GRADUATE EXIT SEMINAR

CHARLES DAVIS

Impact of Fuel Management Strategies on Potential Fire Behavior in the Heathlands and Moorlands of North-West Europe

Oceanic climates, such as those found in Scotland and Norway, contain globally important ecosystems including heather (*Calluna vulgaris*) dominated heathlands and moorlands. These areas are commonly influenced by traditional managed burning that provides optimal patchy-mosaic habitat for red grouse (*Lagopus lagopus scoticus*), and improved forage quality for livestock and deer. Recently, there has been a growing trend to remove traditional management and grazing in favor of alternative land-uses. Simultaneously, an increase in the prevalence of wildfire has highlighted a need to better understand fuel structures and the current state of fire behavior prediction systems for these areas. This thesis evaluates the outputs of several empirical and quasi-empirical modeling systems against observations of fire behavior. From these, suggestions are made as to the efficacy of these models and their ability to be generalized across oceanic heathlands and moorlands. Most notably, the Rothermel model produces tolerable predictions for rates of spread when compared to baseline empirical models. Further, landscape-scale fire behavior was predicted, using the software Farsite, for current and potential management patterns across a range of fire weather conditions representative of oceanic climates. Findings suggest that management actions which produce the most heterogenous arrangements of fuels, including current management using rotational burning, lead to the lowest overall predictions for mean rates of spread and fireline intensity. Conversely, limited fuel reduction management, such as that found in early-successional forest restoration, leads to the highest overall predictions for mean rates of spread and fireline intensity.

Advisor: Dr. G. Matt Davies

WEDNESDAY, APRIL 7, 2021
11:00 A.M.

Join the seminar via Zoom:
https://osu.zoom.us/j/3593932713?pwd=dII3M2g4N1JpS1dvcVF0bDdDeWRiQT09