

Biodiversity and climate change – interesting facts from useful resources

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Document title	Interesting facts from the document
Climate-ready Victoria	Since 1950 central Victoria's average temperature has risen by 1.2 - 1.4 °C and average annual rainfall has dropped by around 100 mm.
	Over the past 100 years, global surface air temperatures have risen by almost 1 °C. We can expect temperatures to continue to increase, with more extreme and frequent weather events and a longer fire season.
Climate-ready Victoria: Loddon Mallee	Temperatures in the Loddon Mallee region will continue to increase year round, with fewer frosts, more frequent and intense downpours, more hot days and warm spells, less rainfall in autumn, winter and spring, and longer and harsher fire seasons.
A new website shows how global warming could change your town	By 2030, the Australian annual average temperature is predicted to increase by 0.6 - 1.3 °C above the climate of 1986 - 2005, with little difference between projected emissions scenarios.
	By 2050, the warming is projected to be around 0.7 - 2.1 °C for a low emissions scenario, 1.0 - 2.5 °C for intermediate emissions, and 1.5 - 3.0 °C for high emissions. The ranges indicate results from different model simulations.
	By 2090, the Australian annual average temperature is projected to increase by 0.6 - 1.7 °C for low emissions, 1.4 - 2.7 °C for intermediate emissions, and 2.8 - 5.1 °C for high emissions.
Weeds and climate change - Fact sheet	When the climate changes, some species benefit and others lose out.
	Some of the complex ways that climate change and weeds will interact to cause harm to Australian biodiversity and agriculture: <ul style="list-style-type: none"> • More opportunities for weeds spread due to extreme weather events. • Range shifts due to temperature and rainfall changes. • Increased invasiveness due to carbon dioxide fertilisation. • Increased dispersal and pollination of weeds from animal behaviour changes. • Transformations due to feedback loops (e.g., weeds that both promote fire and are promoted by fire). • More weed opportunities due to human climate change responses (e.g., changes to agricultural and gardening practices).
	Reducing the impacts of weeds and preventing new weeds are essential to increasing the resilience of ecosystems and giving native species the best chance to deal with the adverse impacts of climate change.
Weeds and Climate Change: Supporting weed management adaptation	The science of invasion ecology indicates the suite of weed species will change and weed impact may increase under climate change. Increased temperature, changed rainfall, increasing carbon dioxide, changes in extreme weather events and frosts, coupled with land use change, will drive the changed weed profile.
	Species distributions will move, mostly southwards in Australia. This will modify the biosecurity threat, including from native invasive species. Corridors may both aid management or be new conduits for invasion, especially invasion of refugia (areas where a population of organisms can retreat to survive through unfavourable conditions).

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	<p>Management of invasive plants under climate change could comprise:</p> <ul style="list-style-type: none"> • Continuing current control options (incremental evolution). • Adopting control options suitable for invasive plant management under current extreme conditions (the no regrets approach). • Developing new invasive plant management techniques adapted for climate change (future proofing approach).
<p><u>Climate-ready Restoration: Some practical guidelines for plant restoration in an uncertain future</u></p>	<p>Some of the more important climate predictions for the near future (i.e., by 2030) for the Murray Basin Natural Resource Management Cluster that are likely to influence how we plan restoration include:</p> <ul style="list-style-type: none"> • Higher temperatures and more frequent hot days. • Fewer frosts. • Less rainfall in the cool season but no changes for the warm season • Increased heavy rainfall events. • More time in drought. • Decreased humidity over winter and spring. • Increased evaporation rates and reduced soil moisture. <p>Future projections of higher temperatures, hotter days, lower rainfall, increased evaporation and reduced soil moisture will significantly influence what we plant and where, and may even change when and how we plant.</p> <p>Climate change will affect seed production (i.e., the timing, pollination, and flowering) with reduced amount and quality of seed. This will ultimately reduce the amount of seed available for restoration.</p>
<p><u>Creating resilient habitat for the future: Building Climate Future Plots</u></p>	<p>The basic concept of creating Climate Future Plots involves planting species currently occurring in the area, but using some provenances of species from further north. This enables genetics to be shared and genetic traits carried to new areas. It also allows monitoring of how successful these provenances are in the new area.</p>
<p><u>Climate change and biodiversity in the Murray Basin NRM Cluster region: how will it affect your region?</u></p>	<p>Potential impacts on terrestrial plants and animals include changed flowering times and length, altering pollinator timing, affecting seed production, and affecting animal resources and recruitment. Plants with niche requirements will struggle with these changes more (e.g., some eucalypts) while less niche plants (e.g. some acacias) will tolerate changed conditions for longer.</p> <p>Plants and animals have three main options to cope with change:</p> <ul style="list-style-type: none"> • Stay put at the risk of being unable to cope and dying out. • Stay put and adapt. • Move to a more suitable place (migration). <p>There are many things we can all do to help biodiversity adapt to climate change including:</p> <ul style="list-style-type: none"> • Engage with your local natural resource managers, council and Landcare group to stay informed of what changes are occurring in your region and how you can help. • Increase the size of flora and fauna populations, reconnecting them and improving their health. This will give organisms the best possible chance of adapting to change. • Accept change is inevitable and local species you know and love may need to

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	<p>move to new areas to survive. The good news is that new species will replace them, although it this may take time.</p> <ul style="list-style-type: none"> • Keep watch for new threats such as pests and diseases not previously seen in your area. Stay in touch with your local natural resource managers, council and Landcare group and let them know when you see something unusual.

For links to more useful resources, visit <https://connectingcountry.org.au/education-resources/take-action/biodiversity-and-climate-change/>

If you would like a hard copy of any of these resources, please contact (03) 5472 1594 or asha@connectingcountry.org.au

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