DEPARTMENT OF BIOLOGY | UNIVERSITY of WASHINGTON

# Jill Fredericksen-Adams Endowed Biology Seminar

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## Eco-climatic legacies of a century of Eastern US reforestation

**Monday, November 25, 2019 | 12:00pm**
**HCK 132 Refreshments at 11:45am**

The Eastern United States has experienced a remarkable history of disturbance and recovery over the past two centuries. Before European settlement, forests occupied most of the land area. From the mid-19$^{th}$ to early 20$^{th}$ century , harvesting for timber and to clear agricultural land reduced forest cover by more than 90% in many places. Throughout most of the rest of the 20th century, forest cover subsequently increased following the abandonment of marginal agricultural fields and active New Deal reforestation efforts. However, due to the influence of multiple anthropogenic and natural forces, the species composition of these secondary forests has been substantially altered during this period of regrowth. In this talk, I will offer a perspective on the eco-climatic legacies of this widespread regional reforestation, and related demographic shifts. Specifically, eddy covariance flux tower observations will be used to evaluate the carbon cycle consequences of secondary forest succession, showing that even maturing eastern U.S. forests continue to function as strong carbon sinks – a result that was not expected from ecological theory. Next, ecosystem- to regional-scale biophysical data will be blended to show that reforested areas offer a substantial local surface and air temperature cooling benefit when compared to nearby grasslands and croplands. Overall, results suggest that early 20$^{th}$ century reforestation efforts have resulted in a substantial, albeit unintended, climate mitigation benefit. Whether this benefit persists into the future is closely linked to ongoing species composition shifts and related biogeochemical processes.

Seminar Speaker Host: Jennifer Hsiao