Apr 2nd, 4:00 PM - 5:00 PM

Tree physiology before, during and after gypsy moth attack and subsequent drought in an upland forest in the New Jersey Pine Barrens

Karina Schäfer
Rutgers University

MONTCLAIR STATE UNIVERSITY

The Doctoral Program in Environmental Management and MSU Sustainability Seminar Series Present:

Tree physiology before, during and after gypsy moth attack and subsequent drought in an upland forest in the New Jersey Pine Barrens

WHEN: April 2, 4:00 pm WHERE: CELS 120 lecture hall

Karina Schafer

Rutgers University

Dr. Schäfer's primary research interests lie in the realm of global change and its effects on terrestrial ecosystems. To this point, her research has focused on refining carbon budgets of forest ecosystems through sapflow based canopy conductance. In her current project she is adapting and re-parameterizing the Canopy Conductance Constrained Assimilation model (4CA) which she originally developed for a pine ecosystem at Duke. Once the model has been parameterized and validated at a specific site, climate change scenarios can be tested by using predicted values and implementing into the model predicting the outcome for that scenario for that site.

In addition, Karina is working in urban ecology through eddy-covariance measurements in the Meadowlands of New Jersey assessing CO2 and CH4 fluxes. Restoration of wetlands may or may not help in the carbon sequestration potential of wetlands and whether they will be able to keep up with sea level rise. Expanding the knowledge along the terrestrial – aquatic interface will enable predictions of resilience for these ecosystems.

An investigation over the >ten-year period, canopy water use had declined due to mortality and has as of yet, not rebound to pre-defoliation levels. However, water use has not proportionally dropped to mortality, due to compensation of surviving trees, mostly white oak species and pines, whereby red oak species declined. Thus, mortality and changes in canopy structure increased availability of water and light, and the surviving population first decreased then increased their water use efficiency after an initial decline hinting at increased competition again. Forest functioning and species composition will likely be altered by re-occurring droughts, insect infestations and windthrow, while the changes in energy partitioning will likely have impacts for regional climate in this forest ecosystem

For more information contact Dr. Dirk Vanderklein at 973-655-5265