

Arid Recovery Project - 1998 Annual Report

Katherine Moseby

Project Coordinator



Summary

The Arid Recovery project was established in July 1997 and has been in effect for over 18 months. Since its inception, the project has made significant progress including choosing a site and building a 14 square km enclosure, eradication of rabbits, modification of the fence, establishment of 24 plant and animal monitoring sites and the trial re-introduction of Stick-nest Rats. Expansion into the 36 square km area to the north of the enclosure has also begun and a friends of parks group was formed and now has over 30 members. Several barriers to progress have been encountered the most serious being the discovery that the fence was neither rabbit nor cat proof. Major fence modifications were required significantly delaying project progress. The work plan for 1999 includes electrification of the main enclosure, release of 2 endangered species, fencing and rabbit control in approximately one quarter of the expansion area and endangered species research.

The long term vision for the project is to create a regionally significant conservation area providing habitat for up to 6 endangered species. The project will represent one of the largest integrated arid zone conservation projects in Australia and the largest previously infested area to be completely eradicated of rabbits. These attributes are unique to the project and set it apart from other conservation initiatives in Australia. Groups such as ATCV, Greencorps, Aboriginal Lands Trust, Department of Environment, Pastoral Management Branch, University of Adelaide, Friends of Parks, University of South Australia and Roxby Downs Area School have and/or will use the area for research, training and education. Other research and education organisations will be encouraged to visit and include the site in their research programs. The area will demonstrate that mining and conservation are not mutually exclusive and that funds from industry can assist the achievement of conservation goals.

The project will become a demonstration site for other mining companies illustrating what can be achieved through partnership links between industry and conservation groups. Research conducted by universities around Australia will provide information on feral animal control and endangered species management that can be used by landholders throughout Australia. Publicity for the project will be kept at a high level through dissemination of research results in scientific journals, conferences and magazines, involvement of volunteer and education organisations, release of endangered species, organised tours, field days and media releases.

Personnel

The following personnel were involved in the project during 1998

Arid Recovery Project committee

Katherine Moseby-project coordinator

John Read- Land Management Superintendent, ODC WMC representative

Steve Green- Environmental Superintendent, ODC WMC representative

Peter Copley- Senior Wildlife Officer, DEHAA representative

Dr David Paton- Lecturer, Department of Zoology, University of Adelaide representative

Friends of the Arid Recovery Project committee

President- Steve Green

Vice President- Steve White

Secretary/treasurer- Katherine Moseby

Publicity officer- Chris Williams/ Ian Burgan

Wally Stringer

Pauline Williams

Judy Mack

Andrew Wiseman

Principal contractors

Project coordinator- Katherine Moseby

Project officer (part time)- Jackie Bice

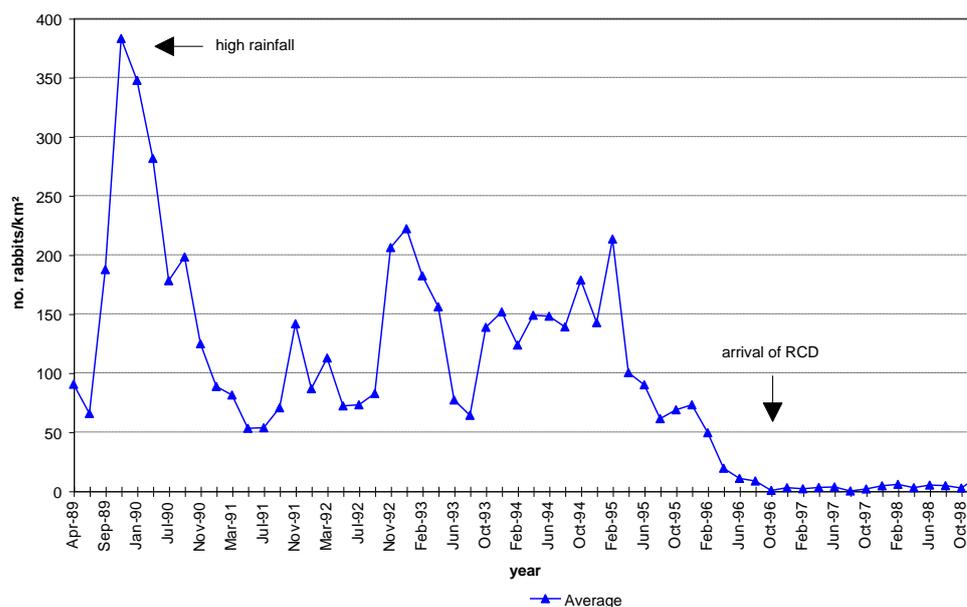
Project officer (part time)- Andrew Freeman

over 150 volunteers have assisted the project since July 1997 donating more than 7 700 hours to the project.

Rabbits

The following graph illustrated rabbit density on dunes outside the Arid Recovery Exclosure estimated through spotlight counts. Rabbit numbers have slowly increased since the release of RCD with the largest increase noted at the end of the 1998 breeding season. Rainfall has been above average during 1998 and the abundant food has led to a long and successful breeding season. RCD has not been confirmed at Roxby Downs since its first appearance in 1996.

Rabbit Populations at Roxby Downs



Rabbit eradication within the enclosure has been the number one priority for 1998. Rabbit control has included shooting of more than 35 rabbits, fumigation of more than 400 holes, trapping more than 100 rabbits, 1080 baiting of all dunes in the area at least twice and more than 10 tracking runs over all the dunes. A professional shooter also donated 2 nights of shooting to the project. It is estimated that over 5000 hours have been allocated to rabbit control since the project began. Rabbit numbers inside the enclosure were estimated to be approximately 300 when the fence was erected. Numbers were significantly reduced during early 1998 through 1080 poisoning and follow up fumigation. It was estimated that less than 30 rabbits remained by April 1998. After 3 more months of tracking down individual rabbits it was thought that only 1 or two rabbits remained. By July 1998, all rabbits within the enclosure were thought to have been eradicated. However, subsequent tracking runs uncovered between 2 and 4 individuals each time, all young rabbits and nearly all on their own. There was no pattern to the distribution of these rabbits but several were close to the fence line and many were moving up to a km a night. Several checks of all the swales were completed in case warrens had been missed between dunes.

Despite continued eradication, young individual rabbits continued to be found and eventually in October 1998 it was discovered that young rabbits on the outside of the enclosure could gain access to the enclosure through the 40mm rabbit proof mesh. A buffer zone of 300m was immediately established around the enclosure through fumigation and shooting. Smaller 30mm mesh was purchased and placed over the 40mm mesh to prevent any independent rabbit from entering the enclosure. The supplier of the mesh, BHP, were approached regarding compensation for the cost of the mesh and erection, as their 40mm mesh is advertised as "rabbit-proof" despite their prior knowledge that rabbits up to 450g could get through. After a visit from their southern manager, BHP wire products agreed to donate \$35 000 to the project in return for forgoing the right to prosecute. A post-fence rabbit run conducted in February has confirmed that all rabbits have now been eradicated from the enclosure.

Rabbit tracking runs will continue to be conducted approximately every 3-4 months even though all rabbits have been eradicated. New rabbit control will begin in the first half of the expansion area during 1999 and the buffer zone surrounding the enclosure will be maintained.

Fencing

Cat enclosure

A 20m x 20m cat pen was erected by the Friends group during March 1998 for the purpose of creating a cat-proof fence design. The cat pen was a replica of the original enclosure but built inside out with the floppy top facing inwards. Feral cats were captured and released inside the pen to study their response to the fence. Cats were videotaped and the fence design was gradually altered until cats could not escape. To date, 27 cats have been tested in the enclosure. The following table summarises the results;

| stage | no.cats tested | no. cats escaped | reason |
|---|----------------|--|---|
| original design: short floppy top only | 2 | 2 | climbed up posts |
| original design with iron on posts | 2 | 1 | climbed over floppy top at corners |
| as above but extra floppy mesh on corners only | 5 | 1 | climbed over floppy top between posts |
| short floppy top, 2 electric wires (30cm and 135cm) | 4 | 2 | climbed over floppy top regardless of shock |
| extra floppy top, no electric wires | 5 | 1(1 also escaped through hole in floppy top) | sat 2/3 way up the fence, jumped backwards and grabbed edge of floppy top |
| extra floppy top, 2 electric wires (30cm, 170cm) | 5 | 0 | |
| extra floppy top, 2 electric wires (130cm,160cm) | 4 | 0 | |
| total | 27 | 7 (8) | |

Results indicate that the iron placed over posts and extra floppy top are essential for keeping out the majority of cats and that electric wires increase the effectiveness of the fence. The floppy top must be firmly joined to the fence to prevent cats pushing through any small gaps. Electric wires must be regularly checked as non-live wires act as support for cats and assist them in scaling the floppy top. To date, no cats have escaped with electric wires and the double floppy top. Thus, the main enclosure will be electrified using 2 wires (120cm and 150cm). Wires will be placed opposite support wires at a distance of less than 80mm from the fence. Special ceramic insulators will be spot welded onto the droppers to keep the wires in place. This design is considered optimal at this stage but further experiments will be conducted to try and improve the cost efficiency of the design for use on the expansion fence line.

The 15km enclosure fence was modified significantly during 1998 due to cat enclosure and rabbit results. All the floppy top wires were put in place, extra floppy top was added to the top of the fence, smaller netting was placed around the base of the fence to keep out young rabbits and all wooden posts were covered with sheets of iron to prevent cats from climbing in. The fence now has a 30cm ground apron on both the inside and outside. Fencing was completed with the help of Greencorps, ATCV, Adelaide University Students, Friends group volunteers and paid contractors. Fence electrification will begin in February 1999.

An 8 ha release pen for Stick-nest Rats was constructed inside the enclosure area during August 1998. The design of this fence was based on the field trials conducted within the feral cat proof enclosure and differed quite significantly from the main enclosure fence. The fence is 1.8m high with a 60cm overhang held up by welded steel rods. It also has a 60cm internal overhang to prevent rats from climbing out and smaller 30cm mesh to prevent rats escaping. The fence is electrified with 2 electric

wires at 120 and 150cm. Iron sheets are fixed to all wooden posts. The electric fence is powered by a battery and solar panel.

Fencing of the 40 square km expansion area has commenced. The western expansion fence extends from the mine lease fence to the dog fence and is currently comprised of 1.8m droppers, 3 plain wires and 1 barb. This fence is keeping stock on Roxby Downs Station away from the Arid Recovery fence and expansion area. The eastern expansion fence along the Borefield Road extends from the mine lease fence north towards the dog fence for approximately 2km. This fence is also made from 1.8m droppers and plain wires. The remaining 4km of the eastern fence to the dog fence will be completed during January 1999. A gate has been installed on the Borefield Road to restrict access to the enclosure when required.

Stick-nest Rats

Greater Stick-nest Rats from Reevesby Island S.A., were re-introduced into a small 8 ha enclosure within the project area during September 1998. 8 rats were released into the enclosure and 2 placed in a 4m x 6m aviary for feeding trials.

One small rat in the outside enclosure was eaten by a goanna two weeks after release. All 7 rats remaining inside the enclosure are healthy and have gained weight. All are now over 200 grams. Rat no 7 (see graph) reached over 300g and was perforate with distended teats suggesting pregnancy. However, after a period of extended hot weather (over 40 degrees C for more than 2 weeks) her weight dropped and she appeared to be imperforate and not lactating.

An important aspect of the trial release in the enclosure was the establishment of 55 vegetation quadrats (24 swale, 28 dune) to determine the effect of the rats on the recruitment and survivorship of perennial plant species. 1 square metre quadrats were established on swale and dune habitats both inside and outside the enclosure. Baseline information was collected on seedling number and species and photopoints were also taken. Seven perennial species were targeted including *Atriplex vesicaria*, *Maireana sedifolia*, *Acacia ligulata*, *Senna artisemoides*, *Hakea leucoptera*, *Dodonaea viscosa* and *Alectron oleafolius*. Sites were revisited during February 1999 and no seedlings of any of these species were taken by rats over the 4 months of monitoring. Some dune *Dodonaea* seedlings succumbed to water stress but this was similar for inside and outside quadrats. There was some decline in juvenile saltbush and bluebush seedlings both inside and outside the enclosure but this was due to seedlings growing and being reclassified as subadults. Similarly some subadult numbers decreased as they became classified as adults. Some seedlings were showing signs of water stress but this was consistent for seedlings both inside and outside the enclosure. Direct observation on rats showed them feeding on adult *Atriplex vesicaria*, *Gunniopsis quadrophila*, and annuals *Salsola kali*, *Sida fibulifera* and *Enchylaena tomentosa* seeds. However, rats appeared to graze lightly and move from plant to plant quite quickly which may help to prevent overgrazing. A University student from Adelaide University will be conducting an honours project during 1999 comparing diet preferences of stick-nest rats and rabbits.

The two rats in the aviary have also gained weight but the female lost weight after undergoing severe convulsions. The rat was taken to the Adelaide Zoo and appeared to fully recover after a few days. It is not known what caused the convulsions but the zoo vet, David Shultz, suggested a temporary spinal injury caused by a fall. These rats are still in the aviary and are being used for diet experiments.

The feeding trials conducted on the aviary rats involve the design of replicated cafeteria trials to determine the feeding preferences of stick-nest rats to native plant species. So far over 55 food items have been tested including seeds, grasses, trees and shrubs. All diet choices were tested by providing a choice of 7-10 species. The species were placed in a row on a 1m length of raised sand in random order. 3 replicate rows of the species were constructed for each experiment. Species were checked daily and the amount eaten recorded. Results from this experiment will be written up as a short journal article during 1999. Plant species could be divided into 4 categories; 1) eaten in large amounts on the first day and thus highly favoured, 2) eaten substantially only after 2 days and thus not so favoured, 3) eaten in small amounts over the 2 days and may comprise a minor part of the diet and 4) untouched.

Monitoring

The 24 vegetation monitoring sites established by DEHAA in August 1997 were revisited in December 98. Photopoints and short notes on vegetation condition were taken. The Jessop transects and cover estimates were not conducted as it was considered to short a time period between monitoring periods to determine differences in perennial vegetation and recruitment. However, seedlings of several species of perennial plants have been noted within the enclosure including *Acacia ligulata*, *Dodonaea viscosa*, *Senna artesimoides*, *Hakea leucoptera*, *Acacia tetragonaphylla*, *Santalum spp.* and *Alectryon oleafolius*. The full monitoring will be conducted in August 1999.

24 fauna monitoring sites were established and trapped by the University of Adelaide during April 1998. These pitfall and elliott sites are within 50m of each vegetation site and will allow comparison of animal numbers and diversity inside and outside the enclosure. Each site consists of 6 pitfall traps and 15 elliott traps. Scat quadrats were also established to compare rabbit density inside and outside the enclosure. These sites will be repeated by the University during April 1999 and additional track transects will also be established. Results from the baseline and 1999 trapping will be analysed in May 1999.

Kangaroos

120 kangaroos were shot inside the Arid Recovery enclosure under permits number 581 and 1933 during 1998. The lack of watering points within the enclosure is a concern during the summer months as remaining roos may be suffering from dehydration. It is estimated that a further 5-6 kangaroos remain but these are rarely if ever seen. Fence damage has reduced considerably since kangaroo culling commenced. The remaining kangaroos include both western greys and reds and will be culled when seen. Spotlighting for kangaroos occurs approximately once a week.

Publicity

The following publicity was generated during 1998 and early 1999;

- 2 Interviews with 5CK-1/98, one on ABC Adelaide radio
- Interview with 5CK Lou Henderson on morning show re: Friends of the Roxby Ecosystem Project, 10.20am 4/98
- Article in SUNDAY MAIL- Feb 15th Revival in the desert
- Article in NORTHERN SUN on cat enclosure- April 1998
- CHANNEL 7 film Crew April 1998- filmed cat enclosure and cat getting over the fence. Aired on April 27th 1988
- May 11th - KM Interview with Michael Vincent on 5CK re: present ARP situation and cat experiment. Aired 6.30am
- May 11th - KM Interview with Lee Radford from ABC COUNTRY HOUR re: Project future directions and current feral status. This statewide program aired within a week.
- Short article in the OUTBACK magazine, May 1998 edition re: progress of project
- May 1998- Short article in the ACROSS THE MYALLS, a department of Primary industries magazine which goes to all landholders in the state. Detailed the low level of rabbits left in the enclosure.
- June 5th World environment day. Interview with John Read aired on CHANNEL 7 during 6.00pm news.
- July- Article in GROUNDWORKS magazine, publication by Australian Mines and Energy Environment Foundation, 3 page article on the project.
- July - 5CK interview with John Read on project stage
- July - Article in ANODE on Sir Arvi Parbo, WMC Chairman, visit to the arid recovery site
- September- 10min segment on STATELINE on channel 2 outlining the Arid Recovery Project- included interviews with Katherine Moseby and Kelli-Jo Lamb.
- November 14th 1998- lift-out on Olympic Dam including a colour photo and article on the Arid Recovery Project.
- January 8th 1999- Northern Sun newspaper. Half page article with photo outlining the Stick-nest Rat grazing trials in the ARP.
- February 13th 1999- Interview with ABC in Pt Augusta re rabbit celebration and achievements
- February 13th 1999- Article in advertiser, pg. 43 outlining the rabbit celebrations and achievements

Friends Group and Volunteers

Over 150 people have contributed more than 7700 hours of volunteer labour to the project so far. Volunteers have included friends members, ATCV and greencorps teams, University students, DEHAA employees, high school students, pastoralists, unemployed youth and the local community. The Friends group established in February 1998 has grown to more than 30 household members and has organised 3 committee meetings and 3 formal working bees during 1998 as well as contributing countless other hours for spotlighting, fencing etc. An NHT grant applied for by the friends group was successful and they will be receiving \$29 910 for electric fencing and volunteer support during 1999.

Budget

Funding during 1998 was extremely limited and the project relied heavily on volunteer commitments, funding brought forward from 1997 and significant financial contributions from the Environmental Department of ODC and Pastoral Management Branch of DEHAA. The most significant expenditure item in 1998 was wages with most fencing equipment already purchased during 1997.

During 1998, 3 grant applications were submitted, a NHT grant for the Friends group (\$29 991), a National Parks Foundation grant for conducting the Stick-nest Rat grazing trials (\$4 530) and a WWF threatened species network grant for radio tracking equipment (\$ 3 938). The first two grant applications were successful and we are awaiting the results from the 3rd application. These funds will be available for use during 1999. A Wildlife Conservation Fund grant of \$5000 was received by the University of Adelaide in 1998 for establishment of the fauna monitoring sites inside the enclosure. Further funds from WCF have been secured by the University for this year's monitoring but are not shown here.

The budget forecast for 1999 includes wages for both a full time project officer and part time assistant as well as fencing funds to fence the first quarter of the expansion area to the north. Other significant budget items include volunteer accommodation and equipment which includes vehicle fuel, endangered species monitoring items and equipment for rabbit control.

ODC SHE department funding and pastoral management branch funding are estimates only and are still to be confirmed.

A summary of funding and expenditure is outlined below. See appendix for full income/expenditure outline

| income source | 1997 | 1998 | 1999 forecast |
|-----------------------------------|-----------------|-----------------|--------------------------|
| ODC SHE | 10 000 | 32 344 | 97 000 |
| WMC corporate | 150 000 | | |
| CUDiv Corporate Affairs | 30 000 | | |
| DENR- PMB | 3 000 | 18 000 | 3 000 |
| NHT | | | 29 991 |
| PRIZES/AWARDS | | 2 000 | |
| National Parks Foundation | | | 4 530 |
| BHP | | | 35 000 |
| Northpoint Toyota | | | 1 000 |
| Lavricks engineering | | | 1 200 |
| total income | 193 000 | 52 344 | 171 721 |
| Expenditure | | | |
| wages | | | |
| project coordinator and assistant | 19 069 | 61 101 | 74 400 |
| contractors wages and equip hire | 51 706 | 2 723 | 15 000 |
| operating | | | |
| endangered species monitoring | 751 | 2 372 | 10 000 |
| equipment | | | |
| freight | | 1 045 | 1 000 |
| volunteer accom/transport | | | 10 000 |
| travel/accommodation | 573 | 1 389 | 1 000 |
| information displays | | | 1 000 |
| vehicle running costs | | | 12 000 |
| electric fencing | | | 15 000 |
| capital | | | |
| fencing materials | 101 777 | 8 234 | 19 500 |
| total expenditure | 173 876 | 76 864 | 158 900 |
| funds remaining | \$19 124 | \$-5 396 | \$7 425 estimated |

In Kind Contributions

| contributor | 1998 | 1999 proposed |
|--------------------------------------|---------------|---------------|
| Pastoral Management Branch | 520 | 3 600 |
| DEHAA | 3000 | 12 000 |
| University of Adelaide | 21 000 | 14 000 |
| ATCV | 0 | 9 600 |
| Greencorps | 8 400 | 6 000 |
| Roxby Downs Area School | 985 | 1 000 |
| community | 5030 | 5 000 |
| Friends of the Arid Recovery Project | 18 945 | 26 400 |
| Primary Industries S.A. | 700 | 1 000 |
| total | 58 580 | 78 600 |

Expansion and Proposed Work Plan for 1999

The Proposed work plan includes several expansion components. The 36 square km expansion area to the north of the enclosure will be gradually fenced off in sections to allow effective rabbit control. The outside expansion fence will be 1.8m high with cat and fox proof fencing but it is proposed to use only short rabbit proof fencing for the internal sections. The first quarter will be fenced off this year and rabbit control initiated using the money obtained from BHP. The 1st quarter is proposed to include the area between the Borefield road, mine lease fence and original enclosure, an area of 8.2 square km. This size should allow more efficient and faster rabbit eradication than the original 14 square km enclosure. Results from this quarter will determine the size and number of other fenced sections in the expansion area. It may not be possible to eradicate rabbits from the whole expansion area and some areas where eradication is deemed to be too difficult may receive only low level rabbit control. Cat and fox control will be conducted within the whole expansion area. An honours student from the University of Adelaide will be conducting research on Stick-nest Rats at the site during 1999.

Another expansion component is the re-introduction of endangered species during 1999. It is proposed to release 40 Stick-nest Rats into the main enclosure in April 1999 as grazing trials indicate that vegetation recruitment is not unduly compromised. A second species should also be re-introduced in July 1999. Possibilities for the second species include Burrowing Bettongs (Boodies) or Western-barred Bandicoots.

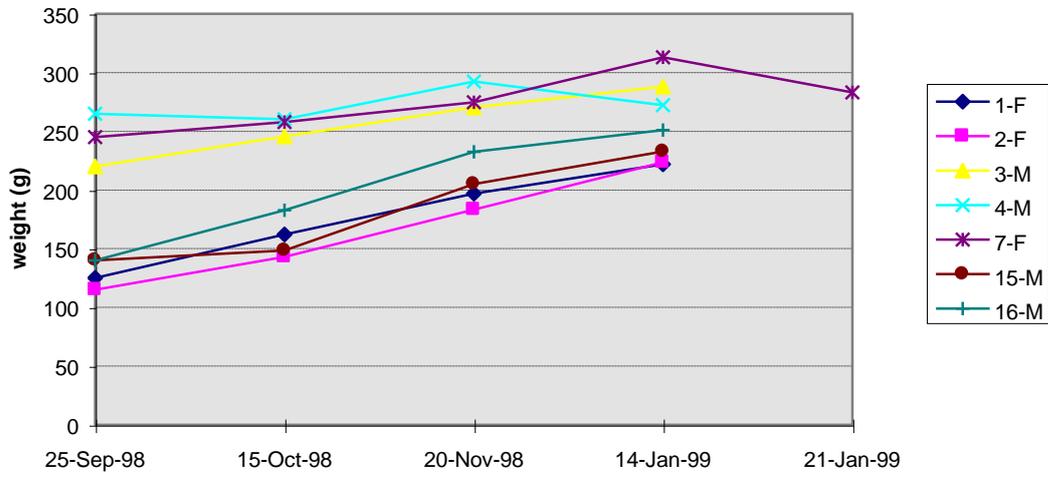
Proposed work plan- 1999

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | 2000 | 2001 |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| rabbit checks in main enclosure | | | | | | | | | | | | | | |
| SNR grazing trial monitoring | | | | | | | | | | | | | | |
| supports for floppy top | | | | | | | | | | | | | | |
| electrify fence | | | | | | | | | | | | | | |
| buffer zone cat/fox control | | | | | | | | | | | | | | |
| fauna monitoring | | | | | | | | | | | | | | |
| stick-nest rat re-introduction | | | | | | | | | | | | | | |
| buffer zone rabbit control | | | | | | | | | | | | | | |
| fence first expansion quarter | | | | | | | | | | | | | | |
| rabbit control in first quarter | | | | | | | | | | | | | | |
| re-introduce second endangered sp. | | | | | | | ? | ? | | | | | | |
| vegetation monitoring | | | | | | | | | | | | | | |
| analyse monitoring results | | | | | | | | | | | | | | |
| write and publish SNR diet paper | | | | | | | | | | | | | | |
| annual report | | | | | | | | | | | | | | |
| fence second expansion quarter | | | | | | | | | | | | | | |
| rabbit control in second quarter | | | | | | | | | | | | | | |
| re-introduce 3 rd endangered species | | | | | | | | | | | | | ? | ? |

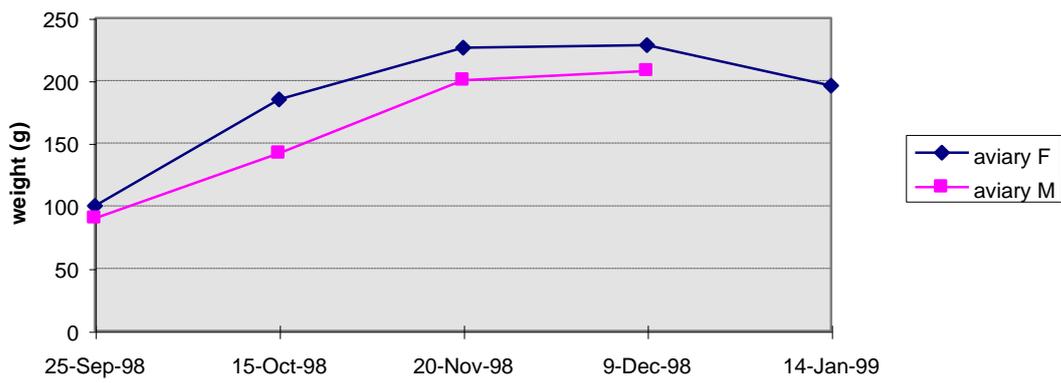
general: apply for grants, attract publicity, conduct research projects, cat pen research, assist honours student etc.

| Species | category 1 | category 2 | category 3 | category 4 |
|-----------------------------|------------|------------|------------|------------|
| SHRUBS/TREES | | | | |
| Atriplex vellutinella | x | | | |
| Atriplex vesicaria | x | | | |
| Trichodesma sp. | x | | | |
| Maireana aphylla | x | | | |
| Carpobrotus sp. | x | | | |
| Sida fibulifera | x | x | | |
| Gunniopsis quadrophila | x | | | |
| Minuria cunninghami | x | | | |
| Acacia ligulata | | x | | |
| Ptilotis sessifolius | | x | | |
| Acacia aneura | | x | | |
| Rhagodia spinescens | | x | | |
| Alectryon oleaefolius | | | x | |
| Dodonaea viscosa | | | x | |
| Maireana astrotricha | | | x | |
| Crotolaria eremia | | | x | |
| Santalum lanceolatum | | | x | |
| Lysiana sp. | | | x | |
| Swainsona | | | | x |
| Senna artesimoides | | | | x |
| Acacia papyrocarpa | | | | x |
| Maireana sedifolia | | | | x |
| Acacia victoriae | | | | x |
| Hakea leucoptera | | | | x |
| Salsola kali | | | | x |
| Enchylaena tomentosa | | | | x |
| Maireana erioclada | | | | x |
| Dissocarpus paradoxus | | | | x |
| Maireana appressa | | | | x |
| Pterocaulon sphacelatum | | | | x |
| Callitris glaucophylla | | | | x |
| SEEDS | | | | |
| Trichodesma zeylanicum | x | | | |
| Dodonaea viscosa | x | | | |
| Maireana aphylla | x | | | |
| Atriplex vesicaria | | x | | |
| Senna artesimoides | | x | | |
| Acacia ligulata | | | x | |
| Paractenium novaehollandiae | | | x | |
| Gunniopsis quadrophila | | | x | |
| Sclerolaena ventricosa | | | x | |
| Acacia victoriae | | | | x |
| Citrillus lanatus | | | | x |
| Crotolaria eremia | | | | x |
| Santalum spicatum | | | | x |
| Acacia oswaldi | | | | x |
| Crotolaria cunninghami | | | | x |
| GRASSES | | | | |
| Dactyloctenium radulans | x | | | |
| Iseilema vaginiflorum | x | | | |
| Paractenium novaehollandiae | | x | | |
| Enneapogon avenaceus | | x | | |
| Triraphis mollis | | x | | |
| Aristida contorta | | | x | |
| Eragrostis setifolia | | | x | |
| Enneapogon cylindricus | | | x | |
| Aristida holathera | | | | x |

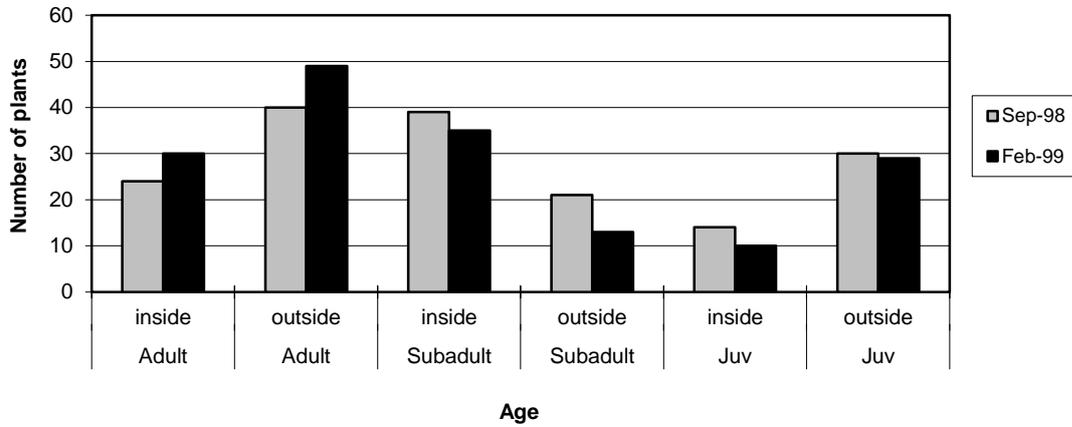
Stick-nest Rat weights since release - Enclosure



Stick-nest Rat weights since release- Aviary



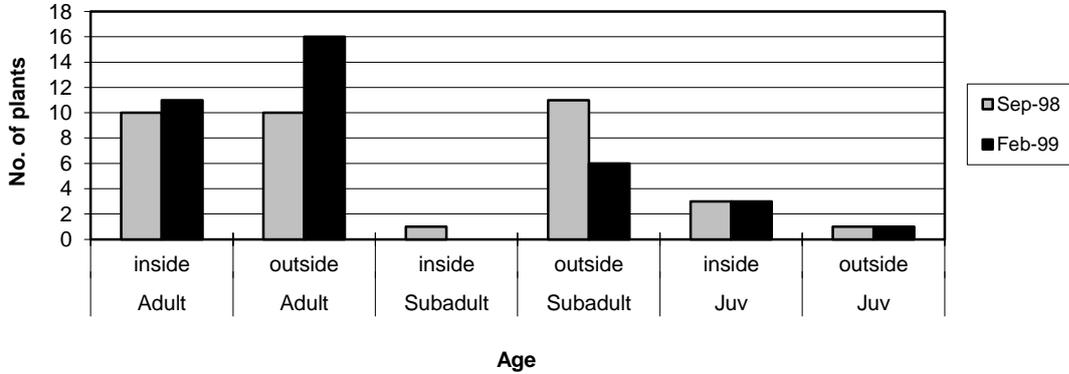
No. of *A. vesicaria* inside quadrats (total 12 quadrats inside and 12 outside)



| | inside | outside |
|------------|--------|---------|
| total Sept | 77 | 91 |
| total Feb | 75 | 91 |

The 2 missing plants inside were identified as dying during the pre-impact monitoring in Sept 98

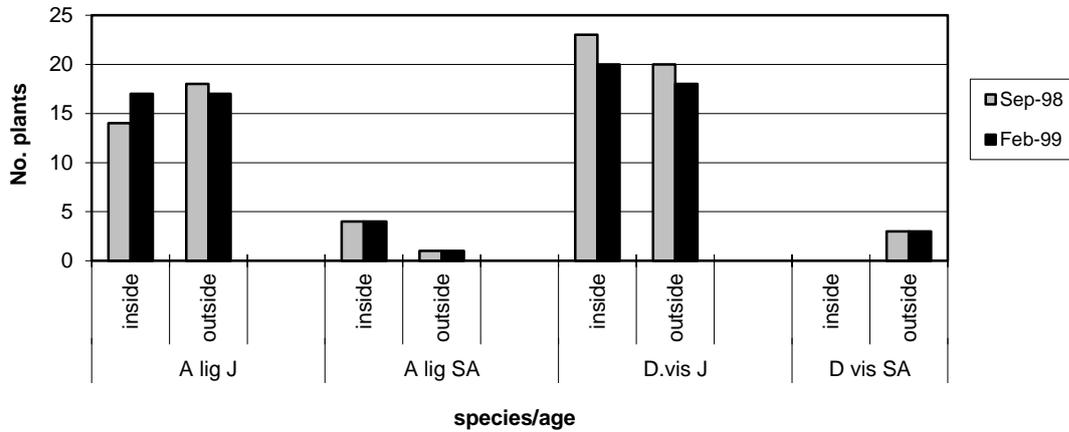
No. of *M. astrotricha* inside quadrats (total 12 quadrats inside and 12 outside)



| | inside | outside |
|------|--------|---------|
| Sept | 14 | 22 |
| Feb | 14 | 23 |

Extra plant was seedling which has come up since monitoring began

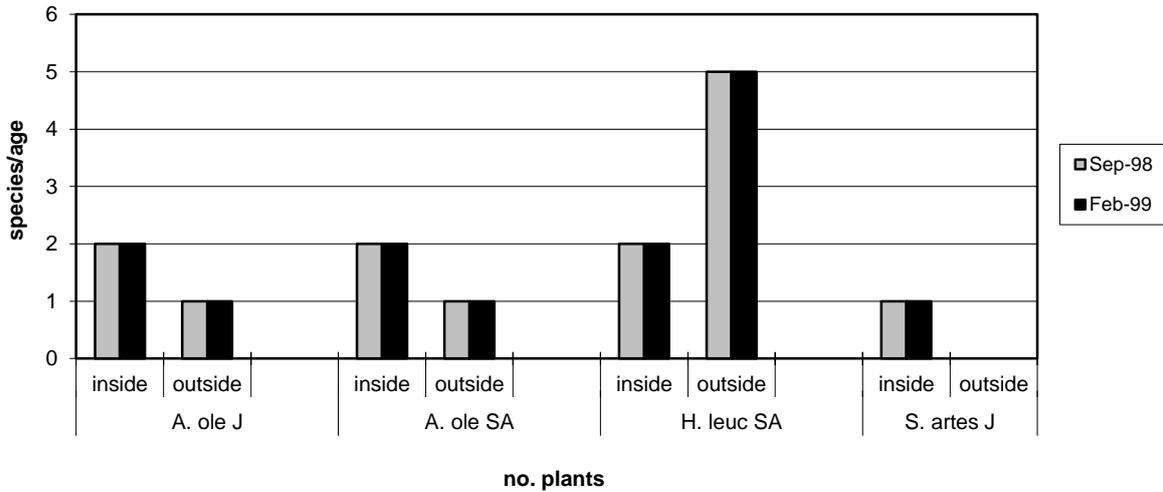
No. of *A. ligulata* and *D. viscosa* plants in inside and outside photopoints



J=juvenile, SA=subadult

Some juveniles succumbed to water stress but there were no signs of grazing by rats on either species. Grasshoppers and other invertebrates had attacked some plants on the outside.

No. of other perennial species found in inside and outside photopoints



J=juvenile, SA=Subadult

A. ole = *Alectron oleaefolius*

H. leuc = *Hakea leucoptera*

S. artes = *Senna artesimoides*

No seedlings of these species were taken over the 4 months of monitoring. Some *A. vesicaria*, *Gunnipopsis* and to a lesser extent *Enchylaena* were chewed but not extensively. *Enchylaena* appeared to have the seeds chewed off rather than the leaves.

ARID RECOVERY PROJECT

Justification and budget for 8km expansion zone:

The 14 square km core enclosure of the Arid Recovery Project is now declared rabbit, cat and fox free. Re-introductions are planned for April 1999 after electrifying the main fence. It is proposed to begin fencing off an 8 square km expansion area that includes land between the Borefield road and the main enclosure. This area contains the viewing platform, BBQ/camping area and access to the main gate. The reasons for fencing off and eradicating rabbits from this area are as follows;

1) The main enclosure will be large enough to sustain populations of endangered species for approximately 5 years but will eventually require expansion so that genetically viable populations can exist. It is prudent to begin expansion as soon as possible as rabbit numbers are increasing steadily and in 5 years densities may be too high to ever achieve complete eradication again.

2) If the area is fenced off, rabbit control can be gradually implemented when volunteers/funds are available. Several volunteer groups will be visiting the area during 1999 including Greencorps, University of Adelaide, Aboriginal Lands Trust and ATCV. Rabbit control is a task which is labour intensive, relatively easy for volunteers to assist with and requires very little funds.

3) If Rabbit Calicivirus Disease comes through the area again it will enable more efficient rabbit eradication. The main fence took 6 months from planning to building and this was long enough for rabbit numbers to build up after the initial decimation from RCD. If the fence is already erected, full advantage can be taken of low rabbit numbers and eradication time will be greatly reduced.

4) Establishing a rabbit-free area next to the main enclosure will enable protection of over 4km of the main enclosure fence. This will greatly reduce time spent establishing a buffer zone and will give the main enclosure 2 levels of protection from rabbits.

The 8 square km expansion area fence has already been partially built by volunteers. In order to complete the fence around the 8 square km area the following funds are required;

| | |
|-------------------|------------------|
| Fencing materials | \$ 25 000 |
| Labour | \$ 8 000 |
| TOTAL | \$ 34 000 |

It is proposed to use the following funds;

| | |
|---------------------------|------------------|
| BHP | \$ 20 000 |
| National Parks Foundation | \$ 3 000 |
| National Heritage Trust | \$ 3 000 |
| WMC ODC | \$ 8 000 |
| TOTAL | \$ 34 000 |

WMC's contribution has already been budgeted for in the 1999 budget under the "fencing materials for expansion" component.