Submission to the Inquiry Into Ecosystem Decline in Victoria

Dr Holly Sitters, 30 August 2020

Inquiry Into Ecosystem Decline In Victoria

Dear Committee Members,

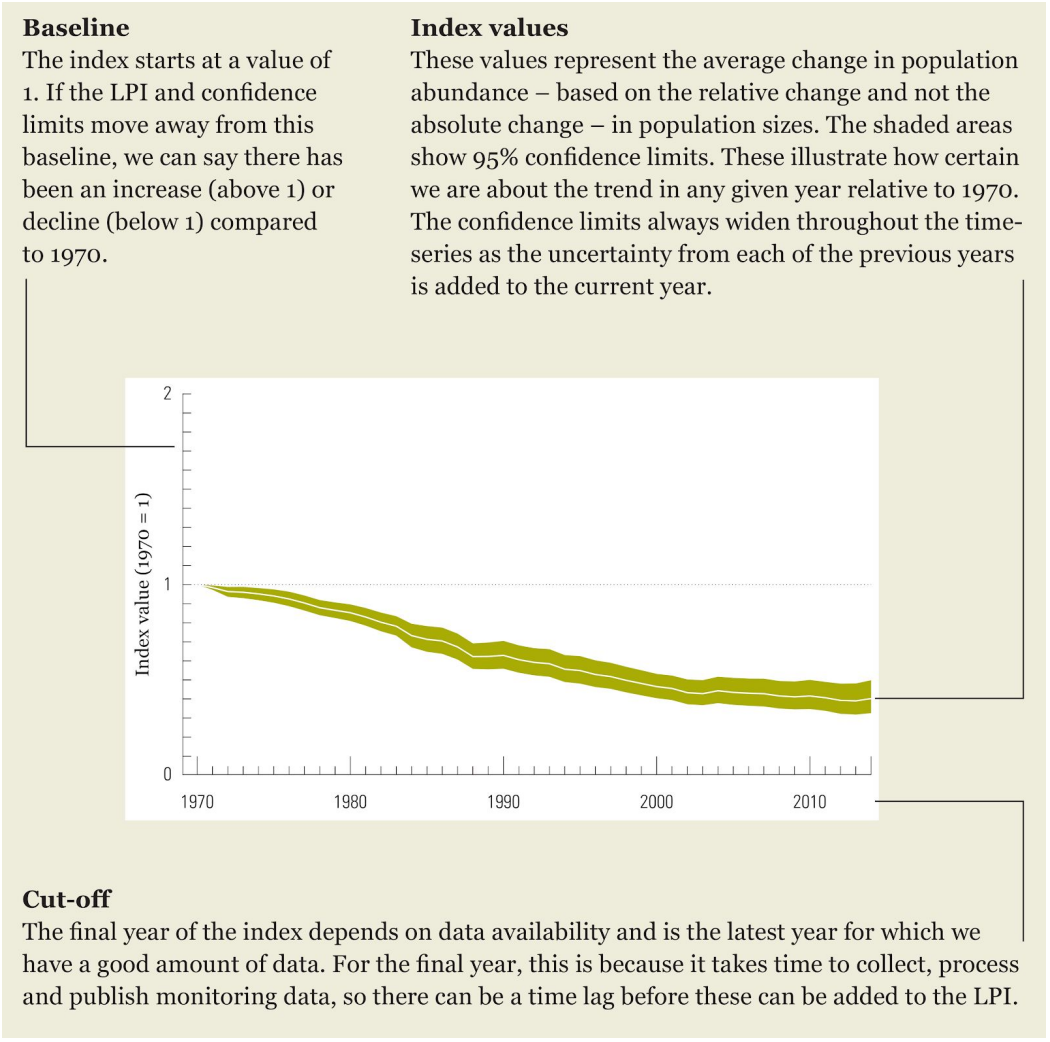
Thank you for the opportunity to make a submission to the Victorian Parliament's Inquiry into Ecosystem Decline in Victoria. As an ecologist, I'm disturbed by the rapidly declining health of Victoria's natural environment. Current environmental laws and funding for research and solutions are inadequate given accelerating rates of ecosystem degradation, and I urge the Victorian Government to take bold action.

Introduction: a global biodiversity emergency

Biodiversity is essential to ecological function and ecosystem health, and this is a precarious time for our planet; rates of biodiversity loss and global warming are approaching tipping points beyond which recovery is intractable. The Living Planet Index is an indicator of the state of global biodiversity, and it shows **an overall decline of 60% in the population sizes of vertebrates between 1970 and 2014**, translating to an average drop of more than half in less than 50 years (Figure 1, Grooten and Almond, 2018). When I show these data in lectures, most of the students' faces are blank. Increasingly, we are bombarded with tales of conservation doom, and we're becoming desensitised at a time when we most need to act.

Australia lies in the Indo-Pacific Realm, which accounts for **more pronounced declines in vertebrate abundance than the global average** (64%; Grooten and Almond, 2018), and the degradation of Victoria's environmental health reflects a much broader biodiversity emergency. In 2018, Victoria's Commissioner for Environmental Sustainability undertook a comprehensive assessment of Victoria's environment and the findings were grim yet unsurprising. Twenty biodiversity indicators were considered 'poor', seven were 'fair' and none were 'good'. **The Victorian Government has a critical opportunity to become a global leader in adopting innovative technologies and environmental laws that reverse ecosystem declines and secure healthy natural environments for future generations.**

Figure 1. The Global Living Planet Index shows the average rate of change over time across more than 16,700 populations of mammals, birds, fish, reptiles and amphibians. Figure sourced from Grooten and Almond (2018) © WWF, Gland, Switzerland.



Why are we losing ecosystems and what can we do about it?

The five key drivers of ecosystem decline and biodiversity loss are: **habitat loss, exploitation, pollution, introduced species and global warming**. These drivers may interact, and species extinctions often result from synergistic interactions between two or more drivers (Brook et al., 2008).

Habitat loss

Habitat loss refers to the modification of the environment where species live through complete removal, fragmentation or degradation, and is the primary cause of species loss in many countries including Australia (Evans et al., 2011). In Victoria, around two thirds of native vegetation has been cleared, and most has been converted to grazing land for introduced sheep and cattle. Further, logging

of native forest is set to continue until 2030 despite a recent federal court case that found much logging in Victoria is in breach of national environmental laws and is directly driving animal extinction.

Solutions

- Victoria should immediately transition away from native forest logging, with financial support for workers and a shift in the industry's focus towards fire management and ecological restoration.
- Meat industries have a disproportionately large land-use footprint due to inefficiencies in energy conversion; meat production requires much larger areas of land than plant-based foods on a per kilogram basis, as well as per 1000 calories and per 100 g of protein (Poore and Nemecek, 2018). **The Victorian Government has an opportunity to join the progressive leaders of a global shift away from animal agriculture towards plant-based alternatives** (de Boo and Knight, 2020). Benefits would include (Reese, 2018):
    - Freeing up grazing land for ecological restoration;
    - Reduced greenhouse gas emissions;
    - Rural livelihood opportunities; and
    - Improved community health.
- Aboriginal people have cultural, spiritual and economic connections to land, biodiversity and resources through their relationship with Country. Meaningful engagement with Aboriginal peoples as custodians of ecological knowledge should be central to ongoing conservation management and ecological restoration.

Exploitation

The common species of today are the threatened species of tomorrow; it is vital that all native species are afforded protection from exploitation before we lose yet more of our iconic wildlife. Currently, exploitation of kangaroos, wallabies, bats, ducks and fish is of particular concern in Victoria.

Solutions

- Terminate the Authority To Control Wildlife system, and end the Commercial Kangaroo Harvesting program. Decimation of kangaroo populations is widely reported anecdotally, and counts arranged by the Department of Environment, Land, Water and Planning are out of date. The recent mega-fires (and likelihood of similarly large wildfires over coming years) should be sufficient justification to stop killing kangaroos and wallabies across Victoria. A precautionary approach is essential because we lack data on how the fires have affected populations of native species, and the extent to which they are able to recover and persist in the face of increasingly frequent wildfires.
- End duck shooting. Drought and the climate emergency are placing pressure on native waterbird populations. Victoria should join other states in banning duck shooting.

Pollution

Pollution is a major cause of biodiversity loss and has particularly devastating direct effects on insects as well as freshwater and marine habitats.

Solutions

- Eliminate pollutants such as plastics, POPs (Persistent Organic Pollutants) and toxins, many of which are used in agricultural fertilisers, herbicides (e.g. glyphosate), pesticides, and antibiotics applied in animal agriculture.

Introduced species

Introduced species continue to pose major threats to Australian fauna, particularly critical-weight-range (35-5500 g) marsupials and rodents (Johnson and Isaac, 2009). For example, foxes and cats may take advantage of prescribed fire to prey on small native mammals that survive the fire (Hradsky et al., 2017). **Urgent action is required to reduce the impacts of introduced species on native species; however, a major shift away from reliance on toxic metabolic poisons (e.g. 1080, PAPP) is crucial.**

Philanthropist Philip Wollen described 1080 as a "vile, indiscriminate atrocity that has no place in civilised society" and I agree. In conservation and ecology, myths about 1080 are pervasive. For example, I've heard state government and university employees say that 1080 occurs naturally in plants, it breaks down quickly and poses no threat to native species. Yet 1080 is a synthetically manufactured organofluorine compound that was developed as a chemical weapon during the Second World War. No species is resistant and there is no antidote. Neurological effects include convulsion, respiratory depression, tremulousness, hallucinations and coma, and cardiac effects lead to cardiac failure. Animals suffer a prolonged death; carnivores take up to 20 hours to die, and herbivores take up to 44 hours.

1080 is odourless, flavourless, water soluble and stable under ambient conditions. Once it's been distributed, it soaks into soil where it can be absorbed by plants and ingested by browsing animals. **It poses a major environmental risk because of its high toxicity and extremely slow rates of decomposition.**

Replacement of lethal methods of animal population control with non-lethal alternatives is timely. Compassionate conservation is gaining traction in the field of conservation biology; it promotes the protection of individuals and populations within conservation, and asserts as its founding principle *first do no harm* (Bekoff 2010). Increasingly, **actions aligned to compassionate conservation are shown to**

be the most ethical and effective. For example, substantial conservation efforts have been funnelled towards the killing of introduced mesopredators (foxes and cats). The most common method for killing foxes, 1080 poison, also kills the dingo, an apex predator. High dingo abundance is widely associated with lower fox densities and greater survival of native animals, thus a strategy designed to enhance biodiversity is instead contributing to its decline (Wallach et al. 2010).

Solutions

- Commit funding to the research and development of non-lethal alternatives to toxic metabolic poisons such as immunocontraception, and non-surgical sterilants (Cowan et al., 2020; French et al., 2020).
- Adopt a three-tiered conservation ethic that recognises the welfare of individuals, populations and ecosystems in decision-making to promote both conservation and animal-welfare (Wallach et al. 2015).

Global warming and megafires

The megafires that occurred between July 2019 and February 2020 were a consequence of global warming, and were unprecedented in their extent and severity within Australia's subtropical, Mediterranean and temperate bioregions (Boer et al., 2020). **They burnt 97,000 km^2 of south and eastern Australia, sweeping through diverse natural ecosystems, including those that do not normally burn such as World Heritage-listed Gondwana rainforest** (Nolan et al. 2020). Even in inherently flammable ecosystems, many animals and plants rely on patches of unburnt vegetation to survive fires, and acquire resources like food and shelter as surrounding burnt vegetation regenerates (Robinson et al., 2013; Sitters et al., 2015). The extent and severity of recent megafires have major implications for long-term population persistence.

Recent megafires overlapped the habitat of 725 non-threatened vertebrate species, and 104 species currently listed under the *Environment Protection and Biodiversity Conservation Act* (Ward et al., 2020). Ninety one species had more than 30% of their habitat burnt, and 21 of these species are already listed as threatened. Concerningly, three species had more than 80% of their habitat burnt: the Kangaroo Island Dunnart and Long-footed Potoroo were already listed as threatened with extinction and Kate's Leaf-tailed Gecko is not currently listed but is a narrow-range endemic. The level of overlap between the megafires and the distributions of habitat equates to dramatic declines in abundance and potentially a limited capacity for population recovery (Ward et al. 2020). To prevent further declines, **it is critical that Victoria reassesses the threat status of fire-affected species and takes rapid action to help populations recover**. A new set of national environmental standards setting legally enforceable rules for the protection of biodiversity will help to prevent catastrophic loss of species under changing fire regimes and global warming.

Solutions

- Solutions that apply under "habitat loss" above also apply under global warming because any measures that benefit habitat will also reduce greenhouse gas emissions.
- Stop burning fossil fuels (coal, oil and gas) for energy by 2030 at the latest, and substantially reduce other sources of greenhouse gas emissions (e.g. animal agriculture).
- Urgently reassess the threat status for species whose distributions overlapped burnt areas.
- Provide funding injections for research and development of practical conservation management tools that accommodate the complexity of real-world landscapes. Victoria is a world leader in the development of innovative fire management solutions but we are not keeping up with the rapid pace of environmental change.

Conclusion

Victoria's primary legislation for protecting ecosystems and threatened species is the *Flora and Fauna Guarantee Act 1988*. Over the past three decades, Victoria's natural environment has deteriorated because the law has failed to protect ecosystems from destructive activities including logging, mining and urban development. The legislation is discretionary and successive Environment Ministers have chosen not to take action to protect the State's wealth of biodiversity. Moreover, Victoria's *Wildlife Act 1975* is out of date and no longer meets community expectations when it comes to protecting native species. Legislative reform is required so that where private or government activities may damage our ecosystems and species, an independent conservation regulator steps in. The conservation regulator must have all the legal powers necessary to ensure Victoria's conservation laws are complied with.

While legislative reform is a critical first step, a suite of solutions are required to enhance biodiversity and restore ecosystem health, including a transition to plant-based agriculture and large-scale ecological restoration. Victoria is at a crossroads and it has an opportunity to choose the path ahead: a path that strives to maintain the status quo at all costs, or one that seizes innovative technologies to support a transition to a sustainable future in which our unique natural landscapes are valued and protected.

I thank you again for the opportunity to make a submission; I am willing for my submission to be made public and I am also willing to be a witness at the hearings.

Yours sincerely,

Dr Holly Sitters

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