Photo: Phill Laroche

ECOLOGICAL MONITORING

Ecological monitoring helps the Tasmanian Land Conservancy (TLC) to better manage our reserves by providing information about their condition and how this may change over time. Monitoring also provides an early warning of threats, such as feral animals or weeds, so that we can act quickly and efficiently. By relating our ecological monitoring data to the work we do on our reserves, such as ecological burning or pest control, we know whether our management is actually benefiting our reserves and the species that call them home.

Buying a reserve is just the first step. For conservation to work, the TLC needs to monitor the status of species on its reserves and take steps to ensure their continued health.

Sometimes we collect data without knowing what we'll use it for. Our future selves will thank us, for example we are now looking back at old photos of wombats and Tasmanian devils to understand changes in mange and facial tumour prevalence mange and facial tumours, information we didn't know we'd want at the time we recorded it.

TECHNOLOGIES

We use a range of technologies to make the task of ecological monitoring easier. We monitor ground-dwelling mammals using motion-sensor camera traps, leaving them in the landscape for several months. Data from the images we collect gives us a measurement of the diversity and abundance of mammal populations. It also warns us about the presence of feral species such as cats or deer.

We monitor vegetation using line-intercept flora transects and photo-points, which are surveyed at regular intervals to detect changes in plant diversity and structure. On some reserves, we also monitor known populations of threatened plants, using methods appropriate to each species. Other monitoring techniques include remote-sensing technologies such as satellite imagery and LIDAR which we use to monitor large-scale changes in the landscape that could affect our reserves and neighbouring areas. These technologies allow us to understand the impact of widespread processes such as climate change, land clearing or bushfires.

Photo: Denna Kingdom

At the Vale of Belvoir Reserve, TLC staff are monitoring the status of the threatened ptunarra brown butterfly (*Oreixenica ptunarra*). This delicately beautiful species is under threat because it is dependent on Poa grasslands, among the most endangered vegetation types in the state. The TLC began monitoring butterflies in 2010 and has been surveying every year since with the help of a dedicated team of volunteers. The monitoring is intended to make sure the TLC's management helps the butterfly persist. Grassland ecosystems often require frequent, low-level disturbance (such as fire or grazing) to maintain species diversity and prevent encroachment by other vegetation types.
The TLC has instituted a program of ecological burning and is phasing out cattle grazing. Monitoring ptunarra browns is part of a larger program aimed at ensuring these management practices promote the unique natural values of this reserve.

In recent years we have also started to introduce acoustic monitoring as part of our standard ecological monitoring at each reserve. Sound recordings allow us to detect and monitor a range of additional species such as birds, frogs and insects, as well as recording environmental events such as rain and wind. We are working on developing reference libraries of the calls of different species. These libraries will eventually be used to develop automatic recognition software, to be able to efficiently analyse the huge amounts of data generated by these detectors. Our new song meters are collecting acoustic information now, in preparation for a system for analysing the data.

The TLC is also hosting four acoustic sensors at our Five Rivers Reserve as part of A20, the Australian Acoustic Laboratory. The A20 project is building an Australia-wide network of approximately 400 sensors which are recording continuous soundscapes across all sorts of landscapes. The project will generate 2 petabytes of sound data over five years, all of which will be publicly available.

Learn more about the A20 network here: acousticobservatory.org/partners

CITIZEN SCIENCE AND MONITORING

WildTracker is an ecological monitoring system developed by the TLC. It is a citizen science program, trialled in southeast Tasmania in 2016-17 and now being rolled out state-wide.

TLC is working with landholders across Tasmania to establish a network of long-term wildlife monitoring sites on private land. The information collected by WildTracker™ will be used to identify wildlife hotspots and target conservation activities to important areas in the landscape.

WildTracker has eight components:

1. Attending a workshop to learn wildlife monitoring techniques and meet other conservation-minded people
2. Identifying a monitoring site
3. Setting a motion-sensor camera for native and feral species
4. Photo-repeat monitoring of vegetation using a digital camera or smartphone to create a visual history of habitat change over time
5. Acoustic monitoring of birds and frogs
6. Analysing the data
7. Sharing the results
8. Protecting wildlife – conservation advice is available through this program or landholders can become a member of Land for Wildlife.

Private landholders have an important role in protecting our native wildlife. Monitoring is a big job that is made a lot easier by sharing the load. By getting involved in WildTracker you can help us identify important areas for wildlife and make a big difference for conservation! Learn more about WildTracker by visiting tasland.org.au/projects/wildtracker

Photo: Matthew Newton

TLC's Five Rivers Reserve is the site of a world-first ecological accounting project. From the TLC's long-term ecological monitoring data, the organisation has developed an Environmental Account, using an asset condition accounting method created by the Wentworth Group of Concerned Scientists.

This is the first case study to be developed on a private reserve in Australia that could convert ecological monitoring data into a common unit of measurement – called Econd.

Using Econds allows the TLC to record, present and interpret monitoring data in a consistent way, comparing the health and condition of all its reserves. The organisation can track the effectiveness of management actions, identify which reserves or species need more attention, and plan work accordingly. To learn more about the TLC's Five Rivers Reserve Environmental Account, visit tasland.org.au/projects/environmental-account

For more information on the TLC's ecological monitoring, contact Conservation Ecologist, Matt Taylor on mtaylor@tasland.org.au

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