UC SANTA BARBARA

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Harrison Tasoff

Understanding Forest Ecosystems

For centuries forests represented the unknown: places of mystery where fairies and spirits dwelt and the mark of civilization was ne’er felt. But we’ve come to realize that forests are vibrant ecosystems that support an array of plants, fungi and wildlife. And far from being primeval, woodlands are quite susceptible to human activity.

UC Santa Barbara’s Anna Trugman is among the scientists who has dedicated her career to unravelling the secrets of forests and understanding how they might respond to a changing environment. The assistant professor has been named a 2022-2026 early career fellow by the Ecological Society of America (ESA) for her work elucidating how sylvan ecosystems respond to climate change.

Early career fellows are researchers recognized by ESA as having furthered ecological knowledge and applications within eight years of completing their doctoral training, and who show promise of continuing to make outstanding contributions to a wide range of fields served by the society. They are elected for five years.

“I’m very humbled and honored to be awarded as an ESA early career fellow,” Trugman said. “It’s a really impressive list of peers to be among.”

Trugman studies forests: What they are and where they’re headed in the coming decades. She’s especially interested in how water limitation impacts these ecosystems. The processes underpinning drought-driven mortality have implications

for carbon sequestration and forest resilience.

After earning a bachelor's degree in geological and environmental science at Stanford University, Trugman obtained her doctorate from the Program for Atmospheric and Oceanic Sciences at Princeton University. "My research integrates all of these diverse fields to understand the interactions and processes that are both influencing forest responses to climate and that forests feedback to the climate system," she said.

Her work addresses some very palpable issues, especially to folks in the American West. For instance, one of her projects focuses on the effect of fire disturbance on vegetation dynamics in California, and how that influences fire risk across the state.

Trugman has certainly made an impression in her field. The ESA recognition comes on the heels of receiving the Tansley Medal from the New Phytologist Foundation. "Anna is a rising star in global ecology, and has made major contributions to our understanding of how ecosystems respond to climate change," said Trugman's colleague William Anderegg, who nominated her for the ESA recognition. "She has a stunning track record in communication and outreach, teaching, mentoring and pedagogy, and integration of her research with land management and policy."

Trugman said she is particularly proud of her collaborations with ecologists, plant physiologists, earth system scientists and others. These partnerships provide a multidisciplinary perspective on forest ecology, she said. Her own contributions are similarly diverse in nature, drawing on fieldwork, mathematical models and remote sensing data.

"I have been inspired by many people in my scientific career, starting with my parents," Trugman said. "I have learned an enormous amount from my postdoc advisor and collaborator William Anderegg, and my Ph.D. advisors David Medvigy [at Notre Dame] and Stephen Pacala [at Princeton]. Their support for early career scientists, enthusiasm and creativity have greatly influenced not only my scientific approach, but also my writing and communication style."

Forests were once a mystery to fear. Then they were a resource to harvest. Now researchers like Trugman are beginning to reveal their true complexity. Hopefully the insights they glean can help us manage and conserve these important ecosystems in an uncertain future.

About UC Santa Barbara

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.