# CEPF FINAL PROJECT COMPLETION REPORT

## I. BASIC DATA

**Organization Legal Name:** University of Cape Town, Zoology Department

**Project Title (as stated in the grant agreement):** *The Importance of Porcupines for Maintenance of Endangered Plant Populations and Plant Diversity in the Geophyte-Rich Koue Bokkeveld*

**Implementation Partners for this Project:** Succulent Karoo Ecosystem Programme

**Project Dates (as stated in the grant agreement):** March 1, 2006 - December 31, 2009

**Date of Report (month/year):** 31 March 2010

## II. OPENING REMARKS

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

The Project had very interesting results, the research showing that porcupines play a key role in the unique and diverse ecosystem of the Nieuwoudtville area, in the Succulent Karoo. Porcupines act as ecosystem engineers through their disturbance of the soil whilst foraging and alter plant community dynamics through selective herbivory and disturbance activity. Porcupines promote rare and endangered bulbs and help maintain biodiversity. The dissemination component of the project (workshops, talks, national TV programmes, local and national radio interviews, national and provincial newspapers, newsletters, Farmers magazine articles, pamphlets, etc) reached a broad range of stakeholders, from local inhabitants to national audiences, and changed perceptions about porcupines. Hundreds of people have contacted the project leader to ask for more information about porcupines, to express interest in the results, and people, including farmers, have shown a willingness to change management practices.

## III. ACHIEVEMENT OF PROJECT PURPOSE

***Project Purpose****: To determine the role porcupines play in the ecosystem and to showcase the positive role porcupines have in maintaining biodiversity. To develop appropriate agricultural problem animal management/techniques communicated to and replicated by local community and farmers*

**Planned vs. Actual Performance**

| Indicator | Actual at Completion |
|---|---|
| **Purpose-level:** | |
| ***1.*** *PhD on porcupine herbivory completed in 4 years with attendant reports on important information for SKEP use and management recommendations. Porcupine mitigation measures used on at least three farms witin 4 years, achieving elimination of porcupine hunting on these farms. Awareness created so that at least 50% of farmers know of these measures and the value of porcupines.* | PhD data collection completed, to be written up by December 2010; the reports are in final stages of completion and will be available in 2010. (Delays due to illness and financial administration issues.) Porcupine mitigation experiments to start August 2010, although already some farmers have stopped hunting porcupines. Awareness has been raised so that at least 50% of farmers in the region know of the value of porcupines. |

***Describe the success of the project in terms of achieving its intended impact objective and performance indicators.***

The project was successful, in terms of scientifically quantifying the positive role of porcupines in the ecosystem and achieving a broad level of awareness of the positive role porcupines play in the maintenance of good veld. In the time period so far several farmers have changed their farming practices to not hunt porcupines, and many more now have a new perception of the value of porcupines. There is still more work to be done, and the mitigation experiments will yield results that will be useful to farmers (these were delayed due to unavoidable reasons).

***Were there any unexpected impacts (positive or negative)?***

Unexpectedly people in the area showed a high interest in the research I am doing on porcupines, and by simply talking to people in informal conversations, it was possible to change perceptions. I also found that doing innovative presentations at meetings, workshops and conferences resulted in far more people paying attention, and thus spreading the word. Many people would contact me for information about porcupines just because they remembered my unique presentation from months or even years before!

## IV. PROJECT OUTPUTS

***Project Outputs**:*

**Planned vs. Actual Performance**

| Indicator | Actual at Completion |
|---|---|
| **Output 1: Improved knowledge on the ecological effects of porcupines in the natural ecosystems of the Succulent Karoo, i.e., the influence of porcupine herbivory and disturbance processes on plant and soil variables of the landscape. Furthermore, through this research our understanding of the population biology of the porcupine will be greatly enhanced.** | Through this project we now have a vastly improved knowledge of the ecological role of porcupines, including their foraging and disturbance impacts on plant biodiversity and soil turnover. They play a key role as ecosystem engineers. |
| ***1.1.** Report produced on porcupine herbivory effects in the endangered plant communities of the Succulent Karoo, by the end of the project; including a section on porcupine benefits for farmers, incorporating engineering effects on soil and seeds. This information will be communicated to farmers and the local community through dissemination activities (see Output 5).* | Report in final stages of completion, the data from exclosures and permanent monitoring plots show significant effects of porcupine foraging on plant biodiversity, allowing us to conclude that the porcupine is a key driver of Renosterveld dynamics. |
| ***1.2.** Vegetation map of bulb distribution, including rare species, on Glenlyon established by December 2007, and added to throughout the project, and a report produced by December 2009 on bulb biomass and density figures for SKEP's use in conservation priority planning* | A broad scale vegetation map has been completed. A report is in the final stages of completion on bulb biomass and density on the Hantam National Botanical Garden study site. |
| ***1.3.** A scientific paper submitted to an international peer-reviewed journal on the ecological role of porcupines in the Succulent Karoo after completion of the* | All scientific papers will be completed by 2011, after my other PhD work (done in the Eastern Cape too) is also finished. |

| | |
|---|---|
| *project.* | |
| ***1.4.** A foraging model created to illustrate trophic effects of porcupines by December 2009* | Foraging model to be completed after GPS collars on Eastern Cape porcupines removed (this is another part of my PhD not funded by CEPF and thus not under the same time frames). Data from GPS collars on Succulent Karoo porcupines show interesting foraging trends and high impacts of porcupines in this region. |
| **Output 2: Scientific verification of the effects of porcupine trophic and disturbance effects on population dynamics of selected rare and endangered geophyte species; including increasing the current understanding of these plant species' life histories and population biology traits.** | Although this experiment is still in progress, we have already found verification that porcupines promote a rare, endangered geophyte species in this landscape. |
| ***2.1.** GPS locations/GIS layer produced of populations of endangered/ endemic geophyte species by July 2007* | GPS layer created of *Sparaxis pillansii* on Hantam National Botanical Garden. |
| ***2.2.** Report and scientific paper written on the positive propagation of porcupine foraging activity on endangered geophytes and on important life history data on endangered species (information to be shared with the Threatened Species Project), by the end of the project* | This report will be completed and available in 2010 (final monitoring taking place this year – delayed due to illness and institutional financial administration delays). |
| ***2.3.** GIS maps will be available during the project to show GPS collared porcupines' foraging patterns in the geophyte patches.* | GIS maps are available of porcupine foraging patterns on the Hantam National Botanical Garden, in Nieuwoudtville, based in the Succulent Karoo. |
| **Output 3: Knowledge on how porcupines respond to hunting pressure and how this relates to farming practices that persecute porcupines. A cost-benefit analysis of the economic values of porcupines will be an outcome of the questionnaire study, in addition to an increased awareness of farmers' perceptions concerning pest wildlife.** | Knowledge on how porcupines respond to hunting pressure has been gained from an external project, and thus no experiments on this were conducted in this project (funds designated for these experiments were returned to CEPF). The cost-benefit analysis is still in progress. |
| ***3.1.** A questionnaire developed in liasion with social/ resource economist/statistician, and at least 100 interviews conducted, by January 2009* | In progress, see above |
| ***3.2.** Cost-benefit analysis written up by December 2008, as a report for use in dissemination (see Output 5)* | In progress, see above |
| ***3.3.** Information on hunting impacts on populations (i.e., data on how shooting porcupines might lead to an unexpected increase in numbers) will be incorporated into Awareness pamphlets, Information Packs, Farmers' Day workshops (see Output 5) by February 2009* | It has been shown by other projects that porcupines increase in number when hunted on farms. However there is a caveat, that when the hunting pressure is unrelenting and source populations are also persecuted (as happens with the increasing quill trade resulting in increased hunting of porcupines), porcupine populations start to decline dramatically. |
| **Output 4: Research will reveal what the most effective porcupine mitigations are that can be used in the Succulent Karoo agricultural community.** | Research has been conducted on porcupine mitigation and the mitigation experiments to be conducted in August 2010 will yield further results. |
| ***4.1.** A library of literature will be assimilated throughout the duration of the project, on past and potential porcupine damage control measures, and be used in implementing porcupine mitigation experiments* | A library of literature shows that repellents can work, but these must be safe to other animals and cost effective. |
| ***4.2.** Experiments will have been set up and* | This experiment was delayed due to illness, and is |

| | |
|---|---|
| *conducted on various farms to test the various methods by December 2008. The most successful method will be assimilated, written up in a format relevant for farmers and disseminated through the activities listed in Output 5.* | to be conducted in August 2010. |
| **Output 5: Farmers in the Succulent Karoo are made aware of the results of this project, including the natural role of porcupines in the ecosystem, how hunting affects porcupine populations, the relevancy for farmers of this information and the means a farmer can use to mitigate or limit porcupine damage on his/her farm. Other sectors of the community, including government organizations, nature organizations, scientific researchers, local farm labourers, local schools, NGOs, SKEP partners, etc, are aware of the results and significance of the research conducted in this project.** | Farmers have been made more aware through a series of articles in local newspapers, local radio interviews, national TV programs, personal conversations, workshops and field trips. |
| ***5.1.*** *Knowledge disseminated to farmers through Farmers' Awareness Day held in 2009, and through the Botanical Society's Stewardship Project; a broader group of farmers will be reached through a popular article on porcupines in Farmers Weekly written up by July 2009; extension officers informed through field days, and meetings with Department of Agriculture. Information packs will be designed, printed and distributed by July 2009, for land users. At least 50% of farmers in the region will have heard of the results of the project through various media and fora by the end of 2009.* | Knowledge has been disseminated through the channels mentioned above, as well as Farmers Weekly articles, excerpts in farming magazines, TV shows, Afrikaans newspaper articles, magazine articles, radio interviews and through workshops aimed at stakeholders. Information packs were not produced due to the delay in mitigation experiments and these results will instead be spread through further awareness raising, including more presentations targeting farmers, radio interviews in the region, as well as a pamphlet included in the questionnaire. |
| ***5.2.*** *Presentations for AZEF and FF will be done and made available on CD. 60% of all researchers working in the Succulent Karoo will be aware of this work by 2010. International audiences will also be made aware through attendance (paid for by UCT) at international conferences to present the scientific findings, and through publication of research findings in international journals (see above Outputs).* | Presentations have been done at AZEF four times, and once at Fynbos Forum (and another presentation will be done at Fynbos Forum in August 2010). International conference only to be attended at end of PhD (not funded by CEPF). |
| ***5.3.*** *Knowledge disseminated to community through Biodiversity Support Group forum (meets every 2-3 months); Knowledge disseminated to local youth through educational days held durng the project at the local schools. At least 40% of Nieuwoudtville inhabitants and local workers aware of the nature of this work and the results* | This has been accomplished at several Biodiversity Support Group meetings. Knowledge disseminated to youth during field trip to see porcupines. At least 40% of inhabitants aware of this research. |
| ***5.4.*** *Pamphlets produced to disseminate results to all sectors of society by June 2009 and distributed at meetings, to farmers, at talks, education days, etc. DEAT will be supplied with information though personal meetings and information exchange. A meeting held with the local municipality at the beginning and end of project and progress communicated regularly.* | Pamphlets produced for the visitors to the study site (Hantam National Botanical Garden). Stakeholders informed through workshops and personal communication. |

| | |
|---|---|
| ***5.5.*** *Attendance and verbal report on progress of project at SKEP information sharing meetings on a regular basis, resulting in awareness of my project design, progress and results amongst all SKEP partners* | SKEP meetings were regularly attended, and information duly shared, resulting in a widespread knowledge of the nature of this project throughout the SKEP partner network. |
| ***5.6.*** *Local Biodiversity facilitator will have substantial experience in the field at the end of the project* | Biodiversity facilitator has experience with porcupine collaring. |

***Describe the success of the project in terms of delivering the intended outputs.***

The project was a qualified success, with the majority of intended outputs achieved and a very satisfactory scientific verification of the positive ecological role porcupines have in this unique ecosystem. There were some outputs which could not be finished in the time frame (but will still be completed within the next year).

***Were any outputs unrealized? If so, how has this affected the overall impact of the project?***

Only a few outputs were unrealized during the time frame (and the funding for these was duly returned to CEPF), specifically the experiments on impacts of hunting porcupines, but this particular issue has recently been dealt with elsewhere, so there was no need to duplicate. The information from the other source will be used in dissemination. Some outputs are still in process due to various reasons (see below) but will be accomplished and forwarded to CEPF in due course.

## V. SAFEGUARD POLICY ASSESSMENTS

***Provide a summary of the implementation of any required action toward the environmental and social safeguard policies within the project.***

During all experiments and collaring projects, I obtained Ethics permission and the appropriate permits from Nature conservation authorities.

## VI. LESSONS LEARNED FROM THE PROJECT

***Describe any lessons learned during the various phases of the project. Consider lessons both for future projects, as well as for CEPF's future performance.***

The lessons learnt were as follows:

- Right at the beginning factor unexpected delays into your proposal time frame, such as illness.
- Try find an institution that can handle funding with minimum bureaucracy as from the time I requested funding from my institution to the time I received it took several months each time, and delayed several of my ecological experiments which were by nature long-term (hence I could not "fast-track" them).
- Ecological conditions are unpredictable and if there is a bad rainfall year, your experiment results will be delayed.
- Do not underestimate the power of the spoken word – I reached more people through speaking to them, engaging with people and through my innovative presentations than through pamphlets.

***Project Design Process: (aspects of the project design that contributed to its success/failure)***

The lesson learnt was that when designing a project, you need to carefully consider time elements, and factor in a huge contingency time period for ecological and funding delays. However that said, the exclosure experiments could not be re-measured in less than 3 years and the funding delays meant my experiments had to be delayed by a year. I was also at a disadvantage in that being a student, I could not directly access or manage the funds in the university accounts, and had to go through a much more convoluted process to request it than staff members or associates would have had to. I had to manage my funds through a third party, who had no knowledge of my project. This third party was the departmental secretary post which had three different people in it during the course of this project which meant each time the new person needed to be trained in account management skills, resulting in further fund-accessing delays for me.

***Project Execution: (aspects of the project execution that contributed to its success/failure)***

The Project was executed on an individual basis as it was a research project, done as a PhD, and this worked well, except for the fact that there was less support from the University for this work, as it was done at a distant location from the university.

## VII. 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 |
|---|---|---|---|
| | | $ | |
| | | $ | |
| | | $ | |
| | | $ | |
| | | $ | |
| | | $ | |
| | | $ | |

***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.***

Boekenhoutskloof Wine Estate sponsored this project to the additional amount of $37 300. This was not granted as a result or in any way connected to CEPF funding and is still in place. This

project will continue into the future, for at least a year, and awareness raising will continue beyond that. There is still funding from the University of Cape Town to continue the project.

## VIII. ADDITIONAL COMMENTS AND RECOMMENDATIONS

## VIII. INFORMATION SHARING

CEPF is committed to transparent operations and to helping civil society groups share experiences, lessons learned and results. One way we do this is by making programmatic project documents available on our Web site, www.cepf.net, and by marketing these in our newsletter and other communications.

These documents are accessed frequently by other CEPF grantees, potential partners, and the wider conservation community.

**Please include your full contact details below:**


| | |
|---|---|
| Name: | Christy Bragg |
| Organization name: | University of Cape Town |
| Mailing address: | PO Box 71, Nieuwoudtville, South Africa, 8180 |
| Tel: | +27 27 218 1276 |
| Fax: | +27 27 218 1276 |
| E-mail: | Christy.Bragg@uct.ac.za |