VICTORIAN NATIONAL PARKS ASSOCIATION
Be part of nature

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NATIVE VEGETATION: VICTORIA'S NATURAL EQUITY

Native vegetation is not just a home for animals, it provides a whole range of services to our communities, including clean water, protecting soils, storing carbon, helping with pollination and providing people with inspiration and interest in the landscape. Various studies have indentified that these services are worth many millions of dollars, these are outlined below.

OUR UNIQUE & AMAZING HERITAGE

Australia has between 7% and 10% of all the Earth's species. Unlike in other continents, the lack of glaciation in Australia over the past few million years has allowed many species-rich ecological communities to survive here (Steffan 2009).

Australia's long isolation means that many of its species occur nowhere else on earth (Chapman 2005). Some 85% of our terrestrial mammals, 91% of our flowering plants, 90% of our reptiles and frogs and more than 50% of the world's marsupial species are only found here (Chapman 2005; Lindenmayer 2007; Dickman and Woodford Ganf 2007).

In addition, most groups of Australian plants and animals have particular features that differentiate them from counterpart groups on other continents.

OUR CHALLENGE

Victoria has cleared a greater percentage of its native vegetation than any other state in Australia (Productivity Commission 2003).

An estimated 66% of Victoria's native vegetation has been cleared as a result of the post-European growth and economic development of the state. Of the remaining 34%, some 7.4 million hectares are in public land and about 1.1 million hectares in private land.

The extent of native vegetation clearance varies across the state. Accessible and relatively fertile landscapes that were developed for pastoral and agricultural activities have been the most affected. For example, the Victorian Volcanic Plains (VVP) in the southwest are 94% cleared (DNRE 2002).

Major rivers and coastal areas have also been significantly affected by urban expansion and related industrial activities. For instance, the Port Phillip catchment management area is 71% cleared (DNRE 2002).

Native vegetation in Victoria continues to be lost on private land.

In 2008, the Department of Sustainability and Environment estimated the total annual losses and gains of native vegetation that are still occurring . This showed that on private land we are still losing a significant amount (around 9,990 habitat hectares) of native vegetation each year. To put this figure into context, on the Victorian Volcanic Plains (between Melbourne and Geelong) one habitat hectare has been shown to equal approximately 2.48 hectares of remnant vegetation (based on median scores for site condition and landscape context for the VVP (VEAC 2010).

Most of Victoria's continuing native vegetation loss is happening on private land (DSE 2008). But we cannot take solace from believing that there must be adequate vegetation protected in public land. Analysis shows that the most cleared parts of the state also have the smallest amount of native vegetation in public reserves (VEAC 2010).

There are two major legacies of our history of clearing and the continuing loss of native vegetation:

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1. Ecosystems on which our presence and productivity depend are now beyond the point of sustainability. This can be seen in the continuing problems of salinity, soil structure decline, reduced water quality and quantity, and increased rates of severe flooding.
2. The biodiversity that built and that maintains these ecosystems is also in decline (DNRE 2002). This is reflected in the fact that 44% of our native plants and more than 30% of our animals are already either extinct or threatened with extinction (Victoria Naturally Alliance 2012).

NATIVE VEGETATION ADDS UP!

Native vegetation can be considered to be our 'safety net'. Apart from sustaining life, it helps to mitigate the impacts of all the activities that cause collective damage to our landscape and our wellbeing.

A study that informed the report Sustaining our Natural Systems and Biodiversity for the Prime Minister's Science, Engineering and Innovation Council in 2002 summarised the following monetary values of native vegetation from an Australia-wide perspective. This adds up to a lot of value!

A closer look will explain exactly how native vegetation supplies the below services and values.

Collateral benefit	Estimate of value (2002)
Dryland salinity	$110 per ha per year
Soil erosion	$10 per ha per year
Carbon sink	$1,400 per ha bushland
Clean water	$230m per year
River salinity	$46m per year
Water regulation	Road damage - $45m pa
Pollination	$1b per year
Tourism	$6.6b per year total
River recreation	$259,200 per 10 km river
Landscape aesthetics	$226,800 per 10,000 ha

Source: Possingham et. al. 2002

WITHOUT NATIVE VEGETATION, OUR LANDSCAPE FALLS APART

Maintaining native vegetation and preventing land degradation are interlinked. For example, the presence of native vegetation at the top of hill slopes has been shown to result in less run-off and erosion on farmland (Young 1997). A study by Walpole, Miles et al. (1998) derived a $9.54 per hectar benefit attributable to the control of land degradation by remnant native vegetation.

By contrast, clearing native vegetation can result in adverse impacts on agricultural production.. Howard (1996) identified that salinity, waterlogging, water erosion and wind erosion are all exacerbated by a lack of native vegetation in the landscape.

As well:

- More than 2.5 million hectares of Australia are affected by dryland salinity, at a cost of more than A$270 million a year in environmental degradation, degraded water supplies, lost agricultural production and damage to infrastructure such as roads, buildings and recreational facilities (Campbell 1999).
- Land degradation in Australia costs $1.15 billion annually in lost production- that is, around 5% of the local value of agricultural production of $23.4 billion in 1994-95 (DEST 1993).
- If all land degradation were eliminated, the value of agricultural output would rise by $7.3m per year per LGA or $12 per ha per year (Sinden & Yapp 1992).

CLEAN AND SAFE WATER

The annual costs of water turbidity for Australia are estimated at $28m, costs of eutrophication as $200m and costs of sedimentation $4m. Together these make a total of about $230m pa (Land and Water Resources Audit, unpublished data).

The cost of current levels of salinity in the River Murray system has been estimated as $46m per year (Murray Darling Basin Commission 1999). This includes costs to irrigated agriculture, to urban and industrial users, and to the environment.

Studies by SKM (200X) showed that stream flow increased by 33 mm for each 10% of forest area cleared in the Maroondah, Stewarts Creek and Reefton catchments in Victoria, thereby increasing

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the potential for increased nutrients and turbidity in waterways.

POLLUTION REDUCTION

Native vegetation and ecological processes play an important role in the breakdown and absorption of many pollutants created by human activity, including sewage and carbon dioxide. Many species ranging from bacteria to higher life forms are involved in these breakdown and assimilative processes (DEST 1993).

A MORE STABLE CLIMATE

Vegetation is essential for maintaining oxygen and carbon dioxide levels in the atmosphere, and influences climate at global, regional and local levels (DEST 1993). The relationship between climate change, the greenhouse effect and native vegetation is developed in Background Paper 7 - The Greenhouse Effect, Climate Change and Native Vegetation (Rawson & Wilson 2000).

Native vegetation stores carbon dioxide. When vegetation is cleared, 'much of the stored carbon dioxide is released into the atmosphere, contributing to greenhouse gas atmospheric warming' (Brown et. al. 1993). Clearing an average hectare of vegetated land contributes 179 tonnes of carbon dioxide to the atmosphere; indeed, policies to reduce clearing of native vegetation may be a significantly cheaper option for meeting Australia's current greenhouse gas reduction obligations, and most of the recently proposed international targets, than reducing fossil fuel use (Ryan 1997).

Benefit	NE Victoria (% of Participants*)
Aesthetics	89
Timber for firewood and fencing	86
Increased agricultural production	77
Recreation	73
Habitat for animals which help control pests	69
Increased stock production	62
Cleaner water	60
Nutrient cycling/soil formation	45
Other (wildlife habitat, windbreak, contribution to quality of life, effect of RNV on climate, privacy, barrier to noise, maintaining ecological balance, education value, nature conservation value, provision of sawlogs and as a seed source)	37
Landscape aesthetics	0
No benefits	0

* More than one alternative could be selected by each participant
Source: Middleton et. al. 1998

Native vegetation may also have a local impact on climate. Evidence suggests that native vegetation may help maintain rainfall locally by recycling water vapour back into the atmosphere. Native vegetation may also generate atmospheric turbulence through the effect of the vegetation canopy. At a smaller scale, vegetation has a moderating influence on adjoining agricultural production and can create specific microclimates that various organisms rely on (DEST 1993).

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PEOPLE LIKE NATIVE VEGETATION

In a survey of landholders in north-east Victoria, 100 participants were asked to identify, and where possible quantify, benefits that they consider they receive from their remnant native vegetation. The table above details how landholders believe that they benefit from native vegetation.

The community's willingness to pay for improvements in non-market aspects of biodiversity has been estimated by choice modelling as:

- 8c/household for swimming and fishing for every 10 km of degraded waterway that is restored ($259,200/10 km for all Australian households willing to pay), and
- 7c/household for landscape aesthetics for every 10,000 ha of farmland rehabilitated ($226,800 for all households, equivalent to $23 per ha). (National Land and Water Resources Audit, unpublished data.)

A study by Lockwood and Carbury (2000) showed that households in north-eastern Victoria would be willing to pay up to $98 (one-off) to preserve remnant native vegetation on private property, as shown below:

VEGETATION PAYS

A benefit-cost analysis of the conservation of remnant native vegetation on private property in north-east Victoria showed that under most conditions, there was a net economic benefit in conserving remnant native vegetation. For example, given a five-year time horizon and a discount rate of 7%, governments could spend up to $29.8 million in north-east Victoria and still achieve a net economic benefit, provided that conservation outcomes were achieved (Miles et. al. 1998).

This result was achieved without taking into account that preservation values (indirect use values and non-use values of native vegetation) may rise through time at a rate greater than the rate of change of the opportunity costs (Gillespie R. 2000).

Furthermore, the preservation values of native vegetation may increase over time for a number of reasons, as follows:

• Environmental goods tend to be 'public goods' and hence the total benefit enjoyed by the population is the sum of benefits to individuals. Increases in population therefore result in an increase in the total

benefit to the community. Agricultural and other market products are predominantly private goods that can be enjoyed only by their immediate users. Population increases may increase the demand for these products, and this may increase the consumer surplus generated by production, but associated price rises may decrease this measure of benefit .

• Environmental goods generally have few substitutes. Over time, with the increasing scarcity of environmental goods, substitution possibilities will become even more limited. Consequently, unit values of these goods will increase over time. Agricultural and other products, however, tend to be easier to substitute for, including the substitution of domestic supplies by overseas supplies. Unit value rises in agricultural and other products are thus far less likely.

• In recent years there has been a shift of community preferences toward environmental goods.

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LIFESTYLE VALUES

A 2015 study of around 7500 rural properties in north central Victoria sold between 1990 and 2011 found that rural landholders generally value native vegetation on their land.

It found native vegetation is more valuable to the owners of lifestyle (small) properties than to the owners of large production-oriented farms. The optimal proportions of native woody vegetation for a 1ha, 10ha, 100ha and 1000ha property come out at 45%, 37%, 29% and 20% respectively. These proportions would increase property values by 25%, 16%, 9% and 5% relative to the value of similar properties with no native vegetation.

The study also revealed that the current extent of native vegetation is lower than what is needed to maximise amenity values to landholders and that restoring some native vegetation on cleared lands may enhance the welfare of people living in this area.

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