



FOREST RESTORATION

AT THE GENTING WILDLIFE CORRIDOR

ANNUAL REPORT 2020

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1. Background on the Genting Wildlife Corridor

The Kinabatangan floodplain in eastern Sabah is one of the most biodiverse regions in Malaysia. It is home to rare and endangered wildlife species, such as the orang-utan and the Bornean elephant. Over the last decades, however, the region has been subjected to large-scale landscape changes, and oil palm plantations now cover about 90% of the Kinabatangan landscape.

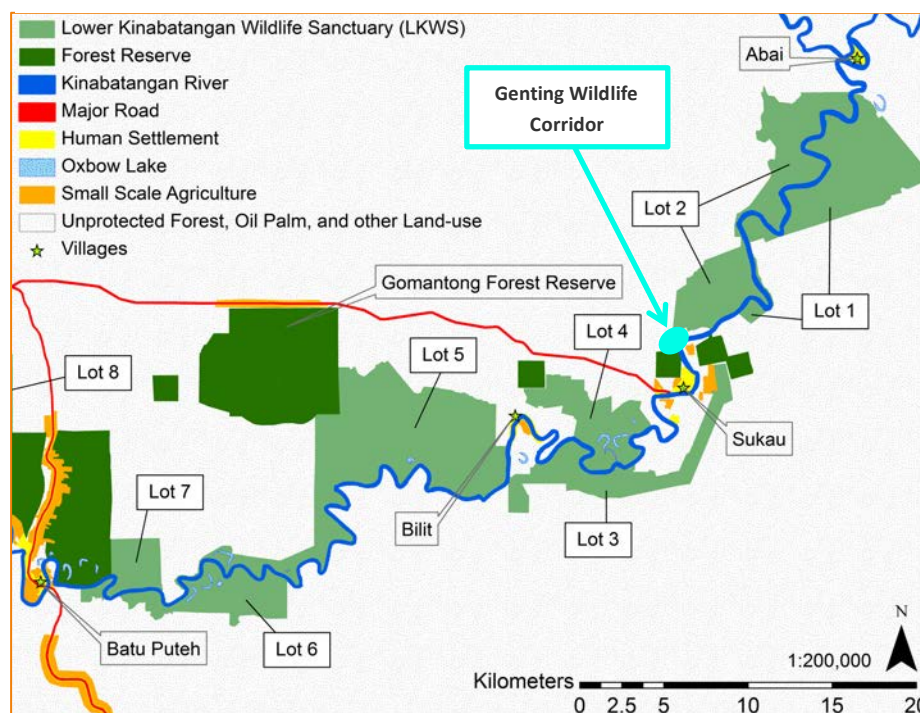
Recent socioecological and genetic studies have shown that the isolated fragments of protected secondary forest scattered along the Kinabatangan River can no longer sustain the region's wildlife populations. Most wildlife species now have no other alternative than passing through agricultural land and villages when moving between patches of protected forest. As a result, human-wildlife conflicts have rapidly increased, especially crop-raiding by elephants.

Hutan is committed to improving wildlife habitat quality and connectivity in the Kinabatangan through forest restoration and partnering with forward-looking private landowners as well as government agencies to create a network of wildlife corridors through the mixed forest-agricultural landscape.

The Genting Wildlife Corridor is the outcome of a pioneering partnership between Hutan, the oil palm producer Genting Plantations and the Sabah State Government to create a wildlife corridor along the Kinabatangan River, reconnecting two fragments of protected area. This corridor aims to ensure a safe passageway for wildlife, reducing wildlife conflicts in the area, thus fostering a more peaceful human-wildlife coexistence.

On 28 August 2018, the Sabah Wildlife Department and Genting Plantations signed a Memorandum of Understanding to allocate 110 acres of mature palms to the wildlife corridor. Hutan started in 2019 to plant native tree seedlings between the abandoned palms to ensure a gradual return of the area to natural forest. At the same time, Hutan also initiated a long-term wildlife monitoring effort to better understand the biodiversity value of reforested corridors in a mixed forest-agricultural landscape and to document the dynamics of wildlife recolonisation of the reforested area.

Figure 1. Map of the Lower Kinabatangan: protected areas and Genting Wildlife Corridor



2. Hutan Reforestation Team

Since January 2008, Hutan's all-female reforestation team has engaged in a long-term mission to rehabilitate crucial wildlife habitat in the Lower Kinabatangan with native tree species known to be the most favoured foods for orang-utans and other wildlife.

In 2020, the team was composed of 12 women from the Kinabatangan community. Very few women in Kinabatangan villages have permanent jobs, and Hutan is proud to offer this opportunity.

The members of Hutan's reforestation team, as all other Hutan staff, have been intensively trained to conduct and manage their work in a highly professional manner. In 2020, ongoing training programs by botanists and reforestation professionals allowed the reforestation team to learn specialised skills (e.g. phenology surveys) and improve their knowledge.

In addition to its permanent staff, Hutan offers the possibility to other women from the local community to join its reforestation team for paid "internship" periods of one month (up to ten intern positions per month are available). The trainees learn the basics of tree planting and seedling maintenance techniques and participate in environmental education programmes by Hutan to raise awareness on the need for conserving natural habitat for wildlife. In 2020, a total of 28 women participated in this internship programme.



3. Hutan native tree nursery

Since 2016 Hutan established its own native tree nursery in the village of Sukau. This nursery serves as a collection centre for seedlings purchased from village families.

Indeed, Hutan supports community tree nurseries in Sukau as an alternative source of income for village families. Hutan provides training to the nursery operators, mostly women, on raising healthy seedlings of suitable native species for reforestation. These seedlings are purchased once they reach 1-2 ft high and transported to Hutan's nursery, where our nursery staff looks after them. The seedlings are then dispatched to Hutan reforestation sites or oil palm plantations rehabilitating wildlife corridors in partnership with Hutan.

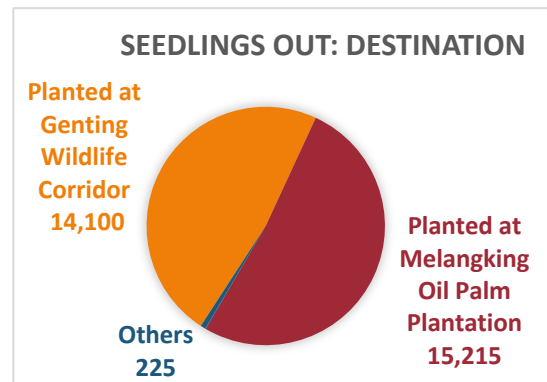
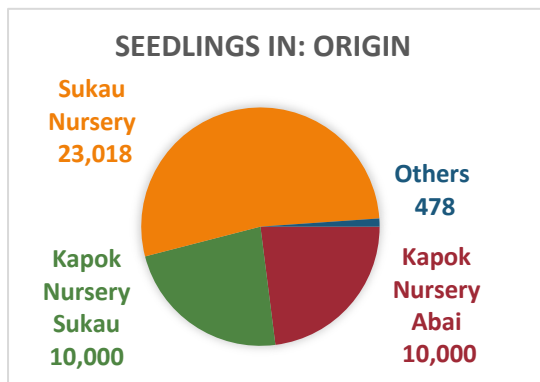
In June 2020, fifteen home nurseries from the village of Sukau became part of a more extensive community nursery network in the Kinabatangan region named "Kapok".

In 2020, all the seedlings arriving at Hutan Nursery were purchased by the Nestle RiLeaf programmes from Kapok nurseries and donated to Hutan and its partners' reforestation efforts. Nestle RiLeaf supports reforestation work in the Kinabatangan since 2011 and has donated seedlings to Hutan since 2015.

The 43,496 native tree seedlings arriving at Hutan's nursery in 2020 were purchased by Nestle RiLeaf and provided an income of RM65,244 (USD15,835) to village home nurseries, i.e. Kapok Nursery Abai and Sukau.

SEEDLINGS INVENTORY AND MOVEMENTS AT HUTAN NURSERY IN 2020

Seedlings at 1 Jan 2020	Seedlings In	Seedlings Out	Seedlings Dead	Seedlings at 31 Dec 2020
2,326	43,018	29,540	1,285	14,997



4. Reforestation progress at the Genting Wildlife Corridor

4.1. Planting seedlings

A total of 14,160 tree seedlings of 21 native species were planted in 2020 (see Table 1). No seedlings were planted in April - May and September – December 2020 due to the Covid-19 lockdowns.

The southern half of the Genting Wildlife Corridor, planted in 2019, is flat but the northern half is hilly. In 2020 Hutan team started to plant tree seedlings on slopes, where oil palms have been planted on terraces. Working on such a terrain proves much more challenging than what our team has experienced so far, and it also resulted in a slight decrease of our planting rates.

Table 1. Species of seedling planted in 2020

BOTANICAL NAME	FAMILY	VERNACULAR NAME	TOTAL TREES PLANTED
<i>Dracontomelon sp.</i>	Anacardiaceae	Sengkuang	492
<i>Cananga odorata</i>	Annonaceae	Bunga gadung	30
<i>Alstonia sp.</i>	Apocynaceae	Pulai	4
<i>Terminalia catappa</i>	Combretaceae	Ketapang	2,906
<i>Terminalia subspathulata</i>	Combretaceae	Talisai	246
<i>Dillenia borneensis</i>	Dilleniaceae	Simpoh Gajah	127
<i>Dillenia excelsa</i>	Dilleniaceae	Simpoh Laki	23
<i>Diospyros sp.</i>	Ebenaceae	Kayu malam	1,150
<i>Excoecaria indica</i>	Euphorbiaceae	Apid-apid	786
<i>Mallotus muticus</i>	Euphorbiaceae	Mallotus paya / Salungapid	3,833
<i>Pterospermum sp.</i>	Malvaceae	Bayor	472
<i>Microcos crassifolia</i>	Malvaceae	Kerodong damak-damak	130
<i>Colona serratifolia</i>	Malvaceae	Lamba	419
<i>Ficus sp.</i>	Moraceae	Tangkol hijau	349
<i>Syzygium fastigiatum</i>	Myrtaceae	Obah jangkang	200
<i>Eugenia sp.</i>	Myrtaceae	Obah putih	100
<i>Nauclea subdita</i>	Rubiaceae	Bangkal kuning	2,290
<i>Neolamarckia cadamba</i>	Rubiaceae	Laran	22
<i>Murraya paniculata</i>	Rutaceae	Kemuning	10
<i>Octomeles sumatrana</i>	Tetramelaceae	Binuang	354
<i>Vitex pinnata</i>	Verbenaceae	Kulimpapa	217
TOTAL			14,160



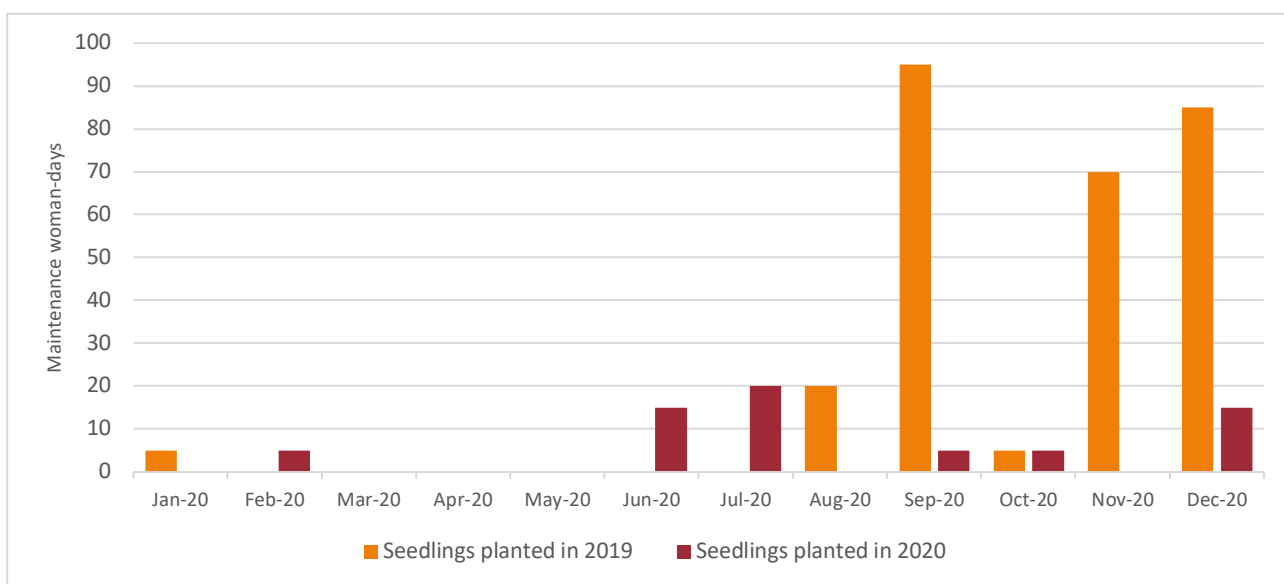
4.2. Maintenance of the planted seedlings

Seedlings' maintenance is carried out quarterly on average for the first two to three years after planting (and sometimes more often if needed, especially during the first year after planting). Later on, maintenance is conducted once a year until the young trees are big enough to survive on their own.

Maintenance includes manual weeding of the seedling and using grass cutters to remove grasses and shrubs in between. No fertilisers, pesticides, nor any other chemical products are used. Watering of the newly planted seedlings is also conducted manually during drought periods.

In 2020, the team conducted 69 days of maintenance work at the Genting Wildlife Corridor, with an average of five women per maintenance day (total of 345 woman-days). 280 woman-days were dedicated to maintaining the seedlings planted in 2019, and 65 women-days to the seedlings planted in 2020. Maintenance rounds in Mar-May and Oct-Nov were missed due to Covid-19 lockdowns.

Table 2. Schedule of seedlings maintenance in 2020 (total of 345 woman-days)



4.3. Monitoring of seedlings survival rates

The team monitored the survival rates of the seedlings planted at the Genting Wildlife Corridor in 2019 and 2020. The results are presented in Table 3.

Table 3. Survival rate of seedlings planted at the Genting Wildlife Corridor

	Number of seedlings planted	Survival Rate (% of planted seedlings alive)	
		By December 2019	By December 2020
Seedlings planted in 2019	31,815	79.35%	67.92%
Seedlings planted in 2020	14,160	-	80.93%
Total	45,975		

By December 2020, the survival rate of the seedlings planted in 2019 was lower than expected. Three main factors could explain this:

Impact of the Covid-19 lockdowns:

Two major lockdowns were implemented in Sabah in 2020, during which field operations were not allowed (see section 5.). We therefore missed some maintenance rounds for the seedlings planted in 2019, which resulted in their higher mortality rate. This demonstrates the vital importance of regular seedling maintenance in the first couple of years after planting.

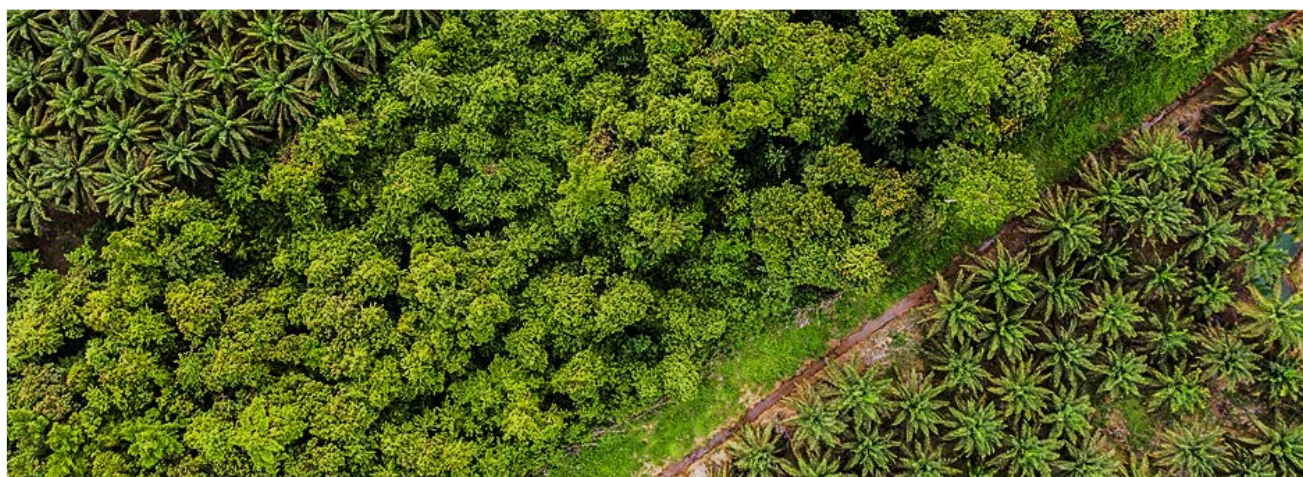
Overflow from plantation trenches:

In 2020, deep trenches were dug at the border between the Genting Wildlife Corridor and the adjacent plantation area where old palms are being replaced by young palm trees. The purpose of these trenches is to channel elephant movements through the Wildlife Corridor and prevent elephants from "spilling" into areas with immature oil palms (where they can cause extensive damage).

Some of the native seedlings already planted by Hutan had to be removed to construct the trenches. Heavy rains in November also caused water to overflow from the inundated trenches into the Wildlife Corridor and drown some of the newly planted native seedlings.

Increasing wildlife presence and seedling predation:

Two years on after the start of the reforestation work at the Genting Wildlife Corridor, we are now observing a rapid recolonisation of the area by wildlife species. Although this actually represents our efforts' ultimate goal, increasing wildlife presence also results in a higher predation rate on newly planted seedlings, primarily by macaques, pigs, and deer. Nevertheless, these animals also contribute to the dissemination of native seeds, and we are also seeing increasing numbers of "wild" seedlings growing throughout the area.



5. Impact of the Covid-19 pandemic

Two major lockdowns were enforced in Sabah in 2020, and Hutan was therefore unable to conduct fieldwork for a total of 3.5 months during the year. We fortunately managed to keep all of our staff on board and pay their salaries throughout the year, but our results in the field have been affected.

We took advantage of the lockdowns, however, to work on improving our organisation structure and processes. We also managed to connect the 80 Hutan employees and interns on Zoom and held frequent meetings and workshops online.

The strict government Standard Operating Procedures (SOP) in between lockdowns also affected our operations. For instance, the number of passengers allowed per car has been constantly limited, sometimes down to two, including the driver. The Genting Wildlife Corridor reforestation site is a 30-minute drive from the village, and it required many return trips to transport the whole team, further delaying fieldwork.

Due to these restrictions, we planted less trees than initially planned. We also had to forego some maintenance rounds during the lockdowns, and this resulted in a higher seedling mortality rate.

Since the beginning of pandemic, Hutan has been extremely concerned by a potential transmission of the virus from human to primates, and especially to orang-utans. We have therefore enforced strict sanitary guidelines, even stricter than the government SOP, for our staff working in the field. Hutan also works closely with international organisations to formulate and update Covid-19 guidelines for in situ great ape research.

