

**Opportunity Title:** USFS Field-based Study of Native Hawaiian Forests

**Opportunity Reference Code:** USDA-USFS-2021-0220



### Organization

U.S. Department of Agriculture (USDA)

### Reference Code

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### How to Apply

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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. All transcripts must be in English or include an official English translation. Click [Here](#) for detailed information about acceptable transcripts.
- A current resume/CV
- An Abstract or reprint
- Two educational or professional recommendations. Applications need at least one recommendation submitted in order to be viewed by the mentor.

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

### Application Deadline

9/30/2021 3:00:00 PM Eastern Time Zone

### Description

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

**USFS Office/Lab and Location:** A research opportunity is currently available with the U.S. Department of Agriculture (USDA), U.S. Forest Service (USFS), Institute of Pacific Islands Forestry (IPIF) located in Hilo, Hawaii.

Through research, knowledge sharing, and partnership the Institute of Pacific Islands Forestry (IPIF) provides scientific and technical information needed to restore, conserve, and sustain tropical forests and wetlands of the Pacific. Since 1956, IPIF has been serving the research, development, demonstration, and technical assistance needs of Hawaii and the US Affiliated Pacific ([see map](#)), a highly diverse geographical area the size of the continental United States. The Institute meets the diverse information needs of natural resource managers across the Pacific, as well as leading cutting edge tropical research, through the work of Institute-based research staff, who lead core science programs in a wide range of problem areas including: restoration silviculture, wetland systems management, invasive species control, ecological management of invaded ecosystems, the ecology and recovery of threatened, endangered, and at risk species (TER), understanding and managing climate change impacts, and carbon cycling science and management.

**Research Project:** The interacting ecological stressors of climate change and invasive species have the potential to substantially alter biodiversity and ecological processes worldwide. Altered successional pathways attributed to the introduction of non-indigenous species have already been exhibited throughout the world, resulting in changes of ecosystem processes. Consequently, state shifts to more homogenous landscapes are evident, affecting the capacity of ecosystems to adapt to changing conditions. This has been apparent in effects of many introduced pathogens; Chestnut blight, Butternut canker, Beech bark disease and many more.

With the degradation of native forests, the world will not only lose the ecological services they provide, but also the natural and cultural heritage forests are so intrinsically tied to. Hawaii, an exceptional embodiment of biological riches, is one of the most endangered ecosystems in the world. Ohia lehua (*Metrosideros polymorpha*) an endemic species, comprises approximately 80% of the biomass in the Hawaiian Islands forests. Ohia lehua functions as a crucial watershed protection resource, a dominant habitat for native species, and an integral part of Hawaiian culture.

In 2014, a fungal pathogen killing large patches of ohia trees was first detected in the forests of Puna on the Big Island of Hawaii. The

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problem, commonly referred to as rapid ohia death (ROD), has since affected over 50,000 hectares of forest. A tree infected by the fungal pathogen, *Ceratocystis fimbriata*, typically dies within a few days to a few weeks, due to degradation of the vascular system causing failure in the transport of water throughout the tree. Though humans appear to be the main transport of the pathogen, a statewide quarantine of the trees has shown ohia mortality is occurring in areas away from direct human contact. While research to better understand and predict rapid ohia death has been extensive, the question remains as to what these landscapes will look like and how they will function ecologically after death of the canopy dominants. As such, we wish to provide an opportunity for a participant to help our ROD research team to help investigate rapid ohia death in Hawaii Island forests and examine changes in structural and functional characteristics of the forest through the following research questions;

1. What are the initial changes in forest structure, diversity, and species composition?
2. What are the successional changes over time and what abiotic/biotic factors are determining those changes?
3. How will fine-scale tree regeneration niche dynamics be influenced by projected forest dieback, over broad spatial scales in Hawaii island forests?

The selected participant will be involved with our ROD research group working in the field and collecting data from the field to aide in the understanding of expected changes in Hawaii island forests. If we can comprehend how forests will be impacted by wide-spread mortality and predict environments optimal for the reestablishment of ohia, we will be able to make well-informed management decisions in efforts of restoration.

**Learning Objectives:** Through these efforts, the selected participant will receive meaningful, hands-on knowledge and experience regarding important components of vegetation analysis, proper use of scientific methods, and collection, processing, and analysis of field data.

**Mentor:** The mentor for this opportunity is R. Flint Hughes ([Richard.hughes@usda.gov](mailto:Richard.hughes@usda.gov)). If you have questions about the nature of the research please contact the mentor.

**Anticipated Appointment Start Date: September 30, 2021.** Start date is flexible and negotiable, and will depend on a variety of factors.

**Appointment Length:** The appointment will initially be for seven 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 only.

**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 [USForestService@orise.orau.gov](mailto:USForestService@orise.orau.gov) and include the reference code for this opportunity.

## Qualifications

The qualified candidate should be currently pursuing or have received a doctoral degree in one of the relevant fields. Degree must have been received within the past five years.

Preferred skills:

- Knowledge and Experience of disciplines of Geography, Ecology, and/or Plant Biology
- Experience and knowledge conducting ecological field studies
- Ability to conduct independent field research




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- Word processing data base management skills

#### **Eligibility Requirements**

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree received within the last 60 months or currently pursuing.
- **Discipline(s):**
  - **Environmental and Marine Sciences** (5 )
  - **Life Health and Medical Sciences** (5 )
  - **Social and Behavioral Sciences** (1 )
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).