

Community Conservation of Borneo's Rainforests



Borneo Nature Foundation

Striving for a greener Borneo

Borneo Nature Foundation (BNF) is a conservation organisation working to protect some of the most important areas of tropical rainforest and to safeguard the wildlife, environment and indigenous culture on the island of Borneo. This is achieved through advocacy, environmental education, capacity-building, community development, forest protection and restoration; all built on a strong foundation of rigorous scientific research.

BNF is a team of dedicated Indonesian and international conservationists working to create a greener Borneo. The BNF team has particular expertise in monitoring the distribution, population status, behaviour and ecology of the Critically Endangered Bornean orangutan. BNF has also made major contributions to action plans and strategies for the conservation of this species.



Borneo Nature Foundation
has been working in
Borneo since 1999

Spotlight on Sebangau

BNF is working to protect the Sebangau Forest; a 600,000 hectare (or 1,121,241 football fields) peat-swamp forest. Sebangau is the largest non-fragmented lowland rainforest remaining on the island of Borneo.



Largest orangutan population in lowland Borneo

An estimated 6,080 wild orangutans live in the Sebangau Forest; representing 10% of the global population. This is the largest population of orangutans in lowland Borneo; making Sebangau one of the last strongholds for this Critically Endangered species.



Major importance for its diverse animal and plant life

Sebangau is also home to a remarkable diversity of wildlife; an estimated 64 species of mammals, 172 bird species, 45 reptile species, 11 amphibian species, 53 fish species, 297 species of spider, 66 butterfly species, 81 ant species and 215 tree species have been recorded by BNF scientists to date.



Globally-significant carbon store

Underlying the forest is peat formed from partially decomposed vegetation, which can reach up to 15 metres (or 49.2 feet) deep. If the peat is dried, cut or burnt, or if the overlying forest is cleared, the peat degrades and carbon dioxide is released into the atmosphere, further accelerating climate change.



Forest resources benefit indigenous communities

Sebangau is naturally flooded during the wet season and is an important breeding ground for fish; providing 80% of animal protein for surrounding communities. The forest has important cultural significance and provides income for people who collect sustainable products, like rattan and rubber.

But, it's a threatened forest!

Sebangau's orangutans & other wildlife are at risk



Peat drainage

Between 1998 and 2004, illegal loggers dug hundreds of canals in Sebangau to float timber out of the forest. Although the illegal logging has stopped, these canals remain (several over 6 miles long) and continue to drain the once water-logged peat. In their natural state these forests are flooded, but when the peat is drained it dries out, oxidises and degrades.



Forest fires

Dried peat burns easily, and the forest is at very high risk from fire during years of severe droughts and prolonged dry seasons, as evidenced by major fires during 1997-98; 2006 and 2015. Approximately 5,600 hectares of forest (or 10,465 football fields) were burnt in BNF's main study area during 2015. Burnt forest loses its seed bank so natural regeneration is unlikely.



Illegal logging and harvesting of endangered wildlife

The forest remains at risk because of its proximity to the regional capital city of Palangka Raya. There is a high demand for quality timber, scaffolding poles, plus animals or animal parts for meat or trade. Some forest animals are taken for the pet trade, like songbirds, and some species are hunted, including flying foxes and wild pigs.

Repairing a damaged forest



Reforestation of burnt and logged areas of the Sebangau Forest is an essential part of our work to protect the home of the Bornean orangutan. Planting trees expands orangutan habitat, prevents soil erosion and reduces the risk of fire; it engages local communities in conservation; and it contributes to the global fight to stop climate change.



Monitoring & research

Replanting in peat-swamp forest is no easy task and the first step is to understand what works and what doesn't work. We have carried out research to understand how to replant in peat-swamp forest since 2009. Our research efforts have focused on identifying the best species for replanting and the best light, water and nutrient conditions for tree survival and growth.

Our main reforestation sites are:

1. The degraded edge of the Sebangau Forest, a barren landscape that used to be lush rainforest, but burnt 50 years ago. The area has lost most of its peat soil, floods every wet season and burns during the dry season. Despite these extreme conditions we are having success at establishing tree species in the area, including Balangeran, Perupuk or Gerongang.
2. In 2015 a large patch of forest was burnt (about 900 ha or 1,682 football fields) near to BNF's research camp. This area is now fire-prone and supports little wildlife, so requires urgent restoration. This is now one of BNF's main reforestation sites where we trial replanting methods in burnt peatland.

The results from this research feed backs into our seedling nursery and replanting protocols to ensure ongoing improvements and increased success of our reforestation efforts.



Innovative technology

Since 2017 we have been using drones to carry out aerial surveys of the reforestation sites to determine the best place to plant trees and monitor conditions. The drones can also be used to assess the development of the seedlings and reforestation sites. We're now looking into new methods to disperse seeds using technology. One option is the use of seed bombs, in which a few seeds are planted into a small amount of peat, and wrapped in a protective, but rapidly degradable casing of woven leaves; these could then be distributed from a plane, helicopter or drone.



Engaging local communities

The reforestation project provides members of the local community with permanent and temporary jobs, training and experience. Time spent with BNF is also an opportunity for discussions about the purpose of reforestation, the importance of conservation, and our plans and hopes for the long-term protection of the Sebangau Forest and its orangutan population.



PROJECT OBJECTIVES

Objective 1: Develop five self-managed community seedling nurseries with local families from two villages with the aim of successfully growing seedlings and reforesting recently burned areas in the Sebangau Forest.

- o Provide with structural resources to build nurseries, including netting, M&E equipment, etc.
- o Setting up and developing the community seedling nurseries
- o Establishing regular checks to monitor performance, identify and resolve any problems

Objective 2: Provide nursery management and reforestation capacity building / training to 36 community families participating in this scheme, to ensure successful comanagement and sustainable development.

- o SOP and regular training workshops to transfer skills and knowledge regarding seedling care, monitor seedling growth and survival, reforestation techniques, financial management and team work
- o Participant and stakeholder workshop
- o Field trips to experience the forest, visit reforestation sites and learn about BNF's conservation activities
- o Ongoing support and advice from BNF's Reforestation team experts

Objective 3: Develop a small-scale local green economy and promote sustainable livelihood development in the area surrounding Sebangau Forest, to deliver positive impacts to local community members and threatened wildlife, including the critically endangered Bornean orangutan.

- o Additional family income established from grown seedling sales
- o Additional family income established from organic pot sales
- o Habitat restoration employment opportunities provided
- o Environmental education opportunities for children provided

METHODOLOGY

BNF has 20 years' experience of project implementation and 10 years' experience of reforestation research in Sebangau. Drawing on this, we will use a participatory approach to establish five community seedling nurseries in two neighbouring villages: Kereng Bangkirai (two nurseries) and Sabaru (three nurseries). Each nursery will be co-managed by eight families. Nurseries will be built on underused land close to family homes, to facilitate integrating nursery management into daily life. Compared to the standard model of project-owned, staff-run nurseries, these community nurseries will require no land

purchase, be more staff and cost effective, and provide greater economic opportunities to more local community members.

The community members and their ideas are central to this project. Participants will have opportunity to share their traditional, socio-cultural knowledge with BNF and other participants to help guide development of this new nursery concept. Family cooperatives, supported by BNF staff, will be responsible for day-to-day nursery management. Families will be recruited from the local community, using links developed through three local fire-fighting teams that BNF supports. The family nurseries will therefore complement fire-fighting team members' income, increasing their long-term conservation commitment. Following this pilot project, and assuming the expected positive outcomes are achieved, the scheme will be expanded to more families from the wider community. Our goals, plus expectations of and benefits to participants, will be explained in detail at socialization and recruitment sessions. The recruitment process will ensure families understand that participation is necessary throughout the entire programme.

Families will have some project ownership, as they will be provided with understand of its goals and desired impacts, plus their crucial role in achieving these. We will create a network of participating families to encourage mutual support, and facilitate families to share experiences and knowledge with other participants.

BNF's support provision to participating families will be centred around three key areas.

(1) Infrastructure and resources, by provision of:

- Seeds of native tree species that have performed best during BNF's previous reforestation trials in Sebangau (balangeran, perupuk and geronggang).
- Structural resources to build nurseries, including netting, M&E equipment, etc.
- Regular checks to monitor performance, identify and resolve any problems.

(2) Capacity building and conservation awareness, by provision of:

- Standard Operating Procedures and regular training workshops to transfer skills and knowledge regarding seedling care, monitoring seedling growth and survival, reforestation techniques, financial management and team work.
- Participant and stakeholder workshop (lessons learned).
- Field trips to experience the forest, visit reforestation sites and learn about BNF's conservation activities.
- Ongoing support and advice from BNF's Reforestation Team experts.

(3) Sustainable livelihood and green-economy development, by providing:

- Additional family income from grown seedling sales.

- Additional family income from organic pot sales.
- Habitat restoration employment opportunities (preparing reforestation plots and planting trees)
- Environmental education opportunities for children. Training will be provided through multi-family workshops and individual family training sessions led by experienced BNF reforestation staff, who will also assess participants' training progress. At monthly meetings with families, we will discuss progress, challenges, objectives for the next month, and offer support and advice. BNF's Reforestation Team experts and Community Engagement Officer will be available on-call if families have questions or need assistance.

Contracts will specify the guaranteed purchase of seedlings by BNF from a family's nursery after reaching a pre-agreed size. The programme is thus incentive driven, as the long-term goal is for families to establish a small-scale green business to support their livelihoods and income, with future seedlings grown purchased either by BNF or other local conservation projects (e.g. Borneo Orangutan Survival Foundation). Families will be encouraged and supported to create an integrated permaculture approach, including potential cultivation of rubber trees or high market value fruits/tubers, to diversify sale opportunities in local markets. The programme will therefore bring new sustainable development opportunities to the communities, especially for women.

In particular, BNF will engage women's cooperative groups to create ~9,000 hand-made organic pots woven from reeds, which will be used to plant seedlings for reforestation. This technique has been shown to increase the survival rates of planted trees in burned areas and provides an integrated socio-economic development approach, developing sustainable livelihoods by empowering and engaging woman into conservation.

Within the project's first three months, families will visit Sebangau and see the area that will be replanted with seedlings grown in their family nurseries. The reforestation sites are accessible from the villages and can be visited in one day. This will give the families opportunity to experience the forest and its wildlife, and understand the importance of protecting Sebangau through experiential learning. BNF's Education Team will support these visits to ensure the topics are engaging and age-appropriate for younger participants through games and child-friendly talks.

Community nursery scheme members will also be contracted to assist with planting and monitoring of the seedlings planted in degraded and burnt areas of Sebangau. These responsibilities will be explained during socialization sessions, prior to families committing to the programme. As the seedlings will need approximately one year to grow to a suitable height for planting, this stage of the project may extend beyond the grant period. Thus, the primary focus of Year 1 is establishing the nurseries to build a strong foundation for future development and expansion.

We will bring together all participating families in the two villages to celebrate Year 1 of the. This will be an opportunity for families to share preliminary results with BNF and each other, discuss lessons learned during the first months (successes and failures), and agree plans. Family friends, wider community members, local government officials and NGOs will be invited to the event to engage more people in conservation. Assuming the results of our M&E assessments at this stage are positive, we hope that this event will become an opportunity to recruit more local people to establish further family seedling nurseries and expand our reforestation efforts.

Children from participating families will be encouraged to join BNF's Environmental Education Programme, including our 'Children of Sebangau' club, which takes place three days a week in Kereng Bangkirai village. Here, children will learn about and carry out environmentally friendly actions that they can do as individuals (e.g. reducing plastic use) and as a community (e.g. reducing fire use) to help protect the environment. The children can also act as important message multipliers through sharing stories about their learning and experiences with family members, including siblings and elders, thus encouraging the longterm local spread of more environmentally-friendly behaviours.

Project M&E is an integral component of our workplan and includes:

- Data collected monthly by participant families and verified through checks by BNF staff on the seedlings in their nurseries (survival rates, seedling heights and number of leaves).
- Monitoring of the number of local families and their composition (men, women and children) actively engaged in the programme, established through regular reports by nursery coordinators and field inspections to determine engagement levels and participant retention.
- Pre- and post- surveys conducted with families to determine any changes in income dependencies (especially environmentally destructive vs. sustainable livelihoods), perceptions and understanding of conservation, and behavioural changes.

USD

Category	Item	Unit description	Quantity	Unit cost USD	Total cost USD
Consumables	Family seedling nursery set-up: fertiliser x 5 nurseries \$7/nursery	per nursery	5	7.00	\$ 35.00
Consumables	Family seedling nursery set-up: 25 kg peat sacks x 5 nurseries \$56/nursery	per nursery	5	56.00	\$ 280.00
Consumables	Family seedling nursery set-up: polybags x 5 nurseries \$18/nursery	per nursery	5	18.00	\$ 90.00
Consumables	Community Hand-made Organic pots x 9,000 \$0.21/pot	per project	9000	0.21	\$ 1,890.00
Consumables	Misc. staff supplies (phone credit, stationary, printing, replacement uniforms, etc.) \$200/mo	per month	12	200.00	\$ 2,400.00
Consumables	Socialisation session: chair and tent hire x 4 \$68/session	per session	4	68.00	\$ 272.00
Consumables	Socialisation session: lunch for participants x 192 pax \$2.5/pax	per head	192	2.50	\$ 480.00
Consumables	Training session: chair and tent hire x 6 \$68/session	per session	6	68.00	\$ 408.00
Consumables	Training session: documents/training pack x 36 families \$2/family	per family	36	2.00	\$ 72.00
Consumables	Training session: lunch for participants x 192 pax \$2.5/pax	per head	192	2.50	\$ 480.00
Consumables	Visit to reforestation site in Sebangau Forest: lunch for participants x 192 pax \$2.5/pax	per head	192	2.50	\$ 480.00
Consumables	Celebration event: banners and posters x 1 of \$35	per session	1	35.00	\$ 35.00
Consumables	Celebration event: chair and tent hire x 1 of \$100	per session	1	100.00	\$ 100.00
Consumables	Celebration event: lunch for participants x 300 pax of \$2.5/pax	per head	300	2.50	\$ 750.00
Consumables	Celebration event: sound system rent x 1 \$105	per item	1	105.00	\$ 105.00
Consumables	Family seedling nursery set-up: Deep-water well x 5 nurseries \$560/well	per nursery	5	560.00	\$ 2,800.00
Equipment	Family seedling nursery set-up: paranet x 5 nurseries \$60/nursery	per nursery	5	60.00	\$ 300.00
Equipment	Family seedling nursery set-up: wooden frames for nursery structure x 5 nurseries \$1,000/nursery	per nursery	5	1,000.00	\$ 5,000.00
Other	Visit to reforestation site in Sebangau Forest: official park entry fees x 5 groups \$80/group	per visit	5	80.00	\$ 400.00
Personnel	Monthly family operational/incentive funds	per family	432	35.00	\$ 15,120.00
Personnel	Habitat Restoration Officer \$500/mo	per month	12	500.00	\$ 6,000.00
Personnel	Reforestation Staff of \$350/mo	per month	12	350.00	\$ 4,200.00
Personnel	Visit to reforestation site in Sebangau Forest: daily salary for 2 x Field Assistants, 2 x Reforestation Staff and 2 x Education Staff \$64/pax	per visit	6	64.00	\$ 384.00
Travel / accommodation	BNF team local travel (visiting scheme members, to office/field camp, etc.) x 12 mo \$200/mo	per month	12	200.00	\$ 2,400.00
Travel / accommodation	Socialisation session: reimbursement of costs to cover personal transport x 36 families \$4/family	per family	36	4.00	\$ 144.00
Travel / accommodation	Training session: reimbursement of costs to cover personal transport x 36 families \$4/family	per family	36	4.00	\$ 144.00
Travel / accommodation	Visit to reforestation site in Sebangau Forest: speedboat to forest edge x 5 \$160/visit	per visit	5	160.00	\$ 800.00
					\$ 45,569.00