HOW CAN WE PROTECT SPECIES FROM CLIMATE CHANGE?

Increasing the resilience of ecosystems will assist them, and the species that rely on them, to adjust to climatic change and its associated complex array of threats. These are the key strategies for achieving this outcome.

PROVIDE ADEQUATE AND APPROPRIATE SPACE

Over coming decades it will become increasingly important to expand our national parks and other protected areas to provide buffer zones for our ecosystems. Connecting protected areas will provide corridors to aid species migration southward or upward in elevation. In prioritising areas for protection we need to think about the extent to which different areas will be impacted by changes to climate, what species will be particularly affected and what it will mean for ecosystems if certain species are lost.

LIMIT ALL OTHER THREATS

Plants and animals and the ecosystems they depend on are already affected by an array of stresses including habitat loss and fragmentation, wildfire and invasive species. We need to reduce these non-climate threats as much as possible, to maximise the ability of the ecosystem to withstand changes to climate. Strategies for achieving this include halting land clearing, stopping the removal of coastal dune systems for urban development, avoiding overgrazing in grasslands, and removing weed and feral animal pests.

LEARN AS WE GO

Despite many scientific advances, there is still much uncertainty about how our ecosystems will be affected by climate change. We therefore need to be adaptable and flexible in refining our approach as we increase our understanding. In some cases where predicted impacts are quite clear, we may be able to intervene with assisted migration or relocation of a species, implement prescribed burning or other fire-management strategies to lessen the impact of increasingly frequent wildfire, or take pre-emptive measures to halt the expansion of a weed or pest. Where impacts are less clear we may need to trial a number of solutions. In some cases, extinction in the wild will be inevitable, and we may need to consider further developing seedbanks and captive breeding as a last resort.

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HOW YOU CAN HELP TO REDUCE THE IMPACT YOU HAVE ON THE ENVIRONMENT

- If all Australians switched to clean, renewable energy (Green Power) today, **Australia's total greenhouse pollution would be cut by 30%**. That's the equivalent of more than 40 million cars! Contact your electricity provider and make the switch. Website: http://wwf.org.au/act/takeaction/green-power-200603/
- Change your showerhead to one with a 'AAA rating' and **save up to 28,000 litres of water per person every year.** That's a saving of more than 45,000 bottles of water per year. The Water Services Association of Australia has a searchable list of AAA rated shower heads on their website: http://www.wsaa.asn.au/ratings/index.plx?search=Shower20Head

The Sustainable Energy Development Authority has installed solar panels on the roof of their office in Sydney's business district.
© WWF-Canon / Adam Oswell.

- Appliances that are running in standby mode may account for **more than 10% of your electricity bill**. Unplug your appliances - chargers (mobile phone, MP3 player etc.), TVs, computers and microwaves - when you're not using them to save money and help the environment, go to the Australian Greenhouse Office website: www.greenhouse.gov.au/gwci/index.html.
- Walking, cycling or using public transport can reduce transport emissions. The TravelSmart website provides information, toolkits and resources to help you reduce car usage and making smart choices about alternative forms of transport on http://www.travelsmart.gov.au/
- Minimise waste of packaging and materials – refuse, reduce, re-use, recycle.
- Protect remnant bushland by fencing, controlling predator species and removing weeds.
- Join the Future is Man Made campaign and **take the first step towards securing a sustainable future for our planet**. It costs nothing, yet it could make all the difference. For more information, visit http://wwf.org.au/future

Mangroves at Port Douglas

BUILDING RESILIENCE TO CLIMATE CHANGE FOR AUSTRALIA'S SPECIES AND ECOSYSTEMS

The Australian climate is changing and our natural environment is being impacted. Those regions particularly vulnerable include the Australian Alps, the Southwest Australia Ecoregion, upland tropical rainforests, coral reefs, arid and semi-arid habitats, freshwater wetlands and riverine environments.

Temperatures in Australia have already increased by about 0.6°C, sea levels have risen 10 cm over the last 50 years, and ice and snow coverage has decreased. Most of Australia is experiencing lower rainfall, resulting in increasing periods of drought and urban water restrictions. This is particularly evident in eastern Queensland and the southwest of Western Australia.

These changes are likely to continue. It is predicted that by 2030 temperatures will have increased by 0.4 to 2.0°C and by 1 to 6°C by 2070. Annual rainfall is expected to continue to decrease, particularly in the southwest, parts of the southeast and much of Queensland, affecting our main food-growing areas. Frequent wildfire will become an increasing problem, and our alpine areas will shrink. Coastal communities will be impacted by sea levels rising by up to 88 cm by 2100 and more frequent and intense cyclones, floods and storm surges.

Temperature and rainfall are two of the most important factors determining where species can live, grow and reproduce. Although the earth has experienced episodes of climate change in the past, change has never before been so rapid, and many species will experience difficulty in adapting quickly enough. Large numbers of plants and animals will experience a shift or reduction in geographic range. Mangroves, coastal wetlands and sea grass communities will be impacted by rising sea levels. Changes to seasons and habitat will affect breeding success, and the structure and composition of ecosystems will change.

Species already threatened with extinction are likely to be even more vulnerable to the increased pressure of climate change, while more robust species such as weeds and feral animals will find that a new range of environments are favourable to them. And ecosystems under stress from climatic changes will be more susceptible to invasion by pest species.

We must act now!

CLIMATE CHANGE AND AUSTRALIA'S THREATENED SPECIES

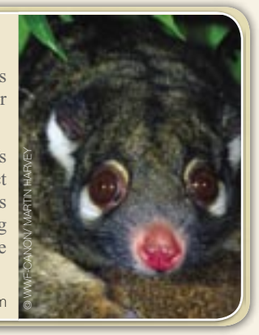
INCREASING WILDFIRE

- An increase in the frequency and intensity of wildfire will reduce the extent of fire-sensitive vegetation in places like the Arnhem Plateau, as well as food and shelter for animals such as the bilby and great desert skink.
- The Arnhem Land Fire Abatement Scheme combines satellite fire-mapping technology, helicopters and on-ground action by Indigenous rangers to achieve a significant reduction in the area burnt each year.

Wildfire

RISING TEMPERATURES

- The green ringtail possum in North Queensland rainforests is very sensitive to high temperatures and is likely to suffer mass mortality during heat waves.
- Through the Queensland Environmental Protection Agency's Nature Refuge Program, landholders can help to protect important habitat for such species. The program creates wildlife corridors across property boundaries by linking vegetation, thereby assisting fauna to successfully migrate as climate changes.



Green ringtail possum

RISING SEA LEVELS

- Coastal habitats important to many species such as marine turtles, shorebirds and sea lions will be impacted by predicted sea level rises of up to 88 cm by the end of this century.
- The Ningaloo Turtle Program monitors marine turtles and their associated habitats, helping to identify areas that are important to turtles now and those that are likely to be in the future, to inform coastal planning.
- The Queensland Wader Study Group coordinates monitoring of important shorebird areas such as the Great Sandy Strait, where it has mapped and monitored shorebird roost sites in order to produce guidelines for planners.

Ruddy Turnstones

REDUCED RAINFALL

- With less rain, the flow of the Murray–Darling river system could reduce by as much as 30%.
- Reduced water flows will impact on many species like the Macquarie Perch and wetland systems such as the Macquarie Marshes, as well as on farmers in the region.
- Through the National Water Initiative, the Australian Government and all state and territory governments have agreed to take significant steps to improve the health of Australia's freshwater ecosystems. By recognising over-allocated rivers, the condition of our unique river and wetland systems can be improved.

Extreme drought conditions, Western NSW

RISING SEA TEMPERATURES

- Increasing frequency of coral bleaching due to rising sea temperatures is threatening the Great Barrier Reef, one of Australia's premier tourist attractions.
- The most effective way to build the resilience of the Great Barrier Reef to climate change is to have a comprehensive network of no-take zones. In 2004, following a world-class process of community consultation, the Great Barrier Reef Marine Park Authority increased the protected area of the Great Barrier Reef Marine Park from 4.6% to 33% – more than 11 million hectares.

Hardy Reef, Great Barrier Reef

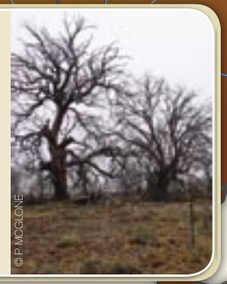
FRAGMENTED LANDSCAPES

- A 1ºC temperature increase equates to approximately a 125 km southern shift of landscape or a gain of 100 m in altitude.
- A sedentary species such as the malleefowl will find it very difficult to migrate. Even very mobile species will find it challenging to move to a suitable climate through highly fragmented landscapes such as the Western Australian wheat belt.
- Community groups across Australia are helping malleefowl by identifying important remnant malleefowl habitat and protecting it, and where possible providing habitat corridors to help facilitate the movement of the species.

Malleefowl in wheat field

INCREASED DROUGHT

- With increased drought, climate change already appears to have caused severe decline of the Miena cider gum.
- The Bothwell Landcare Group is helping to recover four stands of this cider gum through a number of methods, including fencing to exclude stock and rabbits, and propagating and planting seedlings.



Miena Cider Gum

DECREASED SNOW COVER

- Areas with at least 30 days of snow cover annually are predicted to shrink by between 39% and 96% by 2070.
- Decreased snow cover will affect many species in the Australian Alps, including the mountain pygmy possum and alpine skinks, as well as Australia's ski industry.
- Staff from the Victorian and NSW environment departments, in conjunction with alpine resort managers, Parks Victoria and the NSW National Parks and Wildlife Service continue to closely monitor the mountain pygmy-possum populations and their sensitive habitat.

Mountain Pygmy Possum