

## 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. 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**

Grant Recipient Details	
<b>Your name</b>	Ut Vu Ngoc
<b>Project title</b>	Assessment on Seahorse Resource in Phu Quoc Island, Vietnam
<b>RSG reference</b>	8954-2
<b>Reporting period</b>	2010-2011
<b>Amount of grant</b>	£5933
<b>Your email address</b>	<a href="mailto:vnut@ctu.edu.vn">vnut@ctu.edu.vn</a>
<b>Date of this report</b>	November 30th 2011

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
Assessment on seahorse fishing status in Phu Quoc island			Direct interview and survey to 30 fishermen in which 35% of them are targeted fishing the rest are non-targeted. Direct monitoring catch landing of 1 fishing boat. Parameters such as fishing gears, fishing season and period, fishing size and species, total catch landing, CPUE, were fully obtained	Number of fishing boats that can be directly recording data was limited (only one) due to the general recent decrease of seahorse production in Phu Quoc island leading to switch to other targets. Number of seahorse fishermen also decreases in recent years. There are more non-targeted fishermen than targeted ones thus data could be less representative. Logging books were provided to the traders (landing point) but the collaboration was broken down as they were not willing to record and provide data for some reason.
Investigation on seahorse diversity and habitats			A complete 12-month sampling and survey was accomplished. Direct measures were conducted at the landing point and on fishing boat. Four species were recorded including <i>Hippocampus kuda</i> , <i>H. spinosissimus</i> , <i>H. trimaculatus</i> and <i>H. mohnikei</i> . Habitats for different species were	As sampling was done once a month, especially onboard measure, thus the catch was very much dependent on weather and areas where fishermen operated fishing. Logging book provided can help monitoring all catch during a month but not so reliable as it

			also described. The short snout seahorse ( <i>H. mohnikei</i> ) appeared to be the rare species as number of individuals was much less compared to others at all time.	also depends on the fishermen collaboration level.
Investigation on peaks of maturation and spawning season based on gonadal development		Histological analysis of the gonad was completed for the first 6 months of investigation. Five stages of gonad development was recorded in which stage V focused in December, April and May that equivalent to spawning seasons. Fecundity and egg diameter were also recorded.		High prices of mature seahorses leading to limited number of seahorses purchased for histological analysis. Histological analysis takes time, thus the second data set (second six months period) is still to be completed in other months to obtain complete data
Investigation on peaks of maturation and spawning season based on recording sex ratio			Sex ratio and pouch male ratio were determined when measuring all fish at the selected landing point. Pouch male ratio is one of the best indicators of spawning season. The results showed that seahorses, especially two predominant species ( <i>H. kuda</i> and <i>H. spinosissimus</i> ) reproduce almost year around with the peaks in June to August.	Samples measured from landing point and onboard can be supplementary to each other but it seems to be a little bias from the onboard catches which are mostly large and pouch seahorses during the study period (may be due to selective fishing areas and mesh size of the fishing gear).

Assessment on recruitment potential			A total of 2,252 seahorse individuals were measured during 12 sampling months. The data was processed to analyse size frequency to estimate the potential of recruitment. The results indicated that seahorses seem to recruit year around responding to year-round spawning.	Expected juvenile's seahorse caught from zooplankton sampling was not obtained, thus recruitment potential based mainly on size frequency
-------------------------------------	--	--	---	---

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

Number of seahorse fishermen unexpectedly reduced significantly, only one fisher who is still seahorse fisher was available at the selected study area for direct monitoring catches. Unwilling collaboration in recording landing catches from the agencies in recording logging book has caused difficulty in assessing the captured production of seahorse in the study area.

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

The first most important outcome: Present status of seahorse fishing in Phu Quoc Island was depicted. Seahorse resource in Phu Quoc has been declining in recent years. Four species found in the area, two main species which have been heavily fished are *H. kuda* and *H. spinosissimus*. Fishing intensity concentrated in daytime (8-12 hours per day) from August to October and February to April. January and November were the 2 months which had lowest fishing intensity and yield. Data recorded from a direct fishing boat (logging book) revealed that yield (CPUE) was highest and stable from April to August. Lowest CPUE was recorded in January and other months. According to the surveyed results, 72% of fishermen admitted that the production or resource has been significantly declined (more than 50% as compared to previous 5 years). However, in comparison of catch landing to other areas in the Central (Binh Thuan, Khanh Hoa) production of seahorse in Phu Quoc still remained higher. Sizes of seahorse at caught also smaller compared to 5 years ago. Data obtained also showed that non-targeted fishing caught smaller sized seahorses than the targeted fishing group. This would impact severely on the resources. More than 82% of interviewed fishermen agreed that the selling prices have been increasing. However, due to the increased operation cost (fuels) and declined resource (lower yield), incomes of seahorse fishermen were not improved. Up to 95% of fishermen reported that they have not received or been informed any policy in resource protection and management. In general, these preliminary results have given a picture of seahorse fishing status and serve as good database for producing measures for monitoring and managing the seahorse resources in Phu Quoc.

Second most important outcome:

Determination of number species of seahorses present on Phu Quoc and the abundance of each species that indicated which species is more vulnerable. Four species (*Hippocampus kuda*, *H.*

*spinosissimus*, *H. trimaculatus* and *H. mohnikei*) were identified in which two species are dominant and the most heavily fished species is *H. kuda*. Other two species are much scarce but still accidentally fished. They appeared in the landing catches from April to November with high percentage of pouch individuals. These data will also serve as base for monitoring and protecting vulnerable species.

The third most important outcome: Determination of gonad development and spawning seasons of seahorses.

The development of gonad of two dominant species was determined through histological study (only complete data of the first 6 months of sampling cycle) showing the fifth stage of gonad occurred in during 6 months of study (from December to May) but peaking in December, April and May. The maturation and spawning seasons or periods are predicted when the gonad reaches the fifth stage. In addition to the gonad development, ratio of pouch male was also determined through monitoring the catches at a landing point. High pouch ratio indicates the spawning season of the seahorse. Spawning seasons of seashores in Phu Quoc were confirmed almost year around but the peaks seem to be in June to August.

These results are very important for monitoring and managing the resources as timing for fishing may be regulated and limited to reduce overfishing.

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

There was a big help and collaboration from local authorities and fishermen. Local officers of the district Department of Economy supported in arranging and introducing to work with fishermen. The fishermen were cooperating in providing all information needed on fisheries status of seahorse and one fisher collaborated to allow direct monitoring his catch at every single sampling period. One trader allowed measuring all fish landed at one time for determining size and sex ratio of the fish batch although refusing recording and providing logging book for daily catch landing.

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

Investigating possibility to do aquaculture of seahorses in Phu Quoc Island to reduce pressure on the resources.

Establishing a protection or conservation program linked with Phu Quoc Marine protected area to monitor and conserve the resource, especially the two rare species.

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

Publishing the results on the national and international journals and websites

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

The project was in line with the actual length, only one month late due to problem of seeking suitable sites and collaboration, starting from December 2010 to November 2011.

**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
Monthly travel by car (Can Tho-Rach Gia, back and forth)	630	693	-63	Increase travelling prices
Monthly travel by fast boat (Rach Gia-Phu Quoc, back and forth)	700	700	0	
Hiring boat for field sampling	840	840	0	Well negotiated
Local transport within the island	336	340	-4	
Refractometer purchase	200	200	0	
Water parameter analysis	288	288	0	Fixed with the estimated prices
Chemicals for histological analysis	499	499	0	Well prepared
Full time assistant for sampling and sample analysis	1200	1200	0	
Accommodation	840	852	-12	
Workshop	200	100	+100	One more final workshop after complete data of gonad development obtained to conclude on maturation and spawning season
Leaflet	200	0	+200	Leaflet will be printed and delivered when complete data obtained
<b>TOTAL</b>	<b>5,933</b>	<b>5,812</b>	<b>121</b>	

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

Collaborating with local authorities to expand knowledge on seahorse resources in order to increase awareness on resource protection and conservation.

Seeking for projects to establish aquaculture of seahorse in Phu Quoc.

**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?**

Not yet.

**11. Any other comments?**

In this case due to sampling was taken one year, thus timing is limited, it would be better to have more time to be finished (at least 1 month for analysis) before submitting report.