Department of Forest Ecosystems and Society
Global Change Strategic Hiring Plan
May 3rd, 2021
V3 draft for final departmental input

Includes minor edits, including to the overview to represent comments from Qualtrics survey and feedback from April 9th Department Meeting, trimming of Category 3 to emphasize these are a few examples

Overview

One of our grand global challenges is to support thriving social and ecological systems on a chaotic, increasingly crowded, and warming planet. This challenge applies to, and has implications for, our regional, state, and local communities as well. Forest ecosystems, which make up one third of our terrestrial land mass, are central to meeting this challenge. The Department of Forest Ecosystems and Society seeks to build its faculty community to contribute to the research, teaching, and outreach necessary to support evidence-based mitigation of, and adaptation to, global change. We are a multi- and inter-disciplinary department with expertise spanning a wide range of forest-relevant topics including collaborative governance, environmental psychology, ecology, genetics, outdoor recreation, ecophysiology, and conservation. Our education programs seek to train students in interdisciplinary and integrated approaches to addressing complex socio-ecological problems. As a department, we have identified the following faculty positions as priority areas for growth in the context of building capacity for our Global Change Strategic Hiring Plan.

The following list of positions is divided into three categories:

- **Category 1** is a list of hiring priorities for which we as a department feel there is a direct connection to teaching needs and/or opportunity to leverage existing College priorities and research opportunities.
- **Category 2** is a list of hiring priorities linked to anticipated retirements and research gaps in the next five years.
- **Category 3** is a list of example hires that might be pursued through the OSU Foundation but without direct connections to existing teaching needs.

Positions in each category are presented in no particular order. Determination of professorial rank(s) would be made by the Dean.

A (**) pair of asterisks accompanying a course title indicates it is critical/difficult to find instructors or is a course where a long-term instructor has not been identified for all sections.

Category 1

Forest carbon cycle science. Our planet is facing a climate crisis, and the carbon cycle is at the heart of this issue and intertwined with all aspects of global change. Potential research areas for this position could include, e.g., forest carbon-climate feedbacks, biodiversity-carbon cycle interactions and global change, and carbon cycling through above- and below-ground processes. Preferred candidates will have expertise in forest carbon cycle science and employ a variety of methods, including some combination of ecosystem-atmosphere flux and carbon cycle process measurements, satellite remote sensing, and process-based ecosystem modeling at a variety of spatial and temporal scales.

This position would provide teaching capacity for:

- **FES 527 (Forest carbon analysis for assessments & policy agreements)

- **MNR/FES 536 (Carbon sequestration in forests)
- MNR 550 (Climate change impacts on forest ecosystems – Ecampus)
- MNR 538 (Adapting forests to climate change)
- FES 240 (Forest biology)
- Additional possible undergrad NR course on ecology and biophysics of Natural Climate Solutions could be developed.

Policy and economics of forest-based climate solutions. As communities, organizations and governments embrace nature-based solutions to mitigation and adaptation planning, there is a need to produce robust policy and economic analyses of potential strategies. For example, many studies have quantified the C storage importance of large, old trees, and conserving those trees and stands would also have large biodiversity, ecosystem service, and recreation co-benefits. This incorporates carbon accounting and life-cycle analyses, but also includes financing options for environmental services more broadly and policy options and economic analysis for resilient ecosystems in the face of global change (mitigation and adaptation). This position would complement a research focus on carbon, and a renewed focus on ecosystem services, policy, and economics.

This position would provide teaching capacity for:
- **FES 500 (Market tools for managing GHG emissions – Ecampus)
- **FES 527 (Forest carbon analysis for assessments & policy agreements)
- **SNR 521 (Economics of sustainable natural resource – Ecampus)
- **MNR 511 (Intro to sustainable natural resources – Ecampus – requires an economist co-instructor)
- Additional possible undergrad NR course on economics and policy of Natural Climate Solutions could be developed.

Indigenous and local perspectives on land & ecosystem management. Indigenous peoples and local/rural communities often experience disproportionate impacts of global change. But they are also at the forefront of learning and adaptation to changing landscapes, with a rich and historical knowledge of the land and ecosystems. This position could be open to research areas including traditional and local ecological knowledge (TEK/LEK), ethnobotany, ethnoecology, and Indigenous rights. Ideally this faculty member would bring expertise in TEK and political ecology/Indigenous rights and institutions, with interests in blending western scientific approaches and TEK.

This position would provide teaching capacity for:
- **FES 485/585 (Consensus and natural resources -- Corvallis and Ecampus)
- **MNR 511 (Intro to sustainable natural resources - Ecampus-- co-instructor on social aspects)
- NR 202 (Natural resource problems and solutions)
- FES 520 (Posing researchable questions)
- Additional possible slash class(es) could be developed on TEK (high demand from students across campus).

Forest Insect Ecology and Conservation. Insects are in decline globally and serve as the base of the food web for many species, as well as being pollinators contributing to broader ecosystem services. However, insect-driven declines in forests are accelerating, so we need to know more about how to prevent/slow future outbreaks of native and exotic insects including, e.g., emerald ash borer, hemlock adelgid, and mountain pine beetle. This position would provide

a research focus on conservation ecology and forest health related to insects. This position could include links to big data, e.g., taxonomic auto-identification with machine learning.

This position would provide teaching capacity for:

- **FES 412/512 (Forest entomology)
- Potentially other courses: plant/insect interactions, chemical ecology, IPM, foundations of insect ecology, and a new course on insect declines/biodiversity/conservation
- Could teach a variety of forest biology, dendrology, ecology, restoration classes as needed (e.g., FES 445/545 Ecological Restoration is offered multiple times per year via Ecampus)

Category 2
These positions would be anticipated as high priority in the window of 2-5 years with upcoming retirements.

Tree Genetics in the Context of Global Change. With accelerating climate and herbivore stressors on trees, as well as a ballooning global demand for timber and interest in nature-based C sequestration for climate change mitigation, one option is to utilize cutting-edge genetics techniques to breed trees that are more resistant and resilient to global change stressors. Being able to grow more wood on smaller areas would potentially free up land where conservation can be prioritized or ecological forestry can be done. This position would provide a research focus on tree genetics in relation to environmental stressors, and potentially have links to supporting established Co-ops. *Strauss is currently working with OSU Foundation on a related position: ~ "Forest Plantation Biotechnology"*.

Urban forestry and ecology. Urban forests are important elements of natural climate solutions, carbon cycling, biodiversity, ecosystem services, and responses to global change. *Likely a longer timeline 5+ years until need.*

This position would provide teaching capacity for:

- FES/HOR455/555 (Urban forest planning, policy and management)
- FES/HORT 350 Urban Forestry
- FES 565 Urban Forestry Leadership
- FES 506 Urban Forestry Capstone

Notes. Currently, our urban forestry program is large and entirely run by one person: Paul Ries. There might be opportunities to develop connections with Portland State where there is interest from an Associate Dean to develop connections in this area between PSU, Portland-area governments, non-profits, and the CoF. Seems like a natural fit as well for the expanding OSU presence in Portland.

Category 3
These positions are a list of opportunities we think are important areas of research but have less connection to established teaching programs and urgent teaching needs. Therefore, they would likely need support from donors and we would work through the OSU Foundation for support.

Forest mycorrhizal ecology
Tree-ring science for global change
Agroforestry in a local and global context
Forests and human health
Sustainable development of forest ecosystems and society

Forest policy and law for decision-making in social and ecological systems
Collaborative engagement in social-ecological systems