Biodiversity Conservation at Fowler's Gap

Year 5/6 students from School of the Air, Broken Hill and Hay.

Biodiversity Conservation Trust

NSW GOVERNMENT

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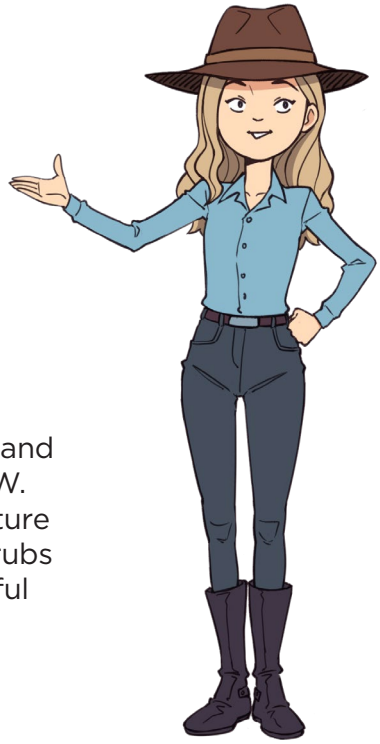
Fowler's Gap
Packsaddle
NSW



Fowlers Gap is located 112km north of Broken Hill and is the only research station in the arid zone of NSW. The limited and sporafic rainfall and low soil moisture mean that this property is characerised by the shrubs and mallee trees. This property had a very colourful diversity of desert plans and animals.

We are students from the School of the Air (SOTA). This means that we live in a wide range of environments in New South Wales (NSW) and learn over distance through mail, email and phone lessons. We also have special mini-schools where we get to meet with each other. We travelled to Fowler's Gap, an arid research station near Broken Hill, to learn about a range of different scientific topics and find out what conserving biodiversity means.

Fowler's Gap, a 39,000-hectare station established in 1966 by the University of New South Wales (UNSW), is the only research station in the arid zone of NSW. It is an important site for teaching in the outdoor landscape, so it was an amazing place to explore and learn.

ABOVE

Photograph copyright UNSW

The station is a long way from any major water source. As soon as we arrived at Fowler's Gap, there was an obvious contrast between the blue of the sky and the red of the soil beneath our feet. We saw eagles above us, and emus in the distance.

On our first day at Fowler's Gap, we met Scott from the Biodiversity Conservation Trust (BCT), Keith from the UNSW and Caitlin. They took us to look at the endangered curly mallee tree and learn about biodiversity.

Biodiversity is the differences between all of the living things. Scott explained "The BCT was made to help interested farmers manage parts of their land for biodiversity. We do this because there are not enough native ecosystems left in NSW. We need to protect these as they are homes to many special native animals like the bilby. The BCT wants more farmers to think about what they have on their property and how they might help protect what they have left."

BCT works with Keith and the UNSW to conserve the biodiversity in 800 hectares of Fowler's Gap. The area contains curly mallee, a small Eucalyptus tree, which is special because it isn't found this far north anywhere else.

We asked Scott about his favourite part of his job. He said, "My favourite part of the job is working with landholders to achieve land management and conservation goals on their property. Working with schools and students like yourselves learn on conservation areas is also a great part of what I do."

We saw a lot more plants then we thought we would, and they were all different. Caitlin explained "Different plants all play a different role for the ecosystem. Some plants create shade and protect animals from wind, like lambs. Some plants create hollows that are important habitat for bats and owls. Some plants are short and create food for birds, like saltbush."

We walked along the creek bed and explored the BCT conservation area. We asked Scott how long the area was conserved for, and he explained it would be conserved forever. As we looked at the different vegetation types, the red soil and rocks crunched under our feet. There were many bushes and shrubs, like saltbush. The flora was very tough and hardy, and we learned that this was so they can survive drought.

BOTTOM RIGHT

Eucalyptus gillii, curly mallee.

Photograph by John Jennings

We continued exploring the conservation area, and Caitlin added “Each native animal can play an important role too. Insects, such as ants, native bees and butterflies help pollinate plants, including crops. Birds control pest insects. Having biodiversity means that the plants and animals are working with balance and a healthier landscape.”

The curly mallee trees wound and bent to different shapes. Instead of having one large trunk, the curly mallee has many thin trunks that entwine with each other from one mallee root. The curly mallee is a slow-growing tree that attracts birds and insects.

When you first look at the soil in the conservation area, it can look a bit bare. But when we looked closer, there was a ‘crust’ of something else. Caitlin explained that this crust was made of cryptogams; a plant that uses spores instead of seeds to multiply, like moss and lichen.

Scott said that by protecting the curly mallee here also protected other unique species as well, such as blue-bush and the yellow-throated miner. Keith added “Biodiversity is what makes ecosystems function and sustainable. There are many examples in Australia, and around the world, where biodiversity has decreased. This, in turn, has caused an ecosystems change which can lead to dominance in one species that can alter and change the environment to the point where all species decline.”

“Curly mallee has a very restricted range, being found only in Western NSW and Eastern South Australia. Even then, it is only in relatively small pockets,” Keith said.

We wanted to know what would happen if we didn't protect the curly mallee. "If the species was not protected on Fowlers Gap, then it would probably go extinct in NSW. The range of this tree is so restricted it is doubtful whether it would ever recover, even if the threat was removed," Keith said.

We asked if there were any other areas UNSW was conserving on the station. Keith told us there were five other conservation areas on Fowlers Gap. "The emu pen has been a fenced enclosure for approximately 35 years, and the vegetation in the pen is virtually pristine. There is also warrens and conservation area enclosures which were established four and two years ago."

"North Mandelman and conservation paddocks has been a conservation area for about 30 years as well, but the fences are porous. That allows for the movement of large herbivores into and out of the areas, but there is no permanent water," he said.

Scott and Caitlin showed us how to measure ground cover. Ground cover is anything not made by people that covers the ground, including logs, rocks, leaves and sticks. We used a quadrat to measure how much ground cover was inside and outside the conservation area. There was a big difference.

OPPOSITE, LEFT

Yellow-throated miner. Photograph by Paul Baife

OPPOSITE, RIGHT TOP

Keith Leggett. Photograph copyright UNSW

OPPOSITE, RIGHT BOTTOM.

Fat-tailed dunnart. Photograph by Bernard Dupont

Keith and Scott explained that pest animals, like goats, can over-graze and take a lot of that ground cover away.

We didn't understand why ground cover was important, so Caitlin explained it to us. "Ground cover is important to keep the soil on the ground rather than blowing away in dust storms. When it does rain, ground cover makes sure that the water soaks into the soil instead of running off." Where we live, we have lost a lot of valuable topsoil, as they are so fragile so this was really important to us.

Fowler's Gap has been used by lots of scientists to study zoology, agriculture, palaeontology and environmental sciences. Also, many artists have used the research station as a backdrop and inspiration in their artwork, and there is even an artist's retreat on the station.

We asked Keith, what research they do at Fowler's Gap. Keith said, "Fowler's Gap does a lot of different research, including projects on small mammals, echidnas, kangaroos, birds and monitoring the dust being transport by the wind. There is even a project that looks at the meteorites bouncing through the earth's atmosphere, and we also host a number of university courses. While we are primarily a research station, we are also a working sheep station. Recently we have seen a number of projects that examine the way sheep behave during high temperatures and how they use the landscape."

We met a scientist, Georgia, who showed us how to track echidnas and we found one digging in the riverbank. It was cool to be up close and get to watch the echidna as it burrowed in the soil. After it left, we could see the nose print from where it had been digging!

After that, we did some activities with Shane, a scientist from UNSW who knows all about outer space and stars. We looked through a telescope which meant we could view the Sun without hurting our eyes. We also learned about why we have seasons through a shadow stick experiment, and made a map of the night sky called a planisphere.

We learnt so much from Shane, and it was really interesting to learn that there is diversity in outer space as well as here on Earth.

Next, we met David, a soil scientist. We worked with David to explore how water soaks into the soil at different speeds depending on the type of land. We also wondered how this would affect the environment.

We answered this question by pouring water in the high ground cover area from Caitlin's experiment and poured water on a dirt pathway. We placed special rings into the soil so we could measure the rates that the water soaked into the soil. On the pathway, the clay topsoil quickly soaked up some water but then stopped any more water from soaking deeper. The site near the flora soaked up more water. David explained that this was because roots and insect burrows allowed for the water to soak deeper past the topsoil.

Next was a hike up to Silcrete Lodge to look at the stars. We used our planispheres with Shane's help and had dinner by the campfire. It was beautiful and quiet out there — we could only hear bats flying overhead and the trees moving in the wind.

We asked Keith about his favourite part of living and working there. “I enjoy the large horizons and desert environments. Additionally, the ecology of the plants and animals make it special. Truly anything that survives out here long-term is a specialist and deserves to be studied closely,” he said. Keith has lived at Fowler’s Gap for 10 years.

Vicki, Garry and Jax also live on and manage Fowler’s Gap research station, and Jax goes to school at School of the Air. We asked Vicki what her favourite part about living on Fowler’s Gap was. She said, “I love the wide-open spaces. It’s not too far away from town, can go in regularly for fresh food. I also love meeting the variety of people that come through. You also get to experience being up close and personal with wildlife, seeing it in its natural habitat. It’s a pretty special place”. Jax said he likes living here because it is a lot of fun.

THIS SPREAD

We then asked Vicki why it is important to conserve biodiversity.

“Biodiversity relates to the variety of flora and fauna within a single habitat or, on a larger scale, the world. It helps to create fully functioning ecosystems and this, in turn, ensures many things like clean air, clean water and the pollination of plants. The conservation of biodiversity saves valuable resources for future generations as well as helping to protect many resources. Without these, food production and the agricultural industry, in particular, would be hugely affected. Biodiversity also reduces things like pests, diseases and erosion, which can all be extremely detrimental to agriculture in particular. There are many reasons why the conservation of biodiversity is so crucial for the future. Without it the existence of all living things cannot be guaranteed”, Vicki explained.

Jax added, “We should conserve plants and animals so that they’re there for a long time.”

We wanted to know what is the coolest thing Vicki has seen while at Fowler’s Gap. Vicki said “The coolest thing I’ve seen would be a Stimson’s python or gidgee skink. I had never seen either of these species before coming here. You also see some pretty cool art that has been created by visiting students with some even giving Garry and I some of their work. We are really lucky to be living in such an extraordinary place”. We then hopped on a cattle truck and rode that back to the main site.

TOP LEFT

Photograph by Paul Baife

The next morning, we travelled to Sunset Lodge and did a scavenger hunt. It was great to look at all of the different layers of the landscape. We got to go to the fossil bed which was interesting, because Caitlin had spoken to us about how the plants and animals turn into soil over time. It is really great that we can see animals from a long time ago and what they looked like.

There must have been biodiversity when they were alive too because we saw different shaped plant fossils and animal ones also. We then all picked a piece of ground cover that we found at the conservation area to draw. We were practising our charcoal and pastel drawings. Lastly, we asked Scott, Keith and Caitlin what is the most important thing we can do to help conserve biodiversity.

KEITH

Observe and question. Look at the world and see the beauty and diversity that is already there. Question anyone who wants to change an ecosystem or destroy it. Climate change are the words on everyone lips these days, but what does it mean. It is not just increased hot, dry conditions for SE Australia, but it means a change in ecosystems and many animals will not be able to adapt and survive in the changing conditions. This will lead to a loss in biodiversity, which could endanger and alter an ecosystem. We need to observe these changes and then question our political leaders and decision-makers to try and keep biodiversity and ecosystems from changing irreversibly.

CAITLIN

Keep learning and asking why. Learn and grow and take notice of the sky, the ground, the different layers of the landscape. Look at it with different eyes. Look at our landscape like a scientist, a farmer and an artist. Remember that everything has a purpose and a place, from the plants and animals, to the rocks and soil.

SCOTT

It is so important that we all learn about biodiversity! Biodiverse places give us more ecosystem services, like protecting soils from erosion and improving our air and water quality. The more biodiverse a landscape, the more resistant it is to pests and diseases. There are some special ecosystems only left on private lands. So farmers and regional communities are very important in protecting what is left. To protect something special, we need to first care about it. That is why learning about biodiversity is so important.

DAKOTA

I am a Conservation Champion because I try not to break off as many leaves and I don't often drag away bark or break trees. Before I went to Fowler's Gap, I thought that nature was annoying because of spiders and bugs that always crawl on me, but now I think that insects and wildlife just want a home, after all, how would we like it if someone took our house away. Biodiversity is Bio= nature and wildlife and diversity= difference and is celebrating differences between nature.

RYAN

Biodiversity is the form of life and protecting our ecosystem.

ABBY

I am a Conservation Champion because I don't play around with trees and remove their branches. I think nature is beautiful.

JACK

I am a conservation champion because I try not to use plastic. I thought that there was heaps of the rare gum trees like the curly mallee, but now I think that there are only a few and you need to take care of them. Biodiversity is everything and everyone working in harmony.

GEORGE

I am a Conservation Champion because I trap for wild dogs. I thought nature was just naturally planted plants but now I think it is all plants. Biodiversity is different plants and animals.

JESSICA

I am a Conservation Champion because I go out and help dad survey when he does his rehabilitation work. Before coming to Fowler's Gap, I thought not much forest ever grew out here. Now I think about the big trees that grew out here that we found in the fossil bed. Biodiversity is like a range of all sorts of animal and plant species that all live together in one area.

WILBUR

I am a Conservation Champion because I know more about wildlife then I did before. Now I know how to take better care of nature. Biodiversity means the variety of plants or wildlife in the world or particular habitat.

BRYCE

I am a Conservation Champion because I help mum in the garden to grow plants that protect natural habitat. I thought that nature was slowly being killed by handmade machinery and now I think that people are taking what they want from their entertainment and not what is needed from the environment. Biodiversity is differences in life forms such as plants, animals, micro-organisms.


FILA

Thank you Keith, Vicki, Garry and Jax for having us at Fowler's Gap. Thank you to Shane, Georgia, David, Scott and Caitlin for teaching us about science and biodiversity conservation. Lastly, thank you to our teachers and parents for taking us to Fowler's Gap for our mini-school.

ABOVE

Photograph by Caitlin Olsson

We had heaps of fun and learnt so much as well. We are happy that the curly mallee and Fowler's Gap will be conserved forever so we can continue enjoying biodiversity forever.

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Authors

Year 5/6 Students with support by Caitlin Olsson

School

School of the Air, Broken Hill and Hay

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School of the Air

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Nicole Ho

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We would like to acknowledge the Traditional Owners of this land and pay respect to their Elders — past, present and future.

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Fowler's Gap
Packsaddle
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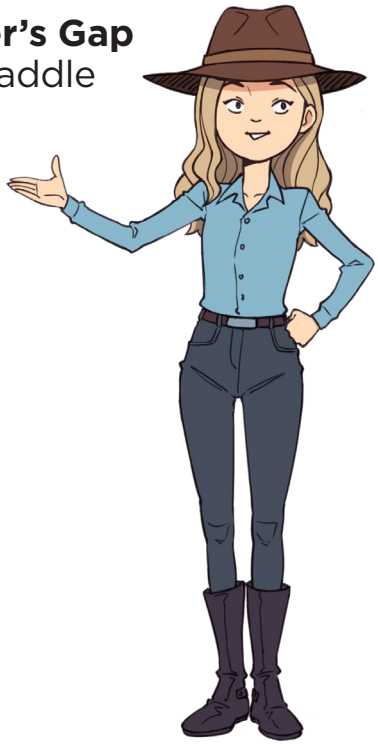

Biodiversity Conservation Program

In 2019, students from the School of the Air participated in creating a book as part of the Biodiversity Conservation Trust's *Conservation Champions* Program near Packsaddle.