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	Ngan Trong Tran
Project title	Surveys to find threatened fishes in the Dong Nai River, Vietnam
RSG reference	18641-1
Reporting period	December 2016 September 2017
Amount of grant	4997
Your email address	ttngan@hcmus.edu.vn
Date of this report	08 December 2017

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
Recognizing and collecting fish species in the Dong Nai River				See "Comment 1" below
Studying diversity of fish species in the Dong Nai River				See "Comment 2" below

Comment 1:
After the field trip, we collected total 136 species in the Dong Nai River. These specimens are stored at Lab of Zoology, Department Ecology and Evolutionary Biology, University of Science - VNUHCM with detail information about date, fishing location and collector. These fishes are the first collection about fish of the Dong Nai River in Ho Chi Minh City. One collection of fish in the Dong Nai River was placed in The Natural Museum belong to Cat Tien National Park.

Comment 2:
Fishes in the Dong Nai River are at high diversity with136 species belong to 92 genera, 38 families and 13 orders. Cypriniformes is the most abundant order with three families, 37 genera and 57 species (41.91% of total species); the second is Siluriformes with eight families, 17 genera and 31 species (22.79% of total species); next is Perciformes with 15 families, 22 genera and 28 species (20.59% of total species).

Neolissochilus stracheyi, *Puntioplites falcifer*, *Poropuntius normani* were first recorded in the Dong Nai River. *Oxygaster anomalura*, *Poropuntius normani* and *Hypsibarbus malcolmi* were first described for ichthyofauna of Vietnam. Two species *Tor dongnaiensis* and *Onychostoma dongnaiensis* are endemic species of this river. The Dong Nai ichthyofauna is sharing two endemic species of the Mekong ichthyofauna with the Mekong River: *Puntioplites falcifer* and *Scaphognathops stejnegeri*.

We recorded the presence of many threatened fishes in the Dong Nai River, including: *Hypophthalmichthys molitrix* (Near Threatened), *Bagarius yarrelli* (Near Threatened), *Wallago attu* (Near Threatened), *Clarias macrocephalus* (Near Threatened), *Boesemania microlepis* (Near Threatened), Most of them were found in the middle of Dong Nai River by fishing with local fishermen. However, these species are very rare because of exploitation and habitat loss (*i.e.* road construction, pesticide from agriculture, sand exploitation or river encroaching).

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

In the project proposal, we proposed to collect fishes in three main sampling sites with different habitats. However, we could not catch fishes at any habitats (*i.e.* deep pool or rapid water) because the local people indicated that they could not catch any there.

Fishes were also found in the local markets but it is too difficult to determine where they were come from due to many middlemen. By interviewing the fish sellers in local markets, sometime we got information about fishermen and met them for more detailed information about fishing locations and fish habitats. But most of the time, fish sellers in the markets were not willing to inform any more information.

Fish identification based on morphology and molecule indicators always get difficult due to lack of comparison between our samples and other species description. Some research institutes and researchers were contacted to refer the specimens but they almost did not keep the specimens or publish the database after their projects finished.

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

After finished this project, we got some important outcomes.

1. Collection of fishes in the Dong Nai River is stored in Lab of Zoology, University of Science with detail information about date and location collected can be used for taxonomy and related researches. This collection is very important for fish taxonomy because the identification of each species could be checked and corrected from subsequent to the original specimen. It also provides voucher specimens to compare the different morphology or the evolution of species in different spatial and temporal scales, answer the new question that arise or hypothesis could be sold when the specimens on hand.

2. Understanding fish diversity is very necessary to provide information about the presence of species, their distribution and habitats. A total 136 species belong to 92 genera, 38 families and 13 orders were identified in the Dong Nai River. Among them, we found 34 species were sold frequently in the local markets: *Notopterus*, *Barbonymus* spp., *Puntioplites* spp., *Oxyeleotris marmorata*, *Ompok siluroides*, *Plotosus canius*, *Clarias* spp., *Hemibagrus* spp., *Pangasius macronema*, *Chana striata*. We also found endemic species or threatened species at the local market. Fishing and selling threatened and endemic species indicated that government did not control the fishing well although they promulgated many policies about fishing in this region.

3. Reports about fish diversity in Dong Nai River, their habitats, distribution and status were sent to the government, including Cat Tien National Park, Dong Nai Culture and Nature Reserve to complete biodiversity data in these regions about fish species, where they occur, threatened fishes and their habitats. Based on these

fundamental knowledge, managers can establish suitable strategies for exploitation and conservation, such as: design further researches, diffuse information to local communities and fishermen to heighten their awareness about fish diversity and conservation, improve policies regarding to fish exploitation.

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

Some personnel of the local government and the national park/nature reserve administration board showed their support and facilitated our work, increase the linkage between researchers and managers. Government can improve their awareness about what they should protect, in doing so, conserve the biodiversity and their benefit. After the work had done, we (our team and the administration group) discussed about further surveys in particularly habitats such as Crocodile Lake (Bau Sau) at Cat Tien National Park, as well as the link between people and the fish resources to know deeply about the fish resources and their role for the environment and stakeholders.

The native people offered their helps as well. They guided us to the sample sites, shared their knowledge/experiences about those sites and the fishes in it and acted as referrer to other fishermen. They had extra income from assisting the survey.

A collection and poster of fishes in Cat Tien National Park have been exhibiting in The Natural Museum at Cat Tien National Park. This collection is a tool for local community and tourists learning about biodiversity and increasing knowledge about nature and the ecosystem. It will make each person has a perception to minimise the effect of human activity on biodiversity. In the future, we also plan to conduct some workshop about fish in the Dong Nai River, their diversity, value and conservation for children and tourist that based on this collection.

5. Are there any plans to continue this work?

Biodiversity conservation must acknowledge the critical links between ecological and social system, refer to and respect the cultures, values, innovations, practices and knowledge of local communities. The strategy to research fish in Dong Nai River highlight four periods for action:

A. Understanding the fish diversity.
B. Recognizing critical links between fish diversity and local community.
C. Identifying ecological and social pressure on fish diversity as well as targets for conservation.
D. Planning action strategy for fish diversity conservation and sustainable development.
E. Evaluating the effect of conservation activities.

With this project, we finished the first step to understand fish diversity in the Dong Nai River. We plan to ask more fund to continue our work with the next step to recognise interaction between the fish and local stakeholders.

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

The results of this project are showed in the ecology master theses of two project members: Ms Tran Trong Ngan and Ms Do Hanh Vi at University of Science - VNUHCM. These full printed text theses are held at the University of Science Library, Library of Department of Ecology and Evolutionary Biology, Library of Zoology Laboratory, supports the reference and research of students or researchers.

Secondly, we make a poster about fish diversity in the Dong Nai River and display it in The Natural Museum at Cat Tien National Park. This poster and the fish collection will show tourists about the fish diversity in this area, their relationships between each group, evolution and beauty.

Ms. Tran Trong Ngan, leading member of this project, presented about "Fish fauna in the lower Dong Nai River: diversity and value" at the "International Conference on Conservation genetics in Mekong River Basin". This conference is in the framework of Peer project Network between Mekong River countries and US collaborative partners, and was hosted by Can Tho University, Vietnam on 6th-7th March 2017. With this presentation, Ms. Ngan announced the diversity, value and conservation status of fish in the Dong Nai River - which was a tributary of Mekong Basin - to ichthyologists and genetics from US and Mekong River Basin countries.

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

We proposed to conduct this project from July 2016 to June 2017 but we got fund from The Rufford Foundation on September 2017. To adapt, we postponed the project 2 months later but keep sampling in two seasons at three sampling sites.

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
Travel from Ho Chi Minh city to Lam Dong province	252	252	0	
Travel from Ho Chi Minh city to Dong Nai province	158	158	0	
Travel from Ho Chi Minh city to Binh Duong province	158	158	0	
Motorbike rental and fuel	761	761	0	
Boat rental for fishing	378	378	0	
Food for team	855	872	-17	Extra people from the government come with us for filed survey
Rent house	632	632	0	
Stipend for protected areas staff	434	434	0	
Stipend for fishermen	869	869	0	
Field expense (maps, notebook, stationery, battery)	300	268	32	We need less field expenses than pro-posed
Chemical for re-storing fish (formalin, ethanol)	150	150	0	
Eppendorf & plastic bottle	50	65	-15	We got more fishes than expected
Totals	**4997**	**4997**	**0**	

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

This project gives us opportunity to get knowledge about fish diversity in the Dong Nai River. The surveys of and communication with local people showed that fish fauna in the Dong Nai River is affected by dams, local fisheries and other local activities (*i.e.* using pesticide and fertiliser in agriculture, road construction or sand exploitation). The habitats under the dams were destroyed. Local people fish without

control from the government, with most of the wild fishes were sold in local markets. However, fish provides the income for fishermen and food for local communities. For the next step, key to our conservation are the local communities that live in and around Dong Nai River as their livelihood depend on the fish in this river and policy to understand the interaction between natural resources and human life: fish resources' roles and services for human; issues in exploitation and usage of the current resources and its management. We hope that after this next step, we can recognize all the threats to fish diversity by ecological and social approach.

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

Logo of The Rufford Foundation was used in posters of fish diversity placed at Cat Tien National Park and in slides of Ms Ngan's presentation under the tittle "Fish fauna in the lower Dong Nai River: diversity and value" at International Conference on Conservation genetics on the Mekong River Basin that was mentioned above.

11. Please provide a full list of all the members of your team and briefly what was their role in the project.

1. Tran Trong Ngan (team leader): Master in Ecology, University of Science - VNUHCM. Duties: fish sampling and field works design, morphological and genetic analysis, data analysis, report writing.

2. Do Hanh Vi: Master student in Ecology, University of Science - VNUHCM. Mrs. Vi working on fish diversity in the middle Dong Nai River. Duties: she joined the field trip, did the taxonomy analysis and analysed the data about fish in middle of the Dong Nai River.

3. Le Duc Khanh: scientific technician in Cat Tien National Park, Dong Nai Province. Duties: he helped us contact with the manager in Cat Tien National Park to get permission and visit some sampling sites; he also took care of the logistic for all the field trip.

We also got the supervision from Assoc. Prof. Hoang Duc Huy (University of Science - VNUHCM) about sampling design and morphological identification. Dr Jean-Dominique Durand (UMR MARBEC) provided technique for DNA analysis during the project. Undergraduate students at University of Science - VNUHCM assisted in morphological measurement and identification. Some student joined the field work and learned about fieldwork skills.

12. Any other comments?

I appreciate The Rufford Small Grant which give me opportunity to conduct a research in the early stage of my carrier as an ichthyologist. This project is a perfect chance for me, my team and my students to practice what we have learned at the university and also benefit to the communities. When doing the research, our team got in touch with practical problem in fish research and conservation in our country.
This project was also an opportunity for my students to "learn by doing". Students in my university joined this project as a field and laboratory assistants. They could apply these knowledge to solve a practical problem, approach their future career and increase personal skills. Most of the students increases their motivation and enjoyment of an ecologist and wants to participate in more projects with our team.