# Position Details

## CSIRO Early Research Career (CERC) Postdoctoral Fellowship– CSOF4

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| The following information is for applicants |
| Advertised Job Title  | CSIRO Postdoctoral Fellowship in Ecological Data Integration |
| Job Reference | 90037 |
| Tenure | Specified Term of 3 years Full-time |
| Salary Range | AU$89,926 to AU$98,504 pa + up to 15.4% superannuation |
| Location(s) | Brisbane, QLD or Townsville, QLD |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | All Candidates |
| Position reports to the | Team Leader, Ecological Management |
| Client Focus – Internal | 100% |
| Client Focus – External | 0% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Andrew Hoskins via email at Andrew.Hoskins@csiro.au or phone +61 7 4753 8567 or Cathy Robinson via email at Catherine.Robinson@csiro.au or phone +61 7 3833 5742 |
| How to apply | Apply online at <https://jobs.csiro.au/> Internal applicants please apply via **Jobs Central**If you experience difficulties when applying, please email careers.online@csiro.au or call 1300 984 220. |

**Acknowledgement of Country**

CSIRO acknowledges the Traditional Owners of the land, sea and waters, of the areas that we live and work on across Australia. We acknowledge their continuing connection to their culture and pay our respects to their Elders past and present. View our [vision towards reconciliation](https://www.csiro.au/en/about/Indigenous-engagement/Reconciliation-Action-Plan).

### Role Overview

**CSIRO Early Research Career (CERC) Fellowships** provide opportunities to scientists and engineers who have completed their doctorate and have less than three years relevant research experience. These Fellowships aim to develop the next generation of future leaders of the innovation system through:

* A differentiated career development program to deliver capability excellence and breadth across all facets of the national innovation system;
* Research training via strategic research and development projects with a clear focus that will deliver real impact through science and engineering excellence;
* An innovative culture supporting the development and demonstration of original thinking and expertise leading to peer-recognition; and
* Opportunities to develop skills and experience in collaborative research teams to effectively work within national and global multi/transdisciplinary and multi-stakeholder environments.

CERC Fellows **are appointed for three years full-time or equivalent.**

Designing a monitoring program where all partners have strong social and technical confidence in the outcomes is complex, particularly when the ecosystem and/or species being monitored is of significant conservation concern, engages local landholders and Indigenous groups, and promotes diverse cultural and social values. Gaining technical confidence in monitoring data is especially difficult when the plethora of survey methods available introduce a myriad of errors and biases, species are cryptic or hard to find, and/or the species inhabits complex and hard to access areas. Citizen scientists, land holders and Indigenous groups are also engaging in monitoring and there is growing policy and funding program recognition and expectation that their input needs to be respectfully incorporated into wildlife and environmental monitoring and management.

This project will examine if, and how, digital co-design approaches can fuse multiple sources of evidence to derive robust input to supporting management of wildlife species in ways which strengthen both social and technical confidence in a monitoring program’s outcomes.

The focus of this position is on developing the next-generation of integrative data analytical approaches which enable the meaningful combination and use of multiple different data sources into best available and technically robust monitoring of state and change in ecosystems and/or species. The CERC Fellow will test and build new integrated joint likelihood approaches which work with data representing different classes and qualities and explore their ability to act as a technically robust estimator.

To ensure policy-relevance and impact, the CERC Fellow will work alongside an interdisciplinary team of ecologists, social scientists, statisticians and data scientists. The Fellow’s outputs will align to and will be supported by the science goals of high profile projects currently underway within CSIRO including; the National Koala Monitoring Program ([Collaborative partnerships for the National Koala Monitoring Program - CSIRO](https://www.csiro.au/en/research/indigenous-science/Managing-Country/Koala-monitoring-program)), SpaceCows ([SpaceCows: Using AI to tackle feral herds in the Top End - CSIRO](https://www.csiro.au/en/news/News-releases/2021/SpaceCows-Using-AI-to-tackle-feral-herds-in-the-Top-End)) and Healthy Country AI ([How healthy country AI is delivering on-ground benefit – ECOS (csiro.au)](https://ecos.csiro.au/healthy-country-ai/)) programs.

### Duties and Key Result Areas

Under the direction of senior research scientists and engineers, this CERC Fellow will:

* + Develop novel modelling approaches which enable the integration of multiple, disparate data streams into robust predictions of ecological state and trend
	+ Test the core assumptions and estimators used in novel data integration approaches to ensure they are robust and fit-for-purpose
	+ Create analytical pipelines which embed the latest integrative approaches into accessible tool kits for use by technical stakeholders
	+ Collaborate across disciplines (ecology, social science, statistics and data science) and work with non-technical stakeholders to identify, define and explore those critical science challenges which will enable the next-generation of trusted and robust ecological monitoring approaches to be deployed
	+ Work with CSIRO project teams to align outputs to the broader science goals of the National Koala Monitoring Program, SpaceCows and Healthy Country AI programs.
	+ Carry out innovative, impactful research of strategic importance to CSIRO that will, where possible, lead to novel and important scientific outcomes.
	+ Recognise and exploit opportunities for innovation and the generation of new theoretical perspectives, and progress opportunities for the further development or creation of new lines of research
	+ Utilise design thinking methodology to plan and prepare research proposals, and apply non-academic impact methodology to research projects
	+ Carry out research investigations requiring originality, creativity and innovation
	+ Record, manage, and analyse data/information using relevant domain data science techniques.
	+ Proactively undertake development to grow effective researcher capabilities to support career goals.
	+ Adhere to the spirit and practice of CSIRO’s Code of Conduct, Health, Safety and Environment procedures and policy, Diversity initiatives and Zero Harm goals.
* Other duties as directed.

The CERC Fellow learning, development and training programis developed between the CERC Fellow and their CSIRO supervisor. The program will focus on enhancing the Fellow’s capabilities to the level expected of an independent researcher and will include on-the-job and course-based development encompassing:

* Discipline-specific techniques and protocols
* Professional growth
* Project management
* Communication and influencing skills
* Working and collaborating with others

## **Selection Criteria**

#### Essential

*Under CSIRO policy only those who meet all essential criteria can be appointed.*

1. A doctorate (or will shortly satisfy the requirements of a PhD). The doctorate must be in a relevant discipline area, such as statistics, data science, quantitative ecology, applied mathematics, or similar.

Please note: To be eligible for this role you must have **no more than 3 years** (full-time or equivalent) of relevant research experience.

1. Proven expertise in scientific computing and/or software engineering languages (e.g. Python, R, C++).
2. Demonstrated expertise in developing novel analytical approaches for addressing complex data, and ideally spatial data, challenges.
3. Experience with formal statistical modelling approaches, such as, Bayesian methods or mixed models
4. High level written and oral communication skills with the ability to co-design research projects effectively internally and externally, including a track record of working with community, industry and/or government agency stakeholders
5. A sound history of research impact e.g. publication in peer reviewed journals and/or authorship of scientific papers, reports, grant applications or patents.
6. A record of digital innovation and creativity, including the ability & willingness to incorporate novel ideas and approaches into scientific investigations.

## **Desirable**

1. Experience with the Bayesian estimation tools such as INLA, STAN, JAGS and ideally an understanding of the implementation of spatial analyses in these software
2. Experience with the statistical description of point patterns
3. Experience in data integration/fusion approaches which build inference from multiple different data streams
4. Strong theoretical and applied understanding of co-designed data collection, analysis and translation to support environmental monitoring and natural resource management
5. Expertise in High Performance and/or cloud computing systems.
6. Remain productive, positive and resilient in complex, ambiguous and/or uncertain environments.
7. **The ability to work effectively as part of a multi-disciplinary, potentially regionally dispersed research team, plus the motivation and discipline to carry out autonomous research.**

## **Required Competencies**

* **Teamwork and Collaboration:** Cooperates with others to achieve organisational objectives and may share team resources in order to do this. Collaborates with other teams as well as industry colleagues.
* **Influence and Communication:** Uses knowledge of other party's priorities and adapts presentations or discussions to appeal to the interests and level of the audience. Anticipates and prepares for others reactions.
* **Resource Management/Leadership:** Allocates activities, directs tasks and manages resources to meet objectives. Provides coaching and on the job training, recognises and supports staff achievements and fosters open communication in the team.
* **Judgement and Problem Solving:** Investigates underlying issues of complex and ill-defined problems and develops appropriate response by adapting/creating and testing alternative solutions.
* **Independence:** Recognise and makes immediate changes to improve performance (faster, better, lower cost, more efficiently, better quality, improved client satisfaction).
* **Adaptability:**Copes with ambiguity or situations that lack clarity. Adapts readily to changing circumstances and new responsibilities (which may include activities outside own preferences) in the interests of achieving team objectives. Recognises the need for and undertakes personal development as a result of changes.

To be appointed as a CERC Fellow within CSIRO, candidates are required to have **submitted** their doctoral thesis at the time of commencement, as a minimum requirement, if PhD conferment has not been obtained. If a candidate has submitted, but their PhD has not yet been formally attained, the starting salary will be CSOF4-1 (AU$87,068). Upon CSIRO receiving written confirmation that the PhD has been awarded (within a six month period from commencement date), the salary will be increased to the negotiated level and the difference will be back-paid to the Officer’s start date.

Special Requirements

Appointment to this role may be subject to conditions including provision of a national police check as well as other security/medical/character clearance requirements.

The successful candidate will be asked to obtain and provide evidence of a National Police Clearance or equivalent. Please note that individuals with criminal records are not automatically deemed ineligible. Each application will be considered on its merits.

If the successful candidate is not an Australian Citizen or Permanent Resident, they may be required to undergo additional security clearances, which may include medical examinations and an international standardised test of English language proficiency (i.e. IELTS test- https://ielts.com.au/)

**Our value proposition**

We want CERC Fellows to join our world class science, engineering and digital teams to solve big, complex problems that make a real difference to the future of Australia and the world.

You'll get to work with some of the most talented minds in their fields, not just in Australia, but in the world. At CSIRO, we spark off each other, learn from each other, trust each other and collaborate closely to achieve more than we could individually.

Find out more about our CSIRO Early Research Career (CERC) Fellow Experience Employee Value Proposition (EVP) [here](https://www.csiro.au/en/careers/postdoctoral-fellowships).

## **About CSIRO**

We solve the greatest challenges through innovative science and technology. Visit [CSIRO Online](http://www.csiro.au/) and [Land & Water](https://www.csiro.au/en/about/people/business-units/Land-and-Water) for more information.

CSIRO is a values-based organisation.  In your application and at interview you will need to demonstrate behaviours aligned to our values of:

* People First
* Further Together
* Making it Real
* Trusted