Victoria Naturally Alliance
Connecting people and nature

Submissions
Garnaut Climate Change Review
contactus@garnautreview.org.au.

11 April 2008

Re: importance of maintaining ecological processes

Dear Professor Garnaut,

Please find attached a submission made by 19 leading Victorian ecologists to the first stage of the White Paper Land and Biodiversity at a time of Climate Change. This submission highlights that in terms of biodiversity conservation, we need a complementary approach to protection of "conservation assets" (species and places) which thinks more broadly of the vital role of ecological processes in maintaining biodiversity. The submission concludes that "the greatest potential to sustain biodiversity and evolutionary processes in Victoria in the long-term (and their concomitant benefits for people), will come from conservation strategies that are directed toward maintaining, or re-establishing, the integrity of ecological processes."

This submission was part of a project commissioned through Deakin University by the Victoria Naturally Alliance of eight environment groups. The alliance is hosted by the Victorian National Parks Association and includes the Australian Conservation Foundation, Environment Victoria, Bush Heritage Australia, Greening Australia (Vic), The Wilderness Society, Trust for Nature and the Invasive Species Council. These groups have come together to work to reverse Victoria's biodiversity crisis.

Since European settlement of Victoria, we have cleared 70% of Victoria's original native vegetation. (DSE 2007). The ensuing habitat loss and fragmentation, along with a plethora of threats such as weeds, feral animals and extraction have resulted in 44% of Victoria's native plants and more than 30% of our animals extinct or threatened with extinction according to the CSIRO.

Many of the valuable ecological services we take for granted are also under threat, including clean air and water, pollination and pest control.

The downward trend continues. The Victorian Catchment Management Council's *Catchment Condition Report 2007* revealed a serious failure to stem the decline of Victoria's land and water resources. It is clear that Victoria's natural environment

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requires a concerted, large scale restoration effort. It is also vital that we adequately protect existing native vegetation.

The natural environment provides significant opportunities for sequestration of carbon in soil and vegetation. If this is to have benefits for biodiversity, approaches require a strong focus on conservation based revegetation. Any emissions trading scheme and carbon sequestration approaches must not have perverse impacts that result in further impacts to our already stressed natural systems and biodiversity. Such perverse outcomes include silvicultural monocultures that favour Noisy Miners and provide little habitat value, woody vegetation plantations on grassland areas, as well as the risk of invasive species escaping from plantations.

Many of Victoria's native species and ecosystems are highly vulnerable to climate change and will have difficulty adapting to the rate and extent of projected changes. It is therefore imperative that we:

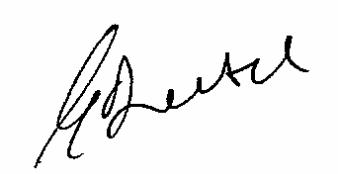
- predict the responses of natural ecosystems to climate change, and develop adaptation options to improve their resilience and ensure the maintenance of ecological processes,
- reduce the threats posed by invasive species, bushfires and habitat loss through development of well prioritised response strategies,
- incorporate climate change adaptation measures into conservation and natural resource management policies and strategies.

To achieve this, landscape wide planning and management is needed to better buffer and link existing protected areas through a "connectivity conservation approach".

The submission from Bennett *et al.* attached with this submission highlights the critical importance of ecological processes in any strategy for carbon sequestration and climate change adaptation. The submission highlights up to date scientific views on the importance of ecological processes in ensuring that ecosystems function.

If you require further clarification of these issues, you could contact Associate Professor Andrew Bennett on 03 9251-7609/ andrew.bennett@deakin.edu.au or myself on 03 93416512/ carried@vnpa.org.au.

Yours sincerely



Carrie Deutsch

Project Leader, Victoria Naturally Alliance

Ecological processes:
a key element in strategies for conserving biodiversity in Victoria

A submission to the Land and Biodiversity White Paper Project Team

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This submission is presented by a group of 19 ecologists from five Universities, three government departments, a CSIRO Division and several conservation agencies. Collectively we have extensive experience in Victoria, across terrestrial, freshwater and marine ecosystems. The group met for two one-day workshops at Deakin University, in Dec 20006 and Feb 2007, to discuss the status of biodiversity conservation in Victoria and to consider potential new directions and approaches to enhance the effectiveness of biodiversity conservation in this State. The main elements of our submission are summarised in the points below. We would like to have the opportunity to present further information to the Project Team and Scientific Reference Committee in relation to this submission.

1. Approach

Conservation of biodiversity poses a formidable challenge in Victoria, and throughout the world. A common approach to conserving biodiversity is to develop priorities based on protecting natural 'assets', such as ecosystems and species. This occurs mainly by setting aside and managing protected areas, including national parks and conservation reserves; and by conservation actions based around threatened species. Essentially, this approach is about protecting natural 'assets'.

This IS an essential component of conservation, and Victoria can be proud of its reserve network across the state. However, in the long term, protecting natural 'assets' will not be an effective approach unless the ecological processes that sustain them are also maintained. In this submission, we emphasize the essential role of ecological processes in sustaining biodiversity, and of developing policy and management approaches that are directed toward sustaining such processes. Thus, we are calling for a new emphasis in the approach to land management and biodiversity conservation in this state.

2. Key ecological processes

Key ecological processes that sustain biodiversity can be grouped into seven main themes: (1) climate, (2) primary productivity, (3) hydrological processes, (4) biophysical habitats, (5) interactions between organisms, (6) movements of organisms, and (7) natural disturbance regimes. These themes encompass fundamental ecological processes that determine the distribution and abundance of species, the structure of ecological communities, and the functioning of ecosystems (e.g. energy flow, nutrient cycling).

3. Threats

Many threats to the natural environment in Victoria have been identified. For example, some 36 'Potentially threatening processes' have been listed under the Flora and Fauna Guarantee Act. We have identified six major categories of threat as being particularly important:

- climate change
- degradation and loss of biophysical habitats
- altered hydrological flows
- nutrient and chemical additions to ecosystems
- unsustainable harvesting of natural resources
- introduced species.

These threats are important because: (1) they each extend across terrestrial, freshwater and marine systems, and (2) they each interact with, or modify multiple ecological processes.

4. Implications for the way in which threats affect processes

Threats, such as those outlined above, are often highlighted for their impacts on particular species or particular ecosystems. We wish to emphasize their effect on ecological processes. Further, when considering the ways in which threats act on ecological processes, there are a number of issues that must be recognised and incorporated into conservation and management programs.

- Time-lags; the full consequences of threats may not be experienced for lengthy periods
- Effects often extend across land tenures (and across land-water boundaries)
- Off-site effects (i.e. distant from the site of intervention) may occur
- There may be interactions among threats that exacerbate the effect of each
- Many changes may be irreversible.

5. New emphases in conservation

We argue that greater attention needs to be given to policy and management approaches directed toward maintaining or restoring ecological processes. Thus, we call for a new emphasis in the way in which conservation of biodiversity is undertaken in Victoria: to build upon, and extend the achievements made in protecting our natural assets. We briefly outline several kinds of activities in relation to a) land and natural resources and b) human dimensions.

a) Land and natural resources

- Inventory and monitoring.

Knowledge of the status of the environment is essential for effective management. Victoria has some valuable data sets (e.g. flora and fauna data bases, GIS data layers on vegetation, wetlands, forest zones, soil types etc), but these primarily represent a static view of assets. To understand the status of ecological processes, we need to have quantitative measures of change through time. There is an extraordinary scarcity of systematic long-term data sets on the status of flora, fauna and natural resources in Victoria. This stands in marked contrast to the availability of systematic data collection on agricultural crops, climatic measures, human population etc. There is a clear need for systematic, long-term monitoring of biodiversity across the state. Likewise, there is a clear need for systematic monitoring of the responses of biota to management programs and natural disturbance events (e.g. bushfire).

- Maintaining processes in 'intact' systems

In extensive areas of 'relatively intact' systems (parks and reserves, marine parks, unregulated rivers, extensive forests etc), the challenge is to maintain the ecological processes that sustain these systems. These include natural disturbance regimes (floods, fire, etc), movement patterns and pathways of species and interactions between species. For example, knowledge of key refuge habitats and the maintenance of connectivity are important for enhancing the resilience of such systems to perturbations. In general, much current management of natural environments relates to protection of assets and countering specific threats (e.g. weeds, pests). We propose a greater emphasis on activities to understand and manage processes; for example, experimental management and monitoring programs relating to successional processes like fire or regeneration.

- Restoration in degraded systems

Changes to natural environments across large areas of the state involve loss of habitat components and breakdown of ecological processes. In these areas and ecosystems, restoration is a priority. Restoration is more than putting components back into the system: the greatest challenge is the restoration of processes (e.g. plant regeneration, timing and volume of water flows, recolonisation of animals). There is great scope for closer integration of management and research (experimental design and monitoring) in this field, with a strong emphasis on large scale and long term restoration projects.

b) Human dimensions

- A vision for the future

Long-term strategic planning for land health and biodiversity conservation in Victoria is difficult without a vision for Victoria's environment in the future. What do we (the Victorian community) want Victoria's environments to be like in the future? As ecologists, we argue that such a vision must be framed to incorporate ecological processes. However, the reality is that there will be multiple points of view within the wider community about priorities for use of land and natural resources. We propose the development of alternative 'scenarios' as a way of envisaging the long-term outcomes of different 'choices' that the community might make. It is essential that the trade-offs implicit in alternative uses of land and water are recognised and incorporated in the scenarios (e.g. urban expansion and maintaining intact communities of plants and animals are incompatible).

- Drivers of change

Victoria's environments will be exposed to pressures and changes over the next century that differ in type and/or extent from those experienced to date. There is a need for careful consideration of the kinds of 'drivers of change' that may be experienced in coming decades and the kinds of threats they will impose. These may be, for example, relate to socioeconomic change, energy, climate change, cultural change and new exotic species.

- Appreciating ecosystem services

In general, the Victorian community has limited appreciation of the extent to which their basic requirements (food, clean water, clean air, shelter) and quality of life (aesthetics, space, recreation, cultural values) depend upon the natural environment and the maintenance of ecological processes. An important role for the White Paper process (and its recommendations) will be to stimulate greater understanding of the critical role of ecological processes in the health and well being of the Victorian people, the economy and the quality of life that Victorians experience now and into the future.

In summary, we conclude that the greatest potential to sustain biodiversity and evolutionary processes in Victoria in the long-term (and their concomitant benefits for people), will come from conservation strategies that are directed toward maintaining, or re-establishing, the integrity of ecological processes.