The Story of the Big Biodiversity Hot Spot

Land of the Tyerrernotepanner people

Australian Context

Australia is one of seventeen countries described as being '**megadiverse**'. (**less than 10%** of the global surface, but support more than **70% of the biological diversity on earth**). 84% of our plant species, 83% of mammals, and 45% of birds in Australia are endemic- ie found no-where else on earth.

Australia's biodiversity - the plants, animals, micro-organisms and their ecosystems - is threatened from the impacts of human activities. Since European invasion, more than **50 species of Australian animals** and over **60 species of Australian plants** are known to have become extinct.

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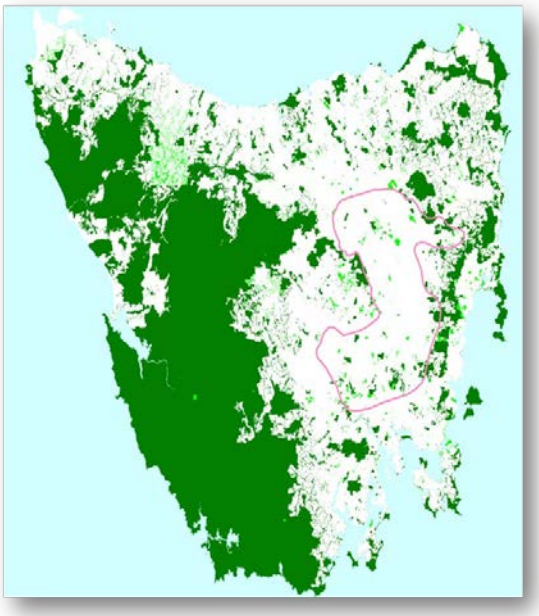

https://upload.wikimedia.org/wikipedia/commons/thumb/f/f7/Midlands_Tasmania.png/270px-Midlands_Tasmania.png

Let's move our focus in to a precious area in the centre of Tasmania- the woodlands and lower grassy lowland plains of the Tasmanian Midlands. The Midlands is nestled between the Eastern Tiers and the Great Western Tiers. What is special about this area? It has lower rainfall and is different to the wetter regions of the west, south and north. This has been named one of 15 biodiversity hot spots in Australia. Hot spots are areas with a high diversity of **locally endemic species**, (which are species that are not found or are rarely found outside the hotspot.) There are 10 endemic plant species, two endemic freshwater mussels and endemic freshwater snails and caddisflies in the Midlands.

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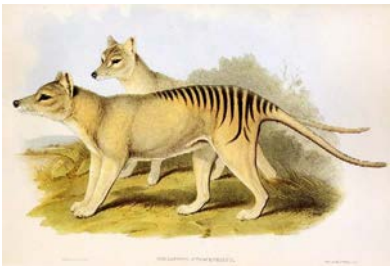
The Tasmanian Midlands is home to 32 nationally threatened species and more than 180 plants and animals threatened in Tasmania.



Up to the early 1800's the area was a mosaic of woodlands, grasslands and wetlands, maintained by traditional burning of its Aboriginal custodians, the Tyerrer-note-panner. There were thylacine, Tasmanian devils, Tasmanian emus grazing and lots of mammals such as

Drawings by Chae Yeon and Thanwa Tuantab

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- Tasmanian devil (nationally endangered)
- Spotted-tail quoll (nationally vulnerable)
- Eastern barred bandicoot (nationally vulnerable)
- Tasmanian wedge-tailed eagle (nationally endangered)
- Eastern bettong (extinct on mainland, nationally endangered)

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Plants

- Black tipped spider orchid *Caladenia anthricina* (critically endangered)
- Pungent Orchid (*Prasophyllum olidum*) and Golfers leek-orchids (*Prasophyllum incorrectum*)(critically endangered) (Key sites include Campbell Town golf course, the Main Esk Road just east of the Midland Highway)

- Silky bush pea *Pultenaea prostrata* (vulnerable in Tasmania)
- Tunbridge buttercup (endangered)

Threatened Vegetation communities

- Lowland native grasslands
- Ephemeral wetlands
- White gum grassy forests

In **1803** a big ship came into Risdon Cove. On board were 49 convicts, sailors and settlers. They brought with them rabbits, blackberries and sheep. The first European settlement was established in Hobart Town. Gradually, as the population of the Island increased, the way between north and south was established. The military forces, and settlers looking for land, passed up and down until several distinct tracks were formed. By Macquarie's orders in 1812, a military guard near Ross protected travellers and pioneers from attacks by "blacks or bushrangers".

In **1821** the main road from Launceston to Hobart was built. A party of at 30 labourers started from each town simultaneously. "About three miles north from Ross Bridge is the government farming

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and grazing establishment. They have reserved to themselves twenty thousand acres and the 'best grazing land in the Island moderately wooded and well watered".

National Trust of Tasmania:https://images.ehive.com/accounts/4357/objects/images/1k78rs8_3896_l.jpg

"About a mile on the road to Launceston, on a gentle rise stands the house of Benjamin Horne, 'Chiswick', a good substantial building of stone. There are also several excellent out offices built of the same material. "The country in the environs of this estate is particularly adapted for the feeding and breeding of sheep."

The greater part of 'Chiswick' was once known as Argyle Plains, -the Government cattle farm. Here the small military guard' and Government stockmen had their headquarters. The ruins of the old 'farm,' on the bank of Tackey Creek, may still be seen on 'Kendon,' which was once part of 'Chiswick,' but is' now incorporated with 'Beaufront.' A few straggling trees planted in the old days and the remains of a hedge mark the site of what was once the 'farm. Horne installed 1000 sheep.

Chiswick in Ross was established with a 2000 acre grazing land grant to a Hamburg shipowner and merchant, Benjamin Horne who arrived in Tasmania in 1823. In 1841 he was at Chiswick house.

In 1829 the Acclimatisation Society introduced deer to Tasmania.

In 1842 a big ship arrived on the shore from Ireland. It was the Ardent, owned by pioneer Roderick O'Connor. He brought with him the first free settlers, furniture and silverware treasures.

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Photo:National Library of Australia

Connorville today. The house original house is not there now, but the stables, coach-houses, court-yard walls and outbuildings still stand.

He established Connorville at Cressy. The open landscape was perfect for sheep grazing on native pastures. This type of farming left the native ecosystems relatively intact.

In the 1850's the settlers hunted the last of the Tasmanian emu and collected their eggs.
There was a bounty on Tasmanian Tigers.
In **1897** the Mercury reported that
" a well known trapper at Connorville, brought to the Longford Police station three mauve tiger heads for which the government allow one pound each. These animals are rarely met with, only a few being now and again captured in the back blocks"

In the **1950's** wool production intensified with the use of superphosphates. The Pig Footed Bandicoot became extinct.

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In the **1970**'s there was a land clearing boom for wood chips.

In the **2010'**s there is a move from grazing with wool to intensive irrigated agriculture.

In recent decades, as farming practises have changed and intensified**, native grasslands and woodlands have declined** and increasingly given way to agricultural pastures and cropping.

There is currently less than 10% of the original native grasslands and 30% of all native vegetation remains, much of it degraded in some way. There is only

Ongoing threats –

clearance & conversion, clearance exposes area with no shade and shelter.

over-grazing
feral predators (deer, rabbits, cats)

weeds (willows, gorse, exotic grasses)
Tasmania's population of Fallow Deer has more than tripled since the 1970s to over 20,000 and scientific studies estimate the population could exceed one million by 2050. . Fallow Deer damage the environment and are a biosecurity risk, but in Tasmania they are protected for recreational hunting.

- Climate change: microclimates and soil chemistry has changed, more rain over summer, more extreme heat events,

There's now a pressing need to protect these precious remnants.

- Less than 10% critically endangered **Lowland Native Grasslands** of Tasmania remain.

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- In 2007 only **3.5 % of the hotspot** is protected
- **95%** of hotspot is on private land

95% of native vegetation in the Tasmanian Midlands is privately owned, and many of landholders have long historical connections to the landscape. Given this, and the high value of land in this agriculturally productive region, landholders, are working with government, Greening Australia, Bush Heritage and the Tasmanian Land Conservancy for biodiversity conservation on private land.

Connorville covers 18000 hectares. Half this has commercial forests, bushruns and native grasslands. 3500 ha is protected for its carbon value as trees in the ground. 1500 ha is working forest, lower quality, harvestable trees and shelter country. 4000 ha is in perpetual covenants for conservation.

http://resources1.news.com.au/images/2011/10/11/1226164/224809-111012-roderic-o-amp-039-connor-carbon-trading.jpg

Chiswick is now owned by Julian von Bibra who is conserving endangered grassland on his farm under the Midlands Conservation Fund.

http://www.bushheritage.org.au/images/our_news_images/winter-2013-newsletter/country-under-your-skin/julian-von-bibra_250px.jpg

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Bring in the Rescue Teams!

Greening Australia is working with farmers to restore bushland on farms. **121,000 trees** were planted on Connorville and Chiswick in 2014. Students helped with this planting. Some of this planting is part of a UTAS research project testing genetic variation in *Eucalyptus* to test effects of climate change. The question is will seedlings from warmer areas of Tasmania grow better than local seed stock?

Eucalyptus ovata seed was collected from every provenance in Tasmania. All these are to be tested in controlled experiments to measure the effects of growing together with different species such as acacias, grasses.

Students will have the opportunity to develop their own research sites near their schools using the same eucalypt species as on farms and will be able to conduct their own research projects.

The University of Tasmania, in partnership with Greening Australia, is undertaking ground-breaking research into animal habitat needs in the Tasmanian midlands agricultural landscape. This includes researchers who are investigating how animals birds, bats and mammals live and move in their habitats.

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Kirsty Dixon is investigating nocturnal aerial predators- owls and bats and how they use the landscape.


Riana Gardner is investigating the populations of bettong and eastern barred bandicoot in farmed, remnant and burnt habitats.


Kirstin Proft is studying Tasmanian bettongs and spotted-tailed quolls, and investigating whether clearing the land for farming is interfering with the movement and natural breeding patterns.

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Rowena Hamer is researching the carnivore populations in the Midlands including feral cats, quolls and Tasmanian Devils. She will begin with broad scale monitoring with cameras. What carnivores live in your neighbourhood?

Students at Campbell Town, Cressy and Oatlands Schools can help these scientists with their research.

- Reporting owl, bettong and carnivore populations.
- Using wildlife cameras to detect wildlife in their school environments
- Help process camera field data
- Wildlife monitoring
- GPS monitoring of plant survival rates

Further possible opportunities for students:

- 'Mentoring pathways' to University for interested students
- Small groups working on animal trapping, bat monitoring.
- Monitoring and submitting mammal and bird records to the Atlas of Living Australia
- Insect monitoring
  refer to https://sites.google.com/site/insectsoftasmania/home
- Scat studies
- Feral Cats research

What Greening Australia offers

- Resource and curriculum support- wildlife cameras, sets of Eucaflips, Poo flips, web sites
- Support with seed collection, propagation, planting, trees and tree guards
- Update of information between schools
- Training in GPS, photo point monitoring
- Access to speakers

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- Links with scientists, researchers and farmers.

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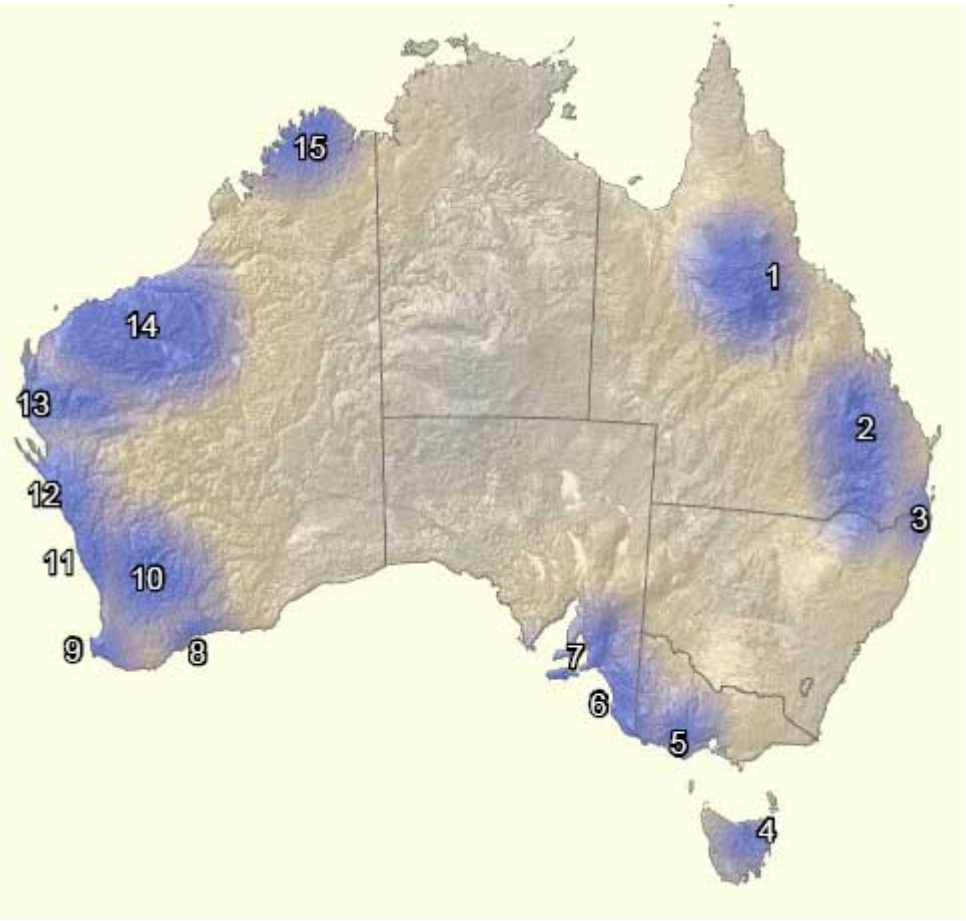

Photo:http://www.environment.gov.au/biodiversity/conservation/hotspots/national-biodiversity-hotspots

The Midlands Hot Spot

Predominantly a large plateau basin, this hotspot includes 10 endemic plant species, two endemic freshwater mussels and endemic freshwater snails and caddisflies. There are 32 nationally threatened species and more than 180 plants and animals listed as threatened at the state level. Twelve wetlands are listed on the Directory of Important Wetlands in Australia and 10 wetlands are of regional significance. Less than 2 per cent of the area is protected.

The Midlands was one of the first areas of Australia cleared for agriculture and still supports extensive agriculture and plantation forestry. Widespread land clearing has resulted in severe habitat fragmentation with **only small and scattered remnants of native vegetation remaining.** Vegetation loss and degradation, soil erosion, dryland salinity and invasion by weeds such as willows and gorse, are seriously threatening endemic invertebrates, native orchids and numerous nationally threatened plant species. The new threat posed by foxes and cats, is potentially devastating to local biodiversity, including the endangered Eastern Barred Bandicoot.

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