**Protecting Biomes:**

**Do Now:**

**Why do you think humans would change a natural biome?**

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**What are some positive and negative effects of these changes?**

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| **Positive** | **Negative** |
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Because we share the world with many other species of plants and animals, we must consider the consequences of our actions. Over the past several decades, increasing human activity has rapidly destroyed or polluted many ecological habitats throughout the world. It is important to preserve all types of biomes as each houses many unique forms of life. However, the continued heavy exploitation of certain biomes, such as the forest and aquatic, may have more severe implications.

**List 5 human activities that have destroyed or exploited biomes:**

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**Land Clearing -** [**www.bushheritage.org.au** /about/about­us/our­challenge/land­clearing](http://www.bushheritage.org.au/about/about-us/our-challenge/land-clearing)

# Australia is still clearing too much vegetation

Though the extreme rates of land clearing that placed Australia in the top 10 land clearing nations in the world have reduced over the past 5 years, we're still clearing much more native vegetation than is being replanted or that's regenerating naturally.

This ongoing net loss and decline continues to threaten Australia’s environment. Clearing increases [erosion](http://www.bushheritage.org.au/what-we-do/landscape-management/erosion) and sedimentation of waterways and reduces water quality. Clearing removes habitats leading to the direct loss of millions of native animals and plants every year and creates an extinction debt.

Large­scale revegetation work has taken place on parts of our Scottsdale Reserve (NSW) that had been cleared before purchase. Photo Peter Saunders.

Rates of land clearing in Queensland and New South Wales are still unacceptably high and proposals continue for development in northern Australia involving clearing of hundreds of thousands of hectares. There's a risk that the severe consequences of clearing vast areas of southern Australia for agriculture will be repeated in the north.

Revegetating land to a complexity that resembles intact native vegetation is difficult and expensive. Recent reviews of natural resource management programs have highlighted the expense and difficulty in restoring an area to original condition and the incongruity of continuing to allow further clearing given the existing problems and environmental challenges being dealt with in cleared landscapes.

# What is land clearing doing to Australia?

European settlement has significantly altered Australia's natural landscape, and with it, Australia's biodiversity. About 90% of native vegetation in the eastern temperate zone has been removed for agriculture, industry, transport and human habitation. About 50% of Australia's rainforests have been cleared and the proportion of Australia covered by forest or woodland has been reduced by more than one third (Source: Creating Markets for Biodiversity, Productivity Commission, Canberra, April 2001).

The effect of these changes has been considerable. Around 5% of Australia's higher plants, 7% of reptiles, 9% of birds, 9% of freshwater fish, 16% of amphibians and 23% of mammals are listed as Extinct, Endangered or Vulnerable.

# The impacts of clearing

## Death and extinction of native birds, wildlife and biodiversity

A swift parrot. Photo Graeme Chapman.

Over 5 million parrots, honeyeaters, robins and other land birds are killed each year by land clearing. For every 100 hectares of bush destroyed, between 1,000 and 2,000 birds die from exposure, starvation and stress. Half of Australia's terrestrial bird species may become extinct this century unless habitat destruction is rapidly controlled. Half our mammal species, including some [wombats](http://www.bushheritage.org.au/species/wombats), [wallabies](http://www.bushheritage.org.au/species/wallabies) and [bandicoots](http://www.bushheritage.org.au/species/bandicoots), are either extinct or threatened with extinction as a result of land clearing, habitat destruction and other threats.



Australia has lost more plants and mammals to extinction than any other country and has more threatened animals than 98% of the world's countries.

## Salt­blighted farmlands and water supplies

Salt will poison over 17 million hectares of Australian farmlands by the year 2050. As trees and native vegetation are bulldozed and cleared, water, once used by native plants, rises through the soil bringing with it ancient salt deposits. This salinity reduces soil and farm productivity, and seeps into rivers and water supplies.

## Salt damage to regional towns, cities and infrastructure

More than 200 regional cities could be affected by 'clearing induced' dryland salinity by 2050, with a larger number of small towns also at risk.

Some of Australia's biggest cities such as Sydney's western suburbs, are also at risk with salinity affecting foundations, parks, gardens, roads, buildings and other infrastructure. Rising groundwater caused by land clearing threatens to undermine 20,000 km of major roads and 1600 km of railways, with this threat expected to double.

## Greenhouse gas pollution

The Australian Greenhouse Office has estimated that land clearing contributed 13% of Australia's total greenhouse gas emissions during 1996. Bulldozed, rotting and burning bush emits greenhouse gases into the atmosphere.

Land clearing's contribution to greenhouse gas emissions costs Australia around $1.6 billion annually.

**Questions**

1. **What are some of the environmental impacts of land clearing in Australia?**

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1. **What percentage of native vegetation in the eastern temperate zone has been removed?**

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1. **What has the vegetation been removed for?**

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1. **The effects of land clearing on Australia’s flora and fauna has been considerable. Create a bar graph using the template below outlining these effects:**

A **bar graph** is a chart that uses bars to show comparisons between categories of data. The bars can be either horizontal or vertical. A bar graph will have two axes. One axis will describe the types of categories being compared, and the other will have numerical values that represent the values of the data. A simple **vertical bar graph** is best when you want to compare independent variables.

1. **For every 100 hectares of bush cleared how many birds die?**

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1. **What do birds die from when bush is cleared?**

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1. **List three mammals that are either extinct or threatened with extinction as a result of land clearing:**

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1. **Explain how salt will affect farmlands by 2050:**

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1. **Explain how land clearing affects green house and gas pollution in Australia:**

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1. **Complete the attached ALARM Matrix to answer the following question:**

**Evaluate the impact of land clearing on the Australian environment**

**Question: Evaluate the impact of land clearing on the Australian environment.**

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| --- | --- | --- | --- | --- | --- |
| Definition and Explanation:  Define land clearing: | | | | | |
| Criteria for Evaluation: (upon which to base an evaluation)   * Impact on fauna and flora | | | | | |
| **Name and Define**  Each area of content | **Describe**  Features / characteristics | **Explain /Significance**  purpose / function | **Analyse**  Explain how each feature / characteristic addresses the problem: explain how it works to solve the problem. | **Critically Analyse**  explain how/why each component/feature/ strategy is + and/or – Explain the +’s and/or –‘s (relate to criteria for evaluation) | **Evaluate**  Explain to what extent each component/feature is successful/effective, etc |
| Fauna |  |  |  |  |  |
| Flora |  |  |  |  |  |
| Salinity OR Green House Gas |  |  |  |  |  |
| **Critically Evaluate/ Conclude overall evaluations**: (explain to what extent the components/features are successful/effective. (This is an explanation/judgement on the overall effectiveness/impact from the total areas/features examined to achieve their purpose/intention). | | | | | |