

Johanna H. Salatas
Senior Scientist

Professional Profile

Ms. Johanna Salatas is a Senior Scientist in Exponent's EcoSciences practice. Her specific areas of technical expertise include ecological risk assessment, natural resource damage assessment (NRDA), habitat equivalency analysis (HEA) and site remedial investigations, with emphasis on ecological restoration and avian biology. Ms. Salatas has 12 years of experience in evaluating the exposure and effects of contaminated soil, groundwater, surface water, and sediments to ecological receptors. She is experienced in assessing risks of bioaccumulative chemicals, such as PCBs, dioxins, mercury, metals, and PAHs, to aquatic and terrestrial wildlife, including threatened and endangered species, in sensitive habitats. Ms. Salatas has designed and implemented field studies to evaluate reproductive success and population dynamics of various avian and mammalian species, and has planned and conducted habitat restoration projects for riparian, wetland, and river environments. She has developed, validated, and published methodology to quantify food consumption of nestling wading birds to facilitate food web model development. Ms. Salatas has been involved in innovative research to further the understanding of metals in soils and bioavailability to avian and mammalian receptors. She has particular interest in proactive and preventative risk management strategies, particularly in promoting ecological land reuse of remediated sites. Her research has applications in the fields of restoration ecology, invasive species control, and risk assessment. Ms. Salatas has provided technical support for energy, petrochemical, pulp and paper, manufacturing, and mining industry clients located in Alaska, Arkansas, California, Indiana, Florida, Kentucky, New Jersey, New York, Maryland, Michigan, Mississippi, Tennessee, Texas, Virginia, Wisconsin, and Iceland.

Academic Credentials and Professional Honors

M.S., Ecology, University of Florida, 2000
B.S., Zoology, University of Washington, 1995
B.S., Environmental Science, University of Washington, 1995

Recipient of the Best Student Paper Award—Colonial Waterbird Society, Miami (1998)
Howard Hughes Medical Institute Fellowship (1994)

Licenses and Certifications

Hazardous Waste Operations and Emergency Response 40-hour Training Program

Publications

Ziccardi L, Salatas JH. The ecological effects of nanomaterials: A risk assessment perspective. ABA Science and Technology Newsletter 2010 Nov; 7(1).

Booth PN, Salatas JH, Jawetz S. Restoring the Great Lakes: The Great Lakes Legacy Act, Great Lakes Restoration Initiative, and NRDA. ABA Newsletter on Superfund and Natural Resource Damages Litigation 2010 Nov; 6(1).

Salatas JH, Booth PN. Considerations for early restoration and cooperative assessments in the NRDA process. Environmental Perspectives Newsletter – Emerging Trends in Natural Resource Damage Assessment 2010 Fall.

Booth PN, Salatas, JH, Kaetzel RS, Gard NW, Yost LJ, O'Boyle RA, Mackay CE. Risk assessment as a decision-making tool for treatment of emissions at a new aluminum smelter in Iceland: 1. Background and introduction. Journal of Human and Ecological Risk Assessment 2009; 15:423–441.

Salatas JH, Booth PN, Gard NW, O'Boyle RA, Mackay CE. Risk assessment as a decision-making tool for treatment of emissions at a new aluminum smelter in Iceland: 3. Ecological assessment. Journal of Human and Ecological Risk Assessment 2009; 15: 469–502.

Mackay CE, Johns M, Salatas JH, Bessinger B, Perri M. Stochastic probability modeling to predict the environmental stability of nanoparticles in aqueous suspension. Integrated Environmental Assessment and Management 2006; 2:293–298.

Salatas JH, Lowney YW, Pastorok RA, Nelson RR, Ruby MV. Metals that drive health-based remedial decisions for soils at U.S. Department of Defense Sites. Journal of Human and Ecological Risk Assessment 2004; 10: 983–998.

Lowney YW, Ruby MV, Salatas J, Pastorok R. The relative bioavailability of metals from soil to ecological receptors. Journal of Toxicological Sciences 2003; 72(1):398–399.

Salatas JH, Frederick PC, Nagy KA. Validation of the labeled-water method for estimating food consumption in nestling herons. Auk - A Quarterly Journal of Ornithology 2002; 119: 551–556.

Salatas JH The relationships among food consumption, growth and survival in nestling herons. Master's Thesis, University of Florida, Gainesville, FL, 2000.

Salatas JH. Removal of inflorescences not recommended for controlling purple loosestrife. Ecological Restoration 2000; 18(3):205–206.

Presentations

Palmquist K, Fairbrother A, Salatas JH. Environmental fate of pyrethroids in urban stream sediments and the appropriateness of *Hyaella azteca* Model in determining ecological risk. Presented at SETAC North America 30th Annual Meeting, Portland OR, November 7–11, 2010.

Booth PN, Salatas JH. The Great Lakes Legacy Act, Great Lakes Restoration Initiative, and NRDA: The potential for synergy. Poster presented at SETAC North America 30th Annual Meeting, Portland, OR, November 7–11, 2010.

Salatas JH, Booth P, Gard N, Mackay C, O'Boyle R. Using predictive risk assessment to evaluate aluminum smelter treatment options for protection of mammalian communities in Iceland. Presented at Society of Environmental Toxicology and Chemistry 27th Annual Meeting, Montreal, Quebec, November 5–9, 2006.

Salatas JH, Booth P, Gard N, Mackay C, O'Boyle R. Using predictive risk assessment to evaluate treatment options for aluminum smelter emissions. Session: Challenges and Innovations in the Evaluation of Birds in Ecological Risk Assessments. Presented at Society of Environmental Toxicology and Chemistry 27th Annual Meeting, Montreal, Quebec, November 5–9, 2006.

Pastorok R, Davis R, Salatas J, Edwards M. Identifying structural and functional indicators for habitat equivalency analysis and restoration of submerged vegetation. Presented at SETAC 25th Annual Meeting, Portland, OR, November 14–18, 2004.

Moore M, Salatas J, Sauvage R, Ginn T. Differential uptake of PCBs by various small mammal species. Presented at SETAC 24th Annual Meeting, Austin, TX, November 9–13, 2003.

Ruby M, Salatas J, Darmani N, Trinh C, Lowney Y, Pastorok R. The relative bioavailability of metals from soil to least shrew. Presented at SETAC 24th Annual Meeting, Austin, TX, November 9–13, 2003.

Pastorok R, Salatas J, Davis R. Ecological structure and function: are they related? Presented at SETAC 24th Annual Meeting, Austin, TX, November 9–13, 2003.

Ruby MV, Lowney YW, Salatas JH, Brauning S. Metal drivers of risk-based soil remediation at DoD sites. Presented at the Annual International Conference on Contaminated Soils, Sediments and Water, Amherst, MA, October 22–25, 2001.

Salatas JH, Schmeising LM, Wallin JM, Iannuzzi TJ, Ludwig DF. Assessing the risks of polychlorinated biphenyls (PCBs) to Bald Eagle (*Haliaeetus leucocephalus*) reproduction: methodological considerations and case study. Presented at SETAC 20th Annual Meeting, Philadelphia, PA, November 14–18, 1999.

Schmeising LM, Moore ML, Salatas JH, Ludwig DF, Wallin JM, Iannuzzi TJ. Assessing the risks of polychlorinated biphenyls on mink (*Mustela vison*) reproduction in the Lower Fox

River and Green Bay using a toxic equivalency approach and quantitative habitat analysis. Presented at SETAC 20th Annual Meeting, Philadelphia, PA, November 14–18, 1999.

Schmeising LM, Connor KT, Salatas JH, Wallin JM, Iannuzzi TJ, Ludwig DF. Extent and magnitude of reported effects of polychlorinated biphenyls, dioxins, and furans on a colonial piscivorous bird, the double-crested cormorant (*Phalacrocorax auritus*). Presented at SETAC 19th Annual Meeting, Charlotte, NC, November 15–18, 1998.

Salatas JH, Frederick PC. Validation of the labeled water method for estimating food consumption in nestling wading birds. Presented at the Colonial Waterbird Society 22nd Annual Meeting, Miami, FL, 1998.

Salatas JH, Frederick PC. Energetic requirements of nestling wading birds. Presented at the Walt Dineen Society 1st Annual Conference, Miami, FL, 1997.

Salatas JH, Frederick PC. Influence of food consumption on body condition in nestling wading birds. Presented at the Colonial Waterbird Society 21st Annual Meeting, Lafayette, LA, 1997.

Salatas JH. Unusual food source for migrating Savannah sparrows on Triangle Island, British Columbia. Presented at the American Ornithologists' Union 114th Annual Meeting, Boise, ID, 1996.

Salatas JH. Purple Loosestrife invasions in Northwest freshwater wetlands: controlling the spread. Presented at the American Association for the Advancement of Science 76th Annual Meeting, Vancouver, British Columbia, 1995.

Project Experience

Assisted with multidisciplinary assessment of the effects of fugitive dust from the Red Dog Mine, haul road, and port in northwestern Alaska, as well as mine closure planning. Detection of elevated metals, including arsenic, cadmium, lead, and zinc, in sensitive arctic tundra habitats raised community concerns about risks from subsistence foods and adverse effects to the environment. Receptors included mosses, lichens, aquatic and terrestrial vegetation, fish, caribou, moose, fish, muskrat, fox, ptarmigan, green-winged teal, brant, black-bellied plover, snowy owl, common snipe, Lapland longspur, tundra shrew and tundra vole. Summarized information for community relations and agency interaction with multiple regulatory agencies, village residents, Alaskan native corporations, and non-governmental organizations.

Participating in a co-operative natural resource damage assessment for the St. Lawrence River at Massena, New York, in support of settlement negotiations on behalf of Alcoa and General Motors. Activities include determining PCB-related injuries to sediment, fish, and wildlife, and to quantify compensable damages and to identify habitat restoration alternatives that can offset damages.

Participating in natural resource damage assessment for Dow Chemical for the Tittabawassee River in Michigan in support of settlement negotiations. Providing technical input for quantifying service losses to ecological resources from exposure to polychlorinated dibenzo-*p*-

dioxins and polychlorinated dibenzofurans in river sediment and floodplain soils. Responsible for organizing cooperative technical work group comprised of both agency and consulting restoration experts. Providing information for tasks regarding habitat equivalence analysis (HEA), dam removal strategies and cost-benefits analyses, fish passage designs, walleye and lake sturgeon habitat restoration, ecological enhancements for in-stream and terrestrial habitats, riparian restoration, and general restoration planning to offset damages.

Conducted predictive ecological risk assessment to determine if there would be any risk-reduction benefit from installation and operation of wet scrubbers at an aluminum smelter in East Iceland. Predicted concentrations of polycyclic aromatic hydrocarbons, hydrogen fluoride, and/or sulfur dioxide were examined in mosses, lichens, lodgepole pine forests, heather/heath grassland communities, and terrestrial receptors including ptarmigan, sheep, and wood mouse. Population models were used to determine potential impacts to carrying capacity for terrestrial receptors both with and without wet scrubbers.

Evaluating state trustee ecological injury and damage claims for an oil refinery in New Jersey for a confidential client. Conducted field studies of birds, benthic and fish communities.

Provided technical support for the development of an ecological risk assessment to evaluate the risk of non-native oyster introduction to the ecology of Chesapeake Bay. The relative risk model was used as an organizing framework for scaling competitive interactions and tracking increases and decreases in various ecological services due to oyster introduction.

Managed tasks associated with natural resource damage assessment and ecological risk assessment work on a large river in the Northeast. This complex project involves evaluating the potential effects of PCBs on terrestrial and aquatic ecosystems. Major tasks include managing and designing field studies to determine the reproductive success of great blue heron colonies potentially exposed to PCBs and reviewing studies being conducted by federal and state natural resource trustees.

Performed screening level or baseline risk assessments for aquatic and terrestrial ecological receptors exposed to PCBs at a large number of natural gas pipeline compressor stations and automobile manufacturing plants located throughout the southeastern U.S. Assisted client with negotiation of risk assessment activities with EPA Region 4 and state regulatory agencies.

Developed site-specific preliminary remediation goals for a variety of terrestrial and aquatic receptors potentially exposed to PCBs and lead in sediment and soils in San Francisquito Creek, California, as part of an ecological risk assessment and to assist in evaluation of remedial options and costs.

Organized and managed tasks related to evaluating the bioavailability of metals from soil to avian and mammalian receptors. With government funding, this project was a three-year collaborative effort that includes laboratory research on surrogates for human and wildlife receptors, soil chemistry, and other soil characteristics that might affect bioavailability. The ultimate goal of the multi-year project is to develop bench-top, *in vitro* methods for evaluating the relative bioavailability of metals from soil to humans, mammalian, and avian receptors.

Contributed to an epidemiological exposure assessment of over 400 residents in a community in New York with concerns over arsenic in soil adjacent to a former pesticide manufacturer. Responsible for coordinating biomarker sampling efforts and ensuring legal paperwork and background exposure questionnaires were properly completed and maintained.

Managed tasks associated with the ecological risk assessment of PCBs in the Lower Fox River and Green Bay, Wisconsin for fish, passerine birds, piscivorous birds, and mink. Risk conclusions were drawn based on the synthesis and analyses of data regarding the ecological and physical conditions of the system, available population studies of key receptors, and site-specific and literature-derived toxicological information. Also provided technical review of the injury assessment conducted by agencies.

Assisted with screening level and baseline ecological risk assessment for Onondaga Lake and Geddes Brook/Ninemile Creek in New York, and Harris Lake in Michigan. Assisted with deterministic and probabilistic food web modeling calculations.

Participated in population study of small mammals, including the endangered Preble's meadow jumping mouse, for monitoring and compliance purposes at Rocky Flats Environmental Technology Site in Colorado.

Designed, organized, conducted, and supervised an extensive research study of nestling wading bird growth and energetics using radioisotopes in the Florida Everglades to quantify food consumption and growth of nestling wading birds in the wild. Statistically analyzed data, and conveyed results through written and oral presentations. The purpose of the study was to document food availability and breeding success for species of special concern.

Validated the labeled water technique as a viable and accurate measure of food consumption for free ranging nestling wading birds.

Surveyed breeding colonies (via airboat and aircraft) of colonial nesting wading bird species in the Florida Everglades, spanning entirely Water Conservation Areas 3A and 3B.

Conducted behavioral studies of juvenile and adult wading bird foraging rates in the Everglades.

Studied effects of habitat restoration and ecological enhancements implemented to facilitate breeding and recruitment of a declining seabird colony along the coast of Washington.

Conducted behavioral study of common murrelets, tufted puffins, bald eagles, and peregrine falcons at a remote access study site in the Scott Islands, British Columbia. Provided logistical support for remote field research camp maintenance and operation.

Mist-netted, night-banded, and collected observational data on seabirds and passerines at remote study sites located on the coasts of Washington and British Columbia.

Surveyed wetland flora, recorded habitat and site information, and identified exotic wetland species infestations in the Pacific Northwest. Designed, budgeted, and implemented a study on methods of controlling purple loosestrife invasions for wetland restoration projects. Applied

non-invasive control methods to purple loosestrife monocultures and evaluated the success of each method. Conveyed results through written and oral presentations.

Professional Affiliations

- Society of Environmental Toxicology and Chemistry
- Society for Ecological Restoration International