Report progress
Human-macaque co-existence in Simeulue
Submitted to Rufford Small Grant

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45620-2

Introduction

The negative interaction between coconut farmers and the Simeulue long-tailed macaque (*Macaca fascicularis fusca*) has intensified in recent years, primarily as a result of the macaques' frequent crop-raiding behavior. For many households on Simeulue Island, coconuts represent the primary source of livelihood, and repeated losses in yield caused by macaques have placed farmers under considerable economic pressure. Such financial strain not only threatens household security but also fosters resentment toward the species. In retaliation, many farmers resort to persecuting or killing macaques as a means of safeguarding their crops and protecting their livelihoods. This ongoing conflict poses a serious conservation challenge for simeulue macaques and other wildlife. The Simeulue long-tailed macaque, a distinct subspecies endemic to Simeulue Island, is already classified as Critically Endangered primates. Over the past 30 years, their population has declined about 80% due to habitat loss for agriculture expansion subsequently leading to negative interactions with farmers. Retaliatory killing, poisoning and hunting become more common action taken by farmers to reduce crop damage caused by macaques. Beyond threatening the survival of this unique primate, the conflict undermines broader conservation efforts aimed at conserving simeulue macaques, which faces increasing pressure from habitat loss and human expansion.

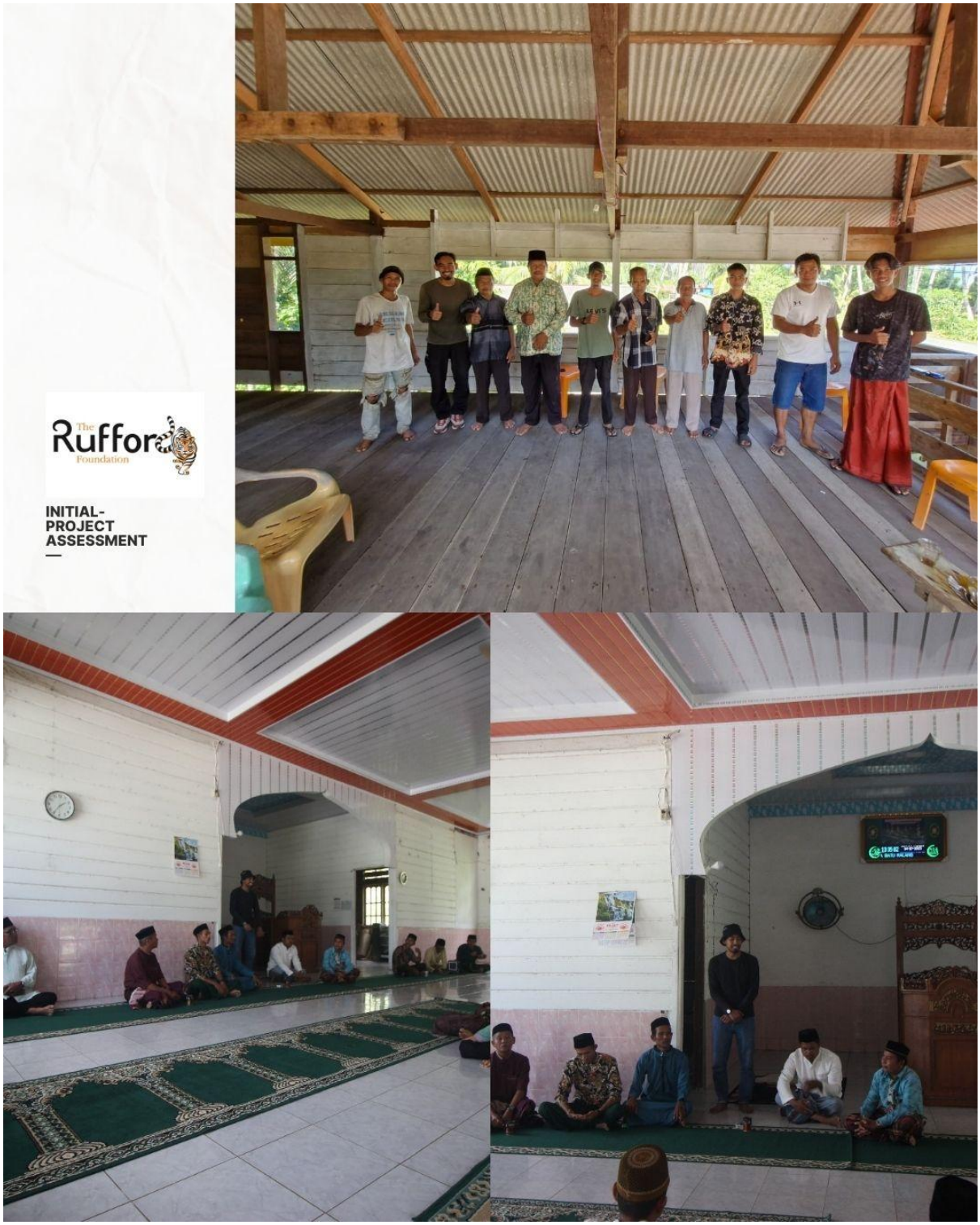
To address this issue, integrative conservation measures are urgently needed. Such measures must go beyond the traditional scope of animal protection and instead focus on balancing the complex interplay of the conservation needs such as improving human livelihoods for local community, increasing awareness towards conservation and enhance sustainable farming practice. Conservation in this context requires fostering coexistence rather than competition between people and macaque. In this report, we aim to highlight the activities that have been carried out to reduce conflict and promote coexistence between farmers and the Simeulue long-tailed macaque. These activities include the advancement of the coco-fiber program, which provides farmers with alternative income opportunities that reduce dependence on coconut harvests; the implementation of a school-based education program, designed to raise awareness among younger generations about the importance of conservation; and organize sustainable farm management practice.

Initial-project Assessment (Discussion with farmers)

Before implementing any conservation initiatives, we conducted discussion with farmers in Teupah Selatan. This approach allowed us to gather quantitative data on crop losses as well as qualitative insights into farmers' attitudes, perceptions. The discussion aimed to address the following aspects:

1. Challenges faced by farmers in maintaining farm productivity including pest pressures, market access, and environmental constraints; 2. The scale and frequency of crop damage caused by wildlife, particularly macaques to quantify economic losses and identify patterns of crop damage by macaques; 3. Farmers' perceptions toward conservation exploring whether macaques were viewed solely as pests or also as part of the island's biodiversity worth protecting; 4. Openness to alternative livelihood opportunities – assessing willingness to adopt new practices such as utilizing coconut by-products or participating in conservation-linked initiatives.

Findings from the interviews revealed that most farmers reported significant income loss due to macaque crop-foraging. This issue has persisted for many years, yet no concrete actions or solutions have been implemented to support farmers in addressing the problem. As a result, resentment toward macaques has continued to grow, often accompanied by negative perceptions of conservation initiatives. Farmers expressed frustration not only at the economic impact but also at the lack of practical assistance. Farmers' resentment toward macaques is understandable, as the majority (around 70%) of the local population depends on coconut farming for their livelihoods. The situation is further exacerbated by the low market price of coconuts and declining productivity of aging coconut trees, leaving farmers with few viable alternatives. In response to these challenges, we then developed the coco-fiber initiative program as a livelihood-based conservation strategy. Coconut damaged by macaque and coconuts husks, which are typically discarded as waste, can be processed into fiber with multiple commercial applications, such as ropes, mats, mattresses, growing media for agriculture and handcrafted products. By turning an "loss" by-product into a source of income, the project provides farmers with an alternative revenue stream that is less vulnerable to macaque foraging. At the same time, the initiative reduces the financial pressure associated with coconut yield losses, thereby lessening resentment toward macaques and creating space for coexistence.



Coco-Fiber Initiative program

Building directly on the insights gained from these interviews, we establish the coco-fiber project as a pilot initiative with selected farmer groups. The project was implemented in Desa Batu Ralang, Teupah Selatan, which identified as a priority site based on several criteria. First, the area contains extensive coconut farming area in Simeulue, making it highly relevant for testing livelihood-based interventions. Second, this area is a key distribution

range of Simeulue macaque groups. Finally, the community has experienced a longstanding and intense level of conflict with macaques, making it an appropriate and urgent location to pilot conflict-mitigation measures. We conducted several meetings to assess the willingness and support of the Batu Ralang community for the coco-fiber program. During these meetings, we introduced the potential benefits of the initiative, explained its underlying concept, and discussed how the activities could provide direct assistance to farmers. These dialogues were essential for building trust and ensuring that the project was aligned with community needs and expectations.

Following these discussions, an initial small-scale training was conducted in April 2025. For this training, we provided basic machinery, equipment, and raw materials, and invited an experienced trainer to Simeulue to guide participants through the step-by-step process of converting coconut husks into raw products such as coco peat, coco bristle, and coco fiber. The training not only focused on technical processing but also emphasized the potential market value of these products and their role in reducing economic pressure caused by macaque-related crop losses. This program was implemented in close coordination with the local village administration, ensuring community involvement at every stage. Such collaboration helped strengthen local ownership of the initiative and laid the groundwork for scaling up the project in the future. After the initial training, we began establishing a production site, registering participating farmers, and initiating small-scale mass production. At present, around 10 farmers are actively engaged in the activities. Their participation is based on their own willingness and commitment, and they are able to follow activities organized. Although many more farmers have expressed interest in joining, participation remains limited due to the shortage of production machinery and equipment. This constraint highlights the strong potential for expanding the program in the future, provided additional resources and technical support can be secured.

School Education Program

The School Education Program has been running since June 2025. This initiative aims to provide a general and comprehensive introduction to the Simeulue long-tailed macaque for elementary school students. The program is designed to increase children's understanding and awareness of the species, its ecological role, and the importance of coexistence. This educational activity is particularly important because many children in Simeulue grow up

with the perception that macaques are *pests*. Such perceptions are often passed down from their parents, who have experienced conflicts with macaques in their farming activities. Through this program, we hope to reshape these early impressions and foster more positive attitudes among children toward wildlife and conservation. The program is delivered through three main methods: 1). Presentations using PowerPoint materials to provide structured information. 2). Storytelling sessions to make learning more relatable and engaging. 3). Interactive games that allow children to actively participate and internalize conservation messages in a fun way. Each session concludes with the donation of storybooks to the school. Every participating school receives around 80 copies of the book for their library, ensuring that the conservation message continues to reach students beyond the classroom sessions. This program targeted 10 elementary school in Teupah Selatan. This program has also received full support from the Simeulue Education department has expressed interest in integrating the program into the official school curriculum through the local content (*muatan lokal*) subject. This step is significant, as conservation education remains very limited both in Simeulue and across Indonesia. By embedding conservation awareness into formal education, the program contributes to building a new generation that values biodiversity and is better prepared to coexist with macaques and other wildlife as well.

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CONSERVATION EDUCATION PROGRAM

Farm Management practice

Crop feeding by macaques continues to human–macaque conflict in Simeulue. While active or passive traditional deterrents are not effective in reducing crop-damage. To address this issue, our program has begun exploring farm management practices that are both environmentally friendly and beneficial for farmers. One promising strategy involves cropping strategy by use of jack bean (*Canavalia ensiformis*) as a natural barrier crop. Farmers in Java and Sumatra have long reported that macaques tend to avoid jack bean fields, most likely because the plant contains cyanogenic compounds that make it unpalatable. Although there is no published scientific confirmation of this phenomenon, local knowledge consistently suggests that monkeys are reluctant to enter or cross jack bean plots. This makes the crop a potential buffer to protect vulnerable plants such as tomatoes, chili, lemongrass, and eggplant. Beyond its deterrent function, jack bean offers additional advantages: it can be processed into food products such as *tempe*, used as green manure to improve soil fertility, and sold to generate alternative income.

In July 20205, we conducted a small-scale experiment to test the feasibility of integrating jack beans into local farms. The trial focused on assessing potential impact of Jack Bean on macaque incursions. Jack beans can grow well under local conditions with minimal inputs, and farmers responded positively to the idea of combining this cropping strategy with livelihood diversification. While systematic data collection is still ongoing. Build on this experiment, we are planning a series of training sessions on farm management practices that will take place between November and December 2025. These sessions will cover three main themes: 1). Evaluate the integration of jack beans as natural buffer crops, 2). the adoption of organic farming techniques such as composting and eco-friendly pest management, and 3). the improvement of field guarding practices. The training will be delivered directly to farmer groups in Desa Batu Ralang and will include practical field demonstrations to ensure that the knowledge can be applied effectively. We expect these efforts to reduce the frequency and severity of crop losses, improve farmers' resilience through diversified income opportunities, and strengthen community capacity in organic and sustainable practices. In the long term, the program also aims to contribute to conservation by reducing reliance on harmful deterrents and encouraging more positive attitudes toward macaques.

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FARM MANAGEMENT PROGRAM