

Example application for Chartered Biologist: Ecology example

Application: Chartered Biologist

Job Title: Project Coordinator

Competencies

1. A1. Explain how your skills and knowledge in biological science inform and impact on your work and career development.

Through my PhD, researching the movement ecology of three threatened black cockatoo species in Western Australia, I developed my skills in spatial data collection and analysis, data base management and conducting fieldwork on an individual basis in remote areas. After completion of my PhD this gave me the experience to manage projects from start to completion in a structured and result-driven way. At present, I use my skills and knowledge professionally as a black cockatoo expert and GIS professional under my role as Carnaby's Black Cockatoo Project coordinator at Birdlife Australia. Within this role, I manage the breeding database for the project (2003-2022) and survey multiple key breeding sites yearly. This requires me to mobilize volunteers, conduct workshops and presentations, survey sites for potential breeding and monitor sites of known breeding across the species' breeding range. Furthermore, I collaborate with the five natural resource management (NRM) organisations in the Southwest of Western Australia to aid and advise them in their on-ground works for the conservation of the species. Apart from my job at Birdlife Australia, I work for an environmental consultancy as one of their resident senior zoologists. Through this position, I manage several of my own projects for which I conduct fauna surveys, habitat assessments, habitat mapping and writing up reports for our clients. I use the skills gained from my PhD and from these two jobs interchangeably across the two positions. It improves the way in which projects are managed and results are produced. For example, at the environmental consultancy, I am the resident black cockatoo expert and take on or provide advice for any targeted surveys concerning the species. In addition, I oversee R&D for the company to manage the way

we collect data in the field and set up the data collection apps. Moreover, I write scripts in R to facilitate data exports and outputs for results. For Birdlife Australia, I conduct habitat assessments on a regular basis and conduct habitat mapping (within a geodatabase) to be able to report on the natural resources in areas and the way these relate to black cockatoo breeding.

I am also part of an Advocacy team for the protection of native vegetation and bushland and use my knowledge of writing environmental reports to appeal submissions for land clearing.

To summarize, my combined knowledge and skillset derived from my PhD, work at the environmental consultancy and research at Birdlife makes me a well-rounded biologist, all of which has impacted greatly on my professional career. My current aim is to further my career as a professional in the biological sciences through personal development and taking on new projects and career challenges.

2. A2. Show how you continue to develop your interest in biological science and what effect this has on your work

I am continually learning and upskilling to be able to better answer the conservation questions I face in my work. As the demand for GIS and specifically remote sensing increases, I am educating myself in remote sensing. In the last year I have followed two courses on remote sensing and an additional course on advanced spatial data analysis. As the field is ever evolving, I aim to stay up to date concerning new research and methodology to practice conservation science and research. In addition, I am conducting drone surveys and am teaching myself photogrammetry and habitat mapping with UAV's. This has allowed me to conduct more in-depth spatial analysis across multiple scales. In addition, through my proficiency in GIS, I have been able to fine tune survey methods and fieldwork protocols to facilitate data collection, export, and outputs. Currently, I am working on setting up a machine learning protocol to identify hollow bearing trees in UAV imagery to determine likelihood of occurrence for breeding trees in an area. This will benefit current survey methods and leave less room for observation bias. It is my aim throughout my professional career to keep upskilling myself within both my field and complementary fields to be able to perform my job in the best way possible.

3. A3. Demonstrate how you use critical thinking and problem solving to draw conclusions from scientific and other data as you develop courses of action

Working in conservation science within Australia, critical thinking and problem-solving are skills that are in constant demand. Conducting fieldwork in rural Western Australia involves traveling long distances in extremely hot weather, often on unsealed roads far from any assistance. In such conditions, despite being well prepared, it is easy for problems to occur. Some of the issues I have encountered include flat tires, malfunctioning equipment, collisions with kangaroos, bush fires, and (during winter) flooding. In each instance, it has been necessary to think critically about the situation to find a resolution that is both safe and effective in enabling me to complete my fieldwork objectives. Failure to problem solve successfully in such conditions can, in some cases, be life-threatening. Despite the many potential pitfalls, I have conducted extensive fieldwork alone in remote conditions, and have always met my objectives safely.

A further issue is that there are always multiple stakeholders involved (private landholders/local community/government) and when conducting surveys, the objectives of each must be kept in mind to be able to properly disseminate the outputs and results across organisations. I, therefore, adjust my surveys to include all information needed for each stakeholder, so I only conduct a survey once, producing several outputs at the same time. Having multiple deliverables easily becomes a time issue, which is why I make sure that I plan well ahead and consult our database to make the best decision on getting a maximum survey effort, while still being able to conduct site visits for NRM organisations. Moreover, to maximise survey efforts, last year I built in a scoring class for tree hollows which helped me this year in my surveys to target suitable hollows only, allowing me to go through areas faster and conduct more surveys. In addition, I frequently draw on existing research to provide advice to stakeholders regarding on-ground actions and offset strategies.

4. B1. Show how you operate your role as a biologist with autonomy, accountability and integrity

As the Project Coordinator for Carnaby's black cockatoos and an expert on the species, I operate with full accountability and integrity. I plan and

implement the research for the program and provide project updates and share data with stakeholders, incl. community, NRM organisations, and others. In addition, I make sure data outputs are transparent and an annual breeding report is produced. For me personally, the key to managing a large project such as the black cockatoo breeding program is ongoing communication between all parties and setting up clear expectations on deliverables from the onset of the project. This has resulted in smooth collaborations and working relationships throughout the project as we keep each other informed on project developments. Accountability is paramount, and if a mistake is made, I will deal with it appropriately and assume responsibility. Within my role, I take pride in my work and therefore hold it to a high standard. This means I do not take shortcuts to get things done but prioritize several key actions rather than trying to do it all.

5. B2. Describe how you reflect on possible improvements in areas of responsibility and offer suggestions to make these improvements

I take an iterative approach to my work, that is rooted in reflection and evaluation, with this informing my future practice. I first try to understand an issue and why things are done the way they are, I then reflect on what works, how it could be improved, and what the impacts are for all involved. After this, I suggest a solution/improvement, highlighting the benefits and taking on board any suggestions that others may have. Finally, I implement my suggestions and the cycle of reflection starts again. This is how a project evolves over the years of its lifetime. For example, since starting my role at Birdlife Australia, I have improved the database, which was disorganised and difficult to access, to the point that anybody can now use it. I have also improved the survey methodology and field equipment; it now takes less time to conduct surveys, fewer mistakes are made, all data is immediately available through an online account and the quality of our media captured in the field has improved. Using this methodology, I have helped and trained other staff to facilitate their own data collection for their projects.

6. B3. Give examples of working as part of a successful team, highlighting your contribution to that success

During my PhD I was part of the Black cockatoo conservation project. The first release of double tagged birds (both satellite PTT and GPS) occurred as part of my PhD, and I developed the analysis method to determine whether birds were part of a flock (only flock movement is considered in the research of their movement ecology). This was a novel method which utilized Behavioural Change Point Analysis (BCPA) to determine flock integration, one that is still used by the conservation project, with the results published in the Journal of Wildlife Management. I also wrote scripts to determine their resident home ranges and to identify key habitat sites through revisitation analysis. In addition, I managed both the movement data and accelerometry data for all flocks through an SQLite database. This database allowed easy data imports into R and QGIS. I also conducted extensive fieldwork in remote conditions, gathering a vast volume of original data, which determined field protocols and guidelines going forward. My work has been essential in establishing the projects database, movement analysis scripts and an initial base dataset which is still being used and built upon. This project has been key to determining key habitat and movement patterns for black cockatoo species, which were previously unknown, and my research along with my original research methods have been instrumental in this. By then using our data to address referrals for clearing, we have received additional interest at the government level which has seen ongoing funding for the project.

7. B4. Show how you plan work and demonstrate foresight in carrying out your responsibilities, using resources effectively

Time management and planning have been key both during my PhD and in my professional career.

During my PhD I had to carefully plan all fieldwork as at any time I would have several satellite tags in different locations start a communication period. This meant that I had to prioritize some locations and flocks for data collection and use resources effectively across these locations.

Within my role for Birdlife Australia, I plan all breeding monitoring during the breeding season which involves close collaboration with NRM organisations as each of these receive a certain number of days during which they can employ me to do monitoring, site visits or training. In

addition to these days, I monitor the key breeding areas across the southwest of Western Australia (a vast area stretching from Kalbarri to Ravensthorpe +1000km), with this all occurring over a period of 3.5 months. As most of our work occurs on private land, careful liaising with private landholders and the NRM organisations is paramount.

In addition, I mobilize volunteers to conduct fieldwork in areas which I can't visit, conduct workshops, and have networking stands at agricultural shows (approximately four per season).

As a non-profit, there are limited funds, so I camp wherever possible, and try to ensure that I maximise my time in each site to avoid unnecessary travel expenses i.e., meeting multiple stakeholders in one trip, combining fieldwork with agricultural shows, etc.

8. B5. Explain how you exert influence in your role and demonstrate good leadership, either directly or through networks

As a member of the Black Cockatoo Conservation project during my PhD, I made multiple submissions against clearing actions using the team's combined knowledge and the movement data collected during the project.

In my role as an expert in black cockatoo conservation and as a senior zoologist with experience in environmental reports, I have addressed multiple referrals for land clearing at the government level. In the last year, we successfully started the Birdlife Advocacy team of which I am one of the four members.

I have utilized my knowledge to lead the advocacy team in making submissions of their own, based on the data gathered through Birdlife's research projects. Together we use our combined knowledge to make submissions against the unnecessary clearing of native vegetation where avoidance or at least mitigation can be explored. I provide mostly support to the Advocacy team regarding submissions, documentation, and templates, and communicate frequently with our national office on our progress.

Furthermore, I frequently provide advice to environmental consultancies and developers on the best use and location for offsets for black cockatoos and other fauna.

Twice a year, I attend the Carnaby's Cockatoo recovery meeting where a group of experts discuss recovery plans and conservation guidelines to

identify threats to the species and how to best address these, which leads to improved conservation management for the species.

9. C1. Describe how you communicate effectively with specialist and non-specialist audiences.

I have spent years communicating research outputs on a regular basis to a variety of audiences (stakeholders, scientists, members of the public) both in written and oral form. During my PhD, I communicated data outputs and analysis to our stakeholders every six months through presentations and every three months through reports. In addition, I have presented my research at academic conferences, and I have published in several academic journals including Journal of Wildlife Management, Wildlife Research, Avian Conservation and Ecology, Journal of Ornithology; I have also written short press pieces for Birdlife Australia and other non-peer reviewed press. I contributed to the 2020 Action Plan for Birds (CSIRO) and "Better offsets for WA Black Cockatoos" (Threatened Species Recovery Hub) and more recently I authored the 2022 Breeding Report for Carnaby's (Birdlife Australia).

As part of my current role, I liaise with volunteers to manage breeding monitoring, as well as representing Birdlife in community events and agricultural shows. An example of this is a recent event I managed which introduced members of the public to our breeding program. First, I gave a short presentation on the issues that Carnaby's Black Cockatoos face, followed by a Q&A session. I began with the presentation and discussion as this gave people the background to the issues facing the cockatoos. After this, I took the attendees for a demonstration of how we monitor breeding, which was an opportunity to broaden their understanding and appreciation of the birds. I give several workshops a year and am currently training a group of Indigenous rangers to be able to monitor breeding within their region.

10. C2. Show how you discuss work constructively and objectively with colleagues, customers and others and how you respond respectfully to, and acknowledge the value of, alternative views and hypotheses.

A large part of my role at Birdlife is collaborating with a wide range of stakeholders, and the only way for this to be successful is to always be

respectful of a range of views. As the Carnaby's Black Cockatoo is endangered and a flagship species for conservation, there is a wide variety of stakeholders within the conservation management of the species. No matter their individual points of view on best conservation practices and addressing conservation issues, I work effectively with each of them. In fact, through individual collaboration with stakeholders involved in breeding monitoring, I have been able to centralize all breeding data for the species; this is the first time this information has been aggregated in a single location, with obvious benefits for conservation outcomes.

One example of working constructively with an alternative perspective comes from my work with the Badgebup Rangers, an Indigenous conservation group I work with at some of the breeding sites I monitor. They have different perspectives on land use, our relationship with land and country, and conservation. Working with them, it has been essential for me to recognise and centre their traditional knowledge in my research processes. This works both ways with me also sharing my knowledge, skills and findings to capacity build and empower them to conduct conservation actions within their community. To this end, in addition to collaborating in the field, I assisted them with producing their annual report so that they could secure further funding for their work.

11. D1. Explain how you promote, implement and take responsibility for health, safety and environmental issues and adhere to requirements relevant to your role

Through the work I do for the environmental consultancy, I need to be aware of HSE, especially working on mine sites where safety is paramount. Safety at a mine site is a necessity, as mistakes might end up in injury or death. Therefore, we have a HSE plan for each job and if travel is involved, we need to submit a journey management plan as well. Before each job we do a Take 5 to familiarize ourselves with the task and any potential risks. If the task contains any potential hazards, we fill in a JHA (Job Hazard Analysis). During travel and work offsite we either have an EPIRB or a satellite phone with us and use a SPOT Tracker for active tracking and use these for check ins and in case of emergency. I take a similar approach in my work with Birdlife Australia, and when traveling I make sure my supervisor and our office manager are aware of my plans; and I carry a SPOT Tracker with me to check in regularly. When working with volunteers, they fall under the Birdlife Australia health and safety

plan and are covered for any work incidents. Prior to any task however, I remind volunteers of this and clearly explain any potential hazards and prevention of these (shin guards against snake bites, hats, plenty of water against heat stroke, etc.)

12. D2. Describe your contribution to key tasks, understanding fully the biological science objectives of the work done and its relevance to your employer and others

The primary task under my breeding project is to provide a full yearly breeding report which is shared with all stakeholders and government. This report is the only indication on the population's breeding in Western Australia and demonstrates where further conservation actions are needed and at which scale. I am therefore responsible to conduct the research and then produce a report in a format suitable for dissemination and publication amongst all parties. I also write a report on all the work I have undertaken for each of the NRM organisations and provide them with this in a timely manner, so they can use these in their reports when applying for continuation of funding.

In addition, I have, in my role as a black cockatoo expert, contributed to the "2020 Action Plan for birds" and "Better offsets for WA Black Cockatoos".

Regarding the environmental consultancy, I manage projects from start to end, producing a final report for our clients which enables them to meet their environmental requirements, whatever these may be.

13. D3. Describe how you show professional integrity and respect for confidentiality, and where you comply with personal and professional issues such as ethical code of practice and the RSB Code of Ethical and Professional Conduct

As the Project Coordinator for the Carnaby's Cockatoo breeding program I must make sure that all monitoring is conducted according to our animal ethics approval. This means that I need to ensure that anyone conducting surveys under our program is aware of the ethics guidelines concerning the work, to sign off on our ethics application and provide training where needed.

Royal Society of **Biology**

In addition, as part of my current role, I represent Birdlife in community events and agricultural shows, and run training sessions for volunteers in bird observation and recording, as well as providing them with support and resources. I also have a strong interest in citizen science and am a member of the Australian Citizen Science Association; I am currently researching the drivers of citizen science participation, to improve the efficacy of our outreach efforts.

When writing, I write from the perspective of Birdlife Western Australia rather than a personal point of view, and only share information that we are allowed to share, and which cannot be used adversely with regards to the protection of the species. As poaching of black cockatoos is a threat, I make sure that data is only shared with proponents looking to use the data for conservation practices and never give exact locations. Where exact locations are shared, a non-disclosure agreement must be signed.

Furthermore, I always recognise and acknowledge the contributions of volunteers and collaborators in the breeding report and other outputs.

14. E1. Give an example of your contribution to the profession of biology outside your direct work environment

I regularly volunteer for other projects outside of my role description. For example, I have recently assisted with deploying audio recorders for the Bittern project and have helped with installing cameras on artificial Sea-eagle nests. I have volunteered extensively in the past for wildlife rescue centres and other organisations, but now I spend my free time on working with the Advocacy committee and developing new methodology to identify breeding sites. I do this through remote sensing but am also using drone imagery to identify hollow-bearing trees. These are projects I work on outside of my professional employment.

15. E2. Give examples of how you support and develop the careers of colleagues

When working in a team, I try to build up my colleagues through assisting them wherever they need help and often offer my assistance. For example, I have run a workshop on QGIS for my colleague at Birdlife and one of our collaborators. Another example of supporting and developing the career of a colleague is training and support in RStudio that I gave to one of my colleagues, who had no previous knowledge of the software. By

Royal Society of **Biology**

training her in the basics of R, she was able to improve her working methods, and develop a new skill that increased both her professional abilities and her wider employability. In addition, I have developed the surveys through ArcGIS for projects my colleagues are running to facilitate their own data collection.

For the environmental consultancy, I have trained other staff in breeding monitoring methods as this is a requirement for targeted surveys. In addition, I regularly give breeding workshops to representatives of NRMs that I collaborate with as part of my role at Birdlife. As an expert in black cockatoo ecology, I have shared my knowledge to better enable them to carry out conservation actions.

When it concerns the sharing of knowledge to help others in their own conservation actions, I am always ready to help. A further example is an intern that I recruited and supervised in the first half of 2022. The intern was a university student who undertook a 100-hour UWA McCusker Centre for Citizenship internship at Birdlife. This involved initially proposing a role to the Centre and collaborating to develop a meaningful position. I then managed the intern for one day a week for the university semester. During his internship, I introduced him to fieldwork and all aspects of work within our organisation. I also mentored him in professionalism and work skills and supervised him throughout his first professional working experience.