

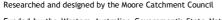
Native revegetation guide for the Moore River Catchment



A practical guide to native revegetation by soil type in the Moore River catchment

















Welcome



Thinking of doing a native revegetation project in the Moore River catchment region but don't know where to start? This booklet could be for you!

Simple hints and tips to get your native revegetation project off to a flying start. Inside are helpful planning tips, tools and ideas for native species to suit your soil type and location. What are you waiting for.....get planning, get planting!

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Why revegetate with natives?

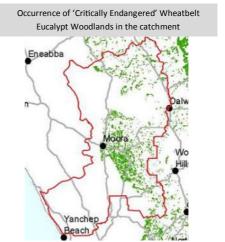


Widespread clearing for agriculture, horticulture and urbanisation has left the Moore's remnant vegetation vulnerable, fragmented and in some cases critically endangered. East of Moora on the favourable farming soils, only 8-13% remnant vegetation remains. This figure is nearer 40-55% remaining remnant vegetation on the sandy soils west of Moora.

Revegetation of degraded land with local native species is an important task to help restore native habitat for overall catchment health, and to help indigenous flora and fauna survive and thrive. Some bird species such as Carnaby's Black Cockatoo and Malleefowl are now endangered and need urgent restoration of native habitat to survive. The Australian Government's Environment Protection and Biodiversity Conservation Act 1999 (EPBC) has recently recognised the rapid decline of two WA ecological communities that occur in the catchment and have registered them as 'critically endangered' (see below). Moore land managers need to protect what remnant vegetation is left and also restore native vegetation to ensure conservation of WA natural assets into the future.



More info: http://www.environment.gov.au/cgi-bin/sprat/public/publicshowcommunity.pl?id=131&status=Endangered



More info: http://www.environment.gov.au/cgi-bin/sprat/public/publicshowcommunity.pl?id=128

80% of the catchment is classed as agricultural land which makes private landholders the main custodians of Moore River catchment natural ecological assets. Problematic issues affecting agricultural practices, such as wind and water erosion and salinity, can be reduced through strategic revegetation using native species reinstalled into the landscape. Healthy agricultural landscapes encompasses plenty of native vegetation which help promote beneficial insects, water harvesting and better soil health which helps for productive and efficient farming long term.

This booklet will help guide land managers with revegetating their land by soil type using local native species available as seedlings from nearby accredited nurseries.



Planning your revegetation project



Good planning is critical to a successful project. Revegetation projects need to be planned 12 months in advance. Seedlings have to be ordered October-December the previous year and site preparations need to be carried out before planting June- August. Consider contacting your local landcare group who can guide you through the planning needed and also maybe able to help finance the project.

You've decided to do some revegetation. What do you need to do? Follow these 6 points to achieve a successful revegetation project using seedlings:

1) Get to know your site

- What is the soil type?, where in the catchment? pH? Dig a test hole to determine soil type. Use maps on page 6 to help ID soil type;
- Where in the landscape is the site? Creekline (does it get boggy in winter? Salty?), middle of paddock (access issues?), stock paddock (protection needed?), high in landscape (wind issues?).

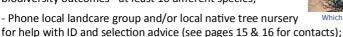


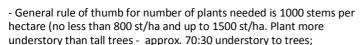


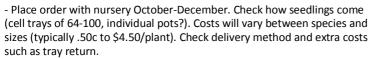


2) Select which species of native plants to grow and how many

- What species are already growing there? Use map on page 7 and related pages to help narrow possibilities. Generally you need a mix of trees and understory to ensure the best biodiversity outcomes - at least 10 different species;









Which Eucalypts to pick?





Nursery seedlings

3) Keep the animals out!

- Newly planted seedlings are tasty to farm animals, and local native and feral wildlife. Does the site need fencing before planting to keep out farm animals? Could there be a problem with kangaroo damage? Use a fencing standard according to need;
- Are rabbits (and/or foxes/goats/pigs) an issue at the site? Consider 1080 baiting or other methods of control. Contact your local Department of Primary Industries & Regional Development (Ag Department) for more advice.



Fence site off from animals

4) Soil preparation for success

- Spending extra time and effort preparing the soil pre-planting is a major key to success long term. Weeds will compete with your seedlings. Carry out adequate weed control before planting;
- Mound or rip? Seedlings need free draining soil to grow. A wet and/or salty site should be ripped and mounded to raise growing zone above water/salt. Adequately rip sandy drier sites. A ripper/scalper will give a good planting zone. Check with landcare group for machine hire;
- Planting configuration depends on project. Nature isn't straight lines but whatever works best for you. Aim to leave at least 2m between rip lines/mounds.



Ripping and scalping



Ripping and mounding

5) Planting time

- Plan to plant after good rains only, in June to August. Never plant seedlings into dry soil;
- Check delivery or pick up times with nursery. Plan to have seedlings less than a few days before planting to minimise drying out. Keep seedlings well watered on delivery and water well before planting;
- Hand or machine plant? If mounded, then hand plant using a hand tree planter or shovel. Non-mounded sites offer the choice of hand planting or machine (such as Chatfields tree planter). Check local landcare group for hire of hand tree planters;
- Mix up seedlings to achieve a good spread of species rather than a line of the same. If planting on soil partly affected by salinity or waterlogging, be mindful of which species won't tolerate this environment and plant them higher in landscape;
- When planting each seedling, aim to plant as deep as possible especially in sandy soils. Don't be afraid to plant root ball plus half the stem to prevent death from drought:
- Water in seedlings if needs be. Don't potentially waste your efforts by not watering. Consider using tree guards to protect from pests and adverse weather.



Hand planting with planter



Tree guards

6) Aftercare - don't forget about you new plantings!

- Check your seedlings a couple of weeks after planting and provide water if necessary regularly for a few months if no rains to ensure a good establishment. The biggest test for the seedlings is getting through summer. Check and water if necessary;
- Monitor for animal and pest (locusts etc) damage and control where necessary;
- Gauge success 6 months post planting, note species which did/didn't live and plan to order extra seedlings for infill if needed. 70-80% survival is considered a good success rate.
- Take photos to document success, changes in landscape and knock on effects ie reduced salinity, water erosion;



Before



After

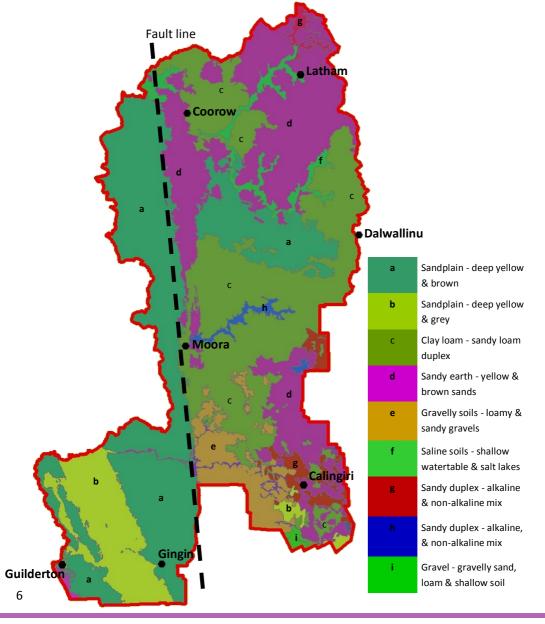
- Give yourself a pat on the back for helping to restore the Moore's natural environment.



Moore Catchment soil types



Geologically, the catchment features two main distinct soil types separated by the Darling Fault. This fault runs north-south through Moora and is marked by the course of the Moore River. To the east lies very ancient (over 2 billion years old) rocks of the Yilgarn Craton which features fertile red soils. To the west of the fault lie the younger rocks of the Dandaragan Plateau covered with poor sandy or gravelly soils. This differing geology has led to a variety of different botanical districts.

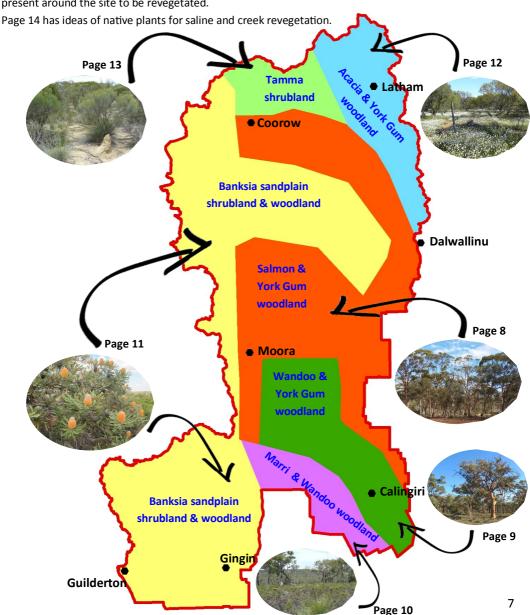




Moore Catchment vegetation associations



Below is a simplified map of the 7 main vegetation associations present in the Moore catchment. The native vegetation present is directly related to soil type. Turn to the page representative of your site. There are pockets of other vegetation types within the main associations ie sandy spots, gravel outcrops, saline creeks, wetlands, Tuart and Marri woodland, Melaleuca thickets etc so check what is naturally present around the site to be revegetated.





Salmon & York Gum woodland





Notes

- Red to yellow sandy loam soil over clay in low-lying and gentle hilly country. Some rocky outcrops. Note salt tolerant species for low lying wet areas
- In addition to the below species, Wandoo (E wandoo) may also feature in sandier areas. Gimlet (E salubris) and Merrit (E flocktoniae) may also be present.

	Species	Common name	Salinity tolerant	Water logging tolerant	Comments
Trees >10m	Casuarina obesa	Swamp Sheoak	$\checkmark\checkmark$	✓	Good wind break tree
	Eucalyptus camaldulensis	River Gum	$\checkmark\checkmark$	✓	Grows very large quickly
	Eucalyptus loxophleba	York Gum		✓	Great all rounder
	Eucalyptus salmonophloia	Salmon Gum			Important for birdlife
	Eucalyptus salubris	Gimlet			Good for heavy soils
Trees <10m	Acacia acuminata	Jam		✓	Easy to establish
	Acacia microbotrya	Manna gum	✓	✓	Easy to establish
	Hakea recurva	Djarnokmurd			Important for birdlife
	Hakea preissii	Needlebush			Important for birdlife
	Santalum acuminatum	Quandong			Edible fruits, plant seeds
Shrubs	Acacia hemiteles	Tan wattle		✓	Easy to establish
	Atriplex amnicola	River Saltbush	$\checkmark\checkmark$	✓	Great all rounder
	Atriplex nummularia	Oldman Saltbush	$\checkmark\checkmark$	✓	Great all rounder
	Callistemon phoeniceus	Lesser Bottlebrush	✓	✓	Red flowers
	Hakea scoparia				Pink flowers
	Melaleuca eluterostachya	Hummock Honey Myrtle	✓	✓	Great all rounder
	Melaleuca uncinata	Broombush	✓	✓	Good screening bush
	Melaleuca viminea	Mohan	✓	✓	Good screening bush



Wandoo & York Gum woodland





Notes

- Sandy, often pale sands, and gravelly soils. Gentle hilly country with gravel/laterite breakaways
- In addition to the below, Salmon Gum (E salmonophloia) may also feature in heavier soils. Marri (C calophylla) may feature on southern and western fringes.
- Parrot bush (*Dryandra sp*) thickets feature on thin gravelly soils and Tamma may dominate low lying wetter soils.

	Species	Common name	Salinity tolerant	Water logging tolerant	Comments
Trees >10m	Eucalyptus accedens	Powerbark Wandoo			Important for birdlife
	Eucalyptus loxophleba	York Gum		✓	Great all rounder
	Eucalyptus wandoo	Wandoo, White Gum			Important for birdlife
Trees <10m	Allocasuarina campestris	Tamma		✓	Important for birdlife
	Acacia acuminata	Jam		✓	Easy to establish
	Acacia microbotrya	Manna gum	\checkmark	✓	Easy to establish
	Acacia saligna	Golden Wreath wattle		✓	Easy to establish
	Eucalyptus macrocarpa	Mottlecah			Stunning red flowers
Shrubs	Acacia erinacea	Spiny wattle	✓	✓	Easy to establish
	Atriplex amnicola	River Saltbush	$\checkmark\checkmark$	✓	Great all rounder
	Banksia sessilis	Parrot bush			Gravelly soils
	Banksia nivea	Honeypot Dryandra			Ground dwelling plant
	Calothamnus sanguineus	Silky-leafed Blood flower			Red flowers
	Grevillea petrophiloides	Pink Pokers			Stunning pink flowers
	Hakea lissocarpha	Honeybush			Honey aroma flowers
	Hakea trifurcata	Two-leafed hakea			White flowers
	Melaleuca lateritia	Robin Red-breast		✓	Red flowers
	Melaleuca viminea	Mohan	✓	✓	Good screening bush



Marri & Wandoo woodland





Notes

- Sandy and loamy gravelly soils. Range of colours.
 Undulating country with rocky outcrops.
- Northern extent of Jarrah (E marginate) in WA. In addition to the below species, may find York Gum (E loxophleba) and Blackbutt (E todtiana) on fringes.
- Important forage and breeding habitat for the endangered Carnaby's Black Cockatoo.

	Species	Common name	Salinity tolerant	Water logging tolerant	Comments
Trees >10m	Corymbia calophylla	Marri, Red Gum		✓	Important for birdlife
	Eucalyptus accedens	Powderbark Wandoo			Important for birdlife
	Eucalyptus marginata	Jarrah			Majestic tree
	Eucalyptus wandoo	Wandoo, White Gum			Important for birdlife
Trees <10m	Acacia acuminata	Jam		✓	Easy to establish
	Acacia microbotrya	Manna gum	✓	✓	Easy to establish
	Acacia saligna	Golden Wreath wattle	✓	✓	Easy to establish
	Banksia attenuata	Slender Banksia			Yellow flowers
	Banksia littoralis	Swamp Banksia		✓	Yellow flowers
	Banksia menziesii	Firewood Banksia			Red flowers
Shrubs	Banksia nivea	Honeypot Dryandra			Ground dwelling plant
	Callistemon phoeniceus	Lesser Bottlebrush	✓	✓	Red flowers
	Calothamnus quadrifidus	One sided bottlebrush			Red flowers
	Grevillea bipinnatifida	Fuschia Grevillea			Red flowers
	Hakea incrassata	Marble Hakea			White/pink flowers
	Hakea lissocarpha	Honeybush			Honey aroma flowers
	Hakea undulata	Wavy leaf Hakea			White flowers
	Melaleuca lateritia	Robin Red-breast		✓	Red flowers



Banksia sandplain shrubland & woodland





Notes

- Deep white, grey and pale sands. Undulating ridges with sand over gravel. Water repellent, well draining and nutrient poor.
- Marri (C calophylla) can dominate in places and Blackbutt (E todtiana) features on higher country. Paperbarks are located on wetter country. Tuarts (E gomphocephala) are found along the Gingin Brook/Moore River in the south.

	Species	Common name	Salinity tolerant	Water logging tolerant	Comments
Trees >10m	Casuarina obesa	Swamp Sheoak	\checkmark	✓	Good wind break tree
	Corymbia calophylla	Marri, Red Gum		\checkmark	Important for birdlife
	Eucalyptus gomphocephala	Tuart		\checkmark	Majestic tree
Trees <10m	Banksia attenuata	Slender Banksia			Yellow flowers
	Banksia littoralis	Swamp Banksia		✓	Yellow flowers
	Banksia menziesii	Firewood Banksia			Red flowers
	Banksia prionotes	Acorn Banksia			Yellow/orange flowers
	Eucalyptus todtiana	Blackbutt			Mallee tree
	Melaleuca rhaphiophylla	Paperbark	$\checkmark\checkmark$	✓	Good creek line tree
Shrubs	Banksia carlinoides	Pink Dryandra			Aromatic flowers
	Banksia leptophylla				Low growing banksia
	Beaufortia elegans	Elegant Beaufortia			Pink Flowers
	Beaufortia squarrosa	Sand Bottlebrush			Orange flowers
	Calothamnus quadrifidus	One sided bottlebrush			Red flowers
	Calothamnus sanguineus	Silky-leafed Blood flower			Red flowers
	Hakea lissocarpha	Honeybush			Honey aroma flowers
	Melaleuca scabra	Rough Honeymyrtle			Pink flowers
	Melaleuca viminea	Mohan	✓	✓	Good screening bush



Acacia & York Gum woodland





Notes

- Pale sands often over gravel and sandy loams over clay/ gravel. Undulating country with salinity issues featuring in low-lying country and some rocky outcrops.
- Generally good soil type for revegetation projects. Soil easy to prepare and holds moisture well.
- Pockets of banksia sandplain ecological community may be present in region.

	Species	Common name	Salinity tolerant	Water logging tolerant	Comments
Trees >10m	Eucalyptus loxophleba	York Gum		✓	Great all rounder
Trees <10m	Allocasuarina campestris	Tamma		✓	Important for birdlife
	Acacia acuminata	Jam		✓	Easy to establish
	Acacia microbotrya	Manna gum	✓	\checkmark	Easy to establish
	Acacia neurophylla	Wodjil			Easy to establish
	Hakea recurva	Djarnokmurd			Important for birdlife
	Santalum acuminatum	Quandong			Edible fruits, plant seeds
	Santalum spicatum	Sandalwood			Edible nuts, plant seeds
Shrubs	Acacia hemiteles	Tan wattle		✓	Easy to establish
	Atriplex semibaccatta	Creeping Saltbush	\checkmark	✓	Excellent self spreader
	Atriplex amnicola	River Saltbush	\checkmark	✓	Great all rounder
	Callistemon phoeniceus	Lesser Bottlebrush	✓	✓	Red flowers
	Grevillea petrophiloides	Pink Pokers			Pink flowers
	Hakea multilineata	Grass Leafed Hakea			Pink flowers
	Melaleuca eluterostachya	Hummock Honey Myrtle	✓	✓	Great all rounder
	Melaleuca filifolia	Wiry Honeymyrtle			Pink flowers
	Melaleuca uncinata	Broombush	✓	✓	Good screening bush
12	Melaleuca viminea	Mohan	✓	✓	Good screening bush



Tamma shrubland





Notes

- Red pale sandy loam soil over clay. Undulating country with salinity issues featuring in low-lying country.
- Allocasuarinas, Acacias and York Gum dominate the landscape. May feature other Eucalypts such at Pear Fruiting mallee (E pyriformis) and Oil Mallee (E kochii).
- Note salt tolerant species for waterlogged low-lying country.

	Species	Common name	Salinity tolerant	Water logging tolerant	Comments
Trees >10m	Casuarina obesa	Swamp Sheoak	$\checkmark\checkmark$	✓	Great wind break tree
	Eucalyptus loxophleba	York Gum		✓	Great all rounder
Trees <10m	Allocasuarina acutivalvis	Black Tamma			Important for birdlife
	Allocasuarina campestris	Tamma			Important for birdlife
	Allocasuarina huegeliana	Rock Oak			Important for birdlife
	Acacia acuminata	Jam	✓	\checkmark	Easy to establish
	Acacia neurophylla	Wodjil	✓	✓	Easy to establish
	Hakea recurva	Djarnokmurd			Important for birdlife
	Santalum acuminatum	Quandong			Edible fruits, plant seeds
	Acacia pulchella	Prickly moses			Yellow flowers
Shrubs	Atriplex amnicola	River Saltbush	✓	✓	Great all rounder
	Calothamnus gilesii	Claw flower			Red flowers
	Calothamnus quadrifidus	One sided bottlebrush			Red flowers
	Hakea scoparia				Pink flowers
	Grevillea petrophiloides	Pink Pokers			Pink flowers
	Melaleuca uncinata	Broombush	✓	✓	Good screening bush
	Melaleuca eluterostachya	Hummock Honey Myrtle	✓	✓	Great all rounder
	Melaleuca viminea	Mohan	✓	✓	Good screening bush



Salt land & creek revegetation





Notes

- Saline sites can be successfully revegetated but the degree of salinity will determine how long the process will take. Revegetate least salty parts first.
- Mounding the site will help plants establish. Position your mounds to help drain excess salty water away.
- Seek hints and tips from people who have carried out saline projects to ensure best result in difficult situations.

	Species	Common name	Salinity tolerant	Water logging tolerant	Comments
Trees >10m	Casuarina obesa	Swamp Sheoak	$\checkmark\checkmark$	✓	Great wind break tree
	Eucalyptus camaldulensis	River Gum	$\checkmark\checkmark$	✓	Grows very large quickly
	Eucalyptus loxophleba	York Gum		✓	Plant on edge of salt
	Eucalyptus rudis	Flooded Gum		✓	Good creek line tree
Trees <10m	Acacia acuminata	Jam		✓	Plant on edge of salt
	Acacia microbotrya	Manna gum	✓	✓	Plant on edge of salt
	Melaleuca rhaphiophylla	Paperbark	$\checkmark\checkmark$	✓	Good creek line tree
Shrubs	Atriplex amnicola	River Saltbush	✓✓	✓	Great all rounder
	Atriplex nummularia	Oldman Saltbush	$\checkmark\checkmark$	✓	Great all rounder
	Callistemon phoeniceus	Lesser Bottlebrush	✓	✓	Red flowers
	Maireana brevifolia	Bluebush	✓	✓	Excellent self spreader
	Melaleuca eluterostachya	Hummock Honey Myrtle	✓	✓	Great all rounder
	Melaleuca thyoides	Salt Lake honey myrtle	✓✓	✓	Excellent salt buster
	Melaleuca hamulosa	Broombush honey myrtle	✓	✓	Good for birdlife
	Melaleuca uncinata	Broombush	✓	✓	Good screening bush
	Melaleuca viminea	Mohan	✓	✓	Good screening bush
	Rhagodia drummondii	Lake Fringe rhagodia	✓	✓	Excellent self spreader
14	Rhagodia Preissii	Mallee saltbush	✓	✓	Good for birdlife



Help & Resources



Help

Contact your local landcare group for advice and possible funding.



Moore Catchment Council. Moora. Community landcare group which services the Moore River catchment area and is based in Moora.

Phone: 9653 1355 Email: moorecc@bigpond.com

Website: www.moorecatchment.org.au Facebook: moore catchment council



Other landcare and useful local groups which can give revegetation advice:



- West Koojan-Gillingarra LCDC, Gillingarra. Contact: wkglcdc@gmail.com



- Yarra Yarra Catchment Management Group, Perenjori. Community Landcare Group Contact: 9973 1444 Email: landcarecoordinator@yarrayarracatchment.org.au

Website: www.yarrayarracatchment.org.au



- Northern Agricultural Catchments Council (NACC), Geraldton. Regional NRM Group. Contact: 9938 0100 Website: www.nacc.com.au



- Chittering Landcare Group, Muchea. Community Landcare Group. Contact: 9571 0400 Email: chitteringlandcare.org.au Website: www.chitteringlandcare.org.au

Online resources

- Trees & Shrubs for the Midlands and Northern Wheatbelt: https://www.nacc.com.au/wp-content/ uploads/2015/11/Trees-Shrubs-for-the-Midlands-and-Northern-Wheatbelt-2nd-edition.pdf
- Revegetation site-preparation in the WA Wheatbelt Ripping and Mound ploughing: https:// www.dpaw.wa.gov.au/images/documents/conservation-management/salinity/reveg site prep 23-10-02.pdf
- Revegetation guide for the Central and Eastern Wheatbelt: https://drive.google.com/file/ d/0BxbBGvhNwSZPdGh3TWkzQUh1NWM/edit
- Native species planting lists by soil type: http://chitteringlandcare.org.au/reports-publications/ native-species-planting-lists/
- Florabase https://florabase.dpaw.wa.gov.au (comprehensive online WA flora search tool)
- Naturemap https://naturemap.dpaw.wa.gov.au (search tool for local flora (and fauna)) around site
- My Weed Watch www.agric.wa.gov.au/myweedwatcher-information (online and smartphone app weed ID and report tool)

Useful books

- Eucalypts of Western Australia's Wheatbelt, Malcolm French 2012 (bible of Eucalypts in the WA Wheatbelt)
- Western Weeds: A Guide to the Weeds of Western Australia, B. M. J. Hussey 1997 (comprehensive WA weed guide)

Native revegetation guide for the Moore River Catchment

Tree Nurseries

There are a number of good quality tree nurseries accessible to the region. Also a good place to seek advice on species selection and care from the knowledgeable nursery people:

Greenoil Tree Nursery, Mingenew. Ian Pulbrook 9928 1381 or 0428 281 470.

Email: ianpulbrook@gmail.com Good variety of Wheatbelt trees and shrubs in cell trays approx. .50c per seedling. Also planting contractor.

Muchea Tree Nursery, Muchea. Natalie Vallance 9571 4090.

Email: muchtree@nw.com.au Website: www.mucheatreefarm.com.au Large variety of species, especially Banksias, Hakeas & Grevilleas in pots. Price range \$1.20 - \$4.50.

Wongan Tree Nursery, Wongan Hills. Denis & Ellen Mitchell 9671 1979.

Email: wongantrees@westnet.com.au Good variety of Wheatbelt trees and shrubs in cell trays approx. .50c per seedling.

Chatfields Tree Nursery, Tammin. Dustin & Lisa McCreery 0427 371 075.

Email: info@chatfields.com.au Website: www.chatfields.com.au Good variety of trees and shrubs in cell trays approx. .50c per seedling. Specialists in planting and site preparation equipment.

Westgrow Tree Nursery, Meckering. Andrew West 0417 978 475.

Email: westgrow.com.au Good variety of trees and shrubs in cell trays approx. .50c per seedling.

APACE Nursery, Fremantle. Community run. 9336 1262.

Email: admin@apacewa.org.au Website: www.apacewa.org.au Good variety of sandplain species \$1.60 - \$3.50. Other services including seed collection.



"The best time to plant a tree was 20 years ago. The second best time is now.



Please contact Moore Catchment Council on 9653 1355 or moorecc@bigpond.com for more information

www.moorecatchment.org.au







