

HEIDI H. DUNAGAN

Biologist II

Mrs. Dunagan is a biologist at Research Planning, Inc., (RPI) specializing in Natural Resource Damage Assessments (NRDA), oil spill response and planning, and natural resource mapping projects. She has served as a member of the National Oceanic and Atmospheric Administration (NOAA) Scientific Support Team as a responder to oil/hazardous materials spills for 9 years, leading survey teams to determine injury to shoreline and coastal resources. Mrs. Dunagan has been the lead biologist on several of RPI's Environmental Sensitivity Index (ESI) and Resource Mapping projects which include compilation of existing information on spatial distribution and seasonality of coastal biological and socio-economic resources. Mrs. Dunagan also has a clear understanding and knowledge of Geographic Information Systems (GIS) and the use of these tools in the analyses and management of natural resources. She has worked with several federal agencies (e.g., National Park Service, Department of Transportation) on contingency planning to protect natural resources during spills and response activities. Her graduate work focused on marine mammal biology, fisheries interactions with marine mammals, and environmental policy.

EDUCATION

M.S., Environmental Studies, University of Charleston / Medical University of South Carolina, Charleston, SC., 1999.

B.S., Biological Sciences, Emory University, Atlanta, Ga., 1997.

PROFESSIONAL EXPERIENCE

- 2000 to present: Biologist II, Research Planning Inc., Columbia, SC.
- 1998-2000: Research Biologist, National Oceanic and Atmospheric Administration, National Ocean Service Science Center for Coastal Environmental Health and Biomolecular Research, Charleston, SC.

SELECTED PROJECT DESCRIPTIONS

Natural Resource Damage Assessment

Mrs. Dunagan is currently leading the Pre-Assessment Phase of the NRDA for the 2006 Savannah River oil spill, corresponding with natural resource Trustees and assessing potential injuries based on initial response activities. She is also currently working on the NRDA for the 2007 *Cosco Busan* oil spill in San Francisco Bay, CA as a representative for NOAA. She served as the NOAA Trustee representative on the Shoreline Injury Assessment Team for the *Bouchard No. 120* oil spill in Buzzard's Bay, Massachusetts and Rhode Island as well as the *Athos* oil spill in the Delaware River. These positions required evaluating different shoreline habitats for degree of oiling and determining the importance of various habitats for coastal resources, such as shorebirds and invertebrates. Mrs. Dunagan compiled Pre-Assessment Data Reports (PADR) and Damage Assessment and Restoration Plans (DARP) for several oil spills.

Mrs. Dunagan also assisted the National Park Service (NPS) in compiling the DARP for the Howard/White Unit No. 1 oil spill on the Obed Wild and Scenic River, Morgan County, Tennessee. She assisted the natural resource trustees in the evaluation of important aquatic resources and riparian habitat along an inland creek that was critical habitat for several

threatened and endangered species (e.g. spotfin chub). The DARP included an analysis of the technical studies conducted to determine the extent of the injury, an environmental impact assessment, and a restoration plan scaled to the injuries. She also assisted the Trustees in preparing the PADR, which was a compilation of the sampling and analysis of the ephemeral data.

Oil and Hazardous Material Spill Response and Planning

Mrs. Dunagan has been a part of the Scientific Support Team to the U.S. Coast Guard provided by the National Oceanic and Atmospheric Administration (NOAA) for oil and chemical spills for over 9 years. She lead the Shoreline Cleanup Assessment Teams (SCAT) for several oil spill incidents such as the Charleston *Evergreen* spill and the Savannah River Mystery Spill. She has provided on-scene support for the Emergency Response and Assessment and Restoration Divisions of NOAA for other incidents such as the *Bouchard No. 120* spill in Buzzard's Bay, Massachusetts and Calcasieu Lake oil spill, Louisiana, as well as oil spills associated with natural events (e.g., Hurricane Ivan). Mrs. Dunagan also served as a member of the Scientific Support Team during the *Cosco Busan*, San Francisco Bay oil spill.

Mrs. Dunagan has written numerous reports and analyses to prepare or advise resource managers of spill impacts on natural resources including but not limited to:

- The NPS oil spill annex as part of the Area Contingency Plan for two Park units within the NPS system: Gateway National Recreation Area and the Georgia Park lands. The annex included maps, protection strategies, and information on all sensitive resources within each Park.
- “Resources at Risk” analyses for oil spills and spill drills, compiling information on oil behavior, threatened and endangered species, and sensitive coastal habitat locations.
- A life history report on population parameters and injury quantification for the Patuxent River diamondback terrapin turtle population in response to the Chalk Point/ Swanson Creek oil spill.
- A field protocol for measuring and quantifying impacts to birds affected by oil.

Natural Resources Mapping/GIS Projects:

Mrs. Dunagan has served as lead biologist on the following ESI and Coastal Resource Mapping Projects: Long Island, NY; Florida; New Hampshire; Hudson River, NY; and Chesapeake Bay, VA and MD. She is currently serving as the lead biologist for the Mississippi ESI. She also assisted in the biological compilation of the Honduras and Guatemala ESI and Resource Mapping project. Her role as lead biologist on multiple ESI projects requires extensive correspondence with biological and socio-economic resource experts from several government, university, and private agencies. In this capacity she was responsible for compiling all of the coastal biological and socio-economic information that is incorporated in the atlases. She has extensive experience in natural resources data collection and interpretation, as well as a working knowledge of Geographic Information Systems (GIS) software, particularly ArcView® and ArcMap®.

She served as the lead biologist for the Department of Transportation's Research and Special Programs Administration's Best Management Practices Project. This involved evaluating threatened and endangered species range data and human interaction issues, as well as

coordinating with the U.S. Fish and Wildlife Service on appropriate practices for species protection during pipeline repairs.

Mrs. Dunagan served as a project biologist for the Department of Transportation's Unusually Sensitive Areas (USA) nationwide mapping project. She collected and analyzed data for threatened and endangered species, and shorebird and waterfowl concentration areas. Using Geographic Information Systems and ArcView® software, she inspected USA models and wrote final reports for each state.

She also served as the lead biologist for identifying High Consequence Areas (HCAs) for Florida Power & Light's Integrity Management Program. This involved evaluating three hazardous liquid pipelines and the HCAs that would be impacted during a release from the pipelines. She prepared the Vulnerability Analysis for Florida Power & Light's power plants as part of the Facility Response Plans.

Coastal and Wildlife Biology Research Projects:

Between 1998 and 2009, Mrs. Dunagan has worked on a variety of coastal and wildlife biology projects as well as several literature syntheses including:

- Working with a team of RPI and outside experts on a synthesis of worldwide literature on alternative energy for the Minerals Management Service (MMS). Her focus was on impacts of offshore wind power and other new energy technologies on marine mammals and sea turtles.
- Participating in fieldwork to assess impacts of dredging operations to the Keta Lagoon, Ghana. This work included measurement of water quality data, bird and vegetation surveys, and assessment to fisheries and wildlife in the vicinity of the lagoon.
- Participating in a feral hog study for NPS and Clemson University in the Congaree Swamp National Monument located in South Carolina. This effort required extensive field work to evaluate and map non-native feral hog impacts on wetland communities, native vegetative, threatened and endangered species, and aquatic habitats that are subject to severe damage from hog rooting and other behavior.
- Assisting lead biologist in conducting a literature review of worldwide coral reef population parameters and recovery time periods after physical disturbance.
- Participating in a NOAA life history study of bottlenose dolphins along the South Carolina coast which required performing necropsies of stranded dolphins, live dolphin captures, telemetry tracking projects, and photo-identification surveys. She also studied the interaction of marine mammals and fisheries along the South Carolina coast.

Publications:

Dunagan, H.H., J. Michel, and B. Benggio. 2008. Estimating oil volume for the 2006 Savannah River mystery spill. Proc. 2008 International Oil Spill Conference, American Petroleum Institute, Washington, D.C.

Hinkeldey, H., J. Michel, N. Meade, and P. McGowan. 2003. Injury to birds and diamondback terrapins resulting from the Chalk Point Oil Spill, Patuxent, Maryland. 2003 International Oil Spill Conference Proceedings, American Petroleum Institute, Washington, DC. 12pp.

- Hinkeldey, H. S. Zengel, E. Inouye, C. Sames, and S. Hall. 2003. Unusually Sensitive Areas (USAs) for ecological resources: maps and GIS data for the United States. 2003 International Oil Spill Conference Proceedings, American Petroleum Institute, Washington, DC. 14 pp.
- Hinkeldey, H, J. Michel, T. Tomasi, R. Greer, W. Kicklighter, R. Wood and N. Meade. 2001. Estimate of the total injury to diamondback terrapins from the Chalk Point oil spill. Report to the Trustee Council for the Chalk Point Oil Spill. NOAA Damage Assessment Center, Silver Spring, MD, 12 pp.
- Hinkeldey, H. and W.E. McFee. 1999. Age Determination Using Acid-Etched Teeth of the Pygmy Sperm Whale (*Kogia breviceps*). Marine Mammal Conference, 13th Biennial Meeting, Maui, Hawaii.
- Michel, J., Dunagan, H., Boring, C., Healy, E., Evans, W., Dean, J.M., McGillis, A. and Hain, J. 2007. Worldwide Synthesis and Analysis of Existing Information Regarding Environmental Effects of Alternative Energy Uses on the Outer Continental Shelf. U.S. Department of the Interior, Minerals Management Service, Herndon, VA, MMS OCS Report 2007-038. 254 pp.
- Michel, J., S. Zengel, H. Hinkeldey, and D. Helton. 2003. Ephemeral data collection during the emergency phase of a spill: protocols and design methods for NRDA. 2003 International Oil Spill Conference Proceedings, American Petroleum Institute, Washington, DC.
- Michel, J., Z. Nixon, and H. Hinkeldey. 2002. Recovery of four oiled wetlands subjected to in situ burning. Report prepared for the American Petroleum Institute, Washington, DC. 71 pp.
- RPI. 2003. Preassessment Phase Report for the Howard/White Unit No. 1 Oil Spill NRDA, Obed Wild and Scenic River, Morgan County, Tennessee. Prepared for National Park Service, 47 pp. + appendices.
- Zengel, S. and H. Hinkeldey. 2002. Coral Reef Recovery: Literature Review and Recommendations for Damage Assessment and Restoration Planning. Report to NOAA Damage Assessment Center, Silver Spring, MD.

Presentations:

International Oil Spill Conference; April 2003, Vancouver, British Columbia

- Unusually Sensitive Areas (USAs) for Ecological Resources: Maps and GIS Data for the United States
- Injury to Birds and Diamondback Terrapins Resulting from the Chalk Point Oil Spill, Patuxent River, Maryland

Poster Sessions:

International Oil Spill Conference; May 2008, Savannah, Georgia, USA

- Estimating Oil Volume for the 2006 Savannah River Mystery Spill