

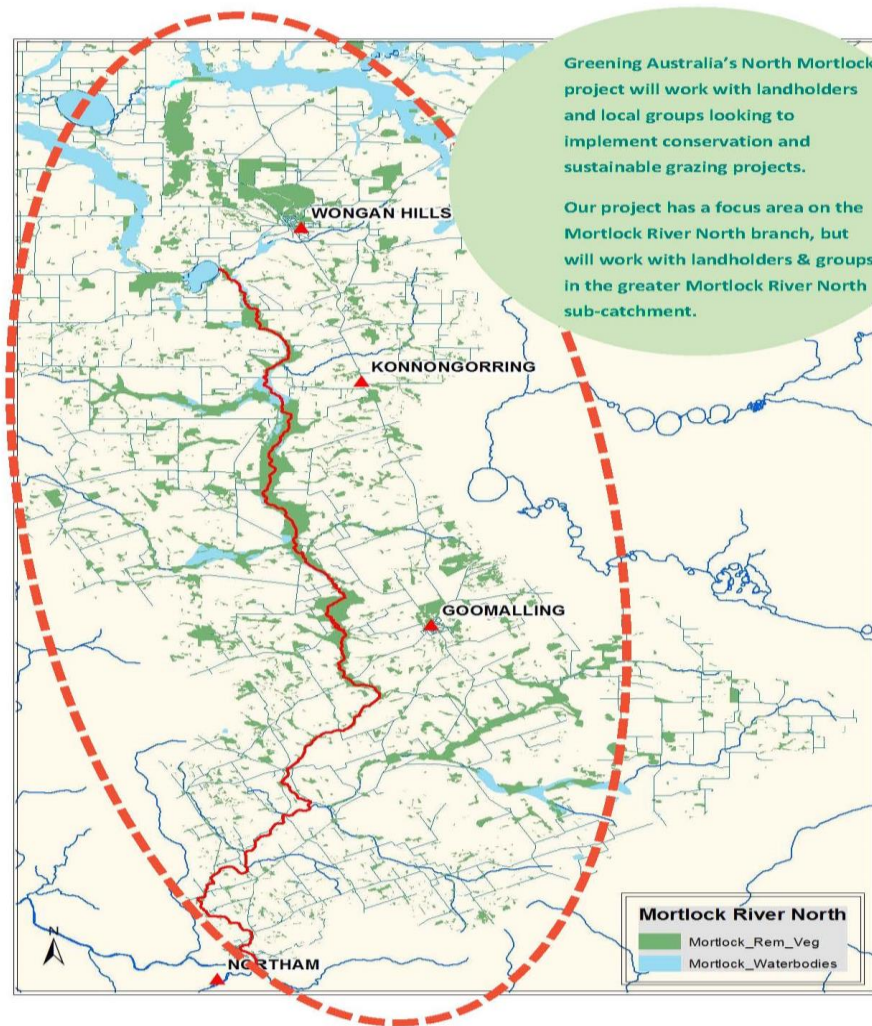
“Revegetation By Stealth”

Re-introducing Biodiversity into hostile territory

Why this approach? and why it's working in the wheatbelt of Western Australia

Adapted from: David Collins, Anne Smith and Dr Blair Parsons Greening Australia

Presented by Dallas Lynch



Project Area-North Mortlock Catchment

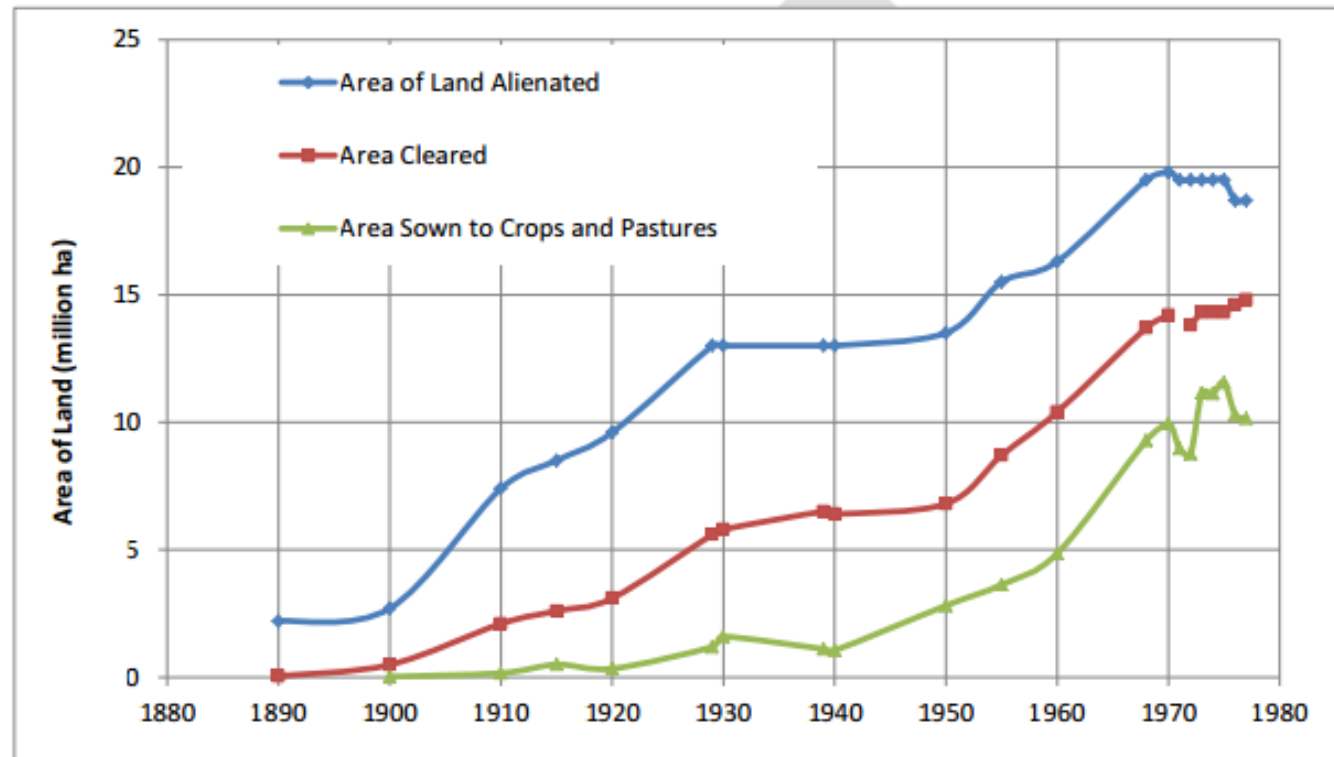
Australian Government Funded project

***Aims-To re-introduce local
native vegetation into an
agricultural landscape
through;***

- * Conventional revegetation***
- *Perennial native fodder
systems.***

- *WHY?*

Figure 3. Area of Land Released and Cleared in Western Australia 1890–1980 (Adapted from Burvill 1979)



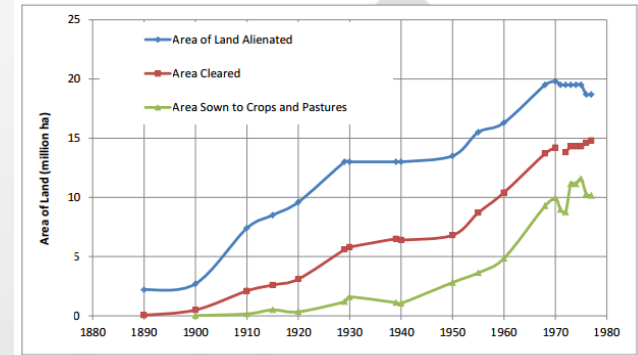
From Wheatbelt NRM 2013)

- **WHY?**



Homemade rollers for clearing scrub, 1915. (Battye 003226d)

Figure 3. Area of Land Released and Cleared in Western Australia 1890–1980 (Adapted from Burvill 1979)

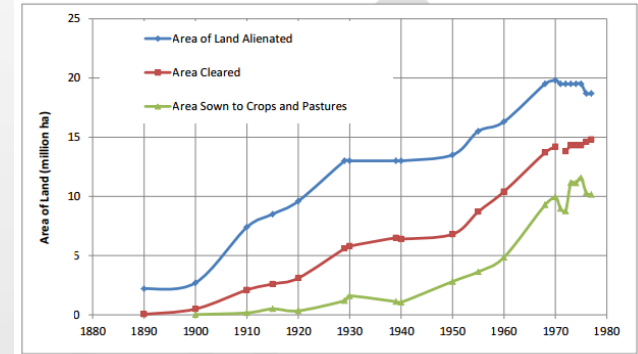


- **WHY?**



Thickets ready to roll, 1920. (Battye 003197d)

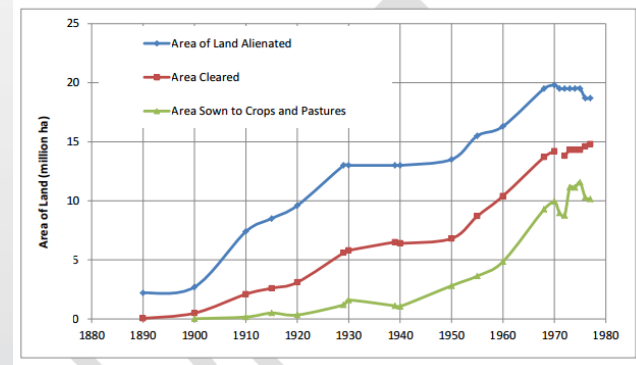
Figure 3. Area of Land Released and Cleared in Western Australia 1890–1980 (Adapted from Burvill 1979)





Ball and chain to clear timber, 1950s. (Battye 003456d)

Figure 3. Area of Land Released and Cleared in Western Australia 1890–1980 (Adapted from Burvill 1979)



Overall there's about 18% remnant vegetation remaining across the total area of the wheatbelt



Continuing decline of the extent of Perennial Vegetation

- *Many shires have less than 5% perennial native vegetation remaining*
- *New fence construction clearing 5 m each side of fence.*
- *Shire roads being widened for larger machinery*
- *Shire roadside weed spraying removing understorey*
- *Sat Nav = paddock trees and small remnants removed*



An innovative use of multi-species native plantings to boost returns from currently unproductive land.

Help fill the autumn feed gap

Reduce reliance on supplement feeding

Respond to current rainfall trends

Utilise summer & unseasonal rainfall



Areas that are available on private property for revegetation.

Riparian zones adjacent to creek and drainage lines

Areas low in the landscape prone to waterlogging and frost

Sandy hillsides prone to wind erosion and becoming non wetting

Areas that large machinery cannot access eg around rocky outcrops

Species selection: from CSIRO ENRICH project trial results, DAFWA rangeland monitoring work and GAWA staff research.

- The species mix includes some non fodder species to provide shade, shelter and biodiversity*

Maireana platycarpa, Shy Bluebush



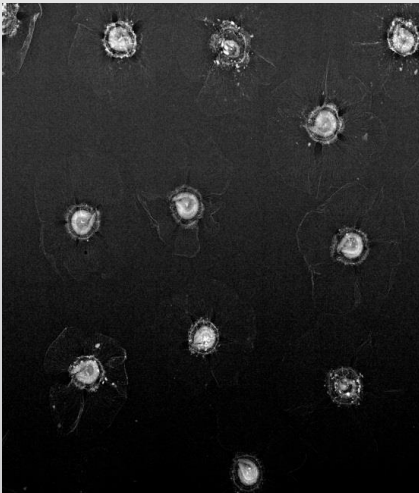
Seed orchard established
Northam Office 2012



Seed orchard established to provide seed of non commercial species, material for striking cuttings and to gain experience cultivating previously un-tested species. Seed is now collected from Seed orchard and established fodder sites.

Testing seed viability, dormancy and seeding pre-treatments

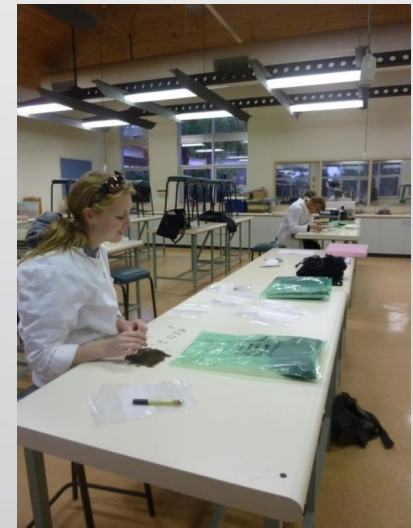
- ✓ In partnership with Curtin University & Kings Park Perth we have reviewed seed dormancy and viability questions. EG: *Chenopodium* & some *Atriplex* species produce large quantities of seed annually but a viability between 10 to 80% is common.
- ✓ The study showed *M. brevifolia* has little or no dormancy ie all viable seed will germinate in 4 to 7 days after rain.



x ray image showing viable seed
solid white



Curtin University Honours student Tiffany Bennett collecting and cleaning *Maireana brevifolia* seed.



Direct seeding: reduces establishment costs allowing larger areas to be treated

One pass operation-Scalp (weed control), rip (deep root development), small mound, compress, knife point seed (precision sowing) then press again (soil contact)



"This is the smallest tractor I've got"

Change in grazing management is essential to ensure species persistence and production of the fodder system

- Perennial based fodder systems do not persist with the current “set stocking” method of grazing management.*



Change in grazing management, alone, can have desirable consequences



2012 *Mesembryanthemum cryatallinum*: ice plant



2014 *Maireana brevifolia*: Bluebush



2016 winter legumes returning

Production values of fodder shrubs

- ✓ *high in crude protein (9 -25%), vitamin E and minerals*
- ✓ *but low in energy.-need carbohydrates a balanced diet.*
- ✓ *Stock can gain weight and increase condition score during autumn. (ENRICH study showed sheep gaining 100g/day and 0.5 of a condition score over 6 weeks).*
- ✓ *Biomass production will vary between soil types and regions but a moderate plant density of 1000 plants per ha will provide grazing at a stocking rate of at least 2.5 DSE to 10 DSE for a 6 week period*
- ✓ *Grazing system can be adapted for cattle and goats as well as sheep*
- ✓ *There are potential production increases of up to 10% from providing shade and shelter alone (DAFWA)*
- ✓ *Good water quality (for stock to drink is essential)*



Environmental Benefits

- *Re-introduction and natural recruitment of local native species*
- *Habitat for small birds, reptiles and invertebrates*
- *Lowering water table reducing the effects of salinity*
- *Stabilising degraded sites reducing the risk of soil erosion*
- *Wind erosion buffer*



Smaller birds return



Natural recruitment-ruby saltbush



Waterways stabilised



Thank You