

Opportunity Title: USFS Exploring the Factors that Dominate Fire Behavior in Live Wildland Fuels Fellowship

Opportunity Reference Code: USDA-USFS-RMRS-2024-0118

Organization U.S. Department of Agriculture (USDA)

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A complete application package consists of:

- An application.
- Transcript(s) – For this opportunity, an unofficial transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. Selected candidate must provide proof of completion of the degree before the appointment can start. Click [Here](#) for detailed information about acceptable transcripts.
- A current resume/CV.
- Two educational or professional recommendations.

All documents must be in English or include an official English translation.

Application Deadline 6/7/2024 3:00:00 PM Eastern Time Zone

Description ***Applications will be reviewed on a rolling-basis.**

USFS Office/Lab and Location: A fellowship opportunity is available with the US Department of Agriculture (USDA) Forest Service (USFS) within the Rocky Mountain Research Station (RMRS) located in Missoula, Montana.

At the heart of the U.S. Forest Service's mission is their purpose. Everything they do is intended to help sustain forests and grasslands for present and future generations. Why? Because their stewardship work supports nature in sustaining life. This is the purpose that drives the agency's mission and motivates their work across the agency. It's been there from the agency's very beginning, and it still drives them. To advance the mission and serve their purpose, the U.S. Forest Service balances the short and long-term needs of people and nature by: working in collaboration with communities and our partners; providing access to resources and experiences that promote economic, ecological, and social vitality; connecting people to the land and one another; and delivering world-class science, technology and land management.

Research Project: Wildland fires spread through mixtures of living and dead fuels. While much is known about the factors that control dead fuel burning behavior, live fuel burning behaviors are still poorly understood. Recent research has focused on the decoupling of seasonal carbon and water dynamics to better describe the flammability of living plants but more action is needed to enable these findings to be incorporated into 3-



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dimensional fire behavior models. This project involves the exploration of the thermal, physical and chemical characteristics of live fuels and the characterization of their seasonal variations across the grasses, shrubs and trees of the Intermountain Western United States. It will leverage field and laboratory measurements to develop novel characterizations of the thermal degradation of live fuels in a format that is suitable for inclusion into kinetic models and computation fluid dynamics-based fire behavior simulators. Ultimately, this new knowledge will guide the implementation of new characterizations of live fuels in fire behavior models and this information can improve our ability to predict the spread and intensity of wildfires and prescribed fires.

Learning Objectives: The program participant will learn a variety of new skills to measure live wildland fuel characteristics in the field and in the laboratory. These measurements will include: live fuel moisture content, specific leaf area, relative water content, crude fat analysis, non-structural carbohydrates, water potential, and hydraulics. The participant will also learn how to prepare samples for microscopy to resolve surface area to volume relationships. Additionally, they will receive instruction in the use of thermal characterization test equipment such as thermal gravimetric analysis and oxygen bomb calorimetry. The participant will be introduced to modern techniques used to characterize the thermal degradation of live wildland fuels in fire behavior models. They will also have opportunities to strengthen their data management, statistical analysis, and technical writing skills by summarizing results for peer reviewed publications.

Mentor: The mentor for this opportunity is William Jolly (william.jolly@usda.gov). If you have questions about the nature of the research, please contact the mentor.

Anticipated Appointment Start Date: May 20, 2024. Start date is flexible and will depend on a variety of factors.

Appointment Length: The appointment will initially be for 3 months but may be extended upon recommendation of USFS and is contingent on the availability of funds.

Level of Participation: The appointment is full time.

Participant Stipend: The participant will receive a monthly stipend commensurate with educational level and experience.

Citizenship Requirements: This opportunity is available to U.S. citizens, Lawful Permanent Residents (LPR), and foreign nationals. Non-U.S. citizen applicants should refer to the [Guidelines for Non-U.S. Citizens Details page](#) of the program website for information about the valid immigration statuses that are acceptable for program participation.

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ORISE Information: This program, administered by ORAU through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and USFS. Participants do not become employees of USDA, USFS, DOE or the program administrator, and there are no employment-related benefits. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE.


Questions: Please visit our [Program Website](#). After reading, if you have additional questions about the application process please email ORISE.USFS.RMRS@orau.org and include the reference code for this opportunity.

Qualifications The qualified candidate should be currently pursuing a bachelor's or master's degree in the one of the relevant fields (e.g. a biology or ecology discipline).

Preferred skills:

- Some laboratory and / or field measurement experience.
- They must also be detail oriented and self-motivated.

Eligibility Requirements

- **Degree:** Currently pursuing a Bachelor's Degree or Master's Degree.
- **Academic Level(s):** Post-Bachelor's or Undergraduate Students.
- **Discipline(s):**
 - **Life Health and Medical Sciences** (51 )

Affirmation I affirm that:

I am a US Citizen, OR

I am a non-US Citizen currently living in the United States