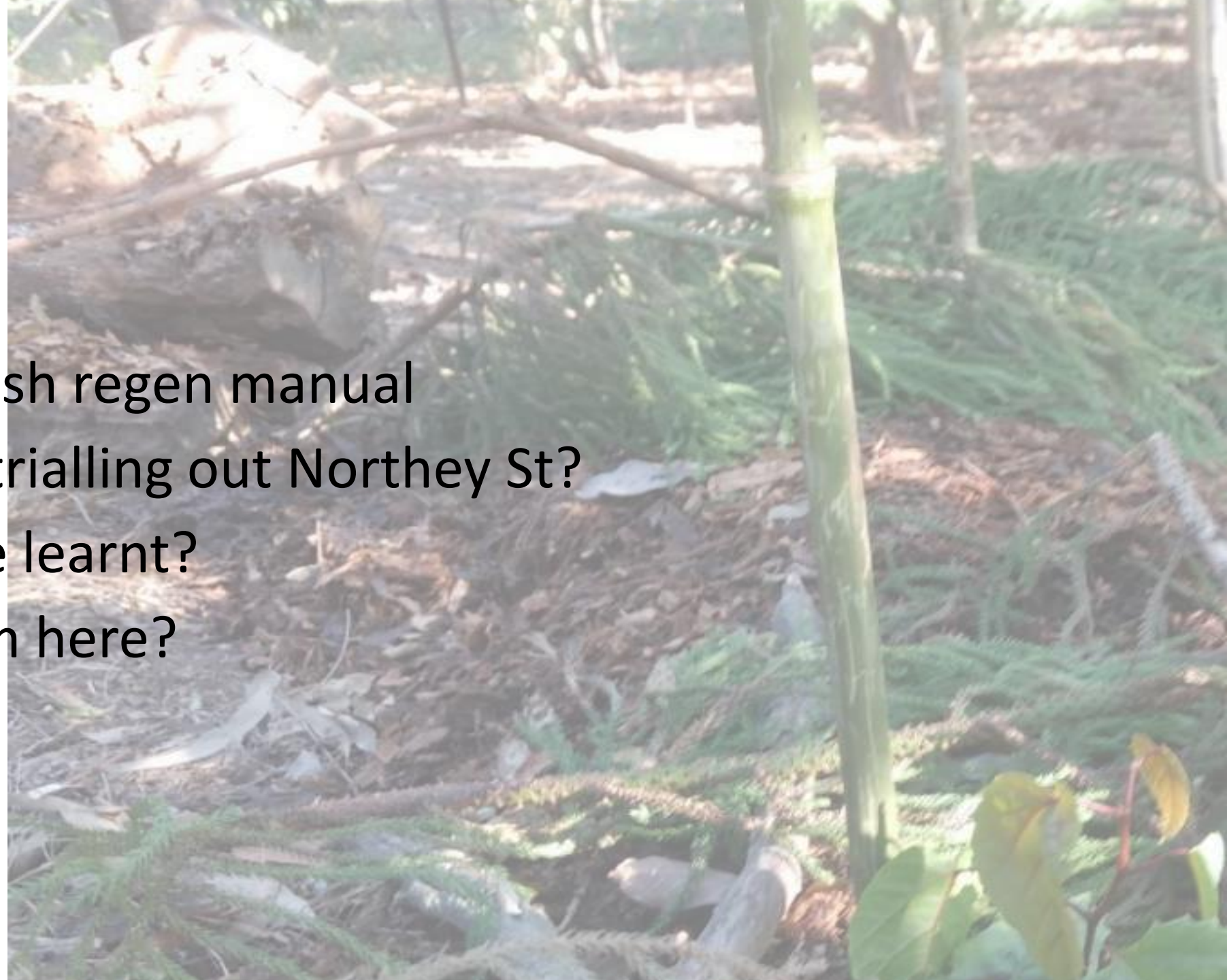
No-dig bush regeneration at Northey St Habitat Brisbane

How can we regenerate native vegetation SAFELY on contaminated lands?

Ko Oishi – Farming Manager at Northey Street City Farm



- Context
- BCC no-dig bush regen manual
- What we are trialling out Northey St?
- What have we learnt?
- Where to from here?

1972

Northey Street 1972, Map 320

Aerial photography owned by Brisbane City Council

NOW

Northey St Habitat Brisbane Area (Approx. 1.4 acres)

Who is involved at the moment?

Participants:

- A few volunteers from Northey Street City Farm;
- Work for the Dole Participants at Northey Street City Farm; and
- Community Living Association – Cert 1 in Land and Conservation Management participants.

Community Conservation Partnerships Program

Version_24.1.18

No Dig and Bushcare Maintenance Activities Reference Manual

This manual outlines approved maintenance and no-dig activities that can be applied where **low risk conditions exist** as determined by the Risk Screening Tool for Bushcare Sites on EMR sites.

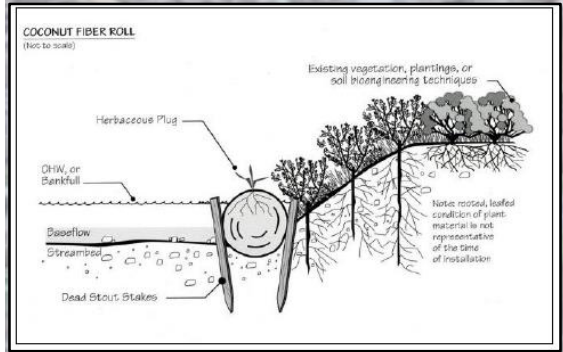
Habitat Sausages

'Habitat sausages' are hessian socks or bags filled with clean growing medium. They are installed, then planted into with grasses or ground cover species* in enviro-cells** Habitat sausages are held in position with hardwood stakes (to depth of approx. 200mm) or stabilisation pins (to depth of approx. 150mm). Stakes and pins are driven in (i.e. no digging).

Coir Log Installation

Purpose

To manage erosion issues & reduce possible further exposure of uncontrolled fill / contaminants.



Photos and text provided by BCC Habitat Brisbane (2018)

Surface layering of grass & herb cuttings

This is a planting technique to support the establishment of a mat of stoloniferous grasses.
This planting technique is currently being trialled by Northey St Revegetation Group.

Direct Seeding

Dispersal of suitable grass and ground cover species (see Appendix 1) by direct seeding into in-situ soil.

Photos and text provided by BCC Habitat Brisbane (2018)

Seed 'bombing'

This is a popular permaculture technique where by seed 'bombs' are made using a mixture of clay, sand and soil with suitable grass and ground cover seed stock embedded into the ball. Seed bombs are installed by simply dropping them on the soil surface. It is important to either water them in well, or to install before heavy rains.

Text provided by BCC Habitat Brisbane 2018
Photos provided by Milkwood Permaculture – 2011.

Native species within the bush regeneration area at Northey Street City Farm

- **Canopy tree species are well established, these include:**
  - *Commersonia bartramia* (Brown Kurrajong);
  - *Guioa semiglauca* (Guioa);
  - *Ficus virens* (White Fig);
  - *Eucalyptus tereticornis* (Red Forest Gum);
  - *Araucaria cunninghamii* (Hoop Pine)
  - *Aphananthe philippinensis* (Native Elm)
  - *Diploglottis campbellii* (Small-leave Tamarind)
  - *Grevillea robusta*
  - *Castanospermum austral*
  - *Diploglottis australis*
  - *Macadamia integrifolia*
  - *Polyscias elegans*
  - *Cupaniopsis anacardioides*
  - *Harpullia pendula*
  - *Ficus rubiginosa*

- **Understorey species include:**
  - *Harpullia pendula* (Tulipwood);
  - *Livistona humilis* (Cabbage Palm);
  - *Acacia sp.*
  - *Mallotus phillipensis*
  - *Sterculia quadrifida* (Peanut Tree);
  - *Ficus coronata* (Sandpaper Fig);
  - *Hibiscus tiliaceus* (Cottonwood);
  - *Pipturus argenteus;*
  - *Melaleuca linifolia*
  - *Melaleuca salignus*
  - *Macaranga tanarius*
  - *Backhousia myrtifolia*
  - *Waterhousia floribunda*
  - *Streblus brunonianus*
  - *Alectryon tomentosus*
  - *Podocarpus elatus*

- **Groundcover species include:**
  - *Commelina diffusa*
  - *Lomandra longifolia*
  - *Tetragonia tetragonioides* (NZ Spinach)
  - *Crinum sp.* (Swamp Lily)
  - *Alpinia caerulea*
  - *Eustrephus latifolius*
  - *Cissus antarctica*
  - *Hardenbergia violacea*

Regeneration challenges

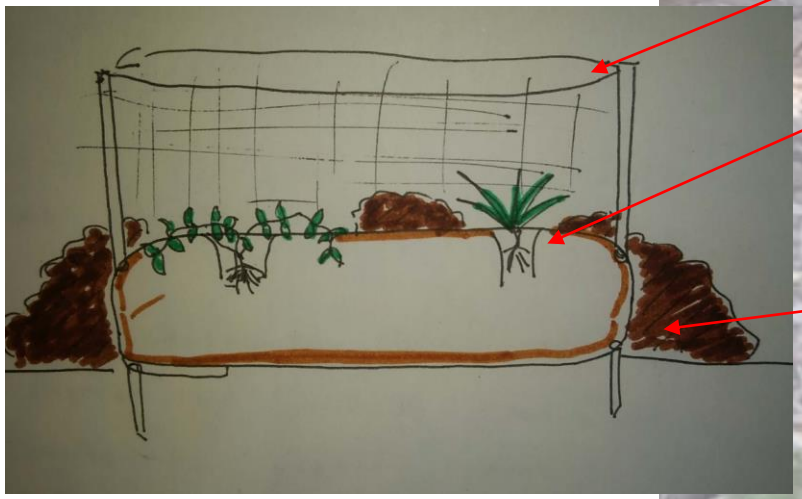
- Currently, our bush regeneration site lack native species in the understorey and ground cover and dominated by *Commelina benghalensis, Callisia repens,* and *Dyschoriste depressa.*
- Challenging to restore native ground cover when it is mostly shaded at the ground level.

No-dig bush regeneration strategy at Northey Street City Farm Habitat Brisbane Site

- Surface planting
- Cardboard Tube planting
- Hessian bag planting

How does it work?

Hessian bag planting



Chicken wire and bamboo stake

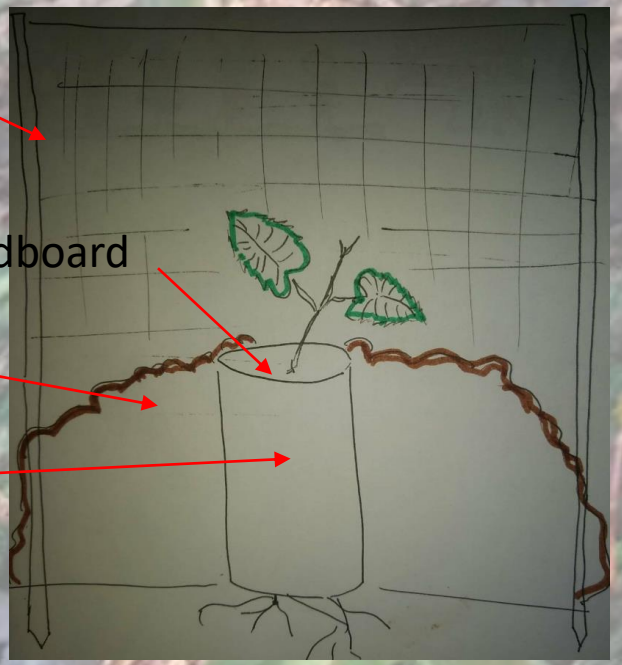
Large coffee hessian bag filled with compost

Seedling planted in compost in cardboard

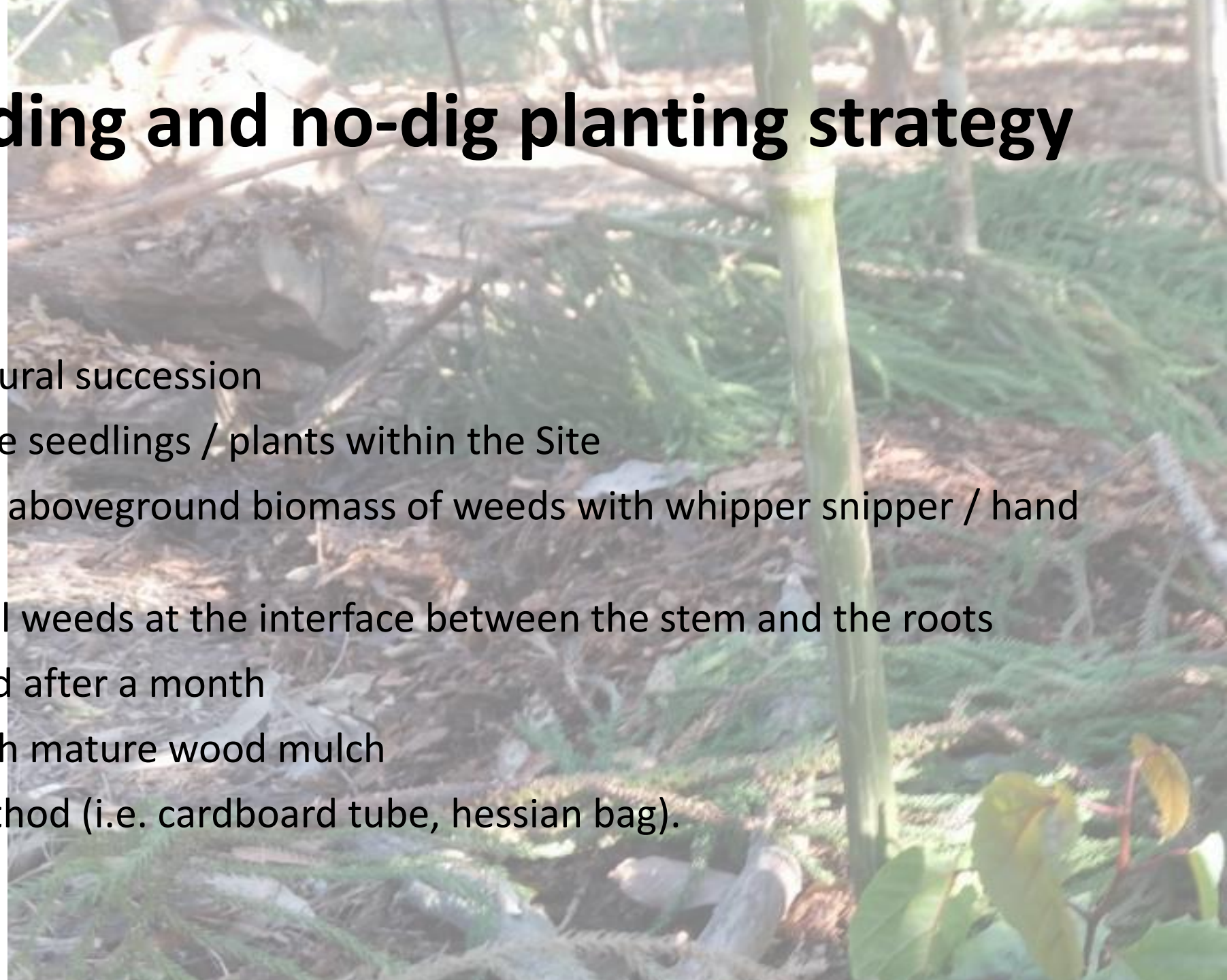
Mature wood mulch

Cardboard Tube

Cardboard tube planting



Steam weeding and no-dig planting strategy



Site Preparation:

- Mark out Site
- Identify signs of natural succession
- Flag and stake native seedlings / plants within the Site
- Remove majority of aboveground biomass of weeds with whipper snipper / hand sickle
- First Steam Weed all weeds at the interface between the stem and the roots
- Second Steam Weed after a month
- Heavy mulching with mature wood mulch
- No-dig planting method (i.e. cardboard tube, hessian bag).

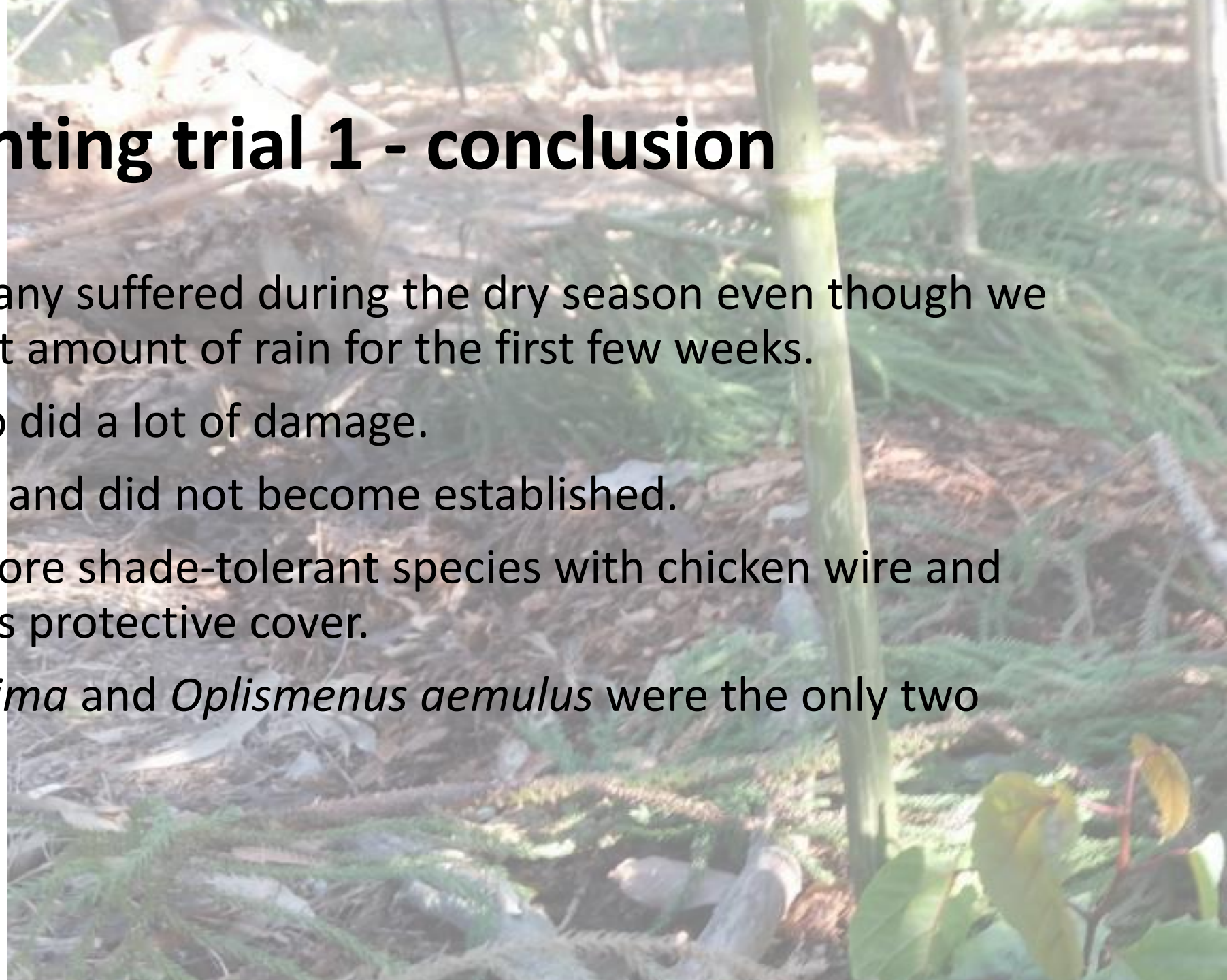
Steam weeding trial

Surface planting trial 1

Surface planting after 4 weeks of planting

Surface planting trial 1 - conclusion

- Unfortunately many suffered during the dry season even though we received a decent amount of rain for the first few weeks.
- Bush turkeys also did a lot of damage.
- Most plants died and did not become established.
- Need to trial a more shade-tolerant species with chicken wire and bamboo stakes as protective cover.
- *Ottochloa gracillima* and *Oplismenus aemulus* were the only two species trialled.



Hessian bag planting trial 1

- *Oplismenus aemulus* (Weeping Basket grass) – Partial shade
- *Alchornea ilicifolia* (Native Holly) – Partial shade
- *Cymbopogon refractus* (Barbed wire grass) – Full sun
- *Themeda triandra* (Kangaroo Grass) – Full sun

Hessian bag planting trial 1 conclusion

- Requires more protection from vermin, and wildlife.
- The most successful species was *Oplismenus aemulus*. They became fully established.
- Needs to be watered for at least a month during the establishment period.

Cardboard planting day 1

- *Imperata cylindrica* (Bladey Grass) - In sunny areas
- *Cissus antarctica* (Native Grapevine) – partial to complete shade
- *Geitonoplesium cymosum* (Scrambling Lily) - Shade
- *Carex appressa* (Tall Sedge) – Full sun
- *Wikstroemia indica* (Tie Bush) – Partial Shade
- *Lomandra multiflora* – Partial shade – full sun

Cardboard tube planting trial 1 - conclusion after 1 month:

- Seedlings not affected by vermin / bush turkeys survived and became well established.

Successful species include:
Cissus antarctica (Native Grapevine), *Imperata cylindrica* (Bladey Grass), *Geitonoplesium cymosum* (Scrambling Lily), *Wikstroemia indica* (Tie bush), *Carex appressa* (Tall Sedge).

Hessian bag planting trial 2

- *Cissus antarctica* (Native Grape Vine - in partially shaded areas)
- *Alpinia caerulea* - in partially shaded areas)
- *Geitonoplesium cymosum* (Scrambling Lily) - both partially shaded areas and sunny areas)
- *Banksia integrifolia* - sunny area opening
- *Austromyrtus dulcis* (Midyim Berry) - sunny area
- *Dianella caerulea* (Flax lily) – Partial shade
- *Enchylaena tomentosa* (Saltbush) – Full sun

Hessian bag trial 2 - conclusion

All seedlings established well after 1 month as long as they were protected from bush turkey damage.

Hessian bag planting trial 3 (not yet completed)

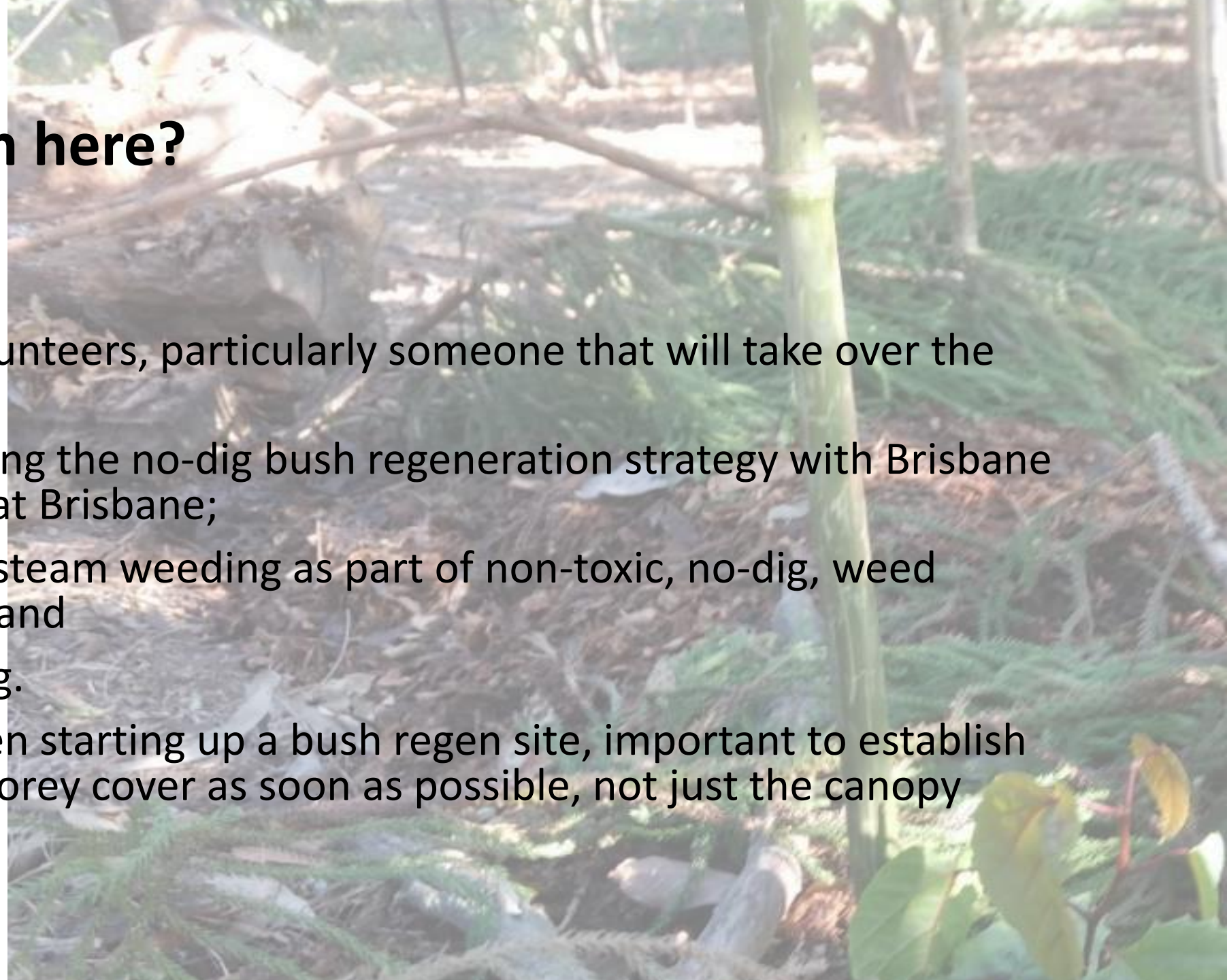
- *Geitonoplesium cymosum* (Scrambling Lily) - both partially shaded and full sun
- *Banksia integrifolia* – Full sun
- *Senna acclinis* (Brush Senna) – Partial / Full sun
- *Acacia fimbriata* (Brisbane Golden Wattle) – Full sun
- *Leptospermum polygalifolium* (Jellybush) – Full sun
- *Cymbopogon refractus* (Barbed wire grass) – Full sun

Where to from here?

Future aims:

- To attract new volunteers, particularly someone that will take over the coordination;
- Continue developing the no-dig bush regeneration strategy with Brisbane City Council Habitat Brisbane;
- Continue trialling steam weeding as part of non-toxic, no-dig, weed removal strategy; and
- Trial seed bombing.

Consideration: When starting up a bush regen site, important to establish ground and understorey cover as soon as possible, not just the canopy species!



Questions to the audience

- Are there any native ground cover species that will germinate easily under partial shade?
- Are there any native ground cover species that will outcompete weed species such as *Dyschoriste depressa, Callisia repens* and *Commelina benghalensis?*
- Will Steam Weeding replace the use of Glyphosate?
- Are there any other no-dig bush regeneration strategy you know of or are trialling?

Any questions or comments?