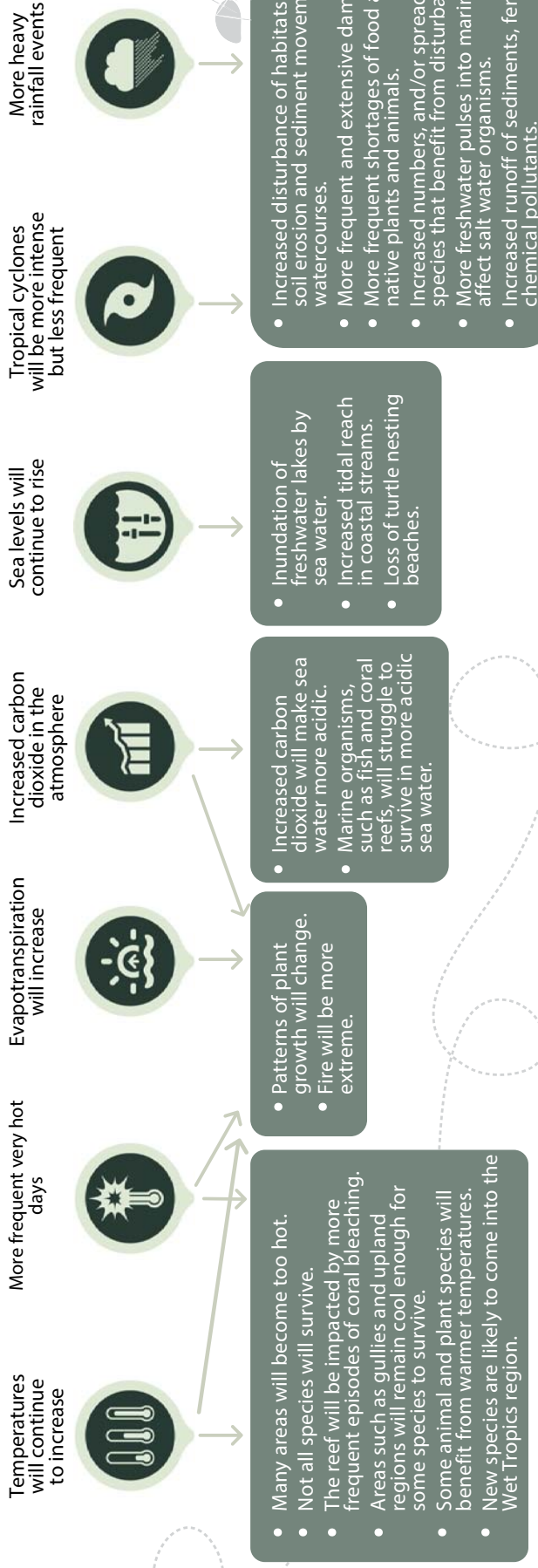


What changes are likely?



What can be done?

Plan

- Use information about how scientists expect climate to change to prioritise those parts of the landscape that will be suitable as habitat for plants and animals in the future.
- Monitor the actual responses of animals and plants and adapt management accordingly.
- Identify areas away from coastlines where coastal species and habitats could survive.
- Include ecological impact assessment in any plans to use engineering to protect communities and infrastructure from sea level rise.
- Plan for an increasing need to manage invasive species following cyclones, fires and floods.

Research

- Develop an understanding of the issues associated with the translocation of species whose habitats we expect to lose.
- Work with on-ground managers to improve knowledge about how to restore coral reef systems and methods for rapidly restoring vegetation cover.
- Investigate ways to address new problems, such as controlling increased marco-algal growth on coral reefs using a different management approach.
- Work together with researchers to monitor how species and habitats are changing.

Implement

- Continue to work with farmers and other land managers to restore habitat areas on private land.
- Plant trees and encourage regrowth to insulate freshwater systems from high temperatures.
- Where temperatures are expected to be too high for native species and habitats, consider providing artificial cooling such as shade or sprinkler systems.
- Protect and restore areas that will remain cool and the connections between them.
- Include 'wildlife friendly' infrastructure design to enable safe movement of native species.
- Adapt management of fire and invasive species based on information about how species and habitats are changing.

Educate

- Increase awareness of the role played by vegetation and natural systems in protecting coastal areas from storm surge and flooding.
- Work with farmers and other land managers to increase awareness of the importance of private land for allowing native species to adapt to climate change.
- Develop more widespread understanding of the need to reduce existing pressures on native species and habitats in order to improve resilience.

Plants, animals, habitats and climate change

Adaptation to the changes brought about by climate change will involve all of society. The type and extent of action required will depend on how much we are able to reduce emissions of global greenhouse gases. Some adaptation actions may require relatively small, continuous improvements in current practices, whereas others will involve fundamental changes to our ways of doing things, including what we do and where we do it.

There are very few options for protecting natural systems from the impacts of climate change and only limited capacity for adaptation to climate changes. This makes biodiversity very vulnerable to impacts of climate change. Because of the ecosystem services provided by natural systems (e.g., clean water, healthy soil, pollination, buffering during storms), negative impacts on biodiversity will affect human well being. Limiting the extent of climate change by reducing global emissions of greenhouse gases is the only way to limit the damage to biodiversity.

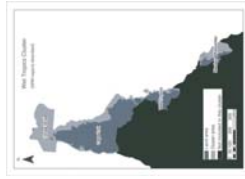
The information provided here has been developed for the Wet Tropics NRM cluster region (shown in map), although many of the principles will be relevant in other locations. The Wet Tropics NRM cluster region is expected to provide climate change refugia for many terrestrial and freshwater species and is considered nationally significant. However, some ecosystems (e.g., tropical coral reefs) and species (e.g., endemic upland rainforest mammals) will not be able to persist in the region, even with fairly moderate climate change. Protecting biodiversity in a changing climate will require strong links between, researchers, policy-makers, management agencies and on-ground managers.

Additional information

AdaptNRM (2015) Helping biodiversity adapt
<http://adaptnrm.csiro.au/biodiversity-options/>

Hilbert, D. et al. (2014) Climate change issues and impacts in the Wet Tropics NRM region.
<https://terranova.org.au/repository/climate-change-issues-and-impacts-in-the-wet-tropics-nrm-cluster-region-1>

Moran C. et al. Eds. (2015) Adaptation pathways and opportunities in the Wet Tropics NRM cluster region.
<https://terranova.org.au/repository/adaptation-pathways-and-opportunities-for-the-wet-tropics-nrm-cluster-region-volume-1-introduction-biodiversity-and-ecosystem-services>



What's happening in your region

Projected changes in climate (and degree of confidence)



Substantial increases in average, maximum and minimum temperatures
Very high confidence



Substantial increases in the temperature, frequency and duration of hot days
Very high confidence



Average sea level and height of extreme sea-level events will continue to rise
Very high confidence



Increases in evapotranspiration in all seasons
High confidence



Increased intensity of extreme rainfall
High confidence



Less frequent but more intense tropical cyclones
Medium confidence



Changes to rainfall are possible but unclear
Low confidence

http://www.climatechangeinaustralia.gov.au/media/cia/2.1.5/cms_page_media/172/WET_TROPICS_CLUSTER_REPORT_1.pdf
The degree of confidence in each projection is determined by considering the number of models that project a similar long-term trend, together with how well we understand the mechanisms underlying the models. If the evidence is robust and there is a high level of agreement among models about trend in that climate variable, scientists have a high level of confidence in the projection.

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