Editorial

What hope for biodiversity in the face of anthropogenic climate change in Oceania?

OVER the past five years, climate change has not only become the main priority for environment policy, it is influencing most spheres of public policy as understanding increases of the ramifications of global warming. Despite the importance of the issue, governments have struggled to reduce their carbon addiction because of the high dependencies of economies and social systems (e.g., jobs) on this one element. Industries aggressively protect their interests and the public debate is often debased by a media who, in the interests of so called balance, often set the issue up as one of disagreement among opposing scientific factions on anthropogenic climate change. A recent extensive analysis of 1 372 climate researchers and their publications and citation data showed that 97-98% supported the tenets of anthropogenic climate change, while the 2-3% of scientists that disagreed had a scientific status well below the majority (Anderegg *et al.* 2010). There is no balance here. Further, international frameworks for decision-making remain fractured with considerable inertia to reduce global emissions. Uncertainty over predictions of what the future will look like has become an increasingly easy reason for not making the necessary policy responses to deal with climate change. Some argue in the rich nations of Oceania (e.g., Australia) that local emissions policy detrimentally affects carbon dependent industries and makes little difference because they emit so little of the world's carbon. This ignores the morale responsibility for leadership among the world's worst emitters of carbon, on a per capita level. It also ignores the critical fact that the environments in our region of Oceania are increasingly the vanguard of those affected by sea level rise and other impacts of anthropogenic climate change and no action will lead to great suffering of those who need our help the most.

Lines of evidence for anthropogenic climate change continue to accumulate from many different independent studies including those on climate itself, sea level rise and changing responses of biota. Those conservation scientists who are not worried that climate change will be a key threat to biodiversity should reconsider their position — current projections of climate change are unprecedented since the last massive extinction event 60 million years ago (Steffen *et al.* 2009). The inevitable lag effects of accumulated carbon in the atmosphere ensure that impacts on biodiversity will continue for decades, even if there was significant policy to reduce emissions.

Faced with this challenge, conservation scientists have some hard choices for their work. There will remain an important role for impact identification and understanding the pathways in which anthropogenic climate change affects ecosystems and species. The ongoing scale of the impacts needs to be conveyed for broad policy change, given the extent of prevarication and lack of understanding in political circles and the wider community. We should also be seeking solutions within the constraints of future impacts of climate change and this requires continual assessment of conservation goals and their achievability. Traditional notions of setting aside conservation areas as static safe harbours for biodiversity no longer work, if they ever did. Climate change is rapidly shifting niches for species. Resilience of ecosystems has increasingly become the currency concept for natural resource management; it conveniently allows for a certain degree of disturbance to an ecosystem or species before there is an often irrevocable shift in ecological state. Implicitly, this implies redundancy within ecosystems in terms of species and functions. There is a considerable challenge in embracing this complexity and attempting to chart future directions for biodiversity conservation that provides a platform for adaptation policies that not only allow ecosystems and their species to adapt but also provide ecosystem services.

The hope for biodiversity in our region is for conservation scientists, policy-makers and managers to play a role in helping raise awareness of what is happening (and what is likely to happen). This will require acting at all levels of society, from influencing broad policy on carbon emission at national and international levels to assisting with local scale adaptations. Good policy is the only way we are going to stop the rate of warming. On the practical side, those interested in planning for conservation need to understand that climate change is going to change the ecosystems they care about. To cope with change, there is a need to define clear conservation objectives for different scales of management where at least we can measure our progress and provide

transparent evidence of achievability. Climate change has swamped many of the traditional threats to biodiversity in terms of its extent and interactions and has further highlighted the inadequacies of current protection of biodiversity. This is a significant challenge and we must remain hopeful and active in measuring impacts and providing solutions for future generations.

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