Submission to the Senate Standing Committees on Environment and Communications - Australia's faunal extinction crisis

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Healthy planet, healthy people.

Doctors for the Environment Australia is pleased to comment on this Enquiry for the extinction crisis reflects the rapid decline in biodiversity and ecological services, nationally and internationally, with grave implications for many aspects of human health and survival.

Recommendations

That all political parties recognise that biodiversity loss is a significant threat to the sustainability of Australia, and to human health which depends on security of food supply, adequate water resources and a stable climate. Indeed, this threat is comparable to and linked to climate change.

That the Government recognises that this is a complex issue and promotes understanding and education of the public and all elected representatives to facilitate action.

A New Generation of Environmental Laws as developed by Australian Panel of Experts on Environmental Law (APEEL) and proposed by the Places You Love (PYL) Alliance of environmental and health groups be introduced nationally to replace ineffective state laws and the EPBC Act.

That within the agenda of the new laws a Sustainability Commission prioritise urgently examination of water availability, stabilisation of ecological damage affecting agricultural production, more effective standards for air quality, action on climate change adaptation, all issues affecting human health.

That the Sustainability Commission be responsible for introducing new regulations to reduce loss of species.

That national action be taken on the causes of the biodiversity crisis by (1) developing a population policy based primarily on sustainable numbers, taking into account of the present trajectory of climate change to which biodiversity is linked; (2) to institute more effective measures to reduce emissions, recognising that some of these measures will protect biodiversity eg reduction of land clearing; (3) to bring economic policy into line with current and future needs in

protecting the environment and Australia's sustainability. Under present conditions a national initiative to sustain agriculture is required immediately.

That the government recognise that action to enhance Sustainable Development Goals (SDGs) in Australia and in neighbouring countries (including increase in Australia's aid budget) are very important.

That the Senate facilitate further action to bring together Aboriginal knowledge on conservation and sustainability measures.

Doctors for the Environment Australia

Doctors for the Environment Australia (DEA) is a voluntary organisation of medical doctors in all Australian states and territories. We work to address local, national and global health effects caused by damage to the Earth's environment. The medical profession has a proud record of service to the community. This record not only includes personal clinical care, but also involvement in global issues that threaten the future of humanity. We aim to use our scientific and medical skills to educate governments, industry, the public and our colleagues by highlighting the medical importance of our natural environment. In effect we function as a public health organisation.

The following recent DEA submissions and policy papers are relevant to the present submission:

- Proposed changes to timber harvesting in NSW's coastal forests[2]
- Exploring ways to improve farmers' interaction with the EPBC Act 1999[3]
- Submission to the Senate on the Inquiry into the United Nations Sustainable Development Goals (SDGs)[4]
- Australia's Strategy for Nature 2018-2030: Australia's biodiversity conservation strategy and action inventory submission[5]
- DEA Biodiversity Policy[6]
- DEA Policy: Action on Climate Change and Health; Governance and Strategy[7]
- DEA position statement on Forests[8]

The following need to be considered in addressing biodiversity loss and the Terms of Reference.

Extinctions in context

This story dramatises the situation as many environmentalists see the world's predicament:

> A young man sitting by a river absorbing its beauty, suddenly realises that a baby is floating down the river; he throws himself into the water and rescues the baby. No sooner is he on the river bank, then there is another baby floating by, again a rescue, again and again, he cannot cope. By then he gazes upstream to see several members of humanity throwing babies into the water; *"what the hell is going on"*.

One can interpret this story in various ways. Clearly the babies are the threatened species, but those on the bridge represent the source of the problem which is much more complex than the throwing of babies, and the motives of those on the bridge requires examination; issues discussed will therefore be the economic mantra of sustained growth which gives precedence to development over environmental sustainability, human induced climate change, population growth and other causes of loss of biodiversity. Then the means of presenting more action on the bridge before we address how we rescue the babies in the water.

Causes of the extinction and biodiversity crisis

1. Climate change

Humanity is in a parlous state, perhaps already one of no return from the already evident increasing ravages of climate change and several other global environmental changes.

Of the four interlinked fundamental supports of human life, air, water, productive land and biodiversity, climate change is partnered by a loss of biodiversity and its associated ecological services. Climate change is the main factor destroying biodiversity and this destruction reinforces climate change.[9]

And *"Life Depends on Climate, Biodiversity Inextricable Link; Let's Defend It"*, United Nations Framework Convention on Climate Change (UNFCCC).[10]

In the past two decades the meagre international and national measures to reduce greenhouse emissions have failed; the house is burning, and governments worry about the cost of calling the fire brigade. Indeed, the effort of most governments in the world is blighted by the use of the democratic political process to satisfy immediate electoral cycle needs and by lack of understanding of the increasingly complex science. There is a great deal of information (even more is needed), but there is a comparative vacuum of understanding. Because these global changes have grave health implications, for nearly 20 years, DEA has investigated the many causes of inaction.

Critically, according to BP's group chief economist, Spencer Dale: *"despite the extraordinary growth in renewables in recent years, and the huge policy efforts to encourage a shift away from coal into cleaner, lower carbon fuels, there has been almost no improvement in the power sector fuel mix over the past 20 years. The share of coal in the power sector in 1998 was 38% – exactly the same as in 2017… this is one area where at the global level we haven't even taken one step forward, we have stood still: perfectly still for the past 20 years."*[11]

The loss of biodiversity and ecological services is becoming manifested by falling food production, land degradation and water scarcity. The extinction of species is but one effect of the problem which will affect Australia's sustainability. Tackling this is the issue most likely to render Australia sustainable, for as world food production falls we require self-sufficiency.

2. Population growth

This is a significant contributory factor in biodiversity loss and it has to be addressed.

World Bank data for 2016 shows Australia's population growth rate as 1.5%. This single year figure was consistent for 5-year periods between 1990 and 2015 but in 2015-2017 has moved to 1.7%. However, the important comparison is with OECD countries. We are one of the fastest growing, with double the growth of many other OECD countries, including the United Kingdom (0.7%) and United States (0.7%). OECD countries have the resources and education to encompass realistic and sustainable rates whereas developing countries which are poor have no such ability, and many have rates above 3.8% pa.

Why have we not addressed it?

As detailed by Crist (2018)[12]

> *Much soul-searching has gone into why the environmental movement, international policy arenas, and university curricula sidelined global population concerns in recent decades. Research has revealed that a number of factors converged to envelop the population question in silence (Campbell, 2007; Potts, 2009; Crist et al., 2017). Paramount among those factors have been the following: a perception that the population problem is 'solving itself' given a globally declining fertility rate; the spectre of climate change, caused by excessive consumption, virtually monopolizing attention; anxieties over the possibility of coercive policies implemented for 'population control'; and a global surge of nationalisms and religious fundamentalism opposed to family planning and indifferent to global population growth. All these factors, and especially their conjunction, played into muting the population question in environmental, social justice, educational, and international arenas. An additional pivotal contributor motivating silence about population has been the rise of an environmental platform arguing for immigration restriction – into the US, the UK, Australia and other rich countries – as a means of achieving national targets of population stabilization a number of factors have converged to negate any action.*

In addition, Australia has an even more damaging reason for continuing population growth, namely, the obsession of Australian governments and particularly their Treasurers with 'growth', aided by other leaders in the discourse such as the Real Estate industry. The political belief that growth is needed for jobs and a stable economy over-rides any consideration of the end point of such a policy.

It is a matter of speculation whether it is wilful ignorance or lack of understanding of the finite nature of planetary resources that has led to this. Indeed, if Australia's population sustainability was known now, current celebrations over a population of 25 million might well be a cause for alarm.

3. The current economic system

> *Earth provides enough to satisfy every man's need, but not every man's greed.*
> —Mohandas K. Gandhi (1869-1948),

The current economic system has two fatal flaws, it fails to recognise that the world's resources are finite, and it fails to recognise the collective right to 'the Commons'.

There is no dispute that planetary resources are finite and that this year's August 1st was the date by which humanity used its 2018

resources (defined as carbon, food, water, fibre, land and timber). Each year this date is earlier than the previous year. Australia had used its share of world resources by March 31 this year, the 8th most profligate nation on earth. This huge annual debt receives no acknowledgement or comment from growth-obsessed politicians who instead scold over huge family and personal debt and prosecute increased national debt in search of more growth and consumption of resources.

'Development and growth' are the basis for a successful market economy under the present self-perpetuating economic system. Development almost always means that the Commons is consumed in some way and there-in lies the on-going political battle we must fight to preserve the pillars of human life whilst we participate in the market system. Fortunately, in Australia those protecting the environment are only denigrated as 'extremists' by developers; in many developing countries they are assassinated, 200 in 2017.[13]

Garrett Hardin in his seminal paper *The Tragedy of the Commons* published in the journal *Science* in 1968 exposes the defect that makes liberal democracy unsustainable in its present form. The Commons of Anglo Saxon culture was the pasture open to the cattle of all villagers. Hardin explained: -

> *As a rational being, each herdsman seeks to maximise his gain. Explicitly or implicitly, more or less consciously, he asks 'What is the utility to me of adding one more animal to my herd?' This utility has one positive and one negative component. The positive component is the increment of one animal. Since the herdsman receives all the proceeds from the sale of the additional animal, the positive utility is nearly +1. The negative component is a function of the additional overgrazing created by one more animal. Since however the effects of overgrazing are shared by all herdsmen, the negative utility for any particular decision making herdsman is only a fraction of minus 1 Each herdsman concludes that it is sensible to add another animal to his herd, and another, without limit… Therein is the tragedy, and in a world that is limited, freedom in the environmental commons brings ruin to all.*

There lies the division in the World today. One herdsman epitomises neo-liberalism and individual right to maximise self-interest. He operates by the rule of the market and treats the environment as a resource. No doubt most economists have flirted with these thoughts, but they embrace the market which pays their salary. There is an alternative economics sheltering in some universities, but it holds no sway against the power of the market

The 'World Commons' is the stability of resources of land, sea, air and fresh water, all necessary for the health and wellbeing of humanity.

Hardin's 'ruin' to all is the predicted confluence, this century, of population growth, depletion of resources and the ravages of climate change. All our problems can be placed in the context of The Commons.

In reviewing hundreds of examples of resource development over many years DEA recognises that most Environmental Impact Statements are flawed; development is always approved because the States gain growth and jobs, to the overall detriment of human health and the environment. This process is a significant cause of biodiversity loss.

4. Lack of education/poor management

When a species is vulnerable and faces extinction, a combination of factors coincides. These include loss of habitat, or exposure to habitat by pests, feral species or infection, often facilitated by poor State management systems. Examples are legion around Australia. More importantly, these factors together with climate change are responsible for diversity coming under threat. Changing this prospect will require education at many levels of society, but especially for governments.

The understanding of ecological systems is arguably the most important understanding that humanity could have for it underpins human existence on this planet. These systems manage food, water and natural resource production, the life support systems upon which we depend.

a. Education on complex systems

Much debate in State and Federal Parliaments on issues relating to biodiversity is polarised and involves denigration of environmental groups from a perception of their opposition to development. However, in many meetings with politicians we have found little understanding of the role and vital importance of biodiversity.

It must be recognised that elected representatives have an exacting task of assimilating and sifting an increasing volume of information. There is a wide range of subjects on which they have are to make effective decisions and which must be made in a World with decreasing reserves of natural resources, burgeoning population and with continuing insecurity.

It is a strength of Parliament that the elected representatives come from many walks of life and bring different skills from their varied education and employment. Nevertheless, some issues are so complex that a realistic approach requires significant background understanding if representatives are to use their vote in an informed way. In many situations Commonwealth departmental research and resources are not

available to assist and even in the case of Ministers, information may be selective or inadequate.

b. How to address complex systems

A simple example of a complex system is the 'Gordian knot' - each attempt to undo the knot by 'loosening' one strand becomes impossible, because other strands tighten. A difficult example of a complex system is, the demands of humanity for development, food or energy which collides with a multitude of natural and artificial components which interact together and so produce outcomes that are not predictable from the study of each component. A remedy for a problem may be instituted, but the problem gets worse. In history, humanity has destroyed complex systems because of a lack of understanding but have had the space to move to other pastures. Today the interdependence of the World though the links of markets, finance, common environment and need, brings disastrous outcomes because of failures of understanding. There are no reserves, only capital. This has brought the international crisis in loss of biodiversity which is reflected in extinctions.

The following is taken from a DEA submission to the Standing Committee on Procedure, and Inquiry into the effectiveness of the House Committees in 2009.

> *An example which profoundly affects Australia is the demise of the Murray Darling River. There are countless examples of similar river collapses in many regions of the world, collapses which commenced over the last few decades before the grip of climate change began. Concerted action is often difficult when a river flows through several countries. However, even in the case of rivers journeying through one country for example in the USA or Australia, there has been a paralysis of effective action. Effective decisions on a river system require a basic knowledge of many disciplines and how the components interact. Scientific evidence of demise has been available for 30 years, yet decision makers have not understood or disregarded it. Thousands of hours of talking by commissions, committees, and State and Federal governments have not produced effective outcomes and the need to protect all rights, perceived or real, have added to the insolubility.*

Today the situation is essentially unchanged due to political compromise and State rorting.

c. The pollinator crisis in Europe and the USA

If all insects on Earth disappeared, within 50 years all life on Earth would end. If all human beings disappeared from the Earth, within 50

years all forms of life would flourish. Jonas Salk, medical researcher and discoverer of the Salk vaccine which has saved millions of lives.

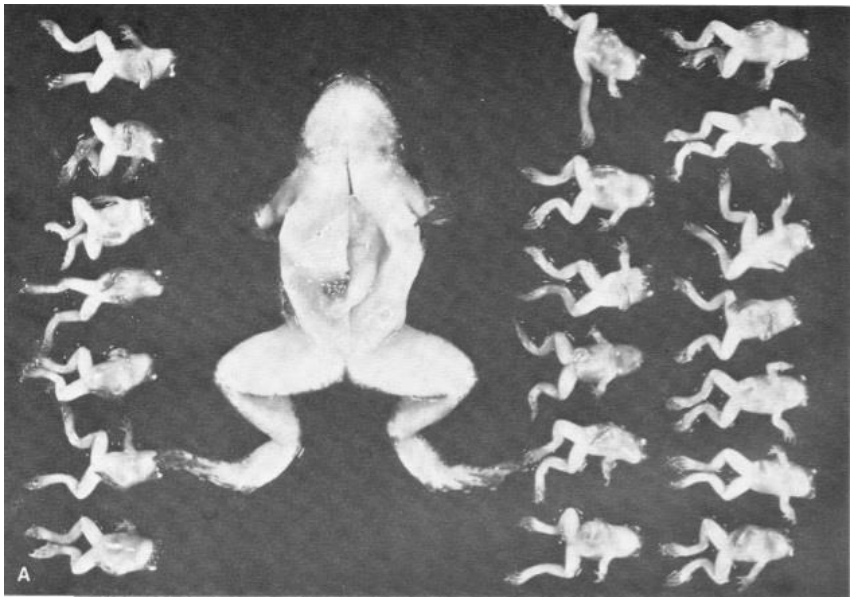
The following points were made in the 2009 DEA submission to the Standing Committee on Procedure Inquiry 2009

> *Science works to study each individual component in a system. As a theoretical, let us suppose that a particular insect is necessary for pollination of a crop and this insect is rapidly becoming an endangered species. We can study the insect, its predators and its food and perhaps put in place breeding systems for its preservation. But the heart of the problem is that the insect lives as part of an ecological community of perhaps thousands of species and the behaviour of the whole system is not equal to the sum of the parts— we need to study the internal dynamics of the entire system. The ecological system is a complex system and complex systems maintain balance on the edge of chaos. Mismanagement of such systems is resulting in the disasters of land and soil loss, neutrification of water sources, demise of rivers and many more human induced disasters. Decision making requires considerable knowledge and precaution submission*

Today, Europe has a pollinator crisis, initially apparent from a fall in bee numbers essential for productivity in many crops. As would be predicted from ecological science, this is part of the collapse of an ecological community of insects and has implications for many other essential species. The latest example is a huge fall in the numbers of flying insects in German Nature Reserves[14].

Threatened species

In 1977 a box arrived in a University of Adelaide medical science laboratory sent by a school pupil in Queensland who said it had been discovered when a frog vomited other frogs. On dissection the specimen had 20 fully formed froglets packed into its stomach. This was *Rheobatrachus silus* found in isolated regions of the Conondale ranges of Southern Queensland.



Rheobatrachus silus with 20 froglets found in the stomach

Subsequently, a live specimen was seen to give birth by disgorging a succession of live froglets which swam immediately.

The mother swallows the fertilised eggs and has developed biological mechanisms to turn off acid secretion and convert its stomach into a muscular uterus. In scientific terms this was sensational and led to the team conducting an intensive research study on a handful of specimens over several years. The initial search was for an inhibitor of acid secretion, for at that time, international research was focussed on the treatment of peptic ulcer- a common and often debilitating disease. The inhibitor was characterised as prostaglandin E2 a known inhibitor, a finding reported in the leading Journal Science[15]. Other inhibitors and facilitators were suspected, but the research was never completed. In particular, the mechanisms of conversion of gastric muscle into uterine muscle[16] were never identified. It is likely that research might have isolated mediators of value in human muscle diseases. However, the frog was never found again and is now extinct; the likely cause – environmental change due to a fungus introduction into the isolated habitat.

In retrospect, this frog was unknown as a threatened species at the time when the final samples were examined.

Medical implications of biodiversity loss

We make the following points for the Committee:

- Over millions of years, species have evolved and gained advantage by developing unique biological mechanisms. These

mechanisms are available to humankind for usage in medicine and often for the treatment of complex disorders.

- Rare and threatened species might have a predilection to such mechanisms for they may allow longer survival during slow environmental change, but their ingenuity may well eventually become a disadvantage during rapid change; it is interesting how many interesting biologically active chemicals are found in rare species of reptiles.

- The frog above, illustrates the potential medical benefits that exist in the millions of species which constitute the biodiversity in which humanity must coexist or perish.

- The successful treatment of disease and alleviation of human suffering are adorned by a range of naturally discovered molecules and their modification, but these are only a few of a number of health benefits which humanity uses, for example:
    - Water filtration, purification and conservation
    - Air purification of various toxins
    - Carbon storage
    - Temperature control
    - Regulation of rainfall
    - Stabilisation of soil and agricultural production.
    - Generalised health benefits [17, 18]

Sustainable development goals (SDG's)

The DEA submission to the Senate on this topic[4] makes the point that Australia's support for developing nations, particularly near neighbours, must be increased to foster SDGs. We all depend on the same atmosphere and act to observe the Paris Agreement. Similarly, for the equally threatening problem of biodiversity loss, we need to support retention of biodiversity in all nations with their SDGs in mind.

Here is an example which is also in Australia's interest;

PNG is logging its forests[19] at a huge rate by corruptly allowing Chinese exploitation. This has climate greenhouse implications, which affect us but of more immediate concern, it also has regional weather implications arising from changes in water cycles.[20] The mechanism of changes likely affecting Australia are detailed here https://www.researchgate.net/publication/312600294_Kinetic_energy_generation_in_heat_engines_and_heat_pumps_the_relationship_between_surface_pressure_temperature_and_circulation_cell_size.

New Generation of Environmental Laws

The present system of environment law enacted by States, with minor input from the EPBC Act, is flawed and the present crisis has arisen during their jurisdiction.

DEA maintains that a new national framework of environmental laws based on the deliberations of APEEL[21] be enacted urgently. Its proponents are an environmental alliance of over 50 groups including human health.[22] The framework will deliver significant health benefits in sustaining the pillars of human health and sustainability[23], adequate and clean water, clean air, food production and maintenance of biodiversity.

The proposal will establish (1) an independent **National Sustainability Commission** to set national environmental standards and undertake strategic regional planning and report on national environmental performance; (2) an independent **National Environmental Protection Authority** that operates at arm's-length from Government to conduct transparent environmental assessments and inquiries as well as undertake monitoring, compliance and enforcement actions.

The environmental mechanisms are detailed and are expected to have significant impact on many of the issues in the TORs in this Enquiry.[24] They will give certainty for climate mitigation and adaptation policy[25], and also ensure consistent standards for environment impact assessments.

This submission will now address the terms of reference using the above background of causation and by summarising why and how new laws are needed.

Senate Inquiry - Australia's faunal extinction crisis

On 27 June 2018, the Senate referred the following matter to the Environment and Communications References Committee for inquiry and report by 4 December 2018:

Australia's faunal extinction crisis, including: **the ongoing decline in the population and conservation status of Australia's nearly 500 threatened fauna species**;

The size of this problem is detailed in DEA's Australia's Strategy for Nature 2018-2030: Australia's biodiversity conservation strategy and action inventory submission[5].

This loss of biodiversity will continue as long as the ethos of job creation by growth continues in its present form to the detriment of the natural environment. The balance between development and conservation needs to be restored by a New Generation of Environmental Laws to replace existing state laws and the Federal EPBC Act.

We recommend all parliamentarians inform themselves about this issue for it is fast eroding Australia's sustainability.[26]

The wider ecological impact of faunal extinction;

These extinctions are the tip of the iceberg of the fall in biodiversity and damage to ecological communities and there is growing impairment of their functions;

In summary these vital functions are;

Provision of a range of innovative potential molecular structures for health needs and scientific research in general

Water filtration, purification and conservation

Carbon storage

Temperature and climate control

Regulation of rainfall

Stabilisation of soil and agricultural production

Air purification of various toxins

Clearly these have important implications for human health which are discussed in earlier sections.

The international and domestic obligations of the Commonwealth Government in conserving threatened fauna;

Australia's climate change policies are insufficient to address climate change and prevent further deterioration in biodiversity.

It is clear that Australia's international obligations under the United Nations Convention on Biological Diversity to protect threatened

species, halve deforestation rates, and stop extinction by 2020, are failing.

Both climate change and biological diversity policy must be brought under the control of a science-based Sustainability Commission.

Similarly, Australia could increase its commitment to SDGs (see page 12) at home and in other countries; a wealthy technologically- expert county would be expected to show leadership.

the adequacy of Commonwealth environment laws, including but not limited to the Environment Protection and Biodiversity Conservation Act 1999, in providing sufficient protections for threatened fauna and against key threatening processes;

This submission has provided evidence that existing Commonwealth Laws have failed and the EPBC Act and many state laws need to be replaced urgently by a national SC and a national EPA.

the adequacy and effectiveness of protections for critical habitat for threatened fauna under the Environment Protection and Biodiversity Conservation Act 1999;

These protections are inadequate and need governance by a NSC and NEPA.

the adequacy of the management and extent of the National Reserve System, stewardship arrangements, covenants and connectivity through wildlife corridors in conserving threatened fauna;

DEA does not have the expertise to comment on this.

the use of traditional knowledge and management for threatened species recovery and other outcomes as well as opportunities to expand the use of traditional knowledge and management for conservation;

This is a most important topic for many indigenous peoples around the globe[27] have managed their resources sustainably for thousands of years.

Much has been written about Aboriginal land care[28, 29].

DEA suggests a Senate Enquiry devoted to this which would have two aims, to allow Aboriginal people to present their knowledge before the

Senate, an important means of empowerment, and secondly to identify issues which should then be pursued and examined by a newly legislated National Sustainability Commission.

The adequacy of existing funding streams for implementing threatened species recovery plans and preventing threatened fauna loss in general;

It is difficult to comment on all the funding available for biodiversity as the funding is fragmented and comes from all levels of government. Consequently, the funding is regional and *ad hoc* at best.

Generally, the funding is vastly inadequate and needs to be increased in order to protect and improve biodiversity.

Take NSW for example. In 2016-17 the Climate Change Fund was allocated $160 million. It is difficult to find any of this funding allocated to biodiversity. There may be some benefits for biodiversity in grants for individual projects, but these do not exceed $80,000. Similarly, the NSW Office of Environment and Heritage has grants available for coastal and estuary protection but this amounts to only $83.6 million from 2016-17 to 2020-21.

Compare this to the United Kingdom's National Adaption Plan which allocates £2.6 billion for capital investment to protect against risk of flooding and coastal erosion.

If protecting biodiversity is truly a priority, then adequate funding must be allocated.

DEA does not have the expertise to comment on the following TORs.

the adequacy of existing monitoring practices in relation to the threatened fauna assessment and adaptive management responses;

the adequacy of existing assessment processes for identifying threatened fauna conservation status;

the adequacy of existing compliance mechanisms for enforcing Commonwealth environment law; and
any related matters.

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