



GARY SHIGENAKA, M.S.**Research Planning, Inc.**

Senior Ecologist

Gary Shigenaka is a marine biologist with many decades of experience in environmental science. He recently retired from a long career with NOAA (U.S. National Oceanic and Atmospheric Administration), where he specialized in field assessment of coastal status and trends for spill response.

Biological support during disaster response requires the ability to integrate broad and deep knowledge of environmental impacts with regional considerations of potentially-affected resources and habitats. Mr. Shigenaka's experience and interests mesh well with these requirements.

His expertise includes, but not limited to:

- General biological support during response for oil and chemical incidents, and other large-scale disasters including storms and earthquakes;
- Incident Command System representation, specifically related to Environmental Unit;
- Shoreline assessment, including SCAT;
- Critical review/evaluation of environmental research studies;
- Field monitoring and assessment of short- and long-term response effectiveness or other environmental impacts;
- Presentation and lectures to technical and lay audiences; and
- Technical reports and writing.

EDUCATION

M.S., Marine Affairs, Marine Environmental Policy, Institute for Marine Studies University of Washington, WA (1987). Thesis Title: Implementation Analysis and Nonpoint Source Pollution: An Application in Puget Sound. Donald L. McKernan Award for Outstanding Marine Affairs Thesis, 1988.

B.S., Biological Oceanography, Department of Oceanography, University of Washington (1976)

RECOGNITION AND AWARDS

- B.C. Pacific States Oil Spill Task Force: Legacy Award (2021)
- Gerald M. Friedman Award for Excellence in Oil History Presentation, Oil History Symposium, Casper WY (2016)
- U.S. Department of Commerce, NOAA, recognition and awards:
 - Distinguished Career Award, Scientific Achievement (2016)
 - Bronze Medal, with Alan J. Mearns, *Exxon Valdez* research & monitoring (2016)
 - NOAA Administrator's Award, Bangladesh spill response (2015)
 - Bronze Medal group award, Shoreline Assessment Cleanup Technique revisions (2014)
 - Special Service Award, Hurricanes Katrina/Rita response (2006)
 - Bronze Medal group award, *Athos I* response (2005)
 - Individual Award, *Selendang Ayu* response (2005)
 - NOAA Spectrum Diversity Award (2005)
 - Special Achievement Award, public outreach coordination (1983)
 - Nominated for Pacific Marine Center Employee of the Year (1983)
 - NOAA Unit Citation, NOAA Ship *Miller Freeman* (1982)
 - Sustained Superior Performance Awards (1994, 1991, 1982, 1980, 1979)
 - Letter of Commendation (1981, 1980)
- U.S. Coast Guard, recognition and awards:
 - Meritorious Team Commendation, *Athos I* response (2005)

- Meritorious Team Commendation, 2001 International Oil Spill Conference Program Team (2001)
- Meritorious Team Commendation, Tankship *Jessica* International Response Coordination Team (2001)
- *Hindsight and Foresight: 20 years After the Exxon Valdez Spill*, documentary film - writer, producer, director
 - Bronze Telly Award, 2009
 - Blue Ocean Film Festival, Savannah, GA 2009, Honorable Mention
 - Festival International du Film d'Environnement, Paris, France, 2009, Featured Selection
 - Energy Film Festival, Lausanne, Switzerland, 2011, Featured Selection
- Donald L. McKernan Award for Outstanding Marine Affairs Thesis, Institute for Marine Studies, University of Washington (1988)
- Dean John A. Knauss Marine Policy Fellowship, Washington, D.C., National Sea Grant College Program, (1986)

OTHER ACTIVITIES

- Nuka Research and Planning LLC, subcontractor for dispersant policy review by Prince William Sound Regional Citizens Advisory Council (2021-2022)
- Islands Oil Spill Association (IOSA, Friday Harbor WA) Science Officer (2019-present); Board of Directors (2023- present)
- “Wallyhood” local Seattle blog, Editor (2020-present)
- Oil Spill Recovery Institute (OSRI, Cordova AK), Science and Technical Committee (2017-present)
- Civilian Response Corps – Standby (U.S. Department of State) (2009-present)
- RS500 training class, Foundations of Interagency Reconstruction & Stabilization, 2010, National Foreign Affairs Training Center, Arlington VA
- Hamilton International Middle School (Seattle School District) PTSA Board (2007-2009)
- International Federation of Professional and Technical Employees, Local 8A Chapter Vice-President (2006-2007; 2011-2012)
- Board of Directors, Little Anchor Child Care Center (1997-1998); President (1998)
- City of Seattle Solid Waste Advisory Committee (1995-1999); Co-Chair (1997-1999)
- Graduate and Professional Student Senate representative, University of Washington (1984-1985)
- Washington State emergency medical technician (1982-1985)
- Cardiopulmonary resuscitation instructor (1982-1984)
 - Certified for Advanced Cardiac Life Support
- Equal Employment Opportunity Committee chair, NOAA Ship *Miller Freeman* (1983-1984)

PROFESSIONAL EXPERIENCE

NOAA Scientist Emeritus - 1/2021 to present

NOAA, Office of Response and Restoration, Emergency Response Division. Concluded work on two projects remaining at retirement (update of NOAA Oil & Sea Turtles guide, and journal article submission for Marine Pollution Bulletin). Presented technical talk on final NOAA work (Golden Ray incident monitoring project; oil spill history) at Interspill conference, Amsterdam, Netherlands (June 2022). Instructor at NOAA Science of Oil Spill classes, Seattle, WA (July 2022) & Grasonville, MD (September 2022). Invited speaker at Duke University Conservation Technology conference (March 2023).

Senior Marine Biologist - 2/1990 to 12/2020

NOAA, Office of Response and Restoration, Emergency Response Division. Senior biologist on scientific support team providing biological fate and effects guidance for oil and chemical spill response and cleanup. On-scene science expert during incident responses. Direct and/or participate in shoreline oiling surveys and resource assessments. Evaluate operational effectiveness and environmental effects of spill countermeasures. Technical and contract manager for Exxon Valdez impact assessment and shoreline recovery monitoring & research programs, 1991-2014. On-scene domestic responses: Exxon Valdez (Alaska, 1989-91); Tenyo Maru (Washington, 1991); Morris J. Berman (Puerto Rico, 1994); Roosevelt Roads Naval Air Station (Puerto Rico, 1999); New Carissa (Oregon, 1999); Athos 1 (Pennsylvania, 2004); *Selendang Ayu* (Alaska, 2005-6); Hurricanes Katrina/Rita (Louisiana, 2005-6); Bayou Perot well blowout (Louisiana, 2007); Barge DM932 (Louisiana, 2008); Delta National Wildlife Refuge (Louisiana, 2010); Deepwater Horizon (Louisiana, 2010-11); Texas City Y barge (Texas, 2014); Columbia River derelict cannery fuel spill (Oregon, 2018); Hurricane Florence (North Carolina, 2018); Golden Ray (Georgia, 2019). International responses: Nakhodka (Japan, 1997); Prestige (Spain, 2002); Sundarbans oil spill (Bangladesh, 2014). Spill monitoring & research in Newfoundland and Chile. U.S. Department of Commerce representative to Region 10 Regional Response Team & U.S.-Canada Joint Response Team, 2005-2020. Oil Spill Recovery Institute (Cordova, AK), Scientific and Technical Committee member, 2018-present. United Nations Decade for Oceans Science (UNDOS) Arctic Ocean Action Plan working group, 2020. Instructor in oil spill response training classes. Trained & certified in HAZWOPR (40 hr.), helicopter emergency egress, first aid, CPR, & small boat safety.

Oceanographer - 8/87 to 2/90

NOAA, Ocean Assessments Division, Coastal and Estuarine Assessments Branch, Pacific Office. Member of scientific team responsible for documenting and interpreting status and recent trends in U.S. marine environmental quality. Prepared assessments and technical publications focusing on specific regions of coastal U.S. and on specific contaminants of concern. Synthesized relevant data from multiple agencies and sources, published literature, and current investigations; analyzed and interpreted data to provide insights into marine environmental quality. Presented papers at professional meetings, published articles in peer-reviewed literature. Designated field party chief aboard research cruises.

Physical Scientist - 1/86 to 8/87

NOAA, Ocean Assessments Division, National Status and Trends Program. Member of multidisciplinary team of scientists responsible for documenting current status and recent trends in U.S. marine environmental quality. Interpreted results of chemical and biological analyses for audiences ranging from lay to technical. Designed, implemented, and maintained computer databases for national analytical data. Assisted in coordination of sediment biological effects study in San Francisco Bay. Reviewed research proposals for interagency environmental assessments. Written products included technical reports with production of associated graphics; briefing materials for congressional hearings; press releases detailing program activities.

Chief Biological Survey Technician - 3/79 to 12/84

NOAA Ship Miller Freeman, National Ocean Service fisheries/oceanographic research vessel (Class 2, 215 ft.). Developed and implemented shipboard support for field sampling activities associated with biological, chemical, geological and physical research projects. Supervised department of three. Technical responsibilities: instrument deployment, data processing, preparation of report graphics, computer program development. Administrative responsibilities: personnel actions, departmental budget preparation and oversight, interdepartmental coordination, and report production. Certified and served as medical technician.

Biological Technician - 10/78 to 3/79

National Marine Fisheries Service, Resource Ecology and Fisheries Management Division; and Resource Assessment and Conservation Engineering Division. Field data collection and processing in Gulf of Alaska ichthyoplankton and groundfish surveys, aboard R.V. Wecoma and NOAA Ship Miller Freeman. Deployment of remote sampling equipment and collection of basic data on groundfish population biology. Laboratory taxonomic work with X-ray identification of juvenile fish.

Fisheries Biologist/Foreign Fisheries Observer - 2/78 to 10/78; 2/77 to 9/77

National Marine Fisheries Service, Foreign Fisheries Observer Program. U.S. Government representative during two field seasons aboard M.V. Keiko Maru, Japanese (Nippon Suisan Corporation) tanner crab factoryship in U.S. Bering Sea working grounds. Observed mothership operations, verified daily fleet catch totals, and collected biological information on resource. Conducted independent research on commensal turbellarian worm in crab population.

Scientific Aide - 8/76 to 12/76

Washington Department of Fisheries, Research and Development Division. Constructed and tested experimental salmon trap in Budd Inlet, Puget Sound. Conducted stream surveys for spawning salmon. Operated Deschutes River fish ladder, Tumwater, Washington, to monitor movements of tagged salmon. Worked with U.S. Army Corps of Engineers at Wynoochee Dam Project to facilitate return migration of coho salmon. Laboratory work removing coded wire tags from sport- and commercially-caught salmon.

Oceanographic Technician - 7/75 to 12/75

University of Washington, Department of Oceanography. Field data collection and processing for U.S. Navy contract study of zooplankton and myctophid fish component of Deep Scattering Layer in north Pacific Ocean, aboard R.V. Thomas G. Thompson. Laboratory work identifying and sorting decapod shrimp in plankton samples.

Bartender – 6/76 to 2/78

Doc Maynard's, Pioneer Square, Seattle. Field research in physical chemistry, toxicology, behavioral psychology (esp. pathological psychosis), dispute mediation, and advanced janitorial methods.

Publications and Reports

- Shigenaka, G.**, J. Weaver, Z. Nixon, and A.K. Fukuyama. In preparation. The relationship between long-term physical and biological recovery of disturbed gravel beach habitat in Prince William Sound, Alaska.
- Wallace, B.P., B.A. Stacy, E. Cuevas, C. Holyoake, P.H. Lara, A.C.J. Marcondes, J.D. Miller, H. Nijkamp, N.J. Pilcher, I. Robinson, N. Rutherford, and **G. Shigenaka**. 2020. Oil spills and sea turtles: documented effects and considerations for response and assessment efforts. *Endangered Species Research* 41:17-37.
- Chen, H., R.K. Nelson, R.F. Swarthout, **G. Shigenaka**, A.H.B. de Oliveira, C.M. Reddy, and A.M. McKenna. 2018. Detailed compositional characterization of the 2014 Bangladesh furnace oil released into the world's largest mangrove forest. *Energy & Fuels*, Article ASAP DOI: 10.1021/acs.energyfuels.7b03944.
- Shigenaka, G.** 2017. The wreck of the Thomas W. Lawson: The "first" large oil spill. *Oil-Industry History* 18(1):109-114.
- Shigenaka, G.**, B. Meyer, E. Overton, and M.S. Miles. 2017. Physical and chemical characterization of in-situ burn residue encountered by a deep-water fishery in the Gulf of Mexico. Paper 2017-185 in *Proceedings of the 2017 International Oil Spill Conference*, May 15-18, Long Beach CA. 19 pp.

- Shigenaka, G.** 2016. Recent studies on the effects of oil. Chapter 20 in *Oil Spill Science and Technology* (2nd Edition), M. Fingas, ed. Cambridge, MA: Gulf Professional Printing/Elsevier, pp. 979-1025.
- Wilkin, S.M., T.K. Rowles, E. Stratton, N. Adimey, Field, C.L. Field, S. Wissmann, **G. Shigenaka**, E. Fougères, B. Mase, Southeast Region Stranding Network, and M.H. Ziccardi. 2017. Marine mammal response operations during the *Deepwater Horizon* oil spill. *Endangered Species Research* 33:107-118.
- Fukuyama, A.K., **G. Shigenaka**, and D.A. Coats. 2014. Status of intertidal infaunal communities following the *Exxon Valdez* oil spill in Prince William Sound, Alaska. *Marine Pollution Bulletin* 84(1-2):56-69.
- Mearns, A.J., **G. Shigenaka**, B. Meyer, and A. Drury. 2014. Contamination and recovery of commercially-reared mussels exposed to diesel fuel from a sunken fishing vessel. In *Proceedings of the 2014 International Oil Spill Conference*, May 5-8, Savannah GA.
- Shigenaka, G.**, E. Overton, B. Meyer, H. Gao, and S. Miles. 2014. Comparison of physical and chemical characteristics of in-situ burn residue and other environmental oil samples collected during the *Deepwater Horizon* spill response. Report submitted to Bureau of Safety and Environmental Enforcement under Interagency Agreement E13PG00001. 37 pp. + appendix.
- Shigenaka, G.** 2014. Twenty-Five years After the *Exxon Valdez* Oil Spill: NOAA's Scientific Support, Monitoring, and Research. Seattle: NOAA Office of Response and Restoration. 78 pp.
- Crosby, S., R. Fay, C. Groark, A. Kani, J.R. Smith, T. Sullivan, and R. Pavia; **G. Shigenaka**, Tech. Ed. 2013. Transporting Alberta oil sands products: Defining the issues and assessing the risks. NOAA Technical Memorandum NOS OR&R 44. Seattle: NOAA Office of Response and Restoration. 152 pp.
- Shigenaka, G.** 2010. Effects of oil in the environment. Chapter 27 in *Oil Spill Science and Technology*, M. Fingas, ed.. Burlington, MA: Gulf Professional Printing/Elsevier, pp. 985-1024.
- Shigenaka, G.** and E.H. Owens. 2008. Sediment relocation of oiled shorelines — M/V Selendang Ayu, Alaska. In *Proceedings of the 2008 International Oil Spill Conference*, 4-8 May 2008, Savannah, GA.
- Coats, D.A. and **G. Shigenaka**. 2005. Sampling needed to assess intertidal impacts: lessons learned from 11 years of monitoring in Prince William Sound. In *Proceedings of the 2005 International Oil Spill Conference*, May 15-19 2005, Miami FL.
- Driskell, W.B., J.R. Payne, and **G. Shigenaka**. 2005. Revisiting source identification, weathering models, and phase discrimination for Exxon Valdez oil. In *Proceedings of the Twenty-Eighth Arctic and Marine Oilspill Program (AMOP) technical Seminar*, June 7-9 2005, Calgary (Alberta) Canada, 33-58.
- Shigenaka, G.** and A.J. Mearns. 2005. Thoughts and retrospection from 16 years in the wake of the Exxon Valdez. In *Proceedings of the 2005 International Oil Spill Conference*, May 15-19 2005, Miami FL.
- Shigenaka, G.** (Technical Ed.). 2003. *Oil and Sea Turtles: Biology, Planning, and Response*. Seattle, WA: National Oceanic and Atmospheric Administration. 111 pp.
- Downs, C.A., **G. Shigenaka**, J.E. Fauth, C.E. Robinson, and A. Huang A. 2002. Cellular physiological assessment of bivalves after chronic exposure to spilled Exxon Valdez crude oil using a novel molecular diagnostic biotechnology. *Environ Sci Technol* 36:2987-2993.
- Shigenaka, G.** 2001. Toxicity of oil to reef-building corals: A spill response perspective. NOAA Technical Memorandum NOS OR&R 8, 100 pp.
- Shigenaka, G.** 2002. Chapter 2. Oil toxicity. In *Oil Spills in Mangroves, Planning & Response Considerations*. Seattle, WA: National Oceanic and Atmospheric Administration, 23-35.
- Fukuyama A.K., **G. Shigenaka**, and R.Z. Hoff. 2000. Effects of residual Exxon Valdez oil on intertidal *Protothaca staminea*: mortality, growth, and bioaccumulation of hydrocarbons in transplanted clams. *Mar Poll Bull* 40:1042-1050.
- Shigenaka, G.** (ed.). 1997. Integrating physical and biological studies of recovery from the *Exxon Valdez* oil spill. NOAA Technical Memorandum NOS ORCA 114, 206 pp. + appendix.
- Shigenaka, G.**, D.A. Coats, A.K. Fukuyama, and P.O. Roberts. 1999. Effects and trends in littleneck clams (*Protothaca staminea*) impacted by the *Exxon Valdez* oil spill. Paper ID #326, *Proceedings of*

- the 1999 International Oil Spill Conference, Seattle, American Petroleum Institute, Washington DC, p 349-356.
- Shigenaka, G.**, C.B. Henry, and P.O. Roberts. 1999. Pavement in Patagonia, asphalt in Alaska: Case studies in oil spill pavement formation, fate, and effects. NOAA Technical Memorandum NOS OR&R 2, 30 pp. + plates.
- Fukuyama, A.K., **G. Shigenaka**, and G.R. Van Blaricom. 1998. Oil spill impacts and the biological basis for response guidance: An applied synthesis of research on three subarctic intertidal communities. NOAA Technical Memorandum NOS ORCA 125, 73 pp.
- Shigenaka, G.**, and C.B. Henry. 1996. Use of mussels and semipermeable membrane devices to assess bioavailability of residual polynuclear aromatic hydrocarbons three years after the *Exxon Valdez* oil spill. In *Exxon Valdez Oil Spill: Fate and Effects in Alaskan Waters*, ASTM Special Technical Publication 1219, P.G. Wells, J.N. Butler, and J.S. Hughes, eds. Philadelphia: American Society for Testing and Materials.
- McGehee, M.A., M. Tacher, and **G. Shigenaka**. 1996. Effects of No. 6 oil and selected remedial options in tropical seagrass beds. NOAA Technical Memorandum NOS ORCA 101, 26 pp. + appendices.
- Shigenaka, G.**, M.A. McGehee, V.P. Vicente, and C.B. Henry, Jr. 1995. Biological effects monitoring during an operational application of Corexit 9580. In Proceedings of the 1995 International Oil Spill Conference. Washington, D.C.: American Petroleum Institute.
- Daykin, M., G. Sergy, D. Aurand, **G. Shigenaka**, Z. Wang, and A. Tang. 1994. Aquatic toxicity resulting from in situ burning of oil-on-water. In Proceedings of the 17th Arctic and Marine Oilspill Program Technical Seminar, Vancouver, B.C., June 8-10, 1994, pp. 1165-1193.
- Hoff, R.Z., **G. Shigenaka**, and C.B. Henry, Jr. 1993. Salt marsh recovery from a crude oil spill: Vegetation, oil weathering, and response. Proceedings of the 1993 International Oil Spill Conference. Washington, D.C.: American Petroleum Institute, pp. 307-311.
- Mearns, A.J. and **G. Shigenaka**. 1993. NOAA's long-term ecological recovery monitoring program: Overview and implications of recovery trends and treatment effects. In *Exxon Valdez Oil Spill Symposium Abstracts*, pp. 83-86.
- Shigenaka, G.**, and N. Barnea. Questions about in-situ burning as an open-water oil spill response technique. Report 93-3, NOAA/HAZMAT, 42 pp.
- Mearns, A.J., M. Matta, **G. Shigenaka**, D. MacDonald, M. Buchman, H. Harris, J. Golas, and G. Lauenstein. 1991. Contaminant Trends in the Southern California Bight: Inventory and Assessment. NOAA Technical Memorandum NOS ORCS 62. 433 pp. + appendices.
- Shigenaka, G.** 1990. Chlordane in the marine environment of the United States: Review and results from the National Status and Trends Program. NOAA Technical Memorandum NOS OMA 55. 230 pp.
- Shigenaka, G.**, E. Long, M. Kuwada, and J. Neff. 1990. Excavation/rock washing: Effects on intertidal biota and projections of recolonization. In *Excavation and Rock Washing Treatment Technology Net Environmental Analysis*. NOAA/Hazardous Materials Response Branch, pp. 163-178.
- Shigenaka, G.** 1989. Chlordane in the coastal and estuarine environment of the U.S.: Review and perspective. In *Oceans '89 Conference Proceedings, Volume 2*, pp. 597-602.
- Shigenaka, G.** and J.E. Price. 1988. Correlation of coprostanol to organic contaminants in coastal and estuarine sediments of the U.S. *Water Resources Bulletin* 24(5): 989-998.
- Long, E.R. and **G. Shigenaka**. 1988. The National Status and Trends Program in southern California: Some recent data and potential future direction. In *The Marine Environment of Santa Barbara and Its Coastal Waters*. NOAA Technical Memorandum NOS MEMD 23, pp. 50-58.
- Mearns, A.J. and **G. Shigenaka**. 1988. Oceanographic, contaminant and ecological trends of the Santa Barbara coast. In *The Marine Environment of Santa Barbara and Its Coastal Waters*. NOAA Technical Memorandum NOS MEMD 23, pp. 59-75.
- Shigenaka, G.** and G.G. Lauenstein. 1988. National Status and Trends Program for Marine Environmental Quality: Benthic Surveillance and Mussel Watch Projects Sampling Protocols. NOAA Technical Memorandum NOS OMA 40. 12 pp.
- Mearns, A.J., M.B. Matta, D. Simecek-Beatty, M.F. Buchman, **G. Shigenaka**, and W. Wert. 1988. PCB and Chlorinated Pesticide Contamination in U.S. Fish and Shellfish: A Historical Assessment Report.

NOAA Technical Memorandum NOS OMA 39. 140 pp.

Leschine, T.M. and **G. Shigenaka**. 1988. Evaluating the effectiveness of proposed nonpoint source pollution control initiatives. In Proceedings of the First Annual Meeting on Puget Sound Research, March 18-19, 1988. Seattle, WA: Puget Sound Water Quality Authority, pp. 266-274.

Shigenaka, G. and J.A. Calder. 1987. "Organic compounds and metals in fish, bivalve molluscs, and sediments of the Chesapeake Bay: Preliminary results from the National Status and Trends Program." In State of the Chesapeake Bay: Second Annual Monitoring Report - Compendium. U.S. Environmental Protection Agency, Chesapeake Bay Program, pp. 71-81.

Shigenaka, G. 1987. "DDT in sediments and fish liver." In National Status and Trends Program for Marine Environmental Quality, Progress Report and Preliminary Assessment of Findings of the Benthic Surveillance Project 1984. U.S. Department of Commerce, NOAA, NOS, OOMA, pp. 33-38.