



GOOLWA TO WELLINGTON LOCAL
ACTION PLANNING ASSOCIATION INC

MANAGING REVEGETATION HANDBOOK

Practical methods to help protect your revegetation sites



Coorong Lower Lakes and Murray Mouth (CLMM) Community Revegetation Project



Australian Government



**Government
of South Australia**

The Community Revegetation Program is managed by the Goolwa to Wellington Local Action Planning Association and the Coorong and Tatiara Local Action Plan Committee.

This Program is part of the South Australian Government's *Murray Futures* Program, funded by the Australian Government.

DISCLAIMER

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AUTHOR: Sherie Bain, Kerri Bartley and Leah Hunter

ACKNOWLEDGEMENTS: Greg Dalton, Creation Care P/L and Phil Barron, Barron Environmental

COVER PHOTO: 2011 and 2014 Community Revegetation Project plantings on private land adjacent to the Tookayerta Creek, Currency Creek.

IMAGES: Australian Plant Image Index, Australian National Botanic Gardens

KEY CONTACT DETAILS: For further information or assistance with management of revegetation including pest species on your property the following organisations are a valuable and available resource:

GOOLWA TO WELLINGTON LOCAL ACTION PLANNING ASSOCIATION



www.gwlap.org.au

Lakes Hub, Shop 2, 10-17 Daranda Tce, Milang, SA, 5256
Ph: 8537 0807

Strathalbyn Natural Resource Centre, 6 Catherine St, Strathalbyn, SA, 5255
Ph: 8536 5612

COORONG TATIARA LOCAL ACTION PLAN



www.coorong.sa.gov.au/ongroundworks

PO Box 399, Tailem Bend, SA, 5260
Ph: 1300 785 277

NATURAL RESOURCES SOUTH AUSTRALIAN MURRAY-DARLING BASIN

www.samdbnrm.sa.gov.au



670 Mannum Road, Murray Bridge, SA, 5253
Ph: 8532 9100

Upper level, Corner Mann & Walker Street, Mount Barker, SA, 5251
Ph: 8391 7500

PROJECT BACKGROUND

The Coorong Lower Lakes Murray Mouth (CLLMM) Community Revegetation Project is a component of a five year adaptive management response plan established to rehabilitate Lake Alexandrina, Lake Albert and the Coorong Ramsar region. This project is part of the South Australian Government's Murray Futures program, funded by the Australian Government.

Goolwa to Wellington Local Action Planning Association (GWLAP) is contracted by the Department of Environment, Water and Natural Resources SA (DEWNR) to engage with the Lower Lakes and Coorong community to deliver the on-ground works for the project. Part of key on-ground services that GWLAP carried out included engaging the Community Nurseries Network (CNN) to grow local provenance plants, contracting community groups to plant the seedlings, and undertaking a multi-faceted approach to pest plant and animal control on all current and previous revegetation sites.

This handbook has been developed by the Goolwa to Wellington Local Action Planning Association and provides documentation for assisting landholders in the management of restoration works on their revegetation sites within the CLLMM region. This document suggests activities that will assist with future/active management of revegetation on restored/revegetated sites and is part of the transition process to assist landholders as the CLLMM Community Revegetation Project comes to a close.

HANDBOOK CONTENT

This handbook provides information on commonly found pest plants and animals on CLLMM Community Revegetation Project sites and tips on how to control them. The pests included in this document have been historically targeted and controlled throughout the existence of this Project on the revegetation sites. The list is not exhaustive and not every species known to occur has been included in this document, however the more commonly seen and regular occurring weeds have. The majority of woody weeds have been controlled on all revegetation sites and have been included as a reminder that regeneration may occur into the future.

Pest plants have been placed into three groups; Woody, Herbaceous and Grass/Reed Weeds and are listed in alphabetical order using common names. Each plant includes a photograph, a description of recommended control techniques and optimal timing for control. **IMPORTANT:** The herbicide recommendations provided should be considered as a guide only and users must ALWAYS READ THE LABEL before using a product.

Information relating to pest animals ie rabbit, fox and feral cat has also been included in this handbook with links to further resources and control information.



The PIRSA Weed Control Handbook and smart phone application (available on Apple and Android) is a useful resource for treatment options and timing for declared plants in South Australia.

http://pir.sa.gov.au/biosecurity/weeds_and_pest_animals/plant_pests_in_south_australia

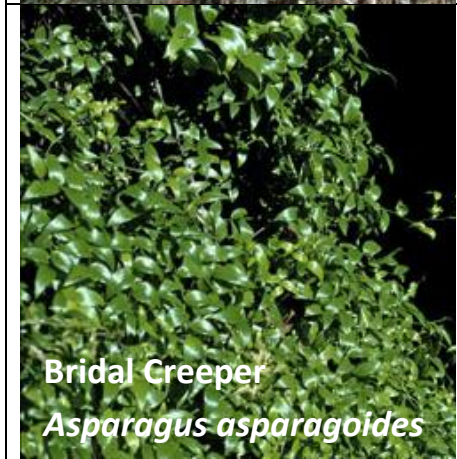
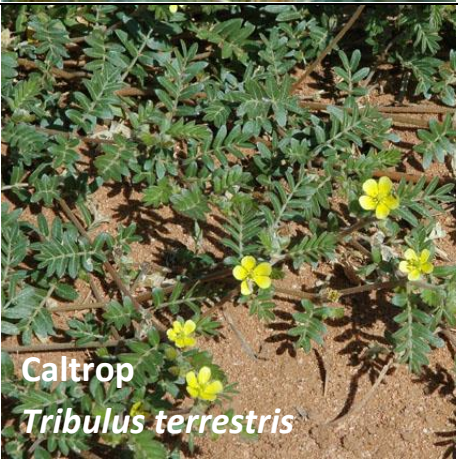


WOODY WEEDS

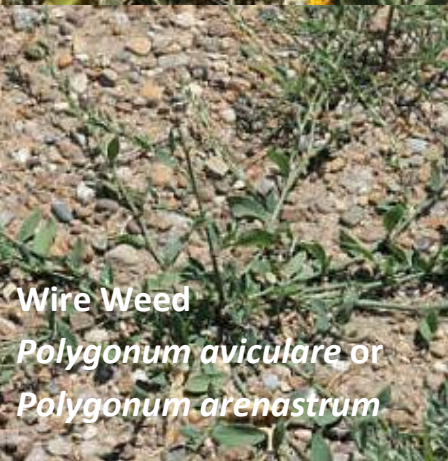
 African Boxthorn <i>Lycium ferocissimum</i>	Declared Weed of National Significance (WoNS) Cut and swab with glyphosate or triclopyr:diesel (All year) Foliar spray with glyphosate or triclopyr (Autumn/Spring)	 Apple of Sodom <i>Solanum linnaeanum</i>	Declared Cut and swab with glyphosate or triclopyr:diesel (All year) Foliar spray with glyphosate or triclopyr (Autumn/Spring)
 Blackberry Nightshade <i>Solanum nigrum</i>	Foliar spray with glyphosate (Early summer and when actively growing) Hand pull	 Coastal Tea-tree <i>Leptospermum laevigatum</i>	Cut and swab with glyphosate or triclopyr:diesel (All year) Foliar spray with triclopyr (Sept-Dec)

 Cotton bush <i>Gomphocarpus cancellatus</i>	Cut and swab with glyphosate or triclopyr:diesel (All year) Foliar spray with glyphosate or triclopyr (Sept-Dec)	 Dog Rose <i>Rosa canina</i>	Declared Cut and swab with glyphosate 1:2 or triclopyr 1:30 diesel (All Year) Foliar spray using triclopyr (Oct-Jan)
 Golden Wreath Wattle <i>Acacia saligna</i>	Cut and swab small plants/drill and fill larger plants with glyphosate or triclopyr:diesel (All year) Foliar spray with triclopyr (April-Dec)	 Olive <i>Olea europaea</i>	Declared Cut and swab small plants/drill and fill larger plants with glyphosate or triclopyr:diesel (All year) Foliar spray with triclopyr (July-Dec)
 Tree Tobacco <i>Nicotiana glauca</i>	Foliar spray with triclopyr + picloram up to 2m high (Autumn/Spring) Cut and swab or hand pull	 Western Coastal Wattle <i>Acacia cyclops</i>	Cut and swab small plants/drill and fill larger plants with glyphosate or triclopyr:diesel (All year) Foliar spray with triclopyr (April-Nov)

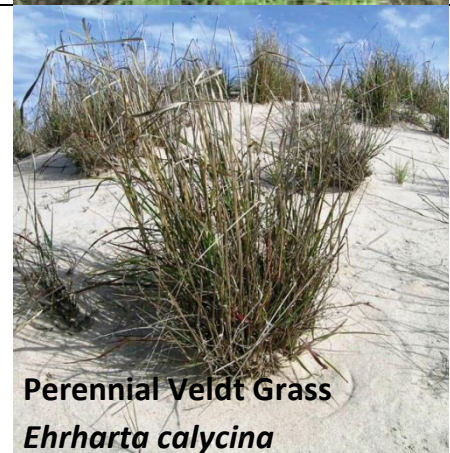
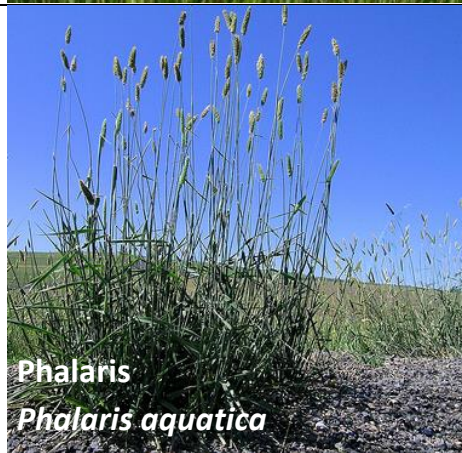
HERBACEOUS WEEDS

 Artichoke Thistle <i>Cynara cardunculus ssp. flavescent</i>	Spot spray with glyphosate during rosette to early flower head stage (Sept-Nov)	 Bathurst Burr <i>Xanthium spinosum</i>	Declared Spot spray with glyphosate before flower and burr formation (Late summer)
 Bridal Creeper <i>Asparagus asparagoides</i>	Declared Weed of National Significance (WoNS) Spot spray or Wick wipe with glyphosate or glyphosate metsulfuron-methyl (June-Sept) *Biological control agents (leafhopper, rust fungus and leaf beetle) can assist with suppression	 Caltrop <i>Tribulus terrestris</i>	Declared Spot spray with glyphosate (Dec-April). Sets seed within 14 days of germination Hand pull and bag plants and seeds
 Cape Weed <i>Arctotheca calendula</i>	Spot spray with glyphosate (June-Oct)	 False Caper <i>Euphorbia terracina</i>	Declared Spot spray with glyphosate (When actively growing) Hand Pull

 Gazania <i>Gazania linearis.</i>	Declared Foliar spray with glyphosate or broadleaf selective around native grasses (Autumn/Spring) Hand pull	 Horehound <i>Marrubium vulgare</i>	Declared Foliar spray with glyphosate or dicamba (Jan-May/Aug-Sep)
 Iceplant <i>Mesembryanthemum crystallinum</i>	Spot spray with glyphosate (April-Oct) Hand pull and bag	 Khaki weed <i>Alternanthera pungens</i>	Declared Spot spray with picloram (beware of soil residual) or dicamba (Dec-Apr) Manual removal ensuring complete removal of tuber and root system.
 Mustard Weed <i>Sisymbrium sp.</i>	Spot spray with glyphosate (Autumn - Spring) Hand Pull	 Onion Weed <i>Asphodelus fistulosus</i>	Wick wipe or spot spray with glyphosate (Aug-Nov) Hand Pull

 Potato Weed <i>Heliotropium europaeum</i>	Spot spray with glyphosate (Oct-Jan) Hand pull	 Scabiosa <i>Scabiosa atropurpurea</i>	Spot spray with glyphosate or Lontrel® (March-Nov)
 Scotch Thistle <i>Onopordum acanthium</i>	Spot spray with glyphosate (when actively growing – can germinate all year)	 Silverleaf Nightshade <i>Solanum elaeagnifolium</i>	Declared Weed of National Significance (WoNS) Spot spray with glyphosate or a broad leaf selective herbicide (Tordon/ 2-4D amine) (Sep-Jan)
 South African Daisy <i>Senecio pterophorus</i>	Spot spray broad leaf selective herbicide (Tordon/ 2-4D amine) (June-Sept) Hand pull	 Wire Weed <i>Polygonum aviculare</i> or <i>Polygonum arenastrum</i>	Spot spray or wick wipe with glyphosate (June-Oct)

GRASS/REED WEEDS

 Kikuyu <i>Pennisetum clandestinum</i>	Spray with fluazifop-P (Fusilade® Forte) in September, December and March each year. Pay special attention to last few runners as these will quickly form a new infestation if not controlled. (Spring – Autumn)	 Paspalum/ Salt Water Couch <i>Paspalum distichum</i>	Spray with fluazifop-P (Fusilade® Forte) in September, December and March each year. Pay special attention to last few runners as these will quickly form a new infestation if not controlled. (Spring – Autumn)
 Perennial Veldt Grass <i>Ehrharta calycina</i>	Brushcut tall rank growth if required, spray follow up growth with glyphosate or fluazifop-P (Fusilade® Forte) (Spring – Autumn when actively growing)	 Phalaris <i>Phalaris aquatica</i>	Brushcut tall rank growth if required, spray follow up growth with glyphosate or fluazifop-P (Fusilade® Forte) (Spring – Autumn when actively growing)
 Rye Grass <i>Lolium sp.</i>	Brushcut tall rank growth if required, spray follow up growth with glyphosate or fluazifop-P (Fusilade® Forte) (Spring – Autumn when actively growing)	 Sea Barley Grass <i>Hordeum marinum</i>	Spray with fluazifop-P (Fusilade® Forte) in September, December and March each year. Pay special attention to last few runners as these will quickly form a new infestation if not controlled. (Spring – Autumn)



Spiny Rush
Juncus acutus

Declared

Spot Spray/Wick Wipe with
glyphosate + Liaise + Pulse
(Oct-April)

Note: commonly confused
with similar native sedges
(*Juncis kraussii/pallidus*)
Native sedges have softer
seed heads while spiny rush
has hard seed heads.
*For further identification
contact your local LAP
office

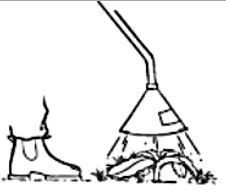
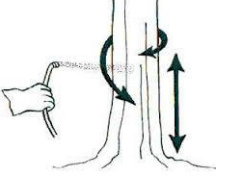


Tall Wheat Grass
Thinopyrum elongatum

Brushcut tall rank growth if
required, spray follow up growth
with glyphosate or fluazifop-P
(Fusilade® Forte)
(Spring – Autumn when actively
growing)

OPTIMAL TIMING FOR WEED CONTROL (SPRAYING)												
	January	February	March	April	May	June	July	August	September	October	November	December
African Boxthorn												
Apple of Sodom												
Artichoke Thistle												
Bathurst Burr												
Black-berry Nightshade												
Bridal Creeper												
Caltrop												
Cape Weed												
Coastal Tea-tree												
Cotton bush												
Dog Rose												
False Caper												
Gazania												
Golden Wreath Wattle												
Horehound												
Iceplant												
Khaki weed												
Kikuyu												
Mustard weed												
Olive												
Onion Weed												
Paspalum/Salt Water Couch												
Perennial Veldt												
Phalaris												
Potato Weed												
Rye Grass												
Scabiosa												
Scotch Thistle												
Sea Barley Grass												
Silverleaf Nightshade												
South African Daisy												
Spiny rush												
Tall Wheat Grass												
Tree Tobacco												
Western Coastal Wattle												
Wireweed												

WEED CONTROL METHODS:

	Method	Type of weed	Equipment required	Notes
	Foliar Spray	Herbs, Bulbs and Woody weeds	Knapsack Herbicide mix Personal protective equipment	Ensure herbicide is being applied at right concentration and rate to cover the foliage of the weed Minimise run-off, spray drift and off target damage
	Cut and Swab	Woody weeds, Shrubs and Trees	Saw/chainsaw/loppers Herbicide mix Personal protective equipment (goggles and gloves minimum) Brush/sponge form herbicide application	Ensure herbicide is applied quickly to cut stump (30 seconds) Apply during active growth period of the plant
	Frill and Paint	Shrubs and Trees	Axe/hatchet Herbicide mix Personal protective equipment (goggles and gloves minimum) Brush/sponge form herbicide application	Frill trunk thoroughly and major surface roots where visible Expose sapwood and apply herbicide immediately For deciduous species, apply during active growth period
	Drill and Fill	Shrubs and Trees	Drill Herbicide mix Application bottle/injection gun Personal protective equipment (goggles and gloves minimum)	Drill to sapwood only and apply herbicide immediately Drill and fill major surface roots where possible For deciduous species, apply during active growth period
	Basal -bark	Woody weeds Multi-stemmed trees/shrubs	Herbicide mix (oil-soluble herbicide in diesel) Knapsack/brush Personal protective equipment (goggles and gloves minimum)	The entire circumference of the stem or trunk should be sprayed or painted with herbicide solution from ground level to a height of 30 cm. It is important to saturate the full circumference of the trunk, and to treat every stem or trunk arising from the ground.
	Wick Wipe	Herbs, Bulbs and Rushes	Knapsack/Wick applicator Tongs with sponges attached Herbicide mix Personal protective equipment	Ensure herbicide is being applied at right concentration and rate to cover the foliage thoroughly Apply during active growth period
	Hand pull and bag	Herbs, Juvenile shrubs and trees	Gloves Bag	If seed present bag and remove from site

PEST ANIMALS

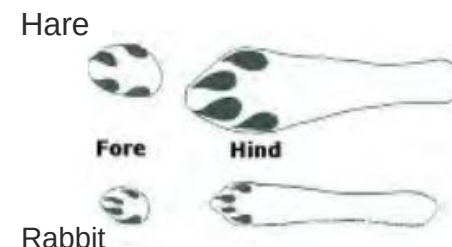
Further information on other pest animals can be found at: <http://www.pestsmart.org.au/pest-animal-species/>

For further advice and assistance on pest animal control please contact the Natural Resource Management Board for your local Authorised Officer.

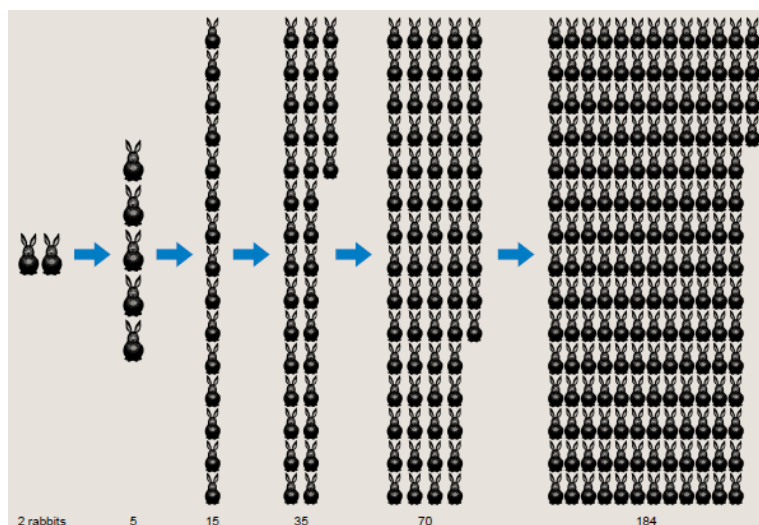
EUROPEAN RABBIT (*Oryctolagus cuniculus*)



It takes less than one rabbit per hectare to prevent the successful regeneration of many native trees and shrubs



Wild rabbits are Australia's most widespread and destructive environmental and agricultural vertebrate pest. Rabbits graze on native and introduced vegetation, crops and pastures. Rabbit grazing can prevent seedlings from regenerating and reduce crop yields, as well as increase competition for feed with livestock. Rabbits damage native plants and directly compete with native wildlife for food and shelter. Their digging and browsing leads to a loss of vegetation cover, which in turn can result in slope instability and soil erosion. There are at least 156 threatened species that may be adversely affected by competition and land degradation by rabbits. (For more information on the effect of rabbits see: <http://www.pestsmart.org.au/pest-animal-species/european-rabbit/>)



Two rabbits can increase to 184 in 18 months in an outside paddock without supplementary feed.



Rabbit Control Calendar

OCTOBER NOVEMBER DECEMBER

Time to Plan

- Draw a paddock map of warrens or locate with a GPS
- Spotlight count numbers
- Contact Local Regional Authorised Officer
- Organise oats
- Check equipment
- Remember there will be many young rabbits, rabbit numbers peak, crop damage will be most visible and some rabbits may be affected by RHD and the Myxo virus (these viruses are not reliable control methods)

JANUARY FEBRUARY MARCH APRIL

Poisoning

- Spotlight to count rabbits and check numbers
- Best time to poison
- Can cut rabbit numbers by 95%
- Rabbit territories undefended
- Rabbits hungry
- 3-4 day gap between non-poisoned feeds
- Three free feeds essential
- Wait 3-4 days then lay poisoned oat trail (for 1080 treated oats)
- Proceed to cross rip warrens as soon as practical after poisoning program.

MAY JUNE JULY AUGUST SEPTEMBER

Follow Up

- Remove debris to avoid future recolonisation by rabbits, to make present and future warren destruction easier
- Destroy now exposed warrens
- Use fumigation if warrens are not accessible
- **RECHECK WARRENS AND RE-RIP OR FUMIGATE**
- Spotlight again to check any remaining rabbits

WARREN DESTRUCTION ESSENTIAL

FUMIGATE TO KEEP WARRENS CLOSED

CONTACT

Contact your nearest South Australia Murray-Darling Basin Natural Resources Management Regional Authorised Officer for further assistance and advice. These officers are based at:

Office	Phone
Berri	8582 4477
Burra	8892 3033
Cambrai	8564 5154
Karoonda	8578 1493
Lameroo	8576 3400
Mt Barker	8391 7500
Murray Bridge	8532 1432
Tailem Bend	8572 3611

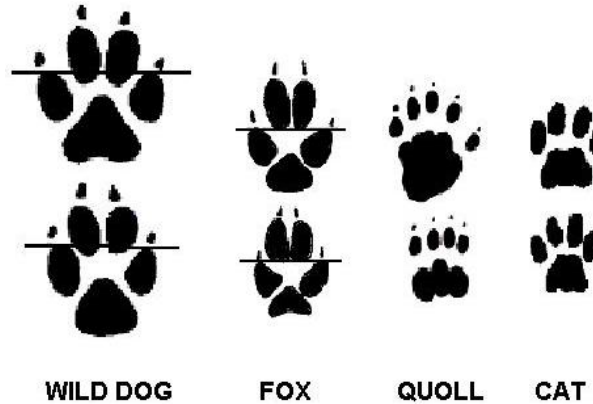
Rabbit control requires a planned and multifaceted approach.

An effective integrated rabbit control program should include poisoning, ripping and fumigation of warrens. Although none of these methods alone can completely control rabbits by themselves, the integrated use and repetition of these methods can be vital in the reduction of rabbit populations.

Poisoning is best undertaken when feed is limited in late summer while warren fumigation and destruction is generally more successful when there is some soil moisture present.

Contact your nearest Natural Resource Management Office to talk to your local authorised officer for more information and assistance on rabbit and other pest animal control.

EUROPEAN FOX (*Vulpes vulpes*)



Why control foxes?

The fox has played a major role in the decline of ground-nesting birds, small to medium sized mammals such as the greater bilby, and reptiles such as the short neck and long neck turtles. While land use change is cited as one of the key reasons for decline in many native species, predation by foxes has also been a significant contributor to native animal decline and continues to undermine recovery efforts for threatened species as the malleefowl, the bridled nail-tail wallaby and the night parrot. The fox causes significant economic losses to farmers by preying on newborn lambs, kid goats and poultry. (For more information on the effect of foxes see: <http://www.pestsmart.org.au/pest-animal-species/european-fox/>)

How to control foxes?

Baiting - The most common toxicant used against foxes is 1080, a restricted chemical and a Schedule 7 poison. 1080 requires special precautions in manufacture, handling, storage and use, and has special regulations regarding labelling and availability.

Trapping - Steel-jaw leg-hold traps (toothed and/or without padding) are prohibited for foxes across Australia, although modified padded (soft-jaw) leg-hold traps can be used in South Australia.

Shooting - Landowners are permitted to hunt and kill foxes on their own land. A recreational shooter needs to get permission from the landowner before shooting on private lands.

Contact your nearest Natural Resource Management Office to talk to your local authorised officer for more information and assistance on fox and other pest animal control concerns.

FERAL CATS (*Felis catus*)



Why control feral cats?

Feral cats live, hunt and reproduce in the wild. They have the body shape, acute senses and fine coordination perfectly suited for stalking and capturing prey. These traits have allowed feral cats to adapt to some of Australia's harshest conditions and invade almost all parts of the continent. Feral cats need large amounts of fresh meat to survive and reproduce. In Australia they mainly eat small native and exotic mammals, birds, lizards and insects. About 80 endangered and threatened species are at risk from feral cat predation in Australia. Feral cats also carry diseases which can affect humans and other animals. (For more information on the effect of cats see: <http://www.pestsmart.org.au/pest-animal-species/feral-cat/>)

How to control feral cats?

Cage trapping - Tempting the feral cat into a cage with the use of a food source, this can be difficult with cats with limited human contact or if food is plentiful.

Soft net traps - A flexible metal frame and netting and/or bag which collapses over the animal when triggered, can attract off target species, eg. wallabies, possums.

Trapping - Steel-jaw leg-hold traps (toothed and/or without padding) are prohibited across Australia, although modified padded (soft-jaw) leg-hold traps can be used in South Australia.

Shooting - Landowners are permitted to hunt and kill feral cats on their own land. A recreational shooter needs to get permission from the landowner before shooting on private lands.

Contact your nearest Natural Resource Management Office to talk to your local authorised officer for more information and assistance on feral cat and other pest animal control issues.

REFERENCES/ USEFUL RESOURCES

Weed Control Handbook for Declared Plants in South Australia. Biosecurity SA PIRSA:

http://pir.sa.gov.au/_data/assets/pdf_file/0020/232382/Weed_Control_July14.pdf

SA Weed Control Phone Application by Primary Industries and Resources South Australia (available on Apple and Android)

Weeds Australia – the national weed website: <http://www.weeds.org.au/>

HerbiGuide Australia: <http://www.herbiguide.com.au/>

Invasive Animals CRC: <http://www.pestsmart.org.au/>

Natural Resources South Australian Murray-Darling Basin: <http://www.naturalresources.sa.gov.au/samurraydarlingbasin/plants-animals/pest-plants-and-animals>

Bridal Creeper: http://www.weeds.org.au/WoNS/bridalcreeper/docs/Bridal_creeper-South_Australia.pdf

Spiny Rush: <http://www.gwlap.org.au/docs/controlling%20spiny%20rush%20around%20Lower%20Lakes.pdf>

Lower Lakes Planting Guide: http://www.gwlap.org.au/docs/lower_lakes_plant_guide_v5.pdf