

The Rufford Foundation

Final Report

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

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Prof. Peter Teske
Project title	A second look at the conservation genetics of the Endangered Knysna seahorse: can new molecular tools improve management practices?
RSG reference	14490-1
Reporting period	2015
Amount of grant	£5196
Your email address	pteske101@gmail.com
Date of this report	02/02/2014

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
Apply for sampling permit			X	Given the high conservation status of this species, obtaining a sampling permit proved difficult. Specifically, a permit to sample in the Swartvlei Estuary was only granted on November 19th, 2014.
Sampling			X	A 1-month sampling expedition was carried out during November 2014. It exceeded all expeditions, as we found seahorses even in estuaries where they were believed to be virtually extinct. We now have a representative sample from all three estuaries where this species has been reported (Knysna: 35; Swartvlei: 26; Keurbooms: 33).
DNA extraction		X		DNA extracted from fin clips is of a high quality, and we do not envisage any problems with downstream procedures.
Microsatellite optimisation		X		At this stage, 10 microsatellites are amplifying routinely. We are intending to increase the final number to 18.
Microsatellite genotyping	X			Genotyping is expected to commence within the next 2 weeks.
Data analyses	X			No data have been generated yet; we expect to do much of this during the next 2-3 months
Preparation of manuscripts	X			Not yet applicable.
Management recommendations	X			Not yet applicable.

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

Given the high conservation status of this species, obtaining permits proved difficult. We obtained a permit for the Keurbooms Estuary on February 20th, 2014 and one for the Knysna Estuary on May 21st, 2014. For the Swartvlei Estuary (where a single seahorse was reported during the past year, and which suffered from a high *E. coli* count due to sewage pollution), we were required to conduct a pilot survey prior to sampling to prove that taking fin clips from ~30 seahorses would not potentially result in the extinction of the population. After searching for almost 2 weeks in mostly degraded habitat, we found eelgrass habitats with very high concentrations of seahorses and estimated that there might still be several thousand in the system. Permission to sample in the Swartvlei was eventually granted on November 19th, 2014. Despite the delays in obtaining the permit and being

able to only conduct a large-scale sampling expedition at the end of the academic year, we consider the project to be well on track.

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

- a) Very successful sampling expedition.
- b) Extracted DNA of high quality.
- c) Target microsatellites tested so far amplifying routinely.

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

In Knysna, we have received considerable support from members of the Knysna Basin Project, a local initiative aimed at improving the quality of the seahorses' habitat. Most of the samples collected in the Knysna Estuary were found at sites pointed out to us by locals. In the Swartvlei Estuary, park rangers acted as observers during sampling, with the aim of ensuring that we did not kill or remove any seahorses, and to ensure that the fin-clipping procedure was indeed non-destructive. One of the rangers eventually became part of the team and provided shore-based support. In the Keurbooms Estuary, local subsistence fishers pointed out to us where to find seahorses, and they helped to return seahorses to the site of capture.

5. Are there any plans to continue this work?

The work is presently in its early stages, as we were only able to commence sampling in November 2014 (specifically, the time between my last regular exam and my first supplementary exam, which was also when most volunteers were able to interrupt their studies). Given my previous experience with seahorse sampling (both in terms of carrying out the fin clipping procedure safely, and in terms of sampling strategy), I considered it important to lead the sampling expedition rather than rely on inexperienced volunteers. We expect to finish the laboratory work during the next 6 months, and finish work on all manuscripts and management recommendations well before June 2016 (the time we expect the PhD student to complete his thesis).

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

In addition to making all research results available on a dedicated website, we are planning to present our findings in the following ways. First, preliminary results will be presented at this year's conference of the Western Indian Ocean Marine Science Association in Durban. Second, once the work is complete, we are intending to jointly organise a day of presentations with the Knysna Basin Project, at which all scientists conducting work in Knysna will have an opportunity to share their research with the general public (this includes not only our genetic work, but also seahorse survey work and research on water and habitat quality). We consider this particularly important as a means of re-igniting interest in the Knysna seahorse, which we consider crucial to ensure that locals support the work of the Knysna Basin Project.

7. Timescale: Over what period was The Rufford Foundation grant used? How does this compare to the anticipated or actual length of the project?

More than half of the grant was used for the field trip during November 2014, the remainder will be spent on laboratory work. We expect the actual length of the project to be two years.

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.

Much of the budget has not been used yet, as the laboratory work is presently in its early stages. We expect that any differences between budgeted and actual amounts will be minimal.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Field trip	869	2018	-1149	Greater than expected due to large number of volunteers
Consumables	158	24	+134	Some consumables yet to be acquired
DNA extractions	471	45	+81	Not all samples extracted yet
Microsatellite primers	446	223	+223	Second half of primers to be ordered shortly
Microsatellite genotyping	1995	0	+1995	Not yet performed. Slight increase in price
Dive team and equipment rental	1257	342	+915	SCUBA equipment not used as frequently as expected (many sites accessible by snorkelling/wading)
Total	5196	2997	+2199	Exchange rate: 1 GBP = ZAR 17.53

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

The data analyses should yield some very interesting results. We were worried that we would end up with samples from Knysna only, but with representative samples from the other estuarine systems, we are now in a position to study the amount of recent gene flow between estuaries. We are very excited that our main aim of being able to recommend whether or not seahorses can be safely translocated between the different systems can now be comprehensively addressed. In the smaller systems (Swartvlei and Keurbooms), seahorses are present in spatially restricted eelgrass habitats, and these sites need to be monitored carefully in the near future because of a very high extinction risk. Translocations of seahorses e.g. from the Thesen Islands Marina in Knysna (where they are highly abundant) to sites in the smaller estuaries where habitat is suitable but where no seahorses were found presents a viable strategy to increase overall numbers.

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

So far, we have only publicised this project on our personal website and used the logo on the PhD student's thesis proposal presentation. The logo will subsequently be displayed on a website dedicated to this project (which we are presently developing), and at the end of all presentations.

11. Any other comments?

Thanks for supporting this project! It is not always easy to convince people that genetic work can improve the management of an endangered species, so we are grateful for this leap of faith! I am confident that we will not disappoint.