

tangled

DESTINIES



Tangled Destinies

Exploring land and people in Australia over time
through the National Museum of Australia

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Exploring Land and People in Australia over Time

tangled DESTINIES

What can the *Tangled Destinies* exhibition tell us about the Australian environment, and the relationship between land and people in Australia over time?

The *Tangled Destinies* exhibition at the National Museum of Australia presents a rich variety of objects and images that explore the relationship between people and land in Australia over time. Through them we can see some of the ways in which people have responded to the Australian environment over tens of thousands of years, and how the environment has been affected by people.

In this unit you can examine some major objects and images from the exhibition, and analyse what they tell us about:

- the ways Aboriginal people have related to and affected the land
- European responses to the strangeness of Australian flora and fauna
- the consequences of introducing new species of plants and animals into the environment
- how technological innovations were born of harsh necessities
- some environmental implications of Australia's urban development.

At the end you will be asked to draw together the information and understandings you have developed to make a statement about the overall theme of the exhibition.

The National Museum of Australia opened in March 2001 as part of the celebrations for the Centenary of Federation. The Museum employs a fresh and exciting approach to Australian history, culture and environment.

Each National Museum unit of work asks students to consider the stories and concepts behind Museum themes, objects and images, and can be used with students in Society and Environment, History, Geography and English.



Curriculum Guide: Student Learning Outcomes

By the end of this unit students will be better able to achieve these learning outcomes that are common to most states' and territories' Society and Environment Key Learning Area:

Time, continuity and change (History)

- Understand some of the major events, people and developments in Australian history
- Identify some key forces for change and continuity
- Describe and explain lasting and changing aspects of Australian society and environments.

Place and space (Geography)

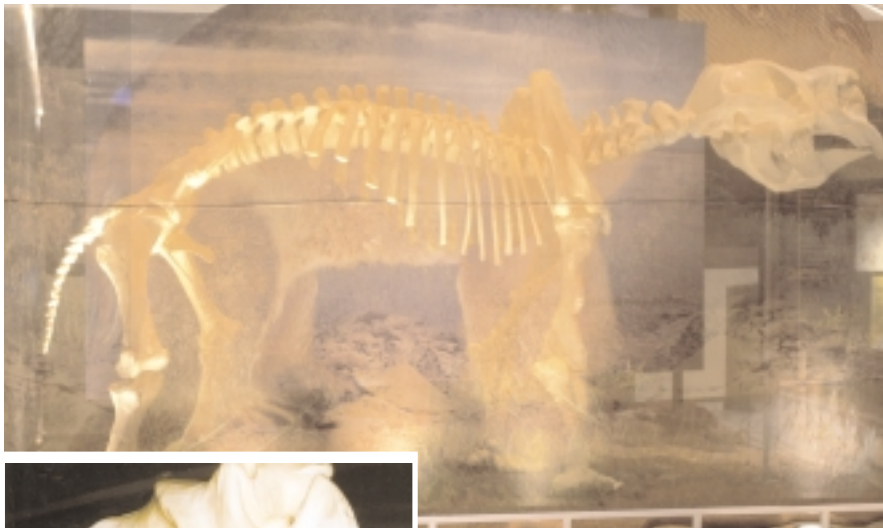
- Analyse attitudes to and impacts of introduced species and ideas on the environment
- Explain and predict variations in places over time by referring to processes that may affect natural and built features
- Explain consequences of human modifications of natural and built features of places
- Explain how interactions of various features contribute to the ways people identify with and value places.

Resources (Economics)

- Analyse relationships among resource use, economic growth, living standards and ecological sustainability.

Interrogating the DIPROTODON exhibit

What can this exhibit tell us about the Australian environment, and the relationship between land and people over time?



This display in the *Tangled Destinies* exhibition shows a replica of a skeleton of a diprotodon, with an image of what scientists think the animal looked like superimposed on it. A diprotodon was one of the group of animals known, because of their large size, as 'megafauna' ('large animals'). They are now extinct.

Here are some facts about the diprotodon. Use these to answer the questions below.



Replica of *Diprotodon optatum* cast from 1906
Lake Callabonna fossils
AHC Ziets and R Limb
National Museum of Australia

- The diprotodon was the largest mammal that ever lived
- Male adults were about the size of a modern hippopotamus
- They weighed about two tonnes
- They needed about 145 kg of food each day
- They needed to live near fresh water
- Their teeth show that they were browsers: the two forward teeth (from which their name comes – di (two) proto (front) don (teeth) – are designed for shearing or snipping off the tops of grass and shrubs, much like hedge clippers do. The side teeth are designed to crush this vegetation by chewing
- They lived in small family groups
- Remains have been widely found in Australia, mainly in inland areas.

- 1 From this evidence we can say that:
- | | TRUE | FALSE | CANNOT TELL |
|---|--------------------------|--------------------------|--------------------------|
| The animal was a herbivore | ☐ | ☐ | ☐ |
| It must have lived in a well-grassed and well-treed environment | ☐ | ☐ | ☐ |

The diprotodon from which the replica above was made was found in 1893 at Lake Callabonna, in South Australia. That is a salt lake in an area with little vegetation. Large herbivores probably could not live in the area today.

- 2 What can you hypothesise from this fact about:
- The nature of the Australian environment over time?
 - The nature of climate in Australia over time?
 - The impact of change in climate and environment on animals?
- 3 Why would a museum want to have such an object in its collection?

Moving beyond the Tangled Destinies exhibition

We do not know when the diprotodon and other megafauna became extinct. Estimates vary from 10 000 to 20 000 years ago. We also do not know *why* they became extinct. They are, however, important questions that scientists, archaeologists, historians and others are keen to explore.

There are three main theories about the cause of the extinction of the diprotodon and other megafauna:

- A human hunting
- B fire
- C climate change

Look at the explanation of each theory on the next page and answer the questions that follow.

Theory A: Human hunting

According to this theory humans arrived in Australia and within a relatively short period of time (perhaps 10 000 years) hunted the megafauna to extinction. This meant that the large quantities of dung from the animals that used to fertilise the soil (estimated at 100 kilos per adult animal per day) were no longer available. This increased the prevalence of fire-tolerant plants, which can grow in poorer soil, over the broad-leaf rainforest-type plants that are destroyed by fire. Fires became more severe, and created more erosion and run-off. The reduction in broad-leaved plants decreased water evaporation, which in turn affected the climate — and there was less rain, creating a more arid environment.

Theory B: Fire

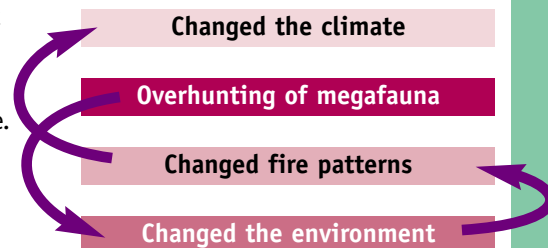
According to this theory humans arrived and perhaps hunted the megafauna, but certainly not to extinction. They started to use fire, which gradually changed the environment, increasing the prevalence of fire-tolerant plants. Fires changed the patterns of erosion and run-off, and reduced the prevalence of non-fire-tolerant broad-leaved plants, decreasing water evaporation. This in turn affected the climate — and there was less rain, creating a more arid environment, and thereby gradually destroying the habitat required for megafauna to survive. It was this climate and environmental change that caused the extinction of the megafauna.

Theory C: El Nino

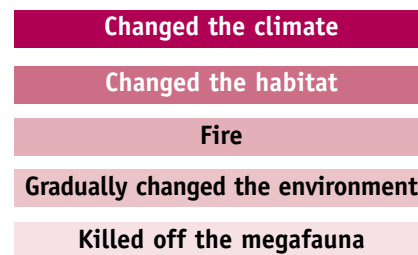
According to this theory climate change occurred as a result of the El Nino Southern Oscillation (ENSO) effect. This is a periodic climatological phenomenon in which normal current and wind patterns between Australia and South America are reversed, creating a severe drought cycle, interspersed with occasional destructively heavy rainfalls. The drought changed the environment, destroying the megafauna's essential habitat, resulting in the death of the megafauna.

These theories are simplified versions of complex ideas. All three suggested possible causes of the extinction of the megafauna are theories only, and each has some scientific/archaeological evidence that supports it, and some which challenges or questions it.

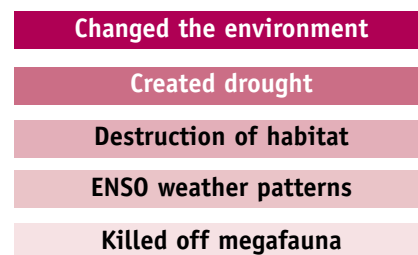
This can be represented as:



- 4 Re-arrange these elements to create a flow chart (like the one above) to explain this theory.



- 5 Re-arrange these elements to create a flow chart (like the ones above) to explain this theory.



- 6 Why might there be three different theories about these changes?
- 7 Imagine that scientists were to make the following discoveries. Decide in each case which of the three theories the discovery supports or challenges. Mark that number in the middle column, and write in why this evidence supports the theory it does.

If this were discovered:	It would support theory (A,B or C):	OR	It would challenge theory (A, B or C):	Because
Indigenous people and megafauna shared the continent for many tens of thousands of years.				
Uncontrolled fires changed the whole continent before the accepted period of human occupation.				
Many species were adapted to fire before Aboriginal people arrived.				
Australian rainforest is not a remnant from increased periods of fire, but in many cases is relatively new.				
Aboriginal people did not hunt the diprotodon — they butchered those that were already dead.				

- 8 How could local archaeological studies help to solve this scientific debate?

Developing your ideas about land and people in Australia over time

You can now reflect on the ideas that have been suggested by the megafauna exhibit in the *Tangled Destinies* exhibition at the National Museum of Australia, and some further information and ideas on the causes of the extinction of the diprotodon. A number of specific words have been listed that are relevant to this exhibit. One example has been done to help you.

A study of the diprotodon exhibit in the *Tangled Destinies* exhibition at the National Museum of Australia helps me to understand that:

Aspect	The idea you have developed
Climate	<i>Climate in Australia has changed dramatically over time</i>
Fire	
People	
Extinction	
Habitat	
Fauna and flora	
Theories	

Further research

www.abc.net.au/science/future/theses/

www.abc.net.au/rn/science/ss/stories/s309340.htm

www.abc.net.au/rn/science/ss/stories/s356397.htm

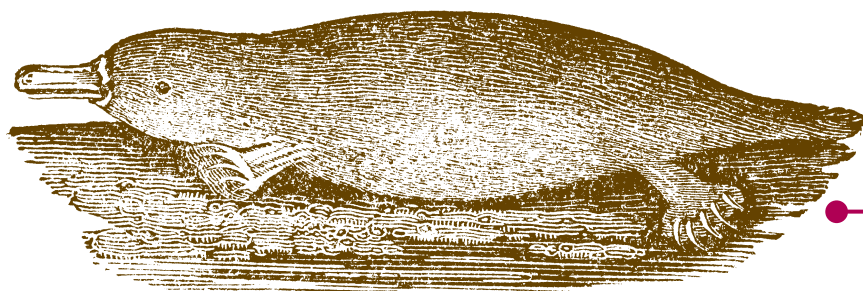
www.samuseum.sa.gov.au

www.archaeology.usyd.edu.au/research/cuddie/cuddie.html

www.lostkingdoms.com/

Tim Flannery, 1994. *The Future Eaters*, Reed Books, Sydney.

Interrogating the PLATYPUS exhibit



What can the exhibit about these creatures, and the European reaction to them, tell us about the Australian environment, and the relationship between land and people over time?

Earliest published drawing of a platypus, 1800
From *A General History of Quadrupeds*, 1800
By Thomas Bewick
National Library of Australia

In 1803, a visitor to the French chateau of the Empress Josephine, Napoleon's wife, would have been astonished to see kangaroos, emus and wombats roaming near cuttings of acacia, casuarina and grevillea trees planted in the parklands.

Australian fauna and flora were the wonder of the scientific world, and were much prized as curiosities. This was because they were so different to European species, and did not seem

to fit the animal and plant classification theories of the day about how the natural world had developed over time.

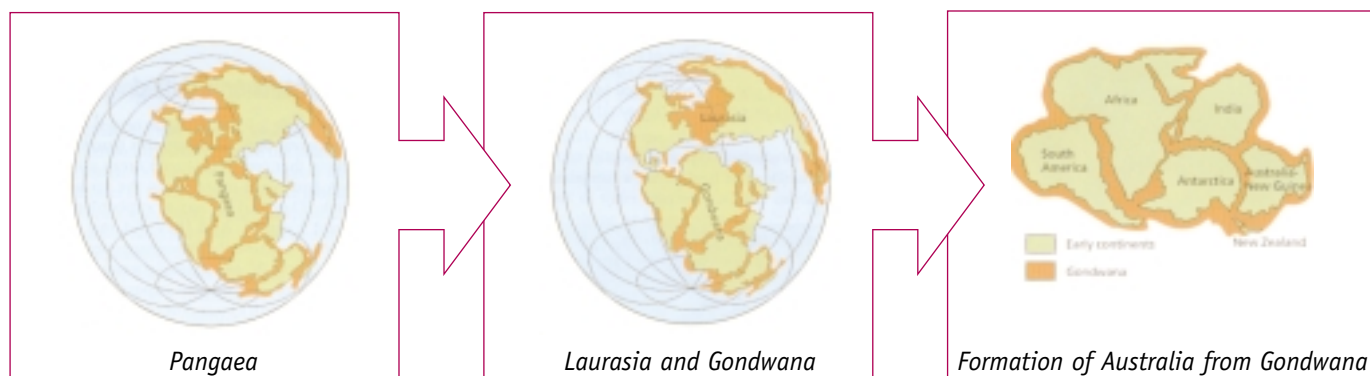
The visitor to Josephine's chateau, however, would not have seen this animal — the platypus. They were extremely rare. At best some people could see a skin, or a stuffed specimen, in a few museums and scientific institutes in England.

The platypus was a mystery. All known animals were classified into one of four types: mammal, fish, bird or reptile. Was the platypus a mammal (as its thick furry pelt suggested); or was it a reptile (with its amphibious nature); or was it a bird (with its duck-like bill and one bodily opening for reproduction and elimination of waste)? Or was it a hoax, a joke — someone had sewed a bird's beak on to the body of a mole!

1 Suggest why the platypus would have been so strange a sight to European scientists and settlers.

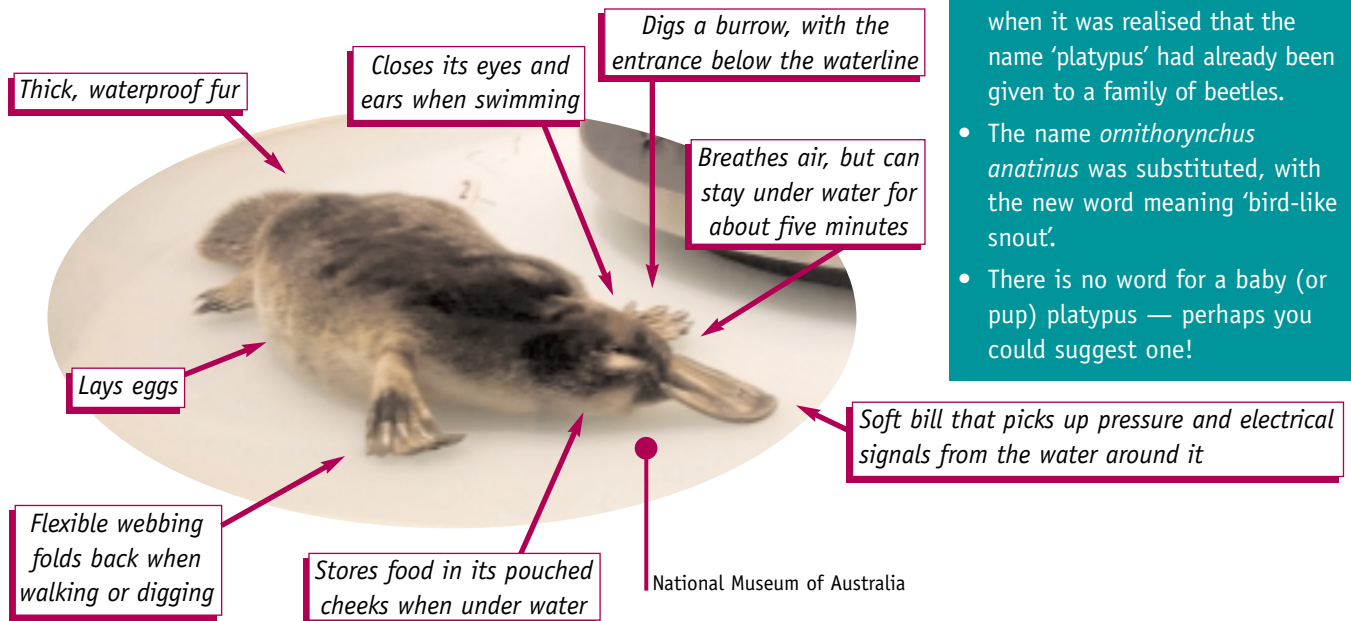
To understand the answer to this question, we need to go back in time.

Look at this illustration of the formation of Australia, carried out over many millions of years.



- 2 Why would Europe and Australia have different fauna and flora?
- 3 Why would European scientists after 1788 be so puzzled about Australian animals and plants and their place in the natural world?

The first platypus was sent to Britain in 1799. Scientists soon realised that the animal was genuine, and gradually found out a lot about the animal (though some misconceptions remained for a long time):



Platypus fact file

- The animal we know as the platypus was first named *platypus anatinus* — meaning 'flat-footed' and 'duck-like'.
- This name had to be abandoned when it was realised that the name 'platypus' had already been given to a family of beetles.
- The name *ornithorhynchus anatinus* was substituted, with the new word meaning 'bird-like snout'.
- There is no word for a baby (or pup) platypus — perhaps you could suggest one!

Some early 'knowledge' and values associated with the platypus in Australia

1878 R. B. Smyth, *Aborigines of Victoria* I. 251

'The duck-billed platypus makes no nests, but lives in holes on the banks of rivers.'

1893 *Scribner's Magazine* June
'Platypus hunting requires as quick an eye and hand as shooting woodcock in close cover.'

1893 *Scribner's Magazine* June
'Platypus shopping-bags and purses are not disdained by the fair who crowd the marts in Melbourne, or in Sydney.'

The platypus is still rarely seen in the wild today. The habitat of the platypus is freshwater streams. These are usually the places that are attractive to people, and to settlements. While the platypus is not endangered, it is certainly vulnerable to having its habitat destroyed by development.

In recent years platypus are returning to areas near urban waterways.

- 5 Suggest reasons why this might be happening.

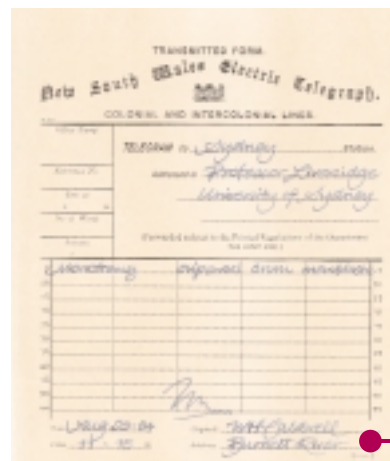
With all these features that contradicted existing scientific knowledge, the platypus had to be placed in a totally new category of mammals, the 'monotremes' (because of its 'one opening' — the only other animal in this category is the echidna).

One mystery remained: was the platypus '**viviparous**' (giving birth to its young as a baby animal, which then suckled) or was it '**oviparous**', laying an egg and then hatching it to be suckled) or was it '**ovoviparous**' (conceived as an egg, but then separating from the shell in the mother's body, and born as a live animal which then suckled)?

Aboriginal people knew the answer to this mystery. The female platypus lays usually two eggs less than 25 millimetres long that stick to the fur on her belly. The babies burst their way out with an egg tooth, and then attach themselves to the mother's belly-hairs. Milk oozes from glands nearby that soak the fur and the babies suck it up. But it was not until scientists had captured and dissected thousands of platypus that they decided they knew this happened.

Europeans did not definitely learn how the platypus gave birth until 1884. This telegram shows that discovery.

- 4 What discovery about how the platypus gives birth to its young is revealed in this telegram?



Monotremes = a class of animals, including the platypus and echidna

Oviparous = egg-laying

Ovum = egg

Meroblastic = a soft-shell egg with large yolk, not dividing into cells but absorbed as food by the developing young

National Museum of Australia

Developing your ideas about land and people in Australia over time

A study of the platypus exhibit in the *Tangled Destinies* exhibition of the National Museum of Australia helps me to understand that:

Aspect	The idea you have developed
Habitat	
Attitudes	
People	
Changes in Knowledge	
Uniqueness	

Further reading

Ann Moyal, *Platypus*, Allen & Unwin, Sydney, 2002.

www.lostkingdoms.com/facts

www.totalretail.com/TR/tr_plat/

Interrogating the THYLACINE (TASMANIAN TIGER) exhibit

On 7 September 1936 an 'endling' died in Hobart Zoo. An endling is the name given to an animal that is the last of its species. In 1936, this endling was 'Benjamin' (actually a female), the last thylacine, or Tasmanian tiger.

The thylacine is now extinct. A thylacine skin and preserved carcass are on display in the *Tangled Destinies* exhibition at the National Museum of Australia. You can see these on the back cover.

1 Why would a museum want such an exhibit?

What does this animal tell us about the relationship between land and people in Australia?

The thylacine has in fact suffered two extinctions in Australia — one on the mainland, and one in Tasmania. The causes of the extinctions have been quite different in each case.

The thylacine was hunted to extinction in Tasmania by Europeans, mostly during the nineteenth century, although a few animals survived into the twentieth century.

Look at illustration F of the thylacine on the back cover.

2 Describe the animal.

3 Suggest why it might have been hunted to extinction by farmers. Justify your hypothesis by reference to the nature of the animal, and attitudes and values at the time.

Read the information opposite to check your answer.

From vermin to icon

4 How would you respond today to the thylacine hunter quoted in the panel opposite?

5 Why do you think attitudes towards the thylacine have changed over time?

What can the exhibit about this extinct creature tell us about the relationship between land and people over time?

- Tasmania has been a sheep-producing region since the early 1800s. Because of the occasional loss of livestock due to predation by thylacines, Tasmanians waged an all out attack on the species. Although reports of livestock loss due to thylacines were undoubtedly wildly exaggerated, by 1840 intense private bounty hunting began. By the early 1860s, the thylacine was almost entirely restricted to the mountain habitats and the more remote, undisturbed parts of the island. Between 1888 and 1909, 2 184 thylacines were killed for payment of a government bounty, and many more were destroyed for private bounties. By 1905, there was a rapid decline in thylacine populations. Ten years later, thylacines were very rare indeed. In addition to the direct human attacks through hunting, poisoning and trapping, other factors such as introduced disease, habitat loss and competition from settlers' dogs contributed to the thylacine's decline.
- Between 1878 and 1893 a Tasmanian tannery exported 3 482 thylacine pelts to London to be made into waistcoats, and as late as 1909 newspaper advertisements could be seen offering 'tiger shoots' for visitors in search of 'fun'.
- As late as the 1930s one of the men who had hunted thylacines said, 'Why did you want to go and protect them bloody useless things?'

www.naturalworlds.org/thylacine/ and National Museum of Australia exhibit text

Moving beyond the Tangled Destinies exhibition

The Tasmanian extinction was the second one for the thylacine. The earlier extinction occurred on the Australian mainland.

We know from fossil finds that the thylacine was once widespread throughout Australia. Scientists generally believe that the extinction of the thylacine on the mainland (as well as two other mammals, the Tasmanian devil, still alive in Tasmania, and the chicken-sized Tasmanian native hen), was caused by the introduction of the dingo.

The dingo was introduced, probably deliberately, about 4 500 years ago, in a semi-domesticated state.

- Suggest why the dingo might have led to the extinction of the three mammals above.
- What if you could bring the thylacine back — would you do it?
- Look at the set of images of the thylacine on the back cover. Re-arrange them into a sequence that tells the story of the thylacine over time, including the possible future.

In fact it might be possible to do just that. Scientific advances in cloning mean that if some preserved thylacine DNA could be found, it might be possible to bring the species back. And in fact a source of DNA exists — by accident. One thylacine pup was preserved by the Australian Museum in 1866 in alcohol, which preserves DNA, and not in the usual formaldehyde, which destroys it.

Cloning is a major modern ethical and environmental issue. Recently the Australian Museum has announced that it is engaged in a program that they expect will enable them to create a thylacine. Visit some of the websites below to find out about this process. Consider the arguments for and against the cloning of extinct species, and decide on your own point of view about this issue.

Developing your ideas about land and people in Australia over time

A study of the thylacine exhibit in the *Tangled Destinies* exhibition at the National Museum of Australia helps me to understand that:

Aspect	The idea you have developed
Habitat	
Attitudes	
Changes in knowledge	
Uniqueness	
People	
Introduced species	
Extinction	
Agriculture	

Sources

www.aronline.net.au/thylacine/
www.abc.net.au/rn/science/ss/stories/s421160.htm
www.abc.net.au/rn/science/ss/stories/s444887.htm
www.abc.net.au/rn/science/ss/stories/s309340.htm
www.abc.net.au/catalyst/stories/s479507.htm
www.naturalworlds.org/thylacine/
www.biotechnology.gov.au
www.parks.tas.gov.au/wildlife/mammals/thylacin.html
www.zoo.utas.edu.au/thylacine.html
www.abc.net.au/btn/scripts/may_09/tastiger.htm
www.samuseum.sa.gov.au/media/cloning.htm
www.austmus.gov.au/thylacine/index2.htm
 Robert N. Paddle, 2000. *The Last Tasmanian Tiger: The History and Extinction of the Thylacine*, Cambridge University Press, Melbourne.

Interrogating the WHEAT exhibit

Here are four related images, all of them from the *Tangled Destinies* exhibition.

- 1 Arrange them into an order that tells a story about wheat in Australia over time.



What can we learn from the exhibit on wheat, and the methods used to harvest it, about the relationship between land and people in Australia over time?

The machine shown in C is a grain stripper. It could strip the heads of wheat off the stalk. This was a job normally done much more slowly by hand.

- A - Aboriginal millstone, about 1890 from central Australia. On loan from M.A. Smith. National Museum of Australia
- B - White Lamas historical wheat variety grown by CSIRO Plant Industry, 2000
Federation wheat, historical wheat variety grown by CSIRO Plant Industry, 2000
Line B73-6.1 Historical wheat variety grown by CSIRO Plant Industry, 2000. National Museum of Australia
- C - May Brothers wheat stripper 1900
National Museum of Australia
- D - Reaphook used by Iram Nash, 1870, Parkes district, New South Wales. Donated by Doris Nash. National Museum of Australia

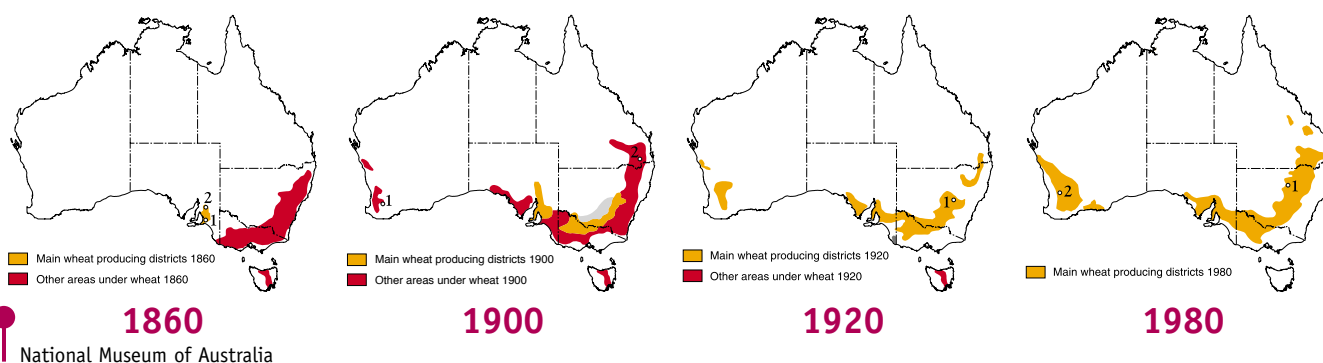
- 2 Brainstorm a list of the likely impacts (both beneficial and harmful) of this technological innovation on:
- the amount of wheat able to be processed
 - the quantity of wheat able to be grown
 - the amount of land used to grow wheat
 - the environment
 - the cost of wheat
 - exports of wheat.
- 3 The wheat stripper did not just happen. It was created in response to particular circumstances or conditions that existed in a certain place at a specific time. Look at the facts opposite that describe some aspects of the history of wheat growing in Australia. Use them to make statements about what Australia's wheat history helps us to understand about these aspects of land and people in Australia over time:
- Why it was introduced
 - What impacts it has had on the land
 - How it is connected to innovation
 - How it has helped global health
 - What it has meant for people's wealth
 - What impact it has had on rural communities.

Moving beyond the Tangled Destinies exhibition

The history of the wheat industry continues in Australia. The maps below show how the area used for wheat-growing has changed over time. The next stage is likely to be the growing of genetically modified wheat to increase yields and resist diseases. This is an area of great debate.

Visit some of the websites listed on the next page to find out about it. Prepare a summary of the facts associated with genetically modified organisms. Decide in each case if that fact is likely to be beneficial or harmful (or both). Summarise your ideas in a table like the one shown below.

- For thousands of years Indigenous people ground the seeds of native grasses to make a form of flour.
- Wheat was brought to Australia on the First Fleet.
- This earliest wheat grew, but did not really flourish in Australian conditions.
- For wheat to grow, settlers cleared the land of trees and shrubs. Many of these were deep-rooted plants, and kept the watertable low. Once the deep roots were removed, the watertable would rise, often bringing salt (from the time when much of the land was under the sea) to the surface.
- The earliest settlers were often poor farmers, and did not rest or re-plenish the land that they were farming.
- Wheat harvesting was a labour-intensive activity, and the shortage of labour often limited the amount of land that could be planted.
- In 1843 John Ridley invented a machine that would strip the heads of the wheat — this could do the equivalent work of many men, and meant that more land could be cleared, and more wheat planted.
- In 1884 H.V. McKay developed a further refinement of this machine, one that carried out several other of the stages in the process of getting wheat off the stalk and into granaries.
- There was also experimentation with different types of wheat, and William Farrer in particular was successful in developing wheat varieties that were much more productive in the Australian conditions.
- The land under crop expanded, more wheat could be harvested, new machines were developed that were even more efficient and labour-saving than Ridley's stripper, and wheat became an important export crop.
- However, this success tempted many settlers to move into marginal lands, and resulted in failure for many.
- Wheat is still a significant crop in Australia today and better farming skills mean that there is a greater chance of sustainable farming.



Fact	Beneficial	Harmful

Developing your ideas about land and people in Australia over time

A study of the wheat exhibit in the *Tangled Destinies* exhibition at the National Museum of Australia helps me to understand that:

Aspect	The idea you have developed
Environment	
Attitudes	
Changes in knowledge	
Innovation	
People	
Introduced species	
Agriculture	

Sources

www.austeha.unimelb.edu.au/tia/
www.foodfuture.org.uk/
www.csiro.gov.au/ and search GMO
www.abc.net.au/ and search GMO
www.newscientist.com/hottopics/gm
<http://special.northernlight.com/gmfoods>
<http://scope.educ.washington.edu/gmfood/>

Interrogating the WATER BUFFALO exhibit

Here are two objects from the *Tangled Destinies* exhibition, both associated with water buffalo in Australia.



A



B

What can we learn from the water buffalo exhibit about the relationship between land and people in Australia over time?

- 1 Suggest what they are, and how each might work. (The answers are on page 10.)
- 2 Suggest why people might need to develop such innovations to deal with water buffalo in Australia.

A National Museum of Australia
B National Museum of Australia

The water buffalo is not native to Australia. Like most introduced species, it has brought with it both benefits and harm. Read through the information on page 10 on the history of the water buffalo in Australia, and keep a note of these benefits and harm in this grid.

Aspect	Benefits	Harm
Tourism		
Environment		
Economy		
Aboriginal life		
National identity		
Food		
Commercial products		
Disease		
Other impacts		

- Water buffalo were introduced from Indonesian islands in the 1820s as a source of food. About 40 were imported at this time.
- By the 1980s there were an estimated 400 000 in northern Australia.
- Many of these became feral and were infected with tuberculosis and brucellosis, and threatened the health of those that were being domesticated for commercial purposes.
- A cull program in the 1980s eliminated the diseases, and there are now about 30 000 domesticated water buffalo, tuberculosis and brucellosis free.
- Breeders have now mixed two types — swamp and riverine. Swamp buffalo became a serious environmental problem in the Northern Territory when animals imported from Asia escaped and became feral.
- Riverine buffalo were introduced from North America in 1994, to set up a cross-breeding program to produce a new breed that had the best qualities of each type.
- Water buffalo have been imported from Italy and Bulgaria, for cheese (buffalo mozzarella) and even ice-cream.
- There are two principal products from water buffalo — meat and hides. There is also a niche market for milk.
- Some Aboriginal people, such as the Murrinhpatha, have incorporated the water buffalo into ceremonies and traditional painting.
- Organised hunting safaris for water buffalo bring tourism to the Northern Territory, and help keep the numbers of wild animals down.
- Water buffalo love to wallow in mud — which can be very destructive to the natural environment.
- Water buffalo are now farmed in all states except Queensland.
- The water buffalo is now an accepted image of the Northern Territory — part of its identity.



Btec Sign, Northern Territory
In use 1980s – 1990s donated by the Arid Zone Research Institute of the Northern Territory
Department of Primary Industries and Fisheries
National Museum of Australia



Made by Murrinhpatha people
Port Keats, NT,
National Museum of Australia

Developing your ideas about land and people in Australia over time

A study of the water buffalo exhibit in the *Tangled Destinies* exhibition at the National Museum of Australia helps me to understand that:

Aspect	The idea you have developed
Environment	
Attitudes	
Innovation	
People	
Introduced species	
Agriculture	
Habitat	

Answers from page 9

The vehicle is a water buffalo catcher. The driver is able to keep up with the water buffalo and trap its head and horns in the mechanical arm on the right-hand side of the vehicle.

The second object is a collar that contains a tracking device, and is fitted to a water buffalo had been caught and then released — to find out the location of that animal's herd.

Water buffalo caught with the 'bionic arm' on the catcher, 1970s
Australian Broadcasting Commission



Sources

www.ausbowhunter.com.au/illiwas/buffalo.htm
www.burkesbackyard.com.au/facts/1998/roadtest/buffalo_39.htm
www.ansi.okstate.edu/breeds/other/buffalo/aust/

Interrogating the URBANISATION exhibit

What can we learn from the urbanisation exhibit about the relationship between land and people in Australia over time?

Australia is a highly urbanised society. This has many impacts on the environment. Two of the most significant are on the supply and quality of water, and the creation of waste.

Part of the *Tangled Destinies* exhibition looks at the effects of urbanisation on the environment, and in the case of Adelaide in particular, the relationship between urbanisation and water.

Look at the 'thunderbox' on display in the *Tangled Destinies* exhibition.

- 1 What is it?
- 2 Who would have used it?
- 3 Why are there no water pipes connected to it?
- 4 How would the waste have been removed?
- 5 Would this object be likely to be associated with health issues?
- 6 What would be the main advantages and disadvantages of this method of waste collection and storage?
- 7 Why would it be relatively rare today?
- 8 Why would a museum want to have such an object in its collection?



Thunderbox — or toilet seat and pan receptacle
Queensland Museum



Wheel fragment of Adelaide's first water cart 1840s
Made from fallen river red gum
City of Adelaide Civic Collection

Look at this object on display in the *Tangled Destinies* exhibition. It is a small piece of wood from a water cart.

- 9 Why would a museum want to exhibit such an object?

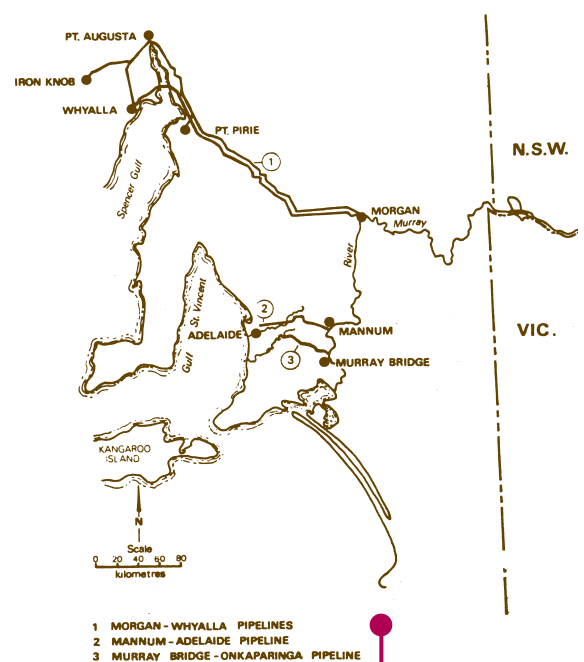
Adelaide has the lowest rate of annual rainfall of all Australian capital cities, but is the closest to Australia's largest river, the Murray—Darling system. Would you expect that to be an advantage to Adelaide? Explain why.

Adelaide draws about 40 per cent of its domestic water usage from the Murray. The Murray—Darling flows through three other states before it reaches South Australia, and each draws water for irrigation and domestic uses.

- 10 Look at this diagram. What is happening to the water flow in the Murray?

The extensive use of irrigated river water for agriculture and horticulture, and for domestic supplies, produces increased wealth for Australia and a high standard of living. At the same time it increases salinity and interferes with the natural environment.

- 11 Go back to question 9. Would you now change that answer?



Murray River pipelines

Developing your ideas about land and people in Australia over time

A study of the thunderbox and water pipe exhibit in the *Tangled Destinies* exhibition at the National Museum of Australia helps me to understand that:

Aspect	The idea you have developed
Environment	
Sustainability	
Agriculture	
Urbanisation	
Resource use	
Innovation	
Health	

Sources

www.atlas.sa.gov.au/Atlas1986/2ENVIRONMENT_RESOURCES/8WATER_SUPPLY.html

Attitudes to the land

Here are extracts from some people's attitudes towards place, in the *Tangled Destinies* exhibition.

A rare gem ... lying on Australia's most barren and inhospitable Dead Heart's breast.

Roma Dulhunty, Lake Eyre (1975)

There you come home; the magpies call you Jack and whistle like larrikins at you from the trees.

James McAuley (1969)

I'll look after us, because we are one and the same.

Nancy Daiyi (1996)

- 1 What do they all have in common?
- 2 Many of the attitudes you have seen in your investigation of objects in the *Tangled Destinies* exhibition contrast with these. Select three of those contrasting attitudes — why do you think those attitudes might have changed over time?

Conclusion

Below are some of the main themes and sub-themes that are presented in the *Tangled Destinies* exhibition.

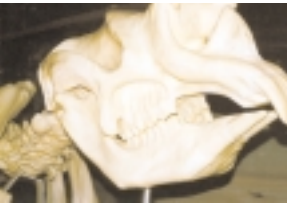
- 1 Write your own summary of what you have now discovered about these sub-themes.
- 2 Choose which object or objects from this unit of work best illustrate that sub-theme.
- 3 Imagine that you have been asked to suggest an alternative object to place in the *Tangled Destinies* exhibition for each of the sub-themes. Discuss what objects you might place there. Record your favourites.

Theme and sub-theme	Key ideas	Object in Gallery	Another possible object
ENCOUNTERING AUSTRALIA Natures of isolation			
Endling			
Biological invasion			
LIVING WITH THE LAND Technologies of necessity			
Cities of the edge			
UNDERSTANDING AUSTRALIA Drying out			
Places of the heart			

- 4 From the material you have investigated in this unit, what conclusions can you draw about the relationship between land and people in Australia over time?



Replica of *Diprotodon optatum*
cast from 1906
Lake Callabonna fossils
AHC Ziets and R Limb
National Museum of Australia



From *A General History of Quadrupeds*, 1800
By Thomas Bewick
National Library of Australia



Ryebuck Media



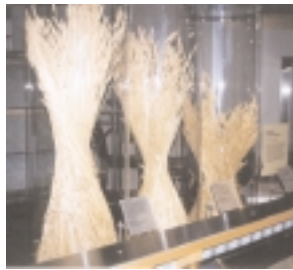
Platypus from Namoi River, NSW,
1920s. Donated by Harry Burrell
National Museum of Australia



National Museum of Australia



Aboriginal millstone about 1890
from Central Australia. On loan from
M.A. Smith



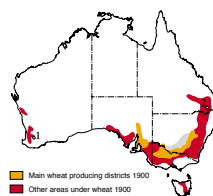
White lamas Historical wheat variety
grown by CSIRO Plant Industry,
2000
Federation Wheat Historical wheat
variety grown by CSIRO Plant
Industry, 2000
Line B73-6.1 Historical wheat variety
grown by CSIRO Plant Industry,
2000



May Brothers Wheat stripper 1900
National Museum of Australia



Reaphook used by Iram Nash 1870
Parkes district, New South Wales
Donated by Doris Nash
National Museum of Australia



National Museum of Australia



Buffalo catcher with 'bionic' arm
1980s Northern Territory
National Museum of Australia



Buffalo radio-tracking collar in use
1980s-1990s
Designed and donated by buffalo
shooter Pat Carrick
National Museum of Australia



Btec Sign, Northern Territory
In use 1980s – 1990s donated by
the Arid Zone Research Institute of
the Northern Territory
Department of Primary Industries
and Fisheries
National Museum of Australia



Made by Murrinhpatha people
Port Keats, NT
National Museum of Australia



Buffalo caught with the 'bionic arm'
on the catcher 1970s
Australian Broadcasting Commission



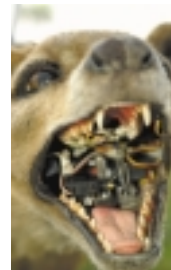
Thunderbox – or toilet seat and pan
receptacle Queensland Museum



Wheel fragment of Adelaide's first
water cart 1840s
Made from fallen river red gum
City of Adelaide Civic Collection



Murray Darling Basin Commission



Discovery Channel



Skin of an adult thylacine about 1930
from Pieman River area, Tasmania
National Museum of Australia



Discovery Channel



News Ltd



Cascade Brewery trademark 1987
by Ken Cato Design
Cascade Brewery, Tasmania



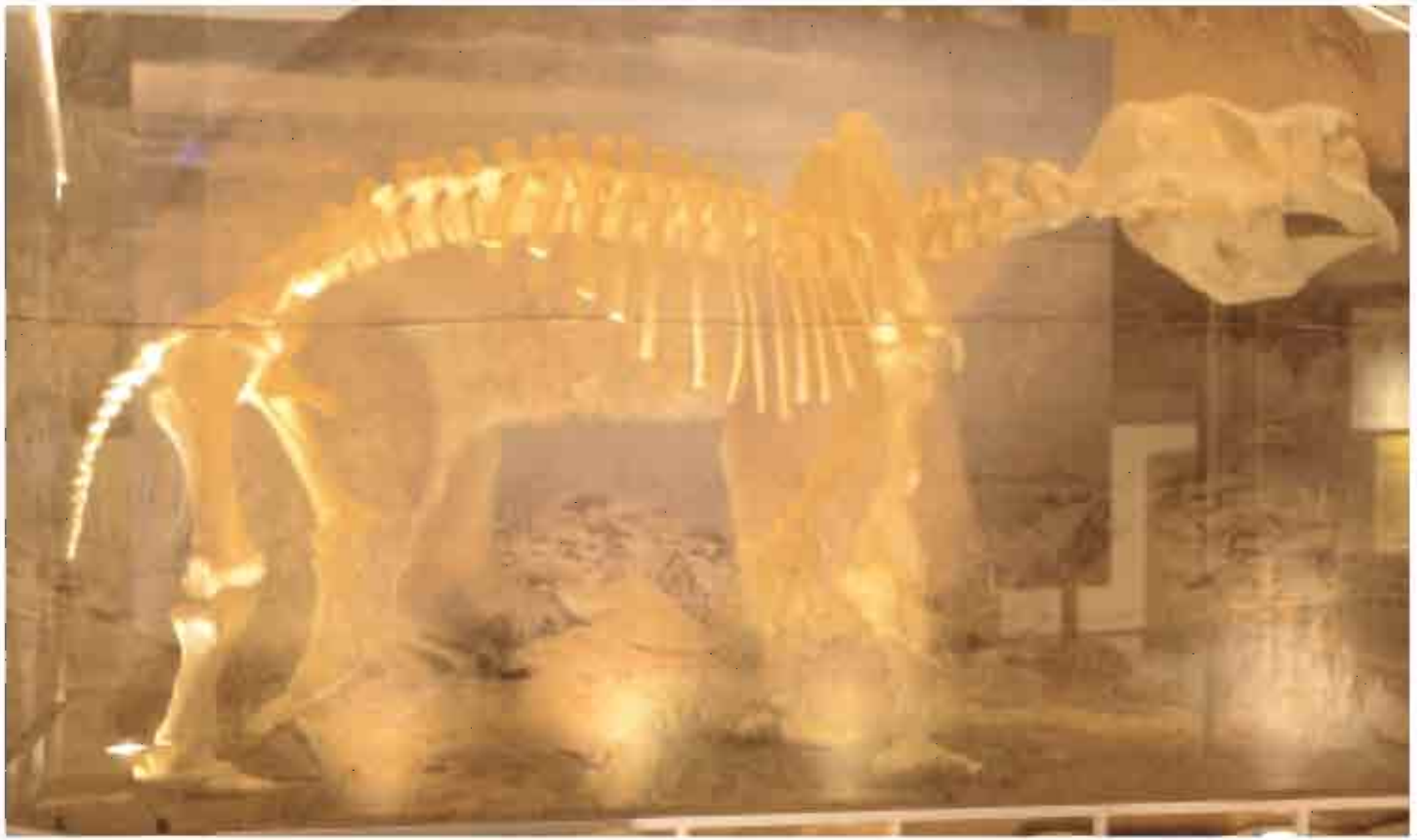
Queen Victoria Museum and Art
Gallery, Launceston

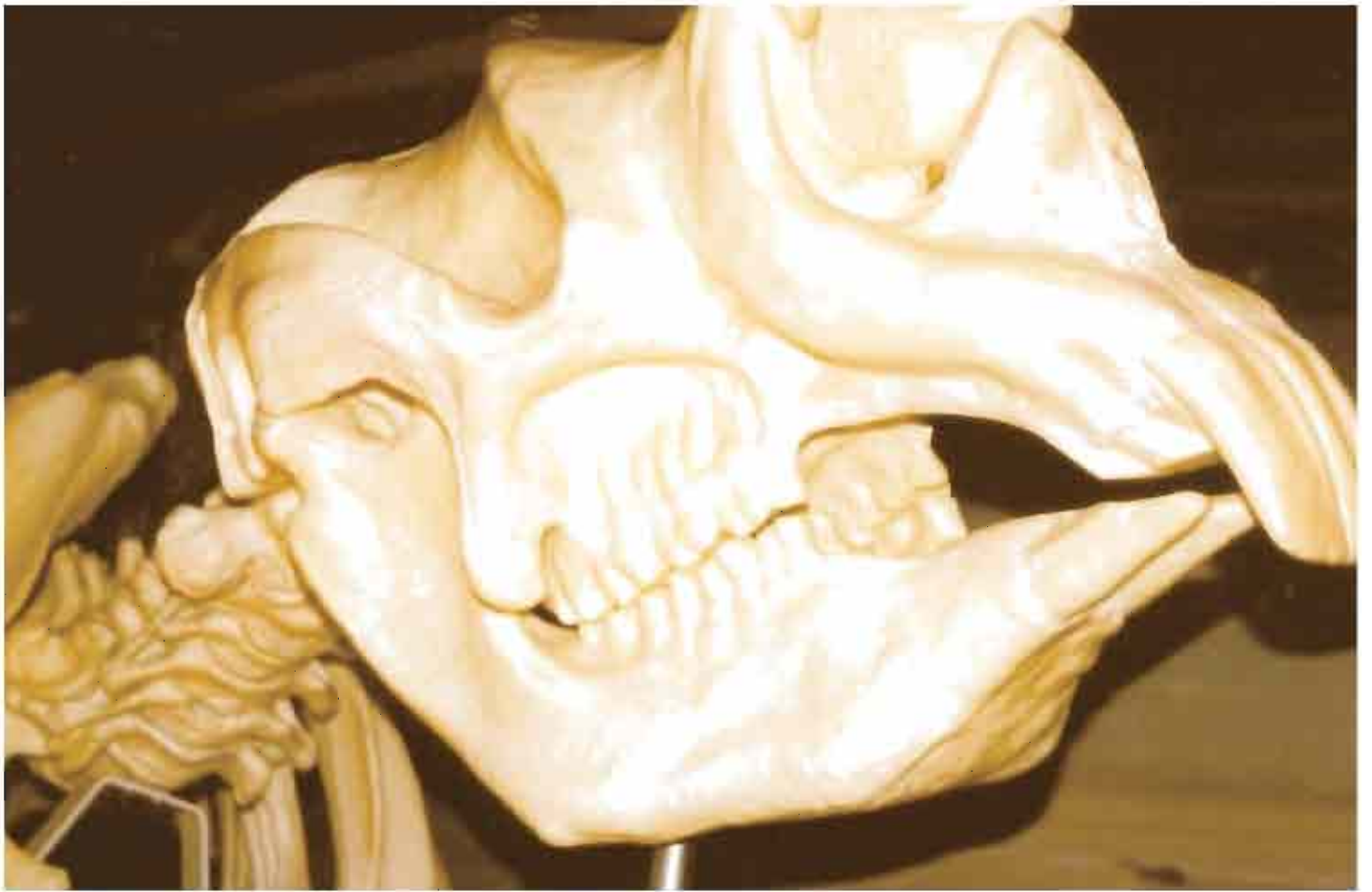


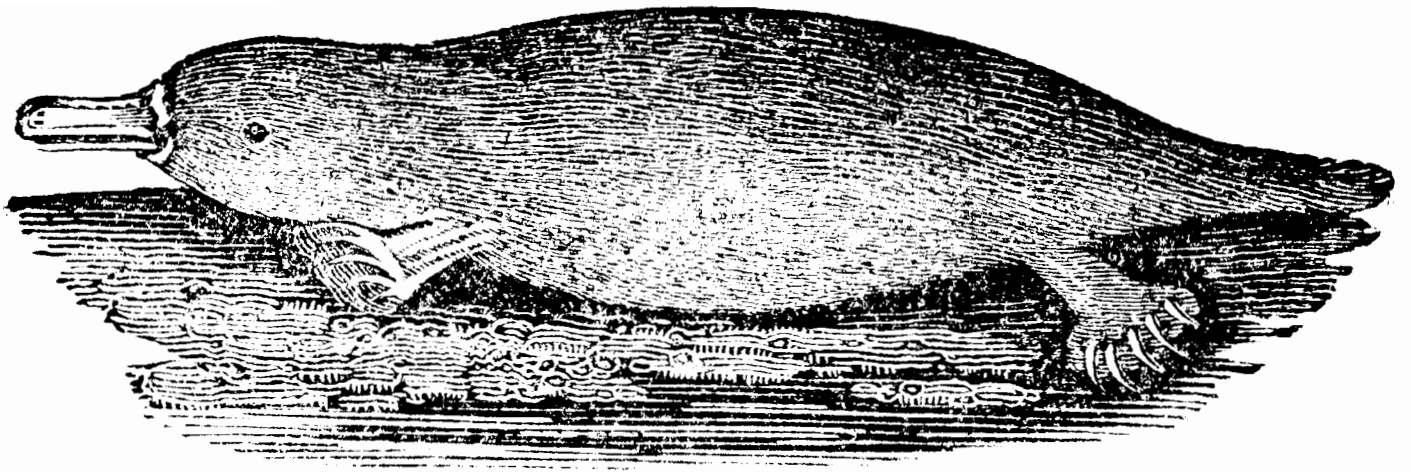
Cartoon by David Pope
National Museum of Australia

Images of the thylacine over time



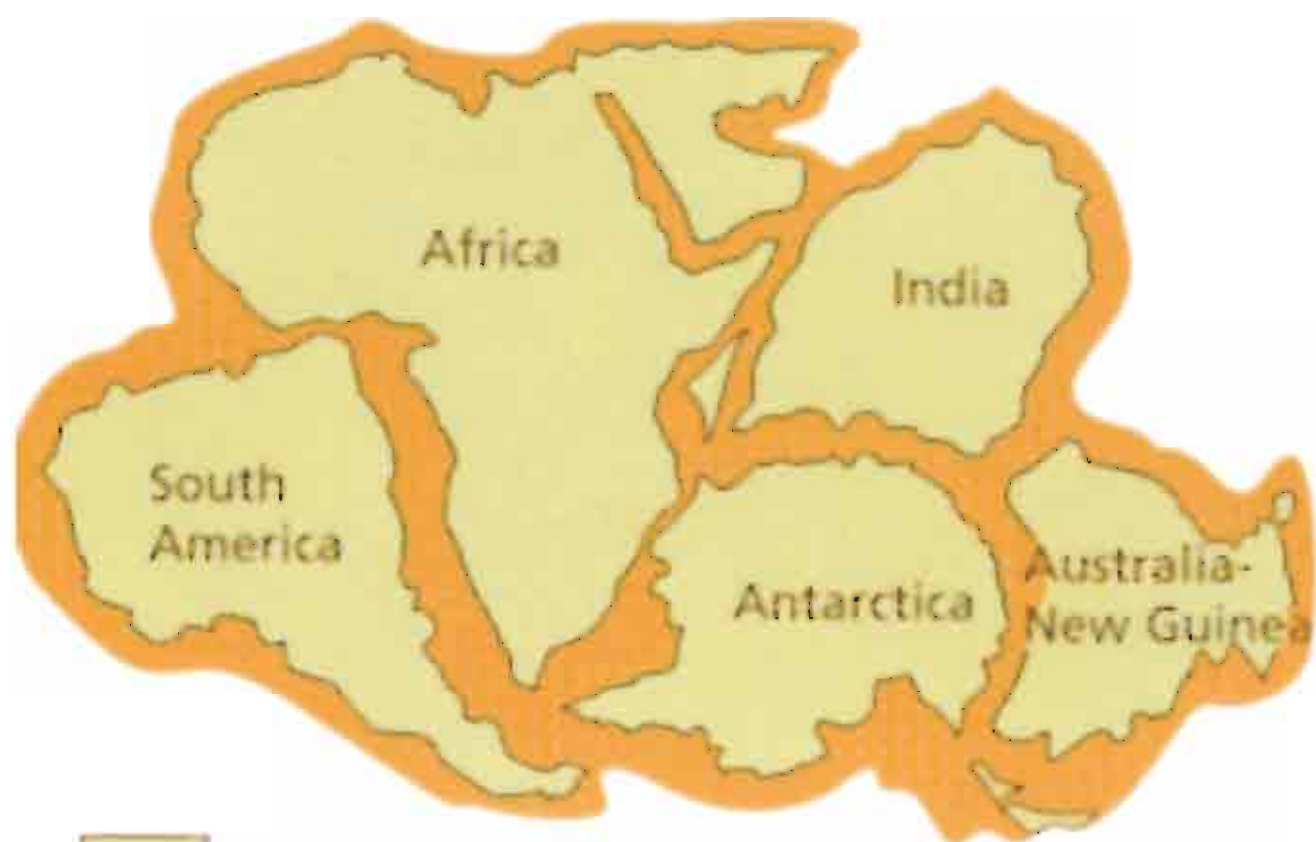












 Early continents

 Gondwana

New Zealand



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Office Stamp	TELEGRAM to <u>Sydney</u> Station,
Reference No.	Addressed to <u>Professor Liversidge</u>
Sent at h. m.	<u>University of Sydney</u>
No. of Words	
Amount	(Forwarded subject to the Printed Regulations of the Department. See other side.)

5	<u>Monotremes</u>	<u>Oriparous</u>	<u>Ornithomorph</u>	<u>mesoblastic</u>	5
10					10
15					15
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25					25
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35					35
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45					45
50					50
55					55

Date Aug 22-84
Time 11 h 15 m

(Signed) W H Caldwell
Address Burnett River

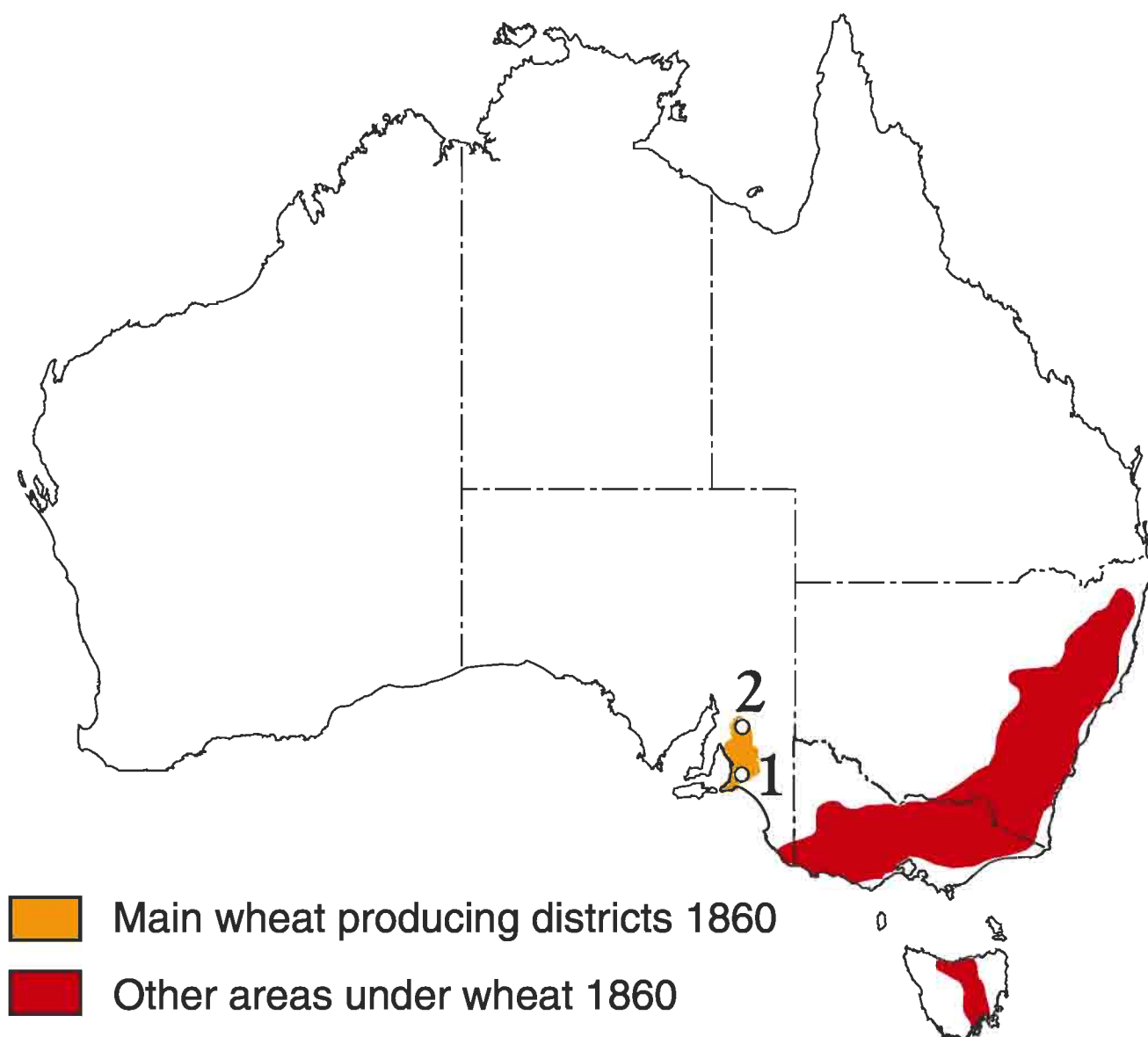
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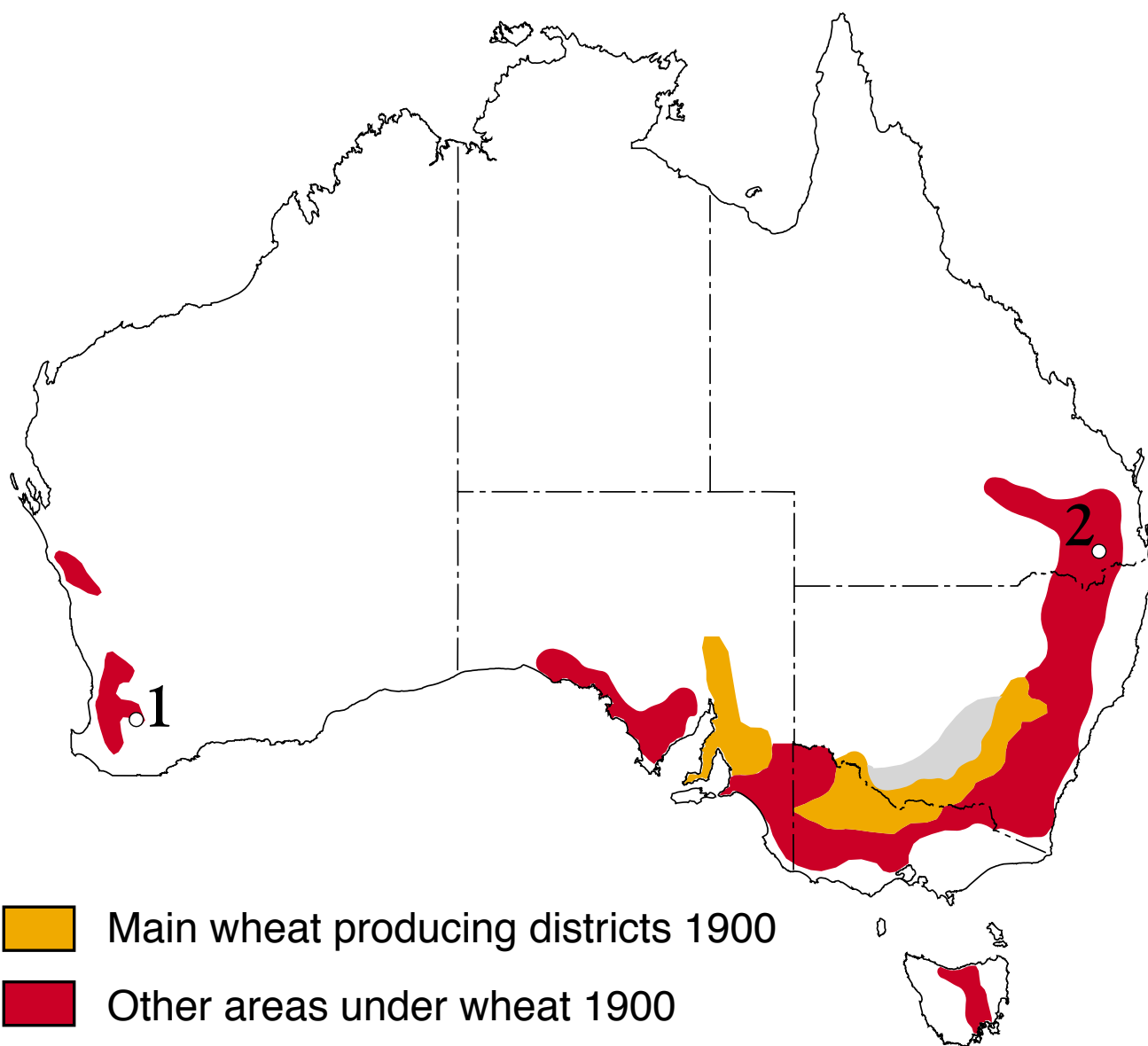


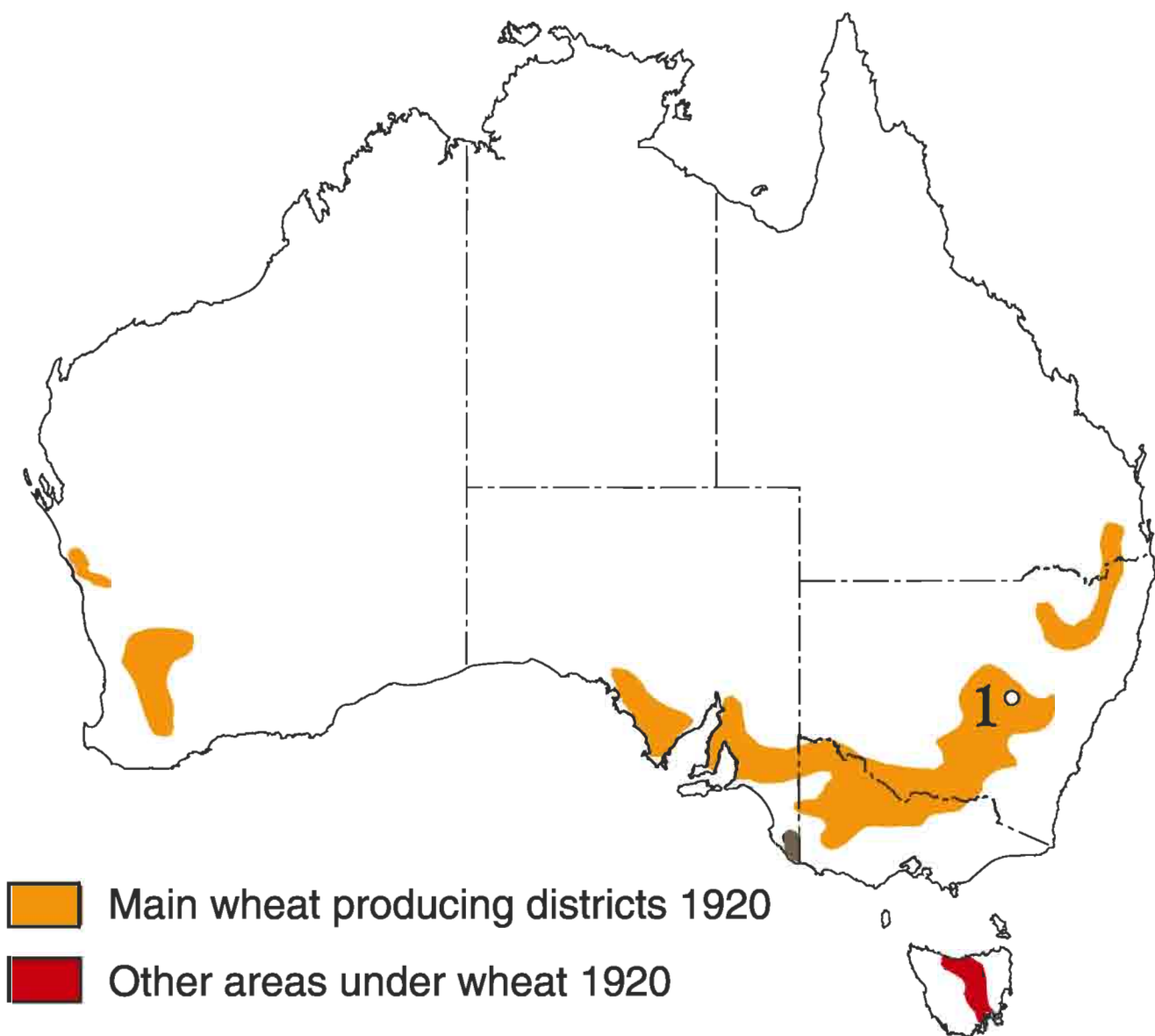


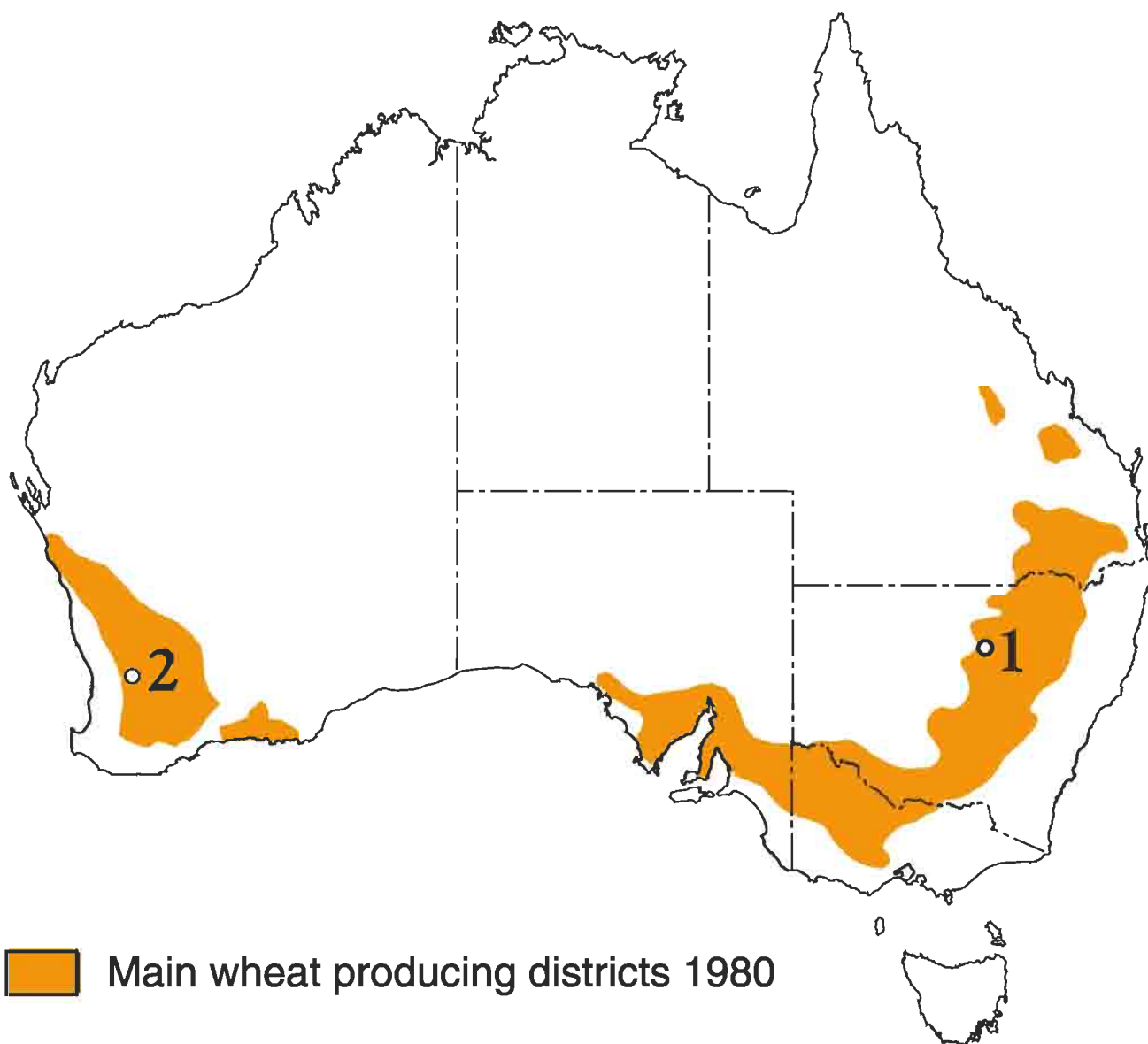


















DEPARTMENT OF PRIMARY
PRODUCTION

DISEASE CONTROL AREA

**TUBERCULOSIS & BRUCELLOSIS
THIS GATE MUST REMAIN
CLOSED**

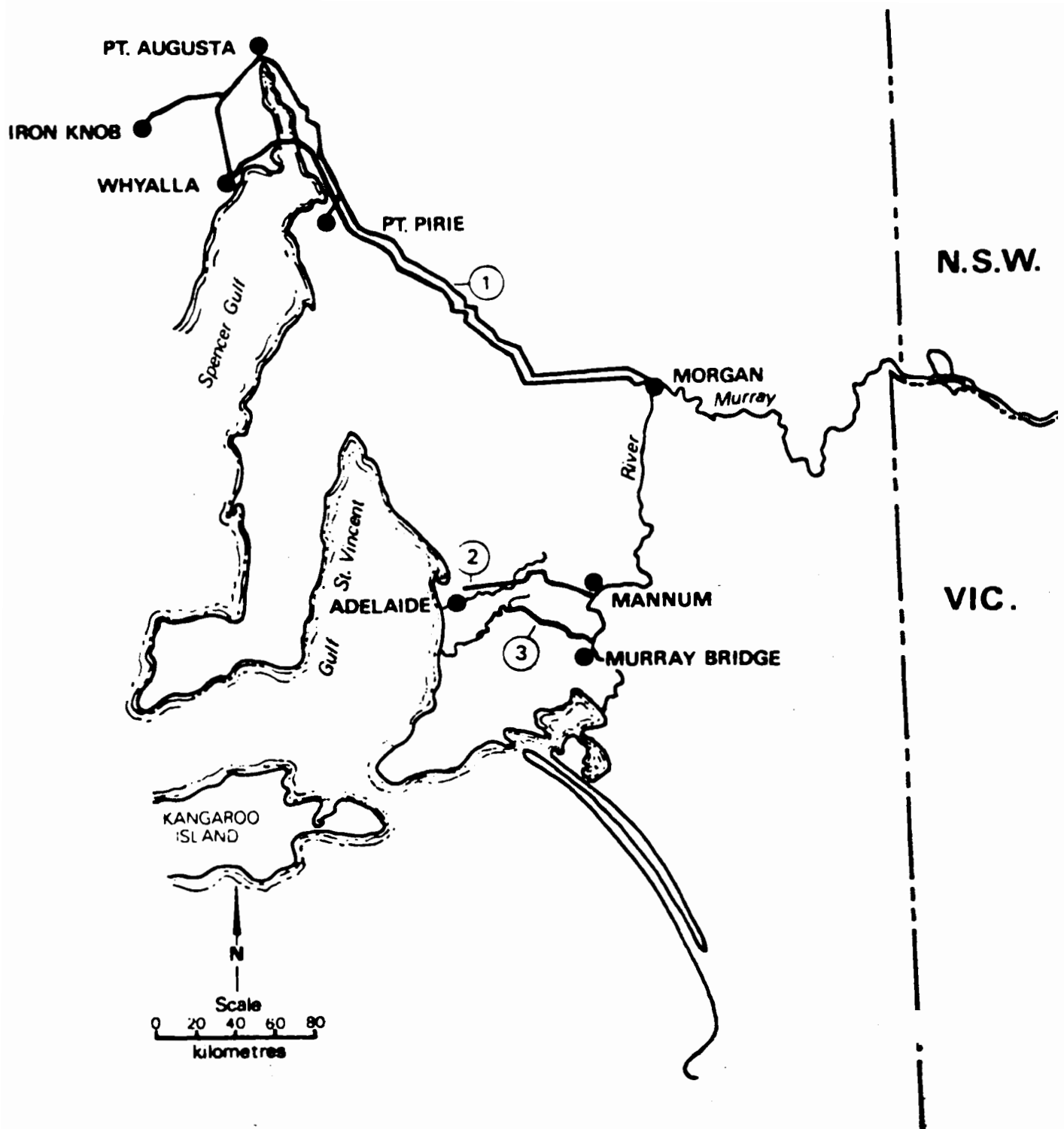












- 1 MORGAN - WHYALLA PIPELINES
- 2 MANNUM - ADELAIDE PIPELINE
- 3 MURRAY BRIDGE - ONKAPARINGA PIPELINE









DON'T WORRY....
SHE'LL BE
RIGHT....

She'll be right

HINZE





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