



Managalas Conservation Area © Danny Nanne 2026

Seminar: *Making sense of large-scale acoustic datasets in the complex tropical landscape of Managalas*

How do we begin to understand biodiversity patterns from millions of minutes of acoustic recordings containing thousands of biological signals from a complex tropical landscape that remains poorly documented?

This is the challenge we faced in developing a biodiversity baseline for the Managalas Conservation Area in Papua New Guinea. Established in 2017 following decades of community-led conservation efforts, this 215,000-ha landscape remains under-documented, making biodiversity monitoring important for understanding ecological patterns and supporting its long-term conservation. The Managalas project brings together Landscape Alliance, WildMon, Map of Life Solutions and James Cook University to develop landscape-scale biodiversity monitoring. Acoustic recorders deployed in 7×7 grids have so far generated more than 1.3 million minutes of recordings across four surveyed grids.

Our initial approach combined automated recognition, reference data and expert validation, generating more than 32,000 acoustic detections representing 134 species. However, species detections capture only one dimension of these recordings. Like the forests themselves, soundscapes contain complex structure across frequencies, time and space that cannot necessarily be represented by species richness alone.

We therefore explored acoustic indices, spectral structure and recurring acoustic patterns to characterise how biological activity is organised across the landscape. Preliminary analyses reveal distinct diel patterns, variation in occupied frequency space, and differences in acoustic composition among sites, including patterns detectable before individual sounds are identified to species.

Here, we demonstrate how combining targeted species detection with soundscape-level analyses can progressively extract ecological information from large acoustic datasets, providing a scalable approach for navigating complex and under-documented tropical soundscapes.

Dr Karlina Indraswari is a conservation scientist whose research integrates advanced data science, technology, and community engagement to address complex environmental challenges. Her work spans biodiversity conservation, environmental governance, wildlife trade, ecoacoustics, and human–nature interactions, with a particular focus on translating research into practical conservation outcomes. Karlina was previously a Postdoctoral Researcher at the University of Queensland and Head Scientist at the Ironwood Foundation in Indonesia, where she led community-based conservation and biodiversity monitoring initiatives. She has published extensively in leading conservation journals and is internationally recognised for her contributions to evidence-based conservation and environmental policy.

Latest Publications:

[Market patterns within Indonesia's songbird trade](#)
[A Typology of Australian Terrestrial Bird Communities](#)
[How to run a language-inclusive international conference](#)

Seminar information

Date: Monday 24 August, 2026
 Time: 12:00-13:00 AEST
 Venue: Crowther Lecture Theatre,
 Building A3 Room 002,
 JCU Nguma-bada Campus, Smithfield
 followed by drinks and nibbles *(Cairns only)

Zoom: <https://jcu.zoom.us/j/83942844089?pwd=aKbkD0t0bljMKbXMXJwALUQDk6F5b.1>

Passcode: 221100

QR Code: Scan the code below to join us on Zoom

