAS2010060605 | Kemp's ridley | Offshore, LA | 6/6/10 | 1 | Yes | Heavy | 15 | 94 | 6 | < 110 |
| | MCT2010060701 | Kemp's ridley | Jefferson, LA | 6/7/10 | 2 | Yes | Heavy | 21 | 94 | 6 | < 110 |
| | KLH2010070901 | Kemp's ridley | Mobile, AL | 7/9/10 | 1 | Yes | Light | 4.5 | 100 | 0 | < 110 |
| | CDD2011032901 | Kemp's ridley | Jefferson, LA | 3/29/11 | 2 | Yes | Unk. | 9.0 | 87 | 13 | < 110 |
| | SMM2011040802 | Kemp's ridley | Jefferson, LA | 4/8/11 | 2 | Yes | Unk. | 17 | 96 | 4 | < 110 |
| | BWM2011041802 | Kemp's ridley | Harrison, MS | 4/18/11 | 2 | Yes | Minimal | 17 | 94 | 6 | < 110 |
| | KMF2010050106 | Kemp's ridley | Harrison, MS | 5/1/10 | 2 | No | None | 12 | 90 | 10 | < 110 |
| | SXC2010050601 | Kemp's ridley | Harrison, MS | 5/6/10 | 2 | No | None | 4.5 | 96 | 4 | < 110 |
| | JNF2010050702 | Kemp's ridley | Hancock, MS | 5/7/10 | 2 | No | None | 16 | 95 | 5 | < 110 |
| | MPW2010050701 | Kemp's ridley | Baldwin, AL | 5/7/10 | 2 | No | None | 10 | 97 | 3 | < 110 |
| | ANR2010050801 | Kemp's ridley | Mobile, AL | 5/8/10 | 2 | No | None | 7.1 | 93 | 7 | < 110 |
| | BXJ2010051201 | Kemp's ridley | St. Tammany, LA | 5/12/20 | 1 | No | None | 13 | 97 | 3 | < 110 |
| | LAJ2010051401 | Kemp's ridley | Mobile, AL | 5/14/10 | 2 | No | None | 5.8 | 86 | 14 | < 110 |
| | MEC2010051401 | Kemp's ridley | Santa Rosa, FL | 5/14/10 | 2 | No | None | 5.1 | 88 | 12 | < 110 |
| | AXL2010051701 | Kemp's ridley | Orleans, LA | 5/17/10 | 2 | No | None | 8.9 | 97 | 3 | < 110 |
| | MDH2010051902 | Kemp's ridley | Harrison, MS | 5/19/10 | 2 | No | None | 7.8 | 96 | 4 | < 110 |
| | JIB2010052101 | Kemp's ridley | Walton, FL | 5/21/10 | 1 | No | None | 3.4 | 98 | 2 | < 110 |
| | RLR2010052201 | Kemp's ridley | Mobile, AL | 5/22/10 | 1 | No | None | 7.2 | 100 | 0 | < 110 |
| | JMI2010052302 | Kemp's ridley | Baldwin, AL | 5/23/10 | 2 | No | None | 22 | 94 | 6 | < 110 |
| | JJA2010060501 | Kemp's ridley | Terrebonne, LA | 6/5/10 | 2 | No | None | 28 | 98 | 2 | < 110 |
| | MXK2010060603 | Kemp's ridley | Harrison, MS | 6/6/10 | 2 | No | None | 9.4 | 89 | 11 | < 110 |
| | MPW2010060701 | Kemp's ridley | Baldwin, AL | 6/7/10 | 2 | No | None | 9.9 | 93 | 7 | < 110 |
| | RAW2010061002 | Kemp's ridley | Harrison, MS | 6/10/10 | 2 | No | None | 6.9 | 91 | 9 | < 110 |
| | LAJ2010061902 | Kemp's ridley | Baldwin, AL | 6/19/10 | 2 | No | None | 13 | 88 | 12 | < 110 |
| | NAD2010062001 | loggerhead | Bay, FL | 6/20/10 | 1 | No | None | 2.4 | 100 | 0 | < 110 |
| | KLH2010062102 | Kemp's ridley | Baldwin, AL | 6/21/10 | 2 | No | None | 7.7 | 81 | 19 | < 110 |
| | KEG2010062201 | Kemp's ridley | Okaloosa, FL | 6/22/10 | 2 | No | None | 9.0 | 100 | 0 | < 110 |
| | TMS2010070701 | Kemp's ridley | Harrison, MS | 7/7/10 | 2 | No | None | 9.9 | 97 | 3 | < 110 |
| | PRG2010070801 | loggerhead | Santa Rosa, FL | 7/8/10 | 1 | No | None | 0.5 | 100 | 0 | < 100 |
| | TDB2010071022 | loggerhead | Offshore, LA | 7/10/10 | 1 | No | None | 6.1 | 100 | 0 | < 110 |
| | MCT2010071201 | Kemp's ridley | Jefferson, LA | 7/12/10 | 1 | No | None | 22 | 98 | 2 | < 110 |
| | CXF2010071502 | green | Offshore, LA | 7/15/10 | 1 | No | None | 4.8 | 96 | 4 | NA |
| | KLH2010071902 | Kemp's ridley | Mobile, AL | 7/19/10 | 2 | No | None | 9.2 | 92 | 8 | < 110 |

| Sample type | Animal number | Species | Collection site | Collection date | Postmortem condition code | Visible oiling code | Degree of oiling | % lipid | Percent sum LMWAHs ¹ contributing to sum PAHs | Percent sum HMWAHs ² contributing to sum PAHs | DOSS ³ ng/g, ww |
|---------------|----------------|---------------|-----------------|-----------------|---------------------------|---------------------|------------------|------------|--|--|----------------------------|
| Liver | SDK2010072001 | green | Lafourche, LA | 7/20/10 | 1 | No | None | 2.4 | 100 | 0 | < 110 |
| | PAK2010072161 | loggerhead | Offshore, LA | 7/21/10 | 1 | No | None | 1.2 | 100 | 0 | < 110 |
| | CNL20100723133 | loggerhead | Offshore, LA | 7/23/10 | 1 | No | None | 4.4 | 100 | 0 | < 110 |
| | VDS2010080701 | Kemp's ridley | Franklin, FL | 8/7/10 | 1 | No | None | 2.6 | 100 | 0 | < 110 |
| | XXX20100821XX | loggerhead | Offshore, LA | 8/21/10 | 1 | No | None | 6.4 | 100 | 0 | < 110 |
| | NME2010082301 | Kemp's ridley | Bay, FL | 8/23/10 | 1 | No | None | 2.0 | 100 | 0 | < 110 |
| | CAG2010082801 | Kemp's ridley | Mobile, AL | 8/28/10 | 1 | No | None | 6.2 | 99 | 1 | < 110 |
| | BDJ2010082901 | Kemp's ridley | Hancock, MS | 8/29/10 | 2 | No | None | 8.3 | 92 | 8 | < 110 |
| | LSW2010091001 | Kemp's ridley | Plaquemines, LA | 9/10/10 | 2 | No | None | 10 | 90 | 10 | < 110 |
| | NME2010091801 | loggerhead | Bay, FL | 9/18/10 | 1 | No | None | 8.8 | 100 | 0 | < 110 |
| | MAN2010101201 | loggerhead | Escambia, FL | 10/12/10 | 2 | No | None | 12 | 94 | 6 | < 110 |
| | MAN2010101301 | Kemp's ridley | Escambia, FL | 10/13/10 | 2 | No | None | 19 | 99 | 1 | < 110 |
| | SEF2010102402 | Kemp's ridley | Harrison, MS | 10/24/10 | 2 | No | None | 21 | 91 | 9 | < 110 |
| | SDD2010110301 | Kemp's ridley | Jefferson, LA | 11/3/10 | 2 | No | None | 6.3 | 89 | 11 | < 110 |
| | JBT2011031901 | Kemp's ridley | Harrison, MS | 3/19/11 | 2 | No | None | 6.4 | 95 | 5 | < 110 |
| | JKM2011031901 | Kemp's ridley | Harrison, MS | 3/19/11 | 2 | No | None | 13 | 97 | 3 | < 110 |
| | BWM2011032201 | Kemp's ridley | Harrison, MS | 3/22/11 | 2 | No | None | 7.3 | 88 | 12 | < 110 |
| | BWM2011032301 | Kemp's ridley | Harrison, MS | 3/23/11 | 2 | No | None | 8.0 | 96 | 4 | < 110 |
| | BWM2011032303 | Kemp's ridley | Harrison, MS | 3/23/11 | 2 | No | None | 17 | 94 | 6 | < 110 |
| | BWM2011032304 | Kemp's ridley | Harrison, MS | 3/23/11 | 2 | No | None | 11 | 90 | 10 | < 110 |
| | BWM2011032305 | Kemp's ridley | Harrison, MS | 3/23/11 | 2 | No | None | 11 | 90 | 10 | < 110 |
| | BWM2011032306 | Kemp's ridley | Hancock, MS | 3/23/11 | 2 | No | None | 7.9 | 98 | 2 | < 110 |
| | KLS2011043001 | Kemp's ridley | Nueces, TX | 4/30/11 | 1 | No | None | 0.9 | 99 | 1 | < 110 |
| | TKS2011051801 | Kemp's ridley | Kenedy, TX | 5/18/11 | 1 | No | None | 5.9 | 100 | 0 | < 110 |
| | CED2011051901 | loggerhead | Jefferson, LA | 5/19/11 | 2 | No | None | 17 | 98 | 2 | < 110 |
| | MRB2011051901 | loggerhead | Jefferson, LA | 5/19/11 | 2 | No | None | 27 | 97 | 3 | < 110 |
| | BWM2011052501 | Kemp's ridley | Hancock, MS | 5/25/11 | 1 | No | None | 4.2 | 100 | 0 | < 110 |
| | MAB2011060101 | Kemp's ridley | Offshore, AL | 6/1/11 | 1 | No | None | 11 | 97 | 3 | < 110 |
| | JCS2011060701 | Kemp's ridley | Cameron, TX | 6/7/11 | 3 | No | None | 9.0 | 99 | 1 | < 110 |
| | CDD2011081901 | Kemp's ridley | Offshore, LA | 8/18/11 | 1 | No | None | 9.4 | 98 | 2 | < 110 |
| LSR2011091201 | Kemp's ridley | Nueces, TX | 9/12/11 | 1 | No | None | 4.8 | 98 | 2 | < 110 | |
| | | | | | | Mean | | 10 | 95 | 5.0 | ND |
| | | | | | | SD | | 6.5 | 4.4 | 4.4 | ND |
| Lung | BAS2010060110 | Kemp's ridley | Offshore, LA | 6/1/10 | 1 | Yes | Heavy | 0.3 | 96 | 4 | NA |
| | BAS2010060102 | Kemp's ridley | Offshore, LA | 6/1/10 | 1 | Yes | Heavy | 0.8 | 100 | 0 | NA |
| | BAS2010060109 | Kemp's ridley | Offshore, LA | 6/1/10 | 1 | Yes | Heavy | 0.6 | 100 | 0 | NA |
| | BAS2010060605 | Kemp's ridley | Offshore, LA | 6/6/10 | 1 | Yes | Heavy | 0.5 | 90 | 10 | NA |
| | MCT2010060701 | Kemp's ridley | Jefferson, LA | 6/7/10 | 2 | Yes | Heavy | 1.6 | 93 | 7 | NA |

| Sample type | Animal number | Species | Collection site | Collection date | Postmortem condition code | Visible oiling code | Degree of oiling | % lipid | Percent sum LMWAHs ¹ contributing to sum PAHs | Percent sum HMWAHs ² contributing to sum PAHs | DOSS ³ ng/g, ww |
|-------------|---------------|---------------|-----------------|-----------------|---------------------------|---------------------|------------------|------------|--|--|----------------------------|
| | KLH2010070901 | Kemp's ridley | Mobile, AL | 7/9/10 | 1 | Yes | Light | 0.3 | 100 | 0 | NA |
| | BWM2011041802 | Kemp's ridley | Harrison, MS | 4/18/11 | 2 | Yes | Minimal | 1.2 | 100 | 0 | NA |
| | PAK2010072161 | loggerhead | Offshore, LA | 7/21/10 | 1 | No | None | 0.4 | 100 | 0 | NA |
| | XXX20100821XX | loggerhead | Offshore, LA | 8/21/10 | 1 | No | None | 0.4 | 100 | 0 | NA |
| | MSB2011033101 | Kemp's ridley | Harrison, MS | 3/31/11 | 1 | No | None | 0.5 | 100 | 0 | NA |
| | JNF2011041501 | Kemp's ridley | Harrison, MS | 4/15/11 | 1 | No | None | 0.3 | 100 | 0 | NA |
| | JNF2011041601 | Kemp's ridley | Harrison, MS | 4/16/11 | 1 | No | None | 0.4 | 100 | 0 | NA |
| | JKM2011051001 | Kemp's ridley | Hancock, MS | 5/10/11 | 1 | No | None | 0.2 | 100 | 0 | NA |
| | | | | | | Mean | | 0.6 | 98 | 2.0 | ND |
| | | | | | | SD | | 0.4 | 3.3 | 3.3 | ND |

¹ Sum LMWAHs = summed low molecular weight PAHs includes summed concentrations of C0-C4 naphthalenes, acenaphthylene, acenaphthene, C0-C3 fluorenes, C0-C4 dibenzothiophenes and C0-C4 phenanthrenes/anthracenes.

² Sum HMWAHs = summed high molecular weight PAHs includes sum concentrations of C0-C4 fluoranthenes/pyrenes, benz[*a*]anthracene, chrysene + triphenylene, C1-C4 chrysenes/benzanthracenes, benzo[*b*]fluoranthene, benzo[*j*]fluoranthene + benzo[*k*]fluoranthene, benzo[*e*]pyrene, benzo[*a*]pyrene, perylene, indeno[1,2,3-*cd*]pyrene, dibenz[*a,c*]anthracene + dibenz[*a,h*]anthracene and benzo[*ghi*]perylene.

³ DOSS - dispersant component dioctyl sodium sulfosuccinate

ND – not determined

NA – not analyzed

Unk. – unknown degree of oiling