

THE STATE OF NEW HAMPSHIRE
SITE EVALUATION COMMITTEE

Docket No. 2019-02

Application of Chinook Solar, LLC for a Certificate of Site and Facility

**COUNSEL FOR THE PUBLIC'S ASSENTED-TO MOTION FOR LEAVE
TO RETAIN ARROWWOOD ENVIRONMENTAL AND FOR AN
ORDER DIRECTING THE APPLICANT TO BEAR THE COSTS THEREOF**

Counsel for the Public hereby moves, pursuant to RSA 162-H:10, V, for leave to retain an expert consultant and for an order directing Chinook Solar, LLC ("Applicant") to bear the costs and fees of the consultant and pay the fees and costs directly to Arrowwood Environmental, in an amount up to \$59,301. In support hereof, Counsel for the Public respectfully represents as follows:

A. Background.

On October 18, 2019, the Applicant submitted an Application for a Certificate of Site and Facility to the New Hampshire Site Evaluation Committee to construct and operate a 30-megawatt solar energy generation facility and associated electrical infrastructure in Fitzwilliam, Cheshire County. On November 8, 2019, the Vice-Chairperson of the Committee appointed a Subcommittee to consider the Application. The Subcommittee accepted the Application on December 17, 2019.

B. Legal Standard.

Pursuant to RSA 162-H:9, I, Counsel for the Public "shall represent the public in seeking to protect the quality of the environment and in seeking to assure an adequate supply of energy." Moreover, RSA 162-H:10, V, authorizes Counsel for the Public to "conduct such reasonable studies and investigations as [she] deem[s] necessary or appropriate to carry out the purpose of this chapter..." Counsel for the Public "may employ a consultant or consultants...in furtherance of the duties imposed by this chapter, the cost of which shall be borne by the applicant in such amount as may be approved by the committee." *Id.* Counsel for the Public's broad role includes conducting studies and investigations necessary and appropriate to carry out the purposes of the statute. *See*

SEC Docket No. 2015-01, Order on Pending Motions, *In re Request of SEA-3, Inc. for Exemption*, dated August 10, 2015, at 9. Those issues go beyond protection of the environment and assuring an adequate supply of energy and include any matters identified in RSA 163-H:1. *Id.*

C. Argument.

Counsel for the Public wishes to retain Arrowwood Environmental to provide expert analysis and opinion concerning the proposed project's impacts to: 1) Wetlands, waterbodies, and vernal pools; 2) Wildlife and wildlife habitat; 3) Rare, threatened, and endangered plants; and 4) Natural communities. The Consultant's resume is attached in *Exhibit A*, pp. 5-13, and the details of services that will be provided are set forth at pp. 1-3. The rates the Consultant will charge are also set forth in *Exhibit A*, p. 4. The total cost of the work is estimated at \$59,301.

Upon careful consideration of the Application, Counsel for the Public has deemed the retention of Consultant's services to analyze the project's impacts to wetlands, waterbodies, vernal pools, wildlife, wildlife habitat, endangered plants, and natural communities. This Consultant is necessary to carry out other purposes of the siting statute and to evaluate if the project will assure an adequate supply of energy without unreasonably and adversely affecting the quality of the environment. As stated in RSA 162-H, the purpose of the siting statute is to find "a balance among those potential significant impact and benefits" of the project. RSA 162-H:1. Retention of the Consultant is necessary because it will provide Counsel for the Public and the Committee with an unbiased, independent, and thorough analysis of those impacts to make their determination of whether the project will have an unreasonable adverse impact on the natural environment, and whether the project is in the public interest.

The Consultant's evaluation of the project's benefits to and impacts on New Hampshire will start with a review of the Applicant's submissions, and outreach to state agency personnel and local town officials. A written evaluation of the Applicant's environmental impact in the areas identified

will be generated. Once this evaluation occurs, pre-filed testimony will be prepared. The Consultant will be available to participate in technical sessions and evidentiary hearings before the Site Evaluation Committee. Reports will be submitted to the Committee along with pre-filed testimony and the Consultant will be available for discovery and cross-examination.

The Application confirms the project is advancing local and regional public policy goals regarding regional clean energy and fuel diversity. It is Counsel to the Public's responsibility to evaluate how these benefits and impacts fit into the overall "public interest" of the project. The retention of the Consultant is necessary to achieve that goal. The Consultant possesses the appropriate balance between expertise and cost-effectiveness. Additionally, the proposed scope of work is focused to achieve prudent advice at a reasonable cost.

If this Motion is granted, Counsel for the Public would forward Consultant's invoices to the Applicant's counsel for payment by the Applicants.

D. Position of the Parties on this Motion.

The Applicant's Position:

The Applicant assents to the relief sought in this motion, but not to any characterizations in the motion about the case or the Application.

The following parties concur in this Motion:

Town of Fitzwilliam.

The following parties object to this Motion:

None.

The following parties take no position on this Motion:

None.

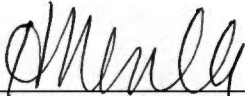
WHEREFORE, Counsel for the Public prays that the Committee enter an Order authorizing the employment of Arrowwood Environmental as a consultant pursuant to RSA 162-H:10, V, and

directing the Applicant to bear the costs, as incurred monthly, up to a total of \$59,301, and grant such other relief as may be just.

Respectfully submitted,

COUNSEL FOR THE PUBLIC

January 21, 2020



Heather Neville, Esquire
Assistant Attorney General
Environmental Protection Bureau
33 Capitol Street
Concord, NH 03301
(603) 271-3679

Certificate of Service

I hereby certify that a copy of the foregoing Motion has this day been forwarded via email or mail to persons named on the Distribution List of this docket.

January 21, 2020



Heather Neville

EXHIBIT A



ARROWWOOD ENVIRONMENTAL
950 BERT WHITE ROAD
HUNTINGTON, VT 05462
(802) 434-7276 FAX: (802) 329-2259

Scope of Work for the Environmental Review of the Chinook Solar, LLC Site Evaluation Committee Application

January 7, 2020

The Scope of Work outlined below consists of an environmental review of the proposed Chinook Solar, LLC (Project) in Fitzwilliam, New Hampshire. This environmental review will be conducted by Arrowwood Environmental (AE) and contractors on behalf of the State of New Hampshire Attorney General's Office.

The proposed environmental review outlined below will evaluate the above documents focused on the following resource areas:

- Wetlands, Waterbodies and Vernal Pools
- Wildlife and Wildlife Habitat
- Rare, Threatened and Endangered Plants
- Natural Communities

AE will conduct this review in an objective manner based on their professional expertise and the current scientific literature in these fields. The standards used to assess proposed impacts will be based on the Site Evaluation Committee (SEC) Rules and other local and state regulatory requirements.

The environmental review process has been broken up into three phases as outlined below.

Phase 1 Document Review and Public Outreach

Task 1a. Document Review

Environmental assessments of Project impacts were conducted by the Applicant from 2016-2019. In addition, pre- testimony and supporting documents have been submitted by various parties and expert witnesses as part of the SEC application process. The initial step of the environmental review process is to collect and review all of the applicable documents relating to the resources listed above. These documents will be reviewed to identify "Issues of Concern" (IOC) as related to state of New Hampshire environmental regulations and SEC rules. IOCs may be related to inadequate methodologies employed when assessing natural resources, inaccuracies in reporting, lack of identification of impacts or unsubstantiated conclusion regarding impacts (or lack thereof).

The following documents will be reviewed during this process:

- Testimony of Expert Witnesses
- SEC permit application
- TRC Wetland, Waterbody and Vernal Pool Report
- TRC Bat Presence Absence Survey Report
- TRC Forest Composition Report
- Correspondence with regulators
- Federal, State and Local regulations and requirements

Task 1b. Outreach

An outreach effort will be undertaken by AE in order to collect available information about the resource areas and identify and elaborate on the IOCs. As part of the outreach effort, AE will contact state agency personnel as well as local town officials. Outreach will not include meeting with the general public.

Phase 2- Report

Upon completion of Phase 1 , AE's findings will be summarized in a professional report. The report will include a brief section on the methodology of the review process and a section outlining the results and conclusions. The results section will be broken up by the resources areas and will focus on the IOCs that were discovered during Phase 1. In some cases, a review of the scientific literature may be required to support conclusions in the report. All literature included in this review will be cited in the report. The report will be submitted digitally.

Phase 3- Depositions, Testimony and Hearings

The third Phase of the review consists of the necessary steps to participate in the Site Evaluation Committee (SEC) evidentiary hearings. If the results of the professional report conclude "unreasonable impacts to the environment" in any of the resource areas, this last phase may be undertaken at the discretion of the Attorney General's office. The four Tasks included in this potential Phase are outlined below.

Task 3a. Develop Pre-filed Testimony

Development of the pre-filed testimony will occur after report completion. The content of the pre-filed testimony will be based on the conclusions detailed in the report. AE expects to work closely with counsel on developing the testimony.

Task 3b. Review Applicant Supplemental Testimony and Discovery Responses

AE personnel will review Applicant responses to AE pre-filed testimony and responses to discovery requests. AE will work with the Attorney General's office to develop supplemental testimony as needed.

Task 3c. Participate in Technical Sessions

AE personnel which have submitted pre-filed testimony will a be made available to participate in technical sessions. AE personnel will also be available to attend the applicant's technical session to provide counsel to the Attorney General's office

Task 3d. Provide Direct Testimony in SEC Evidentiary Hearings

Based on the report, pre-filed testimony and technical hearings, AE personnel will act as expert witnesses during the formal SEC hearings if necessary. This may include participation in testimony preparation sessions and consultations with counsel regarding questioning of other witnesses.

Sub-contractors

The majority of the environmental review work will be conducted by the four principle partners of AE. Northeast Ecological Services (NEES) has been engaged as a subcontractor for the assessment of impacts to bats.

Cost Estimate

A detailed cost estimate is presented below. This cost estimate represents a “not-to-exceed” amount and includes all labor costs and expenses for AE and its sub-contractors. Only those costs incurred on the project will be billed. The labor rates are calculated at \$85 per hour. Rates for technical hearings and testimony are calculated at \$150 per hour. Expenses include mileage, per-diem and miscellaneous expenses.

<i>Task</i>	<i>Total Hours</i>	<i>Labor Cost</i>	<i>Expenses</i>
Phase 1: Initial Review			
Data Compilation	25	\$2,125	
Wetland Review	25	\$2,125	
Wildlife Review	40	\$3,400	
NC Review	20	\$1,700	
RTE Plant Review	10	\$850	
Bat Review	42	\$3,570	
Phase 1 Sub-total		\$13,770	
Phase 2: Report			
Report Maps	20	\$1,700	
Report Writing	70	\$5,950	
Phase 2 Sub-total		\$7,650	
Phase 3: Depositions, Testimony, Hearings			
Develop Pre-filed Testimony (PFT)	24	\$2,040	
Review Applicant Response to PFT	11	\$935	
Develop Supplemental Testimony	18	\$1,530	
Develop Discovery Requests	6	\$510	
Review Discovery Responses	14	\$1,190	
Depositions	28	\$2,380	
AG Technical Sessions	40	\$6,000	\$667
Applicant Technical Sessions	40	\$6,000	\$667
SEC Evidentiary Hearings	50	\$7,500	\$994
Phase 3 Sub-total		\$30,413	
Project Administration	31	\$2,635	
Spatial Data Management	15	\$1,275	
Document Management	10	\$850	
Report Production	8	\$680	
Project Meetings	16	\$1,360	\$667
Project Total		\$59,301	

**Arrowwood Environmental
Resumes of Principal Partners
and Subcontractor**

AARON WORTHLEY

PARTNER — GIS ANALYST — SCIENTIST — UAS PILOT



Areas of Expertise

- Geographic Information Systems
- UAS / Drone Mapping
- Cartography & Web Mapping Tools
- Wildlife Assessment & Monitoring
- GPS & Surveying
- Database Management
- Graphic Design & Layout

Education & Professional Training

- B.A. Individual Design (social sciences, performing arts), University of Vermont, 1994
- FAA Licensed UAV Pilot (2016)
- Wetland Ferns (2/2013)
- Phase II- VT Stream Geomorphic Protocols, summer (2007)
- Wetland plant Identification (2007)
- SGAT & Phase 1 VT Stream Geomorphic Protocols, (2004)
- Vernal Pool Identification & Certification, (2006)
- Winter Identification of Trees and Shrubs workshop (2003)
- Keeping Track- Wildlife Tracking & Monitoring (2001-2002)
- Forest Mycology (2003)
- Vermont Spatial Data Partnership, semi-annual GIS Roundtables

Mr. Worthley is the principal GIS Analyst for Arrowwood Environmental responsible for project mapping, GIS and CAD plan development, spatial data assessment, spatial database management, remote sensing, spatial, visual and hydrological modeling, and GPS surveying. Mr. Worthley also conducts field inventories and assessments for wildlife tracks, sign and wildlife, avian habitat assessments and wetland delineations. As a certified UAV (drone) pilot, Mr. Worthley conducts aerial surveys, mapping, and photography to support Arrowwood's projects and clients. Accomplishments include extensive map, plan, database, and visual aid development for municipalities, organizations, businesses and private landowners, court exhibits, public presentation and project planning; community tree inventory project development and implementation, wildlife and bird inventories, habitat assessment, ecological predictive modeling and mapping, and development of web-based mapping and communication tools.

Significant Projects & Experience

- Vermont Vernal Pool Mapping Project: Database and GIS manager for a statewide vernal pool mapping initiative.
- Audubon Vermont: Forest Bird Initiative. Field evaluations and forest management recommendations for enhancing forest bird habitat with participating landowners.
- Vermont Dept. Environmental Conservation RCPP Wetland Outreach: Database design, implementation and management, cartography, and geospatial modeling to identify and prioritize agricultural wetland restoration projects.
- Vermont Dept. Environmental Conservation, CCRPC: Fluvial Geomorphic Assessments & Fluvial Erosion Hazard mapping. Field assessments analysis and data development, erosion hazard mapping, software testing, technical support.
- Wildlife habitat spatial-modeling: A component of town-wide natural resource inventories to support management and planning decisions for wildlife habitat and corridor protection.
- Planning, and conducting aerial surveys: Mapping & photography using UAV (drone) technology in accordance with FAA regulations and ecological best-management practices.
- Wildlife monitoring and habitat assessments: Including- Wildlife track and sign documentation, remote camera deployment, live-trapping, baited track boards, aerial habitat surveys and grassland, forest & high-elevation avian field studies.

DORI BARTON

PARTNER — PROJECT MANAGER — WETLAND ECOLOGIST — HYDROLOGIST



Areas of Expertise

- Project Management
- Environmental Permitting and Expert Testimony
- Wetland Delineation and Assessment
- Stream Geomorphic Assessments
- Wetland Restoration Design and Implementation
- Wildlife Habitat Assessments

Education & Professional Training

- M.S., Watershed Science, Colorado State University, 1996
- B.A., Political Science and Environmental Studies, Dartmouth College, 1992
- Vt. Regulatory Review Planning for Endangered Bats (February 2017)
- Vermont Natural Shoreland Erosion Control Certification (2016, 2018)
- Vt. Stream Geomorphic Assessment Phase 2 Training (2003, 2005)
- Certified Professional in Erosion and Sediment Control; #2634 (2003)
- Erosion and Sediment Control Awareness Class (2003)
- Keeping Track Wildlife Training Course (2002-2003)
- Botany Courses (2001, 2013, 2015, 2019)
- Hydric Soils Courses (1998, 2001)
- Field Techniques for Soil Evaluation (1997)

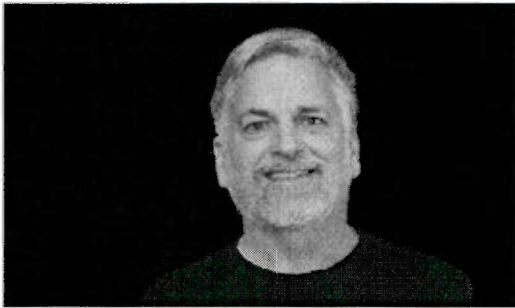
Ms. Barton is a project manager and principal ecologist for Arrowwood Environmental. Her responsibilities include wetland delineations, wetland functional assessments and permitting, wetland restoration plan design, implementation and monitoring; stream geomorphic assessments and bridge and culvert assessments; wildlife habitat evaluations; hydrologic investigations; and erosion prevention and sediment control plan design. Ms. Barton is frequently called upon to provide expert testimony in Act 250, Act 248 and District Court for a wide range of projects and clients. Ms. Barton provides expert project management skills ensuring high quality work products completed in an efficient and timely manner. Ms. Barton is committed to giving back to her home community and currently serves as Chair of the Huntington Selectboard, and previously served on the Huntington Planning Commission for a period of ten years.

Significant Projects & Experience

- Wetland Reclassification: Provide technical support and detailed analysis to support Class I reclassification petition for the LaPlatte River Marsh Wetlands.
- Renewable Energy: Project manager and principal ecologist working with project sponsors and engineers of small and large scale solar and wind projects to design layouts that avoid and protect significant natural resources.
- Wetland Restoration: Conduct impact assessments, design, implement and monitor site specific restoration plans for voluntary and/or mandatory regulatory permit compliance.
- Vt. DEC RCPP Wetland Project Outreach and Development project: Project manager and principal wetland ecologist for Prioritization and development of 250 potential wetland restoration sites within the Lake Champlain Basin in Vermont.
- Utility Projects: Identify and map stream and wetland resources for Green Mountain Power line upgrades and line extensions. Coordinate wetland permitting with State and Federal agencies as needed.
- Ski Resort Development: Conduct field assessments and coordinate environmental permitting with State and Federal agencies including Vt. Wetlands Program, US ACOE, and Vt. Stream Alteration Program.
- Vt. Dept. of Environmental Conservation: Conduct fluvial geomorphic assessments and prepare River Corridor Plans.

JEFF PARSONS

PARTNER — WILDLIFE BIOLOGIST — WETLAND ECOLOGIST



Areas of Expertise

- Hydric Soils & Wetland Delineation
- Wetland Function & Value Assessment
- Wildlife & Wildlife Habitat Assessments
- Recreational Impacts on Wildlife
- Lake & Reservoir Ecology and Management
- Pesticide Impact Assessment
- Conservation Biology
- Geographic Information Systems

Education & Professional Training

- M.S. Natural Resources Planning, University of Vermont, 1992
- B.S. Zoological – Anthropology: University of Michigan, 1985
- Wildlife Biology: Michigan State University, 1977-1982
- Vermont Natural Shoreline Erosion Control Certification, 2016
- Wetland Ferns, 2013
- Aquatic Plants of Vermont, 2002
- Sedges of Vermont, 1998
- Lichens of Vermont, 2008
- Mosses of the Northeast, 2007

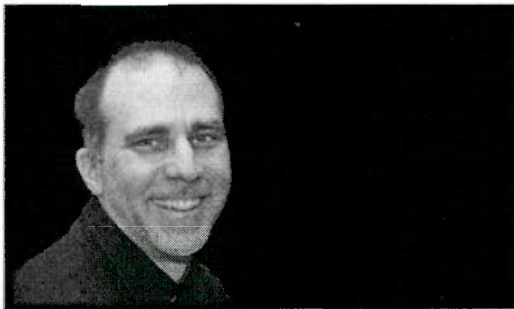
Mr. Parsons is the principle Wildlife Biologist for Arrowwood Environmental responsible for a wide variety of wildlife studies including: single-species and habitat assessments, wildlife impact assessments, field inventories, wildlife tracking and sign assessments, and grassland and high-elevation avian assessments. Mr. Parsons also conducts wetland delineations, function and value assessments, impact assessments, reclassifications, and mitigative and restoration plans and implementation. Accomplishments also include lake, pond and reservoir ecology and management plans, interpretive trail development, and recreational impacts on wildlife, community natural resource planning and environmental permitting.

Significant Projects & Experience

- Instructor: Vermont Law School: 1997-2003.
 - University of Vermont: 1993-1998.
 - Northern Vermont University: 1994-98, 2016-18.
 - Sterling College: 1992-2017.
- Vermont Pesticide Advisory Council: Health and Environment Representative 1991-2000.
- Interim Vermont Recreation Planner: Vermont Recreation Plan Wetlands Component and summary documents 1988
- Lecturer and Field Leader: Wetland Ecology for Federal District Court Judges (Vermont Law School).
- Black Bear Habitat Assessments: Smugglers' Notch Resort, Stowe Mountain Resort, Jay Peak Resort, Sugarbush Resort, Bromley Mountain.
- Bicknell's Thrush Habitat and Species Monitoring: Smugglers' Notch Resort, Jay Peak Resort, and Sugarbush Resort.
- Primary Ecologist and Project Coordinator: Lake and Pond Assessment and Management for Woodbury, Vt.
- Vermont's Golf Course Pesticide Risk Assessment: Author of Protocol addressing pesticide toxicity, half-life, and chemical mobility.
- Ecologist and Wildlife Biologist: Middlebury Gap and Smugglers' Notch Scenic Highway Management Plans .
- Ecologist and Wildlife Biologist: Inventory and management guidance for natural areas wetlands, and wildlife within the cities of Burlington and South Burlington.
- Lead Investigator: Inventory & Prioritization of wetlands for acquisition by the State of Vermont.

MICHAEL LEW-SMITH

PARTNER — ECOLOGIST — BOTANIST



Areas of Expertise

- Rare, Threatened and Endangered Plant Inventories
- Aquatic Plant Inventories
- Wetland Delineation
- Natural Community Mapping and Assessment
- Freshwater Mussel Inventories
- Vernal Pool Mapping and Assessment
- Invasive Species Mapping and Management
- Wetland Restoration
- Rare Plant Transplantation and Monitoring

Education & Professional Training

- M.S., University of Minnesota Department of Plant Biology, 1997
- B.S., University of Michigan School of Natural Resources. Natural Resource Management, 1991
- Freshwater Mussel Identification and Ecology, USFWS Training Center, Shepardsdown, WV, 2016
- Reptiles and Amphibians of Vermont, Hogback Community College Vt. Family Forests. Bristol VT, 2011
- Boreal Flora, University of Michigan Biological Station, 1995
- Bryophytes, University of Michigan Biological Station, 1995

Mr. Lew-Smith is an ecologist and principal botanist for Arrowwood Environmental. He has worked closely with conservation organizations, agencies, municipalities, companies, and private individuals on natural resource identification, assessment and management. Mr. Lew-Smith conducts botanical inventories, wetland delineations, wildlife habitat assessments, and ecological restorations. He also has considerable experience mapping and assessing natural communities for private organizations and public land managers and is currently working on an aquatic natural community classification system. Mr. Lew-Smith regularly conducts inventories of aquatic invasive species and rare aquatic plants and works closely with lake associations on aquatic vegetation management plans. Mr. Lew-Smith has also worked throughout Lake Champlain mapping and controlling aquatic invasive species. He is one of the founders of the Vermont Vernal Pool Mapping project, which mapped and assessed vernal pools statewide.

Significant Projects & Experience

- Aquatic Species Mapping and Assessment: Map native and non-native aquatic plants in lakes throughout Vermont and develop plans for the management of aquatic nuisance species. Monitoring potential Asian Clam infestation sites in Lake Champlain.
- Northern Pass: Project Manager and ecologist working for the NH Attorney General's office on providing an independent review of the environmental assessment of the proposed Northern Pass transmission line.
- Wetland Reclassification: Provide technical support and detailed analysis to support Class I reclassification petition for the LaPlatte River Marsh Wetlands.
- Renewable Energy: Project manager and principal ecologist working with project sponsors and engineers of small and large scale solar projects to design layouts that avoid and protect significant natural resources.
- Member of the Floral Advisory Group: Advising the Vermont Endangered Species Committee on matters related to Vermont's Rare, Threatened and Endangered Plants.
- Vernal Pool Mapping: Co-founder of the Vermont Vernal Pool Mapping Project. Developed a vernal pool mapping methodology and a statewide Vernal Pool map and database.

North East Ecological Services, LLC

P.O. Box 3596
Concord, New Hampshire 03302
(603) 545-7012
www.neesbats.org

AREAS OF SPECIALIZATION

- Population Biology
- Conservation Biology
- Project Risk Assessment Analysis
- Wind Power Bat Impact Surveys

EDUCATION and CERTIFICATIONS

Ph.D., 1999. Physiological Ecology of Temperate Bats, Boston University; Boston, Massachusetts
B.Sc., 1991. Biology with Environmental Science minor, McGill University: Montréal, Quebec Canada.
Certified Senior Ecologist. Board of Professional Certification of the Ecological Society of America

EMPLOYMENT

North East Ecological Services: Managing Partner: 1998 - present
St. Paul's School: Faculty in the Science Division: 2000 - present
Boston University: Research Fellow, Department of Biology: 2009 - 2014
Allegro Microsystems, Inc.: Facilities Systems Consultant: 1993 - 1999
Occupational Health and Safety Coordinator: 1991-1993
Environmental Compliance Coordinator: 1991-1992

PROFESSIONAL MEMBERSHIPS

American Society of Mammalogists: 1992 - present
North East Bat Working Group: 1996 - present
Sigma Xi: 1997 - present
National Science Teachers Association: 2001 - present
Ecological Society of America: 2004 - present
Wildlife Society: 2006 - present

PROFESSIONAL ACTIVITIES

North American Bat Conservation Alliance, Steering Committee: 2014 - present
North East Bat Working Group, President: 2013 - 2015
Northern Long-Eared Bat Endangered Species Listing Committee: 2013 - 2015

RESEARCH EXPERIENCE (since 2009)

Project Risk Assessment for Bats: (completed date)

New Hampshire Army National Guard (Grafton County, NH): NH Adjutant General: 2019
Strong Breeze Wind Project (Ontario, Canada): Invenergy, Corp: 2017
Northern Pass Transmission Project (NH): Council for the Public, NHDOJ: 2017
New Hampshire Army National Guard (Merrimack County, NH): NH Adjutant General: 2017
Verizon Cell Tower Retrofit Project (Carroll County, NH): McLane Law Firm, LLC: 2015
New Hampshire Army National Guard (Merrimack County, NH): NH Adjutant General: 2015
Greeley Wind Farm (Greeley County, NE): Bluestem Energy Solutions, 2015
Heritage Garden Wind Project (Delta County, MI): Heritage Sustainable Energy, 2014
Four Mile Wind Project (Garrett County, MD): Synergics Energy: 2013
Grande Prairie Wind Project (Knox County, NE): Midwest Energy, LLC: 2012
Port Jersey Wind Project (Hudson County, NJ): Port Authority NYNJ: 2011
Fisherman's Atlantic City Wind Project (Atlantic County, NJ): Fisherman's Energy: 2010
Cape May Wind Project (Cape May County, NJ): US Coast Guard: 2009

RESEARCH EXPERIENCE (since 2009)

Pre- and Post-Construction Bat Inventories and Migratory Surveys: (completed date)

Amherst Island Technical Advisory Committee (Ontario, Canada): Algonquin Liberty Corp: 2019
Greeley Wind Farm (Greeley County, NE): Bluestem Energy Solutions, 2015
Garden Peninsula Wind Project (Delta County, MI): Heritage Wind Energy, 2013
Atlantic City Wind Project (Atlantic County, NJ): Fisherman's Energy, 2012
Maple Ridge Wind Project (Lewis County, NY): Iberdrola Renewables, 2010
Wethersfield Wind Project (Wyoming County, NY): Noble Environmental Power: (2010)
Bear Creek Wind Project (Luzerne County, PA): Babcock & Brown Renewable Holdings, 2009
Hounsfield Wind Project (Jefferson County, NY): Babcock & Brown, 2009
Sweden Wind Project (Potter County, PA): STK Renewable Energy, Inc., 2009

Endangered Species Inventory Surveys

New Hampshire Army National Guard (Grafton County, NH): NH Adjutant General: 2019
New Hampshire Army National Guard (Merrimack County, NH): NH Adjutant General: 2017
Bat Survey of Cape Cod, MA (Barnstable County, MA): US Army Corps of Engineers: 2016
Conservation Land Bat Inventory (Cheshire County, NH): Rindge Conservation Commission, 2016
Jackson Ski Trail Expansion Project (Carroll County, NH): Jackson Ski Touring Foundation: 2015
VTrans US Route 4 Improvement Project (Rutland County, VT): 2015
New Hampshire National Guard Training Institute (Merrimack County, NH): 2014
Mt. Storm Wind Project (Grant County, WV): 2014
New Boston Air Force Station (Merrimack County, NH): 2002, 2006, 2007, 2010, 2011, 2012, 2013)
Dan's Mountain Wind Project (Allegany County, MD): 2013
Four Mile Wind Project (Garrett County, MD): Synergics Renewables, LLC: 2010, 2012

Conservation Biology and Habitat Mitigation

Mt. Auburn Cemetery Bat Survey and Management (Middlesex County, MA): Leslie University, 2017
Critical Maternity Colony Relocation in Cornish (Sullivan County, NH): NH Fish & Game: 2005
Vermont Electric Company Northwest Reliability Project: VELCO: 2004
Population Survey of Hibernating Bats in New Hampshire: NH Fish & Game: 1999

EXPERT WITNESS TESTIMONY

Nation Rise Wind Project: Ontario Environmental Review Tribunal, Torys, LLP: 2018
Fairview Wind Project: Ontario Environmental Review Tribunal, Dale & Lessmann, LLP: 2016
Amherst Island Wind Facility: Ontario Environmental Review Tribunal, Torys, LLP: 2015
Bow Lake Wind Facility: Ontario Environmental Review Tribunal, Torys, LLP: 2014
Ostrander Point Wind Project: Ontario Environmental Review Tribunal, McCarthy Tetrault LLP: 2013
Dufferin Wind Power Project: Ontario Environmental Review Tribunal, Torys, LLP: 2013
Prospect Wind Energy Project: Connecticut Siting Council on behalf of Friends of Prospect., 2011
Liberty Gap Wind Project: West Virginia Public Service Commission, US Wind Force, LLC: 2008
Highland New Wind Project: Virginia State Corporation Commission, Highland New Wind, LLC: 2006
Roth Rock Wind Project: Maryland State Corporation Commission, Synergics Energy, LLC: 2005
East Haven Wind Project: Vermont Public Service Board, EMDC, LLC: 2004

RESEARCH GRANTS

Conserving Northern Long-Eared Bat Habitat in Working Forestlands (NRCS-CIG Grant), 2015
Connecting Disparate Datasets to Generate Population Models (US Fish and Wildlife Service), 2014
Population Survey of the bats of New Boston Air Force Station (US Fish and Wildlife Service), 2012
Transect-based Acoustic Monitoring of a Bat Community (US Fish and Wildlife Service), 2011
New Hampshire Winter Bat Population Surveys (NHFG): 2000, 2005, 2008, 2009, 2010
Maple Ridge Post-Construction Monitoring Project (NYSERDA and NJ Audubon): 2007-2009
New Hampshire Comprehensive Plan for Bats (New Hampshire Department of Fish and Game): 2004
North American Bat Conservation Partnership (Bat Conservation International): 1999, 1998

PROFESSIONAL PRESENTATIONS

- The value of long-term research on common species. Lessons learned from the little brown bat. Monadnock Natural History Conference, Keene, NH: 2019.
- Integrating multiple survey techniques to document shifting bat communities in the wake of White-nose Syndrome. North East Bat Working Group, Roanoke, VA: 2018
- Live longer by living alone and staying active: lower mortality of eastern small-footed myotis from White-nose Syndrome. Northeastern Natural History Conference, Springfield, MA: 2016.
- Variables that affect acoustic monitoring. North East Bat Working Group, Baltimore, MD: 2016.
- The influence of environmental variables on the demography of *Myotis lucifugus*. North American Symposium on Bat Research, Costa Rica: 2013
- The use of mobile platforms to conduct pre-construction acoustic monitoring at off-shore wind project sites. North East Bat Working Group, Albany, New York: 2013
- Temporal and spatial patterns of bat activity at a large-scale wind energy facility. North American Symposium on Bat Research, San Juan, Puerto Rico: 2012.
- The value of long-term banding for White-Nose Syndrome surveillance and research. White-Nose Syndrome Symposium, Little Rock, Arkansas, 2011.
- Re-evaluating the role for banding in the population biology of bats. North American Symposium on Bat Research, Denver, Colorado: 2010.
- The hibernating bats of New Hampshire: Are we climbing to the edge of a cliff? North American Symposium on Bat Research, Portland, Oregon: 2009.
- The Impact of White-Nose Syndrome on the bats of New Hampshire. White-Nose Syndrome Symposium, Pittsburgh, Pennsylvania: 2009.
- The value of long-term mark-recapture data for determining the population dynamics of the little brown myotis *Myotis lucifugus*. North American Symposium on Bat Research, Scranton, Pennsylvania: 2008.
- The potential value of pre-construction surveys for predicting bat fatality at wind facilities: North American Symposium on Bat Research, Merida, Mexico: 2007
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