

## The Rufford Small Grants Foundation

### Final Report

Congratulations on the completion of your project that was supported by The Rufford Small Grants Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. The Final Report must be sent in **word format** and not PDF format or any other format. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. Please note that the information may be edited for clarity. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to [jane@rufford.org](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

#### Grant Recipient Details

<b>Your name</b>	Halszka Hrabar
<b>Project title</b>	Cape mountain zebra conservation – ensuring the future stability of this vulnerable sub-species.
<b>RSG reference</b>	8815-1
<b>Reporting period</b>	November 2010-February 2012
<b>Amount of grant</b>	£5048
<b>Your email address</b>	<a href="mailto:Halszka.Hrabar@live.nmmu.ac.za">Halszka.Hrabar@live.nmmu.ac.za</a>
<b>Date of this report</b>	March 2012

**1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.**

Objective	Not achieved	Partially achieved	Fully achieved	Comments
What are the primary factors influencing population performance of CMZ?		X		Long term performance data were not available for most populations. The focus was therefore more on factors affecting population demographics, such as the age and sex composition of populations, herd size etc. Data were collected from 10 sub-populations.
What factors determine a successful translocation and initial reintroduction?			X	Using data from 53 translocation events, the success of hot releases (straight off the truck) versus boma releases was compared. The effect of founder population size on reintroduction success was also investigated.
What determines reproductive sex allocation in CMZ?		X		One aim here was to record the effect of social status on reproductive sex allocation but this proved to be beyond the scope of this project. Instead, environmental influences at the population level were investigated, e.g. rainfall. Foal sex ratios were determined for two years running for all 10 study populations.
What effect does the re-introduction of predators have on resource use and demographics of CMZ?	X			Additional funding necessary for GPS collars for monitoring zebra movements in relation to lion movements was not obtained. Population demographics prior to the lion introduction in Karoo National Park was recorded though, which can be used for comparative purposes later on.
Advise/train private owners/managers on management recommendations.			X	Detailed demographic data on 10 sub-populations was handed over to managers, providing a foundation for their own further data collection and population monitoring. Management recommendations were made where necessary and data collection techniques were taught where possible. Further training and advice will be available through the website.

Set up a networking system for owners/managers to communicate with one another.			X	The website is near completion and will be live by the 30 April 2012.
Compile a comprehensive conservation and management plan for CMZ	X			A Cape Mountain Zebra Working Group Meeting was scheduled for April 2011, during which a Biodiversity Management Plan for the Species (BMP-s) was to be discussed. This meeting, which is not under my control, was however, postponed and is due to take place in 2012. A management plan cannot be compiled until this meeting has taken place, as input from all stakeholders needs to be considered. Results from this study will, however, contribute significantly to this management plan.

**2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).**

Determining female social rank proved to be beyond the scope of this project. To determine this statistically, numerous interactions between each female in a herd are required. It soon became apparent that the time frame of the project would, however, not allow this as the priority at this stage was to collect data (population demographics) from a large number of populations, rather than very detailed data from one population with a small sample size. The flight distance of the zebra was often large, in mountainous terrain with a limited road network. Data collection potential was therefore limited as animals moved out of visible range. More time in one or two suitable target populations is required to collect this information.

When considering management plans for the whole metapopulation, input from all relevant stakeholders is necessary. This can take time to co-ordinate and drive, resulting in unforeseen delays. Ensuring the Cape Mountain Zebra Working Group Meeting takes place is of priority for 2012.

**3. Briefly describe the three most important outcomes of your project.**

1) An improved understanding of the impact of translocation methods and determinates of successful reintroductions. Although translocations between isolated sub-populations are necessary for a metapopulation approach to management, the mortality rate during these translocations was found to be 10.38%, which is equivalent to the mean annual population growth rate. The hot release method, where animals are released straight off the truck into their new habitat, is more successful than releasing animals into bomas first, as the death rate was double in boma releases (14%) compared to hot releases (7%). Small founder population size (less than 14 individuals) resulted in poor population performance or failed reintroduction.

2) The influence that the age and sex composition of a population has on herd structure, reproduction etc. was determined, which has useful management implications. The adult male: female ratio in a population was found to influence the size of breeding herds, for example, as a higher male: female ratio results in smaller breeding herds (fewer adult females per herd). The abundance of surplus males therefore seems to promote the formation of new breeding herds and as a consequence, the effective population size is increased, as more adult males are contributing to the gene pool. Previous recommendations for a near 1:1 adult sex ratio are therefore justified and the need for 'excess' males in a population is highlighted i.e. justification to hunt these males is reduced.

3) Preliminary reproductive sex allocation results show a trend opposite to most other ungulates and even other Equids and go against the predictions of the Trivers-Willard hypothesis (TWH), which states mothers in good condition should prefer sons. We found that below average rainfall (i.e. reduced resources) during the year of conception tended to result in more male foals (e.g. in the Camdeboo area in 2010, 81% of foals were male when rainfall was 33% below the annual mean), while the male: female ratio was close to 1 when rainfall was not much different to the annual mean. Interestingly, one population had a strong female bias for all age classes (75%, 72% and 67% for foals, yearlings and adults respectively) and this population is kept on old grazing pastures with abundant grazing.

#### **4. Briefly describe the involvement of local communities and how they have benefitted from the project (if relevant).**

Field rangers/managers accompanied me during my field work in a number of areas and learnt relevant data collection techniques which can be used in future. It was also very useful to have one-on-one discussions with managers about management issues and general Cape mountain zebra behaviour. A better understanding and appreciation of the sub-species was gained.

#### **5. Are there any plans to continue this work?**

Yes, the postdoctoral research position at Nelson Mandela Metropolitan University has been extended for another year. Areas that will be addressed are listed in the 'next steps' section, but are dependent upon funding availability.

#### **6. How do you plan to share the results of your work with others?**

- 1) I will take part in Cape Mountain Zebra Working Group Meeting, during which a Biodiversity Management Plan for the Species (BMP-s) will be discussed. This is due to take place sometime this year (postponed from last year). Results from this study are invaluable to this management plan.
- 2) Results are being included in the latest Cape Mountain zebra IUCN report by Patricia Moehlman.
- 3) I have applied to present a paper at the IV International Wildlife Management Congress in Durban, South Africa in June 2012.
- 4) I plan to present a paper at the International Wild Equid Conference in Vienna in September 2012.
- 5) A paper, looking at factors driving Cape mountain zebra population demographics is in preparation.

**7. Timescale: Over what period was the RSG used? How does this compare to the anticipated or actual length of the project?**

November 2010-February 2012. This was three months longer than planned due to three months maternity leave.

**8. Budget: Please provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used.**

Item	Budgeted Amount	Actual Amount	Difference	Comments
Mileage – 10070km	2747.25	2766.48	19.23	Accurate estimation of 10000kms.
Accommodation – 18 nights	784.93	267.82	-517.11	Less than expected as much accommodation was provided for free or was cheaper than expected.
Admin – phone calls and postage.	78.49	49.05	-29.45	Slightly less than expected,
Scope - Yukon 6-100x100 Spotting scope	313.58	384.54	70.96	A suitable model with sufficient magnification was a bit more than originally budgeted for. It proved to be worth it for the extra magnification.
Website	549.45	643.64	94.19	Larger site than originally planned, as more information (i.e. pages) was added.
<b>Total</b>	<b>4473.53</b>	<b>4111.53</b>	<b>-362.18</b>	<b>* Local exchange rate in March 2012 is R12.74 to £1</b>

**9. Looking ahead, what do you feel are the important next steps?**

1) Further data collection on foal sex ratios across populations, to confirm the apparent trend from these preliminary results. Areas previously with below average rainfall received high rainfall in 2011. Recording the effect of this on foal sex ratios (towards the end of 2012) will add great value to the data set. If the relationship is confirmed, investigating why Cape mountain zebra display a trend opposite to most other ungulates and equids will be a priority. Is it related to unpredictable resource availability, for example?

2) The initial aim of the study, to determine the influence of female social rank on reproductive sex allocation is still a priority. This will help explain patterns on the population level and the factors driving the unusual trend observed in phase one of the study. A few target populations which are large enough, relatively habituated and occur on suitable habitat for data collection would be chosen.

3) The effect of lions on population demographics and population performance is an urgent need. Since their introduction into Karoo National Park, lions have been preying upon Cape mountain

zebra regularly. Predation pressure is also expected to increase in future as lions are introduced to more areas with Cape mountain zebra.

4) The pressure for hunting quotas continues to increase as Cape mountain zebra numbers increase. Research into the possible consequences of hunting is an urgent need before hunting quotas are issued.

5) Ensuring the Mountain Zebra Working Group meeting takes place, so that a species management plan can be discussed and written up.

**10. Did you use the RSGF logo in any materials produced in relation to this project? Did the RSGF receive any publicity during the course of your work?**

I have requested that the RSGF be acknowledged in the IUCN report. The logo will be used on the two conference presentations planned to be made this year and will be clearly visible on the website. Acknowledgement will also be made in the management plan and any publication.

**11. Any other comments?**

The Rufford Small Grants Funding has enabled invaluable research on the threatened Cape mountain zebra. We now have knowledge of the population demographics of the metapopulation as a whole, which is crucial for comparative purposes and future management decisions. This information will form the basis of the species management plan to be put together this year. We also have an improved understanding on practical issues such as translocation methods, as well as interesting scientific questions such as what drives reproductive sex allocation. Furthermore, this work has formed a solid foundation upon which future research can be built, as additional questions and issues have arisen.