Biodiversity Conservation at ‘Moona’

Emma McCallum, Patrick Taggert, Hayden Kelvey, Austin Schofield, Bella White, Carly Fisher & Sophie Stringer.

Biodiversity Conservation Trust

NSW GOVERNMENT

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Moona
Deniliquin
NSW

Moona-Bingel is approximately 30km west of Deniliquin in NSW. It sits right along the Edward river and has been a project by it’s landholders to revegetate and restore it to a biodiverse habitat for many native flora and fanua. Parts of the property are also important places for the Traditional Owners of the land- the Wamba Wamba Perrepa Perrepa people.

Do you hear that?
Water trickling over the rocks, Grass blowing in the wind.
Do you see that?
Birds dancing and frolicking in the bushes.
Do you feel that?
The wind swaying around us and the trees.
The sun on our skin.

Before we started on this journey, most of us didn't know what biodiversity meant, let alone realise the value it can bring to a business or person.

"Before today, I didn't know conserving biodiversity helps both the environment and the property owners. It is beneficial to both."

"Before today, I didn't really know anything about biodiversity or that farms are an ecosystem."

"Before today, I thought that biodiversity wasn't important and now, I know it is."

We are Agriculture students from Deniliquin High School, and we had the opportunity to travel to a nearby property to learn about biodiversity and conservation. None of us had realised the value that both can bring to landholders, before this visit.

The Moona-Bingel property, approximately 30km west of Deniliquin in NSW, sits right along the picturesque Edward River. Its passionate owners, Ken and Jill Hooper, have made it their home since 2002. For the past 17 years, it has been their mission to revegetate and restore the property to its natural, habitat-rich state where native fauna and flora can thrive. On the 18th of September, we travelled there with Nigel Jones from the Biodiversity Conservation Trust (BCT) to learn from Ken and Jill about the value of biodiversity conservation in agriculture.

Before we discuss the property, a bit of background on these two passionate dairy farmers from Victoria. They used natural resource management to help run the successful and profitable farm. “We put in shelterbelts between the paddocks, and there was a noticeable difference in the comfort of the cows but also the pastures. The wind velocity was reduced significantly, and so the pastures grew better,” Jill said. 2002 brought a massive change for them both when they found a dusty property, across the border in NSW, full of litter and weeds. But under all of the weeds and rubbish, Jill and Ken saw a diamond in the rough.

“We fell in love with the place when we saw it. We both got that gut feeling. We looked underneath the rubbish, dog kennels, box thorns and wire — you name it, it was here — and we could see it, the magnificent property that could be turned into something really beautiful. It was a project for us and a nice place to live. We were not ready to retire in a town, and fishing and golfing does not suit us,” Ken said.

Around the 1860s, the Moona property was taken up by a horticulturalist who cleared the sandhills and planted fruit trees and grapevines. When the horticulturalist left, it was taken over for sheep grazing and cropping. This meant the property was significantly altered before Jill and Ken bought it.

So Jill and Ken put in four years of hard work before circumstances allowed them to live full time on Moona. By this time their efforts were already having a marked effect on the inhospitable aspects of Moona. They have continued revegetation works ever since. This has not been an easy task; however, Ken and Jill put in a large portion of their time to make sure the property is appropriately managed.

“Every time we’d think we’ve got one weed under control, a different one pops up that maybe hadn’t been there for a couple years. So, weed control and getting rid of the exotics is still one of the major things that we need to do on a day-to-day basis,” Jill said.

“It’s so important to plant things Indigenous to the area and get the right seed for the right soil type. We have planted about 25 different species of trees and bushes on the sandhill, and some of them are quite uncommon and disappearing. So that’s been an objective, to try and get some of the rarer ones and get them established.”

But Ken and Jill have not been doing this on their own, with the former Catchment Management Authority (CMA), now Local Land Services (LLS), and others supporting their efforts. The BCT is a valued partner in funding and advice. Ken explained that when it comes to science, they rely on the scientists. “This works because of our collaboration with people like Nigel and people in catchment management. We use their knowledge combined with our practical skills. We get very good results with our life experience, our passion and our ability to take people like Nigel, Matt Herring (wildlife ecologist), and people in the North Central CMA, and their knowledge and marry it all together,” he said.

We didn't know what the BCT was, so Nigel explained. "The Biodiversity Conservation Trust is an organisation working with private landholders to protect the biodiversity on private lands. Jill and Ken are given a financial incentive to manage the conservation area as well as a plan of management to help them work out what is best for this type of landscape," he said.

Jill explained why this was important. Because their dairy farm in Victoria was on highly clay-based soils, the couple didn't have the knowledge of the sandhills ecosystem found at Moona (NSW). They explained that relying on a range of experts can ensure you are doing the best you can for your property.

"If you are thinking of going into natural resource management, whether it be agriculture or fisheries, there is the practical on-farm learning, and there is the scientific learning through study. Both are important for the success of the farm. It is critical to have knowledge in both aspects or to rely on others who do. You'll make tremendous strides in the success of your farm or property if you work with people who have different skills than you," said Ken.

We then asked Nigel if this meant you could not graze or use that area for farming. He responded, “Different properties have different agreements. Some are suited to use stock grazing as a management tool, but at Moona, with so much restoration work going on, Ken and Jill have decided to exclude it.”

“When we first got the property, it was like, this is the kind of place we would want to go on a holiday or want to camp beside,” Jill said.

Ken and Jill have done so much to the property to restore it to a healthier system. Just looking at some of the old photos in comparison to what we saw today was really astounding. For example they brought in dead hollow trees and ‘planted’ them. Even though they are dead the hollows can be used as habitat for many species. They then planted shrubs and understory around them. Recently an Antechinus was photographed sunning itself in one of the hollows.

We asked Jill what changes to the biodiversity they have noticed since restoring the habitat. "There really wasn't much in the way of native things when we first got here. We've seen the progression of the lizards, snakes, birds, and possums. But we're seeing a lot more of them because we've provided them with habitat," she said.

Jill told us about the seven-year ants study she conducted at the property. She is very knowledgeable about the different species of ants, and told us how she marked them to identify them. "Many people don't realise that ants are essential pollinators as well", she said. Next, we asked Nigel why the BCT gives landholders financial support to conserve the biodiversity on their property.

"The Hoopers have a contractual agreement to conserve Moona in perpetuity. This means the conservation area is protected forever, regardless of landholder changes. The biodiversity that is being enhanced and conserved on this property is of value to the community," Nigel explained.

"It gives us peace of mind knowing that when we sell the property, that all of this is conserved and protected," Ken said. "Someone else who has similar values to us, could use it for farm-stays or eco-tourism. The recreational value is outstanding."

'Values' is a term that kept popping up throughout the visit. But what do Jill, Ken and Nigel mean when they say that Moona's biodiversity has a value? Caitlin gave us an explanation.

“Biodiversity can be seen as valuable to us because we depend on biodiversity for cultural, economic, health and wellbeing purposes. For example, many cultures in Australia and around the world rely on native species for cultural traditions and identity. The ants (and other insects) that Jill speaks about pollinate crops and control other pest insects. Some are decomposers and turn dead plant and animal matter into soil and nutrients,” Caitlin said.

“Trees provide shade and shelter from the wind. These are called ecosystem services, and by having healthy farm ecosystems, we can prevent erosion and soil loss and increase water quality. There is a scientific or medical use as well because we use many plant species in medications. There are spiders that can produce remarkably strong silks, and scientists are looking to use these.

But also, importantly, there is intrinsic beauty in biodiversity. There is value in it because it exists, and it makes people happy. Would you rather live in a busy city where all you hear are people, trucks and cars, and all you see are billboards; or, would you like to live by this lagoon listening to the birds in the trees? We holiday at biodiverse locations; this is the recreational and wellbeing value,” Caitlin continued.

So, we sat on the lagoon bank and looked and listened. A scarlet robin was arguing with a willy wagtail. Dragonflies zipped over the lagoon, and the trees swayed in the breeze. We would rather spend our days here, we decided, and we could see why Ken and Jill wanted to live here.

“Every morning when I wake up, there’s generally something going on out there. If it’s not the kookaburras, magpies or a wallaby going by, something is happening out there all the time,” Jill said.

We said thank you to Jill and Ken as we left, knowing we would be returning soon to study some of those scientific and ecosystem values that we discussed. We came back a month later, but this time with some of year 8 peers. We brought them to the property and were tasked with mentoring the students on a few different topics with staff from the BCT, Yarkuwa Indigenous Knowledge Centre, LLS and Petaurus Education Group.

It was great to have so many experts to chat with about different topics, which is exactly what Ken and Jill mentioned in their advice. Latisha from Yarkuwa conducted the Welcome to Country, after which Jill and Ken spoke to the younger students about Moona. Caitlin then separated us into groups with the younger students, and we began our first activity.

We met the team from Yarkuwa; Uncle David, Aunty Jeanette, Tracey, Trish and Latisha. We learnt about different plant and animal uses of the Wamba Wamba people, including their possum skin cloaks and Quandongs. We learnt words for animals and plants and the word for lagoon, which is Muna. We also learnt about how the biodiversity of this area is significant culturally and that includes plants, animals, the sky, water and land.

Thank you so much Yarkuwa for teaching us and giving us the opportunity to learn more about our local community and the cultural importance of biodiversity.


PLANTS
BIRDS
Nyan Kurk - Pelican
Tyali-kurrkuk - Red Capped Robin

We then met Cassie and Stu from the BCT, who taught us about biodiversity in water. They had two big buckets of water, and when they poured them into a tray, at first we thought it was just plants and water. But then hundreds of different bugs started swimming and crawling out of the vegetation. These, Stu explained, were waterbugs and are very important for the health of the water. Just as the insects on land are essential for soil health and pollination, freshwater macroinvertebrates are fundamental in keeping the freshwater ecosystems healthy and clean.

We separated the different species of waterbugs into ice cube trays and then went to work identifying them. We learnt that different species of waterbugs have different roles in the ecosystem and also have different requirements. Cassie explained that this is why having biodiversity is critical —some waterbugs want to be on plants in the water, some under logs and some even camouflage by making an outfit out of leaf litter. These different species can be used to measure the health of the water too, which was significant for us because clean water access for stock is vital for farm productivity. Stu and Cassie did a pH test and compared turbidity with Caitlin, to show us the health of the water from a different approach.

We then spent time with Nigel and Angie from the BCT, who took us for a survey and bushwalk. Before we started, we had to write down a list that included: a meal from the canteen we wanted to eat, our ideal school uniform, and a subject we wanted to do ‘all day, every day’ at our dream school. We then put them the lists in buckets, and Nigel shook them up.

Next, we picked out a piece of paper from each bucket and decided whether we would stay at the school we picked out of the bucket, or leave to go to a new one. Some of us chose exceptionally great 'schools', but some of us had awful ones. Nigel explained that when your school or landscape are changed, some people or species may do better than others. For example, magpies may do better when a landscape changes, but gliders might do worse.

This was a really interesting way to think about what happens to diversity when we change a landscape. We then went on a bushwalk and saw many exciting things, such as skinks, robins, centipedes, saltbush fruit and mistletoe.

Next, we met Alice from the BCT to talk about soil and root structures. She spoke about the underground layer and how healthy soil is the building block for a healthy landscape.

We measured the health of the soil system by studying soil clumps, or aggregates, and roots. We also compared how water interacts with bare soil and soil with vegetation covering it.

When we poured water on the soil with vegetation, it filtered the water before soaking up the water like a sponge and retaining it. When we poured water on the bare ground, it raced down the slope and took some soil with it. This was really interesting to see visually and helped us understand the importance of ground cover.

We learnt that there are many physical, chemical and biological features that make up soil: structure and texture, pH and salinity, organic matter, root abundance and bacteria. Learning how to test soil health in a practical way will be useful for our Year 12 studies.

STUDENT REFLECTIONS

BELLA

At first, I was very unsure and uneducated about this project and what it was going to be about. Now, after visiting and seeing the farm and its environment, I can appreciate that agriculture isn't just about profit and outputs. I think what Jill and Ken are doing is just the start for a better and more sustainable environment and the fact that they love and feel good about it is just the cherry on top.

HAYDEN

I am more aware of the relationships between other organisms now, and I gained knowledge on how to be more sustainable. I learnt that the soil features complex symbiotic relationships and networks, and I can now determine the health of a freshwater ecosystem with aquatic organisms. I also learnt how to test soil and water pH, and measure soil health.

PATRICK

I gained academic knowledge for the classroom, and practical understanding that can be implemented in my own life. We gained more respect for the knowledge of the local Indigenous people, the Wamba Wamba people. I also gained practical knowledge about ground cover and how to incorporate that on private land.

Sophie

I learnt a lot of skills in sustainability and the importance of biodiversity on private land. I believe that Ken and Jill are doing great things for the environment. I learnt we can fence off particular zones, that may not be highly productive zones, for conservation and that you can have riparian zones and plant more native vegetation. It was great to see that native plants and animals can help farms. I would like to learn more about how these ideas can be implemented on a productive farm. This concept should be for everyone — although backyards may be small, they can still hold lots of biodiversity.

CARLY

I gained an overview and understanding of biodiversity and the benefits of conserving a certain area for diversity. I see the significance for Jill and Ken to have this area, and that having a conservation area adds value to their farm. One practical idea I learnt about is how biodiversity can help the overall production of the farm, for example; pollination.

EMMA

I learnt practical management actions such as planting native vegetation as shade and shelter for stock, and planting native vegetation around the home. I learnt about using gum trees for windbreaks and controlling pests. I am proud of what Ken and Jill are doing because I don't think there is enough action taken nationally and globally to protect Australia's biodiversity.


PADDY
20

We learnt so many valuable lessons and gained some fantastic experience working with Jill and Ken and the BCT. We've become more aware of the delicate relationships between different organisms in the ecosystem and the landscape itself. We gained some great academic knowledge that we can bring into the classroom, as well as practical experience like how to measure and test the health of a landscape.

Importantly, we gained understanding and appreciation of biodiversity from an economic, cultural and wellbeing lens. We appreciate the work that Ken and Jill are doing on their property. They really are Conservation Champions.

Thank you to Jill and Ken for showing us around. With properties like Moona, we can see that conservation can occur on private land.

A big thanks to Angie, Cassie, Stu, Nigel and Alice from the BCT; as well as staff from Yarkuwa and Petaurus for teaching us about biodiversity and the career opportunities we can have in Agriculture or Science.

Finally, thank you to our teacher Gen Dunmore, and our school, Deniliquin High school, for supporting our learning.

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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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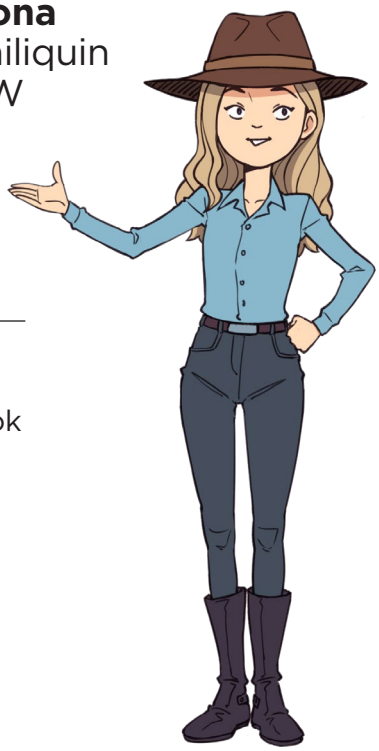
Moona
Deniliquin
NSW



Biodiversity Conservation Program

In 2019, students from Deniliquin High School participated in creating a book as part of the Biodiversity Conservation Trust’s *Conservation Champions* Program just outside of Deniliquin.