### 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.

Donor	Type of Funding*	Amount	Notes
US – Sub	A	R60 000	Post-doctoral fellowship to
committee B			Megan McMaster
Esler – publication	A	R60 000	Post-doctoral fellowship to
funds			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, <a href="www.cepf.net">www.cepf.net</a>, 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	
162	V

If yes, please also complete the following:

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

Name: Dr. Megan McMaster

Mailing address: Department of Conservation Ecology, University of Stellenbosch, Private Bag

X1, Matieland, 7602 Tel: +27 -21 - 808 3304 Fax: +27 -21 - 808 3304 E-mail: karoo@sun.ac.za Appendix 1: Posters, in English and in Afrikaans, were distributed to key municipalities & libraries in Namagualand, 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 Tortolse

- (Psammahams Businmaniand Tent Tortoise
- (Psammahares remarius verraxii) Angulate Tortol (e /Chersina angulare)
- Namaqualand Specified Padioper
- Southern Speckled Padloper (Hamapus stananis catori



## why Do Research on Tortoises?

Bolent att know very little about Bouth Attoan turbites. For most apecies, we do not know the exact details of where they live, the number of for bites a tatare in each area, their ecology, the role they play in their ecologyation or how they are being after ted by terming, domestic animals and possibling for the pet trade. Recearabers by to another come of these questions!

How can you get to MATK ON reptiles or in deserts?
If you want to work on the ecology, behaviour or concervation of desert reptiles why not apply to your local Nature Concernation Bervines for more information. Or sludy applied to concernation ecology for a university Backelor of Balence degree and do receased that will go becards your postgraduate degrees of 8.80. Honours,

#### For More Information, Please Contact:

Major Difficials of Manie Edia,
Department of Conservation Ecology,
University of Selfent Ecolo
Rothland Cape Mature Conservation Services (923 SUT 498)
CapeMature (923 SHU)



## conservation of Tortoises

#### ► Threats to Tortolses

Torfoloso in Bouth Attipa, expedially those in dry areas, are under severe threat from bad agricultural practices, de chucton of habitat and illegal capture for the petitade. Few recent cludles have in testigated the true population clatus, distribution limits or oon cervation requirements of tortol ce c in dry

Mo of openie concurring in Kamaqualand are found in only one receive, and all require the turther e clabil chmen to f pro leo led area c for their oon cervation.

#### ▶ Protection of Tortoises

All furful section Booth Action are protected by the law (CITES Appendix II protection). This means that it is lilegal to remove furful securiorial seegs from the wild, permit serve required to keep furful section captivity and export permit serve needed before furful sec

uan be traded.

The Padioper Tortologicin Namaqualand are libed in the IUCN Red De C. Lisra s'ilover Michael Threatened". They are atrick from habitatic chuo fon and illegal trade, and need additional pro teoton.

#### ► YOU can help conserve Tortolses! Leave for folice dialone when you dee them

- In the veid!

  Look out for forbice corologing road cand
  fry not to run over frem!

  Report the illegal collection of forbice of to
- your on minunity leaders, non servation badle car he pallas.

If you look after the tortol ce oin your area, you, your community and victors can all enjoy turblize cand the benefits they bring to the weld!



## why are Tortoises Important?

#### ► Tortoises as Plant Esters

The ymight not be as big as elephants or ninos, but tortolses are important plant eaters — they eatmany type sof succulents, grasses and herbisi They also eat a variety of seeds and may play a role in dispersing seed through the

#### ► Tortolses as Reptiles

Tortol ses also help us under stand the evolution of reptiles and the biology of desert reptiles. How do reptiles such as tortolses, cope with estreme temperature a and low rainfall in dry areas? Tortoises use a variety of being viours to keep their bod; temperature a stable will challows 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!



## Research on Tortoises in Namaqualand

I worked on Ten tior to be sin Paul shock in the Lelie tonieln Communal Reserve,

Kamaqualand. I in ve cigated whether Tent tortolice oin the Bucquient Karoo are affected by different type coffand use. I bund that there were more furbice oin area owners goats are e soluded, that furbice chave le coplants to eatwhen they are in area couth foo many goats, and they have to move very large di clance c = come time c a kilome fer a da y = fo find food in area c that have been heavily gra æd by goatol

Therefore, chock grazing has an affect on the curvival and concervation of Ten tior to be soin the Bucculent Karoo, in addition, overgrazing may be affecting the ability of the forbice of to disperse the seed ofplants!







# Alles Oor Skilpaaie!



## Het Jy Geweet?

Dear I s. 14 skilpad spe sie s in Suid-Afrika -'n kwart van al die spesies in die

Vyf van hierdie 14 spe sie s kom in Namak waland yoor:

- Namak waland Knopple idop iki ipad
- (Psermaters enrarius rimon)

  Bosmanland Knopple (dop (klipad (Psammahares remerius verraxii) • Angulate Tortol∎e (Chersina angulare)
- Namak waland Speckled Padloper
- Southern Speckled Padioper (Hamapus



# Hoekom Navorsing Doen oor Skilpaaie?

Weten chaplikes weet bale min our Buld-Arthannes chilpanis. Wat die mes die opseles betret west om die predes waar hulle bly, hoeveel chilpanis in elke gebied bly, hoe hulle ekologie daar uitzen, water rol hulle in die eko dicteme i queel of hoe hulle geraak word deur boerdery, hulicaliere en ictelery vir die froetsidiermark nie. Na vorcero probeer om commige van hierdie vrae te beantwoord.

## Hoe Kry Ek Werk In Dié Rigting?

Ac Jy in hierdie riging wil werk – ekologie, gedrag of die bewaring van repitele in die woodyn – kan Jy Jou plaadlike woodyn – kan Jy Jou plaadlike natuurbewaring odlend vir meer hilliging nader. Of doen 'n EBo-graad in Dierkunde of Bewaring cehologie by 'n universiteit en doen daarna na vording vir nagraad te studie o too o'n honneuro, mee stero- of'n dok torograad.

#### Kontak on a geru a vir m eer inligting :

University of Statismoduce Northern Cape Nature Conservation Services 1821 3011 4300 1021 483 3400

## Bewaring Van Skilpaaie

► Bedreiging i vir Skilpaale Bkilpaale in Buid-Atrika, veral die in droë gebiede, word ern vir bedreig deur virsk landboupraktyke, die vernieliging van habitat en unwettige delery vir die troebildiermark. Min unlang to the die the tidle ware be volking thand, ver torrelding torren to of bewaring overeitse dvir dilipaale in droë

gebiede onder wek. Die mee de ope de overtin Namahwaland voorkom, word deg oin een recervaatge vind en nog be diermde gebiede mae tge ve cilg word a con challe will be wan.

► Beskerming van Skilpaale Alle dilipaale in Buid-Affika word be dierm deur die wet(CITEB, Bylae II oor beskerming). Ditbeleken dat ditonwetig I com skilpaale of cklipadelers uitdle veid te verwyder en dat jy 'n permitmoethê om 'n cklipad aan te hou en 'n uitvoerpermita's jy met cklipaale wil handel

die World Concervation Union (UCN) ce Red Dee Lisrgehia ods ceer ac "Laer richo, amper bedreig". Om dathulle habitat vernietig word en daar onwettig met hulle handel ge dryf word, I a die padio perchilpad in ge vaar en het hulle skicks be diarming nodig.

- ► JY kan Skilpasie Help Bewaari Loc dilipaale uit canneer jy hulle in die
- Wee cop die uith yn vir dilipaale watoor in
- pad loop on moonle oor hulle ry nie i Meid die onte tige vang en aanhou van chlipsale aan by jou gemeen chap delerc, bewaring diggame o fdle poll de.

Ac Jyna die chilpaale in Jou gebied om den, kan Jy, Jou gemeen chap en be coeker calmai ckilpaale en ook die voordele wathulie vir die veld bring, waardeeri

> CRITICAL ECOSYSTEM PARTNERSHIP FUND

## Hoekom is Skilpaaie Belangrik?

► Skilp sale as Planteters Hulle is miskien nie so groot soos olifante of renosters nie, maar skiipaale is belangrike planteters – itulie eet bale soorte vetpiante, grasse en krule. Hulle eet ook 'n verskeldenheid sade en kan selfs 'n rol speel om die sade in die veld te versprei.

#### ► Skilp sale as Reptiele

Skilp aa ie Irelp on a om die evoluale van rep beie en die blologie van rep beie in voest; ne te verstaan. Hoe ooneef reptiele soos skillpaale in om standigisede soos ulter ste temperature en la e reënval in droë gebiede? Skilipasie doen verskillende dinge om hulle liggsam stemperatuur stablel te hou sodat hulle in die som er én winter vir langer tydperke aktief kan væes. Hulle kan ook die manier waarop hulle liggam e werk, verander om in bale droë toestande te coneer. As on s weet iroe inulle dit doen, help dit on som ook ander reptiele in die voestyn te verstaan!



## Navorsing Oor Skilpagie in Namakwaland

Et hetin Paul choek in die Lelle tinteinre cervaat Kamakwaland, na vording oor knopple odop cklipaale gedoen. Et hetgekk ofk nopple od op cklipaale in die verplant Karoo geraak word deur verckillende tipe o grondge bruik. Et hetge vind datdaar meer chilpaale ic in gebiede waar daar nie vee Ic nie, dat chilpaale minder plante he tom te setvannser hulls in gebieds mette vest ves I cen dathulls bals groo tafclands mostloop — com c'n kilomster per dag — om ho c'te vind in gebiede wat owaandeur vee bewel word. Die weiding van vee hetdu o'n in vloed op die oorleving en bewaring van die knoppleisdopskilpaale in die verblant-Karoo. Econop han corbevelding ook die verspreiding van plantsade deur skilpaale



