

## The Rufford Small Grants Foundation

### Final Report

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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. 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. 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**

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Grant Recipient Details	
<b>Your name</b>	Lindsey Gillson
<b>Project title</b>	Palaeoecology, Fire Management and Vegetation Dynamics in the Cederberg Wilderness Area, South Africa
<b>RSG reference</b>	42.09.06
<b>Reporting period</b>	July 2006 – December 2008
<b>Amount of grant</b>	£5000
<b>Your email address</b>	Lindsey.Gillson@uct.ac.za
<b>Date of this report</b>	28 November 2008

**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
July 2006: First coring session			X	This was a very successful coring trip on which we cored two sites, De Rif and Wlebedacht. The De Rif Core was 1.64m and had good stratigraphic preservation.
August 2006 March 2007 Preliminary pollen and charcoal analysis. AMS radiocarbon dating			X	Fiona Ballantyne was trained in pollen and charcoal analysis and successfully analysed 49 levels of the De Rif core for pollen and charcoal. A basal AMS radiocarbon date gave an age of 2320±30 BP (uncalibrated) and a second at 80cm had an age of 400±30 BP. Now we have a completed pollen diagram, we have applied for two more radiocarbon dates and are awaiting the results of these.
April 2007 Second field session. Vegetation surveys and collection of pollen surface samples. More cores taken if needed.	X			The second field trip was deemed unnecessary because no further cores were needed, due to good pollen preservation in the De Rif Core. A publication by Sugden and Meadows had already described the modern pollen rain in the Cederberg (Meadows and Sugden 1991)
May 2007-Feb 2008 Pollen and charcoal analysis, vegetation and modern pollen analysis			X	Pollen and charcoal analyses is now complete.
March 2008-June 2008 Analysis and interpretation of data. Project write up and preparation of manuscripts for publication		X		Fiona Ballantyne has analysed the data, with input from me. She has assembled the results chapter of her thesis and is now working on the interpretation of the data. This has taken longer than we anticipated in our original proposal, but we anticipate that Fiona will have completed her dissertation and prepared a Manuscript for publication by March 2009.

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

We tried Pb-210 of the most recent sediment, but didn't find any. This suggests that sediment stopped accumulating c. 100 years ago. We dealt with this by using pollen markers like maize and wheat as chronological markers.

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

- 1) There is a long history of human use and management of the Cederberg. The vegetation composition has shifted during these different management periods probably through a combination of disturbance and climate change.
- 2) We found that disturbance by colonial farmers mainly affected vegetation through trampling and disturbance, rather than alterations in the fire regime of the CWA.
- 3) The increase in grasses and Cyperaceae may in future increase the probability that the area will burn and hence shorten the fire return interval which may cause further shifts in the vegetation composition towards more fire tolerant species.

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

We consulted with Cape Nature before our coring trip. We will feedback our results to them. It is hoped that this information will provide insight into the De Rif site's history and the general use of the Cederberg by people. It may create further interest in the history of the area.

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

There is an ongoing interest in research in the Cederberg at UCT, and we hope the Cederberg will continue to be a core area of Fynbos research. Currently, as well as our project there are also projects looking at fossil pollen deposits in hyrax middens (Quick and Chase, ongoing) and using repeat photographs to study landscape change (Bonora and Hoffman, ongoing). This builds on previous work by February, and Sugden and Meadows, which used pollen analysis and dendrochronology to study long term vegetation change. (Sugden and Meadows 1990, Meadows and Sugden 1991, February and Stock 1998, 1999, February et al. 2007)

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

We will publish our results in an ISI rated international journal and will circulate PDF to interested parties like Cape Nature, and the Fynbos Forum. We have presented preliminary results at the 2008 Interfaces meeting of the Fynbos and Arid Zones Fora, and will present complete results at Fynbos 2009 and / or South African Association of Botanists 2009.

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

The RSG was used from 2006 until December 2008. The project took longer than expected. We did not spend as much money on field work as we expected because the second field trip was not necessary.

**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
Field Expenses	£3155	£2018	+£1137	We were able to use a colleague's 4x4 and this reduced expenses on our field trip significantly. This was less than we expected because only one field trip was necessary.
Laboratory Expenses	£1935	£2491	-£556	Difficulties with the chronology meant that we had to spend more on AMS dating than originally anticipated.
Student Costs	£5260	£2690	+£2570	Student was largely self-funded, and costs were shared with a colleague.
Running Costs	£2135	£900	£1235	
<b>TOTAL</b>	<b>£12485</b>	<b>£8099</b>	<b>£4386</b>	

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

In the immediate future, we need to interpret, write up, and publish our data, as well as disseminating results at conferences and via publication. In the future we will continue to develop and interdisciplinary focus on the landscape history of the Cederberg Wilderness Area.

**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?**

Yes, it was used on a PowerPoint presentation at the Interfaces meeting 2008, held at Oudsthoorn South Africa. A poster with the project proposal and preliminary results was presented at the SASQUA XVII conference (Southern African Society for Quaternary Research) in April 2007 in Howick South Africa.

I have also spoken to my colleagues about the grant and encouraged them to apply for it?

**11. Any other comments?**

Many thanks for your support of our project.

**Literature**

- February, E. C., and W. D. Stock. 1998. The relationship between ring width measures and precipitation for *Widdringtonia cedarbergensis*. *South African Journal of Botany* **64**:213-216.
- February, E. C., and W. D. Stock. 1999. Declining trend in the C-13/C-12 ratio of atmospheric carbon dioxide from tree rings of South African *Widdringtonia cedarbergensis*. *Quaternary Research* **52**:229-236.
- February, E. C., A. G. West, and R. J. Newton. 2007. The relationship between rainfall, water source and growth for an endangered tree. *Austral Ecology* **32**:397-402.

- Meadows, M. E., and J. M. Sugden. 1991. A Vegetation History of the Last 14,000 Years in the Cederberg, South-Western Cape Province. *South African Journal of Science* **87**:34-43.
- Sugden, J. M., and M. E. Meadows. 1990. The History of the Clanwilliam Cedar *Widdringtonia cedarbergensis*. Evidence from Pollen Analysis. *South African Forestry Journal*:64-71.