Jennifer J. (Gillrich) Goulet **Exhibit NN-JG-1**
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Education

State University of New York College of Environmental Science and Forestry (SUNY-ESF) 2012

- Master of Science, Plant Ecology
- Thesis: Effects of environmental variation at multiple spatial scales on bryophyte diversity, in nine calcareous fens of the Fall Creek watershed, near Cortland, NY.
- Relevant coursework includes: Hydrogeology, River Form and Process, Wetland Practicum, Community Ecology, Landscape Ecology, and Geographic Information Systems

State University of New York College of Environmental Science and Forestry (SUNY-ESF) 2004

- Bachelor of Science, Environmental and Forest Biology
- Summa Cum Laude
- President's High Honors List
- Phyllis Roskins Memorial Award
- Relevant coursework includes: General Botany, General Zoology, Dendrology, General Ecology, Population Ecology and Evolution, Diversity of Plants, Principles of Entomology, Plant Ecology, Plant Physiology, Ecological Monitoring and Biological Assessment, Systematic Botany, Freshwater Wetlands

Professional Experience

Certified Vermont Horticulturalist **2018 - present**
Norwich, Vermont

- Ecologically based problem solving: soil testing, wildlife deterrence, etc.
- Soil improvement, water conservation, pollinator and habitat gardens
- Garden installation, maintenance and restoration

Physical Scientist **2009 - 2018**
United States Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. Hanover, New Hampshire

- Designed and managed ecological research projects in the context of Corps policies, procedures and statutory requirements described in §404 of the Clean Water Act. Most Recent work includes:
  - Potential effects of solar installations on hydrophytic vegetation
  - Phylogeny, Taxonomy, Habitat Preference, and Identification of Three Alaskan Birch Species
  - Developing a Method for Assigning Wetland Ratings to Western Phreatophytes and Halophytes
  - Testing Hydrophytic Vegetation and Hydrology Indicators for FACU dominated wetlands
- Selected study sites, led field teams and collected natural resource and GPS data
- Analyzed field data using ArcGIS software, multivariate, parametric and nonparametric statistics.
- Drafted peer-reviewed journal articles and presented technical papers at national conferences.
- Assisted in the development and administration of the National Wetland Plant List.
- Created dichotomous keys and lecture materials for speciality wetland plant classes.
- Provided botanical and technical support for the All Things Wetland Plants video series.

Plant Ecologist **2009**

Department of Agriculture. United States Forest Service. Forest Inventory and Analysis.
Jamison Professional Services. East Point, Georgia

- Measured vegetative cover and the physical properties of forest soils and waters throughout New York State in support of long term ecological research.
- Recorded data in the field using Forest Service databases, software and GPS enabled hardware.
- Responsible for the compatibility of data collected at multiple spatial scales.

Consultant **2008 - 2009**

National Technical Committee for Wetland Vegetation. Science & Technology Corporation.
Hampton, Virginia

- Evaluated literature regarding utility of bryophytes as indicators of hydric soils and wetland hydrology.
- Proposed sampling procedures for the bryophyte stratum during wetland delineations.
- Developed recommendations for using indicator bryophytes in select wetlands and geographic regions.

Wetland Technician **2005 - 2006**

New York State Department of Environmental Conservation, Division of Fish and Wildlife,
Bureau of Habitat. Cortland, New York

- Delineated wetland boundaries using hydrophytic vegetation, hydric soil, wetland hydrology and GPS.
- Performed ecological surveys and mapped the distribution of threatened wetland plant communities.
- Prepared technical reports and maps using Arcmap 9.1 and ArcView 3.2.

Teaching Experience

Instructor **2010 - 2018**

U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory.
Hanover, New Hampshire.

Lectured and facilitated laboratory exercises for District personnel. Courses include: *Introduction to Geographic Information Systems, Intermediate Geographic Information Systems, GPS for Regulators.*

Instructor **2010 - 2014**

U.S. Fish and Wildlife Service, National Conservation Training Center. Shepherdstown, West Virginia.

Lectured and facilitated laboratory and field exercises as part of an interagency team. Courses include: *Basic Wetland Plant Identification* and *Advanced Wetland Plant Identification: Asters, Sedges, Grasses and Rushes* taught at different locations throughout the United States.

Teaching Assistant **2004 - 2005**

State University of New York College of Environmental Science and Forestry. Syracuse, New York.

Facilitated laboratory and field exercises for General Botany.

Publications

Harbert BL, Lichvar RW and **Goulet JJ** (2019) *Review of Landscape Data Available to Evaluate Wetland Ratings Accuracy.* ERDC/CRREL TR-19-4. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. Hanover, New Hampshire.

Photos, C. Lefebvre L, Klein J, McKernan C, **Goulet J** and Lichvar R (2019) *Influence of Wetland Ratings on the Extent of Hydrophytic Vegetation during Delineations.* ERDC/CRREL TR-19-19. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. Hanover, New Hampshire.

Goulet JJ, Lefebvre LE and Chung YJ (2017a) *Choosing a Global Positioning System Device for use in Army Corps of Engineers Regulatory Districts.* ERDC/CRREL SR-17-5. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. Hanover, New Hampshire.

Lichvar, RW and **JJ Goulet** (2017b) *Testing Methods for Challenging the National Wetland Plant List: Using* Tsuga canadensis *(L.) Carr. (Eastern Hemlock) as a Case Study.* ERDC/CRREL TR-17-9. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. Hanover, New Hampshire.

Lichvar, RW and **JJ Goulet** (2017c) *Examining Wetland Frequency Discrepancies Produced by Data Collected at Wetland Boundaries and Across the Landscape: using* Tsuga canadensis *(L.) Carr. (Eastern Hemlock) as a Case Study.* ERDC/CRREL TR-17-11. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. Hanover, New Hampshire.

Lichvar RW, **Gillrich JJ**, McKernan CE and Bultema BL (2016) An Overview of Research Supporting Wetland and Ordinary High Water Delineations. *Wetland Science and Practice* 32:18-21.

Gillrich JJ and Lichvar RW (2014) Use of LiDAR for Delineating Waters of the United States and Wetlands. ERDC/CRREL TR-14-03. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire.

Lichvar RW and **Gillrich JJ** (2014) *Field Testing New Plot Designs and Methods for Determining if Vegetation is Hydrophytic during Wetland Delineations in the United States* . ERDC/CRREL TR-14-01. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. Hanover, New Hampshire.

Lichvar RW and **Gillrich JJ** (2014) *Examining Discrepancies among Three Methods used to make Hydrophytic Vegetation Determinations for Wetland Delineation Purposes* . ERDC/CRREL TR-14-02. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. Hanover, New Hampshire.

Mersel MK, Lichvar RW, **Gillrich JJ** and Lefebvre LE (2014) *The Occurrence and Distribution of Ordinary High Water Mark Indicators in Non-perennial Stream Systems in the Western Mountains, Valleys and Coast Region of the United States* . ERDC/CRREL TR-14-11. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. Hanover, New Hampshire.

Lefebvre LE, Curtis KE, Lichvar RW and **Gillrich JJ** (2013) *Channel Classification Across Arid Western Landscapes in Support of OHW Delineations* . ERDC/CRREL TR-13-3. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire.

Publications (cont.)

Lichvar RW, Curtis KE, **Gillrich JJ** and Lefebvre LE (2012) *Testing Wetland Delineation Indicators in New England Wet Boulder Fields*. ERDC/CRREL TR-12-4. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire.

Gillrich JJ, Allen BP and Lichvar RW (2011) The Effect of a Low-Cover Stratum-Woody Vines-on Vegetation Determinations Made During Wetland Delineations. *Wetlands* 31: 865-873.

Lichvar RW and **Gillrich JJ** (2011) *Final Protocol for Assessing Wetland Indicator Status Ratings During the National Wetland Plant List Update*. ERDC/CRREL TN-11-1. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. Hanover, New Hampshire.

Lichvar RW, **Gillrich JJ** and Ochs WR (2011) Discrepancies in hydrophytic determinations produced by three vegetation formulas used for wetland delineations. *Wetlands* 31: 603-611.

Gillrich JJ and Lichvar RW (2010) *Sphagnum as an Indicator of Wetland Hydrology in the Atlantic and Gulf Coastal Plain Region*. ERDC/CRREL TN-10-2. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. Hanover, New Hampshire.

Gillrich JJ and Bowman, KC (2010) *Use of Bryophytes as Indicators of Hydric Soils and Wetland Hydrology during Wetland Delineations in the United States*. ERDC/CRREL TN-10-9. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. Hanover, New Hampshire.

Professional Presentations

Annual meeting National Technical Committee for Wetland Vegetation. Hanover, New Hampshire. 2017

- *Reassessing the process for assigning wetland ratings to plant species on the National Wetland Plant List.*

Annual meeting of the National Technical Committee for Wetland Vegetation. Galveston, Texas. 2015

- *Mosses as hydrophytic vegetation indicators in FACU Dominated Wetlands.*
- *The Utility of Morphological Adaptations as an Indicator of Hydrophytic Vegetation.*

Annual meeting of the National Technical Committee for Wetland Vegetation. Charleston, South Carolina. 2013

- *Three methods for making vegetation determinations using a national delineation dataset.*
- *Results of field testing plot designs and a new hydrophytic vegetation formula.*
- *Results from two watershed scale investigations of plant species wetland frequency ratings.*
- *Use of Bayesian models for deciding challenges to the National Wetland Plant List.*
- *Use of LiDAR for delineating Waters of the United States and wetlands.*

Annual meeting of the Society of Wetland Scientists. Orlando, Florida. 2012

- *Developing a National Standard for Challenges to the National Wetland Plant List.*

Northeast Natural History Conference, Syracuse, New York. 2012

- *Developing a Sampling Methodology for Challenges to the National Wetland Plant List.*

Professional Presentations (cont.)

Annual meeting of the National Technical Committee for Wetland Vegetation. Online Meeting. 2012
- *Procedures for Challenging Ratings of Species on the National Wetland Plant List.*

Annual meeting of the National Technical Committee for Wetland Vegetation. Online Meeting. 2011
- *Draft Study Design for Challenges to the National Wetland Plant List.*

Humboldt Field Research Institute. Stuben, Maine. 2011
- *History and Updates to the National Wetland Plant List.*

Annual meeting of the Society of Wetland Scientists. Salt Lake City, Utah. 2010
- *Mathematical Characteristics of Hydrophytic Vegetation Formulas.*

Annual meeting of the Society of Wetland Scientists. Salt Lake City, Utah. 2010
- *The potential use of Sphagnum as a hydrology indicator during wetland delineations in the United States.*

Job Related Training and Certifications

Certified Vermont Horticulturalist , Vermont Nursery and Landscape Association 2018 - present
Certificate of Home Horticulture , Vermont Cooperative Extension, Master Gardener Program 2017
Field Identification of Sedges, Grasses and Rushes , Humboldt Field Research Institute, Stuben, Maine 2013
Bayesian Modeling and Likelihood Approaches to Data Analysis , SUNY-ESF, Syracuse, New York 2012
Vascular *Plant Databasing and Nomenclature* , Humboldt Field Research Institute, Stuben, Maine 2011
Using Dichotomous Keys to Identify Grasses, Sedges and Rushes , UNH, Durham, New Hampshire 2010
Advanced Sphagnum Field Studies. Humboldt Field Research Institute, Stuben, Maine 2004

Professional Affiliations

Ecological Landscape Alliance 2018 - present
Vermont Nursery and Landscape Association 2018 - present
Society of Wetland Scientists 2004 - 2018
Keeping Track Inc. of Norwich 2010 - 2017
Norwich Conservation Commission 2014 - 2017
American Bryological & Lichenological Association 2004 - 2015

Public Service Presentations

Creating Habitat for Wild Bees Workshop . Montshire Museum, Norwich, VT. 2017
Identifying Invasive Plants . Marion Cross School, Norwich, VT. 2016
Ephemeral Zoo: Creatures that Live in Moss . Montshire Museum, Norwich, VT. 2012
The Hidden World of Mosses. Montshire Museum, Norwich, VT. 2011
A Real Life Application of Binomial Probability . Blue Mountain Union High School, Wells River, VT. 2010

Hobbies

Big Game Hunting. Vermont, Maine, New Hampshire 2012 - present
Sugaring 2016 - present
Soap Making 2019 - present