

Final Evaluation Report

We ask all grant recipients to complete a project evaluation that helps us to assess the success of your project.

We understand that projects often do not follow the predicted course, but knowledge of your experiences is valuable to us and to others who may be undertaking similar work—remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please DO NOT fill in and submit this form until the project has been completed.

Please complete this evaluation report in English and refer to the reporting guidelines. We may ask for more information or a revised report if we have follow-up questions or feel information is missing. Note that edits may be made before posting on our website, so please provide the report in **MS Word format** (not PDF).

Your final budget should be submitted separately, using the Excel template sent with your offer letter.

Please email both the completed report and budget to jane@rufford.org.

Your Details	
Full name	Anisa Anggraeni
Project title	Conserving Threatened and Endemic Species of <i>Hopea bilitonensis</i> P.S.Ashton and <i>Rubroshorea balangeran</i> (Korth.) P.S.Ashton & J.Heck. in the Province of Bangka-Belitung Islands, Indonesia
Application ID	43517-1
Project start date	1 February 2025
Project end date	30 January 2026
Date of report submission	30 January 2026

Outcomes, indicators and activities

1. Indicate the level of achievement of the project's original expected outcomes. Include a brief explanation of the activities conducted and your key findings, providing specific, measurable outputs, based on the indicators in your project proposal (e.g. number of camera traps deployed).

Expected outcome (as per project proposal)	Level of achievement	Indicator (as per project proposal)	Summary of activities and outputs
Preliminary interview and community survey	Fully achieved	<ul style="list-style-type: none"> - Total participants involved - Local community member involved in fieldwork - Local knowledge on seed regeneration 	<ul style="list-style-type: none"> - 25 participants, including researchers and local community members, actively engaged in fieldwork and data collection - Local communities reported that <i>Rubroshorea balangeran</i> seeds can germinate annually and are often found outside their typical habitat
Fieldwork	Fully achieved	<ul style="list-style-type: none"> - Number of survey site - Occurrence point of <i>Hopea bilitonensis</i> - Occurrence point of <i>Rubroshorea balangeran</i> - Topographic variable analyzed - Morphological Data of <i>H. bilitonensis</i> and <i>R. balangeran</i> - Seed availability of <i>H. bilitonensis</i> 	<ul style="list-style-type: none"> - 3 research sites - 24 occurrence points (<i>Hopea bilitonensis</i>) - 11 occurrence points (<i>Rubroshorea balangeran</i>) - Three topographic variables (elevation, slope, and aspect) were analyzed - Diameter at Breast Height (DBH) (morphological data) were analysis - Seeds of <i>Hopea bilitonensis</i> were found

Note: For detailed information, please refer to the supplementary file.

2. If relevant, describe any other important or unexpected outcomes of your project. Feel free to include evidence (e.g. maps, tables and figures).

One unexpected outcome of the project was the discovery of *Hopea bilitonensis* seeds during the fieldwork, which was not initially anticipated. This finding is significant as it suggests the potential for natural regeneration of the species in the area. Detailed information regarding this discovery and its implications can be found in the supplementary file, including relevant data and observations.

Challenges

3. Explain any challenges that arose during the project (e.g. severe weather, broken equipment, delay in obtaining research permits, etc.). Were you able to overcome these? If so, please explain how.

- a. During the field surveys, we encountered unexpected heavy rainfall that disrupted our planned schedule. These weather conditions affected the accessibility of some research sites, especially in higher elevations. To solve this, we adjusted our survey schedule, allocating additional time to complete the necessary fieldwork. We also increased our collaboration with local communities, who provided valuable advice on suitable timing and alternative routes to access the sites despite the challenging weather.
- b. The original plan involved full participation from all team members in the field. However, due to financial limitations, we had to revise the plan to ensure the project stayed within budget. Only two team members were able to travel and conduct field surveys, while the remaining members provided logistical and analytical support from their hometown. Solution: We optimized the roles of the non-field team members by having them assist with data analysis, administrative tasks, and coordination remotely. This adjustment allowed us to reduce field costs without compromising the quality of the research. Additionally, local community members were engaged to assist in data collection, minimizing the need for extra field staff.

4. Were there any changes to the project plan or any activities that you were unable to carry out or had to adapt? (If these changes impacted your budget, please include amounts in the budget section only.)

Shift from Simultaneous to Sequential Phases (Preliminary Interviews Followed by Fieldwork)

Originally, the plan was to conduct both preliminary interviews and data collection in a single field visit. However, due to unforeseen circumstances, the

project had to be split into two separate visits, namely preliminary interviews and community survey as well as field trip with three different sections. This led to additional logistical coordination and an extended project timeline.

Adaptation: To manage costs, only two team members were sent to the field during both visits, while the remaining team members supported from their hometown. The team adjusted by using remote collaboration tools to assist with data preparation and planning, ensuring that the field team was able to focus on high-priority tasks during their visits.

Budget Impact: The decision to reduce the number of field team members helped prevent significant budget overruns, as it minimized travel and accommodation costs for the second visit. Detailed budget adjustments will be outlined in the budget section.

Community and other stakeholder involvement

- 5. Were any local community members or other stakeholders involved in the project (e.g. fishers assisting with data collection)? Please describe who and their involvement. Disaggregating gender data is important for highlighting diversity, equity and inclusion. When quantifying stakeholder engagement, please state how many women and men were involved.**

There are four male members of the Kelompok Pemuda Pecinta Alam Desa Kelubi (KEPPAK) were involved in the project, supporting field activities and local engagement.

- 6. Describe if local communities and other stakeholders have benefitted from the project. Did local communities present any resistance to the project at any stage?**

Local communities benefited by gaining knowledge of their environment and participating in field activities as well as supplementary income through their involvement in this project. There was no significant resistance, although initial hesitation was addressed through clear communication and involving local leaders (Head of KEPPAK).

- 7. If you have observed any behaviour change by stakeholders as a result of your project, please explain the change and how you have measured this. We understand that behaviour change can take a long time, but any progress towards this is useful to include.**

One notable behaviour change observed was the increased interest among local communities in propagating *Hopea bilitonensis* and *Rubroshorea balangeran*. This shift was reflected in their active participation during field activities and discussions about sustainable plant propagation methods. The interest in cultivation and reforestation efforts was measured through informal

feedback and engagement with local youth groups, particularly those involved in the project. While it is early to fully measure long-term behaviour change, the willingness to engage in conservation practices shows positive progress.

Communications and results dissemination

- 8. Have you or will you share your findings with relevant stakeholders? Please fill in the table below to explain who with and how.**

Type of stakeholder	Name of stakeholder (e.g. specific government entity or department)	What you have or will share (e.g. data, key results, recommendations)	How you have or will share this (e.g. reports, workshops, meetings)
Local community members	Kelompok Pemuda Pecinta Alam Desa Kelubi (KEPPAK)	Key findings on plant distribution and regeneration	Informal meetings and discussions

- 9. Do you plan to share your data or findings with the relevant IUCN Species Survival Commission Specialist Group? If so, which group?**

Yes, we plan to share the findings with the IUCN/SSC Global Tree Specialist Group (GTSG)

- 10. Do you plan to submit a manuscript to a peer-reviewed journal? If you have already published a paper/s relating to this or a previous Rufford Small Grant, please include the DOI link here.**

Yes, we plan to submit a manuscript based on this project to a peer-reviewed journal.

- 11. Have you or do you plan to present your project findings at any conferences?**

Yes, we plan to present the project findings at relevant conferences, particularly those focused on conservation, forestry, and biodiversity.

- 12. Did you develop any outreach materials, and have you shared your project on social media, websites or through other media? Please fill in the table below and, where possible, provide links or images.**

Item	Target audience	Level of dissemination (i.e. number of products printed/number of social media followers/number of radio listeners)	Link (if relevant)
Online article	Researcher, student, academicians, practitioners	Website traffic: 64,563 visitors (suggesting strong interest and engagement).	www.ethnobiologi.com/2025/09/the-ethnobiological-society-of-3.html

Going forward

13. Are there any plans to continue this work? Outline the important next steps.

Yes, there are plans to continue this work, specifically focusing on the development of a propagation protocol for *Hopea bilitonensis*, as seeds of this species were found during the fieldwork. The next steps will involve testing and optimizing propagation techniques to support the species' conservation and reforestation efforts. Additionally, we will also monitor and collect seeds of *Rubroshorea balangeran* in 2026, which will then be propagated alongside the *H. balangeran* seeds we have already collected.

14. Do you intend to apply for another Rufford Small Grant or funding from another donor?

Yes, we intend to apply for another Rufford Small Grant to support the continuation of the project, particularly for the development of propagation protocols and further conservation efforts for *Hopea bilitonensis* and *Rubroshorea balangeran*.

Personal capacity and professional development

15. Has the project helped you personally or in your career?

a) **Experience** (e.g. time in the field, stakeholder engagement):

The project allowed me to engage with stakeholders from KEPPAK, which has broadened my network and deepened my understanding of local community involvement in conservation efforts.

- b) **Skills** (e.g. technical skills, leadership skills, fundraising, proposal and report writing):

I enhanced my skills in stakeholder engagement and community collaboration. Additionally, I gained experience in supporting the team's logistical coordination and data collection remotely. My skills in report writing and proposal development were also strengthened.

- c) **Qualifications** (academic or other):

This project has enriched my academic qualifications by providing practical experience in community-based conservation research, which will contribute to future publications and professional development in the field of environmental science and biodiversity conservation.

Other

16. Which of the Global Biodiversity Framework [2030 Targets](#) does your project address? List as many as applicable (e.g. Targets 2 and 4).

- a. Target 2: "By 2030, protect and conserve at least 30% of the world's land and marine areas, including areas of particular importance for biodiversity and ecosystem services." The project contributes to this target by focusing on the conservation of *Hopea bilitonensis* and *Rubroshorea balangeran*, both of which are key species for biodiversity conservation in tropical ecosystems.
- b. Target 3: "By 2030, restore at least 30% of degraded and damaged ecosystems, including those most impacted by climate change and pollution." The propagation of *Hopea bilitonensis* and *Rubroshorea balangeran* will support ecosystem restoration efforts by enabling the reforestation and rehabilitation of degraded areas.
- c. Target 7: "Ensure that biodiversity is mainstreamed across sectors and integrated into national and local development planning, poverty reduction strategies, and reporting systems." The project works closely with local communities and stakeholders, integrating biodiversity conservation into local development practices.
- d. Target 12: "By 2030, increase the financial resources mobilized for biodiversity, including from innovative finance sources." By involving local stakeholders and building partnerships, the project fosters an environment for potential future funding and resource mobilization for conservation activities.

17. Did you use the [Conservation Evidence](#) website when planning your project, and was this helpful? If your project provides useful information about what worked or did not work, please consider sharing it through Conservation Evidence.

Although the Conservation Evidence website was not used as the sole reference when planning the project, it played a significant role in informing some aspects of the research design. The site provided valuable insights into evidence-based conservation practices, particularly for plant species propagation and ecosystem restoration, which were incorporated into the methodology. If the project yield useful data on effective conservation strategies or highlight areas for improvement, we will ensure that these findings are shared through the Conservation Evidence platform.

18. Did The Rufford Foundation receive any publicity during your project (such as including the Foundation logo on outreach materials)? If yes, please describe how.

The Rufford Foundation was acknowledged verbally during the project, with mention that the project was funded by Rufford.

19. Provide a list of all the members of your team and briefly describe their role in the project.

Anisa Anggraeni: data curation, formal analysis, visualization, writing report
Prof. Dr. Wawan Sujarwo: data collection, conceptualization, methodology, review the report
Dr. Angga Dwiartama: conceptualization, data curation, formal analysis
Dr. Yulian Fakhurrozi: data collection
Arifah D. Lestari: project administration, writing report

If not already provided, please include some photos from your project, along with brief captions and copyright information.

Detailed information, including photographs of the seeds and data analysis, can be found in the supplementary file.

Please ensure you also submit a final budget, using the Excel template sent with your offer letter.

Supplementary file: Conserving Threatened and Endemic Species of *Hopea bilitonensis* P.S.Ashton and *Rubroshorea balangeran* (Korth.) P.S.Ashton & J.Heck. in the Province of Bangka-Belitung Islands, Indonesia

Preliminary Interview and Community Survey

Prior to the fieldwork activities, interviews and preliminary surveys were conducted with local communities to obtain information on the target plant species, particularly regarding habitat characteristics, local occurrence, and the identification of community members who could potentially contribute to the study. These activities served as an essential preliminary step to inform fieldwork design and site selection. Based on the information gathered, collaboration was established with the local youth environmental group namely *Kelompok Pemuda Pecinta Alam Desa Kelubi* (KEPPAK), to support field activities and local engagement (Figure 1).



Figure 1. (a) Discussion with local people; (b) *Hopea bilitonensis* (c) *Rubroshorea balangeran*

Fieldwork

The aim of this fieldwork was to document the diversity, abundance, and regeneration patterns of target plant species while integrating local ecological knowledge from surrounding communities. Fieldwork was conducted in three sites to systematically cover different parts of the study area. The study sites were selected to capture a range of ecological conditions, such as varying species composition and structural characteristics across the landscape. Study Site 1 consisted of relatively flat terrain, with elevations ranging from 55 to 195 meters above sea level (masl). Study Site 2, located in the opposite direction from Site 1, also exhibited a similar elevation range (0–105 masl), but was chosen to assess differences in vegetation structure. Study Site 3, which extended along the same route as Site 2, was located at a lower elevation range (0–33 masl). Three local community members with extensive knowledge of the local flora participated in all field sessions. Their guidance was essential for accurate species identification, documentation of local nomenclature, and navigation of the study sites (Figure 2).

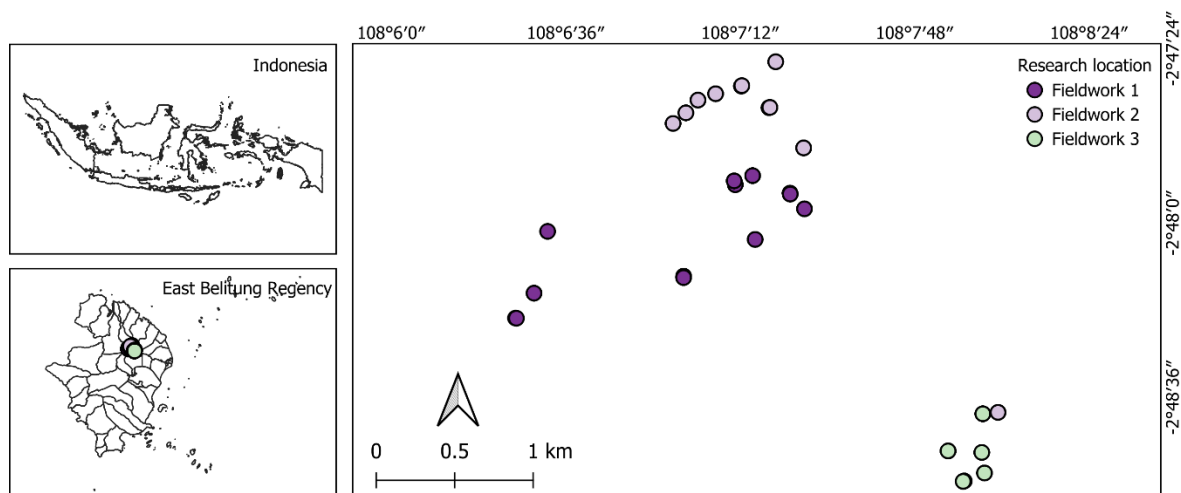


Figure 2. Fieldwork locations across the three study sites

The vegetation data were collected using two plot sizes to capture both tree-level and regeneration-level information. Large plots measuring 20 × 20 m were established to record tree composition and structural characteristics, while smaller plots measuring 2 × 2 m were used to assess regeneration patterns. Plot locations were selected using purposive sampling to target areas where the occurrence of focal species was most likely. Within the 20 × 20 m plots, data collected included geographic coordinates, species identity, number of individuals, tree height, and stem circumference. Geographic coordinates were recorded using the Avenza mapping tool, species names were documented in the local vernacular, stem circumferences were measured with a flexible tape, and tree heights were measured with a distometer. In the 2 × 2 m plots, only species name and the number of individuals were

recorded to efficiently capture regeneration patterns. Across the three field sessions, a total of 13, 12, and 9 plots were established in fieldwork 1, 2, and 3, respectively, providing comprehensive coverage of the study area (Figure 3). In addition to plot-based measurements, plant specimens were collected and transported to the National Research and Innovation Agency (Badan Riset Inovasi Nasional, BRIN) for herbarium preparation and subsequent taxonomic verification.

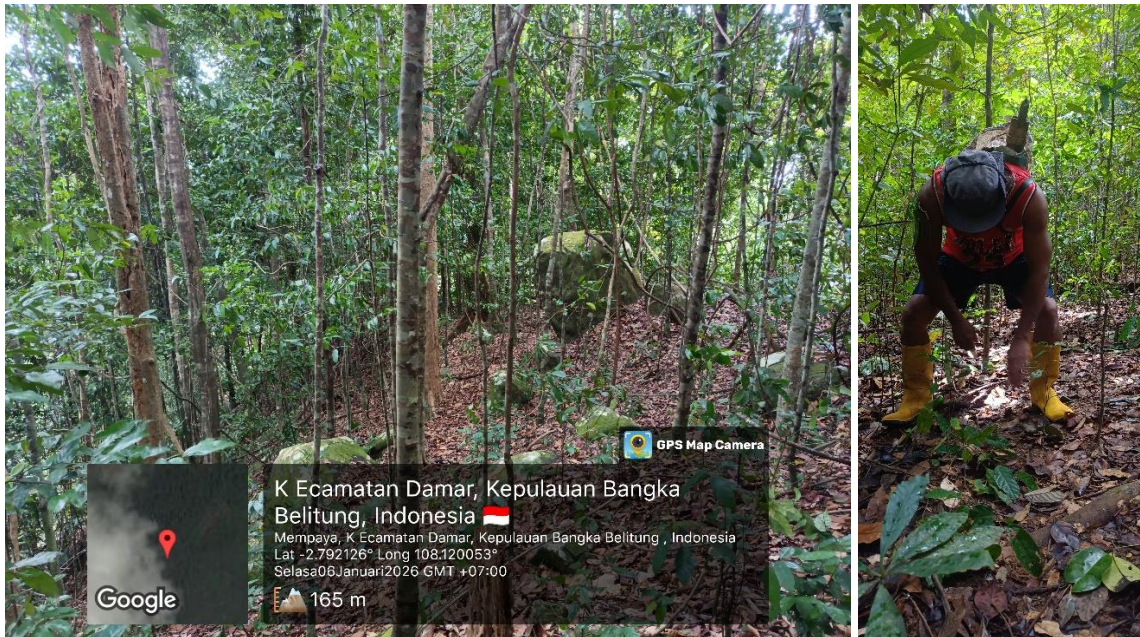


Figure 3. Research location (left) and the process of making a plot (right). The image on the left shows the overall site where the fieldwork was conducted, and the image on the right illustrates the process of establishing a plot for data collection during the field survey.

Based on the fieldwork, a total of 452 individuals representing 45 species and 30 genera were collected within an area of 1.4 hectares (Figure 4 and Figure 5). Two Dipterocarpaceae species, *Hopea bilitonensis* and *Rubroshorea balangeran*, were identified in specific plots within the study area. *Hopea bilitonensis*, a tree species, was recorded in plots 1-24 and plot 32, while *Rubroshorea balangeran* was identified in plots 3 and 25-34 (Figure 6).

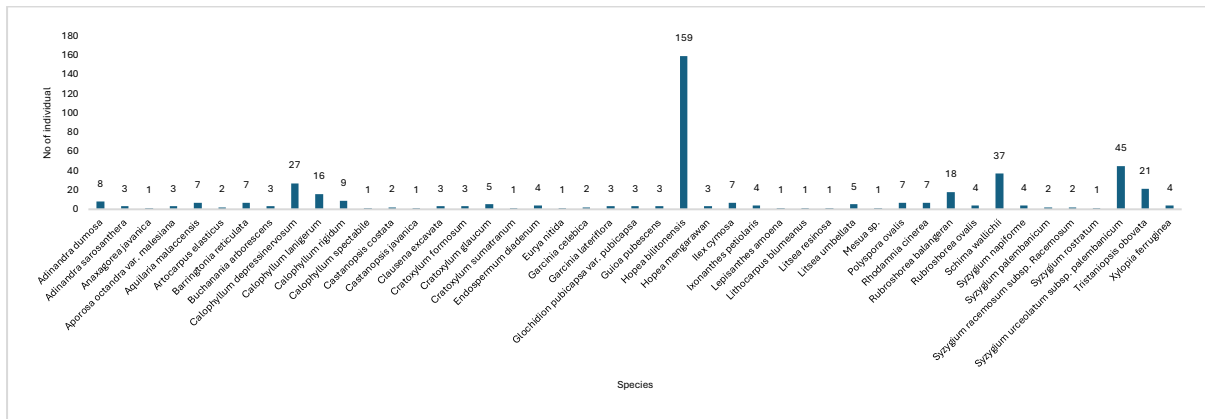


Figure 4. The number of individuals by species

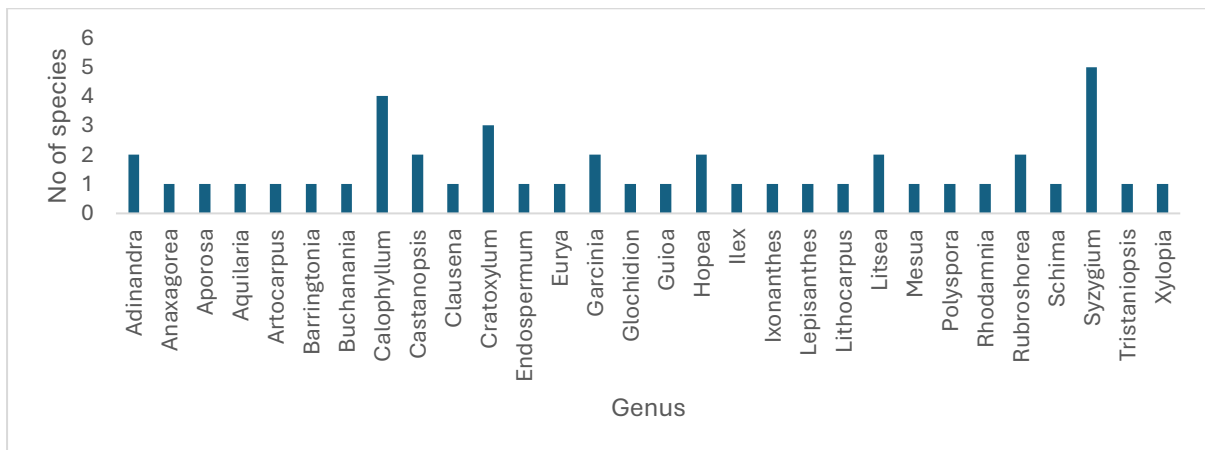


Figure 5. The number of species by genus

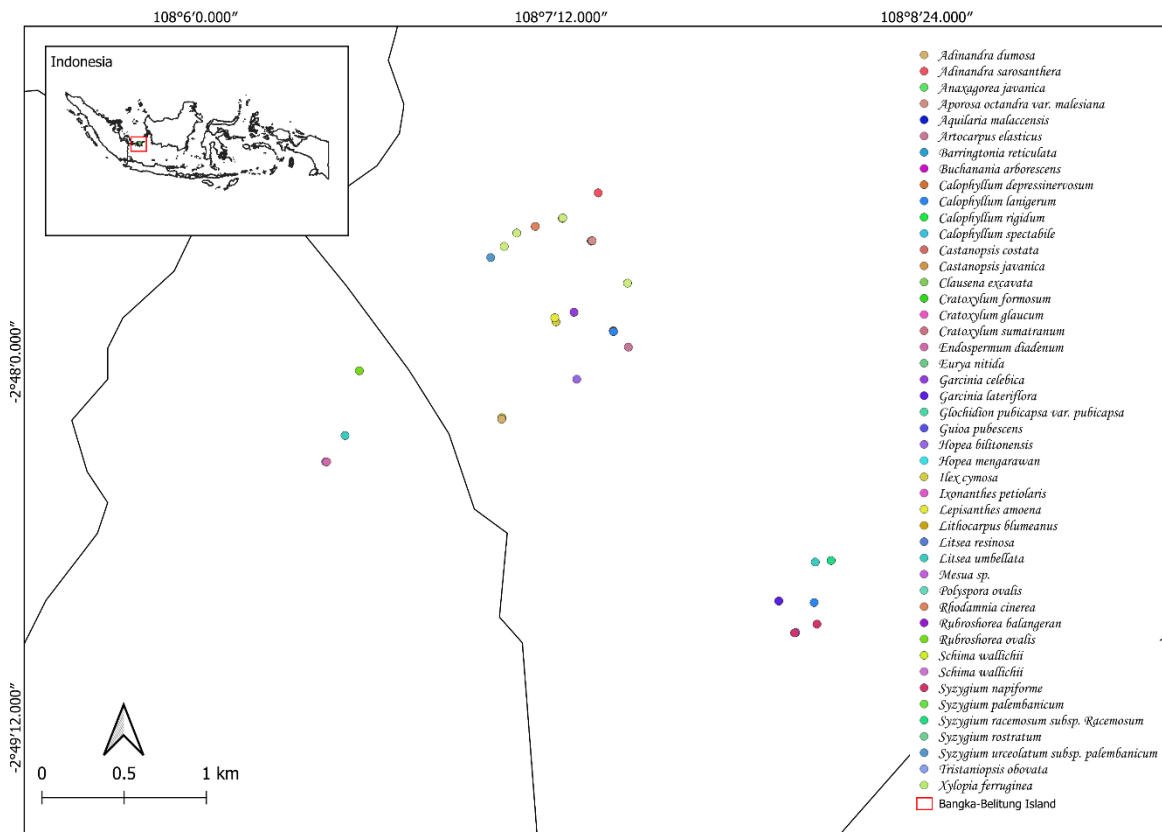


Figure 6. The species distribution of *Hopea bilitonensis* and *Rubroshorea balangeran*

To assess the environmental conditions where these species occur, we analyzed the elevation, slope, and aspect based on DEM data from ALOS Global Digital Surface Model version 4.1 provided by the Japan Aerospace Exploration Agency at 1 arc-second resolution. The analysis reveals that *Hopea bilitonensis* was found at elevations ranging from 0 to 195 meters above sea level (masl) with slopes ranging from 1.04% to 23% (Table 1). These findings suggest that *H. bilitonensis* occupies relatively diverse topographic conditions, from lowland areas to moderately sloping terrain that indicating its adaptability to various landscape features.

In contrast, *Rubroshorea balangeran* was found at a narrower elevation range, from 0 to 57 masl, and a slightly more restricted slope range of 2.07% to 9.9% (Table 1). This indicates that *R. balangeran* is typically confined to flatter and lowland areas with less variation in slope. The restricted range of *R. balangeran* in terms of both elevation and slope may suggest more specialized habitat requirements compared to *H. bilitonensis*.

These habitat preferences highlight the ecological differentiation between the two species, with *H. bilitonensis* occupying a broader range of elevations and slopes, while *R. balangeran* is more restricted to lowland habitats with relatively gentle slopes. This ecological differentiation may influence the distribution patterns and competition dynamics between these species within the study area. Additionally, understanding

these habitat preferences is crucial for future conservation and management strategies, as it provides insights into the environmental factors influencing the distribution and growth of these species in their natural habitats.

Table 1. Population sampling and habitat condition of *Hopea bilitonensis* and *Rubroshorea balangeran*

Field work	Plot	Latitude	Longitude	Elevation (masl)	Slope (%)	Aspect	Aspect direction
<i>Hopea bilitonensis</i>							
f1	1	-2.79919	108.1237	64	4.558897	345.2564	N
f1	2	-2.79829	108.1229	57	2.078923	243.435	SW
f1	3	-2.79834	108.1229	57	2.078923	243.435	SW
f1	4	-2.79729	108.1207	58	4.113408	253.6105	W
f1	5	-2.79781	108.1197	61	2.826586	279.4623	W
f1	6	-2.79759	108.1197	63	3.67163	304.6952	NW
f1	7	-2.80048	108.109	195	6.957071	273.8141	W
f1	8	-2.80402	108.1082	172	18.19622	327.0948	NW
f1	9	-2.80545	108.1071	151	19.58344	325.2222	NW
f1	10	-2.80546	108.1072	151	19.58344	325.2222	NW
f1	11	-2.80305	108.1168	62	6.257686	267.8789	W
f1	12	-2.80313	108.1168	62	6.257686	267.8789	W
f2	14	-2.79569	108.1236	105	4.267154	315	NW
f2	15	-2.79339	108.1217	124	11.95103	4.398705	N
f2	16	-2.79337	108.1217	124	11.95103	4.398705	N
f2	17	-2.79076	108.122	123	22.92343	307.1998	NW
f2	18	-2.79215	108.1201	0	11.04216	73.07249	E
f2	19	-2.79212	108.1201	0	11.04216	73.07249	E
f2	20	-2.79259	108.1186	0	12.74097	111.0375	E
f2	22	-2.79295	108.1176	0	1.039804	63.43495	NE
f2	23	-2.79368	108.1169	0	8.585865	36.25384	NE
f2	24	-2.79429	108.1162	0	7.869907	266.6335	W
<i>Rubroshorea balangeran</i>							
f1	3	-2.79834	108.1229	57	2.078923	243.435	SW
f2	25	-2.81086	108.1348	25	3.02903	212.4712	SW
f3	26	-2.81094	108.1339	33	8.009296	33.23171	NE
f3	28	-2.81316	108.1338	0	5.42716	250.0169	W
f3	29	-2.81307	108.1319	0	9.917562	21.80141	N
f3	30	-2.81307	108.1319	0	9.917562	21.80141	N
f3	31	-2.81482	108.1328	0	7.456569	60.25512	NE
f3	32	-2.81479	108.1328	0	7.456569	60.25512	NE
f3	34	-2.81433	108.134	0	3.235362	158.9625	S

The diameter at breast height (DBH) class distribution of *Hopea bilitonensis* exhibited a pronounced tendency toward a reverse-J-shaped pattern, with a greater proportion of individuals occurring in small to intermediate diameter classes and a gradual decline toward larger size classes. The highest abundance was observed in the 15–19.9 cm class, followed by the 20–24.9 cm and 10–14.9 cm classes. In contrast, the frequency of individuals decreased substantially in larger diameter classes, with very limited representation above 30 cm in diameter (Figure 7). This size-class structure is characteristic of an uneven-aged stand and suggests the presence of on-going recruitment within the population. However, the marked scarcity of large-diameter individuals indicates a constrained progression into mature size classes, potentially reflecting the legacy of past disturbances, selective extraction, or site-specific environmental limitations affecting growth and survival.

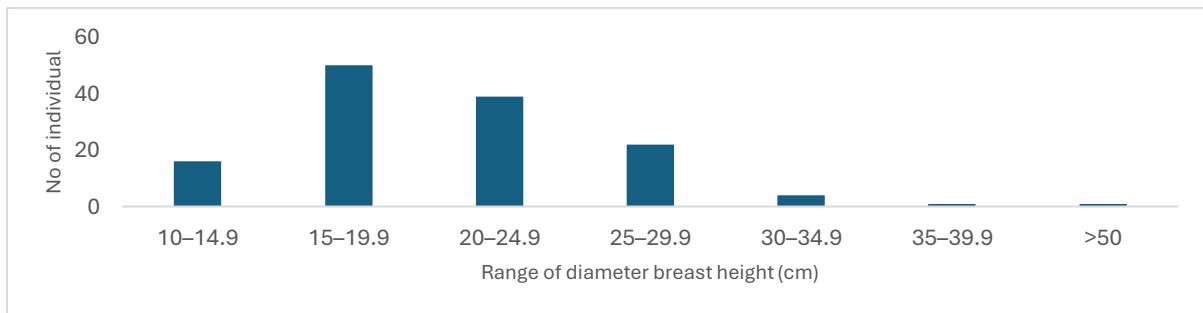


Figure 7. Distribution by diameter breast height (dbh) class of *Hopea bilitonensis*

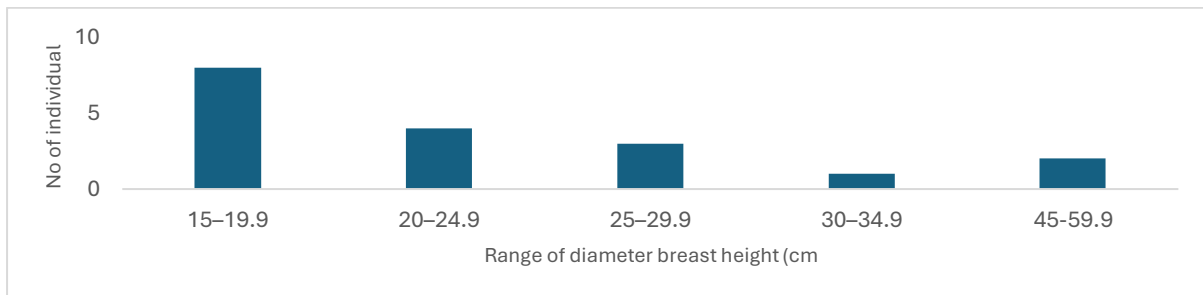


Figure 8. Distribution by diameter breast height (dbh) class of *Rubroshorea balangeran*

A contrasting diameter distribution was observed in *Rubroshorea balangeran*, which displayed a more truncated size-class structure. The species was represented by only 18 individuals, with most occurring in intermediate diameter classes (15–29.9 cm). Specifically, eight individuals were recorded in the 15–19.9 cm class, four in the 20–24.9 cm class, and three in the 25–29.9 cm class. Larger diameter classes were sparsely represented, with one individual in the 30–34.9 cm class and two individuals in the 45–59.9 cm class, while smaller diameter classes were entirely absent (Figure 8). The lack of individuals in the smallest DBH classes suggests limited recent recruitment, whereas the presence of a few large-diameter trees indicates the persistence of remnant mature individuals within the stand.

Taken together, the contrasting DBH distributions of *Hopea bilitonensis* and *Rubroshorea balangeran* highlight species-specific demographic responses within the same landscape. *Hopea bilitonensis* is characterized by a population dominated by younger diameter classes, suggesting on-going recruitment but limited progression into mature size classes. In contrast, *R. balangeran* exhibits a diameter structure indicative of an aging or relict population with constrained regeneration. These patterns emphasize the importance of conserving existing mature individuals while simultaneously enhancing conditions that support successful recruitment and growth. The failure to sustain both regeneration and survival across diameter classes may ultimately compromise long-term population viability, reduce stand structural complexity, and weaken ecological functioning within the forest ecosystem. In this context, active propagation becomes a critical conservation strategy. Notably, seeds of *Hopea bilitonensis* were recorded during field observations (Figure 9), demonstrating the availability of viable reproductive material that can be harnessed to support ex situ propagation and assisted in situ restoration efforts.



Figure 9. Seeds of *Hopea bilitonensis* (a-d) show different views of the seeds, highlighting their physical characteristics and potential for regeneration