



Photo: Neil Davidson

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# Creating resilient habitat for the future: Building Climate Future Plots

## PREFACE

A workshop in February 2017 organised by VicNature2050 and hosted by the Arthur Rylah Institute brought together professionals from across the biodiversity, climate and restoration sectors to discuss the opportunities and challenges associated with setting up “Climate Future Plots”.

The aim of the workshop was to explore Climate Future (CF) Plots – long-term restoration trials that incorporate potential genetic variants and species adapted to future climates, which can inform conservation management decisions regarding when, where and how to support ecosystems as they are affected by climate change. Presentations and discussions covered a wide range of topics and drew on diverse expertise, with the overall aim to harness this knowledge toward constructing guidelines for creating CF Plots that are resilient to future climates and a resource for conservation management under increasing uncertainty.

It was clear that the way we manage our natural systems needs to be dynamic to meet the transformational changes expected to occur in our environment (Mike Dunlop). For example, major shifts in vegetation communities at Wilson’ Promontory National Park over the past 100 years from forests of large trees to a shrub-dominated landscape, in response to human-driven changes in fire regime, demonstrate the extent to which changes have already occurred (Jim Whelan). Climate change

is expected to result in continued and accelerated change as evident from ecosystem modelling efforts (Suzanne Prober, Craig Nitschke). However, moving to new conservation paradigms has challenges, including the need to develop new knowledge and overcoming institutional as well as social barriers (Mike Dunlop). Nevertheless, managers urgently need information on how to manage their land to mitigate negative effects of climate change on biodiversity. Discussions throughout the day focused on how we can build on the information already available to create CF Plots for maintaining habitat under climate change using new management approaches.

It was evident that the need for change in the way we manage biodiversity is being recognised across the sector. Victoria's new Biodiversity Strategy is taking a new approach to conservation management that recognises the impact of climate change and uncertainty (James Todd). Alternative strategies are already being implemented in some organisation to enhance climate resilience in restoration (Jim Begley; Elisa Raulings). However traditional 'local-provenancing' for restoration remains commonplace in most revegetation efforts. What is required is a collaboration across sectors, to guide and enhance the nature of current plantings and to provide strong climate and biodiversity science to inform both management decisions and policy.

When, where, and how much intervention is required to assist our natural systems can vary depending on the quality of the site and the desired objective (Linda Broadhurst). As new management approaches are developed and tested, including in CF plots, clear decision-making will be important for determining not only the appropriate actions, but also how uncertainty will influence decisions. Strategic monitoring can reduce uncertainty and improve future decision-making (Linda Broadhurst; Peter Vesk).

Presentations on the latest research regarding climate adaptation demonstrated the knowledge base available to inform CF Plots. This included research on variation in climate tolerance within and between species (Stefan Arndt; Suzanne Prober), knowledge of both climatic and genetic variation to guide selection of material for CF plots (Suzanne Prober; Adam Miller) and key traits that may limit species success under future climates (Craig Nitschke). In addition, examples of large-scale, experimental CF-style plots to assess species tolerance provides insight into possible approaches as well as logistical challenges (Brad Potts).

How we can move forward to create CF Plots? This core question generated much discussion and highlighted the many aspects that need to be considered from planning and decision making to logistics and science, as well as the challenges associated with collaboration across the sector and within the community. Whilst the need for clear and thorough objectives and guidelines was acknowledged, a clear message from the workshop was that uncertainty and incomplete data should not become an excuse for inaction (Peter Vesk). Climate Future Plots offer the opportunity to directly address uncertainty and actively test potential management strategies. Building from these discussions and the need for rapid action, the following document synthesises key ideas from this workshop and outlines a vision around the creation of CF plots.