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on Climate Change, Environment and the Arts
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By email: ccea.reps@aph.gov.au

August 12, 2011

Dear Sir/Madam

Inquiry into Australia's Biodiversity in a Changing Climate

The Australian Psychological Society (APS) welcomes the opportunity to make a submission to the Inquiry into Australia's Biodiversity in a Changing Climate.

Australian psychologists are increasingly concerned about the impact of environmental threats and climate change on the natural environment and its ecosystems. The protection of biodiversity is vital for the maintenance and protection of human health. Because of the interdependencies of human communities and ecosystems, we need approaches to enhance the resilience of our ecosystems which simultaneously build the resilience of communities as well. Psychologists thus have an integral role to play in addressing linkages between people and environmental problems and finding achievable and effective solutions.

The APS has no interests or affiliations relating to the subject of the consultation and the representations submitted, other than our concern that the Australian Government be well-informed and effective in its strategies.

For further information about this submission please contact Dr Susie Burke on

Yours sincerely,

Professor Lyn Littlefield OAM
Executive Director
Australian Psychological Society

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The Australian Psychological Society Ltd

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Submission to the

Inquiry into Australia's Biodiversity in a Changing Climate

House of Representatives

APS contact:

Dr Susie Burke

This submission was prepared for the Australian Psychological Society by Dr Susie Burke and Ms Heather Gridley, with expert assistance from Professor Joseph Reser and Professor Helen Ross.

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Table of Contents

1 Executive summary

The Australian Psychological Society (APS) recognises the importance of protecting Australia's biodiversity in a changing climate. The biodiversity of healthy natural environments and ecosystems is integral to human health and wellbeing, and of profound importance to people's everyday lives and connection with the natural world. This importance goes well beyond human requirements for 'healthy', life-supporting, ecosystems and uncontaminated air, water, food ecosystem services, though these are of course fundamental to human health and wellbeing. Biodiversity is also of profound importance for meeting psychological needs of hope and inspiration, connection to the natural world, restoration, recreation, and identity. Overall, healthy ecosystems make an essential contribution to our quality of life.

Loss of biodiversity therefore has significant psychosocial impacts on individuals and communities. Psychosocial impacts include things like direct psychological impacts (e.g., distress from actual or anticipated changes to the environment), as well as social and community impacts (e.g., changes to relationships as a result of changes in how people use and occupy a territory). Changes in ecosystems and biodiversity losses are more likely to harm already vulnerable people, including the world's poorest people, who are less able to adjust to these changes because they have limited access to substitutes or alternatives.

Addressing loss of biodiversity includes both efforts to reduce the threats (e.g., climate change mitigation, changing our behavior to reduce our human contribution to environmental problems), and adaptation to a changing environment (e.g., by building the resilience of human communities and ecosystems).

Resilience research done by psychologists over many years has identified that resilience needs to be understood as both of the species *and* their habitat, or, in the language of this Inquiry, human communities and ecosystems. Ecosystems and human communities mutually influence each other. Efforts to address resilience must therefore think in terms of people and environment as a *single,* albeit complex, system. It is possible to explicitly enhance resilience. With proper processes and tools, this can also be done in a way that enhances community and ecological resilience simultaneously. If this is done, humans' ability to thrive in their environment can be enhanced, and the protection of biodiversity maximized. In practice, this requires cooperation and collaboration between organisations.

The issues raised in this submission are summarised in a series of key points.

2 Key points

1. As well as meeting human requirements for healthy, life-supporting, ecosystems, biodiversity is also of profound importance for meeting psychological needs of hope and inspiration, connection to the natural world, restoration, recreation, and identity. Overall, healthy ecosystems make an essential contribution to our quality of life.

2. Loss of biodiversity has significant impacts on human populations in a number of physical and psychosocial ways, including direct psychological impacts, loss of social connections, loss of choice and freedom, increased conflict and violence. Urgent action must be taken by Australian governments, industry and the community to preserve biodiversity and human health.

3. Loss of biodiversity is likely to harm the world's most vulnerable people first and worst. Efforts to preserve biodiversity must protect the needs of vulnerable communities.

4. Understanding human-environment interdependencies is critical for both long-term ecological *and* societal sustainability. Support for and promotion of multidisciplinary work is thus essential to enable correct interpretation of impacts, and for enhancing resilience in both ecosystems *and* human communities.

5. It is possible to enhance community and ecological resilience simultaneously by adopting particular processes and tools. Organisations working in either natural environments or human environments need to cooperate and collaborate to grow the resilience of the whole system.

3 The Australian Psychological Society

The Australian Psychological Society (APS) is the premier professional association for psychologists in Australia, representing more than 20,000 members. Psychology is a discipline that systematically addresses the many facets of human experience and functioning at individual, family and societal levels. Psychology covers many highly specialised areas, but all psychologists share foundational training in human development and the constructs of healthy functioning.

The APS welcomes the opportunity to provide input to the House of Representatives Inquiry into Australia's biodiversity in a changing climate. Australian psychologists, along with other members of the scientific and professional community, are increasingly concerned about the impact of environmental threats and climate change on the natural environment and its ecosystems. Threats to biodiversity are in a large part caused by human behaviours and directly affect human health and wellbeing. Psychologists thus have an integral role to play in addressing linkages between people and environmental problems and finding achievable and effective solutions.

The APS is well placed to contribute to this consultation by identifying psychological research on the psychosocial impacts of threats to and loss of biodiversity on individuals and communities, and on the promotion of social and ecological resilience. The APS has a Climate Change and Environmental Threats Reference Group (CCRG) comprised of psychological experts in environmental and social psychology. Our members have expertise in resilience, the built environment, conservation of wilderness heritage areas, waste and recycling, media representations of environmental threats, behaviour change, adaptation, preparedness, and risk perceptions, amongst other interests.

While the APS is not in a position to comment on every aspect of the Inquiry, we draw the committee's attention to the APS Position Statement on *Psychology and the Natural Environment*, based on a comprehensive Literature Review, and a number of related submissions made to government inquiries in recent years. These resources can be accessed at: http://www.psychology.org.au/community/public-interest/environment/.

4 Responding to the terms of the Inquiry

The APS response will focus on the following terms of reference:

- how climate change impacts on biodiversity may flow on to affect human communities and the economy
- strategies to enhance climate change adaptation, including promoting resilience in ecosystems and human communities

5 How climate change impacts on biodiversity may flow on to affect human communities and the economy

5.1 The importance of biodiversity to perceived environmental quality and quality of life

Biodiversity refers to the number, variety and variability of living organisms. It can be understood on different scales, from the diversity of species and organisms found in people's backyards, to the green spaces in urban environments and the natural ecosystems in regional areas, as well as biodiversity on national or global scale.

The biodiversity of healthy natural environments and ecosystems is integral to human health and wellbeing, and of profound importance to people's everyday lives and connection with the natural world. This importance goes well beyond human requirements for 'healthy', life-supporting, ecosystems and uuncontaminated air, water, food ecosystem services, though these are of course fundamental to human health and wellbeing. Biodiversity is also of profound importance for meeting psychological needs of hope and inspiration, connection to the natural world, restoration, recreation, and identity (Bentrupperbäumer & Reser, 2007). Overall, healthy ecosystems make an essential contribution to our quality of life.

The existence and flourishing of natural environments constitute a very meaningful symbolic message, even more so in a troubled and changing world. They convey the message that we live in a naturally ordered world of beauty, peace, inspiration, hope, and transcendence. The availability of natural environments for humans affords us a personal connection with a coherent and meaningful world (e.g., Hartig & Staats, 2003; Uzzell & Moser, 2006).

Further, biodiversity, or the health of natural environments, communicates powerful messages about the fate of our planet, and its survival. Biodiversity has always been a 'miner's canary' for individuals and human communities, a signboard for how the natural environment and natural systems are faring. For example, the health and wellbeing of natural environments within urban or peri-urban environments is often the 'window' for many urban dwellers on the wellbeing of the larger natural world (e.g., Kaplan, Kaplan & Ryan, 1998; APS, 2008).

In addition to the symbolic meaning of healthy natural environments, they are important for restoration, stress reduction, and recreation, as well as enabling people to feel a part of the natural environment. Research on people's interactions with nationally important

ecosystems, like World Heritage Areas for example (Bentrupperbäumer & Reser, 2008), highlights positive impacts including quality of life, a sense of place and belonging, self-identity, restoration and inspiration. Other research on the restorative benefits of natural environments and settings has found that biodiversity in natural environments is important for human health and wellbeing (Maas et al., 2006; De Vries et al, 2003), and has a particularly positive effect on mood, attention and cognition. Fuller et al. (2007), exploring the relationship between mental health and the capacity to reflect (i.e., gain perspective or clear one's head) and perceptions of green space diversity, showed a positive correlation between this reflection capacity and green space biodiversity amongst people living in urban environments. The more biologically diverse the green space, the higher its psychological value. Kaplan & Kaplan (1989) argue that natural environments allow our directed attention to rest as nature engages an involuntary and effortless form of attention that they call fascination; this in turn improves mood, directed attention, and cognition. Biodiversity, even in an urban environment, thus plays a key role in proper mental functioning.

Humans' relationships with animals, either with pets or with wildlife, or animals in zoos, further illustrate of the profound importance that humans place on connections to the natural world, and to other species and life-forms. Our fascination with and interest in wildlife, and the many ways in which we seek to interact with it (e.g., bird watching, zoos, national parks), also underscores the importance of healthy biodiversity to humans' quality of life. Furthermore, these interactions with animals and wildlife foster many important attitudes and qualities in humans, like empathy, pro-environmental attitudes, and conservation behaviours (e.g., Myers, Saunders, & Bexell).

Key point 1. As well as meeting human requirements for healthy, life-supporting, ecosystems, biodiversity is also of profound importance for meeting psychological needs of hope and inspiration, connection to the natural world, restoration, recreation, and identity Overall, healthy ecosystems make an essential contribution to our quality of life.

5.2 Human impacts of biodiversity loss

Loss of biodiversity has profound negative effects on human populations in a number of ways, such as threatening our food security, reducing our access to clean water (loss of forest, destruction of watersheds leading to reduction in quality and availability of water), decrease in energy security (e.g., shortages in wood fuel in areas without access to alternatives), increasing our vulnerability to natural disasters (e.g., flooding in areas no longer protected by mangroves or coral reefs), limiting the availability of natural resources (e.g., the basic plant and animal materials that we rely on for livelihoods). Loss of biodiversity ultimately threatens the very survival of humans.

Loss of biodiversity also has significant psychosocial impacts on individuals and communities. Psychosocial impacts include things like direct psychological impacts (e.g., distress from actual or anticipated changes to the environment), as well as social and community impacts (e.g., changes to relationships as a result of changes in how people use and occupy a territory).

For example, loss or damage to biodiversity can mean a loss of social connections, or harm to social relations between groups for a number of reasons. The displacement or relocation that arises when people are forced from their land because it can no longer support them disrupts existing social networks as members of the group are dispersed to different areas, and can lead to considerable grief, anxiety and distress.

Loss or damage to biodiversity can also harm social relations between groups if one group is seen to profit from the losses incurred by another. For example, logging native forests can be seen as a profound loss of biodiversity to one group, but may constitute great profit to another group, thus creating tension and conflict between groups.

Loss of biodiversity also often means a loss of choices and loss of freedom for people. The notion of having choices available irrespective of whether any of them will be actually picked is an essential constituent of the freedom aspect of wellbeing.

Many cultures attach great importance to ecosystems or their components, either for religious, spiritual, recreational or aesthetic reasons. Loss of diversity and change in the ecosystem can result in the loss of 'sense of place' in local residents and indigenous people. Extensive research into the importance of a sense of place and community to people's sense of belonging and identity illustrates how ecosystem changes can disrupt pre-existing emotional attachments and threaten place-related identity processes (Fullilove, 1996).

Both place attachment (the process of attaching oneself to a place and a positive emotional connection with familiar locations) and place identity (the ways in which physical and symbolic attributes of certain locations contribute to an individual's sense of self or identity) are important considerations here. People who are attached to their home environment or familiar landscape enjoy positive emotions from this attachment, as well as feelings of belonging, comfort, and security. Change to this familiar environment can threaten all of these, and result in fear, anxiety and considerable distress (Fried, 2000, cited in Devine-Wright, 2009).

Environmental degradation and loss have another widespread effect on humans, beyond the communities that are directly affected. Even the perception of loss of biodiversity can lead to considerable concern, anxiety, guilt, anger, helplessness, dread, and pessimism (e.g., Bohm, 2003; Edelstein, 2002; Doherty & Clayton, 2011). This distress is variously referred to as 'eco-anxiety' or 'climate change anxiety', and describes the growing angst around knowing about loss of biodiversity, species extinction, and dwindling natural resources, as well as the bigger issues of climate change. The term 'solastalgia' (Albrecht & Sartore, 2007), describes the sadness caused by environmental change and by the loss of familiar environmental markers. We underestimate the importance of having a stable, predictable environment for our mental wellbeing.

A final important note is that changes in ecosystems and biodiversity losses are more likely to harm already vulnerable people, including the world's poorest people, who are less able to adjust to these changes because they have limited access to substitutes or alternatives (Costello et al., 2009; Doherty & Clayton, 2011; McMichael et al., 2008; Brouwer et al., 2007).

Key point 2: Loss of biodiversity has significant impacts on human populations in a number of physical and psychosocial ways, including direct psychological impacts, loss of social connections, loss of choice and freedom, increased conflict and violence. Urgent action must be taken by Australian governments, industry and the community to preserve biodiversity and human health.

Key point 3. Loss of biodiversity is likely to harm the world's most vulnerable people first and worst. Efforts to preserve biodiversity must protect the needs of vulnerable communities.

5.3 Human impacts on biodiversity

Having explored to some extent the impacts of loss of biodiversity on humans, and the utmost importance of protecting and preserving biodiversity, it is also essential to point out the human impacts *on* biodiversity.

There is strong consensus among psychologists and other scientists that human motivations and behaviours constitute core causal factors with respect to environmental problems (e.g., Swim et al., 2009; Vlek & Steg, 2007). Biodiversity is extremely threatened by climate change and other environmental problems, like land clearing, pollution, introduction of weeds and other species, mining, over population, and other human behavior causes. Our negative impact on biodiversity is profound.

It is essential in considering biodiversity, therefore, to understand the human behaviour contributions, and to share knowledge and understanding of necessary changes in behaviour to reduce the threats (APS, 2010). There is a large and expanding literature detailing how people and organisations can change their behaviour to reduce their contribution to climate change, other environmental problems, and ultimately, the human impact threats to biodiversity. These strategies are often included mitigation projects.

It is beyond the scope of this inquiry to address mitigation of environmental problems, as the focus here is more on adaptation. However, the Australian Psychological Society regards both mitigation *and* adaptation to be essential in addressing threats to biodiversity, and is willing to provide additional information on psychological contributions to environmental threats and climate change mitigation (for further information see the APS Position Statement on Psychology and Climate Change, 2010).

6 Promoting resilience in ecosystems and human communities

Strategies to protect biodiversity can involve promoting resilience in ecosystems and in human communities, and this will be the focus of the remainder of our submission. Environmental problems and challenges are complex and require collaborative, multidisciplinary, 'ecological', analyses and 'solutions'. Thus too, resilience needs to be approached on multiple levels, and to include both the person and the environment.

6.1 Resilience

Resilience is a well-established concept across many diverse fields, from psychology through to ecology. In the field of psychology and mental health, the concept has expanded from an early focus on individuals and their capacity to bounce back from adversity, through to community resilience, which is currently receiving much attention. Community resilience is about the ability of groups to withstand, recover from, and respond positively to crisis or adversity (FAHCSIA, 2011). Resilience is a dynamic quality within a community. It can be developed and strengthened over time. A community can take action to enhance the capacity of its people, organisations, resources and processes to respond to and influence the course of change.

Increasingly, the environment is seen as a critical factor in the development of resilience in individuals and communities (Tusaie & Dyer, 2004). Resilience needs to be therefore understood as both of the species *and* their habitat, or, in the language of this Inquiry, 'human communities' and 'ecosystems'.

Ecosystems and human communities mutually influence each other. People and the environment continually interact and impact on each other in a complex system. Through people's actions, they alter the environment in which they live, for example by taking and using natural resources, polluting, conserving or restoring a place. Likewise, the environment has an impact on the people in it, through weather events, providing resources for personal or economic use, and providing a sense of restoration, meaning and connection. Understanding human-environment interdependencies is critical for long-term ecological and societal sustainability. However, "natural" ecosystems are usually studied independently from their human components, and by different scientific disciplines with largely different scientific traditions ("natural" scientists; "social"` scientists). Multidisciplinary work is thus essential for correctly interpreting the causes of impacts, and for enhancing resilience in both ecosystems and human communities.

Efforts to address resilience must therefore think in terms of people and environment as a *single,* albeit complex, system. In the psychological literature, these systems are variously referred to as social ecological systems, socio-ecological systems, human-environment systems, or environment behaviour systems (Berkes, Colding, & Folke, 2003; Holling, 2004; Flora, Flora & Fey, 2004).

Key point 4. Understanding human-environment interdependencies is critical for both long-term ecological *and* societal sustainability. Support for and promotion of multidisciplinary work is thus essential to enable correct interpretation of impacts, and for enhancing resilience in both ecosystems *and* human communities.

6.2 Enhancing resilience

It is possible to explicitly enhance resilience. With proper processes and tools, this can also be done in a way that enhances community and ecological resilience simultaneously. By doing this, one can enhance humans' ability to thrive in their environment, and maximise the protection of biodiversity. In practice, this requires cooperation and collaboration between organisations.

According to Ross et al. (2010), "growing" resilience so that resilience of the whole system is enhanced, can be done in a number of ways. It could involve:

- Facilitating the formation of and actions by community groups that care for the environment (e.g., Landcare groups) more deliberately. This both enhances the social capital of a community (an important characteristic of a resilient community), as well as contributing to the protection of biodiversity.
- Developing new, more engaged, governance forms such as collaborative management of land, seas and species with traditional owners.
- Explicitly building governance capacity – for example, by resourcing the formation and activities of Indigenous organisations, or conducting projects and research collaborations that enhance governance capacity throughout the community.
- Developing 'win-win' collaborations and initiatives that respect and meet stakeholder and government interests equally.
- Building green economy jobs, for example in natural resource management.
- Building infrastructure that supports other resilience attributes (like walking tracks to natural areas that enhance people-place relationships).

Key point 5. It is possible to enhance community and ecological resilience simultaneously by adopting particular processes and tools. Organisations working in either natural environments or human environments need to cooperate and collaborate to grow the resilience of the whole system.

7 Conclusion

The protection of biodiversity is vital for the maintenance and protection of human health. The priority must be to maintain a diversity of well-functioning ecosystems. Because of the interdependencies of human communities and ecosystems, we need approaches to enhance the resilience of our ecosystems which simultaneously build the resilience of communities as well. In this way, the resilience of the whole system grows.

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