

# CEPF SMALL GRANT FINAL PROJECT COMPLETION REPORT

## I. BASIC DATA

**Organization Legal Name:** University of Stellenbosch

**Project Title (as stated in the grant agreement):** Ecological Interactions and Impact of the Tent Tortoise (*Psammobates tentorius*) on the Succulent Karoo Biome

**Implementation Partners for This Project:** N/A

**Project Dates (as stated in the grant agreement):** 1 January 2004 to 31 December 2005

**Date of Report (month/year):** 31 March 2006

## II. OPENING REMARKS

**Provide any opening remarks that may assist in the review of this report.**

Tent tortoises are local endemics of the succulent Karoo and are under increasing threat from habitat destruction and human disturbance. This project sought to investigate the ecology of Tent tortoises in the succulent Karoo biome and the possible role they play as herbivores and seed dispersers in the ecosystem.

The highlights and conclusions of the project were as follows:

1. Land use was found to have a large influence on the basic ecology of tent tortoises, particularly home range size and diet. Home range size and mean daily distance moved were significantly positively correlated with an increase in grazing pressure. In addition, changes in plant composition as a result of grazing pressure resulted in a diet switch from a predominantly succulent diet on lightly grazed sites to a shrub dominated diet in heavily grazed sites. This has implications for the conservation of tent tortoises, other tortoise species, and possibly other endemic herbivores whose distribution overlaps communal rangelands.
2. Local and scientific interest was generated through this project. Local communities were made aware of the conservation needs of endemic tortoise species, and community leaders were encouraged to consider tortoises as possible tourist attractions that could bring income into the communities. Scientific interest was generated through scientific journal publications, presentations at various national scientific conferences and scientific posters.
3. Posters and information brochures on the influence of land use and the conservation of tortoises in Namaqualand were distributed throughout Namaqualand and the Knersvlakte. In addition, two popular articles were published in agricultural magazines to educate the public on the conservation of tortoises and their importance as herbivores.

Papers in preparation:

1. McMaster, M & Esler KJ (in prep, 2006) Activity and thermal behaviour of the Namaqualand Tent tortoise (*Psammobates tentorius trimeni*) on communal rangelands in the Succulent Karoo. *Journal of Herpetology*
2. McMaster, M & Esler KJ (in prep, 2006) Influence of communal land use on the ecology and conservation of Tent tortoises (*Psammobates tentorius*) in the Succulent Karoo Biome. *Biological Conservation*

Popular articles:

1. Skilpaaie 'n aanwins vir jou veld. LandbouWeekblad, December, 2005
2. Sweating the small stuff. Farmers Weekly, 9 December, 2005

Presentations:

1. McMaster, M & Esler KJ (2005) Sweating the small stuff. SAWISE 10th Anniversary and National Women's Day: A Celebration of women in Science and Engineering, 8 August. **\*Award for best poster presentation**
2. McMaster, M & Esler KJ (2005) Ecological interactions and impacts of the Tent Tortoise (*Psammobates tentorius*) on the Succulent Karoo. Namaqualand Colloquium, Springbok, 24 – 26 May.
3. McMaster, M & Esler KJ (2005) Effect of landuse on the ecology and ecological impacts of the Tent Tortoise (*Psammobates tentorius*) on the Succulent Karoo. Arid Zone Ecology Forum, Barrydale, 12 – 15 September **\*Award for runner up best student presentation**

### III. NARRATIVE QUESTIONS

1. What was the initial objective of this project?

The initial objective of this project was to investigate the ecological role of the Tent tortoise (*Psammobates tentorius*) within the Succulent Karoo Biome.

2. Did the objectives of your project change during implementation? If so, please explain why and how.

The initial objective did not change, however, the influence of the type of land use on the ecology of the Tent tortoise was evident once data collection began and resulted in a shift in emphasis in the project. This slight change in the focus of the project did not result in a change of the specific objectives or the key deliverables.

3. How was your project successful in achieving the expected objectives?

This project was successful in providing the first comprehensive ecological study on Tent tortoises in the succulent Karoo. This adds not only in the understanding of the conservation requirements of Tent tortoises themselves, but also to our understanding of the ecological role of an endemic herbivorous reptile in the succulent Karoo. In addition, this study revealed the huge effect that the type of land use can have on the population and ecology of an endemic herbivore and the possible implications that this may have for the conservation of tortoises and other species in the succulent Karoo.

4. Did your team experience any disappointments or failures during implementation? If so, please explain and comment on how the team addressed these disappointments and/or failures.

One of the objectives of the project was to find out whether Tent tortoises could disperse viable seed through the landscape. While large amounts of seed and seeds from a variety of plant species were found in tortoise faeces, the germination of the seeds to test for viability was unsuccessful. It may be that conditions for seed germination were not adequate or that the seeds were not viable and more research is required in this area.

5. Describe any positive or negative lessons learned from this project that would be useful to share with other organizations interested in implementing a similar project.

The effect of current and historical land use in the succulent karoo should always be taken into account when investigating the status, ecology and conservation of an endemic animal.

In addition, as previously mentioned, it would be of interest to initiate research into the effect of gut passage on seed germination which would further add to our knowledge of fauna as seed dispersers.

6. Describe any follow-up activities related to this project.

Posters, provided to libraries and municipalities, will be presented at the SKEP partners conference in May 2006.

#### IV. ADDITIONAL FUNDING

***Provide details of any additional donors who supported this project and any funding secured for the project as a result of the CEPF grant or success of the project.***

<b>Donor</b>	<b>Type of Funding*</b>	<b>Amount</b>	<b>Notes</b>
US – Sub committee B	A	R60 000	Post-doctoral fellowship to Megan McMaster
Esler – publication funds	A	R60 000	Post-doctoral fellowship to Megan McMaster
n/a			
n/a			

***\*Additional funding should be reported using the following categories:***

- A** *Project co-financing (Other donors contribute to the direct costs of this CEPF project)*
- B** *Complementary funding (Other donors contribute to partner organizations that are working on a project linked with this CEPF project)*
- C** *Grantee and Partner leveraging (Other donors contribute to your organization or a partner organization as a direct result of successes with this CEPF project.)*

*D Regional/Portfolio leveraging (Other donors make large investments in a region because of CEPF investment or successes related to this project.)*

Provide details of whether this project will continue in the future and if so, how any additional funding already secured or fundraising plans will help ensure its sustainability.

This project will not be continuing in the future.

## V. ADDITIONAL COMMENTS AND RECOMMENDATIONS

Throughout this project, the CEPF and our liaison in Conservation International, Nina Marshall, have been extremely helpful, professional and enthusiastic about this project. This has made the administration of this project very efficient which is much appreciated.

## VI. INFORMATION SHARING

CEPF aims to increase sharing of experiences, lessons learned and results among our grant recipients and the wider conservation and donor communities. One way we do this is by making the text of final project completion reports available on our Web site, [www.cepf.net](http://www.cepf.net), and by marketing these reports in our newsletter and other communications. Please indicate whether you would agree to publicly sharing your final project report with others in this way.

Yes

If yes, please also complete the following:

**For more information about this project, please contact:**

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Appendix 1: Posters, in English and in Afrikaans, were distributed to key municipalities & libraries in Namaqualand, Succulent Karoo.

# All About Tortoises!




## Did You Know?

South Africa is home to 14 species of tortoises – a quarter of all the species in the world!

Five of these 14 species are found in Namaqualand:

- ▶ **Namaqualand Tent Tortoise** (*Pseemochers tentorius tentorius*)
- ▶ **Bushmanland Tent Tortoise** (*Pseemochers tentorius verrucosus*)
- ▶ **Angulate Tortoise** (*Chersina angulata*)
- ▶ **Namaqualand Speckled Padloper** (*Hemopus signatus signatus*)
- ▶ **Southern Speckled Padloper** (*Hemopus signatus cafer*)

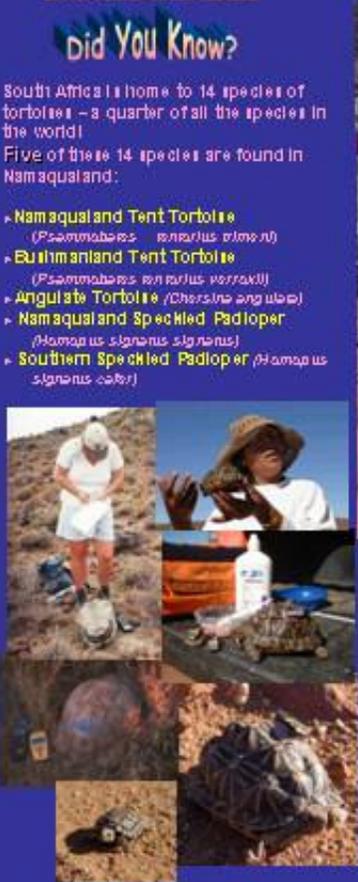
## Why are Tortoises Important?

▶ **Tortoises as Plant Eaters**

They might not be as big as elephants or rhinos, but tortoises are important plant eaters – they eat many types of succulents, grasses and herbs! They also eat a variety of seeds and may play a role in dispersing seed through the veld.

▶ **Tortoises as Reptiles**

Tortoises also help us understand the evolution of reptiles and the biology of desert reptiles. How do reptiles such as tortoises cope with a stream of temperatures and low rainfall in dry areas? Tortoises use a variety of behaviours to keep their body temperature stable which allows them to be active for longer periods in both summer and winter. They can also change the way their body works to cope with very dry conditions. Understanding how they do this helps us understand other desert reptiles!



## Conservation of Tortoises

▶ **Threats to Tortoises**

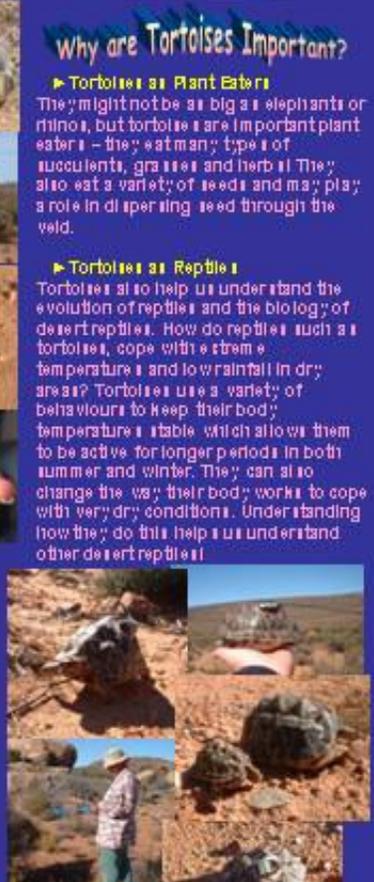
Tortoises in South Africa, especially those in dry areas, are under severe threat from bad agricultural practices, destruction of habitat and illegal capture for the pet trade. Few recent studies have investigated the true population status, distribution limit or conservation requirements of tortoises in dry areas.

Most people occurring in Namaqualand are found in only one reserve, and all require the further establishment of protected areas for their conservation.

▶ **Protection of Tortoises**

All tortoises in South Africa are protected by the law (CITES Appendix II protection). This means that it is illegal to remove tortoises or tortoise eggs from the wild, permits are required to keep tortoises in captivity and export permits are needed before tortoises can be traded.

The Padloper Tortoise in Namaqualand are listed in the IUCN Red Data Book as "Lower Risk, Near Threatened". They are at risk from habitat destruction and illegal trade, and need additional protection.



## Why Do We Research on Tortoises?

Scientists know very little about South African tortoises. For most species, we do not know the exact distribution where they live, the number of tortoises that are in each area, their ecology, the role they play in their ecosystem or how they are being affected by farming, domestic animals and poaching for the pet trade. Researchers try to answer some of these questions!

## How can you get to work on reptiles or in deserts?

If you want to work on the ecology, behaviour or conservation of desert reptiles, why not apply to your local Nature Conservation Services for more information. Or study zoology or conservation ecology for a university Bachelor or Honours degree and do research that will go towards your postgraduate degree of B.Sc. Honours, Master or Ph.D.

## For More Information, Please Contact:

Ngweni Endubeni or Karen Bales,  
Department of Conservation Biology,  
University of Stellenbosch  
Nardouw, Cape Nature Conservation Services  
CapeNature

027 283 3514  
027 283 3501  
027 283 3418

## YOU can help conserve Tortoises!

- ▶ Leave tortoise tracks when you see them in the veld!
- ▶ Look out for tortoises crossing roads and try not to run over them!
- ▶ Report the illegal collection of tortoises to your communal leaders, conservation bodies or the police.

If you look after the tortoises in your area, you, your community and visitors can all enjoy tortoises and the benefit they bring to the veld!

## Research on Tortoises in Namaqualand

I worked on Tent Tortoises in Paulshoek in the Lelientuin Communal Reserve, Namaqualand. I investigated whether Tent Tortoises in the Succulent Karoo are affected by different types of land use. I found that there were more tortoises in areas where goats are excluded, that tortoises have less plants to eat when they are in areas with too many goats, and they have to move very large distances – sometimes a kilometre a day – to find food in areas that have been heavily grazed by goats. Therefore, close grazing has an effect on the survival and conservation of Tent Tortoises in the Succulent Karoo. In addition, overgrazing may be affecting the ability of the tortoises to disperse the seed of plants!





