



## Deepwater Horizon: Natural Resource Damage Assessment Toxicity Testing Program

### Select Publications

Alloy, M., T. Garner, K. Bridges, C. Mansfield, M. Carney, H. Forth, M. Krasnec, C. Lay, R. Takeshita, J. Morris, S. Bonnot, J. Oris, and A. Roberts. 2017. Co-exposure to sunlight enhances the toxicity of naturally weathered *Deepwater Horizon* oil to early life stage red drum (*Sciaenops ocellatus*) and speckled seatrout (*Cynoscion nebulosus*). *Environmental Toxicology and Chemistry* 36(3):780-785.

Bayha, K.M., N. Ortell, C.N. Ryan, K.J. Griffitt, M. Krasnec, J. Sena, T. Ramaraj, R. Takeshita, G.D. Mayer, F. Schilkey, and R.J. Griffitt. 2017. Crude oil impairs immune function and increases susceptibility to pathogenic bacteria in southern flounder. *PLoS ONE* 12(5): e0176559. Available:

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0176559>.

Brown-Peterson, N.J., M. Krasnec, R. Takeshita, C.N. Ryan, K.J. Griffitt, C. Lay, G.D. Mayer, K.M. Bayha, W.E. Hawkins, I. Lipton, J. Morris, and R.J. Griffitt. 2015. A multiple endpoint analysis of the effects of chronic exposure to sediment contaminated with *Deepwater Horizon* oil on juvenile southern flounder and their associated microbiomes. *Aquatic Toxicology* 165(August):197-209. Available:

[www.sciencedirect.com/science/article/pii/S0166445X15001733](http://www.sciencedirect.com/science/article/pii/S0166445X15001733).

Brown-Peterson, N.J., M.O. Krasnec, C.R. Lay, J.M. Morris and R.J. Griffitt. 2017. Responses of juvenile southern flounder exposed to *Deepwater Horizon* oil-contaminated sediments. *Environmental Toxicology and Chemistry* 36(4):1067-1076.

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Esbaugh, A.J., E.M. Mager, J.D. Stieglitz, R. Hoenig, T.L. Brown, B.L. French, T.L. Linbo, C. Lay, H. Forth, N.L. Scholz, J.P. Incardona, J.M. Morris, D.D. Benetti, and M. Grosell. 2016. The effects of weathering and chemical dispersion on *Deepwater Horizon* crude oil toxicity to mahi-mahi (*Coryphaena hippurus*) early life stages. *Science of the Total Environment* 543:644-651. Available: <http://dx.doi.org/10.1016/j.scitotenv.2015.11.068>.

Forth, H.P., C.L. Mitchelmore, J.M. Morris, and J. Lipton. 2017. Characterization of oil and water accommodated fractions used to conduct aquatic toxicity testing in support of the *Deepwater Horizon* oil spill Natural Resource Damage Assessment. *Environmental Toxicology and Chemistry* 36(6):1460-1472.



Forth, H.P., C.L. Mitchelmore, J.M. Morris, C.R. Lay, and J. Lipton. 2017. Characterization of dissolved and particulate phases of water accommodated fractions used to conduct aquatic toxicity testing in support of the Deepwater Horizon natural resource damage assessment. *Environmental Toxicology and Chemistry* 36(6):1460-1472.

Garner, T.R., M.A. Hart, L.E. Sweet, H.T.J. Bagheri, J. Morris, J.A. Stoeckel, and A.P. Roberts. 2017. Effects of *Deepwater Horizon* spill oil on the migration and survival of marsh periwinkle snails (*Littoraria irrorata*). *Environmental Science and Technology* 51(15):8757-8762. doi: 10.1021/acs.est.7b01565. Available: <http://pubs.acs.org/doi/abs/10.1021/acs.est.7b01565>.

Harr, K., D. Reavill, K. Deak, S. Murawski, and R. Takeshita. 2017. Generation of red drum (*Sciaenops ocellatus*) hematology reference intervals with a focus on identified outliers. (Accepted at *Vet Clin Pathol*)

Jones, E.R., C.J. Martyniuk, J.M. Morris, M.O. Krasnec, and R.J. Griffitt. 2017. Exposure to *Deepwater Horizon* oil and Corexit 9500 at low concentrations induces transcriptional changes and alters immune transcriptional pathways in sheepshead minnows. *Comparative Biochemistry and Physiology – Part D: Genomics and Proteomics* 23:8-16.

Lotufo, G., D. Farrar, J. Bienenbach, J. Gaird, M. Krasnec, C. Lay, J. Morris, and M. Gielazyn. 2016. Effects of sediment amended with *Deepwater Horizon* incident slick oil on the infaunal amphipod *Leptocheirus plumulosus*. *Marine Pollution Bulletin* 109(1):253-258. Available: <http://dx.doi.org/10.1016/j.marpolbul.2016.05.073>.

Mager, E.M., C. Pasparakis, L.S. Schlenker, Z. Yao, C. Bodinier, J.D. Stieglitz, R. Hoenig, J.M. Morris, D.D. Benetti, M. Grosell. 2017. Assessment of early life stage mahi-mahi windows of sensitivity during acute exposures to *Deepwater Horizon* crude oil. *Environmental Toxicology and Chemistry* 36(7): 1887-1895. Available: <http://onlinelibrary.wiley.com/doi/10.1002/etc.3713/full>.

O'Shaughnessy, K.A., Forth, H., Takeshita, R. and Chesney, E.J., 2018. Toxicity of weathered *Deepwater Horizon* oil to bay anchovy (*Anchoa mitchilli*) embryos. *Ecotoxicology and Environmental Safety*, 148, pp.473-479.

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Vignier, J., P. Soudant, F.L.E. Chu, J.M. Morris, M.W. Carney, C.R. Lay, M.O. Krasnec, R. Robert, and A.K. Volety. 2016. Lethal and sub-lethal effects of *Deepwater Horizon* slick oil and dispersant on oyster (*Crassostrea virginica*) larvae. *Marine Environmental Research* 120:20-31. Available: <http://dx.doi.org/10.1016/j.marenvres.2016.07.006>.

### **Presentations available online:**

Morris, J.M., M. Krasnec, C. Lay, H. Forth, R. Takeshita, J. Lipton, and M. Gielazyn. 2016. Post-Settlement Conclusions of the Trustee Toxicity Testing Program Conducted in Support of the Deepwater Horizon Natural Resource Damage Assessment. 37th Annual Meeting of the Society of Environmental Toxicology and Chemistry (SETAC), Orlando, FL. November 6–10. Recorded presentation available: <http://setac.sclivelearningcenter.com/index.aspx?PID=9484&SID=224566>

### **Reports available online:**

Deepwater Horizon Natural Resource Damage Assessment Trustees. 2016. *Deepwater Horizon* Oil Spill: Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement. Available: <http://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan>.

Garner, T.R., A.P. Roberts, M.A. Hart, J.A. Stoeckel, and J.M. Morris. 2016. Migration and Survival of Marsh Periwinkles (*Littoraria irrorata*) Exposed to *Deepwater Horizon* Oil. Prepared by University of North Texas, Denton, TX; Auburn University, Auburn AL; and Abt Associates, Boulder, CO, for National Oceanic and Atmospheric Administration Assessment and Restoration Division, Seattle, WA. January 7. Available: in Section 5.12.2 Technical Reports: <https://www.doi.gov/deepwaterhorizon/adminrecord>.

Forth, H.P., D. Cacela, J.M. Morris, A. Pyayt, S. Cheemalapati, H. Wang, and K.R. Konnaiyan. 2015. Measurement of Slick Thickness by Light Attenuation. Technical Report. Prepared by Abt Associates, Boulder, CO and the University of South Florida for National Oceanic and Atmospheric Administration Assessment and Restoration Division, Seattle, WA. August 31. Available: in Section 5.12.2 Technical Reports: <https://www.doi.gov/deepwaterhorizon/adminrecord>.



- Forth, H.P., J.M. Morris, and D. Cacela. 2015. Explanation of Analytes Included in the Total Polycyclic Aromatic Hydrocarbon Sums Used by the *Deepwater Horizon* Natural Resource Damage Assessment Toxicity Group. Technical Report. Prepared by Abt Associates, Boulder, CO, for National Oceanic and Atmospheric Administration Assessment and Restoration Division, Seattle, WA. August 31. Available: in Section 5.12.2 Technical Reports: <https://www.doi.gov/deepwaterhorizon/adminrecord>.
- Forth, H.P., J.M. Morris, C.R. Lay, J. Lipton, C.L. Mitchelmore, and S.E. Suttles. 2015. Characterization of Oil and Water Accommodated Fractions Used to Conduct Aquatic Toxicity Testing in Support of the *Deepwater Horizon* Natural Resource Damage Assessment. Technical Report. Prepared by Abt Associates, Boulder, CO and Chesapeake Biological Laboratory, Solomons, MD, for National Oceanic and Atmospheric Administration Assessment and Restoration Division, Seattle, WA. August 31. Available: in Section 5.12.2 Technical Reports: <https://www.doi.gov/deepwaterhorizon/adminrecord>.
- Krasnec, M.O., H.P. Forth, M. Carney, J.M. Morris, R. Griffitt, and N. Brown-Peterson. 2015. Characterization of the Various Sediments Collected for Toxicity Testing in Support of the *Deepwater Horizon* Natural Horizon Damage Assessment. Technical Report. Prepared by Abt Associates, Boulder, CO and University of Southern Mississippi, Ocean Springs, MS, for National Oceanic and Atmospheric Administration Assessment and Restoration Division, Seattle, WA. August 31. Available: in Section 5.12.2 Technical Reports: <https://www.doi.gov/deepwaterhorizon/adminrecord>.
- Krasnec, M.O., J.M. Morris, and C. Lay. 2015. An Evaluation of the Toxicity of Deep Sea Sediment Collected after the *Deepwater Horizon* Oil Spill on the Amphipod *Leptocheirus plumulosus*. Technical Report. Prepared by Abt Associates, Boulder, CO, for National Oceanic and Atmospheric Administration Assessment and Restoration Division, Seattle, WA. August 28. Available: in Section 5.12.2 Technical Reports: <https://www.doi.gov/deepwaterhorizon/adminrecord>.
- Lay, C.R., J.M. Morris, R. Takeshita, H.P. Forth, C.L. Travers, A.P. Roberts, M. Alloy, T.R. Garner, and K. Bridges. 2015. Incident Ultraviolet (UV) Radiation and Extinction Coefficients in the Northern Gulf of Mexico during the *Deepwater Horizon* Oil Spill. Technical Report. Prepared by Abt Associates, Boulder, CO and University of North Texas, Denton, TX, for National Oceanic and Atmospheric Administration Assessment and Restoration Division, Seattle, WA. December 16. Available: in Section 5.12.2 Technical Reports: <https://www.doi.gov/deepwaterhorizon/adminrecord>.



- Lay, C.R., J.M. Morris, R. Takeshita, H.P. Forth, C.L. Travers, A.P. Roberts, M. Alloy, T.R. Garner, and C. Overturf. 2015. The Effect of Ultraviolet (UV) Radiation on the Toxicity of *Deepwater Horizon* Oil. Technical Report. Prepared by Abt Associates, Boulder, CO and University of North Texas, Denton, TX, for National Oceanic and Atmospheric Administration Assessment and Restoration Division, Seattle, WA. December 16. Available: in Section 5.12.2 Technical Reports: <https://www.doi.gov/deepwaterhorizon/adminrecord>.
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