

Cyclone Seroja

Environmental Impacts and Future Planning

Background

On 12th April 2021, Tropical Cyclone Seroja ripped across a 1000km stretch of Western Australia leaving a trail of destruction in its wake. This report has been initiated to get an idea of the environmental impacts of the Cyclone and to help determine a practical course of action from here.

With little information collected about the environmental impacts to date, the Moore Catchment Council have sought to address this. A drop-in event was organised on the 13th April 2022 at the Latham Sports Club as an opportunity for affected landholders to share their personal experiences on their properties and to begin discussions about what could be done from here. On hand to give additional advice were Ian Pulbrook of Greenoil Tree nursery. Ian has considerable experience in successful revegetation practices for this landscape. Fiona Falconer also attended, Fiona is a local farmer with huge experience in landcare in agricultural environments, including many years working as a Land for Wildlife officer and extensive knowledge of the local flora and fauna.

The Questionnaire

Below is a summary of the questionnaires shared with the landholders:

Background & Initial Devastation

- Could you estimate the number of trees/shrubs you have lost? (From Low <50 trees to Extreme >5000 trees)
- Did you notice that any particular species were more greatly affected and if so, what?
- What age were the trees and shrubs affected?
- Where did damage occur and could you estimate the %'s of these areas affected– e.g., fencelines, remnant vegetation, windbreaks, breakaway country, hilltops, plantations, all the above
- Have you noticed the loss of wildlife breeding trees (e.g., hollows) – Yes, No, Unsure, Comments

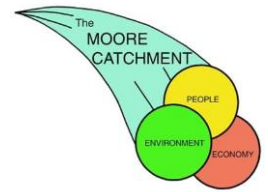
Knock-on effects over the 12 months since the Cyclone

- Have you noticed any changes in wildlife in the last 12 months – e.g., different species around, fewer or more baby birds, fewer or more insects, wildlife in general etc...?
- Have you experienced other damage and impacts because of the cyclone e.g., wind/water erosion, pest problems,
- Any other comments?

Future Planning

- What would you like to do on your property to recover from the cyclone (e.g. plant trees and shrubs to replace what has been lost, plant more than was lost/ any other ideas;
- Do you need assistance in planning and paying for these recovery plantings? Y/N – any comments?
- Who do you think should pay for recovery plantings? Landholder? Govt? Other?
- How do native trees and shrubs benefit your property in general and specifically?
- Any other comments?

The drop in event was well attended. Several landholders were unable to get there for various reasons and they were contacted individually by phone or face to face and the questions above were discussed.



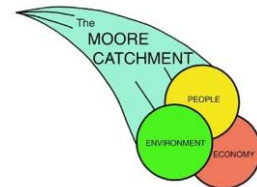
Summary of Landholder Feedback

Damage Sustained

- Significant damage to vegetation, very difficult to estimate the extent.
- Remnant vegetation massively impacted – difficult to walk through due to the amount of fallen trees and debris, making it harder to estimate extent of tree/shrub loss.
- Very difficult to know the effects on wildlife, a number of landholders reported definite loss of old large trees with nesting hollows.
- Species affected in particular – large old Salmon Gums (*Eucalyptus salmonophloia*), Jam Trees (*Acacia acuminata*), Sheoaks and Melaleucas
- All areas of properties affected – hilltops and shallow gravel country, breakaways, remnants, windbreaks, fence lines. (Certain areas more susceptible and higher % loss of vegetation on hilltops/breakaway and shallow soils). Fenceline damage is often highlighted because cleaning up fence lines and repairing fences has been a priority task for landholders.
- Heavy loss of vegetation has thinned out remnant vegetation to the point where it is less effective as a windbreak
- Some landholders have noticed water erosion from increased runoff, plus wetter valley floors (noting that 2021 was an above average rainfall winter, in addition to large rainfall received during the cyclone). There has also been some damage to infrastructure and road due to runoff.
- Majority of landholders have not noticed changes in wildlife numbers or which species are around/not around*(please see comments in appendix from Fiona Falconer)

Future Planning and Recovery

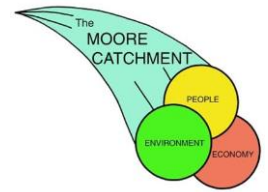
- Most landholders have indicated that they would like to plant trees and shrubs to replace those that have been lost, plus plant additional stems strategically to help with planning or mitigation of potential future significant wind events.
- General consensus that some assistance would be needed to plan strategic revegetation.
- General consensus that revegetating or recovery of remnants poses the greatest challenge – and would probably need to be handplanted, outside help would be needed (physical help to do the work, plus advice on what to do, and financial assistance) if any recovery of remnants was to take place.
- General consensus that there should be some financial assistance to help with environmental recovery costs – most landholders expressed that they would be willing to do site preparation and tree planting if the cost of seedlings was covered or subsidised.
- Most landholders would like to see more trees/shrubs in the landscape – many have identified areas such as the low-lying valley floors as areas they want to improve. Although not the main areas impacted, there could be some landscape scale benefits to helping landholders increase vegetation in these areas making the overall landscape more resilient.
- Several comments that it would be good to know what other options are possible to help with recovery beyond simply tree-planting. An opportunity to learn from what has been done in other places would be really beneficial.
- 12 months on from the cyclone, there are a lot of trees that were damaged that are re-sprouting from broken trunks.
- A few of the farmers we spoke with have indicated that they are replacing/ plan to replace the damaged fences by moving their fences into the paddock (i.e. leaving the damaged



fences and remaining vegetation). They would also be interested in increasing the width of the vegetation along these strips (if costs of trees were covered). This would have an added advantage of creating a more improved windbreak (especially if designed well) and potentially reducing the affects of future significant wind events. This is an opportunity that would be worth exploring further.

Barriers to Implementing Recovery Actions

- **Priority (Time)**
 - Environmental recovery is at the bottom of the priority list after replacing damaged infrastructure including fences, water infrastructure, sheds, silos, homes, etc.
 - There has been an enormous amount of extra work created by the cyclone in terms of clearing up, repairing fences, removing fallen trees from paddocks, and replacing damaged sheds, machinery, windmills etc..., carting water for stock, lack of power, etc. plus dealing with insurance companies and drawn-out claims processes.
 - 12 months on from the cyclone, most farmers are still getting through the list of jobs above.
 - Not much is going to happen without some support and ideally this needs to be financial and coordination support to actually see on-ground outcomes.
- **Cost**
 - Every farmer impacted by the cyclone has been financially impacted already, so cost is a real barrier to undertaking environmental works. There has been financial assistance and other support available to help with some of the recovery costs, but nothing is available for environmental recovery, and this is not a cost covered with general farm insurance policies.
 - Remnant vegetation has no direct impact on business productivity, so for the majority of landholders we spoke with, they would be much more likely to replace trees and shrubs if there was some financial assistance to do this. This is even more likely to be the case with damaged remnants.
- **Knowledge**
 - There are options in addition to tree planting (e.g., cool burns, artificial habitat etc. see below for more detail. These may not be widely known about, or if they are, most landholders may not have the skills or knowledge required to implement them for greatest chance of success).
 - There is no one size fits all approach for landscape recovery due to the variation in vegetation types, soil types etc... throughout the impacted area. What may work in one area may be detrimental in another, and without sufficient knowledge there is potential for causing further damage.
 - This knowledge gap could be addressed through community engagement and extension activities.
- **Lack of Support**
 - Speaking with several landholders there is a clear desire to do something to try and replace some of what has been lost, but it is also clear that if there was some coordination support, the uptake would be much higher.
 - This may include but not is limited to; advice on which species to order from the tree nursery, how to set up the most effective windbreaks, help prioritise areas on their farm to give the greatest impact etc...



The Recovery Options

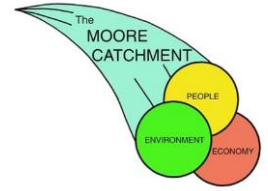
Below are the main options which could help to aid recovery with a brief summary of their pros and cons. Different situations will suit different strategies, and they are not mutually exclusive. A combination of recovery strategies will probably give the greatest impact.

It is key to note that there are hugely different costs, time-commitments and levels of knowledge required to implement these strategies, so what may be the best option is not necessarily the most practical or easiest to achieve.

- **Revegetation:**

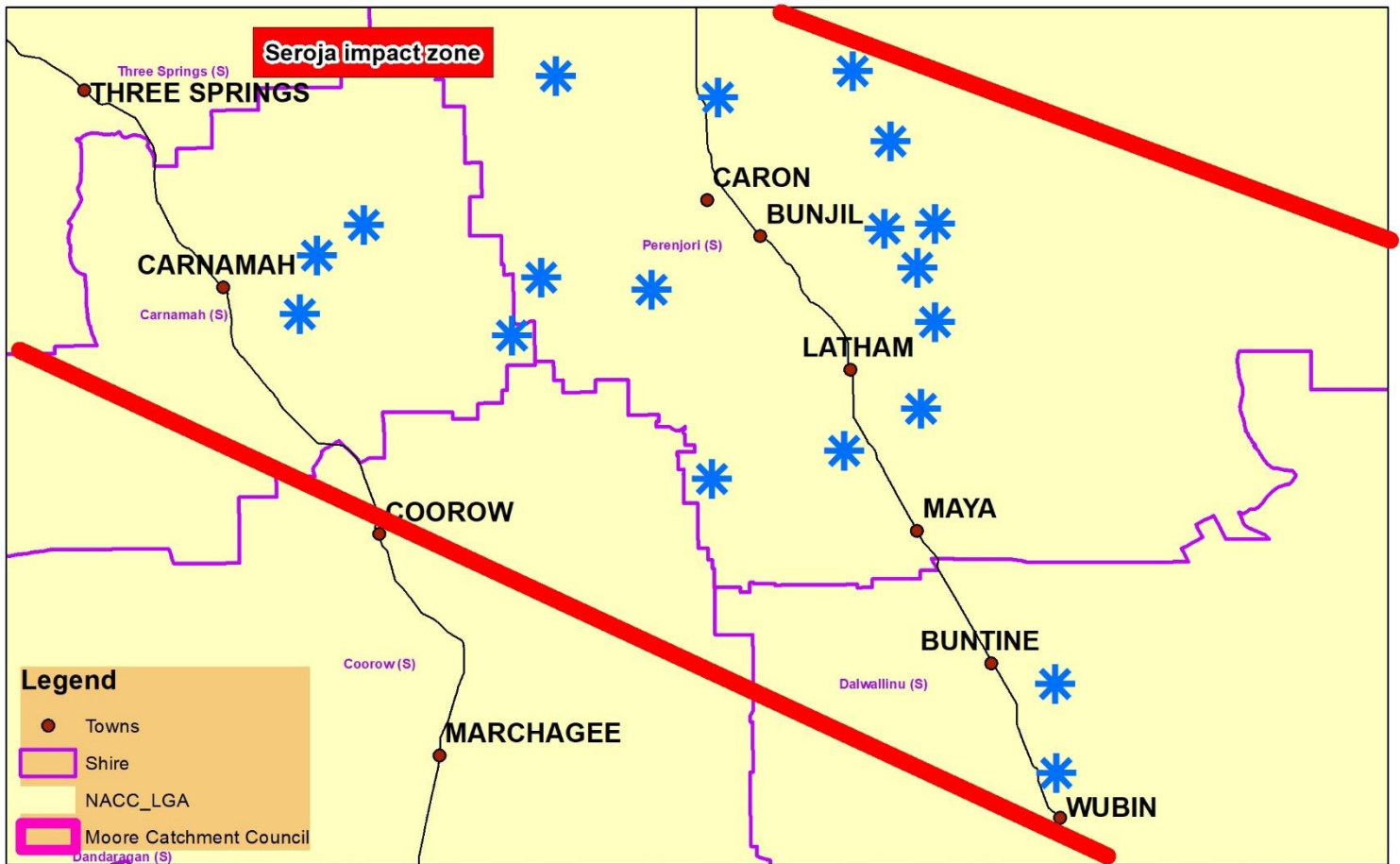
This covers a number of options – block planting, windbreaks, along fence lines to increase existing width of windbreaks, and in more difficult spots such as remnants.

 - Revegetation with seedlings costs around \$1000 per hectare
 - Great option for certain areas, for example along boundaries, to create windbreaks or increase width of existing windbreaks
 - Much more difficult to implement in remnant vegetation and other areas such as breakaway country due to difficulties for access to use a tree planter, a lot of fallen trees and debris on the ground etc.
 - Can include or target species that are known to be unsuccessful at natural regeneration (Salmon Gums, Gimlets in particular)
 - Weed control will be really important in remnants to see good re-establishment
- **Cool Burns**
 - An inexpensive option which could be used to assist large areas.
 - Guarantee that seedlings that germinate are provenance.
 - Suitable for certain vegetation communities (eg York gum/jam woodland) but inappropriate for others (eg Sheoaks dominated areas with shallow soils) – so education is essential or may cause more harm than good.
 - Burns should be in mosaic form not blanket burning.
 - Best time for these works is during April/May when landholders are very busy with seeding, so additional support would be required.
 - May require additional weed control to allow tree and shrub seedlings to flourish.
- **Do nothing and allow natural regeneration to occur**
 - Lowest cost option
 - More suitable for properties without livestock unless areas are fenced off
 - Weeds control will be really important to see good natural regeneration.
 - Slow
 - Some disturbance may be required (e.g. fire) to stimulate the natural recovery.
 - Some species regenerate more successfully than others – with Salmon Gums being particularly noted as not very good at natural regeneration.
- **Artificial nesting hollows/Bat boxes etc.**
 - Revegetation cannot replace old trees with nesting hollows/habitat functions so installing nesting boxes for different birds and mammals is another option.
 - Potential to engage the wider community in the construction of the boxes including schools, Mens Sheds etc...
 - Will have an immediate impact.

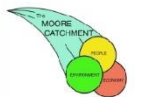


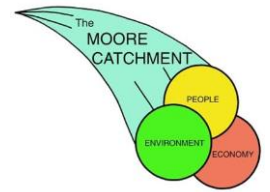
• **Community Education on options for recovery**

- Provide information sessions or educational materials to highlight various options that could be implemented.
- Potential to reach a lot of people for relatively low cost.
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- Will help to overcome knowledge barriers and highlight the availability of lower cost and time options that could help aid recovery, in turn making it more likely that landholders will implement some of these strategies.



Cyclone Seroja community engagement & rehabilitation project 2021 -
Landholder interview locations (blue stars) within Seroja impact zone





Appendix

Comments and observations from Fiona Falconer:

*Although farming in Waddy Forrest, just out of the region directly impacted by the Cyclone, Fiona has huge knowledge of the local environment, and has been dedicated to this for decades. Fiona formerly worked for the Land for Wildlife program and we have included her observations about the loss of habitat, as it is very apparent through conversations with most farmers that they are not aware of the types or extent of damage to habitat. Fiona also has a lot of valid input for ways of encouraging and promoting local recovery efforts.: **Observations:** Main tree species affected are Salmon Gums and York Gums, main shrub species are *Allocasuarina campestris*, *Melaleuca* species in general and *Acacia acuminata*. Significant damage to trees greater than 200 years old (i.e. trees with hollows). Of planted trees, eucalypt species have suffered most damage (although this may be as they are one of the main species planted). Significant damage has taken place on remnant native vegetation on ridgelines, and also to isolated paddock trees. Obvious loss of wildlife breeding trees. In the last 12 months, Fiona has noticed fewer birds including fewer baby birds, less wildlife in general. Probably fewer insects but hard to know. Other problems include the loss of habitat for hollow-dependent species (e.g., owls, bats etc...). Damage to roadside and rail reserve vegetation. Decline in the resilience of native vegetation corridors with an impact on the ability of birds, insects, spiders, mammals etc. to move across the landscape (i.e., increases their vulnerability).

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natural resource
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