

## ***CURRICULUM VITAE***

### **DAVID J. BURKE**

The Holden Arboretum  
9500 Sperry Road  
Kirtland, Ohio 44094  
440-602-3858  
dburke@holdenarb.org

---

#### **EDUCATION**

##### **Ph.D., 2001**

Biological Science with concentration in Ecology and Evolution; Rutgers University, Newark, NJ

##### **M.S., 1996**

Biological Science; East Stroudsburg University, East Stroudsburg, PA

##### **B.S., 1987**

Environmental Science; Rutgers University, New Brunswick, NJ

#### **RESEARCH INTERESTS**

Rhizosphere ecology, plant-microbe interactions, molecular microbial ecology, and plant ecology.

#### **PROFESSIONAL EXPERIENCE**

2006-Present	Department of Biological Sciences, Case Western Reserve University <i>Holden Assistant Professor of Biology</i>
2006-Present	The Holden Arboretum <i>Assistant Scientist, Rhizosphere Biologist</i>
2005-2006	Department of Environmental and Forest Biology, State University of New York <i>Postdoctoral Associate</i>
2002-2004	Boyce Thompson Institute for Plant Research at Cornell University <i>Postdoctoral Associate</i>
2003	Center for Environmental Bioremediation, University of West Florida <i>Visiting Research Associate</i>
2001-2002	Department of Mechanical Engineering, New Jersey Institute of Technology <i>Postdoctoral Associate</i>
2001	Department of Biological Sciences, Rutgers University <i>Research Assistant</i>
1997-2000	Department of Biological Sciences, Rutgers University <i>Teaching/Graduate Assistant</i>
1997	Department of Biological Sciences, Rutgers University <i>Lecturer</i>

## ADDITIONAL EXPERIENCE

- 1995-1997                   Yannaccone Associates, Inc., Chester, New Jersey  
*Environmental Investigator*
- 1987-1995                   Washington Township Health Department, Long Valley, New Jersey  
*Environmental Health Specialist*

## PUBLICATIONS

- Burke DJ** (2008) Effects of *Alliaria petiolata* (Brassicaceae - garlic mustard) on mycorrhizal colonization and community structure in three herbaceous plants in a mixed deciduous forest. *American Journal of Botany*, 95: 1416-1425.
- Burke DJ**, Dunham SM & Kretzer AM (2008) Molecular analysis of bacterial communities associated with the roots of Douglas fir (*Pseudotsuga menziesii*) colonized by different ectomycorrhizal fungi. *FEMS Microbiology Ecology*, 65: 299-309.
- Welsh A, **Burke DJ** & Hahn D (2007) Analysis of nitrogen-fixing members of the  $\epsilon$  subclass of *Proteobacteria* in salt marsh sediments. *Applied and Environmental Microbiology*, 73:7747-7752.
- Suntornvongsagul K, **Burke DJ**, Hamerlynck EP & Hahn D (2007) Uptake and translocation of heavy metals in salt marsh sediments by *Spartina patens*. *Bulletin of Environmental Contamination & Toxicology*, 78: 275-279.
- Suntornvongsagul K, **Burke DJ**, Hamerlynck EP & Hahn D (2007) Fate and effects of heavy metals in salt marsh sediments. *Environmental Pollution*, 149: 79-91.
- Burke DJ**, Kretzer AM, Rygiewicz PT & Topa MA (2006) Soil bacterial diversity in a loblolly pine plantation: Influence of ectomycorrhizas and fertilization. *FEMS Microbiology Ecology*, 57: 409-419.
- Burke DJ**, Martin KJ, Rygiewicz PT & Topa MA (2006) Relative abundance of ectomycorrhizas in a managed loblolly pine (*Pinus taeda* L.) genetics plantation as determined through terminal restriction fragment length polymorphism (TRFLP) profiles. *Canadian Journal of Botany*, 84: 924-932.
- Burke DJ**, Martin KJ, Rygiewicz PT & Topa MA (2005) Ectomycorrhizal fungi identification in single and pooled root samples: terminal restriction fragment length polymorphism (TRFLP) and morphotyping compared. *Soil Biology and Biochemistry*, 37: 1683-1694.
- Burke DJ**, Hamerlynck EP & Hahn D (2003) Interactions between the salt marsh grass *Spartina patens*, arbuscular mycorrhizal fungi and sediment bacteria during the growing season. *Soil Biology and Biochemistry*, 35: 501-511.
- Weis P, Windham L, **Burke DJ** & Weis JS (2002) Release into the environment of metals by two vascular salt marsh plants. *Marine Environmental Research*, 54: 1-5.
- Burke DJ**, Hamerlynck EP & Hahn D (2002) Effect of AM mycorrhizae on soil microbial populations and associated plant performance of the salt marsh grass *Spartina patens*. *Plant and Soil*, 239: 141-154.

- Burke DJ**, Hamerlynck EP & Hahn D (2002) Interactions among plant species and microorganisms in salt marsh sediments. *Applied and Environmental Microbiology*, 68:1157-1164.
- Burke DJ**, Weis JS & Weis P (2000) Release of metals by the leaves of the salt marsh grasses *Spartina alterniflora* and *Phragmites australis*. *Estuarine, Coastal and Shelf Science*, 51: 153-159.
- Burke DJ** (1997) Donor wetland soil promotes re-vegetation in wetland trials. *Restoration and Management Notes*, 15: 168–172.

## NON-PEER REVIEWED PUBLICATIONS

- Burke DJ** (2001) The interaction between the grass *Spartina patens*, N<sub>2</sub>-fixing bacteria and arbuscular mycorrhizae in a Northeastern salt marsh. Ph.D. Thesis, Rutgers University, Newark, New Jersey.
- Burke DJ** & Hahn D (2000) The effect of mycorrhizae on nitrogen-fixing bacteria associated with the salt marsh grass *Spartina patens*. Section II: 28 pp. In W.C. Nieder and J.R. Waldman (Eds.). Final Reports of the Tibor T. Polgar Fellowship Program, 1999. Hudson River Foundation, New York.
- Burke DJ** (1996) The use of soil seed banks in the establishment of vegetation at wetland mitigation sites. M.S. Thesis, East Stroudsburg University, East Stroudsburg, Pennsylvania.

## PRESENTATIONS

### International and National Meetings

- Kretzer AM, Bai S, King ZR, Dunham SM & **Burke DJ** (2008) Molecular analysis of bacterial communities associated with Douglas-fir (*Pseudotsuga menziesii*) ectomycorrhizae from Oregon. Mycological Society of America Meeting, State College, Pennsylvania, August 9-13.
- Burke DJ**, Chan CR, López-Gutiérrez JC & Smemo KA (2008) The diversity of ectomycorrhizal fungi in a mature beech-maple forest: Influences of soil environment and vegetation. Ninety-third annual meeting of the Ecological Society of America, Milwaukee, Wisconsin, August 3-8.
- DeForest JL & **Burke DJ** (2008) Acid deposition: Reduced base saturation, available phosphorous, and changed fungal community composition in an old-growth forest. Ninety-third annual meeting of the Ecological Society of America, Milwaukee, Wisconsin, August 3-8.
- Carrino-Kyker SR & **Burke DJ** (2008) The response of vernal pool microbial communities to environmental fluctuation and land use patterns. Ninety-third annual meeting of the Ecological Society of America, Milwaukee, Wisconsin, August 3-8 (Poster).
- Chan CR, **Burke DJ** & Kalisz S (2008) The effects of deer herbivory and the invasive plant garlic mustard (*Alliaria petiolata*) on fungal community diversity in a mixed mesophytic

- forest. Ninety-third annual meeting of the Ecological Society of America, Milwaukee, Wisconsin, August 3-8 (Poster).
- López-Gutiérrez JC, **Burke DJ**, Chan CR, Smemo KA & Barratt N (2008) Is soil enzyme activity related to the identity of ectomycorrhizal fungi colonizing tree roots in a northern hardwood forest? Ninety-third annual meeting of the Ecological Society of America, Milwaukee, Wisconsin, August 3-8 (Poster).
- Smemo KA, **Burke DJ**, López-Gutiérrez JC & Chan CR (2008) Seasonal patterns and environmental controls on extracellular enzyme activity in a northern hardwood forest soil. Ninety-third annual meeting of the Ecological Society of America, Milwaukee, Wisconsin, August 3-8.
- Mahaney WM, Smemo KA & **Burke DJ** (2008) Do plant species influence soil microbial community responses to inputs of different quality litter? Ninety-third annual meeting of the Ecological Society of America, Milwaukee, Wisconsin, August 3-8 (Poster).
- Chan CR & **Burke DJ** (2007) Invasive garlic mustard (*Alliaria petiolata*) alters soil bacterial communities in a northern hardwood forest soil. Ninety-second annual meeting of the Ecological Society of America, San Jose, California, August 5-10 (Poster).
- Topa MA, **Burke DJ** & Chapin C (2005) Biocontrol of purple loosestrife by the leaf-feeding beetle *Galerucella*: Potential cumulative effects on whole-plant carbon budgets. Ninetieth annual meeting of the Ecological Society of America, Montreal, Quebec, August 7-11 (Poster).
- Burke DJ**, Topa MA & Kretzer AM (2005) Bacterial diversity in soil associated with ectomycorrhizal root tips of loblolly pine: effects of long-term fertilization. Ninetieth annual meeting of the Ecological Society of America, Montreal, Quebec, August 7-11.
- Burke DJ**, Martin KJ, Rygielwicz PT & Topa MA (2004) Ectomycorrhizal diversity in a loblolly pine (*Pinus taeda* L.) genetics plantation: Influence of host origin and fertilization. Eighty-ninth annual meeting of the Ecological Society of America, Portland, Oregon, August 1-6.
- Burke DJ**, Martin KJ, Rygielwicz PT & Topa MA (2003) Utilization of TRFLP to characterize mixed ectomycorrhizal fungal communities. Third International Symposium on Dynamics and Physiological Processes of Woody Roots, University of Western Australia, Perth, Australia, September 29-October 3 (Poster).
- Burke DJ**, Weis JS & Weis P (1999) Excretion of metals by the salt marsh grasses *Spartina alterniflora* and *Phragmites australis*. Fifteenth Biennial International Conference of the Estuarine Research Federation, New Orleans, September 25-30.

### **Regional and Local Meetings**

- Burke DJ**, Chan CR & Smemo KA (2007) The influence of soil environment on the diversity of ectomycorrhizal fungi in a mature beech-maple forest. Thirty-fourth annual Natural Areas Conference, Cleveland, Ohio, October 9-12.
- Burke DJ**, Smemo KA & Mahaney W (2007) Invasive species research at the Holden Arboretum. Ohio invasive plants research conference: continuing partnerships for invasive plant management, Ohio Wesleyan University, January 18 (Poster).

**Burke DJ**, Martin KJ, Rygielwicz PT & Topa MA (2003) Ectomycorrhizal community composition on loblolly pine ecotypes as determined by terminal fragment length comparisons. Mini-Symposium on Root-Soil Interactions, Center for Root-Soil Research, Cornell University, Ithaca, New York, April 24.

**Burke DJ & Hahn D** (1999) Nitrogen nutrition of marsh grasses. Polgar Fellowship Studies Presentation of Findings, Institute of Ecosystems Studies, Millbrook, New York, August 31.

**Burke DJ**, Weis JS & Weis P (1999) Excretion of metals by the salt marsh grasses *Spartina alterniflora* and *Phragmites australis*. Thirty-Second Middle Atlantic Regional Meeting of the American Chemical Society, Fairleigh Dickinson University, Madison, New Jersey, May 17-19.

### **Invited Seminars**

University of Pittsburgh, Department of Biological Sciences (October 2008)

Ohio University, Department of Environmental and Plant Biology (October 2008)

Cleveland State University, BGES Department (April 2008)

East Stroudsburg University, Department of Biology (September 2007)

John Carroll University, Department of Biology (May 2007)

Case Western Reserve University, Department of Biology (January 2006)

Smithsonian Research Institute, Edgewood Maryland (January 2006)

State University of New York, Department of Environmental and Forest Biology (December 2004)

USDA, Appalachian Farming Systems Research Center (October 2004)

University of Vermont, Burlington, College of Agriculture and Life Sciences (November 2003)

University of West Florida, Department of Biological Sciences (February 2003)

Boyce Thompson Institute for Plant Research at Cornell University (August 2002)

Mary Washington College, Department of Biological Sciences (February 2002).

Hofstra University, Department of Biological Sciences (February 2002)

Rutgers University, Department of Biological Sciences (1998, 1999, 2000, 2001)

### **TEACHING EXPERIENCE**

#### **Lecturer**

**Field Ecology** (Fall 2001): Presented four classes on vegetation types encountered in New Jersey and environmental factors influencing vegetation across the state.

**Plant Ecology** (Spring 1997): Responsible for developing plant ecology course for undergraduate biology majors. Incorporated topics in plant geography, autecology and synecology to examine the relationships between plants and their environment.

## **Teaching Assistantships**

***Plant Physiology Laboratory*** (Fall 1999, Fall 2000): Responsible for instruction of plant physiology laboratory for undergraduate biology majors, including assessment and grading of laboratory reports.

***General Biology*** (Spring 1999): Instructor for both laboratory and discussion sections of introductory biology course

***Field Ecology*** (Spring 1998): Aided students in field identification of plant species common to forests, fields, and shorelines of New Jersey

***Biology of Seed Plants Laboratory*** (Fall 1997, Fall 1998): Responsible for supervision and instruction of basic plant biology class for undergraduate biology majors, including coordination of laboratory technicians and junior teaching assistants for preparation of class materials

## **PROFESSIONAL AFFILIATIONS**

Ecological Society of America

Botanical Society of America

American Society of Microbiologists

## **PROFESSIONAL ACTIVITIES AND SERVICE**

Reviewer for the journals: *Applied Soil Ecology, Aquatic Microbial Ecology, Estuarine, Coastal and Shelf Science, Journal of Phytopathology, Marine Environmental Research, Microbial Ecology, Plant and Soil, Soil Biology and Biochemistry* and *Wetlands*.

Qualifying exam committee member CWRU, May 2008.

Served on search committees for Holden Postdoctoral Fellows, 2007 and 2008.

Founding Member of the Ohio Soil Ecology Collaboratory (OSEC), November 2006.

Co-organizer, Soil Ecology Forum, Holden Arboretum, October 2006.

Participant rhizosphere/mycorrhizal discussion group Boyce Thompson Institute, Cornell University and SUNY-ESF during the 2002-2004 academic years.

Biological Sciences Colloquium organizer, Rutgers University, March 1999.

## **OUTREACH**

I have conducted outreach to high school students and instructors. I have prepared teaching modules and offered instruction in soil ecology to high school science teachers through Holden's Mastin Teacher Workshop, a continuing education program. In addition, I have conducted workshops in soil ecology at Holden for advanced placement biology classes.

I have conducted public outreach through public talks and writing. I have spoken to local groups such as Master Gardeners in Ohio about mycorrhizal ecology, and I have given several talks to Holden visitors on topics such as mycorrhizal ecology and invasive plant species. I have also written several articles over the past few years for "Leaves", a quarterly publication of the Holden Arboretum that reaches members and the general public.