

## The Ecosystem Change Ecology team

We are a multidisciplinary team based in Perth, Western Australia. We primarily deliver to the Land & Water and Health & Biosecurity business units, focusing on landscape change, species invasions and native species resilience in terrestrial ecosystems.

### Our diversity

We are a diverse team of around 20 people, built around two research scientists, two joint appointments with the University of Western Australia, an experimental scientist and a senior research technician.

We add value to our team via postdoctoral scientists, Indigenous cadets, honorary research fellows, visiting scientists, postgraduate students, honours students and volunteer fellows.

### Our capacity & expertise

We have considerable adaptability, while carving out widely acknowledged expertise in plant and invertebrate ecology and management as it relates to global environmental change. More importantly, our complementary skill sets combine synergistically to provide critical expertise on the research challenges we tackle.

Recent projects have involved the fields of plant ecophysiology, invertebrate biology and physiology, herpetology, empirical field ecology at the population and community levels, modelling and GIS, remote sensing, molecular and morphometric taxonomy, plant genomics, plant-animal interactions, biogeography and ecosystem interactions, and biological control, to name a few.

**We generate knowledge on the mechanistic links and synergistic interactions between landscape change, species invasions and native species resilience in terrestrial ecosystems.**

**Working on both natural and agricultural systems, we undertake research and develop theory to underpin more effective policy and management actions for conservation, invasion and production challenges in the face of rapid global change.**



**Sampling plant and invertebrate biodiversity in rainforest vine thickets of the remote Kimberley region in Western Australia.**

### Our collaborators & customers

We thrive on collaboration. In CSIRO alone, we deliver on projects across 3 Business Units and 4 programs.

Nationally, our main collaborators range from local groups targeting on-the-ground outcomes to Go8 universities:

- Natural Resource Management groups
- Indigenous groups in the Kimberley and Queensland
- WA Dept of Biodiversity, Conservation & Attractions
- Universities (UWA, Murdoch, UoM)

Our global outlook is underpinned by established partnerships with world class institutions and field leading researchers, including:

- The Centre for Invasion Biology (South Africa)
- Council for Scientific & Industrial Research (South Africa)
- The Stability of Altered Forest Ecosystems (SAFE) Project, Borneo (Imperial College UK)

We deliver our research to an increasingly diverse range of customers that include:

- WA Dept of Biodiversity, Conservation & Attractions
- Australian Department of the Environment and Energy
- Resource extraction companies (Chevron, Mt Gibson)
- Science and Industry Endowment Fund (SIEF)
- Australian Centre for International Agricultural Research (ACIAR)

## Our scientific engagement

We deliver our science to a variety of key science advocacy and research initiatives:

- The Western Australia Biodiversity Science Institute (WABSI)
- The Northern Australia Environmental Resources hub of the National Environmental Science Programme (NESP)
- The CSIRO Scientists and Mathematicians in Schools (SMiS) program
- The School of Biological Sciences at the University of Western Australia, via lecturing, joint appointments, collaborative research and student supervision.

## Our innovative approach

Despite being primarily focused on non-commercial research outcomes, we regularly take an entrepreneurial approach to our science:

- We applied a cutting edge genomic approach to make it possible to **characterise the massive biodiversity values** of vine thickets in the remote Kimberley region.
- We are developing novel strategies to guide resilient restoration of once-invaded landscapes in the south west of Western Australia, taking into account climate change drivers and species inherent adaptability.
- To enhance on-ground uptake of our pioneering work in invasive species management, we adapted our research into a **module for delivering planning advice** to NRM practitioners and generated an open access online **repository of global climate data**.

## Our excellent science

We convert our innovation into positive impacts through leading edge science with a focus on outcomes:

- More than 80 papers over the last five years, including multiple papers in *Science*, *Nature*, *PNAS* and *Trends in Ecology & Evolution*, as well as numerous book chapters and reports
- The AdaptNRM **Weeds & Climate Change** module
- The **CliMond database** of global climate data.

Our high calibre output has been recognised in various state and national awards, including:

- Australian Research Council (ARC) Future Fellowship
- CSIRO Julius and John Phillip awards
- CSIRO team excellence award
- two Endeavour Fellowships
- Australian Institute of Policy and Science (AIPS) Tall Poppy award.

**Our team has a sense of adventure and we relish exploring the 'roads less travelled'. Team cohesion is built on accountability, trust and a healthy dose of mutual respect. It is a fun and rewarding place to make a contribution to our planet's future.**



**Implementing weed biological control solutions in the remote Kimberley region of Western Australia.**



**Addressing global change challenges for conservation in the Daintree region of far north Queensland.**



**Providing national guidance for the appropriate choice of climate resilient street trees to avoid future weed problems.**



**Generating adaptation solutions for future food security via collaboration and knowledge transfer.**

### TEAM ALIGNMENT:

#### Land & Water:

Biodiversity & Ecosystem Knowledge & Services (Ian Cresswell)  
Biodiversity Assessment & Conservation (Kristen Williams)

#### Health & Biosecurity:

Managing Invasive Species & Diseases (Andy Sheppard)  
Invasion Biology & Management (Louise Morin)

### FOR FURTHER INFORMATION

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