

## The Rufford Foundation

### Final Report

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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](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

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Grant Recipient Details	
<b>Your name</b>	Iresha Nilmini Harischandra
<b>Project title</b>	Phylogeny, Ecology and Conservation Status of the Endemic Skink Genus Lankascincus (Squamata: Scincidae) in Sri Lanka
<b>RSG reference</b>	24685-1
<b>Reporting period</b>	09-04-2018- 09-07-2019
<b>Amount of grant</b>	£5000
<b>Your email address</b>	ireshanh@gmail.com
<b>Date of this report</b>	09-07-2019

**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
<b>General objective</b>				
To assess the molecular phylogenetic lineage and evolution of skink Genus <i>Lankascincus</i> compared to their morphological characteristics				The general objective has been partially achieved at this stage of the project and is being continued in order to meet successfully in the next stage at broader level.
<b>Specific objectives</b>				
To assess the comparative morphological variations within all species of the genus <i>Lankascincus</i>				Comparative morphological variations have been assessed successfully of all the 10 species of the genus.
To analyse the genetic variations of mitochondrial 16S, 12S and <i>cyt-b</i> regions in the Genus <i>Lankascincus</i>				Two out of three (16S, 12S) mitochondrial regions have successfully amplified with designed novel primers. The data under progress for publication. Under unforeseen circumstances the designed primers did not precisely amplify the gene region of all species, hence will be analysed further during the second stage of the project. Fresh set of primers were being optimised to the date of completion of the first stage of project. The genetic variations are being analysed and finalised for publication.
To analyse the genetic variations of nuclear <i>c-mos</i> gene in the Genus <i>Lankascincus</i>				Amplification has been done successfully with the novel designed primers, and the variations have been analysed. Data under process for publication.
To determine the phylogenetic relationship of <i>Lankascincus</i> species from other Lygosomoidea families.				The analysis and phylogenetic tree development is under progression with the sequence data.

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

1. A macro camera lens for close-up photography of skink morphological characteristics

The sensitivity and the resolution of the camera lens available with the field researchers were inadequate in order to obtain the desired precise morphological data. In order to overcome this unforeseen drawback the research team invested in purchasing a macro camera lens for close-up photography as it shall be useful throughout the project at each stage for precise viewing of their scales and other morphometric characteristics useful in species identification purposes. In order to make the purchase the proposed budget was adjusted accordingly within the allocated total budget to make sure no future research work to be disturbed.

2. Conservation Awareness programme

Conservation seminars were planned to be conducted in order to disseminate the knowledge on skinks among the schooling community and other local stakeholders. The team successfully prepared leaflets, pre- and post-seminar questionnaires to analyse the successfulness of the seminar sessions. During sample collection at different sites, the information leaflets were handed over to local communities. However, following conducting the pilot seminar, the research team identified several errors in the pre- and post-questionnaire system developed and the scoring system to be used for data analysis. After thorough discussion the team considered the feedback and comments from the attendees and prepared a general feedback form of which the general audience were much more comfortable with rather than two separate questionnaires. These feedback forms along with leaflets shall be used for the future conservation seminars for qualitative-based feedback for the seminars.

Furthermore, the presentation included information regarding the *Lankascincus* species and reptiles, however, following pilot seminar it was understood that incorporation of an introduction to overall biodiversity conservation section in the presentations will be beneficial too. All these information gathered during first stage will be used to adapt the second stage conservation seminars.

3. Molecular protocols – *cyt b* gene region amplification

The laboratory staff designed unique and novel primers for the gene amplification especially for this project. Three out of the four genes were successfully amplified however, the final gene segment of *cyt b* did not amplify under different attempted conditions in many of the *Lankascincus* gene. The laboratory team identify this interesting finding as a challenge to be explained and will make attempts to identify potential genetic mutations within or between species in this *cyt b* gene during the second stage of the project.

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

1. Intra – species morphological variations

While observing the morphometric characteristics of species in different climatic and geographical localities, morphological variations within species were observed. These could be due to various reasons however, further investigations are in progress.

2. Genetic variations are not related to the morphology

Intra-species morphological variations observed among the species were not congruent with the genetic variations of the selected molecular markers of the study. Further investigations are ongoing.

3. Awareness of the skinks among general public is not satisfactory

Even with the limited involvement of general public in the study, through the findings from questionnaires and casual discussions with local villages, it was evidenced that the communities had little or no or very poor knowledge about the skinks and their importance in addition, with many mythical beliefs. The formal discussions among the residents around the sampling areas (outside the protected areas), revealed that general public is not aware of the conservation aspects or importance of skinks as an animal group. Therefore, proper awareness programmes and their contribution in conservation activities are to be encouraged and recommended. It highlighted the need for such awareness programmes, and the next stage of the project will emphasise on that aspect.

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

The sampling was carried out in the wildlife protected areas under the obtained permits, therefore, any outside personnel were not actively involved in experimental studies at this stage of the project. The involvement was through discussions and sharing their understanding and knowledge on skinks with the research team at the pilot seminars conducted which actuated the need for further awareness programmes. Their attention was brought towards realising the importance of conservation of skinks which enhanced their knowledge on the skink species and ecological balance.

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

Yes. We were able to carry out this study on the genetic diversity analysis of endemic skink genus *Lankasnincus* for the first time in Sri Lanka. The Rufford Foundation has provided the full support on the initial stage of the project (1st year) and we were able to achieve a great success of the project at this level. Considering the experiences, results and data obtained through this project, it was clear that further studies are required and even as a small team we could make a change and impose and impact on the community as well as researchers through obtaining novel data, thereby we are currently developing the second stage of the project to continue further to further describe the phylogenetic and evolutionary relationships of the selected species, which will be beneficial in the conservation management planning and future decisions making of these endemic skinks. With the realisation of the need for awareness on skinks, we hope to continue this work further emphasising

on such awareness programmes especially targeting the young generations and schooling community.

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

The findings of the analysis will be shared with the scientific community through publishing as research papers in reputed journals. Optimised molecular study protocols will be shared through abstracts and presentations at both local and international research conferences.

The conservation aspects and the contribution of general public for the skink conservation that was identified during the project will be shared among the general public by publishing leaflets, posters and booklets at the final stage of the entire project. Upon publication, the sequence data will be shared at NCBI nucleotide database for public access. The data will be shared with IUCN Red List regarding the current phylogeny of the *Lankascincus* skink species to be available to the public for expanding knowledge purpose. The former will be continued with further findings in the next stage of the project. Final reports shall be submitted to Department of Wildlife Conservation of Sri Lanka and Forestry Department of Sri Lanka, the two main governmental responsible authorities on biodiversity and species conservation (as a requirement for research permits, they granted to carry out the research), including the information and suggestions for policy impact on skink species conservation.

All the data from the conservation seminars conducted to the date and further will collectively be utilised in order to build up conservation strategies in Sri Lanka for *Lankascincus* species such as captive breeding and habitat conservation.

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

The Rufford Foundation grant was used in the initial stage (1st year) of the project. We have planned to continue the research for another 2 years to delineate the phylogenetic, morphological and evolutionary relationships of the studying genus and the related species in the family.

#### **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.**

Conversion ratio as per the ratings of 1<sup>st</sup> July, 2019  
1GBP = 219.89 Sri Lankan rupees

Item	Budgeted Amount	Actual Amount	Difference	Comments
Awareness – Seminar, leaflets	750	250	-500	Conservation seminars could not be conducted for the schooling community as planned, the actual cost was only for the pilot seminars conducted within, and among local communities around sampling areas
Chemicals and consumables	1000	3680	+2680	A major percentage (57%) was used up for getting the bidirectional sequencing service outsourced.
Field sampling – consumables	750	670	-80	Includes the camera lens and the other consumables
Field sampling - travelling	2500	400	-2100	We used public transportation for the field sampling to cover the budget for the camera lens and for the outsourced bidirectional sequencing service. Also the accommodation and refreshment cost were managed to reduce that the expected budget.
<b>Total</b>	<b>5000</b>	<b>5000</b>		

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

We have observed intra-species morphological variations of species in different localities and climatic zones of the country. Therefore, the most important next step in the project is to carry out a spatial analysis of genetic variations of the species in the genus *Lankascincus* found in Sri Lanka. Also, it was understood that awareness programmes on skinks are vital among the local communities. Therefore, with the requisite modifications to the distribution media and materials, it is of significance to implement and continue such activities.

### 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?

Yes. The Rufford Foundation logo was publicised at the conservation seminar presentations and as the heading of presentation slides. We have also included several PowerPoint slides about the foundation as the funding source of the project. The Rufford logo was included in the leaflet shared and distributed at seminars and

among the local communities around the sampling areas. A copy of the leaflet is attached with the report.

The Rufford Foundation is kindly acknowledged in every past and future publications. To the date one conference presentation has been made under the project and Rufford Foundation was acknowledged with the logo in a slide and all the future conference as well as manuscript publications shall acknowledge the Rufford foundation for their immense contribution to the project.

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

Principal Investigator (PI):

**Dr Iresha Harischandra**

Role

- Development of project objectives and overall leading the project team
- Confirming that the entire project proposal meets its requirements
- Preparing the technical proposal
- Taking responsibility for keeping updated CVs or bio-sketches of the project team
- Ensuring that procedures used are consistent with sound research design and do not unnecessarily expose research subjects in the project to risk/harm
- Assuring that the design is appropriate to the proposed question
- Preparing and directly supervising the planning of the budget and its justification
- Identifying all available financial resources
- Handling grant applications
- Preparing the letters and forms to obtain research permits and ethical clearance
- Completing and getting the participation agreement signed from the all collaborative parties prior to conducting the research
- Disclosing all potentially significant conflict of interest situations
- Taking the ultimate responsibility for the conduction and completion of the research project

Co – Investigator (CoI):

**Mr Lakshan Warnakula**

Role

- Developing research protocols
- Working with the PI to ensure that the entire project proposal meets its requirements
- Ensuring that procedures used are consistent with sound research design and do not unnecessarily expose subjects to risk/harm
- Assuring that the design is appropriate to the proposed question
- Preparing and directly supervising the preparation of the budget and its justification



- Identifying all available financial resources
- Handling grant applications
- Preparing the letters and forms to obtain research permits, and ethical clearance
- Completing and getting signed the participation agreement from the all parties prior to conducting the research
- Tracking progress over time

Administrative Lead

**Dr Nihal Abeysinghe:**

Role

- Providing wide range of executive, analytical, management and administrative support including, but not limited to: coordination of operations including management of the project team, long-term planning, deliverables tracking, task management, and assistance in the development of milestones and objectives
- Providing strategic support to project planning and execution
- Providing assessments and indicators of project progress

Co – Administrative Lead

**Dr Kaushalya Jayaweera:**

Role

- Assisting in management and execution of administrative support activities of the project
- Assisting with preparation of all educational and training workshops and evaluation of strategies
- Developing assessment and evaluation tools

Project Lead

**Ms Ruwini Cooray:**

Role

- Overall coordination of the research project and maintaining to the schedule
- Developing project proposal, laboratory protocols
- Grant proposal writing and obtaining research permits
- Managing and responding to project related emails
- Planning, scheduling and coordinating project meetings
- Providing readily access to all experimental data for the project team
- Reviewing and editing data to ensure completeness and accuracy of information; following up field research coordinators to resolve problems or clarify the data collected
- Setting up, calibrating and maintaining laboratory and/or field research equipment, as specified by the requirements of the study
- Summarizing project results
- Monitoring the project budget
- Preparing progress reports



- Writing and contributing to publications
- Guiding the work of research assistants, research technician and project interns

Field Research Coordinators:

**Mr Dineth Danushka, Mr Suneth Kanishka**

Role

- Developing research ideas to the project
- Travelling to various locations with the necessary equipment for recording accurate data and collection of required samples
- Cataloguing the data and physical samples taken from the environment carefully for later analysis
- Transporting samples to the laboratory under the proper conditions following the protocols confirmed by the PI
- Writing and contributing to publications

Research Assistants:

**Ms Nimanie Hapuarachchi, Ms Yasassrini Dissanayake**

Research Technician:

**Ms Lakshini Piyasiri**

Role

- Assisting in the development of the research protocols
- Preparing findings for publication and assisting in laboratory analysis, quality control, and data management
- Writing and contributing to publications
- Assisting with repairs and maintenance of equipment and supplies
- Maintaining supply inventories and preparing purchase requisitions

Project Interns/Lab assistants:

**Ms Sammani De Silva, Ms Savini Gunarathne**

Role

- Assist in organising conservation seminar programmes
- Conducting literature reviews
- Collecting and analysing data
- Entering data for subsequent analysis
- Assisting in required document preparation for the granting foundation, The Rufford Foundation
- Attending meetings as necessary
- Preparing other articles, reports and presentations
- Writing and contributing to publications
- Performing miscellaneous job-related duties as assigned

## 12. Any other comments?

We, the project team are beholden to the Rufford Foundation for selecting this project proposal for funding and kindly acknowledge your stake. Without the Rufford Foundation, this project would not have been a reality in this soon. Further, we would wish to appreciate your great work in funding low- and middle-income countries such as Sri Lanka where there are biodiversity hotspots and for providing a solid foundation for much needed conservation related research.



Left: *L. gansi*. © Suneth Kanishka. Right: *L. fallax*. © Suneth Kanishka.



Left: *L. dorsicatenatus*. © Suneth Kanishka. Right: *L. sripadensis*. © Dineth Dhanushka.



*L. greeri*. © Dienth Dhanushka.