Credit: Alan Graham

BEST-PRACTICE GUIDELINES

Practical climate adaptation advice for land managers

Climate change poses a major threat to the biodiversity of New South Wales. Increasing temperatures, shifts in rainfall patterns, rising sea levels and increases in the intensity and frequency of extreme events are affecting population sizes, species ranges, the timing of life cycles, the structure and composition of ecological communities and extinction risk. The exact nature of how climate change impacts will continue to affect individual species and ecological communities, however, is uncertain. The projects undertaken under the 'Best-practice Guidelines' research theme focus on examining the climate-readiness of current conservation practices and aim to develop new guidelines that better incorporate climate variability.

SPECIES ON THE MOVE

The rapidly changing climate means that some habitats will become increasingly unsuitable for certain species. Survival of these species may require active intervention in the form of translocation (also known as assisted colonisation) to new, more suitable environments.

Led by Macquarie University, this project delivered recommendations to policy makers for designing translocation policies under climate change for species in NSW.

Southern corroboree frog. Credit: Dave Hunter / OEH

Revegetation site. Credit: North Sydney Council Bushcare

CLIMATE-READY REVEGETATION

Revegetation and restoration practices need to incorporate information on changing climates at local sites to increase the likelihood that new plantings are sustainable in the medium- and long-term.

This project, led by Macquarie University, provides a step-by-step guide to using currently available climate change and species distribution tools to assist end-users incorporate climate change into revegetation and restoration planning:
www.anpc.asn.au/resources/climate_ready_revegetation

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MICROBIAL DIVERSITY IN WETLANDS

The Macquarie Marshes are an aquatic ecosystem of high-conservation value. Understanding how climate change may affect the relationship between flooding, aquatic metabolism and microbial diversity is critical for ecosystem and water management. A project led by Macquarie University investigated wetland primary productivity and the spatial distribution of cyanobacteria and soil microbes, and found that the response of microbial communities to inundation is highly complex and wetland-specific.

Willancorah swamp, Macquarie Marshes. Credit: Tim Ralph / Macquarie University

Tall tree in Barrington Tops NP. Credit: John Spencer / OEH

CONSERVATION THROUGH A CLIMATE-READY LENS

By altering the structure of landscapes, climate change is affecting how we view practical conservation targets, as well as the mix, timing and location of management actions required. For this project, CSIRO developed a decision-support tool that examines the ability of existing decision processes to incorporate climatic change and highlights how conservation can become more 'climate-ready'.

REMOTE SENSING OF ALPINE WEEDS

This project led by Macquarie University, examined the potential of remote sensing to monitor the distribution of weed species in alpine NSW. The development of monitoring tools which can provide cost-effective, large-scale spatial information will become increasingly important for weed management in the future, especially for those species that are predicted to become more widespread under warmer climates, such as Orange Hawkweed.

Orange Hawkweed. Credit: Wikimedia Commons

About the Biodiversity Node

The NSW Adaptation Research Hub was established in 2013 to leverage the State's multidisciplinary science capacities to produce relevant and practical research to directly inform the decision making of NSW agencies and communities. It is comprised of three nodes to address key policy and operational priorities of the NSW Office of Environment and Heritage. The Biodiversity Node is hosted by Macquarie University, and focuses on increasing our knowledge about the capacity of species, ecosystems and landscapes to adapt to climate change. Sixteen research projects have been co-developed with 15 partner institutions, which build our understanding of climate change impacts on biodiversity and inform potential actions and responses. For more information on the Biodiversity Node and the projects it supports, visit mq.edu.au/about/biodiversity-node

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