

**Co-operative Research Programme: Sustainable Agricultural and Food Systems Fellowship
Summary Report**

Dr. David Flores

Research Proposal: Theme 2 Managing Risks in a Connected World

Subject Title: Wildland fire management during COVID-19

Host Institution: Wageningen University & Research, The Netherlands

Host collaborator: Dr. Cathelijne Stoof

Dates of Fellowship: August 1, 2021 – December 17, 2021

I give my consent to this report being posted on the Co-operative Research Programme's website.

1) What were the objectives of the research project? Why is the research project important?

The objectives of this project were to combine and analyze data collected from the United States Forest Service and Wageningen University in The Netherlands on the challenges of wildfire management during the COVID-19 pandemic.

Wildfires across the world are becoming more frequent, intense, and are lasting longer durations. In March of 2020, the Northern Hemisphere began preparing for the complexities involved in managing the wildland fire season under COVID-19. Wageningen University in The Netherlands and the United States Forest Service began their own separate research studies on challenges and risk mitigations for managing wildfires during a global pandemic. The objectives of this research project were achieved and we were able to combine these studies to create a robust data set on wildfire management during COVID-19.

2) Were the objectives of the fellowship achieved?

International co-operation among the research scientists involved in the project was achieved. We are also building additional research co-operation with scientists in the United States and The Netherlands. We intend to invite additional social and environment scientists to work with us on upcoming projects and we are working to build collaboration between the United States Forest Service research and Wageningen University.

The project also engages with wildfire management policy and provides new insight into the challenges of policy implementation during a global pandemic. We are hopeful that this research project will help support ongoing efforts to keep wildland firefighters safe while performing their duties in the field.

Due to the fact that wildfires cross jurisdictional and national borders, this research project helps to facilitate the inter-connectedness between countries and stakeholders in dealing with the problem of catastrophic wildfires that have become more frequent with the impacts of climate change.

3) What were the major achievements of the fellowship? (up to three)

- a. We were able to combine data sets and begin the process of developing a series of manuscripts on wildland fire management during the COVID-19 pandemic. The pandemic continues to impact wildland fire management and both land managers and scientists are still learning how to respond and develop best practices for adapting to a new working environment that involves significant risks along with the strenuous working conditions involved in wildland fire.

- b. We developed and administered a second survey to wildfire managers across the globe to learn the different ways in which the pandemic has influenced wildfire management. We also translated the second survey from English to Spanish and Portuguese in order to invite participation from the global South.
- c. The OECD fellowship has provided an opportunity to develop new collaborations that otherwise would not have been possible or would have been very difficult to achieve. While at Wageningen University & Research, additional collaborations were developed with university faculty, post-docs, and graduate level students. How to manage wildfire as well as how to mitigate the risks of COVID-19 are global challenges that require diverse interdisciplinary thinking. As such, the fellowship recipient was able to develop new ways to think about the fire problem in the United States within a broader global context.

4) Will there be any follow-up work?

Additional manuscripts for academic publication are being developed. In addition to publishing findings in academic journals, we intend to distribute findings to land and fire management professionals to assist them in implementing fire management and COVID-19 procedures on the ground. The visiting fellow was also invited by the host to participate in a research proposal examining cross-border wildfire management in The Netherlands and Germany. In addition to considering COVID-19 in the proposal, we are proposing an integrated fire management approach that includes fire management, research, and community engagement throughout each phase of the project. This proposal emphasizes novel research and fire management practices that are working to shift away from typical large investments in fire suppression to community-based prevention and mitigation strategies.

5) How might the results of your research project be important for helping develop regional, national, or international agro-food, fisheries or forestry policies and, or practices, or be beneficial for society?

The sharing of best management practices during the COVID-19 pandemic functions as a tool for both land managers and policy makers at regional, national, and international levels. Catastrophic Wildfires are a global problem that could severely threaten natural environments, agriculture, economies, and human health. We argue that wildfire plays an important role in ecosystems and that an integrated fire management approach can bring significant benefits to communities and landscapes in fire prone regions. While COVID-19 presents additional challenges to implementing integrated fire management, best management practices can be adopted to mitigate the risk of contact and transmission of the virus. Society can benefit from this research by understanding better the challenges experienced by wildfire managers, and to collaborate with fire organizations to avoid the negative impacts of fire, and instead take advantage of the benefits that fire on the landscape can provide.

6) How was this research relevant to:

a. The objectives of the CRP?

The objectives of the CRP to bring international cooperation among research scientists and institutions as well as the policy focus on global issues including food security, climate change, and inter-connectedness of economies are realized in this project. The insights gained from this project can work to mitigate several sources of concern and uncertainty for future fire seasons, and to protect forests and natural resources, as well as to protect the people who manage them. The results could provide valuable strategies that can be disseminated globally to inform wildfire management across our highly connected world.

b. The CRP research theme?

This study contributes to the aims of the theme “managing risks in a connected world” by producing science-based knowledge that builds on existing sources of data, with the aim of adapting wildfire management to a global pandemic. The international online survey of wildland fire management at Wageningen University & Research is a broad study of how fire managers across the world are thinking about and managing risk during the COVID-19 pandemic in their respective countries. The qualitative focus groups conducted in the United States highlight how risk management consists of everyday practices and decisions made in the field. Thus, this project promotes: 1) new understandings of the effects of the COVID-19 pandemic on wildland fire management in the Northern Hemisphere; 2) shared knowledge on diverse types of adaptations to wildfire risk management due to COVID-19 risk mitigation measures like physical distancing and facial coverings; and 3) the long-term goal of living with fire and in fire-adapted communities by accounting for the different perspectives on fire and COVID-19 globally.

7) Satisfaction

The fellowship exceeded my expectations and provided mutual benefits to both the United States Forest Service and Wageningen University & Research. New collaborations have been developed and we intend to build new research studies based on this project. Personally, the fellowship has directly increased my career opportunities to expand my research beyond the borders of the United States. The new insights and collaborations that I developed are long lasting and include cross-border fire management research, opportunities for additional research with European universities, cross-border knowledge exchange, and an introduction to new frameworks for understanding the adaptations to fire risk management that are unfolding across the globe.

Practical problems encountered include the amount of time required to integrate into Dutch society. For example, 1) finding living quarters (the university is rapidly growing and housing in

Wageningen is scarce); 2) acquiring a Dutch *burgerservicenummer* (BSN) number (a BSN is required to conduct administrative business such as renting an apartment or opening a bank account); and 3) opening a bank account (most places of business do not accept credit cards and require a Dutch debit card for transactions). Each of these problems are highly bureaucratic and take weeks to resolve.

8) Advertising the Co-operative Research Programme

I learned about the Co-operative Research Programme through an email announcement that was distributed to scientists across my organization.

In order to be more visible, the programme could work closer with organizations to support applicants during the application process such as providing a webinar to particular organizations along with a question & answer session for potential applicants.

Institutions and organizations that send scientists to participate in the CRP could be better informed on the application and award process.