



FELLOWSHIP SUMMARY REPORTS

- Dr Martine J Barons
- **Decision support for healthy ecosystem services**
Theme: Managing risks in a connected world
- Host institution CEBRA, University of Melbourne
- Host collaborator: Dr Anca Hanea
- Dates of fellowship 17/10/2022-09-12-2022
- I 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?

Ecosystem services, such as pollination, are vital to human health and wellbeing and particularly to sustainable and efficient agriculture. In complex and strongly interconnected systems, decision support is vital form evidence –based decision-making. Estimating the abundance of pollinating insect populations is a challenging statistical problem, and estimates obtained are inevitably subject to uncertainty. In addition, pollination is affected by agricultural and other human practices, such as crop protection, energy production, housing and carbon sequestration measures. In a strongly interconnected world, decision-making in the landscape relies on many models for different parts of the system. The aim of this research is to provide decision support for policymakers concerned with protecting ecosystem services, by coupling the models within a Bayesian framework. We focussed on the example of pollination ecosystem services to support food production. We explored the efficacy of this novel integrating decision-support system for pollinator abundance decisions under a range of policy scenarios.

2. Were the objectives of the fellowship achieved?

The objectives of the fellowship were fully realised: I was able to leverage CEBRA's rich, interdisciplinary environment within which to develop and explore policy decision-making relevant to ecosystem services. I was able to connect with decision analysts and domain experts alike to work towards a realistic decision support system.

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

- a. Development of additional research collaborations
- b. Development of new research programmes
- c. Concrete roadmap for the specific work of the fellowship

4. Will there be any follow-up work?

- Is a publication envisaged? Will this be in a journal or a publication? When will it appear?

We plan to publish this work when complete. The timing is also strategic as the recent incursion of Varroa Mite of Honey Bees to Australia requires policy interventions which the developing Decision support system will be able to address, directly addressing the decision support for healthy ecosystem services objective. Submission is envisaged with a year.

- Is your fellowship likely to be the start of collaboration between your home institution and your host?

This collaboration has been significantly developed and new collaborations begun with those beyond the host institution, but enabled by the fellowship.





- Is your research likely to result in protected intellectual property, novel products or processes?

It is likely to develop a working decision support tool which will have real impact in the domain of pollinator abundance.

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?

Food security is important for everyone on the planet and insect pollinators are a key factor in the food production process. Additionally, areas of outstanding natural beauty, including wildflowers in Western Australia, are a key driver of tourism and other economic benefits. The tool we are now developing will provide evidence-informed decision support for policymakers concerned with ensuring pollinator abundance, including in the face of novel threats, such as the Varroa incursion into New South Wales in late 2022.

6. How was this research relevant to the objectives of the CRP and research theme?

This project directly supports biological resource management for sustainable agricultural systems.

7. Satisfaction

- Did your fellowship conform to your expectations?

The fellowship over delivered on expectations – once the funding was confirmed I was able to start contacting relevant experts for meetings and they introduced me to further experts. I attended a conference in my host institution which yielded further contacts. Additional funding provided by QJMAM to attend a conference in Sydney provided development of a second piece of research and some new collaborators.

- Will the OECD Co-operative Research Programme fellowship increase directly or indirectly your career opportunities? Please specify.

Increased career opportunities as I expect two new publications and an impactful tool to arise, one from the fellowship objectives and another from the opportunity provided by the conference in Sydney.

- Did you encounter any practical problems?

The increase in costs between the original application and the actual visit left a shortfall for subsistence. The very cheap apartment hotel was in easy distance of the host location but left a lot to be desired with respect to cleanliness and working appliances.

8. Advertising the Co-operative Research Programme

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

I heard about the fellowship through my host.

