

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	Vinh Quang Luu
Project title	Taxonomy, phylogeny, geography and evolution of Bent-toed Geckos (Squamata: Gekkonidae) along the Annamite Mountain Range: A case study in Hin Nam No NPA, Laos
RSG reference	19306-D
Reporting period	March - December 2016
Amount of grant	£9890
Your email address	qluu@smail.uni-koeln.de
Date of this report	28 December 2016

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
<p>To clarify evolutionary processes of species boundaries, biogeographical relationships, and habitat partitioning of <i>Cyrtodactylus</i> species in karst formations of Hin Nam No and surrounding areas.</p>				<p>- Two pairs of karst-adapted cryptic gecko species (i.e. species with distinct genetic differences, but a similar phenotype) occurred on both sides of the Annamite Mountain Range. Only in one case these were sibling species (<i>Cyrtodactylus sommerladi</i> in Laos versus <i>C. roesleri</i> in Vietnam), but not in the other (<i>C. hinnamnoensis</i> in Laos versus <i>C. phonghakebangensis</i> in Vietnam).</p> <p>- On the Laotian side, nine gecko species (<i>Cyrtodactylus bansocensis</i>, <i>C. calamei</i>, <i>C. darevskii</i>, <i>C. hinnamnoensis</i>, <i>C. khammouanensis</i>, <i>C. multiporus</i>, <i>C. sommerladi</i>, <i>G. boehmei</i>, <i>G. sengchanthavongji</i>) currently have to be regarded as endemic to the Hin Nam No region. On the Vietnamese side, seven species including two bent-toed geckos (<i>Cyrtodactylus phonghakebangensis</i> and <i>C. roesleri</i>), three skinks (<i>Lygosoma boehmei</i>, <i>Sphenomorphus tetradactylus</i> and <i>Tropidophorus noggei</i>), and two snakes (<i>Hebius andreae</i> and <i>Boiga bourreti</i>) are currently only known from Phong Nha - Ke Bang and adjacent regions. These high numbers of potential endemic species together with the cryptic species</p>

			complex in <i>Cyrtodactylus</i> provide strong evidence that the karst formations in the northern Truong Son Range represent a hot spot of reptile diversity and of speciation in <i>Cyrtodactylus</i> in particular.
To discover further new records and new species in the area			Three new species to science and one new country record from Laos of the genus <i>Cyrtodactylus</i> were described.
To raise the awareness for conservation among local stakeholders			<ul style="list-style-type: none"> - We have contributed to two posters and a booklet namely: The first poster: Important ecosystem Hin Nam No. The second poster: Six years of Cooperation in biodiversity research and conservation in Lao PDR. The booklet: Six years of zoological cooperation between Laos, Vietnam and Germany. - Twelve HNN staff were trained in techniques for the identification of rare species (especially focusing on cryptic species), designing field surveys, and implementing respective conservation activities.
To identify threats and conservation status of reptiles and amphibians and to propose recommendations for conservation measures in Hin Nam No and surrounding areas.			Two main threats to amphibians and reptiles in Hin Nam No and surrounding areas are habitat destruction and illegal wildlife hunting. Southern Hin Nam No with its high diversity of endemic species was identified as the first priority area for conservation.

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

None

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

- One article about cryptic diversity among *Cyrtodactylus* species along the Truong Son Range was published in the peer-reviewed journal.
- Three new species to science and one new country record from Laos of the genus *Cyrtodactylus* were described.
- Two posters and a booklet were contributed to the stakeholders and 12 HNN staff were trained.

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

Local people were participated to do the field surveys with our team. They help us to identify the survey sites, distribution location of *Cyrtodactylus* species in the protected area. We also explained about the importance of biodiversity and natural conservation via the posters and during the interview process with local people.

5. Are there any plans to continue this work?

I would like to conduct further research on diversity of *Cyrtodactylus* not only for Khammouane Province but also for the hold country.

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

This project's results were published in a peer-reviewed journal. This article was shared with stakeholders including the Hin Nam No NPA, Natural Resources Management Department, GIZ, National University of Laos, WWF.

Luu, V.Q., Bonkowski, M., Nguyen, T.Q., Le, M.D., Ngo, H.T, Schneider N. & Ziegler, T. (2016) Evolution in karst massifs: Cryptic diversity among bent-toed geckos along the Truong Son Range with descriptions of three new species and one new country record from Laos. *Zootaxa*, 4107 (2), 101–140. <http://doi.org/10.11646/zootaxa.4107.2.1>

The first poster was distributed to villages and offices of Natural Resources and Environment Management Department in Bualapha district and Thakhek town. The

second poster and the booklet were showed at the 20th Anniversary of the NUOL including lecturers, students, management officers and related ministries.

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

I conducted two times of field surveys in between February and March as well as in August 2016 instead of one time as proposed. In general, surveyed days are in accordance with the proposed plan of the project.

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
Batteries for digital camera and other field equipment	200	200	0	
Chemical and plastic boxes for specimen preservation	150	150	0	
Headlamps	70	70	0	
Individual field equipment	400	400	0	
Camp equipment	500	500	0	
Personal medication and first aid kit for the project team in the field	200	200	0	
International flight for principal investigator: Return tickets from Germany – Vietnam and from Hanoi, Vietnam - Vientiane, Laos	1620	1950	-370	supported by Cologne Zoo, Germany
Domestic travel	1300	1450	-150	
Wage for a field assistant	900	900	0	
Food for a field assistant	900	900	0	
Stipend for a local person and a forest ranger for guide in the field survey	1800	1800	0	
Food for a local person and a forest ranger for guide in the field survey	1800	1800	0	
Wage for porters	500	500	0	
Food and lodging principal investigator	1050	900	+150	
Training course and discussions for HNN staff and local people	120	120	0	
Total	9890	9890		

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

Correct species identification is a fundamental requirement for conservation measures. The discovery of cryptic species complexes poses a challenge for alpha taxonomy and species conservation, because the true distribution ranges of the species are in fact much smaller than previously assumed. In addition, our results will contribute to promote Hin Nam No as an UNESCO world heritage site in the near future.

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?

Yes, we have printed the poster and booklet, as well as the logo was used in my PhD defence at the University of Cologne, Germany. The RSGF was acknowledged in the peer-reviewed journal.

11. Any other comments?

Finally, we would like to sincerely thank to the RSGF for the kindness and support. This project is really useful not only for our project team but also for biodiversity conservation in Laos.

