

## **Declaration of Gino Giumarro**

1. My name is Gino Giumarro. I am a Certified Wildlife Biologist who works for Stantec Consulting Services Inc. In my capacity as a Certified Wildlife Biologist and Senior Associate I conduct windpower assessments, regional natural resources planning, wildlife management planning, natural resources damage assessments, and permitting. I am responsible for designing field studies, coordinating and performing data collection, and report preparation. I have specialty expertise with bird and bat surveys, with a focus on rare species and habitat restoration. As a Senior Ecologist at Stantec, I oversee windpower impact assessments, Federal Energy Regulatory Commission (FERC) license applications, threatened and endangered species surveys, ecological community characterizations, Natural Resources Damage Assessments (NRDA), biological assessments, Endangered Species Act consultations (relative to Sections 7 and 9), environmental planning, fish and wildlife surveys, and document preparation in accordance with the National Environmental Policy Act (NEPA). My client experience includes a wide array of federal, state, local, and private clients. I am certified by the US Army Center for Health Promotion and Preventative Medicine in the Evaluation of Environmental Noise. A copy of my resume is attached.

2. This declaration is the result of my own research and experience and that of my colleague, Elizabeth Annand. Elizabeth Annand is a Certified Wildlife Biologist and NEPA specialist with 17 years experience in the Natural Resource Management field. She specializes in environmental permitting on the state and federal levels, NEPA documentation for federal actions, and threatened and endangered species protection and management. She conducts regulatory compliance for several natural resource disciplines. Elizabeth has developed her career skills with emphasis on successfully managing various natural resources (animals, plants, etc.) in conjunction with other resource demands (energy, minerals, timber, recreation, etc.). She has a solid understanding of ecological concepts and resource management techniques. This allows her to evaluate projects and aim for implementing environmentally sound alternatives for development. Elizabeth has an exceptionally broad background in the field of integrated wildlife and resource management, and her work experience includes employment with federal and state agencies as well as the private sector. Elizabeth has extensive experience composing and reviewing federal and state environmental permitting documents for projects of all sizes and is well versed in relating ecological principles to rules and regulations. She is also proficient in developing field survey investigations, including data collection, data analysis, and technical reporting. A copy of her resume is attached.

3. I am providing this declaration in support of comments to be filed by the Infrastructure Coalition with respect to the Federal Communication Commission's (FCC) Programmatic Environmental Assessment (PEA) regarding its Antenna Structure Registration Program (ASR). The intent of the authors is to provide context relative to scoping and development of alternatives in the NEPA analysis being conducted. I declare the following to be true and correct based on personal knowledge, information and belief.

4. A PEA or Programmatic Environmental Impact Statement (PEIS) is used when subsequent NEPA analyses and documents may be prepared in tiers (40 C.F.R. § 1508.28) as narrower, more site-specific plans for implementing the proposed action or an alternative are defined. The programmatic process is intended to be used as guidance for subsequent NEPA analyses and decisions that may be needed when more site-specific plans for implementing the selected alternative are defined. The role of the programmatic process is to address broad issues so that the large-scale analyses can be incorporated into subsequent site-specific assessments. A programmatic EA or EIS should support program-level decisions regarding which specific projects will be considered in the future.

5. The Executive Branch Council on Environmental Quality (CEQ) has implementing regulations for conducting NEPA analyses of Federal actions. The CEQ regulations are written with some flexibility with understanding of the vast diversity of Federal agency bureaucratic structures and actions. This flexibility comes in the form of Federal agency implementing regulations. Each Agency implements the CEQ Regulations differently, including specification criteria for determining the specific types of analysis actions. This includes predetermination

of types of activities that would require an Environmental Assessment (EA), Environmental Impact Statement (EIS), or which would be categorically excluded from analysis. This pre-decisional list of criteria differs widely for each agency.

6. The FCC implementation of NEPA differs from many other Federal agencies in their implementation of NEPA in that the FCC is generally not part of the project planning process associated with the proposed action. NEPA analysis is conducted by a variety of independent project proponents for approval and verification by the FCC. All of these independent actions that are driven by market forces make it difficult to plan for and evaluate cumulative impacts without conducting a programmatic assessment. This creates unique circumstances that make it important for the NEPA scoping process to be initiated early, transparently, and with the full inclusion of other partners. The FCC PEA will set the ground rules for further evaluation of applications and registrations under the ASR program. The unique circumstances of the NEPA program implementation by the FCC make the conduct of ASR NEPA analysis a unique circumstance. When conducting new analyses without precedence, federal agencies often conduct intensive scoping made up of experts that assist with the determination of project impacts.

7. The scoping information provided by FCC for the ASR PEA to date has not provided specific alternatives or proposed action for which to provide substantive comments. Therefore, it is difficult to frame the context regarding the normality of this NEPA scoping. This information is generally developed both internally and through communications with Cooperating Agencies.

8. There are many examples of PEAs, however, there are few that have this particular level of controversy. Below are some examples of various PEAs that have been conducted by various agencies. Each of these PEAs are done on a programmatic level, however the scope of analysis is limited to a specific area where scoping failed to produce significant issues that warrant the preparation of a Programmatic EIS.

***EXAMPLE #1 - US Army Corps of Engineers  
Final Programmatic Environmental Assessment on Allowable Adjacent Landowner Activities Incorporating  
Ecosystem Management Practices on Federal Lands at Grapevine and Lewisville Lakes, Texas, May 2005  
Area of Potential Effect: North Central Texas***

Agency Coordination

Prior to the scoping process, USACE coordinated with other agencies and held a workshop to discuss alternatives for the EA.

Public Workshops

In the scoping process, USACE engaged interested localities and members of the public, including homeowner associations and held workshops for developing alternatives.

Public Information and Review

During the scoping process, USACE also sent letters to all members of Fort Worth District's Environmental and Recreation Advisory Committee (ENRAC) list. The letter included copies of the existing mowing, underbrushing and access path guidelines and asked members to provide their comments related to modifying the existing guidelines.

**EXAMPLE #2 - U.S. Bureau of Reclamation, May 2003**  
**Mid-Columbia River Steelhead ESU – Action 149 Fish Habitat Improvement Measures Implementation**  
**Programmatic EA**  
**Area of Potential Effect: Central Oregon**

Prior to formal scoping activities, the Bureau’s “Advance Team” (Bureau staff with experience in habitat-related and public-outreach actions) visited the area and met with a wide variety of interested members of the public. These meetings helped to determine local concerns, identify potential partners and information sources, and quantify and define ongoing local efforts.

Thereafter, the Bureau initiated public scoping for this habitat improvement program on March 11, 2002. This scoping effort involved a meeting of 26 people, representing 13 organizations, with an interest in habitat improvement activities in one or more of the three subbasins. The scoping period ended on April 12, 2002. During that month-long period, one written comment was received. Also during this period, the Bureau’s Subbasin Liaison made contact with private individuals and others within the subbasins.

Several issues, both within and outside the scope of this PEA, were identified during the scoping period. Each issue was identified, then evaluated against two criteria: 1. Is the issue consistent with the purpose and need for the proposed action?, and 2. Is the issue within the management constraints?

The scoping process clarified the issues and alternatives to be included in the PEA.

**EXAMPLE #3 - BLM Cedar City Oil and Gas Leasing (Eastern Portion) Programmatic EA**  
**Area of Potential Effect: Southern Utah**

This project was posted on the BLM’s Environmental Notification Bulletin Board (ENBB) on April 16, 2008 and a notice of EA availability was posted on May 23, 2008. A 30-day public comment period was held – beginning on June 1, 2008 – and a public meeting was held in Cedar City during the 30-day public comment period.

Prior to public scoping an Interdisciplinary Team (ID Team) of resource professionals was assembled by the Cedar City Field Office. During the preparation of this EA, the ID Team worked to identify environmental issues and resource concerns for the area being considered for oil and gas leasing in Southern Utah.

9. These examples demonstrate that other agencies engage in an active, multi-stage scoping process in which the agency discloses and refines the alternatives and objectives that are to be considered in the programmatic environmental assessment, even when the program affects only a limited area. When, as here, the program is applicable nationally, a detailed, iterative scoping process is even more important.

I declare the foregoing to be true and correct under penalty of perjury.

  
Gino Giumarro

Executed: 1/14/11



Mr. Giumarro is a Certified Wildlife Biologist and Senior Associate with extensive experience in windpower assessments, regional natural resources planning, wildlife management planning, natural resources damage assessments, and permitting. He is responsible for designing field studies, coordinating and performing data collection, and report preparation. He has specialty expertise with bird and bat surveys, with a focus on rare species and habitat restoration.

As a Senior Ecologist, Mr. Giumarro oversees windpower impact assessments, FERC license applications, threatened and endangered species surveys, ecological community characterizations, NRDA, biological assessments, Section 7 consultations, environmental planning, fish and wildlife surveys, and document preparation in accordance with the NEPA.

Mr. Giumarro's client experience includes a wide array of federal, state, local, and private clients. He is certified by the US Army Center for Health Promotion and Preventative Medicine in the Evaluation of Environmental Noise.

#### PROFESSIONAL EXPERIENCE

- Stantec Consulting. 2007-present. Senior Associate, Certified Wildlife Biologist.
- Woodlot Alternatives, Inc. 2003-2007. Senior Project Manager, Director of Ecological Services, Certified Wildlife Biologist.
- e2M, Inc., Washington, DC. 2000-2003. Wildlife Biologist.
- University of VT/USFWS. 1998-2000. Human Dimensions of Wildlife Biology Specialist.
- Maine Audubon Society. 1998. Avian Biologist.
- The Chewonki Foundation. 1996-1998. Wildlife Ecologist.
- The Trustees of Reservations. 1994-1996. Wildlife Biologist.

#### EDUCATION

MS, Natural Resources Planning, University of Vermont,  
Burlington, Vermont, 2000

BS, Wildlife Biology, University of Massachusetts,  
Amherst, Massachusetts, 1995

40-Hour Hazwoper Certification, OSHA, Topsham,  
Maine, 2010

Member, Cornell Lab of Ornithology

Member, Society of American Foresters

Member, The Wildlife Society

Northeast Board Member, Wildlife Restoration Group,  
The Wildlife Society

#### PROFESSIONAL ASSOCIATIONS

Environmental Planning, Siting and Permitting  
Workgroup, Great Lakes Wind Collaborative

Member, National Military Fish and Wildlife  
Association

\* denotes projects completed with other firms

# Gino J.M. Giumarro

Senior Associate, Certified Wildlife Biologist

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## PROJECT EXPERIENCE

### Environmental Assessments

#### Environmental Assessment for Habitat Conservation Planning, Colorado\* (Project Scientist)

*Drafted NEPA Environmental Assessment for the Habitat Conservation Planning for the threatened Preble's Meadow Jumping Mouse in four Colorado counties. Determined baseline noise conditions and evaluated the environmental consequences of noise on Preble's as a result of the Proposed Action, evaluated compliance with state and federal regulations including Endangered Species Act.*

#### Environmental Assessment for Beddown of C-17 Aircraft, South Carolina\* (Project Scientist)

*Proposed Action included base infrastructure modifications, military airspace, and training areas to enable aircrews to perform readiness training operations and ensure that tactical low-altitude, airdrop, and re-supply mission requirements for C-17 aircraft were met and sustained. Served as primary author for affected environment and environmental consequences for the following sections: noise, water resources, biological resources, visual resources, socioeconomic, and environmental justice.*

#### Wind Cave National Park Boundary Expansion EA, South Dakota\* (Project Scientist)

*Served as author and technical lead for biological resources components during the preparation of the NEPA Environmental Assessment of expansion of this national park, including scoping, DOPAA, IICEP, Draft EA, and Final EA.*

#### Integrated Deepwater System Program EIS, Nationwide\* (Technical Lead)

*Mr. Giumarro developed a NEPA EIS for implementation of Integrated Deepwater System Program, the largest and most innovative acquisition program in Coast Guard's history focused on upgrading and replacing its full range of assets – cutters, aircraft, sensors, communications, and logistics. Served as primary author for the affected environment and environmental consequences sections for protected and sensitive habitats, marine mammals and sea turtles, sensitive coastal and marine birds.*

### Natural Resource Services

#### Record Hill Wind Farm, Maine

*Mr. Giumarro acted as Senior Ecologist for the Record Hill wind project, which is a 22-turbine, 55 MW wind project on a forested ridge environment in the western Maine mountains. For this project, he coordinated planning and feasibility studies, wetland delineations, wildlife impact studies, noise and visual impact assessments, and helped to coordinate all state and federal environmental permitting.*

#### Lempster Wind Project, New Hampshire

*As the Senior Ecologist, Mr. Giumarro was responsible for coordinating and conducting environmental surveys and assisted in permitting for this 24 MW wind project, the first in New Hampshire. Tasks included developing and negotiating work plans with agencies, performing avian and bat studies, rare species investigations, vernal pool surveys, and providing testimonial support. Mr. Giumarro was also involved in the development of post-construction monitoring protocols for the project.*

#### Stetson Mountain Wind Farm, Washington County, Maine

*Stetson is a 57 MW generation facility consisting of 38 turbines on a 6.5-mile, low-elevation ridge in Washington County, Maine. Mr. Giumarro supervised avian and bat studies during the planning process and assisted in the design of the post-construction avian monitoring program.*

\* denotes projects completed with other firms

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## Granite Reliable Wind Park, Coos County, New Hampshire

*Mr. Giumarro has acted as the Senior Ecologist on this long-term project supervising and conducting a variety of natural resource surveys to assess potential concerns raised by the proposed project. Surveys included several seasons of nocturnal radar surveys, a winter track survey to document occurrence of American marten (state threatened) within the project site, wetland and vernal pool reconnaissance surveys, multiple seasons of acoustic bat surveys, rare plant surveys, a raptor migration survey, and a Natural Community Characterization. Stantec also gave several agency presentations to summarize the multiple seasons of environmental surveys and their implications for the project. Stantec is currently involved in the permitting process by providing expert witness testimony.*

## Hounsfield Wind Farm, Galloo Island, New York

*As Senior Ecologist for the nocturnal migration surveys conducted to determine site suitability, Mr. Giumarro negotiated and designed a marine radar survey reflective of the unique location of this island site. Solutions to transport, maintenance, and site coverage were carefully determined in order to produce one of the most extensive migration surveys to date, successfully documenting avian abundance, flight patterns, and flight altitudes surrounding the site. Mr. Giumarro and his project team were praised for their thoroughness and insights provided to state agencies.*

## Electrical Substation and Transmission Line Upgrades, Jay and Rumford, Maine

*Senior Ecologist. Managed field survey of wetland boundaries, potential streams, Significant Vernal Pools, and Wetlands of Special Significance under the jurisdiction of the MDEP based on the criteria of the Maine Natural Resources Protection Act. Stantec also coordinated town permitting requirements in Jay and will be preparing town, state, and federal permit applications for improvements proposed in Rumford in 2009.*

## Marbled Salamander Habitat Assessment and Surveys, Randolph, Massachusetts

*Senior Ecologist. Conducted assessment of suitable habitat conditions, aquatic larval/amphibian egg mass surveys, and drift fence/pit-fall trap surveys for marbled salamanders at the site of a proposed commercial expansion project. Presented results and permitting recommendations to the client and agency to comply with MESA while the project underwent MEPA review.*

## Umbagog Shadowdragon, Arrow Clubtail, and Blanding's Turtle Habitat Assessment, and Blanding's Turtle Nesting Surveys, Massachusetts

*Senior Ecologist. Conducted assessment of habitat conditions for dragonflies and Blanding's turtle. Conducted turtle nesting surveys to evaluate nest site selection on-site. Presented results to agency and coordinated project design modifications and mitigation recommendations to the client for compliance with MESA.*

## Ringed Boghaunter Habitat Assessment, North Smithfield, Rhode Island

*Senior Ecologist. Conducted an assessment of habitat conditions at the site of a large proposed commercial project. Provided impact analysis and mitigation design recommendations to client. Also provided third party review of the initial habitat assessment.*

## Norwottuck Rail Trail Rehabilitation Project, Hadley, Northampton, and Amherst, Massachusetts

*Senior Ecologist. Conducted natural community, general wildlife, and rare species habitat assessments within the 11-mile rail trail corridor. Evaluated habitat conditions for 19 state-listed rare wildlife and plant species documented by the NHESP and provided impact minimization recommendations to the engineer to comply with MESA. Evaluated current beaver damage to the rail trail corridor and developed a beaver management plan in accordance with MWPA and MESA performance standards.*

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## Spotted Turtle Habitat Assessment and Surveys, Marshfield, Massachusetts

*Senior Ecologist. Conducted an assessment of suitable habitat conditions and visual surveys for spotted turtles at the site of a proposed major commercial and residential development. Assisted with the development of wildlife crossing structure and exclusion barrier design and placement. Coordinated project planning and mitigation design with local and state agencies in compliance with MESA.*

## Eastern Box Turtle Protection Plan, Construction Monitoring, and Relocation, Duxbury, Massachusetts

*Senior Ecologist. Developed and coordinated approval of a protection plan to protect box turtles during construction in compliance with MESA. Plan included methodology for pre-construction searches, construction monitoring, turtle handling/relocation, and habitat management/enhancement for duration of project. Summary results presented in report to the NHESP.*

## Diamondback Terrapin Habitat Assessment and Nesting Surveys, Southern Massachusetts

*Senior Ecologist. Conducted an assessment of suitable habitat conditions and visual surveys to evaluate mating and nesting activities of a newly discovered diamondback terrapin population at a former landfill proposed for mixed use development. Evaluated project designs and presented impact minimization and mitigation recommendations to comply with MESA. Recommendations and response to reviewer comments also provided during MEPA review.*

## Regional Blanding's Turtle Rapid Habitat Assessment, Southern and Central New Hampshire

*Senior Ecologist. Conducted and managed landscape analysis, habitat assessment, and field survey of Blanding's turtle habitat modeling results in southern and central New Hampshire. Developed regional study plan in coordination with the New Hampshire Fish and Game Department to assess modeling results of 15 sites (>1500 acres). Results evaluated suitable habitat conditions, new observations of Blanding's turtles, and conservation planning and management recommendations.*

## Indiana Bat Habitat Assessment, Jefferson and Oswego Counties, New York

*Senior Ecologist. Prepared a habitat assessment to evaluate suitable habitat conditions for Indiana bat day-time and maternal roosting along a proposed 42.5 mile transmission line. Also conducted a landscape analysis and field survey of natural communities along the transmission line corridor. Results were used for project planning with objective to avoid and minimize resource impacts.*

## Timber Rattlesnake and Eastern Copperhead Protection Plan and Surveys, Massachusetts

*Senior Ecologist. Prepared rare snake protection and relocation plan in coordination with the NHESP, the client, and construction contractors. Conducted pre-construction surveys of the project site with the goal of capturing and relocating state-listed rare snakes inside construction zone.*

## New Hampshire ATV Policy Development and Trail Planning, New Hampshire

*Senior Ecologist. Assisted with the research and development of statewide ATV Trail Plan to address dramatic growth in ATV use throughout NH. Plan inventoried existing trails open to the public, including trail length and condition, organizations responsible for maintenance, funding levels, and estimated use. Stantec then identified sites for strategic acquisition and trail development by the state, reviewed the environmental sensitivity of these sites, and assessed the level of funding necessary for purchases of land, easements, and rights-of-way. Stantec also evaluated the state's statutory process for development of ATV trails on public lands.*

## Natural Resource Services, New England

*Senior Ecologist and Project Manager. Conducted reconnaissance assessment and survey of terrestrial and aquatic systems at numerous project sites throughout New England to identify and characterize suitable habitat conditions for a variety of rare, threatened, and endangered species; rare or exemplary natural resources; wetland resources; potential vernal pools; and natural communities. Determinations of applicability were provided to clients to assist with their project planning and permit applications in compliance with applicable local, state, and federal natural resource regulations.*

\* denotes projects completed with other firms

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### Post-construction Avian and Bat Mortality Monitoring at Forward and Lookout Wind Projects, Somerset County, Pennsylvania

*Senior Ecologist in charge of post-construction bird and bat mortality surveys at two operational wind projects in southwest Pennsylvania, including daily mortality surveys, acoustic bat surveys, and diurnal raptor surveys. Coordinated communications with state wildlife agencies.*

### Indiana Bat Mist Netting Surveys for Grandpa's Knob Windpark, Rutland County, Vermont

*Senior Ecologist in charge of Indiana bat mist netting surveys. Developed survey strategy in coordination with Vermont Fish and Wildlife Department, US Fish and Wildlife Service, and the client. Conducted surveys in accordance with federal protocol. Assisted with bat acoustic monitoring at project site. Coordinated and lead regular meetings between client and state and federal biologists, analyzed acoustic and mist netting survey data, prepared reports.*

### Riverbank Wiscasset Energy Center, Wiscasset, Maine

*Mr. Giumarro served as the Project Manager, Client Lead for the development of a pumped storage hydroelectric project. This included acting as the technical lead in the preparation of the FERC licensing documentation, resource surveys and natural resources surveys. The Project is a 1,000-megawatt pumped storage hydroelectric project. The principal project works include an upstream reservoir and an underground downstream reservoir (2,200 feet underground) with a capacity of 1.23 billion gallons. Mr. Giumarro also served to aid the project team in minimizing project impacts on the environment and served as the liaison for developing and implementing work plans to evaluate project impacts. Mr. Giumarro is also the lead in preparing the Maine Waterway Development and Conservation Act (MWDCA) permit. The project is currently in the permitting process with the FERC and the State of Maine. Stantec worked with Riverbank to prepare the Preliminary Application Document (PAD), MWDCA permit, and is currently assisting with development of the FERC license application. Stantec is also in the process of conducting fisheries evaluations, dive surveys, deer wintering area characterizations, wetland delineations, rare species surveys, benthic habitat characterizations, and hydraulic modeling.*

### Wind Farm Development Surveys and Risk Assessments, New York, New Hampshire, Vermont, Maine, Virginia, West Virginia, and Pennsylvania

*Mr. Giumarro has managed pre-construction wind farm development surveys and risk assessments at multiple sites throughout New England, New York, and the mid-Atlantic. These assessments include site prospecting for wind farms, landscape analyses, fatal flaw analyses, neotropical migrant surveys using marine radar, acoustic bat surveys, breeding bird surveys, bat mist netting, raptor surveys, and ecological community characterization. Mr. Giumarro has effectively served as liaison between clients and regulatory agencies to insure that studies and monitoring plans are in accordance with federal and state guidelines. Study results and determinations of risk have been provided to clients to assist with their project planning and permit applications in compliance with applicable local, state, and federal natural resource regulations. In addition, Mr. Giumarro has aided in the development of a weight-of-evidence approach to risk assessments specifically for wind farms. This risk assessment approach was presented to the annual conference of the Wildlife Society in Tucson, AZ.*

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### Downeast LNG Ecological Characterization and Permitting, Robbinston, Maine

*Mr. Giumarro was the Project Manager and Lead Ecologist for Downeast LNG's construction of a liquefied natural gas (LNG) import terminal and natural gas pipeline in eastern Maine. Mr. Giumarro directed all field work and was the primary author of all permitting documentation, FERC application materials, Biological Assessments (USFWS and NMFS), and directed the overall site prospecting and selection process. Stantec was retained to assist the client in evaluating environmental resources and potential impacts, prepare FERC documentation, serve as a liaison with natural resource agencies, and coordinate state and local environmental permitting for the project, which includes a 47-acre port facility and a 30-mile natural gas pipeline. The proposed development includes an associated pier facility extending approximately 3,300 feet from shore into Passamaquoddy Bay.*

*Stantec conducted an extensive site characterization including detailed marine and terrestrial habitat surveys, rare species studies, wetland mapping and functional assessments, Essential Fish Habitat studies, marine mammal habitat evaluations, development of potential gas pipeline corridors, and reviews of regulatory requirements for state and federal environmental permitting. Stantec also conducted detailed wetland and rare species field evaluations along the pipeline corridor alternatives. Mr. Giumarro directed the preparation of Biological Assessments for Atlantic Salmon, bald eagles, and marine mammals with the USFWS and NMFS.*

### Acadia Gateway Intermodal Facility Environmental Assessment, Trenton, Maine

*Mr. Giumarro was the Project Manager Ecologist for fieldwork and preparation of the natural resources portions of the Environmental Assessment. The Maine DOT is working with Acadia National Park, Federal Transit Authority, and Friends of Acadia in planning the development of a combined intermodal transportation facility and Acadia National Park welcome center in Trenton, Maine. The project is intended to reduce traffic and automobile use within the Park and in Bar Harbor through increased use of the Island Explorer bus service. Mr. Giumarro worked closely with the project planners and engineers in evaluating natural resources at the site, assessing impacts, developing a master plan, drafting a NEPA Environmental Assessment, and planning permit strategies and mitigation options.*

*Mr. Giumarro completed initial project tasks for the project including conducting literature reviews and performing environmental characterizations of the site with regard to natural communities, wildlife, and rare species. Stantec also conducted additional field surveys to map and assess wetlands, document wildlife use of the site, evaluate rare species occurrences, develop functional assessments of wetlands, and determine potential on-site mitigation opportunities. Mr. Giumarro also performed impact assessments for the project were performed under the requirements of NEPA, National Park Service Director's Order 12 and Handbook, and the USACOE Highway Methodology.*

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### Mount Rushmore National Memorial Air Tour Management Plan Environmental Assessment, South Dakota

*The National Parks Air Tour Management Act of 2000 (NPATMA) was signed into law on April 5, 2000, and applies to any person who applies to the Federal Aviation Administration (FAA) for operating authority to conduct a commercial air tour operation over a unit of the national park system, over tribal lands that are within or abutting a unit of the national park system, or any area within ½-mile outside a unit of the national park system.*

*The NPATMA requires the FAA, in cooperation with the National Park Service (NPS), to develop an Air Tour Management Plan (ATMP) for each unit of the park system or tribal land that does not have a plan in effect at the time a person applies for FAA authority to conduct such an operation.*

*Two air tour operators have applied to the FAA for operating authority to conduct commercial air tour operations at Mount Rushmore National Park (the Park). Prior to implementation of an ATMP, the FAA must comply with the National Environmental Policy Act of 1969 (NEPA) and other related NEPA laws and regulations. The FAA, in cooperation with the NPS, determined that an environmental assessment (EA) would be initiated for the Park ATMP for NEPA purposes.*

*Mr. Giumarro assisted with preparation of the EA for this ATMP, which included development of the affected environment on biological resources and land use sections, environmental consequences on biological resources and land use sections, and cumulative impacts on biological resources section. This project included application of a wide body of science on the environmental effects of noise.*

### Badlands National Park Air Tour Management Plan Environmental Assessment, South Dakota

*The National Parks Air Tour Management Act of 2000 (NPATMA) was signed into law on April 5, 2000. The NPATMA applies to any person who applies to the Federal Aviation Administration (FAA) for operating authority to conduct a commercial air tour operation over a unit of the national park system, over tribal lands that are within or abutting a unit of the national park system, or any area within ½-mile outside a unit of the national park system.*

*The NPATMA requires the FAA, in cooperation with the National Park Service (NPS), to develop an Air Tour Management Plan (ATMP) for each unit of the park system or tribal land that does not have a plan in effect at the time a person applies for FAA authority to conduct such an operation.*

*Two air tour operators have applied to the FAA for operating authority to conduct commercial air tour operations at Badlands National Park (the Park). Prior to implementation of an ATMP, the FAA must comply with the National Environmental Policy Act of 1969 (NEPA) and other related NEPA laws and regulations. The FAA, in cooperation with the NPS, determined that an environmental assessment (EA) would be initiated for the Park ATMP for NEPA purposes.*

*Mr. Giumarro assisted with EA preparation for this ATMP, which included development of the affected environment on biological resources and land use sections, environmental consequences on biological resources and land use sections, and the cumulative impacts on biological resources section. This project included application of a wide body of science on the environmental effects of noise.*

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### NASA Wallops Island Flight Facility Bat Evaluation, Wallops Island, Virginia

*Mr. Giumarro conducted bat acoustical surveys during the Fall 2008 migration period. Bat acoustic data were used to characterize bat presence in the project area and allow for some identification of bat species or guilds. These data provided an index of bat activity between migration and breeding periods and will help determine whether seasonality affects bat activity.*

*Echolocation calls were identified to species level whenever possible (i.e., when clear call sequences of certain species were recorded). Tree-roosting migratory bats are typically easy to identify to species, while those of the genus *Myotis* are not. Bat calls were identified to guild, although some calls were provisionally categorized to species when possible. Mr. Giumarro reviewed Stantec's regional database of bat calls to aid in the interpretation of results through use of filtering software. Bat detector data were summarized for each detector for each night (i.e., number of calls by species or species group per hour). These estimates were provided for each sampling site and, when sufficient data was available, for each canopy height within each sampling site. Call rates by species, as well as total detections and trends in species presence, were reported. Comparisons between call rates and species composition were also compared between the three detectors. Mr. Giumarro compiled and evaluated data obtained for the acoustic survey and produced a report summarizing the results.*

### Ecosystem Management Application and Vegetative Surveys, Wisconsin\*

*Mr. Giumarro was the Project Manager, conceptual designer, and primary author for the preparation of an Ecosystem Management Application for the ANG. Mr. Giumarro led the development, data collections, and performed the analyses for classification on the three installations according to the National Vegetation Classification Standards. Based upon this foundation, Mr. Giumarro designed a spatially related database that focuses on research related to natural history and ecology of plants and wildlife known to occur within the area. In conjunction with quantitative surveys and background research, habitat associations were developed that allow for ANG natural resources managers to compile spatial inventories of select areas as well as manage toward specific ecosystem forms and functions. As part of this process, Mr. Giumarro designed an online interface that allows all installation personnel to perform analyses without a need for formal training in GIS technology. In addition, the application allowed for analysis of ecosystem stressors through an application of an ecosystem stressor matrix designed provide for the mitigation of such stressors.*

\* denotes projects completed with other firms

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## Simplified Natural Resource Damage Assessment for Sites Involving Injury to Groundwater and Wetlands, Massachusetts

*Mr. Giumarro assisted in preparation of the draft Simplified Natural Resource Damage Assessment for Sites Involving Injury to Groundwater and Wetlands, which identified several characteristics a site must have to qualify for the simplified approach to assess natural resources damages. These criteria first establish whether a site is appropriate for any type of damage assessment, including:*

- *Have natural resources been impacted by contamination at this site?*
- *Does the site have health or environmental risks that remain to be addressed one year after the State was notified of the release [i.e., is the site tier classified]?*
- *Does this site fit the requirements for statute of limitations?*
- *Is there a viable responsible party?*
- *Is the site well characterized? Does enough data exist to quantify injury?*

*If the site meets the above criteria, it may be amenable to a simplified natural resource damage assessment. The following additional criteria should assist in determining whether the simplified approach can be used:*

- *Is the site "complex"?*
- *Have impacts to resources other than groundwater or wetlands been identified?*
- *Did the spill result in the discontinuation of use of a public water supply well or private well?*

*For the simplified approach to be successful, these questions must be ascertained from existing data collected during site characterization. This report serves as the baseline for assessing damages to wetlands in MA assessing damages to wetlands in Massachusetts as part of their Natural Resources Damage Assessment (NRDA) Program.*

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## PUBLICATIONS

Giumarro, G.J., K.S. Watrous, T.S. Peterson, S.A. Boyden, M.J. Lacki, and J.S. Johnson. Seasonal and geographic trends in acoustic detection of tree-roosting bats. *Presented at the Windpower 2010 Conference and Exhibition, Dallas, Texas, 2010.*

Giumarro, G.J., K.S. Watrous, T.S. Peterson, S.A. Boyden, and J.S. Johnson. Seasonal and geographic trends in acoustic detection of tree-roosting bats. *Presented at the NWCC Wind Wildlife Research Meeting VIII, Lakewood, Colorado, 2010.*

Giumarro, G., J.S. Johnson, T.S. Peterson, K.S. Watrous, and S. Boyden. Summary of Seasonal Distribution of Migratory Tree Bats in the Northeastern United States Using Passive Acoustic Sampling. *Presented at the 1st International Symposium on Bat Migration. Berlin, Germany, 2009.*

Giumarro, G., and D.K. Tong. Environmental Benefits of Tidal Pumped Storage Energy Generation: A Case Study from Riverbank Wiscasset Energy Center, Maine. *Presented at the Energy Ocean Conference. Rockland, Maine, 2009.*

Giumarro, G. and A. Gravel. Assessing The Risk Of Avian And Bat Mortality At Commercial Wind Farms. *Presented at the Windpower 2009 Conference and Exhibition, Chicago, Illinois, 2009.*

Giumarro, G., S. Pelletier, K. Watrous, T. Peterson, and J. Johnson. Seasonal Distribution of Tree Bats in the Northeast Using Passive Acoustic Sampling. *Poster Presentation at the Windpower 2009 Conference and Exhibition, Chicago, Illinois, 2009.*

Pelletier, S.K., G.J. Giumarro, and G.C. Kendrick. Gulf of Maine Offshore Bat and Bird Pilot Study. *Poster Presentation at the AWEA Offshore Wind Project Workshop, Boston, Massachusetts, 2009.*

Giumarro, G. Understanding of Risk to Long Distance Migrating Bats in Canada Using an Ecological Risk Assessment Framework. *Presented at CanWEA, Wind Matters, Wind Project Siting Seminar, Halifax, Nova Scotia, 2009.*

Pelletier, S., G. Kendrick, G. Giumarro, T. Peterson, and A. Gravel. Gulf of Maine Offshore Bat and Bird Project. *Poster Presentation at AWEA Offshore Energy Conference; Boston, Massachusetts, 2009.*

Giumarro, G and J. Lortie. Using Ecological Risk Assessment to Characterize Risks to Birds and Bats at Wind Farms. *Presented at the Wildlife Society Annual Conference. Tucson, Arizona, 2007.*

Giumarro, G.J. and S.K. Pelletier. Rare Turtle Tracking and Mitigation Associated with Infrastructure Development. *North American and Natural Resources Conference, Washington, DC, 2005.*

Giumarro, G. The Indirect Ecosystem Benefits of Mission Required Prescribed Burns: A Case Study from Hardwood Air National Guard Range, Wisconsin. *National Military Fish and Wildlife Association Conference, Spokane, Washington, 2004.*

Giumarro, G. The Ecopsychology of the Department of Defense: understanding organizational motives and future direction of natural resources management. *College of the Atlantic, Bar Harbor, Maine, 2003.*

## Gino J.M. Giumarro

Senior Associate, Certified Wildlife Biologist

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Giumarro, G.J., D. Gonnering, and B. Hoppy. Rural Encroachment: Conflicts between Natural Resources Management on Military Lands and Agricultural and Wildlife Management Area Objectives. *National Military Fish and Wildlife Association Conference, Dallas, Texas, 2001.*

Giumarro, G.J. and W.F. Kuentzel. User Perceptions of Nonconsumptive Wildlife Recreation: Have Vermont Users Redefined the Wildlife Watching Experience?. *International Symposium on Society and Resource Management, Western Washington University, Bellingham, Washington, 2000.*

Giumarro, G.J. and W.F. Kuentzel. The 2000 Watchable Wildlife Survey. *Vermont Department of Fish and Wildlife, 2000.*

Giumarro, G.J. and W.F. Kuentzel. 2000 Vermont Angler Survey. *Vermont Department of Fish and Wildlife, 2000.*

Giumarro, G.J. A Handbook for Natural Resource Planners. *University of Vermont, 2000.*

Presented with fellow students of Integrated Analyses of Natural Resource Issues. Comparing Integrated Frameworks for Defining Environmental Implications of Sprawl. *Conference of the Society and Human Ecology, McGill University, Montreal, Canada, 1999.*

Jones, J.J., G. Giumarro, and K. Williamson. 1998 Piping Plover and Least Tern Project Report. *Maine Audubon Society, 1999.*

# Elizabeth M. Annand

Project Manager



Elizabeth Annand is a Certified Wildlife Biologist with 17 years experience in the Natural Resource Management field. She specializes in environmental permitting on the state and federal levels, NEPA documentation for federal actions, and threatened and endangered species protection and management. She is capable of conducting regulatory compliance for several natural resource disciplines. Elizabeth has developed her career skills with emphasis on successfully managing various natural resources (animals, plants, etc.) in conjunction with other resource demands (energy, minerals, timber, recreation, etc.). She has a solid understanding of ecological concepts and resource management techniques. This allows her to evaluate projects and aim for implementing environmentally sound alternatives for development.

Elizabeth has an exceptionally broad background in the field of integrated wildlife and resource management, and her work experience includes employment with federal and state agencies as well as the private sector. Elizabeth has extensive experience composing and reviewing federal and state environmental permitting documents for projects of all sizes and is well versed in relating ecological principles to rules and regulations. She is also proficient in developing field survey investigations, including data collection, data analysis, and technical reporting. She is a veteran field scientist and has conducted work in six regions of the United States. She continues to provide valuable field and document support for the extensive efforts associated with pre-construction review for several proposed wind resource areas in the Northeast.

## EDUCATION

MS, Wildlife Biology, University of Missouri, Columbia, Missouri, 1995

BS, Biology and Wildlife Management, Delaware State College, Dover, Delaware, 1991

Bat Acoustic Monitoring/Bat Conservation & Management Certification, Bat Conservation International, Austin, Texas, 2005

40-hr Surface Mine Worker Training, Mine Safety & Health Administration, Gillette, Wyoming, 2008

Wildlife Hazard Management at Airports Certification, Embry-Riddle Aeronautics University, Daytona Beach, Florida, 2008

Hazwoper Certification, OSHA, Topsham, Maine, 2010

## REGISTRATIONS

Certified Wildlife Biologist #25063, The Wildlife Society

## PROFESSIONAL ASSOCIATIONS

Member, The Wildlife Society

Member, The Wildlife Society, Maine

## PROJECT EXPERIENCE

### **Natural Resource Services**

Wells Harbor Dredge Project, Wells, Maine

*Stantec is providing scientific and regulatory support for permitting a proposed dredge and beach nourishment project. As Project Manager, Elizabeth's tasks include biological resources assessment and project effects analyses. She also serves as the Regulatory Specialist for this project. She coordinates state and federal agency participation in the project and has prepared all attachments for the state NRPA and federal CWA permit applications.*

# Elizabeth M. Annand

Project Manager

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## Downeast LNG, Robbinston, Maine

*Stantec is the lead consultant in providing permitting assistance for an LNG terminal, regasification facility, and 30-mile send-out pipeline in Washington County, Maine. As Project Scientist, Elizabeth directed field investigations and provided chief assistance in the preparation of the FERC and State of Maine applications for the project.*

## Skowhegan Transportation Corridor Study, Skowhegan, Maine

*Stantec is assisting the lead consultant in the preparation of the EIS for the Maine DOT's proposed by-pass. As Project Manager, Elizabeth is a preparer for EIS sections addressing resources in the physical and biological environments.*

## Bear River Migratory Bird Refuge EA and BA, Utah

*Project involved improved access road to refuge. Elizabeth prepared Wildlife Resource and Threatened and Endangered Species Sections for Project EA. She also prepared the Biological Assessment. Project effects analysis included bald eagle and fat-whorled pondsnail.*

## Mount Rushmore and Badlands National Parks Air Tour Management Plan EAs, South Dakota

*Stantec is providing assistance in developing natural resource sections of an Environmental Assessment evaluating multiple alternatives for commercial air tour operations at Mt. Rushmore National Memorial and Badlands National Park. As Technical Lead, Elizabeth's tasks include natural resource data compilation and noise impacts analysis on wildlife and habitats under federal regulations including the NEPA, Endangered Species Act, and Wilderness Act.*

## Cape Wind Energy Project EIS and BA, Massachusetts

*Stantec participated in the federal environmental permitting effort for a wind resource area in Nantucket Sound, Massachusetts. As Project Scientist and Regulatory Specialist, Elizabeth was instrumental in preparing, reviewing, and responding to comments on the avian sections for the EIS and Biological Assessment.*

## Hudson River Avian Impact Studies, New York

*Stantec designed and carried out extensive bird surveys and egg collection efforts for the USFWS, covering 60 miles of the Hudson River in New York State. As Project Scientist, Elizabeth conducted field work to collect and process wild songbird eggs as part of the Natural Resources Damage Assessment for the river to evaluate impacts associated with contaminated sediments.*

## Natural Resource Damage Assessment, Massachusetts

*Stantec assisted the lead consultant in preparing a simplified approach for conducting natural resource damage assessment for wetlands affected by hazardous materials releases. As a co-author, Elizabeth researched and designed a method for assigning monetary value for affected wetlands. Research included an economic analysis and an investigation of affected wetlands in Massachusetts. Project was conducted in support of the Massachusetts Contingency Plan.*

## Knox County Airport, Owls Head, Maine

*Stantec is the lead consultant for the Knox County Airport expansion project. As Project Scientist, Elizabeth is conducting a wildlife hazard assessment for the airport. She is also preparing a management plan to reduced wildlife hazards that are a potential threat to landing and departing aircraft at the airport.*

## Jackson Hole Resort EA and BA, Wyoming

*Project involved additional and upgraded trails and helicopter skiing option. Elizabeth prepared Wildlife Resource, Threatened and Endangered Species, and Biodiversity Sections for Project EA. She also prepared the Biological Assessment for federal threatened and endangered species and Biological Evaluation for US Forest Service sensitive species. Project effects analysis included the following species: grizzly bear, Canada lynx, and wolverine.*

## Bangor Landing BA, Bangor, Maine

*Stantec provided assistance for permitting limited remedial dredging and construction of a NAPL trapping cap at Bangor Landing. As Project Scientist and Regulatory Specialist, Elizabeth co-authored the Biological to assess the impact of the project on the endangered shortnose sturgeon and Atlantic salmon.*

# Elizabeth M. Annand

Project Manager

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## Coalbed Methane Development EIS, Colorado

*Elizabeth was on a team of third-party reviewers for a programmatic EIS for a coalbed methane project in Southern Colorado. She reviewed sections on Wildlife, Vegetation, and Threatened and Endangered Species, and she also reviewed the Biological Assessment. Project effects analysis included the following species: bald eagle, southwestern willow flycatcher, Colorado pikeminnow, razorback sucker, and several plants (cacti, milkvetch, etc.).*

## Sugarbush Development and Improvement Project EA and BA, Vermont

*Project involved trail and lodge improvements at the resort. Elizabeth prepared Revised Biological Assessment for federal threatened and endangered species and Biological Evaluation for US Forest Service sensitive species. Project effects analysis included the following species: Indiana bat, small-footed bat, and several odonates and plants.*

## Loon Mountain Ski Resort Expansion and Development EIS and BA, New Hampshire

*Project involved upgraded trails and new mountain development. Elizabeth prepared Wildlife Resource, Threatened and Endangered Species, and Biodiversity Sections for Project EIS. She also prepared Biological Assessment for federal threatened and endangered species and Biological Evaluation for US Forest Service sensitive species. Project effects analysis included the following species: Indiana bat, small-footed bat, Canada lynx, American marten, and several plants.*

## Brewer Module Facility BA, Brewer, Maine

*Stantec provided assistance for permitting a module fabrication facility on the Penobscot River. As Project Scientist and Regulatory Specialist, Elizabeth co-authored the Biological Assessment that addressed endangered short-nosed sturgeon and Atlantic salmon.*

## Hoosac Wind Project, Massachusetts

*Stantec is providing assistance in the environmental permitting of a wind resource area in Florida and Monroe, Massachusetts. As Project Scientist, Elizabeth conducted a wildlife habitat evaluation and provided support to wetlands scientists to prepare State Notice of Intent for the electrical transmission tie-line. She continues to provide scientific support to the lead consultant and is currently supervising implementation of the conservation management plan for the state-endangered large-leaved goldenrod for the turbine project.*

## Plan for Developing NH's Statewide Trail System for ATVs and Trail Bikes 2004-2008, New Hampshire

*Stantec prepared a recreational plan for the State of New Hampshire. Elizabeth conducted a state-wide study of the wheeled off-highway vehicle trail system in New Hampshire. She then co-authored a plan to develop and maintain the trail system in anticipation of project future use. This effort also included conducting agency and public correspondence.*

# Elizabeth M. Annand

Project Manager

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## PUBLICATIONS

Nichols, JD, LL Bailey, AF O'Connell, NW Talancy, EH Campbell Grant, AT Gilbert, EM Annand, TP Husband, and JE Hines. Multi-scale occupancy estimation and modeling using multiple detection methods. *Journal of Applied Ecology*, 2008.

Gilbert, AT, AF O'Connell, Jr., JR Sauer, JD Nichols, and EM Annand. Inventory of terrestrial mammals at National Parks in the Northeast Temperate Network and Sagamore Hill NHS. *USGS Technical Report Series*, 2007.

Annand, EM and FR Thompson, III. Forest Bird Response To Regeneration Practices in Central Hardwood Forests. *Journal of Wildlife Management*, 61:159-171, 1997.

Donovan, TM, PW Jones, EM Annand, and FR Thompson, III. Variation in Local-Scale Edge Effects: Mechanisms and Landscape Context. *Ecology*, 78:2064-2075, 1997.