

THE GECKO



Edition 46
January 2025

Happy New Year and welcome to the January 2025 edition of The Gecko.

Despite a relatively gentle spring, summer has started with two heatwaves that have taken their toll on our plants. Some of the trees that had looked like they were recovering from last summer's

horrendous conditions have died back again. It will take a miracle for them to recover again.

However, other plants appear to be taking the hot, dry conditions in their stride and keep on keeping on. It will be interesting to see if these become the dominant species in the future.

October to December 2024

27 October 2024

Seven volunteers and two City of Canning staff met to pull up some Wild Gladiolus, *Gladiolus caryophyllaceus*, before they dropped their seeds. The weather was perfect and the bush was full of interesting things to see so there were lots of distractions as we worked. Nevertheless, we removed a substantial number of weeds while enjoying the sights and each other's company.



A Tau Emerald dragonfly, *Hemicordulia tau*, was spotted while we were weeding. Photo: Kade

24 November 2024

A very warm start to a hot day may have stopped some members from attending as we only had four volunteers to water our seedlings. Even though there was a bit more work for those who did assist, it was good to see how big some of our plants had grown since they were planted last year.

Half of the plants we watered had been put in the ground this winter and the others are a year older. The older cohort is all of the same species, Chenille Honeymyrtle, *Melaleuca huegelii*, with the tallest of these now being up to shoulder-high. Although they appear established, and probably don't need watering to survive, we want to give them the best chance of creating a gentler microclimate rather than plant the understorey into an open and exposed site.



Two waist-high seedling Chenille Honeymyrtle, *Melaleuca huegelii*, with a mature specimen between them in the background.

One of the highlights of the morning was seeing how many native plants have germinated since the weeds have been brought under control. Give it a few more years and we won't recognise the place.

29 December 2024

We watered again at the same site as November's activity. It was slightly cooler than last month, and

overcast, which made the conditions much more comfortable. However, it didn't result in any greater attendance – only three volunteers on this day.

The seedlings put in this year are showing signs of stress with several having given up already. But last year's *Melaleucas* are still growing strongly.

Also this quarter

We came across two wonderful surprises when we started watering one of our revegetation sites. This area is where we salvaged plants from the site of the State Football Centre in April 2021 then replanted them nearby in June 2022.

One of the grass trees, *Xanthorrhoea brunonis*, that we translocated, was flowering. This species doesn't have the spectacularly large trunk or flowers of *Xanthorrhoea preissii* but has an equal environmental value nonetheless. We will continue watering it this summer to ensure it establishes well.



Our second surprise was nearby and involved a Grey Stinkwood, *Jacksonia furcellata*, which we had grown from seed collected from the same cleared area. This was also planted in June 2022 and has done exceptionally well, growing to a large size and flowering profusely in just one year. After flowering last year, this plant evidently set seed and one of those seeds germinated during last winter. The only thing better than seeing a plant in flower is to see it reproducing!



A seedling Grey Stinkwood with its parent in the background.

Rainbow Bee-eaters have started nesting around Perth and the City of Canning is taking steps to ensure a successful breeding season.

These birds dig an underground tunnel with a nesting chamber at the end in which to breed. This keeps the eggs and chicks safe from many natural predators. However, the tunnels are built in sparsely vegetated areas which many people find ideal spots to let their dog run free. Unfortunately, these uncontrolled dogs can find the Rainbow Bee-eaters' nests and dig them up within seconds.



To mitigate this threat, the City is covering nests with mesh and posting temporary signs to alert people to their existence. It is hoped that people will become aware of the hazard they and their dog present and take action to avoid the nesting area.

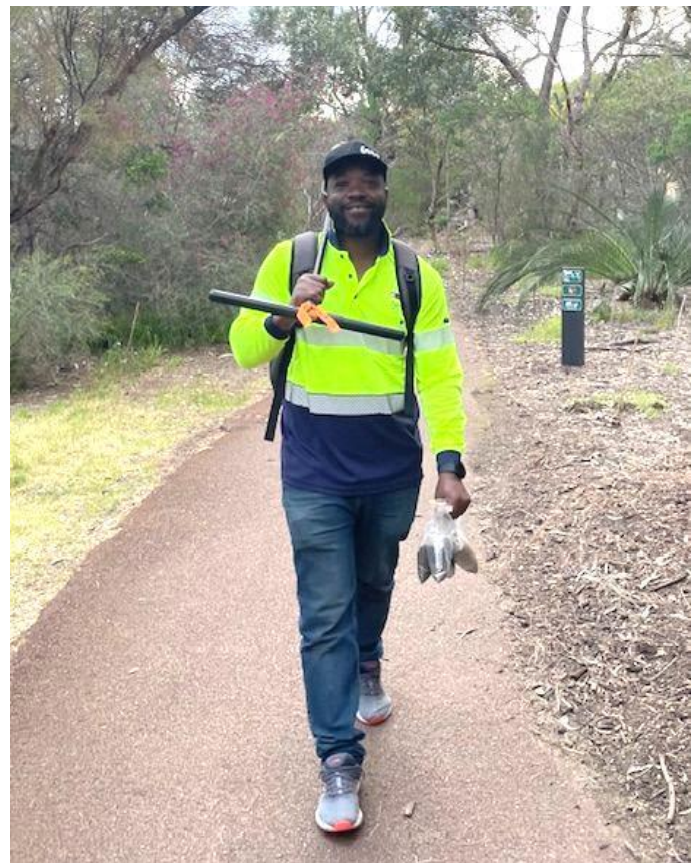


Native legume study

Nicholas George and Selassie Ahiakpa were sampling legumes in our bushland in October. Nic is a Senior Lecturer in Agricultural Sciences at Curtin University and Selassie is one of his students. Selassie kindly wrote about his project for inclusion in our newsletter.

Unlocking the Potential of Native Legumes for Sustainable Agriculture

Legumes in the agricultural sector are recognized for their significant role in their ability to fix atmospheric nitrogen, which is critical in a broadacre production system. Over-reliance on synthetic fertilisers may be reduced significantly due to this ability. Native legumes have agricultural potential, which is relatively untapped.



Selassie carries soil specimens collected from next to sampled plants. Photo: Nicholas George

My PhD research, “**Assessing the Potential of native Australian Legume (Fabaceae) Species as Grain Crops - a Proof of Concept for New Crop Development**”, explores the diversity and ecological potential of native legume species across the Southwest Australian grain belt region, including bushland ecosystems. My focus will be on two species, *Hardenbergia comptoniana* and *Kennedia prostrata*. Collecting and studying various germplasm from different locations, I aim to develop a workflow for new crop development while uncovering insights into their adaptability, ecological benefits, and potential for enhancing agricultural resilience.



Running Postman, *Kennedia prostrata*. Photo: Sian

The Heart of the Research

Australia has a rich diversity of native legumes, and many are uniquely adapted to challenging environmental conditions such as poor soils and low rainfall. These species not only provide ecological stability in their native habitats but also hold immense promise for improving soil fertility through atmospheric nitrogen fixation. My project involves collecting vegetative cuttings and seeds from multiple bushland locations, focusing on diverse ecosystems across the southwest region.

Why Germplasm Diversity Matters

Collecting germplasm from varied environments ensures that my study captures a wide range of genetic diversity. This diversity is essential for:

1. Enhancing Soil Health

Native legumes may contribute to nitrogen cycling and naturally improve soil fertility.

2. Supporting Climate Resilience

By studying diverse genetic material, we can identify traits that enhance drought tolerance, pest resistance, and adaptability to changing climates.

3. Informing Agricultural Applications

The data gathered can inform breeding programs and ecological restoration efforts, especially in regions where declining soil fertility and climate change threaten productivity.



Selassie checks on the cuttings he has taken from across Southwest Australia. Photo: Nicholas George

The value of local contributions

One of the memorable aspects of this journey has been the collaboration with local communities and groups who manage bushlands. During a recent field collection trip, a Friends of Queens Park Bushland representative was supportive during our sampling of plants. The support provided critical insights into the natural habitats of the target species and ensured the inclusion of unique genetic material in the study. By working with landholders and community groups, we can build a network of knowledge and resources to unlock the full potential of native legumes. This

partnership approach advances the research and underscores the importance of conserving bushlands as reservoirs of biodiversity and ecological resilience.



Native Wisteria, *Hardenbergia comptoniana*. Photo: Sian

Looking Forward

Through careful propagation experiments and controlled environmental studies, my research aims to unlock the potential of native legumes for agricultural and ecological applications. By working closely with farmers, researchers and conservationists, we can create pathways for these species to contribute to sustainable agriculture and land management. A comprehensive workflow for new crop development would be used to aid future crop research.

This journey is continuing a decade-old study, but the results promise to contribute meaningfully to tackling pressing challenges in agriculture and conservation.

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