

Final Evaluation Report

Your Details					
Full Name	Hening Triandika Rachman				
Project Title	Preserving The Last Remaining Populations of Javan Endemic Damselfly (<i>Rhinagrion tricolor</i>) in Nusakambangan Island				
Application ID	30154-1				
Date of this Report	12 July 2022				



1. 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
Provide an update data of Rhinagrion tricolor population.				48 individuals of <i>R. tricolor</i> in Nusakambangan were found during the survey, 44 were males (92%) and four (8%) were females.
Provide an update data of Rhinagrion tricolor distribution.				 <i>R. tricolor</i> were distributed in six locations: Kali Jati River, West Nusakambangan Nature Reserve, Batu Prison River, Nirbaya River, Banjar River, Kali Kencana River. 38 grids (28%) area was explored from the total of 165 grids. 18.4% of the explored grid is inhabited by <i>R. tricolor</i>
Provide an update data of <i>Rhinagrion</i> <i>tricolor</i> microhabitat preference.				Major factors that influence the preference of <i>R. tricolor</i> microhabitats include air humidity, soil moisture, water pH, water TDS, water dissolved oxygen and altitude. Males prefers perching on vegetation that touches the water or fallen branch at the edge of the river. Female of <i>R. tricolor</i> is very difficult to find. It likes to perch deep in shrubs and lianas.
Provide specimen of Rhinagrion tricolor as first specimen of Indonesia				Male and female Rhinagrion tricolor specimens have been prepared and sent to the Entomology Laboratory (LIPI) now named BRIN. We also send other specimens which according to data are scarce or have important value for future research.
Initiating a regulation and conservation action plan collaborating with Central Java BKSDA				We carried out a joint survey with the Nusakambangan Natural Resources Conservation Center. In addition, we have reported the data that we have obtained so that the habitat points of <i>R</i> . <i>tricolor</i> in Nusakambangan can be the focus of attention. where the Kali Jati River and the West Nusakambangan Nature Reserve are still in the area managed by the Conservation Center. I



		have also presented the results of research at the Central Java Provincial Conservation Center which is the centre of other regions. We also work with the Ministry of Law and Human Rights in Cilacap which manages the prison area. So, we can enter the river area around the prison accompanied by officers. Even <i>R.</i> <i>tricolor</i> was chosen to be the mascot of one of the prisons.
Publishing Scientific paper, presenting in conference, or presenting in specific forum of odonata to share about research of <i>Rhinagrion tricolor</i> .		We have published a paper in AGRION - NEWSLETTER OF THE WORLDWIDE DRAGONFLY ASSOCIATION entitled An expedition to Nusakambangan Island: survey of the Javan endemic damselfly <i>Rhinagrion tricolor</i> on July 2021. <u>https://worlddragonfly.org/wp- content/uploads/docs/agrion/Agrion_25</u> <u>-2 July2021_hq.pdf</u> . The photo of <i>R</i> . <i>tricolor</i> was chosen to be the cover of the journal Volume 25, Number 2. The content contained is more general. Meanwhile, a material with more scientific content is in the final review stage. It will be published in the Journal of Tropical Biodiversity and Biotechnology.
Educate the local communities to encourage about dragonfly conservation and habitat conservation		We carried out educational programmes in between children's Islamic religious education activities because at that time all the children on the island of Nusakambangan gathered. We tell about dragonflies' role in general and the importance of dragonfly conservation, especially <i>R. tricolor</i> which is currently population only confirmed on Nusakambangan Island. We also show documentary films about our activities that are easy to understand visually and are expected to inspire them in the future. We have also made an illustration book on the conservation of <i>R. tricolor</i> and we have distributed it to schools in Nusakambangan, other NGOs and related government agencies.
Collaborating with IUCN Dragonfly		The data from the Rhinagrion tricolor research has been sent to Rory Dow as a



Specialist Group and	member of the IUCN SSC Dragonfly
Indonesian Institute of	Specialist Group. This data will be used
Science about	as a reference in updating the data on
Rhinagrion tricolor	the IUCN Redlist to determine the latest
conservation	status of Rhinagrion tricolor and its
	conservation strategies.

2. Describe the three most important outcomes of your project.

a). Data updates are outcomes that are the main goal of this Rhinagrion tricolor project. Data related to population, distribution, and habitat preferences are primary data that did not exist before. So that it affects the conservation status and conservation steps that will be carried out.

b). The second important outcome is the establishment of multi-stakeholder collaboration. We collaborated with the RKW Cilacap natural resource conservation centre and Nusakambangan prison as the owner of the area. We also involved local NGOs, schools, and local communities to expand the impact of this research.

c). After getting the results we publish to expand the impact of the research. We have published a paper on Agrion, an illustration book, a video documentary, and a journal that is still under review. From these publications, we hope to reach the general public and scientific circles.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

Working in tropical forests is very synonymous with high rainfall so that data is often biased due to rain. For example, before the dry season we should be able to find a high population of dragonflies, but because of the rain, dragonflies are very difficult to find. We also work during the pandemic, so we need an antigen test before leaving and after the survey. However, we are still affected by the delta variant of covid. One of our team started showing symptoms on the second day of the survey and it spread to other team members. Another thing that is difficult to predict is the duration of the journal review, which is difficult to meet the 1-year project target. We hope that the system will remain open so that we can notify The Rufford Foundation when the journal is published.

4. Describe the involvement of local communities and how they have benefitted from the project.

Local communities involved in this activity are divided into stakeholders, NGOs, and (schools, and Nusakambangan island communities). The stakeholders involved are the owners of the island area, including the Nusakambangan Nature Reserve (RKW Cilacap) and the Ministry of Human Rights and Law of Cilacap. They give access permits in very strict areas. they also helped in this research. The local NGOs involved are various organisations involved in tree planting in the Nusakambangan area, including Land Forest Rehabilitation 2021. We involve local communities in assisting with research, and we conduct education programmes for children in



Nusakambangan and provide illustration books for *R. tricolor* conservation in Nusakambangan.

5. Are there any plans to continue this work?

Based on the results that have been achieved I am planning to continue this conservation programme at a deeper level. Currently we have provided specimens for storage at the Indonesian Research Institute, and we want to carry out molecular analysis. I also plan to make a core zone in an area where R. *tricolor* populations is exists. I also plan to expand the survey in potential areas on the island of Java. But now I will postpone, because I am studying abroad.

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

In order to broaden the impact of this study we divide the target audience. For general material we write on Agrion. For material with scientific content, we write in the Journal of Tropical Biodiversity and Biotechnology. More broadly, we make a documentary video that will be published on YouTube, which is more visually appealing and easily understood by the public. For educational purposes, we create an illustration book that is packaged with attractive illustrations and simple descriptions but contains basic concepts about the important role of dragonflies in the environment. We also presented on the campus of the State University of Yogyakarta Majoring in Biology and also in the Department of Science Education about the projects we carried out. We also convey this project on the occasion of other Indonesia Dragonfly Society activities.

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

We think the next important step is to provide more protection to habitats where there are confirmed populations of *Rhinagrion tricolor*. Considering there is a location that is located close to the limestone mining site. The two immediately update the conservation status of *Rhinagrion tricolor* on the IUCN Red List, so that it can be related to the conservation steps that can be taken. We can also go deeper with those anvils. For example, when we say that this dragonfly is classified as critically endangered to the natural resource conservation centre, they will also pay more attention than the dragonfly is still classified as Data Deficient. Finally, of course, conduct a follow-up survey with a wider range and longer duration as well as other potential locations. Java still has another lowland forest in the Ujung Kulon National Park, although our team did not find this *R. tricolor* during several surveys.

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

We include the Rufford Foundation logo and mention The Rufford Foundation at various events. For example, during a presentation at the Natural Resources Conservation Center of Central Java Province. We also use the logo printed when planting trees with Forest Land Rehabilitation 2020. We also include the logo in video documentaries, Rhinagrion illustration books and in journals.



9. Provide a full list of all the members of your team and their role in the project.

Wahyono Restanto, BFor.Sc. MT. is a member of Central Java BKSDA that responsible to monitor Nusakambangan Nature Reserve. He has been working in Nusakambangan since 2008. He has a good understanding of the Nusakambangan areas condition and will assists in surveying the habitat of *R. tricolor* along rivers, streams, and ponds. He also knows well the local community around Nusakambangan in which we will do education and socialization program.

Diagal Wisnu Pamungkas, B.Sc. from Tanah Tinggi Highland Conservation. He has done various biodiversity project such as Mount Lawu Expedition (2014-2016). Danone Corporate Social Responsibility (CSR) Project for conserving watershed that used by Aqua as water sources. Dragonfly Survey in Aketajawe Lolobata National Parks (2017). He is our associate in Indonesia Dragonfly Society and also the leader of Biodiversity Survey in Toba Samosir Lake (2019). His understanding of habitat conservation and biodiversity survey is very useful for determining habitat conservation action plan.

Nanang Kamaludin, B.Sc. is senior researcher from Indonesia Dragonfly Society. He is the author of Indonesian Dragonfly List and several book such as Dragonfly of Semarang, Butterfly of Semarang, Biodiversity of Bengawan Solo, Biodiversity of Upstream Brantas River. His deep understanding of dragonfly species in Indonesia will give many contributions during the survey.

Frendi Irawan, B.Sc. is dragonfly researcher from Indonesia Dragonfly Society. He was creating Indonesian Dragonfly List together with Nanang Kamaludin. He has done several biodiversity surveys such as research of vector and reservoir disease (2016-2018). Biodiversity Survey in Toba Samosir Lake (2019). Biodiversity survey in Rewulu as CSR of oil corporation Pertamina (2019). His is expert in dragonfly photography, graphic design and field survey technique.

10. Any other comments?

On behalf of the Indonesia Dragonfly Society, I am very grateful for the opportunity to carry out a project from The Rufford Foundation. This is the first proposal in Indonesia that represents the dragonfly taxa, where previously the proposals that passed tended to be mammals, birds, or reptiles. We hope to continue the project on a wider scale and within a longer timeframe. I am also very happy to have the opportunity to share with other researchers at the conference held by Rufford on April 13, 2022.