



## Cover page

- Your name

Forrest Fleischman

- The subject title and theme number of your research fellowship

How does scientific information and traditional ecological knowledge shape forest restoration policy and practice?

Theme 1: Managing Natural Capital

- Your host institution

Institut de Ciència i Tecnologia Ambientals at the Universitat Autònoma de Barcelona (ICTA-UAB)

- The name of your host collaborator
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Esteve Corbera

- The dates of your fellowship

September 1 2023-March 1 2024

- Your consent to your report being posted on the Co-operative Research Programme's website, or alternatively, a short paragraph about your fellowship which could be used anonymously.

I give permission for my report to be posted on the CRP website.





## 2. What were the objectives of the research project? Why is the research project important?

Forest restoration is a growing global priority, yet many forest restoration programs are unsuccessful. One reason that they may be unsuccessful is inadequate application of existing restoration knowledge. In my proposal to the OECD CRP I proposed to examine the application of restoration knowledge to the practice of restoration in four countries: Spain, the US, India, and Mexico. Findings from this research will help restoration scientists conduct research that better supports restoration policy and practice, while helping restoration practitioners improve the knowledge they use in their decision-making.

In particular I proposed to focus on 2 scientific analyses, and prepare a paper focused on each, while also preparing one policy brief and 2 grant proposals. I copy the original framing of these objectives below:

- Paper 1 will answer the following question: What restoration knowledge shapes restoration policy and practice in each of the four countries, and why is that knowledge influential there? (target journal: *Global Environmental Change*)
- Paper 2 will answer the following question: Under what conditions does restoration ecology influence restoration policy and practice? (target journal: *Restoration Ecology*)
- The Policy Brief will be focused on policymakers in the US and Spain, and will examine ways that both scientific knowledge and traditional knowledge can be more effectively integrated in restoration planning.
- Grant proposal 1 will focus on building a global network of scientists to study restoration social science. This will particularly focus on my existing network of colleagues and collaborators in the US, as well as new collaborators at ICTA-UAB and in Spain more broadly.
- Grant proposal 2 will leverage findings from the proposed comparative study of four countries to conduct a broader proposal of knowledge use in restoration around the world, including in global initiatives, as well as national and subnational strategies.

## 3. Were the objectives of the fellowship achieved?

Some of the objectives of the fellowship have been achieved, others are in progress, and others have been altered as I learned more about the situation.

### **Publications:**

Upon arrival in Spain I began working with two different masters students at my host institution to conduct research about restoration in Spain. I am co-supervising these masters students with local faculty, including my local host/supervisor, Esteve Corbera, and ICTA-UAB faculty member Esteve Corbera. Together we are examining the historical development and current practice of restoration in Spain. due to the time frame of masters research projects, these projects have not been completed, however co-supervising local masters students has given me a greatly enriched perspective on the topic that I would not have been able to achieve on my own, as well given me the opportunity to work with local students and strengthen the institutional bonds between programs. I expect each of the students work will result in a publication, and while this will differ somewhat from the originally planned publications, the shifts in focus will be the result of learning more about the topic. In addition to this, I have worked on several related publications summarising past work in India and the US, several of which have been submitted for review during the fellowship period, and one of which was published during the fellowship period (Rana, Pushpendra, Harry W. Fischer, Eric A. Coleman, and Forrest Fleischman. 2024. "Using Machine Learning to Uncover Synergies between Forest Restoration and Livelihood Support in the Himalayas - Ecology & Society." *Ecology and Society* 29 (1). <https://doi.org/10.5751/ES-14696-290132>.)

### **Policy Brief:**

I have not yet prepared the proposed policy brief, as the research in Spain remains incomplete, however in related work I have consulted with the Fundación Española para la Ciencia y la Tecnología, FECYT and the UK Parliamentary Office of Science and Technology on restoration science and practice.

### **Grant Proposals:**

I have prepared and submitted 2 grants to the US National Science Foundation related to this project, and am in the process of preparing three more, which will build on the work of this fellowship. The proposals are diverse and three are not yet completed, but all three aim to build on this project to bring greater understanding of the social processes underlying ecological restoration in diverse landscapes, including in Spain and the US.





#### 4. What were the major achievements of the fellowship? (up to three)

1. I submitted two grant proposals and worked on preparing three more, all related to the social dynamics of ecological restoration in the countries targeted in the original proposal, and/or closely related countries.
2. I worked with two masters students to study restoration in Spain.
3. I have given a series of talks and consultations with policy-makers and scientists in Spain and also to some extent in other areas of Europe that would not have been possible without my presence enabled by the fellowship

#### 5. Will there be any follow-up work?

I intend to continue to work in close collaboration with many of the people I met through this fellowship, including faculty at my host institution (not only my formal host, but also several others). I am working on several publications based on the work I have done in Spain, and I expect there will be several resulting journal articles in collaboration with my hosts and the students I met here. A typical time frame for journal articles in my field is 2-4 years from the initial work to the publication. I do not expect there to be any formal collaboration between my home and host institution, however I do expect there to be a large amount of informal collaboration enabled by this fellowship, and I also expect that I will return to my host institution with some regularity in the coming years to maintain the new connections I have made.

#### 6. 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?

Ecological restoration is an emerging global priority because of its potential to improve human well-being and ecological health. Yet there is little social scientific research about restoration, and this means important questions, such as the impact of people on restoration outcomes, the impact of restoration on human well-being, and the kinds of knowledge and policies that make restoration work, are poorly understood. One of the things I learned during my fellowship was that Spain was in many ways a pioneer of ecological restoration in the 1940s and 1950s, engaging in large-scale tree planting campaigns to alleviate perceptions of ecological degradation. These campaigns had the intended consequence of restoring forests in many parts of Spain, but also had unintended consequences in that imagined future wood products industries did not materialise because the quality of wood produced in much of Spain was too poor to be competitive in today's globalised marketplace, while many of the planted trees are now blamed for fueling catastrophic wildfires and degrading naturally open ecosystems. This learning from Spain can be applied as a caution for many other parts of the world considering similar programs. Improved understanding arising from these experiences could help countries such as the US which are now engaged in large-scale restoration programs avoid similar unintended consequences.

#### 7. How was this research relevant to:

- The objectives of the CRP?
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The objectives of the CRP

- The CRP research theme?

#### 8. Satisfaction

I had an enormously productive and satisfactory experience as a fellow. The opportunity to study and work in a foreign country and build new relationships with leading scholars in my field from other countries was amazing and transformative for my career, opening up whole new worlds of opportunity. While its hard to pin down specific outcomes from the experience, particularly since the fellowship just ended (and actually I'm still on sabbatical at my host institution even though the formal fellowship period ended), I learned a tremendous amount, was stimulated with new ideas, got to work on old and new projects and form new relationships and learn about new funding sources and research programs.





As far as challenges/improvements, it was a real pain and very expensive to get a long-term visa for Spain, although having the fellowship seemed to help. For example, I had to pay for official translations for numerous documents, and had to travel to the nearest Spanish consulate in person (a 6 hour drive/1 hour plane flight) to submit paperwork. Given the OECD's connections, perhaps some of this work could be facilitated. In addition, as noted below, the amount of funding I received was far below the actual cost of the travel involved, and I had to supplement the fellowship (and my university's funding) with personal savings to make the trip possible.

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## 9. Advertising the Co-operative Research Programme

- How did you learn about the Co-operative Research Programme?

I learned about it from a colleague at my host institution (not the one who was my formal host, but one of his collaborators). I do not know how he knew about it.

- What would you suggest to make it more "visible"?

For the US context, since it targets environment and agricultural researchers, it could be advertised directly to the deans of Land Grant Colleges and environmental schools. There are a number of listservs and associations of these institution leaders

- Are there any issues you would like to record?

The amount of money provided by this fellowship was very small relative to the cost of living in my host institution (basically it covered my rent but nothing else). I was fortunate to be able to draw on a partial sabbatical salary from my home institution, several research grants, and savings to fund the visit, but I would not have been able to come with only the money provided by the fellowship. This being said, I also wouldn't have been able to afford the visit if I had not also had the fellowship, so I appreciate that at least some funding was available. However for faculty with less savings and/or less institutional support, the funding in the fellowship is too small (at least for a city like Barcelona).

