



PAM LATHAM, Ph.D., PWS, CSE
Senior Scientist / Ecologist

Research Planning, Inc.

Dr. Latham is an Ecologist with more than 30 years of professional experience in natural resource assessments and management, working with federal, state, regional, and local agencies. Dr. Latham's areas of expertise include NEPA, development of Minimum Flows and Levels (MFLs) for rivers, and coastal restoration. Her experience with NEPA compliance and understanding of the nexus of environmental and regulatory issues provides her with the technical and management skills necessary to ensure that natural, cultural, and economic resources are addressed adequately and that work products meet regulatory and scientific scrutiny. Dr. Latham's regional focus is on planning, data collection, and analysis in support of development of MFLs in Florida, pursuant to the Florida Water Resources Act (1972), which is intended to protect Florida's water resources. Her restoration work in the last several years has included design and permitting for coastal marsh restoration projects following storm damage or remediation. Much of her career has included work with protected species under the Endangered Species Act (ESA). Dr. Latham has several peer-reviewed publications and presents her work at professional conferences to learn from, and share information with, the scientific community and interested public.

EDUCATION

Ph.D., Environmental Engineering Sciences, University of Florida, Gainesville Florida. Affiliated with the USFWS Cooperative Fish and Wildlife Research Unit and the Center for Wetlands. Dissertation title: Plant distributions and competitive interactions along a gradient of tidal freshwater and brackish marshes

M.S., Biology, University of Central Florida. Thesis: A statistical analysis of sand pine scrubs of central and east-central Florida

B.S., Biology, University of Central Florida

CERTIFICATIONS

Certified Senior Ecologist (CSE) Ecological Society of America

Professional Wetland Scientist (PWS) (00001381)

PROFESSIONAL EXPERIENCE

Senior Technical Manager for Tampa, Orlando, and Miami Sciences. Atkins North America, Tampa, FL (2013-2014)

Principal Scientist. Atkins North America, Tampa, Florida (2009-2013)

Senior Scientist II-III. Atkins North America, Tampa, Florida (1997-2009)

Associate Environmental Engineer. Northwest Florida Water Management District (1991-1995)

Post-doc and graduate assistant with USFWS Cooperative Fish and Wildlife Research Unit. University of Florida, Gainesville, Florida (1985-1990)

Biology and chemistry instructor. Seminole County School District (1979-1984)

Dr. Latham's experience is summarized below, grouped by her work with NEPA, Minimum Flows and Levels (MFLs), restoration, and ESA consultations.

NEPA experience ranging from programmatic EISs for restoration in response to the Deepwater Horizon oil spill to third-party EISs for large marsh creation projects and offshore wind development.

Coral Reef Conservation Program (CRCP) Programmatic EIS (PEIS). Global. Dr. Latham was the technical lead and primary author responsible for the environmental consequences section of the PEIS

being prepared for coral reef conservation and restoration activities as part of the implementation of the CRCP strategic plan throughout the seven U.S. coral reef jurisdictions around the world. Potentially impacted resources included fisheries, coral reefs, other marine resources, and terrestrial resources potentially affected by watershed restoration, coral reef transplant, and marine debris removal activities.

Deepwater Horizon (DWH) Programmatic Damage Assessment and Restoration Plan and EIS (PDARP/PEIS), 2014 to 2016. Dr. Latham had a lead scientific role in analysis of environmental consequences for proposed restoration alternatives (including freshwater and sediment diversions) on natural resources, including coastal habitats, wetlands, fisheries, and endangered species, for NOAA. Key roles in preparation of Environmental Consequences chapter for the PEIS.

Third Party Mid-Barataria Sediment Diversion EIS. Barataria and Lower Mississippi River Basins. Dr. Latham is the project manager and technical lead responsible for RPI (a subcontractor) deliverables for the EIS (soils, geomorphology, marine mammals, and aquatic and wetland resources). She is also part of the impacts analysis, writing, model review, and technical review teams for alternatives development, characterization of wetland and aquatic resources for the affected environment, and analysis of potential impacts of the proposed diversion on wetland and aquatic resources.

Third Party EIS for an Offshore Wind Project, U.S. Atlantic Coast (confidential client). Dr. Latham is the technical lead for coastal habitats for the preparation of this EIS that will evaluate the potential impacts of the proposed wind farm project on coastal habitats and fauna from state waters to the landward extent of the coastal watershed. Dr. Latham is also RPI's NEPA reviewer to ensure NEPA consistency for deliverables.

Programmatic EIS, Florida Keys Water Quality Improvements Project. Lead agency: USACE, Jacksonville District. Dr. Latham was the deputy project manager for this programmatic EIS triggered by \$10 million funding to communities for design and implementation of waste- and storm- water improvements. The project targeted inadequate and untreated waste- and storm- water that ultimately flowed into nearshore waters of the Florida Keys National Marine Sanctuary. She prepared Biological Assessments (BAs) for the Schaus swallowtail butterfly and Key Largo tree snail under Section 7 of the ESA. The EIS received accolades from the Jacksonville District.

Third Party EIS for the Cano Martin Pena Restoration, Puerto Rico. Lead agency: USACE, Jacksonville District. The client, ENLACE, was awarded a 2010 National Achievement in Environmental Justice by EPA for the project, which will restore the historic tidal connection between San Juan Bay and the Atlantic Ocean and improve living conditions for the local community. Dr. Latham coordinated with scientists, engineers, and planners to prepare the environmental consequences section and ensure technically accurate analysis and NEPA consistency in the EIS.

Third Party EIS for the Bayou Casotte Harbor Improvement Project in Pascagoula, Mississippi. Lead agency: USACE, Mobile District. As deputy project manager, Dr. Latham coordinated with lead and cooperating agencies, prepared and/or reviewed major portions of the EIS, responded to comments, reviewed the EIS for NEPA consistency, and prepared the draft Record of Decision and Notice of Availability. Components included the Marine Protection Research and Sanctuaries Act, the Clean Water Act (CWA), Essential Fish Habitat of the Magnuson- Stevens Act, and the ESA. The EIS was completed in 12 months.

Third Party EIS for the Lac du Flambeau Band of Lake Superior Chippewa Indians, Shullsburg, WI. Lead agency: Bureau of Indian Affairs (BIA). Dr. Latham is the project manager for this EIS for the fee-to-trust application to the Bureau of Indian Affairs for a casino development. Dr. Latham coordinates needs among the Tribe, BIA, EPA, and other agencies and is responsible for ensuring NEPA compliance. Particularly relevant federal regulations addressed in the EIS include the Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, ESA, and USACE 404(b) permitting for wetlands impacts. The draft EIS is presently under agency review.

Third Party EIS for the South Carolina Palmetto Railways Intermodal Container Transfer Facility (ICTF). Lead agency: USACE, Charleston District. Dr. Latham provides the QA/QC for this EIS and is

responsible for reviewing the EIS for NEPA consistency as well as technical accuracy. Palmetto Railways is the applicant for a permit for the proposed construction and operation of an ICTF at the former Charleston Navy Complex to handle and process current and projected increases in intermodal container traffic at the Port of Charleston. The Description of the Proposed Action and Alternatives has been submitted for review by the USACE.

Programmatic EIS for Essential Fish Habitat (EFH) for the Gulf of Mexico Fishery Management Council. Dr. Latham was the lead scientist responsible for the impacts analysis and environmental consequences section of the PEIS for the Council's Generic Amendment for Essential Fish Habitat in the Gulf of Mexico. NMFS and regional Fish Management Councils prepared new EISs for the EFH to: assess a range of potential alternatives to designate EFH; identify habitat areas of particular concern (HAP); and prevent, mitigate, or minimize the adverse effects of fishing on EFH to the extent practicable, using the best available scientific information.

Essential Fish Habitat (EFH) evaluation under FEMA's National Flood Insurance Program (NFIP) in Florida. Lead agency: NMFS. Dr. Latham provided the EFH technical expertise under a Hazard Mitigation Technical Assistance Program contract with FEMA. She participated in coordination with FEMA, USFWS, and NMFS to define potential impacts of the NFIP on EFH, including discretionary actions such as Community Rating System (CRS) and Letters and Conditional Letters of Map Revision with respect to potential adverse impacts to EFH.

NEPA Compliance Document, Florida Bay Seagrass Habitat Restoration Management Plan (Plan), Homestead, FL. Lead agency: National Park Service (NPS). Dr. Latham provided QA/QC and technical support and agency coordination in support of the Plan to ensure its compliance with NEPA prior to submittal. The Plan was prepared and submitted for compliance and consistency with all applicable laws and policies including, but not limited to: National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archaeological Resources Protection Act, ESA, and Wilderness Act.

EIS and design and permitting for the Ocklawaha River Restoration project for the Florida Department of Environmental Protection (FDEP). Lead agency: USACE, Jacksonville District. Dr. Latham was the lead on the EIS and addressed Section 10 of the Rivers and Harbors Act, Section 404 of the CWA, and Section 7 of the ESA. She also provided support for the design and permitting of the Ocklawaha River Restoration that targeted 1,900 acres of forested floodplain on U.S. Forest lands. Regulatory issues have delayed project implementation.

Environmental Information Document (EID) for the South Tampa Area Reuse (STAR) project. Lead agency: City of Tampa, FL. Dr. Latham prepared and submitted the EID, which was subject to NEPA due to federal matching funds for the design and construction of the treatment and distribution facilities for the project. The EID addressed potential impacts of a 10 mgd capacity pumping station, over 100 miles of transmission main, directional drill transmission main pipelines under the Seddon Channel, and distribution lines to deliver reclaimed water to Tampa irrigation customers.

Restoration experience including coastal restoration, remediation, and assessment projects due to impacts ranging from oil spills and storm damage to agriculture and groundwater withdrawals.

Final Phase II Restoration Plan and Environmental Assessment #3.3, Large-Scale Marsh Creation: Upper Barataria Component (Final RP/EA #3.3). Coastal LA. Dr. Latham was the co-with lead technical roles for this RP/EA, including alternatives analysis, existing conditions, environmental consequences, the Monitoring and Adaptive Management (MAM) Plan, responses to public comments, coordination with USFWS and NMFS for protected species, and materials preparation for public meetings.

Programmatic Restoration Plan (RP) and Environmental Assessment (EA) Florida Trustees Implementation Group (Florida TIG). 2017-2018. Dr. Latham was the senior scientist responsible for NEPA, scientific, and GIS support to development and preparation of the RP/EA, which evaluated restoration projects for federally managed lands, nutrient reduction, water quality, and recreational opportunities along Florida's Gulf. Participated in coordination calls, attended and participated in

stakeholder meetings, prepared water quality project evaluations, and reviewed other projects as needed. Also prepared Biological Evaluations (BEs) for projects via the USFWS/NMFS streamlined BE Form to initiate informal Section 7 consultations under the ESA.

Restore Act Best Available Science (BAS) Reviews, OGCR, U.S. Dept. of Treasury, Gulf-wide. Dr. Latham is a third-party reviewer for proposed natura resource restoration and protection projects requiring RESTORE Act funding. RPI is the program manager for BAS and other regulatory and technical reviews being conducted for OGCR. Reviews to date include large-scale marsh restoration projects, salinity intrusion control, shellfish stock enhancement, marine debris removal, water quality improvements, invasive species management, coastal stream restoration, and artificial reef construction.

Oil Spill Effects Literature Synthesis and Compendium of Oil Spill Impacts – BOEM, Washington DC. Dr. Latham was the primary author for the analysis of potential effects of oil and gas activities on marshes and mangroves for the entire U.S. coast. Smaller spill literature is limited so that impacts from larger spills are often scaled to smaller spills. This data gap was addressed by compiling and synthesizing information relevant to the impacts of these smaller spills (500 to <20,000 bbl) on physical, biological, and economic resources in the U.S. A second synthesis addressed impacts associated with OCS and state marine water spills and remediation efforts for oil spills >20,000 barrels. This compendium supports regulatory compliance for proposed actions in BOEM’s 5-year EIS analysis and addresses available long-term and cumulative impacts data.

Efficient NEPA Reviews for Outer Continental Shelf Offshore Wind Development (OSWD) Facilities – BOEM, Washington DC, 2017. Dr. Latham was the primary author for this white paper, which provided an analysis of potential effects of OSWD on coastal habitats, including development of a user-friendly tool designed for ranking impacts and streamlining the evaluation process. The document identifies potential common effects (including significant effects) of OSWD based on NEPA documents and scientific literature. RPI was a subcontractor to ICF.

Florida State Expenditure Plan (SEP). Gulf-wide. Dr. Latham is the senior scientist on the team (the Gulf Consortium under the Spill Impact Component of the RESTORE Act) providing coastal habitat restoration expertise and support to counties as they select and develop restoration projects. Dr. Latham participates in the stakeholder process, plan preparation, concept design, and permitting and construction feasibility evaluation for projects and the review and compilation of relevant best available science. As a subcontractor to ESA, her work has included all 23 Florida Gulf coast counties.

Post-storm evaluation and restoration plan for Prime Hook National Wildlife Refuge, Delaware. Dr. Latham is the project manager and senior scientist on the restoration team and works with coastal engineers to develop restoration alternatives to convert former freshwater impoundments to (historic) salt marsh habitats. Dune breaches will be filled and tidal channels opened to restore historic hydrologic connections and salinities throughout the Refuge. The marsh restoration is a part of the larger coastal restoration effort being developed with the USFWS following Hurricane Sandy. A draft conceptual design has been submitted to the USFWS. View the project at <http://www.fws.gov/northeast/primehook/marshrestoration.html>

Sawgrass Lake Restoration Project, Pinellas County, FL. (completed in 2015). Dr. Latham was the project manager for the project design and permitting, which included removal of contaminated materials (due to adjacent gun range activities) from the 39-acre remediation area, treatment/disposal of material, and construction of a 21-acre treatment wetland to reduce pollutant loads to Tampa Bay. Over 104,000 cy of lake bottom sediments were removed. The project is the 2nd in Florida to use a polymer process that inactivates the dredged materials so it can remain on site, thereby reducing off-site disposal costs.

Ecological Monitoring and Assessment Services to Tampa Bay Water, FL. Dr. Latham is a key team member (as a subconsultant) for the ongoing Morris Bridge Wellfield monitoring and assessment and provides statistical and technical support for annual reporting requirements. She is part of the regional ecological knowledge and statistical expertise teams and provides quality and accuracy reviews of data, data analysis, and assessments for ecosite condition and semiannual and annual reports.

Environmental Monitoring Plans (EMPs) in support of Water Use Permits (WUPs) and wetland recovery for Polk County Utilities and the City of Englewood, FL. As lead scientist, Dr. Latham developed and implemented vegetation and soils sampling, water level monitoring, analysis, and reporting for EMP submittals to the SWFWMD per WUP compliance. The EMP documents differences in wetland water levels and examines the influences of rainfall and withdrawals among 13 wellfield and 7 reference wetlands. Wetlands are exhibiting signs of recovery due to reduced pumping and increased rainfall.

Design of Advanced Mitigation Area Plan, Brighton Seminole Indian Reservation, Seminole Tribe of Florida, Glades County, FL. Dr. Latham was the principal ecologist for this project to restore, create, and preserve 881 acres of wetland and upland habitat, resulting in approximately 200 mitigation credits to offset previous and future development impacts and acquire permits from USACE and SFWMD. Dr. Latham conducted initial field evaluations, researched historic (pre-development) conditions, and developed hydrological parameters for restoration of wetlands and creation of deepwater refugia for crayfish and other prey for wading birds.

Critical Coastal Habitat Assessment (CCHA) for the Tampa Bay Estuary Program, FL. Dr. Latham is the project manager and lead scientist for the CCHA, a project to develop and implement a long-term coastal habitat monitoring program in Tampa Bay, Florida's largest open-water estuary and a designated "estuary of national significance." Shifts in mangrove and marsh vegetation distributions that have been attributed to rises in sea level will be monitored in individual plots and belt transects and "linked" to aerial photographs for long term monitoring.

Comprehensive Everglades Restoration Program (CERP) for the USACE, Jacksonville District. Dr. Latham provided scientific support through the Everglades Protection Joint Venture (EPJV) within the USACE office in Jacksonville in support of restoration efforts. She drafted performance measures for the recovery of Everglades and slough crayfish as part of efforts to restore white ibis population.

Upper Floridan Aquifer Regional Recharge Concepts, Suwannee River Water Management District (SRWMD), FL. Dr. Latham was the lead scientist responsible for identification and feasibility analysis of projects with respect to water quality and MFLs regulations. The purpose of this project was to identify and evaluate water resource development projects to restore the potentiometric surface of the Upper Floridan aquifer in the SRWMD and identify potential sources of water for groundwater recharge.

Minimum Flows and Levels (MFL) to Florida's water management Districts, pursuant to the Florida Water Resources Act (1972).

Waccasassa River Ecological Data Collection and Analysis (MFL Support): Collection, Analysis, and Reporting for the Estuarine and Freshwater Reaches of the Tidal Portions of the Waccasassa River. Dr. Latham was project manager and lead scientist for this project that included ecological data collection and analysis necessary to quantitatively characterize plant and benthic invertebrate communities along the Waccasassa River, as described in the Suwannee River Water Management District's Conceptual Plan. This study was the first quantitative analysis of vegetation and associated environmental parameters along the tidal Waccasassa River and suggests that coastal hydric hammock is especially vulnerable to storms, sea level rise, and freshwater flow changes.

Analysis of Floodplain Vegetation, Soils, and Hydrologic Indicators in Support of MFL Development for the Upper Santa Fe River. Dr. Latham was project manager and lead scientist for the ecological data collection along the upper Santa Fe River, to support the District's MFL evaluations. Contributions of environmental parameters (e.g., salinity, elevation) in predicting vegetation classes were then quantified. Upstream vegetation classes had greater variation in elevations and soils, and surface water runoff was the primary source of wetland flooding was directly from the river, resulting in greater sensitivity to changes in flows when compared with the upstream transects. Dr. Latham's previous MFL support to the District included the lower Suwannee, upper Santa Fe, and Ichetucknee rivers.

Conceptual Plan for Habitat and Faunal Inventories and Analysis in Support of MFLs for Suwannee River Water Management District Coastal Rivers. Dr. Latham with the primary author of this plan, which was

prepared to identify ecological data needs and develop a study design for data collection and analysis to supplement earlier data collection and analysis efforts focusing on the Aucilla, Econfina, Steinhatchee, and Waccasassa coastal rivers and further support this District's MFL program. The plan outlined additional sampling and data collection needed based on earlier studies completed for these same rivers, as well as schedules for implementation, cost estimates, and deliverables.

MFLs support to the Northwest Florida Water Management District for the St. Marks River Rise, Wakulla, and Sally Ward springs. Dr. Latham was the project manager and lead scientist for the District's first MFLs and developed a Work Plan that presents a sampling design to fill critical data gaps and monitoring plans for data collection in instream and floodplain habitats; analysis of rainfall, surface and ground water flows, elevations, soils, habitats; public involvement; peer review; schedules; and costs. She was also the project manager and lead scientist for implementation of ecological data collection, analysis, and reporting for these rivers, providing the first quantification of differences vegetation, soils, and elevations along and between these two rivers. She subsequently led the ecological data sampling for the riparian and aquatic habitat to support mfl development for Jackson Blue Spring System for the District.

MFLs support to the Southwest Florida Water Management District (SWFWMD). Dr. Latham developed the sampling design for the upper Peace River MFL in 1999 that is still used by the District. She completed field sampling, statistical analyses (using SAS), and reporting to support establishment of MFLs for the Rainbow, Homosassa, Little Manatee, Anclote, Braden, Myakka, Peace, and Alafia rivers, and Gum Springs in for the Southwest District.

Apalachicola-Chattahoochee-Flint River (ACF) instream flows assessment for the ACF Stakeholders group. The goal of the group is to reach consensus among its 56-member governing board for recommendations to the USACE and states of Alabama, Georgia, and Florida regarding water management in the basin. Dr. Latham is the lead scientist, and with other scientists, developed environmental flow criteria for the Apalachicola River based on acres of connected aquatic and floodplain habitat as a function of flow, and flows necessary to sustain protected mussel species. Results are intended to provide input/ constraints on a water management model being used by the ACFS. The final report was submitted to the ACFS in 2012.

Experience with surveys and state and federal consultation for numerous species, including Schaus swallowtail butterfly, flatwoods salamander, sea turtles, gopher tortoise, plovers, beach mice, and bent golden aster.

Programmatic Endangered Species Biological Assessment (BA) for the DWH PDARP / PEIS. Gulf-wide. Dr. Latham was the lead scientist for the preparation of this "Framework" BA evaluating and reporting potential impacts to 114 listed species and 39 critical habitats as a result of implementing restoration actions for the programmatic BA/BO, prepared to support the PDARP/PEIS.

Federal Consultations for NOAA Debris Removal in Response to Hurricanes Florence, Michael, and Typhoon Yutu. As lead scientist, Dr. Latham coordinated federal consultations for the removal of vessels and marine debris from coastal areas in Florida, North Carolina, and the Commonwealth of the Northern Mariana Islands (CNMI) in the South Pacific. She coordinated with agencies, grant recipients, and contractors; and prepared correspondence letters, impacts analyses, Biological Assessments, Best Management Practices checklists, and other documentation and analysis, as needed, for Consultations with the USFWS, NMFS, NHPO/SHPO, and THPO for impacts to ESA listed species, Essential Fish Habitat under the MSA, marine mammals, and historic and cultural resources.

Multiple Species Habitat Conservation Plan (MSHCP) and Environmental Assessment for the Choctawhatchee beach mouse, Walton County, FL. The St. Joe Company applied for an incidental take permit (ITP) under Section 10 of the ESA for impacts to 7.6 acres of federally designated Critical Habitat for the beach mouse. Dr. Latham was responsible for the preparation of the HCP, which also addressed

Florida snowy plovers and sea turtles, and included beach mouse conservation, reintroduction, and monitoring.

MSHCP and Environmental Assessment for the St. Andrews beach mouse (Bay and Gulf counties) and Perdido Key beach mouse (Escambia County), FL. Dr. Latham provided technical support in the development of the ITP and HCP developed for the St. Andrews and Perdido Key beach mice and associated species, including sea turtles and piping plovers.

Environmental Assessment for impacts to the federally listed flatwoods salamander, Walton County, FL. Dr. Latham coordinated with the USFWS and prepared a BA to address potential impacts to the flatwoods salamander by the proposed Camp Creek North, a 1,023 acre golf course development project. The BA was prepared and submitted to the USFS on behalf of the St. Joe Company, who applied for and received an ITP from the USFWS pursuant to Section 7 of the ESA.

PEER REVIEWED PUBLICATIONS

Reinhardt, J., J. Weaver, **P. Latham**, A. Dell’Apa...2018. Catch rate and at-vessel mortality of circle hooks versus J-hooks in pelagic longline fisheries: A global meta-analysis. *Fish and fisheries* 19(3):413-430.

Latham, P., L. Heisler, and V. Engel. 2010. Tree Islands and Everglades Restoration. Pp. 113-119 in *Scientific and Technical Knowledge Gained In Everglades Restoration (1999-2009): REStoration COordination and VERification (RECOVER)*.

Latham, P., J. Lane, S. Allen, and S. Hardin. 2010. Exotic Invasive Species. Pp. 208-215 in *Scientific and Technical Knowledge Gained In Everglades Restoration (1999-2009): RECOVER*.

Latham, P., S. Miao, M. Vaidya, M. Chen, and K. Haag. 2010. Fire Ecology in Everglades. Pages 288-298 in *Scientific and Technical Knowledge Gained In Everglades Restoration (1999-2009): RECOVER*.

Latham, P.J., L.G. Pearlstine, and W.M. Kitchens. 1994. “Species Association Changes Across a Gradient of Fresh, Oligohaline, and Mesohaline Tidal Marshes along the Lower Savannah River.” *Wetlands*. 14(3): 174-183.

Pearlstine, L.G., W.M. Kitchens, **P.J. Latham**, and R.D. Bartleson. 1993. “Tide Gate Influences on a Tidal Marsh.” *Water Resources Bulletin*. 29(6): 1009-1019.

Latham, P.J., L.G. Pearlstine, and W.M. Kitchens. 1991. “Spatial Distributions of the Softstem Bulrush, *Scirpus validus*, across a salinity gradient.” *Estuaries*. 2(14): 192-198.

Stout, I.J., C.L. Connery, and **P.J. Latham**. 1984. “Preliminary Findings on Endangered Plants in Sand Pine Scrubs of East Central Florida.” *Florida Scientist* 47 (Supplement 1): 45.