Chris Hasselerharm

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CURRICULUM VITAE

I am an organised and diligent contributor, driven by a strong work ethic and a penchant for creative thinking. My passion lies in exploring land sharing and environmental restoration practices. I excel in leading and collaborating with various departments and stakeholders to achieve collective objectives. My approach to work emphasizes adaptability, passion, and a commitment to continuous self-reflection. I follow an agile project management style, facilitating rapid development and constant feedback to meet the demands of landscape-scale projects.

KEY COMPETENCIES

- Problem solving: Strong collaborative problem-solving skills;
- Collaboration: Thrives in a team environment;
- Adaptability: Ability to embrace challenges and adapt to a rapidly changing environment;
- Planning: Experienced in planning field teams requiring liaising with multiple departments and stakeholders;
- Organisation: Project management using Kanban and rigorous data management skills;
- Project management: Able to envision, plan, and execute end to end project processes and objectives;
- Communication: Strong written and verbal communication skills; skilled at translating complex concepts to collaborators and stakeholders of non-technical backgrounds;
- Technical skills: Skilled in geospatial modelling and visualisation using QGIS, R, and Python;
- Experienced drone pilot leading remote operations.

PROFESSIONAL EXPERIENCE

Data Scientist – Data Science (Ecology/GIS) team leader   **AirSeed Technologies**
2022 – Present

Achievements and responsibilities:

- Project lead in developing species identification and vegetation monitoring techniques using drone and satellite based sensors
- Leading development of geospatial models to optimise seed pod planting strategies
- Built a platform providing real-time carbon return and risk analysis for environmental plantings projects
- Developed custom flight planning software that integrates with open source autopilot software (ArduPilot and PX4)
- Provisioning of geospatial visualisations for technical and non-technical stakeholders

Field Assistant (Casual)   **University of New South Wales**
2021-2022   PI: Kate Brandis

Duties and responsibilities:

- Prepare flight missions and collect drone imagery of remote waterbird colonies in a safe and timely manner
- Sort and process imagery into mosaics using photogrammetry software (Pix4D)
- Maintain and ensure readiness of field equipment such as vehicles, drones, and kayaks
- Develop and validate supervised deep learning models to count birds and nests automatically

Teaching Associate (Casual)   **University of Technology Sydney**

2017 - 2021

Subjects: Animal Behaviour & Physiology, Biocomplexity, Environmental chemistry, Principles of Scientific Practice

Duties and responsibilities:

- Create a safe learning environment for students to share ideas and develop communication skills
- Provision of student feedback that positively reinforces the core learning objectives
- Consulting on future improvements to the practicals ability to meet course objectives
- Maintaining a professional relationship with colleagues and students

Field Assistant (Casual)   **University of Technology Sydney**

2018 – 2019   PI: Daniel Ramp

Duties and responsibilities:

- Establish protocols for collecting drone imagery to quantify vegetation biomass accurately
- Liaise with the industry partners to acquire drone imagery over ground-truthed plots.
- Process imagery into classified 3D point clouds for quantifying vegetation biomass
- Assist in developing supervised machine learning models to calculate biomass automatically

RESEARCH EXPERIENCE

Doctor of Philosophy Candidate   **Novel detection of wildlife provenance using portable x-ray**
2019 – 2022   **fluorescence**
                                            Supervisor: Daniel Ramp

My PhD research aimed to combine an elemental analytical device and machine learning to build a real-time forensic tool for the illegal wildlife trade. My research forms part of a larger collaboration with Taronga Wildlife Society, ANSTO, and UNSW. This project has involved:

- Building an end-to-end framework for retrieving data, processing, and analysis
- Sharing, tweaking, and updating code using GitHub
- Testing and refining machine learning models using robust methods of validation
- Designing and executing field-based research independently and as part of a team

BSc (Hons) in Environmental Science   **Monitoring the restoration of semi-arid rangelands in South**
2018   **Africa**
                                            Supervisor: Daniel Ramp

For honours, I had the privilege of travelling to the Karoo in South Africa to assess the benefits of different farming practices on the structure and health of vegetation. During my stay, I established relationships with additional farmers to include in the study and also:

- Conducted near-daily fieldwork for three months in remote locations 4 wheel-driving in rugged terrain
- Developed and tested machine learning algorithms for the classification of drone footage
- Extensively used camera traps, acoustic recorders, and a drone
- Created a stratified sampling design accounting for topological variation using QGIS

Undergraduate research project   **Using camera trap misfires to monitor vegetation health**
2017   Supervisor: Daniel Ramp

This project took advantage of those frustrating camera trap images absent of animals to monitor vegetation health. This is the project that introduced me to the power of coding in R. As part of this research I:

- Wrote R code to automatically read in images, filter night images, and temporally model vegetation metrics.
- Tested the effect of camera setup on several RGB based vegetation metrics

EDUCATION SUMMARY

2018   BSc (Hons) in Environmental Science   University of Technology Sydney, NSW Australia

2010   Certificate II in Furniture Making   Polytechnic West, WA Australia

AWARDS & SCHOLARSHIPS

2020   Australian Wildlife Society UTS Wildlife Ecology Research Scholarship ($5,000)
2019   UTS Doctoral Scholarship
2015   Deans Merit List for Academic Excellence

PUBLICATIONS

1. Hasselerharm, C. D., Wooster, E. I. F., Zawada, K. J. A., Yanco, E., McManus, J. S., Smuts, B. H., Lundgren, E. J., Middleton, O. S., Juilliard, L., McEvoy, T., Ramp, D. (2024). Wildlife-friendly farming promotes functional richness and trophic complexity. Agriculture, Ecosystems and Environment, (Under review).

2. Brandis, K.J., Francis, R., Zawada, K.J.A., Hasselerharm, C.D., Ramp, D. (2024). Advancing the Application of pXRF for Biological Samples. bioRxiv 2024.01.16.575873. https://doi.org/10.1101/2024.01.16.575873

3. Lundgren, E.I., Ramp, D., Middleton, O.M., Wooster E.I., Balisi, M., Ripple, W.J., Hasselerharm, C.D., Sanchez, J.N., Mills, M., Wallach, A.D., (2022). A novel trophic cascade between cougars and feral donkeys shapes desert wetlands. Journal of Animal Ecology, 91, 2348-2357. https://doi.org/10.1111/1365-2656.13766

4. Hasselerharm, C. D., Yanco, E., McManus, J. S., Smuts, B. H., & Ramp, D. (2021). Wildlife-friendly farming recouples grazing regimes to stimulate recovery in semi-arid rangelands. Science of The Total Environment, 788, 147602. https://doi.org/10.1016/j.scitotenv.2021.147602

5. Lundgren, E.J., Ramp, D., Middleton, O.M., Balisi, M., Ripple, W.J., Hasselerharm, C.D., Sanchez, J.N., Wooster, E.I., Mills, M., Wallach, A.D., (2021). Echoes of the late Pleistocene in a novel trophic cascade between cougars and feral donkeys. bioRxiv, 2021-04.

6. Hasselerharm, C. D., (2021) Seahorse secrets and where to find them. Australian Wildlife, Summer 1, 14-15.

REFEREES

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