Personal Information

Last Name:Quigley
First Name:Kathleen
Dept.:Forestry
e-mail:quigle44@msu.edu

Supervisor: Jessica Miesel
Supervisor e-mail:mieselje@msu.edu

Conference Details

Communication Type:Oral
Total Expense (USD):$806
Date:28 Nov - 2 Dec 2017
Location:Orlando, Florida

Conference Title:7th International Fire Ecology and Management Congress
Communication Title: Post-fire soil soil chemistry in relation to burn severity

ABSTRACT

Decades of fire suppression has resulted in the dramatic loss of open habitats which provide vital ecosystem services and wildlife habitat. Fire suppression, however, is a common practice in human-dominated systems despite the associated negative consequences for fire-dependent ecosystems. For instance, fire suppression may result in dangerous wildfires of extreme intensity and severity due to the gradual accumulation of live and dead vegetation or in the loss of open habitats which contribute to biodiversity maintenance. As part of a collaborative team of USDA Forest Service and MSU researchers, I am studying the use of prescribed fire as a tool for restoring globally imperiled Pine Barrens ecosystems. By collecting and analyzing soils before and after a series of large-scale controlled burns in the Chequamegon-Nicolet National Forest, I aim to understand how fire alters the soil properties (i.e. hydrology and nutrients) which influence post-fire plant community establishment and the forest carbon cycle. I will present data on the relationships among fire temperature, burn severity, vegetation cover, and soil nutrient inputs in a diverse landscape mosaic consisting of hardwood forest, conifer forest, and grassland vegetation. Preliminary data indicate that the amount and type of fuel present at a study site drive soil pH, nutrient availability, and the formation of stable 'black' carbon, an important terrestrial C sink. Low to moderate severity fires associated with low fuel loads resulted in the greatest production of black carbon, while also limiting fire-induced changes to soil pH which increase soil nutrient availbility. These results will be used to inform land management decisions to restore critical pine barrens habitat in a manner which also results in optimal belowground storage of carbon following wildland fire.

COMMUNICATION OUTCOMES

The Association for Fire Ecology's (AFE) 7th International Fire Ecology and Management Congress presents a unique opportunity for me to communicate my research simultaneously to academic researchers, land managers, and students interested in fire ecology. I have been invited to give an oral presentation in an organized Special Session which will include a panel discussion consisting of an international array of leading fire researchers. The panel discussion will allow me to receive feedback for ongoing components of my study and to network with faculty members from other major research institutions. As a researcher new to the field of fire ecology, this networking opportunity will provide me the opportunity to meet individuals who I am likely to collaborate with in the future as I continue toward my academic goals. The results of my oral presentation will also be published as a non-technical research brief published by the Lake States Fire Consortium, a regional network of fire researchers and land managers. Furthermore, because the AFE meeting is well attended by land management professionals from state and federal agencies as well as non-governmental organizations, I will be able to practice communicating applications and management goals of the overall Moquah barrens research project. This is important because when communicating fire ecology research to the general public, such as during outreach events, I stress the beneficial roles of prescribed fire in habitat restoration and conservation. Finally, attending the AFE fire congress will enable me to advance the mission of MSU as a land grant university by disseminating the results of scientific research designed to inform land management decisions regarding the use of prescribed fire.