



## CSIRO Submission 08/329

### Review of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

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## Review of the EPBC Act

*Q1(c) (under Scope of the Act): Are the existing matters for national environmental significance (NES) appropriate? Do you think that there should be any additional matters of NES, and if so, how should such matters be framed?*

and

*Q9 (under Biodiversity): Does the Act provide an effective regulatory framework for the conservation of Australia's biodiversity? If not, what improvements could be made?*

- The Act adopts and promotes a perspective on the nature and value of Australia's biodiversity that emphasises listed threatened species and threatened ecological communities. However, only a small proportion of the total compositional diversity of Australia's biota can ever be addressed explicitly by the listing of threatened species and communities.
- This issue is particularly acute for lesser known, highly diverse biological groups at the species level (e.g. invertebrates, non-vascular plants, microbes), and for all biological groups at the genetic level. The congruence between spatial patterns exhibited by these components of diversity and defined "ecological communities" of the type commonly considered for listing (based largely on dominant vascular plants) is often poor, or unknown.
- The role of biodiversity in maintaining ecosystem processes and providing ecosystem services is not currently recognised by the Act. Such processes and services are often underpinned by more widespread and/or abundant species and communities. Incremental losses relating to these more common (and therefore unlisted) entities may therefore have major consequences for ecosystem processes and services.
- In the nine years since the inception of the Act major scientific advances (often Australian-led) have been made in ecological and conservation theory, principles and assessment methodologies of direct relevance to the issues outlined above. A number of CSIRO scientists have been integrally involved with these developments, and are therefore well placed to provide further expert advice to the review process, if required.

*Q19 (under Biodiversity): Does the Act provide an appropriate legislative framework for addressing climate change and other emerging pressures in the context of environmental protection and biodiversity conservation? If not, how can such matters be considered when making decisions under the Act?*

- The current Act does not provide a long-term basis for addressing biodiversity conservation in the context of climate change.
- Using defined "ecological communities" – listed or otherwise – as the basis for conservation assessment under climate change raises a fundamental challenge. The present assemblages of species will not remain fixed under climate change – species will mix in new combinations, forming communities unlike those we currently see in the landscape. The logic behind using a fixed list of communities to assess conservation status (as assumed in the current Act) is likely to fail under climate change.
- A likely consequence of this is the need to shift focus from protecting individual species to providing as much opportunity for as many species as possible to survive. Science of the last 20 years suggests protecting a diversity of types of habitats is an extremely effective way to provide opportunity for many species – it is the basis of the National Reserve System. Very likely this will remain so, possibly becoming even more important, as species and ecosystem respond to climate change (Dunlop and Brown 2008). But additional factors may need to be considered, management especially of disturbance regimes, connectivity to facilitate movement of species locally between types of habitat and from one region to another.
- Further attention needs to be given to the potential role that biological diversity (particularly at large spatial scales) could play in promoting ecosystem resilience (and therefore ongoing provision of ecosystem services) under climate change – i.e. the concept of "insurance value". This offers the potential to re-cast biodiversity as a solution to climate-change adaptation, rather than as simply part of the problem.

### **Issues for the review panel to consider that CSIRO will be able to assist with**

Relates to Q1 a, c, e; Q8; Q9, Q18, Q19, Q25,

Also Q10-17, questioning whole rationality for addressing each and every threatened species.

Also Q28 (as a mechanism for promoting coordination)

- The way native species and ecosystems, and threats to them, will respond to climate change will have inevitable consequences for the conservation of biodiversity.
- The changing nature of biodiversity dictates we must reformulate the core objectives of biodiversity conservation. The current (implicit) objective of preventing any change to biodiversity (in selected places) will become untenable. We will need to shift to something like “managing the *change* to minimise the *loss*”. We need to get there, but we don’t know how to do it yet.
- Actions to *resist* ecological change may increase some losses, but some actions to *facilitate* change may also increase other losses. We do not yet understand the ecological aspects of the trade-offs, nor the social consequences, let alone consider different institutional approaches to managing them. This requires more conceptual, analytical and empirical work over the coming decade. ‘Critical Habitat’ identifies the specific habitat required for the survival, recovery and persistence of a listed species. Analysis of the effectiveness of protecting Critical Habitat under the United States Endangered Species Act (ESA) has shown a clear link between protection and species recovery. In Australia, the protection of Critical Habitat is a discretionary measure in the recovery and conservation of threatened species under the Environment Protection and Biodiversity Conservation Act (EPBC). Despite its known importance, the protection of Critical Habitat remains one of the most contentious decisions faced by government agencies. In Australia uncertainty about what constitutes Critical Habitat has crippled the designation process. Under the current review of the EPBC there is an opportunity to make the designation of Critical Habitat a priority for listed species. Serious consideration should be given to “protecting habitat for the *future* survival of species” as a matter of National Environmental Significance; this could effectively be framed in terms of protecting as many different types of habitat and the diversity of habitat types in any region. Any actions that decrease the diversity of habitat types should be covered by the act.

### **CSIRO coordinators, and contributors to the submission**

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Lead scientists: Mike Dunlop, Simon Ferrier & Mark Stafford Smith (biodiversity and climate); Tara Martin (critical habitats); Andy Sheppard (invasive species);

### **Relevant reading**

Dunlop, M., and P. R. Brown. 2008. Implications of climate change for Australia’s National Reserve System: A preliminary assessment. Report to the Department of Climate Change. Department of Climate Change, Canberra, Australia.