Pullen Pullen Catchments Group

Enhancing Ecosystems through Natural Bush Regeneration in Anstead Bushland Reserve

authored by Jim Williams

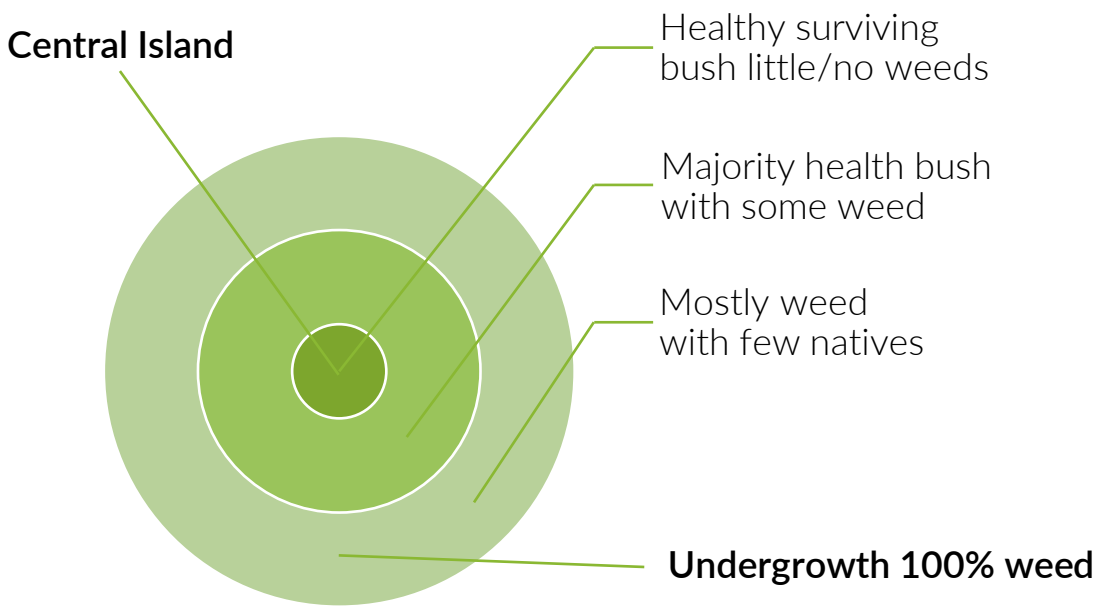
An Introduction to Bush Regeneration – Nature's Way

The Bradley Method of Bush Regeneration was developed by Joan and Eileen Bradley in northern Sydney in the late 1960s and early 1970s. Trial and error steered them into developing a method of bush regeneration that became proven and popular across the world. The basic concepts are straightforward and extremely effective when properly applied.

Only a basic overview of the Bradley method is provided here. Further details on planning work, identifying plants, weeding techniques, mulching, moving through the bush, working with the weather, tool maintenance and other aspects of the method are covered in Joan Bradley's book *Bringing Back the Bush: The Bradley Method of Bush Regeneration*.[1] The book can be purchased online for around $25 and is also available from Brisbane City Council libraries. Copies are also available for loan from Pullen Pullen Catchments Group via the Friends of Anstead Reserve.

What is the Bradley Method of Bush Regeneration?

Application of the Bradley method initially requires identification of an area of weed infested bush that contains "central islands" of healthy surviving bush. Each central island will have a range of remnant flora and little or preferably no weed. Each "central island" may well only be a few meters wide.



[1] First published in 1988 by Lansdowne Press; republished in 2022 by New Holland Publishing.

The inner two circles are meticulously weeded. This should only be done when the soil is moist enough to allow for complete extraction, disturbing the soil to a minimum. Undisturbed soil and mulch resists weed seed germination far, far less than disturbed soil. A thin layer of new mulch is then added, only where needed. The areas weeded include the two central circles plus very conservative inroads into the next circle ("Mostly weed with few natives"). This approach ensures maintenance of a microclimate suitable for regeneration within the inner two circles.

Why such a conservative approach?

There are two reasons for this conservative approach, and both are absolutely critical for success:

1. Look at healthy bush and you will see competition for space, moisture, and nutrient. This is a result of natural evolution. When a tree falls in a forest and allows additional light in, it is often the grasses, herbs and vines that initially take up this new opportunity for life, fighting against each other for dominance. In natural bush regeneration this competition needs to be present for success, both above and below ground. Many native grasses, herbs and vines struggle to evolve if they are in an environment where there is no competition. Weed can form part of this competition when regenerating degraded bush naturally. Without competition the natives are in an alien open space, an unnatural world.

2. Weed as a perimeter around healthy bush protects the inner regenerating core against edge effects by providing some shelter from heat and wind, whilst maintaining humidity.

Where would you look for a central island of "Healthy Surviving Bush" in this image?

Time for patience

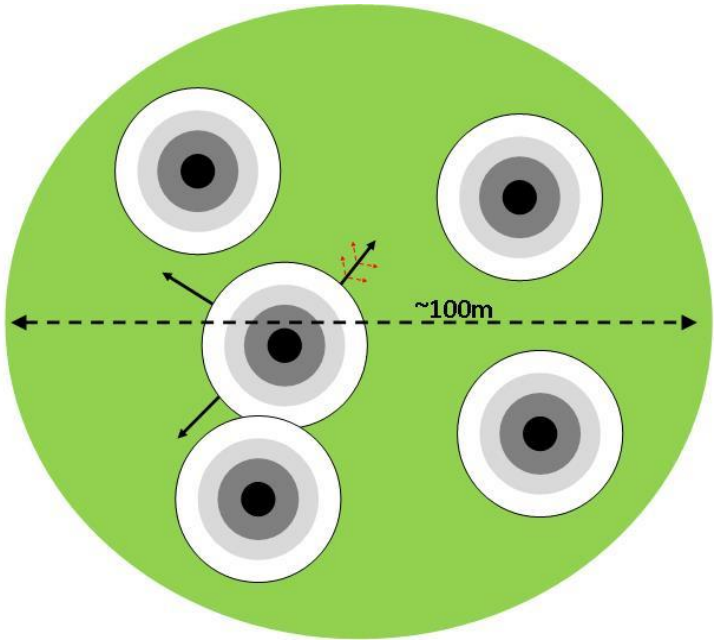
The area of healthier bush is now left to regenerate over time, following up regularly with sensitive re-weeding. Regrowth will now be in favour of the natives as competition for moisture, light and nutrient have been significantly reduced. We now have what is referred to as "waiting time" and it is the hardest challenge. When the native regrowth eventually moves outward and comes up against the outer ring of weed, further inroads of weeding are made into the outer ring of weeds. The extent of this depends upon the circumstances, including the species of native and weed plants, the season (wet/dry) and the extent to which the area is exposed or sheltered. These weeded "inroad" areas are now attractive to the escalating and expanding growth of natives. Over-clearing of weed is a very common temptation and mistake made by people using this method. The fact is that the surviving natives have persisted in the presence of weed for a long time, perhaps 100 years or more. In many ways they are dependent upon neighbouring plants (be they weed or native) to survive, as these can afford some shelter from wind, sunlight, and heat, and even increase humidity. In pristine bush the plants have evolved in a neighbourhood, not in isolation. Over-clear an area from weed and the remaining natives will struggle to progress and/or survive in this sparse unnatural environment.

Considerations for the surrounding areas

The areas of weed around the "islands" of weed free bush needs to remain infertile where possible. This is usually a simple case of removing flowers, fruit, and seed as they appear in order to prevent the reproduction of weed species from seed – a necessary process in Southeast Queensland.

Multiple areas

The wonderful benefit of the method is that multiple islands can be regenerated at the same time. Referring to the diagram below, we can visualize five islands all being actively regenerated simultaneously.



As the healthy bush continues outward, further inroads into weed are made and the processes repeat. Eventually healthy weed free islands overlap, and the remnant bush becomes its own representation of an original ecosystem. Nothing has been planted and the only financial cost has been that of supplying any mulch needed.

The Essential Fundamentals

Three underlying guidelines must be adhered to throughout the process. If these are not observed, failure is guaranteed.

1. Always work from the healthy bush outward toward weed infested areas. This way, over time, the bush is taken into the weed and not weeds into the natives.
2. Disturb the soil and mulch to an absolute minimum. Nature's mulch is layered, thin and very effective at keeping weed germination at bay. Once it is disturbed weed seeds have the advantage.
3. Do not over-clear weed. Let the bush determine its progress. The human desire for haste and being in control have no place.

Benefits for you and the environment

There are a number of different ecosystems within the Anstead Bushland Reserve that would benefit from the Bradley Method of Bush Regeneration. Within each of these areas there is potential for several "islands" of suitable surviving remnant bush to be utilised. For a bush care group, exposure to regeneration within different ecosystems provides opportunities to learn about the diversity of flora in each. For the Anstead Bushland Reserve the Bradley method has the potential to regenerate examples of the various eco systems that amazingly still exist here.

Why isn't the Bradley Method more widely adopted?

The method does not provide quick results for organisations that need to see value in the short term. It is also reliant upon the presence of a good stock of native ground cover, understorey and canopy species and cannot be utilised to rehabilitate highly modified environments (such as those previously utilised for intensive agriculture or where widespread earthworks and topsoil removal has occurred).

Bush health guidelines

The table below represents a simplistic view of Bush Health and needs to be considered when looking at commencing natural bush regeneration.

Broadly Defined Four Classes of Native to Weed Ratios[2]	
Level	**Remnant Bush (Island) Condition**
1	Good Condition: native bush with scattered weeds.
2	Fair Condition: two to one native to weed ratio.
3	Poor Condition: weeds abundant, outnumbering the natives in a ratio of seven to three.
4	Very Poor Condition: thicker and thicker weeds finally reaching complete replacement of the native species.

[2] Source: Toni May Bringing Back the Bush. The Society for Growing Australian Plants, December 1996, http://www.anpsa.org.au/APOL4/dec96-5.html

The level needed for a successful “Bradley Project” is preferably level one, with level 2 also being acceptable. There simply is no answer to how long it will take. Benefits are there from the first day. Mistakes will be made, hopefully not many. Success gradually increases as time passes. Effort required decreases as time passes.

Thinking globally, acting locally

For a bush care group at The Anstead Bushland Reserve, with good Knowledge Skill and Attitude, the potential is remarkable. The significant point is that the natural world has been given the opportunity to re-establish an environment that would otherwise be lost.

Applying the Bradley Method in Anstead Bushland Reserve: Friends of Anstead Bushland (FOAB) Bush Care Activities

Within the Anstead Bushland Reserve, FOAB members have identified eight practice sites for learning and practicing the Bradley Method of Bush Regeneration. Each of the eight centrally pegged zones designated for practice has an area of bush 16m x 16m. Importantly these areas of bush have been left undisturbed for many, many years. There have been no poisons used, the weeds have not been attacked by whipper snippers, nor has there been any vigorous weeding leading to soil disturbance. The bush is far from original; however, it has good potential for natural regeneration.

Volunteers are guided in the Bradley method and weed/native identification. The initial step is to keep weed within these areas infertile, wherever possible. This is achieved simply by removing only the flower heads and seeds; no other parts of the weeds are removed (vines are cut close to ground level and also at eye level). This requires no great effort, simply using secateurs, a knife and listening to the sounds of the bush and observing the animals around us. Guidance on plant identification and methodology is provided along the way so even the novice (who may only be able to differentiate a grass from a tree) is able to participate. Even children can get involved (we all know how much they LOVE getting their hands on their parent’s secateurs and snipping things!).

The next stage is to record the location of all "Naturally Occurring" (native) plants that are to be found growing in a pegged zone. Both paper based and electronic options are provided to record this information. Although identifying a native species by name may not come easy to most (particularly those of us who need glasses to really see what we're doing), after a few sessions most participants are able to differentiate the primary Anstead Bushland Reserve weeds from the natives (and if they don't know – they ask, or we send a specimen off to the Herbarium). It is a wonderful experience seeing bush carers learning about and identifying what is growing within their own pegged zone. Importantly, it is necessary to know what is growing where before bush regeneration starts and the species variability changes with seasons and wet/dry years. Already since we started in July 2021, FOAB teams have "discovered" three plant species growing that, as far as we can determine (through publicly available wildlife databases), have never been previously recorded in the Reserve. They are Swainsona queenslandica (Darling pea), Tricoryn elatior (common rush lily) and Sorghum nitidum (brown sorghum), a tufted grass.

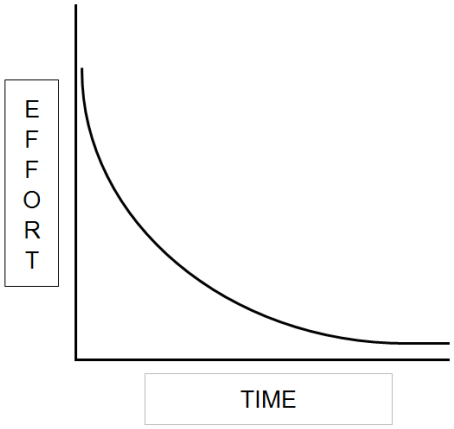
The hardy Swainsona can spread via underground rhizomes, has wonderfully bright purple flowers and is very drought tolerant. Six of these plants have been found in the one location.

Tricoryn elatior (common rush lily) has yellow flowers that are displayed following spring or summer rain.

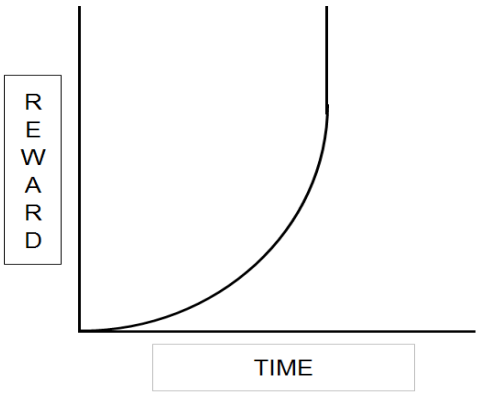
Nearby to the Swainsona we also “discovered” Sorghum nitidum (brown sorghum), a tufted grass.

Once the weeds have been made infertile and records have been made of the location of natives, bush regeneration can commence. Within each pegged zone, areas of good natural growth are identified, and the Bradley method is then applied to each of these “islands”. We now have over 1000 sq m of bush committed to care using this method. With natural bush regeneration the following 2 diagrams are worth considering.

1. **Effort decreases with time.**
   Gardening it is not! So, there is no poisoning, whipper snipping, digging, planting, watering, fertilizing, composting, landscaping, propagating, or staking…just patience with the gentle art of weeding and applying a thin layer of weathered forest mulch to targeted areas. It is an opportunity to allow nature to take back control by gradually removing the advantages for growth away from the weeds and swinging them back in favour of the naturally occurring natives that have miraculously managed to survive under the advancing weed. So as time passes the effort needed from natural bush carers reduces.



2. **Reward increases with time.**
   To see the natural world, respond to the advantages that you, as a bush carer have given it, is a rewarding privilege. Natural beauty is very much about how and if you actually see what you are looking at. It can be our attentiveness that is lacking, our capacity and inclination to do the work that this wonder requires. So, with natural bush regeneration, the rewards should not be sought. Nature will provide them when and how she deems them to be correct.



As a tangent endeavour that adds more meaning to our bush rehabilitation efforts, we are also recording wildlife habitat and wildlife sighting. Mammals and reptiles recorded include goanna, echidna, red necked wallaby, swamp wallaby, possum, deer, and fox. Birdlife recorded includes white-browed scrubwren, eastern whipbird, double-barred finch, red-backed fairywren and pheasant coucal.

Even the rock within the reserve is vital. Within the pegged zones there are classic rock habitats for the threatened Delma torquata (collared delma). This legless lizard forages during the day seeking out small insects. The invasive weed Creeping lantana (Lantana montevidensis) smothers rocks and compromises the habitat for this threatened species. We are hopeful that by carefully applying natural bush regeneration techniques (The Bradley Method), their habitat will be enhanced and support their survival.

Delma torquata: image © Queensland Museum, Jeff Wright

Pullen Pullen Catchments Group cares for a variety of bush care sites that accommodate a range bush care styles. Within the Anstead Bushland Reserve there awaits an opportunity for you to practice the Bradley Method of Bush Regeneration within your very own area. Help, advice, resources, demonstrations, and support are there for you. Whether you are a seasoned bush carer or a novice your involvement is very welcomed. Please say g'day if you see us there during our bushcare sessions which are scheduled on the first Sunday morning of each month except January! You might also find us there on the afternoons of the second and fourth Saturdays of the month and early Friday mornings.