

Orangutan landscapes at risk:

The role of industrial tree concessions
in protecting key forest habitats





Orangutan landscapes at risk: The role of industrial tree concessions in protecting key forest habitat

This report is part of the project
'Corporate Transformation in Indonesia's Pulp & Paper Sector'

A report by
Aidenvironment

June 2022

Supported by:

Good Energies Foundation
www.goodenergies.org

Author(s):

Christopher Wiggs, Aidenvironment
Jack Cunningham, Aidenvironment

With contributions from:

Monalisa Pasaribu
Okita Miraningrum
Sri Wahyuni
M. Haikal Sanjaya
Marco Tulio Garcia
Albert ten Kate
— all Aidenvironment

And thanks to:

Dr. Gail Campbell-Smith
Dr. Tsuyoshi Kato, PT Mayangkara Tanaman Industri

Design:

Grace Cunningham
www.linkedin.com/in/gracecunninghamdesign/

Aidenvironment
Barentszplein 7
1013 NJ Amsterdam
The Netherlands
+ 31 (0)20 686 81 11

www.aidenvironment.org
info@aidenvironment.org

Aidenvironment is registered at the Chamber of Commerce of Amsterdam in the Netherlands, number 41208024

Executive summary

All species of orangutan are Critically Endangered. National parks and other protected areas in Indonesia have long been the focus of conservation attention and today harbour some of the largest populations of orangutans. However, there is 14,110,153 hectares (ha) of forested orangutan habitat remaining within Indonesia, of which only 3,456,191 ha (24%) falls within protected area boundaries. Almost double this amount, 6,219,661 ha (44%), lies within corporate oil palm, logging, and industrial tree concessions.

Aidenvironment has an extensive database of these concessions, and by overlaying our database with remaining forested orangutan habitat, have been able to identify the top 10 oil palm, logging, and industrial tree concessions with the most remaining habitat. 4,757,727 ha (34%) remains within selective logging concessions, 563,282 ha (4%) within known oil palm concessions, and 898,652 ha (6%) within industrial tree concessions.

The palm oil sector has transformed in the last few years with the adoption of No Deforestation, No Peat, No Exploitation (NDPE) policies. Greater emphasis has been placed on forest conservation, and projects to conserve and restore forest areas. The logging sector is governed by strict rules that specify how much timber can be extracted and the amount of forest cover that must remain. In contrast, industrial tree concessions can be cleared of native vegetation, concessions are typically substantially larger than oil palm plantations, and the industrial tree sector operates under far less transparency than the palm oil sector. As such, in many orangutan habitat units, industrial tree concessions are the key stakeholder.

The three industrial tree concessions with the largest remaining forested orangutan habitat in Indonesia are PT Mayawana Persada in the Mendawak habitat unit of the Kubu Raya landscape in West Kalimantan (68,776 ha), PT Industrial Forest Plantation

in the Sungai Murui Hulu habitat unit of the Kahayan-Kapuas landscape in Central Kalimantan (51,026 ha), and PT Taiyoung Engreen in the Rungan Timur habitat unit of the Rungan River landscape (41,609 ha). These three concessions are also three of the largest deforesters in the industrial tree sector. Between 2018 and 2021, PT Mayawana Persada cleared 8,852 ha of forest, PT Industrial Forest Plantation cleared 9,673 ha of forest, and PT Taiyoung Engreen cleared 3,510 ha.

If orangutans are to survive outside of protected areas, corporate concession owners must implement forest conservation programmes in their concessions and in the wider landscape. To demonstrate both how necessary and complex this is, in this report Aidenvironment explores the Kubu Raya, Kahayan-Kapuas, and Rungan River landscapes. We provide information on the ownership of the key concessions in each landscape, the extent of current orangutan habitat, and provide suggestions for possible conservation interventions.

Deforestation in
PT Mayawana Persada
Feb, 2021
© Aidenvironment

‘However, there is 14,110,153 hectares (ha) of forested orangutan habitat remaining within Indonesia, of which only 3,456,191 ha (24%) falls within protected area boundaries’



Contents

	Executive summary	p. 4
CHAPTER ONE		
Introduction	Orangutan distribution	p. 8
	Forest conversion is a threat to orangutans	p. 9
	Conservation efforts focused on protected areas	p. 9
	Corporate concessions are key to the future of orangutans	p. 10
	Corporate intervention in orangutan forest landscapes	p. 11
	Linking Gunung Palung National Park to Sungai Putri	p. 12
	A cautionary tale: Tanjung Puting National Park	p. 14
CHAPTER TWO		
Orangutan habitat on corporate concessions	Identifying orangutan habitat on concessions	p. 17
	Key concessions in forest landscapes	p. 18
	The industrial tree sector's sustainability performance lags behind oil palm and logging	p. 21
	Signs of improvement but deforestation remains	p. 22
	Industrial tree concessions key to orangutan conservation	p. 22
CHAPTER THREE		
Landscapes	Rungan River landscape	p. 24
	Kahayan-Kapuas landscape	p. 30
	The Kubu Raya landscape	p. 38
	References	p. 48



Introduction

Orangutan distribution

Orangutans are only found on the islands of Borneo and Sumatra. All three species are classified as critically endangered¹: the Bornean (*Pongo pygmaeus*), Sumatran (*Pongo abelii*) and Tapanuli (*Pongo tapanuliensis*). The most detailed and up to date Population and Habitat Viability Assessment² (PHVA), conducted in 2016,

puts the overall wild orangutan population at 71,820 individuals. These individuals are found in 55 populations and meta-population units across both islands. Approximately 80% of orangutans live in the five provinces that make up the Indonesian portion of Borneo, Kalimantan.

SPECIES (COMMON NAME)	SPECIES (SCIENTIFIC NAME)	POPULATION SIZE	TOTAL
Sumatran Orangutan	<i>Pongo Abelii</i>	14,470	14,470
Bornean Orangutan	<i>Pongo pygmaeus morio</i>	14,630	57,350
	<i>Pongo pygmaeus pygmaeus</i>	4,520	
	<i>Pongo pygmaeus wurmbii</i>	38,200	
			71,820

Table 1
Breakdown of wild orangutan population by species and sub-species. There is only one species of Sumatran orangutan and three species of Bornean Orangutan.

**Note – in the 2017 PHVA Tapanuli orangutan were not yet classified as a separate species from Sumatran orangutans, therefore they are included in the Sumatran orangutan figures.*

Forest conversion is a threat to orangutans

The conversion of lowland forest to oil palm concessions, industrial tree concessions, logging concessions, small-scale agricultural plots, and mines has drastically reduced available orangutan habitat. Hunting, the illegal wildlife trade, human-orangutan conflict, and disease have further reduced orangutan population numbers. Orangutans are particularly vulnerable to these habitat and population disturbances because of their large home ranges and extremely slow life history; they have the longest interbirth interval of any land mammal³, typically six to nine years, making it difficult for populations to recover quickly from disturbances.

‘Hunting, the illegal wildlife trade, human-orangutan conflict, and disease have further reduced orangutan population numbers’



Mother and infant orangutan, Central Kalimantan, Indonesia
Shutterstock

Conservation efforts focused on protected areas

To combat these threats, a variety of conservation initiatives have been implemented. Indonesia has an extensive system of national parks and other protected areas, and from the early 1970s onwards, conservation activities predominantly focused on these areas. The results have

been patchy. Protected areas have suffered from land and forest fires, small and large scale agricultural conversion, road infrastructure, human settlements and local orangutan extinction. However, they still harbour some of the largest and best protected orangutan populations. These

include both the Sebangau and Tanjung Puting National Park (5,800 orangutans and 4,180 orangutans, respectively²) in Central Kalimantan and Gunung Palung National Park (2,500 orangutans) in West Kalimantan².

Corporate concessions are key to the future of orangutans

Despite the importance of these protected areas to orangutan conservation, Aidenvironment's analysis shows that of the 14,110,153 hectares (ha) of forested orangutan habitat remaining within Indonesia, only 3,456,191 ha (24%) falls within protected area boundaries. This includes national parks, nature reserves, game reserves and protected forests. In the unprotected landscapes in which most orangutans are found, corporate concessions are often the key stakeholders. These are usually either oil palm, industrial tree or logging concessions, which together make up roughly 30% of all Indonesia's land area. Various studies over the years have attempted to identify the amount

of orangutan habitat found on corporate concessions. It's an analysis that has been hampered by the lack of transparency in Indonesia's land-use sectors and permit system, and the reluctance of concession owners to be transparent about their concession landbanks.

The best analysis to date of orangutan habitat in Indonesia is the 2016 PHVA, in which several corporate concessions are included. For example, of the 17 landscapes that make up the habitat of the *P. pygmaeus wurmbii* subspecies (Figure 1), seven have at least one identified corporate concession listed within the landscape. In others, no corporate concessions are mentioned, but

are indeed present. The smaller orangutan habitat units that make up these landscapes are often also dominated by corporate concessions. A prime example of this is the Arabela (Arut-Belantikan) habitat unit, located within the Arabela-Schwaner landscape (which has approximately 12,462 orangutans²) in Central Kalimantan (Figure 1). The Arut-Belantikan habitat unit contains between 2,698 and 3,526 orangutans² within 483,039 ha of orangutan habitat, of which just under half (237,434 ha) falls within six corporate concessions: one industrial tree concession, three logging concessions, and two oil palm concessions.



Figure 1
Central Bornean Orangutan (*Pongo pygmaeus wurmbii*) landscapes covered in this report. Population estimates were taken as the upper limits for each landscape. (Source: 2017 Orangutan PHVA)

Corporate intervention in orangutan forest landscapes

Agricultural and forestry sectors tend to be viewed as one monolithic group. However, while there are similarities in how oil palm, industrial tree, and selective logging concessions operate and a high degree of overlap in ownership of concessions⁴, they are markedly different sectors that operate in different ways. Even within these sectors, a concession owner's sustainability performance is often highly dependent on which markets it sells to. The presence of orangutan habitat on a corporate concession does not necessarily mean orangutans are still living on the concession. Nor does it mean the orangutans on the concession are necessarily at risk of being captured and killed. However, in general, the ever-decreasing forest patches they are being confined to as a result of corporate concessions means it is harder for orangutans to survive in these landscapes.

There are various types of support corporate concessions can provide to orangutan conservation. Typically, it will take the form of conservation or restorative action inside concessions. Several concession companies have programmes in place to monitor and protect orangutans on their concessions:

- Oji Holdings are working with the Orangutan Foundation UK and the Indonesian Orangutan Foundation (YAYORIN) to develop a corridor to link orangutan habitat on PT Korintiga Hutani to help conserve the 67 orangutans that Oji Holdings claim live in the concession area^{5,6,7}.
- On their degraded and fire-affected⁸ PT Arrtu Energy Resources concession in West Kalimantan, Eagle High implements Project Amour⁹. Eagle High claim this includes a patrol and conservation team that has identified almost 3,000 nests and a population of over 30 individuals, including females with young.
- Alas Kusuma has a long-term project with WWF Indonesia to monitor and conserve orangutan populations on their 171,300 ha PT Suka Jaya Makmur concession. In August 2020, PT Suka Jaya Makmur conducted an orangutan census in the concession's northern block and identified 185 orangutan nests¹⁰.
- In 2015, Dwima Group committed to orangutan conservation on all their timber concessions¹¹, which covers approximately 450,000 ha. PT Dima Jaya Utama achieved Forest Stewardship Council (hereafter, FSC) certification in 2013¹² and has a population of 63 orangutans² in the Samba - Kahayan hills (Eastern Schwaner) habitat unit of the Arabela-Schwaner landscape.
- Eagle High is also supporting the Rimba Raya reserve¹³, committing 25 years of funding through Lestari Capital's Sustainable Commodities Conservation Mechanism¹⁴.
- The Indonesian palm oil company Golden Agri Resources¹⁵ collaborates with Orangutan Foundation International to release ex-captive orangutans into the Rimba Raya reserve and supports conservation education and outreach activities.
- As well as working with Borneo Orangutan Survival Foundation to protect orangutan habitat in and around their high conservation area (HCA) on PT Kalimantan Sawit Abadi in Lamandau in Central Kalimantan, Sawit Sumbermas Sarana¹⁶ also provided BOSF with a 1,434 hectare area on the island of Pulau Salat to house 200 of their rescued orangutans.

‘... in general, the ever-decreasing forest patches they are confined to means it is harder for orangutans to survive in these landscapes’

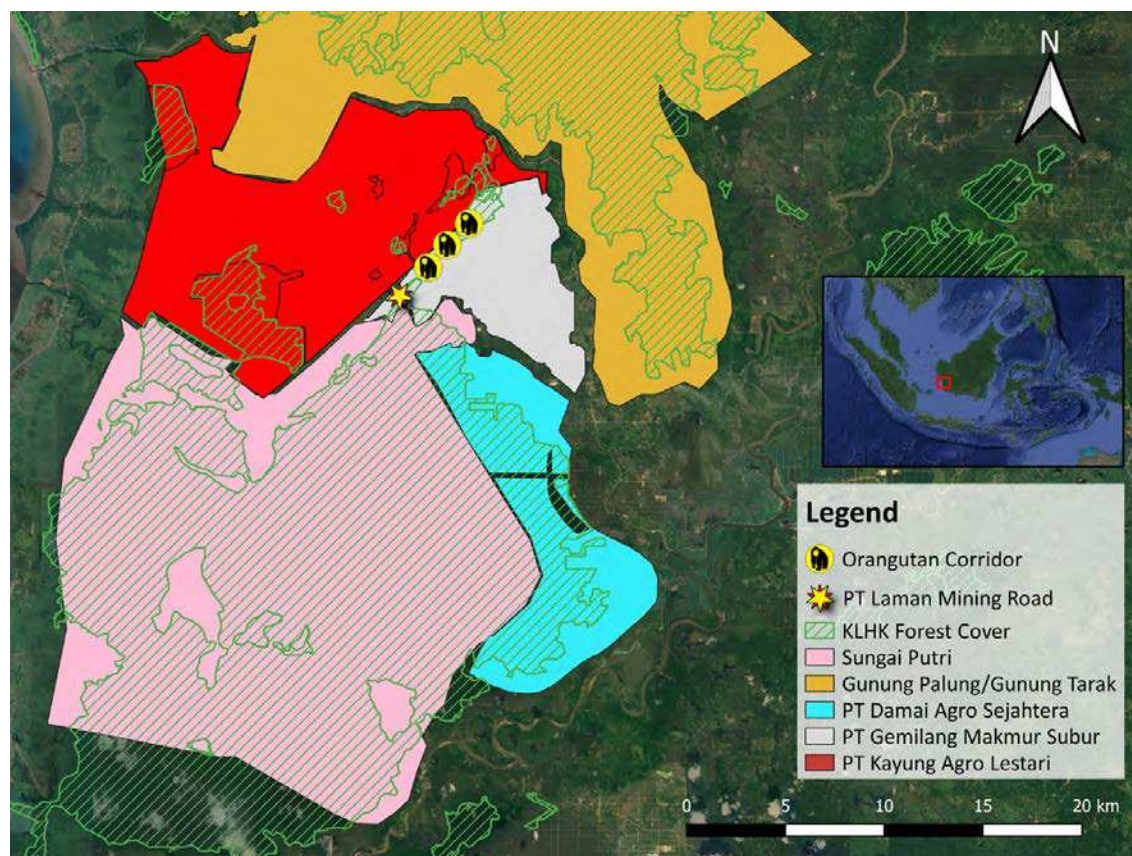


Figure 2
The corridor area linking Sungai Putri to Gunung Palung and Gunung Tarak.

Linking Gunung Palung National Park to Sungai Putri: A case of corporate interventions in partnership with NGOs

One of the most ambitious corporate interventions in orangutan landscapes is a project that Aidenvironment has been involved in, an effort by the palm oil company Bumitama Gunajaya Agro and the Sustainable Trade Initiative (IDH) to link two of the most significant orangutan populations in West Kalimantan. It is a project that shows both what committed corporate intervention can do, and the challenges of implementing large-scale conservation projects in Kalimantan.

The project identified Gunung Palung National Park as one of the target areas, covering 108,000 ha, with around 90,000 ha of orangutan habitat. On Gunung Palung's southeastern border is the 24,000 ha Gunung Tarak Nature Reserve (Figure 2). A narrow corridor of forest links Gunung Tarak to the more southerly Sungai Putri peat swamp, which covers 55,000 ha. Together, the Gunung Palung-Sungai Putri meta-population includes 3,280 orangutans.

Gunung Tarak and Gunung Palung are both under the jurisdiction of the Ministry of Environment and Forestry. The Sungai Putri peat

swamp covers 55,000 ha, including a 48,400 ha industrial tree permit operated by PT Mohairson Pawan Khatulistiwa and the oil palm plantation PT Damai Agro Sejahtera, operated by Bumitama Gunajaya Agro. PT Mohairson Pawan Khatulistiwa is an Indonesian company linked to a Chinese-backed investment firm¹⁷. After an NGO campaign focused on the impact of the concession's development on the Gunung Palung-Sungai Putri meta-population, PT Mohairson Pawan Khatulistiwa sold the concession to a new company established to conserve the forest on the concession. Together with PT Mohairson Pawan Khatulistiwa under their new management strategy, the NGO International Animal Rescue Indonesia are implementing a holistic conservation programme in and around the concession area. Projects focus on community development and empowerment, forest protection and restoration simultaneously conserving the orangutan population within the concession and wider area.

Palm oil concessions share the landscape

The corridor linking Gunung Tarak and Sungai Putri runs in between two oil palm concessions. On the west side is the 18,000 ha PT Kayung Agro Lestari, operated by Austindo Nusantara Jaya. On the eastern side is the 18,000 ha PT Gemilang Makmur Subur, operated by Bumitama Gunajaya Agro.

In 2016, Aidenvironment entered into a partnership with Bumitama Gunajaya Agro and IDH to strengthen the protection of the corridor. The project included, among others, support for 2,500 smallholder farmers operating in the vicinity of the corridor, restoration of 400 ha of degraded habitat, and training of Bumitama Gunajaya Agro staff and villagers to patrol the corridor and observe the orangutans using it.

The project was ambitious. Initially covering two years, it was designed in such a way that Bumitama Gunajaya Agro staff and people living in the vicinity of the corridor could have continued the activities without the need for external assistance. If successful, it would have secured the ability of orangutans in the two key habitats to extend their home ranges and migrate. However, the fate of the corridor project since the project ended in 2018 shows the complexities of corporate intervention in conservation activities in and around their concessions.

Complexities to corporate intervention

The mining company PT Laman Mining has a permit to explore Ketapang's extensive bauxite ore reserves. Their permit overlaps with PT Kayung Agro Lestari's concession and its southern conservation area¹⁸. This has been a source of dispute between the two companies for over 10 years¹⁹. After a long period of inaction, in 2018 PT Laman Mining reactivated its permit and began excavation work²⁰. This included cutting a 1.5km long and 30 metre wide road through the southern portion of the corridor²¹. (Figure 3).

If developed fully, the PT Laman Mining mine and associated developments will irrevocably degrade the habitat and remove any chance of orangutans moving between Gunung Tarak and Sungai Putri along the corridor. Negotiations between the three companies, local government and NGOs is ongoing. The case shows what corporate concessions can achieve if conservation activities are extended outside of concessions and the need of the entire landscape and orangutan habitat unit are considered. However, it also shows the limits of conservation projects if all stakeholders in the landscape aren't committed.



Figure 3
Satellite imagery showing the development of the PT Laman Mining road, destroying the orangutan corridor linking Sungai Putri to Gunung Tarak. The orangutan populations in each area are now isolated from each other.

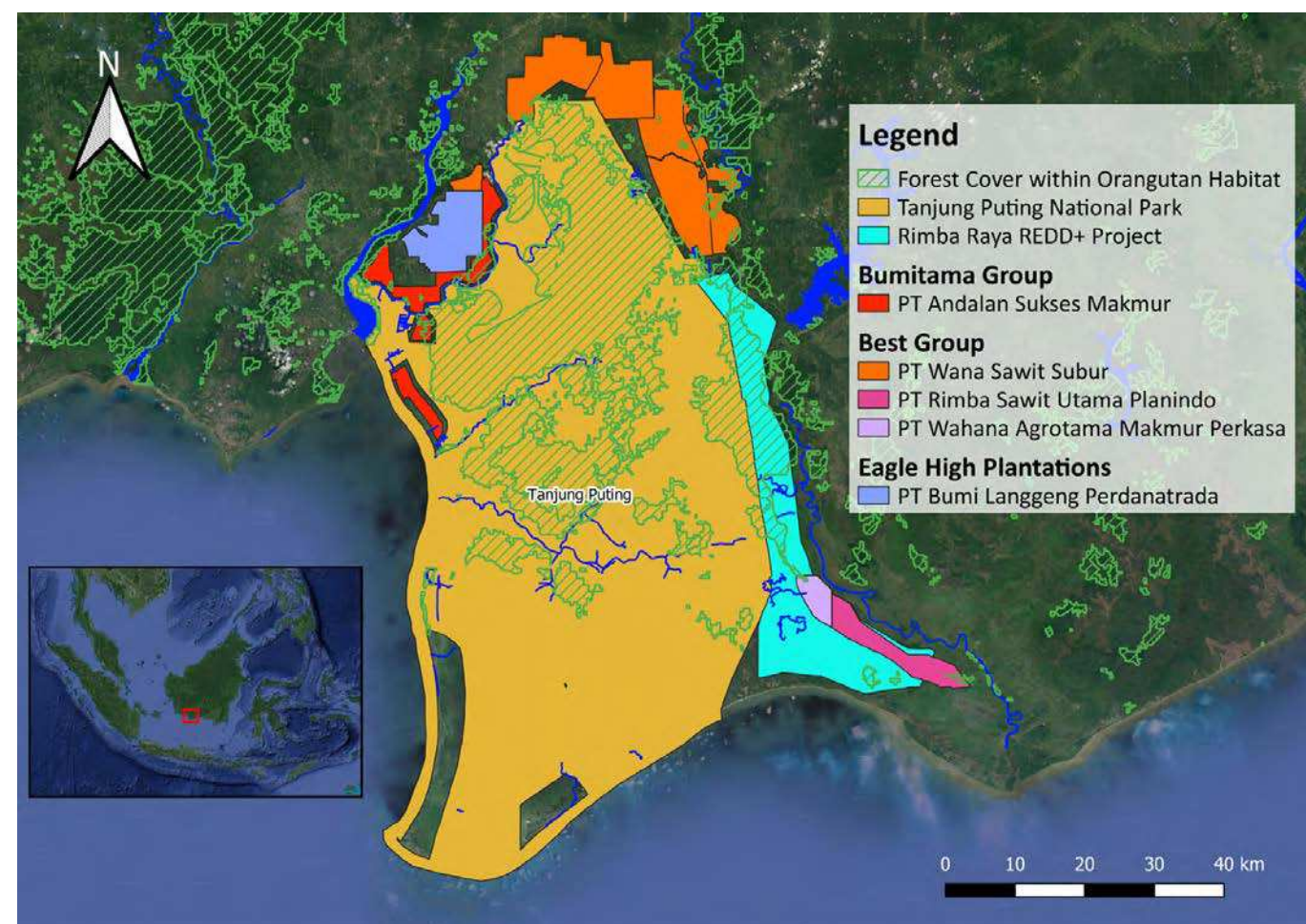
A cautionary tale: Tanjung Puting National Park

The reason why it is so necessary for corporate concessions to be involved in orangutan conservation is demonstrated by the case of Tanjung Puting National Park. Tanjung Puting National Park covers 415,040 ha and sits on a peninsula in the south of Central Kalimantan. The PHVA puts the wild orangutan population in the park at 4,180 individuals, with an available habitat of 159,364 ha. Tanjung Puting is arguably Kalimantan's best-known national park, famous for its wild and ex-captive orangutans and the long-term study initiated in 1971 by Birute Galdikas²². Despite its renown, Tanjung Puting has had a chequered history, blighted by illegal logging, widespread fires, and encroachment, and today, the park's buffer zone has been completely eradicated, occupied by oil palm plantations with highly degraded or non-existent orangutan habitat. It's a situation that is mirrored throughout Indonesia's protected area network.

Tanjung Puting's northern border is demarcated by the Sekonyer river. On the northern border of the river lies PT Andalan Sukses Makmur, a 9,276 ha oil palm plantation operated by Bumitama

Gunajaya Agro²³. Directly north of PT Andalan Sukses Makmur is the oil palm plantation PT Bumi Langgeng Perdanatrada, an 8,877 ha concession operated by Eagle High Plantations (Figure 4).

Bumitama Gunajaya Agro began land clearing on PT Andalan Sukses Makmur in 2013²⁴, leading to a complaint being submitted to the Roundtable on Sustainable Palm Oil (RSPO) by Friends of the Orangutan and International Animal Rescue²⁵. In the same year, NGOs in the area reported the remains of several orangutans in different locations along the border between PT Andalan Sukses Makmur and PT Bumi Langgeng Perdanatrada²⁶, including four orangutan skulls²⁷. The PHVA references a survey conducted in 2013 in 1,000 ha of forest on PT Andalan Sukses Makmur by Borneo Orangutan Survival Foundation that found 10 orangutans. Aidenvironment reached out to Bumitama Gunajaya Agro during the preparation of this report to confirm how many orangutans are living on the concession as of 2021, but Bumitama Gunajaya Agro declined to answer.



‘ Today, the concession has very little forest, and what remains continues to be cleared; between 2016 and 2020, approximately 350 ha of peat and peat forest was cleared. ’

In 2012, a RSPO complaint was made alleging Eagle High subsidiary, PT Bumi Langgeng Perdanatrada, were draining peat and encroaching into Tanjung Puting. PT Bumi Langgeng Perdanatrada responded²⁸ by stating that there had been no clearing activity since 2011 and highlighting the river between the concession and the park. PT Bumi Langgeng Perdanatrada has now been completely cleared of forest. Eagle High confirmed to Aidenvironment that there was once a corridor in and out of the concession where an Eagle High representative once saw “a couple of orangutans”, but it burnt down in 2015.

The largest concession, situated on the park's northeastern border, is PT Wana Sawit Subur Lestari, owned by the Indonesian company Best Group. The concession is divided into four blocks. Operations on the concession commenced in 2007²⁹. In 2008, border patrolling activities by Orangutan Foundation International found Best Group had cleared areas outside of their concession and were encroaching into the park³⁰. The

concession has now largely been cleared of orangutan habitat. What forest remains on the concession continues to be cleared; between 2016 and 2020, approximately 350 ha of peat and peat forest was cleared. The deforestation led to engagement by Best Group's NDPE-compliant buyers. The palm oil buyer Louis Dreyfus Company engaged with Best Group and forced a stop-work order to be issued on 6th March 2020³¹. Louis Dreyfus Company has also requested Best Group adopt a sustainability policy.

Tanjung Puting's eastern border has always presented the best opportunity for expansion, being the only border not immediately demarcated by water. In 2007, the entire border area was earmarked by the government to be converted into four oil palm concessions³². to be given to Best Group³⁰. Fortunately, the Hong Kong organisation Infinite Earth successfully bid for the area to become a Conservation Forest and to be managed under a REDD+ scheme. The area is now called The Rimba Raya Biodiversity Reserve Project and covers

65,000 ha, comprising a Concession License of approximately 36,950 ha, a Collaboration Area (with Tanjung Puting National Park) of around 18,640 ha and a Management Agreement area of around 8,900 ha. This section includes two further oil palm concessions, operated by Best Group, PT Rimba Sawit Utama Planindo and PT Wahana Agrotama Makmur Perkasa.

The reserve has a forested area of 25,000 ha. No wild orangutan data for the reserve exists, but as of 2016, 100 ex-captive orangutans had been released into the reserve by Orangutan Foundation International. Rimba Raya is the largest-ever REDD+ project to see its emission reductions verified³² under the Verified Carbon Standard. It is also now the only area surrounding Tanjung Puting that provides any orangutan habitat, a small buffer zone to a famous national park completely hemmed in by oil palm concessions.

Orangutan habitat on corporate concessions

Identifying orangutan habitat on concessions

Aidenvironment has an extensive database of corporate concessions and associated ownership information. From this database we can monitor land-use activities, identify the company or individuals responsible, and connect deforestation or other destructive practices to international supply chains. To perform the assessment in this report, we overlaid our concession data with the orangutan habitat data derived from the PHVA. This allowed us to determine the individual concessions with the largest amount of orangutan habitat, and then the company groups with the largest

accumulated amount of orangutan habitat. We then overlaid both with the 2018 Forest Cover map from the Indonesian Ministry of Environment and Forestry, to identify orangutan habitat that was still forested. To gain a more accurate representation of forest cover in 2021, the remaining forested orangutan habitat data was overlaid with Global Forest Watch GLAD alerts (deforestation alerts) from 2018 to 2021. Where deforestation had occurred, the area was removed from the remaining forested orangutan habitat data.

RANK	CONCESSION COMPANY	COMPANY GROUP	REMAINING FORESTED HABITAT (HA)	ORANGUTAN LANDSCAPE	ORANGUTAN HABITAT UNIT
1	PT Suka Jaya Makmur	Alas Kusuma	181,240	Arabela-Schwaner	Rongga-Perai
2	PT Sarmiento Parakantja Timber (Sarpatim)	Kaya Lapis Indonesia	165,274	Arabela-Schwaner	Seruyan Hulu
3	PT Sari Bumi Kusuma (Unit I and II)	Alas Kusuma	143,201	Arabela-Schwaner	Arabela (Arut-Belantikan)
4	PT Erna Djuliawati	Lyman Group	138,215	Arabela-Schwaner	Seruyan Hulu
5	PT Dwima Jaya Utama	Dwima Group	102,550	Katingan	Sambah-Katingan
6	PT Dasa Intiga	GPS Group	94,708	Kapuas-Barito (Mawas)	Mantangai (Block A)
7	PT Agathis Alam Indonesia	PT Agathis Alam Indonesia	93,249	Arabela-Schwaner	Murung Raya
8	PT Hutanindo Lestari Raya Timber	Hutanindo Lestari	88,940	Arabela-Schwaner	Seruyan Hulu
9	PT Balikpapan Wana Lestari (formerly Balikpapan Forest Industries)	Korindo	85,143	Sungai Wain	Sungai Wain Protection Forest CA Muara Kaman
10	PT Nusantara Alam Raya Sejahtera (formerly PT Nusantara Plywood Unit IX)	PT Nusantara Alam Raya Sejahtera	83,436	Arabela-Schwaner	Murung Raya

Key concessions in forest landscapes

There is 14,110,153 ha of standing forest remaining within the orangutan habitat in Indonesia. Of this, 4,757,727 ha (34%) remains within selective logging concessions, 563,282 ha (4%) within known oil palm concessions, and 898,652 ha (6%) within industrial tree concessions. The 10 logging concessions with the largest amount of remaining forested orangutan habitat have a combined 1,175,956 ha (Table 2). The 10 oil palm plantations with the largest remaining forested orangutan habitat have a combined 108,911 ha (Table 3). For industrial tree concessions, the 10 largest have a combined 367,319 ha (Table 4).

Table 2

The top 10 logging concessions with the most forested orangutan habitat remaining

RANK	CONCESSION COMPANY	COMPANY GROUP	REMAINING FORESTED HABITAT (HA)	ORANGUTAN LANDSCAPE	ORANGUTAN HABITAT UNIT
1	PT Rimba Utara	Rachmat/Oetomo families — Dharma Satya Nusantara	29,752	Arabela-Schwaner	Kapuas Hulu
2	PT Anugrah Kebun Mandiri	Palma Serasih	14,205	Sangkulirang	Pangadan
3	PT Kaltim Bhumi Palma	Sridjaja Family	12,012	Arabela-Schwaner	Murung Raya
4	PT Sumber Alam Selaras	NPC Resources — Indonesia	10,781	Kutai NP-Borang	Cagar Alam Muara Kaman
5	PT Citra Mitra Perkasa Utama *Permit was revoked in January 2022 by President of Indonesia	Fangiono Family (Ciliandry Angky Abadi)	9,149	Katingan	Smbah-Katingan
6	KSU Danum Paroy	KSU Danum Paroy	8,455	Arabela-Schwaner	Murung Raya
7	PT Marsam Citra Adiperkasa	PT Marsam Citra Adiperkasa	7,690	Arabela-Schwaner	Murung Raya
8	PT Gading Tirta Mandiri	Castlegate and Everett	6,559	Arabela-Schwaner	Kapuas Hulu
9	PT Sawit Mandiri Lestari	Sawit Sumbermas Sarana	5,276	Lamandau-Sukamara	SM Lamandau
10	Ikhsanudin — PT Permata Sawit Mandiri	PT Permata Sawit Mandiri	5,032	Arabela-Schwaner	Rongga-Perai

Table 3

The top 10 oil palm concessions with the most forested orangutan habitat remaining

‘ There is 14,110,153 ha of standing forest remaining within the orangutan habitat in Indonesia. ’

RANK	CONCESSION COMPANY	COMPANY GROUP	REMAINING FORESTED HABITAT (HA)	ORANGUTAN LANDSCAPE	ORANGUTAN HABITAT UNIT
1	PT Mayawana Persada	Alas Kusuma	68,776	Kubu Raya	Mendawak
2	PT Industrial Forest Plantation	Nusantara Fiber	51,026	Kahayan-Kapuas	Sungai Murui Hulu
3	PT Taiyoung Engreen	Jhonlin + Taiyoung	41,609	Rungan River	Rungan Timur (Mungku Baru)
4	PT Mayangkara Tanaman Industri	Sumitomo Forestry	39,716	Kubu Raya	Mendawak
5	PT Tanjung Redeb Hutani	Prabowo Subianto	38,468	Wehea-Lesan	Wehea Protection Forest
6	PT Wana Hijau Pesaguan	Djarum	35,996	Pematung Gadung	Pesaguan
7	PT Surya Hutan Jaya	Sinar Mas	28,694	Kutai NP - Bonrang	Timber estate
8	PT Langgeng Bakti Persada	Dr. Suheldi SE M M	22,264	Katingan	Sambah-Katingan
9	PT Sumalindo Alam Lestari II	Salim Group	20,482	Sangkulirang	Karangan
10	PT Bukit Beringin Makmur	PT Puncak Keemasan Lumbung Dunia	20,288	Arabela-Schwaner	Seruyan Hulu

Table 4
The top 10 industrial tree concessions with the most forested orangutan habitat remaining

The industrial tree sector’s sustainability performance lags behind oil palm and logging

The most high-profile examples of corporate intervention in orangutan landscapes are in the oil palm and logging sectors. In the palm oil sector, the intervention has been driven by civil society and supply chain pressure. In the case of logging, this is likely due to the rules in Indonesia on timber extraction, the requirements of timber certification schemes and the ability of orangutans to live in selectively logged forests. While there are examples of specific projects on industrial tree concessions (see Sumitomo Forestry in the Kubu Raya landscape section and the beforementioned Oji Holdings), the industrial tree sector operates under lower sustainability standards and far less civil society surveillance than the oil palm and logging sectors.

Industrial trees are used to produce paper and textile fibres, as well as for wood products and energy generation. The Indonesian industrial tree plantation sector is dominated by two large pulp and paper

producers, Asia Pulp & Paper (APP) and Asia Pacific Resources International Holdings (APRIL)³³. APP and APRIL are parts of the Sinar Mas and Royal Golden Eagle (RGE) groups of companies, respectively. The Japanese company Marubeni Corporation also produces pulp in Indonesia, but to a lesser extent³⁴.

Of the 21 largest oil palm growers in Indonesia, 16 are committed to No Deforestation, No Peat, No Exploitation (NDPE) policies³⁵. Meanwhile, of Indonesia’s 21 largest industrial tree growers, only Sinar Mas, RGE and Marubeni have sustainability commitments that are close to palm oil NDPE policies. The biggest difference is that palm oil NDPE policies forbid any development of peat areas, regardless of depth, whereas Sinar Mas’ and RGE’s industrial tree sustainability policies allow the planting of industrial trees on unforested peatlands⁴.

Clearing within PT Industrial Forest Plantation
© Aidenvrionment



‘Aidenvironment identified that just five industrial tree companies were responsible for 13,000 ha of deforestation in Indonesia’

Signs of improvement but deforestation remains

In the palm oil sector, the adoption of NDPE policies by the main buyers has significantly reduced deforestation. The policies of Sinar Mas, RGE and Marubeni have had the same effect in the industrial tree sector. Between 2015 and 2019, deforestation on industrial tree concessions fell by 85% compared to 2010 to 2012 inside the 91 concessions supplying wood fibre to Indonesian pulp mills belonging to Sinar Mas, RGE, and Marubeni³⁶.

Despite these positive developments, deforestation persists. Aidenvironment identified that just five industrial tree companies were responsible for 13,000 ha of deforestation in Indonesia in 2020³⁷. This includes Nusantara Fiber Group (6,900 ha), Alas Kusuma (2,800 ha), Sumatera Dinamika Utama (1,300 ha), PT Adindo Hutan Lestari (1,200 ha) and Sinar Mas (800 ha). In 2021, just four industrial tree companies cleared 11,000 ha of forest, peat forest and peat in Indonesia. These once again included Alas Kusuma (5,300 ha) and Nusantara Fiber (3,200 ha), plus Moorim Group (1,500 ha) and PT Hutan Produksi Lestari (800 ha).

Industrial tree concessions key to orangutan conservation

In several orangutan habitat units, industrial tree concessions are the largest concession. As they cover a larger area than oil palm plantations but operate without the harvesting restrictions that logging concessions do, these industrial tree concessions are often the key land-use stakeholder. If forest in these habitat units is to be protected, the industrial tree concession sector badly needs to improve its sustainability performance.

The industrial tree concessions with the largest amount of orangutan habitat are found in three of the key habitat units for orangutan: PT Mayawana Persada is in the Mendawak habitat unit of the Kubu Raya landscape in West Kalimantan; PT Industrial Forest Plantation is in the Sungai Murui Hulu habitat unit of the Kahayan-Kapuas

landscape in Central Kalimantan; and PT Taiyoung Engreen in the Rungan Timur habitat unit of the Rungan River landscape. The three concessions are also three of the largest deforesters in the industrial tree sector.

The PHVA contains population data for each of these landscapes. The landscape with the best additional data and where there is evidence of a viable orangutan population is Rungan River, where the Borneo Nature Foundation works to protect orangutans. Additional data is available for the Kubu Raya landscape. No data on the orangutan habitat in Kahayan-Kapuas exists. These three landscapes will be examined in more detail in the following chapter.



Rungan river landscape

The Rungan River landscape lies to the north of Sebangau National Park. The landscape is split into an eastern and western part by the Rungan river. The eastern side of the river is a predominantly Kerangas (Sundaland dry heath) forest landscape flanked by another river, the Kahayan, to the east (Figure 5). This area contains 147,357 ha of forested orangutan habitat and the orangutan population here constitutes the Rungan Timur (Eastern Rungan) habitat unit. The PHVA estimates the population here to be between 1,364 and 2,034 individuals², but in recent years Borneo Nature Foundation have conducted more in-depth assessments and determined the population to be

between 2,220 and 3,275 individuals³⁸. This represents one of the largest unprotected populations of orangutans. For this reason, this landscape has been the focus of intensive conservation efforts by the Borneo Nature Foundation. The NGO has a dedicated programme in the landscape focused on corporate engagement and developing strategies to conserve orangutan habitats in and around concessions. Aside from orangutans, this landscape contains a wealth of biodiversity. The forest here boasts pangolins, hornbills, crocodiles, turtles and is the only site in Central Kalimantan with all five of

Borneo's wild cats³⁸. It is also home to more than 20,000 people spread across 20 villages³⁹. It is a landscape dominated by corporate concessions: numerous oil palm concessions, industrial tree concessions and one logging concession. The most significant of these is PT Taiyoung Engreen, the industrial tree concession with the third most forested orangutan habitat in Indonesia, 41,609 ha. In a mirror of the situation in PT Kayung Agro Lestari's concession north of Sungai Putri in West Kalimantan, there is a 84,358 ha zircon mining concession on the banks of the Kahayan River.

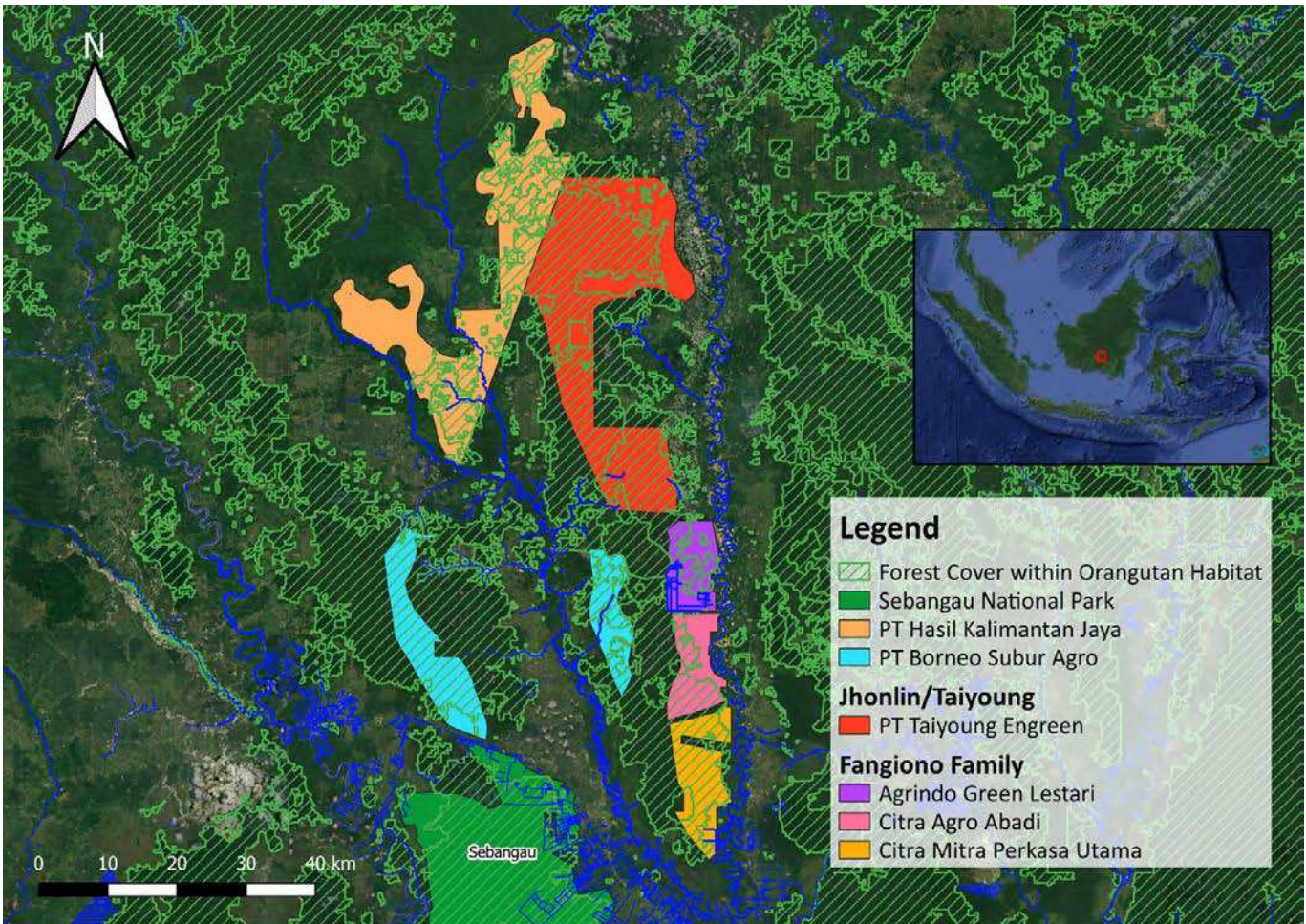


Figure 5
Concessions within the
Rungan River landscape

PT Taiyoung Engreen

The largest amount of remaining forested orangutan habitat within concessions in the landscape is within PT Taiyoung Engreen. According to Aidenvironment's analysis, there is 41,609 ha of forested orangutan habitat remaining (Figure 5), ranked third amongst industrial tree concessions in Indonesia for orangutan habitat. Seventy percent of this concession is

customary forest of indigenous people, the Dayaks, and consists largely of Ulin trees (*Eusideroxylon zwageri*), which for the Dayaks are sacred⁴⁰. There is also mining for zircon and coal taking place within the boundaries of the concession. One of the coal concessions in the northwestern area of PT Taiyoung Engreen is operated by PT Persada Makmur Sejahtera.

Ownership

PT Taiyoung Engreen is owned by the Korean company Taiyoung Global Co Ltd (40% shareholding) and the Indonesian company Jhonlin (30% shareholding). Three individuals: Mr Badrodin Haiti (Chief of the Indonesian National Police from January 2015 until July 2016), Mr Mohamed Rafil Perdana and Mr Didi Basuki, each have 10% shareholdings.

Taiyoung Global Co Ltd is based in South Korea. The company doesn't have an online footprint and its registered address in Seoul belongs to a company known only as "TY".

Jhonlin is one of Indonesia's most notorious companies. It is operated by the Indonesian businessman Haji Andi Syamsudin Arsyad (commonly known as Haji Isam). He started in the coal mining industry in South Kalimantan, before aggressively expanding into oil palm and industrial tree concession development.

Haji Isam has two children, Liana Saputri and Jhonny Saputra, who own shares in several companies under the Jhonlin group flag. Jhonlin and the wider Isam family hold industrial tree concessions totalling 57,752 ha in South Kalimantan. The oil palm landbank of the company is not known, but Aidenvironment estimates it is approximately 160,000 ha, divided over at least 17 concessions³⁹. As well as oil palm plantations, the family owns the PT Adisurya Cipta Lestari and PT Batulicin Agro Sentosa palm oil mills in Tanah Bumbu district, South Kalimantan, and PT Pradiksi Gunatama mill in Paser district, East Kalimantan.

Jhonlin's sustainability issues led to supply chain repositioning

Jhonlin and its affiliates have cleared 8,736 ha of forest and peat since 2016. Jhonlin has also been linked to numerous disputes with local communities over land, labour, and human rights violations. These include the bodies of two security officers being found at the security post of PT Jhonlin Agro Mandiri with injuries to the neck, face and head, and the company being linked to the death of a journalist who was reporting on Jhonlin Group activities⁴⁰.

Jhonlin was a supplier to several companies with NDPE policies, including ADM, Golden AGRI Resources, Johnson & Johnson and Sime Darby, but has slowly

been suspended from supply chains as a result of their practices. Hopes that Jhonlin would commit to company-wide NDPE policies have faded as the company has moved into Indonesia's domestic biofuel sector. In 2021, Jhonlin completed the construction of a new biodiesel plant, PT Jhonlin Agro Raya, in Tanah Bumbu district, South Kalimantan⁴¹. The plant can process 60 metric tons of fresh fruit bunches per hour, and 30% of the plant's capacity is planned to be met by FFB supplied by Jhonlin's own subsidiaries. Servicing the biofuel sector, which has weaker sustainability standards than the NDPE market, means there is little incentive for Jhonlin to stop clearing its oil palm plantations.

Deforestation of PT Taiyoung Engreen

PT Taiyoung Engreen has had 3,510 ha of deforestation since 2018, including 872 ha in 2021 (Figure 6), some of which was for mining (Figure 7). The deforestation is almost entirely within orangutan habitat. Given Jhonlin and Taiyoung's lack of sustainability policies, the low sustainability criteria in biofuel markets (to which Jhonlin is now a supplier) and Jhonlin's track record, it's likely more orangutan habitats will be cleared on the concession.

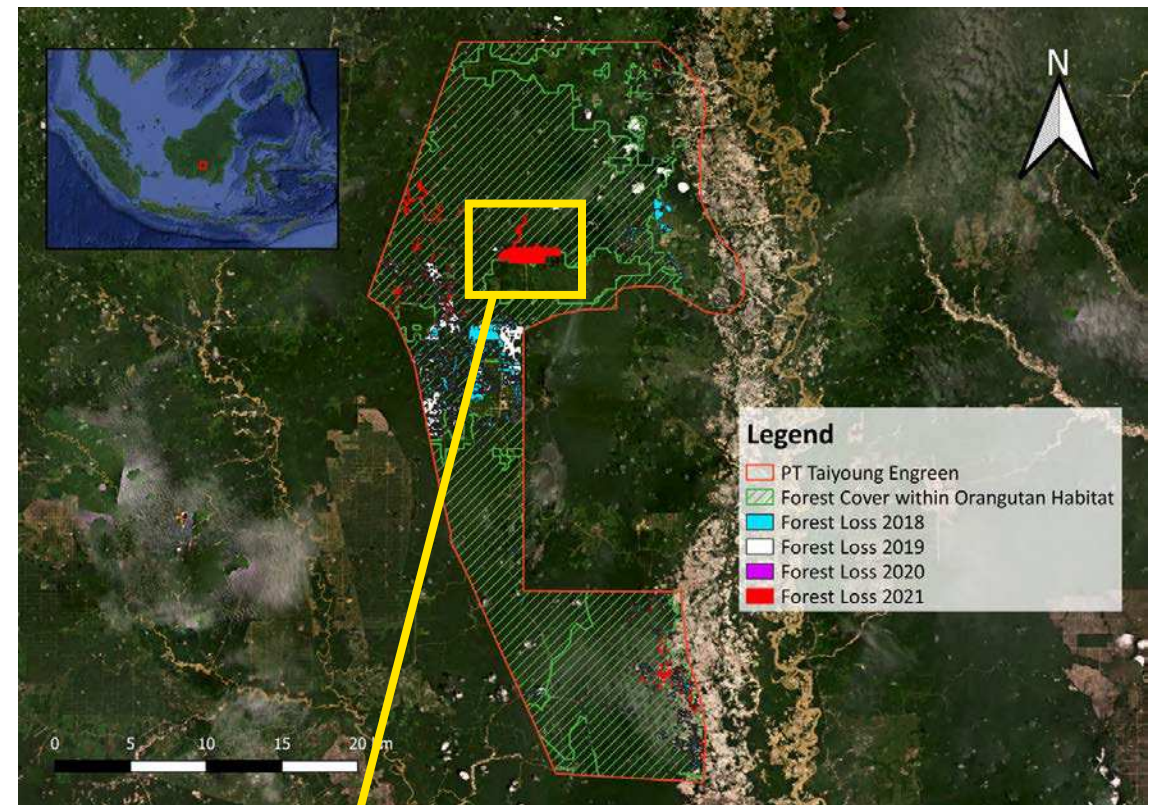


Figure 6
Deforestation between 2018 and 2021 on PT Taiyoung Engreen. The deforestation in the southeastern corner of the concession is due to mining

Approximately 480 ha of deforestation within PT Taiyoung Engreen in 2021.

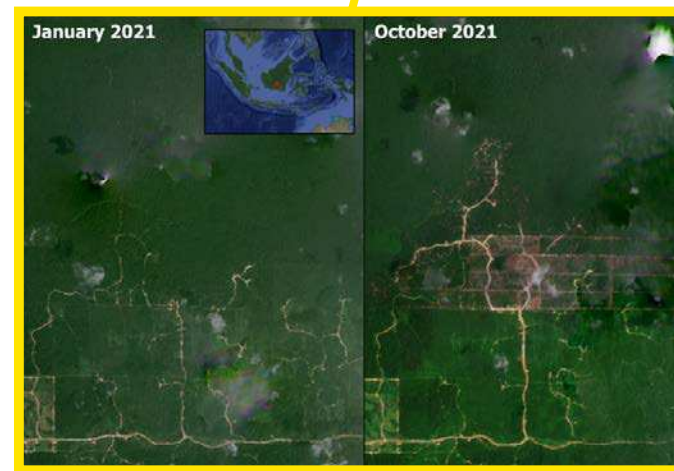
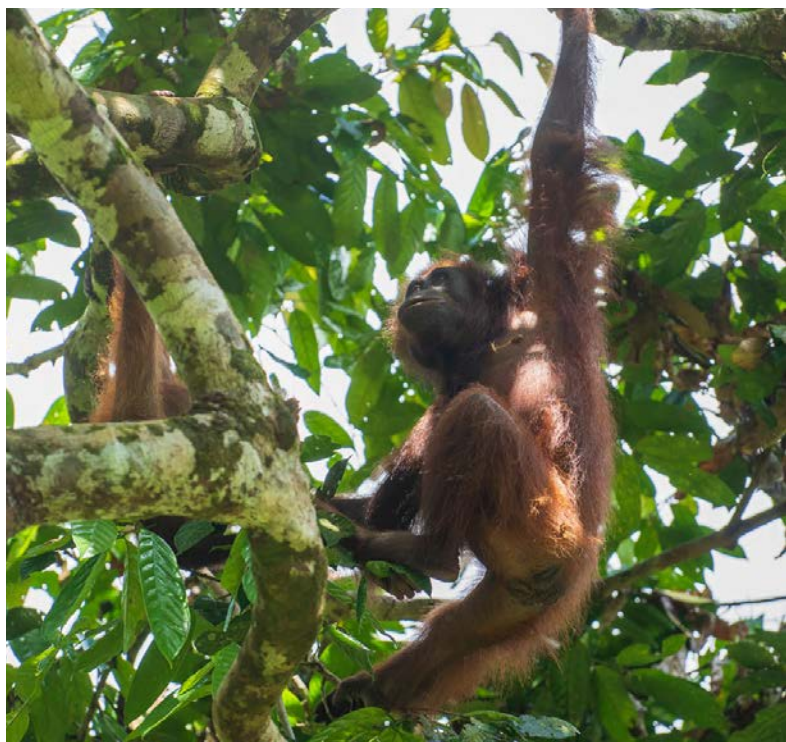


Figure 7
Zircon mining within the boundaries of PT Taiyoung Engreen. The river in this part of the concession has completely eroded the riverbanks due to the clearing of riparian forest.

Wild orangutan in Central
Kalimantan, Indonesia
Shutterstock



PT Hasil Kalimantan Jaya

The next largest remaining forested orangutan habitat within this landscape is the logging concession PT Hasil Kalimantan Jaya. The concession covers 51,522 ha⁴² and has 9,504 ha of orangutan habitat remaining. The concession sits along PT Taiyoung Engreen's northeast border, for approximately 18 kilometres (Figure 5). Little is known about PT Hasil Kalimantan Jaya. The company has no website and no publicly available information regarding orangutans or policies within their concession.

PT Citra Mitra Perkasa Utama

PT Citra Mitra Perkasa Utama is an oil palm concession that was owned by the Ciliandry Angky Abadi group, believed to part of the Fangiono family, who also own PT Agrindo Green Lestari and PT Citra Agro Abadi. However, in January 2022, PT Citra Mitra Perkasa Utama had its concession permit revoked by the President of Indonesia, meaning that the concession can no longer be developed by the company. It is unclear how this

revocation will develop and what this means for the concession area's forests and orangutans. PT Citra Mitra Perkasa Utama still contains 9,156 ha of forested orangutan habitat. Since this concession is in the south of the landscape, in area of lowland peat swamp forest, it is highly likely that orangutans use the forests within this concession area as it represents their ideal habitat type.

PT Borneo Subur Agro

PT Borneo Subur Agro is an industrial tree concession containing 18,595 ha of forested orangutan habitat. PT Borneo Subur Agro is split between two blocks on the eastern and a western border of the Rungan River. The eastern block has 5,486 ha of remaining forested orangutan habitat. Within this eastern block there is small scale illegal mining for gold and zircon. PT Borneo Subur Agro is owned by Dr Suheldi SE MM, a local businessman who ran for mayor of Binjai city in 2020⁴³. Dr Suheldi has previously held roles with PT Tanjung

Redeb Hutani, a company known to be linked to current Indonesian Minister of Defense, Prabowo Subianto⁴⁴.

PT Borneo Subur Agro's western block also contains 13,109 ha of forested orangutan habitat and forms a key part of the Rungan Barat habitat unit. This unit is on the western side of the Rungan river, north of Sebangau National Park.

Priority area for conservation

The northern forested block of PT Taiyoung Engreen (Figure 8,9) is the most undisturbed and pristine forest within the concession and contains a substantial and highly viable population, according to the Borneo Nature Foundation. Using the PHVA estimates of between 0.88 and 1.31 individuals/km², it can be determined that there are at least 160-240 orangutans within this area. 84% of

this area is managed by PT Taiyoung Engreen, meaning they are responsible for this orangutan population's long-term survival. The area is surrounded by roads, so it's likely the population will remain isolated, unless restorative action or some kind of habitat linkage can be developed. There are a few small dirt roads within this forest block, which may further degrade the orangutan habitat.

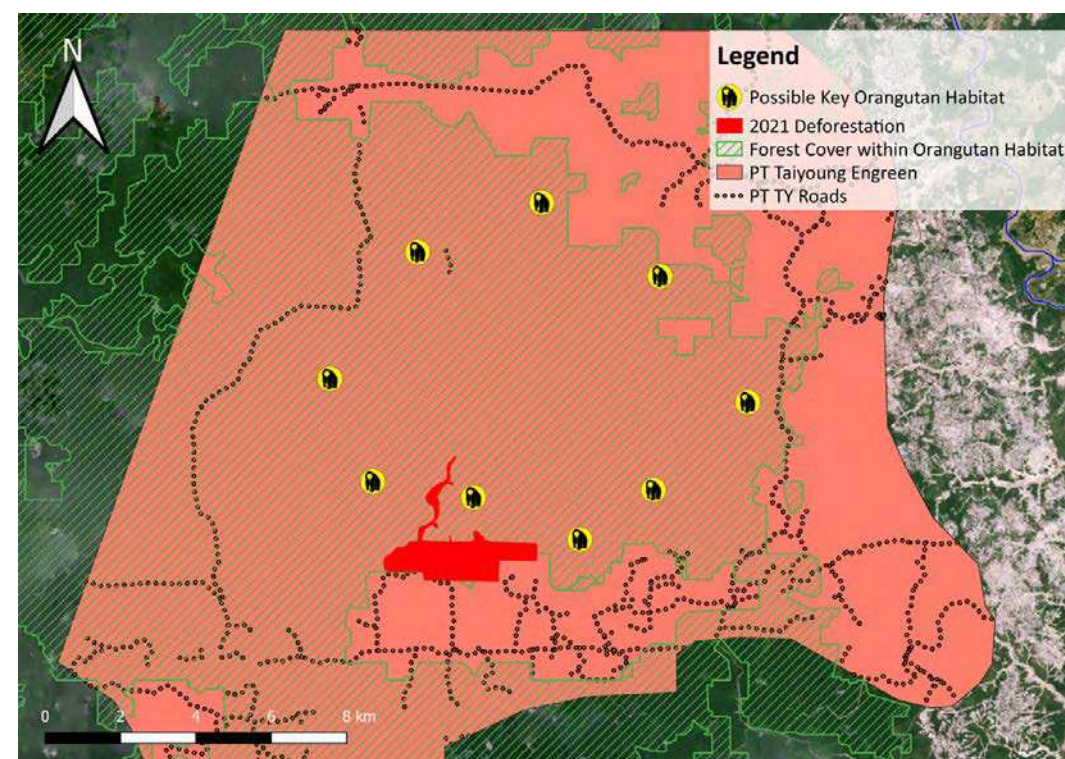


Figure 8

Northern forested block within PT Taiyoung Engreen that should be designated for orangutan conservation.

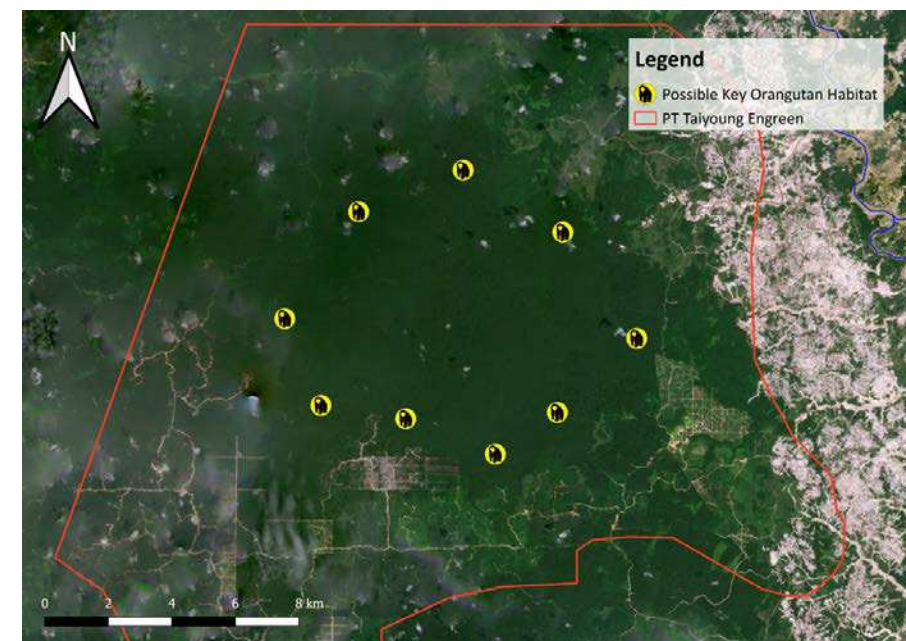
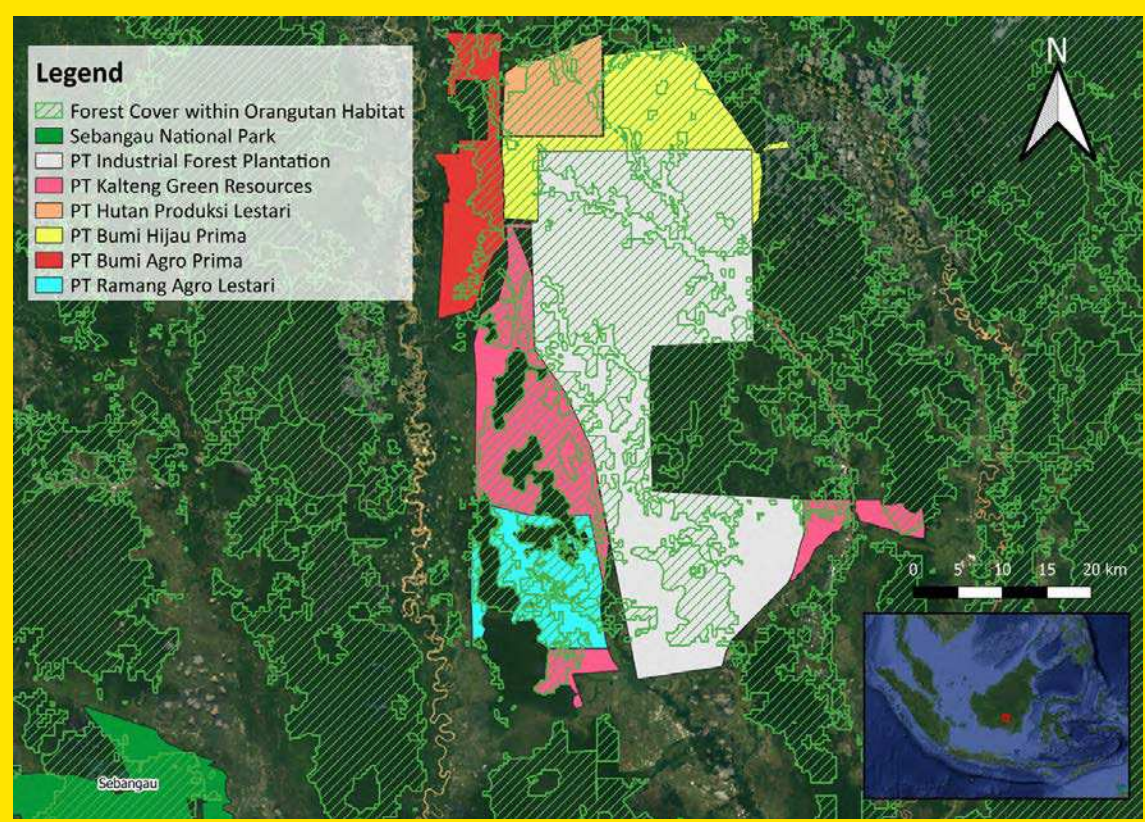


Figure 9

Satellite imagery of the northern forested block within PT Taiyoung Engreen that should be designated for orangutan conservation. Satellite image from November 2021 (Source:Planet).

Kahayan-Kapuas landscape

Figure 10
Remaining forested
orangutan habitat
within the Kahayan-
Kapuas landscape.



The Kahayan-Kapuas landscape constitutes almost 400,000 ha of orangutan habitat. Situated just north of block B⁴⁵ of the failed Mega Rice Project of the mid-1990s, the Kahayan-Kapuas landscape is named after the two rivers that form its natural east and west borders. Comprising mostly peat swamp forest, the PHVA states that an estimated 1,065 and 2,300 individuals live in this landscape, although only one of its seven orangutan habitat units has been surveyed². PT Industrial Forest Plantation is the key concession in the landscape and is surrounded by concessions on its northern and western borders (Figure 10).

PT Industrial Forest Plantation

PT Industrial Forest Plantation is located in the centre of the Kahayan-Kapuas landscape and covers 101,840 ha, 52,125 ha of which is forested orangutan habitat. This puts the concession second place amongst industrial tree concessions in Indonesia for forested orangutan habitat. Since 2018, 9,673 ha of forest has been cleared on PT Industrial Forest Plantation (Figure 11,12,13), largely in a strip running through the centre of the concession. Not all clearing is due to industrial trees, as PT Sumber Kencana Bumi Kaya are operating a zircon mine along the river in the north-eastern corner of PT Industrial Forest Plantation⁴⁶ (Figure 14).

According to an audit by PT Trustindo Prima Karya as part of PT Industrial Forest Plantation's Sustainable Production Forest Management (PHPL, Pengelolaan Hutan Produksi Lestari) certification application conducted in June 2019⁴⁷, the designated protected area of PT Industrial Forest Plantation amounts to 15,800 hectares, of which 80 percent is forested. The protected area of 15,800 hectares is a mixture of river borders (3,600 hectares), wildlife conservation area (DPSL, Daerah Perlindungan Satwa Liar, 3,200 hectares), germplasm conservation area (KPPN, Kawasan Pelestarian Plasma Nutfah,

3,300 hectares) and protected peat (5,700 hectares).

A 2014 assessment on behalf of PT Industrial Forest Plantation has identified the existence of orangutans inside the concession boundaries, as well as other protected fauna and flora consisting of 29 bird species, 22 mammal species, six types of reptiles and 15 tree and plant species⁴⁸. The same audit by PT Trustindo Prima Karya identified land conflicts inside the concession area, in the form of land claims by communities and farmers over 22,100 ha.

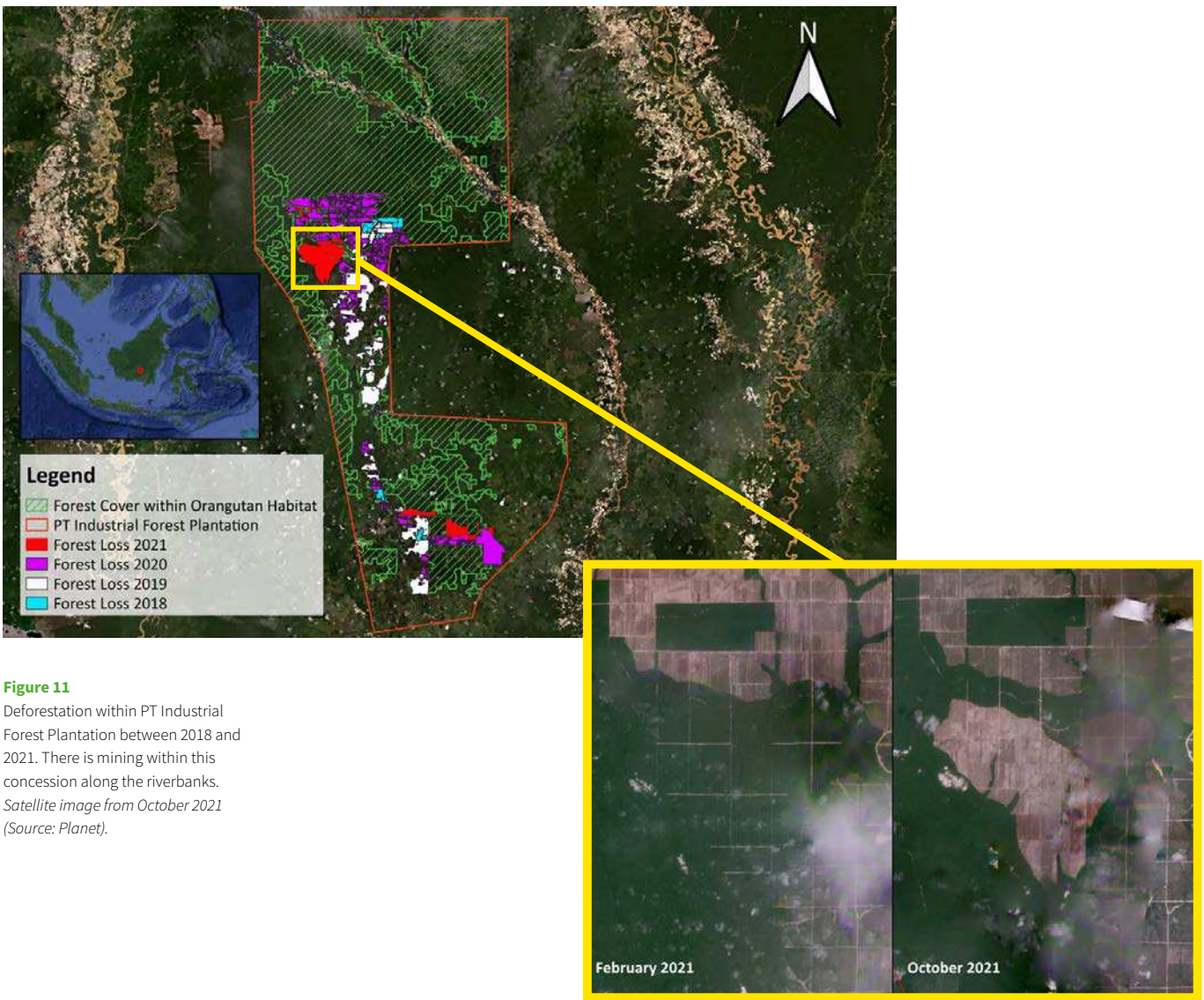


Figure 11
Deforestation within PT Industrial
Forest Plantation between 2018 and
2021. There is mining within this
concession along the riverbanks.
Satellite image from October 2021
(Source: Planet).



Figure 12
Deforestation within PT Industrial Forest Plantation.
(Source: Aidenvironment)



Figure 13
Clearing within PT Industrial Forest Plantation
(Source: Aidenvironment)

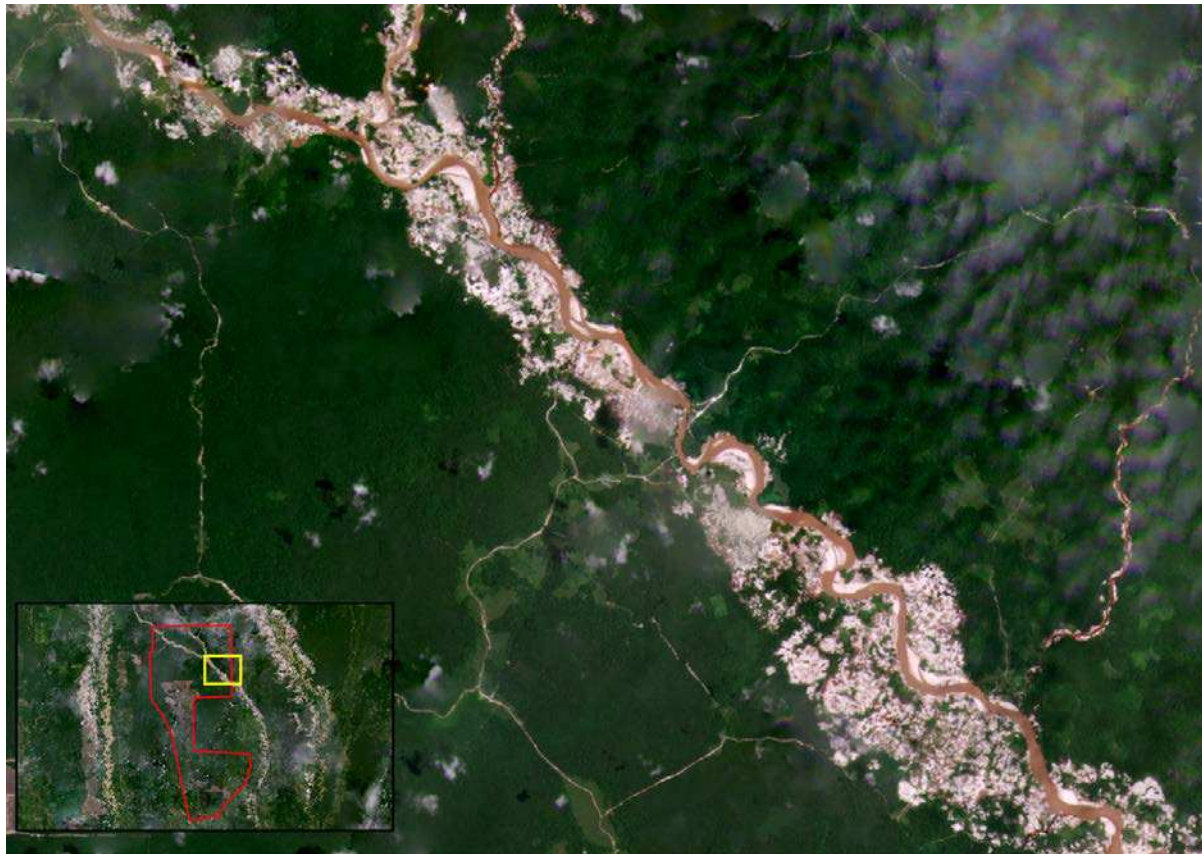


Figure 14
Mining within PT Industrial Forest Plantation along the riverbanks.
This is likely due to zircon mining by PT Sumber Kencana Bumi Kaya.
Satellite image from October 2021 (Source: Planet).

Nusantara Fiber

The Nusantara Fiber group is a collection of large industrial tree concession companies. These include PT Bakayan Jaya Abadi, PT Permata Hijau Khatulistiwa, PT Mahakam Persada Sakti, PT Santan Borneo Abadi, and PT Nusantara Kalimantan Lestari in East Kalimantan, and PT Industrial Forest Plantation in Central Kalimantan⁵¹. The concessions belonging to these companies cover 242,000 ha. Nusantara Fiber does not have a website and there is no publicly available information about any sustainability policy. Since 2016, there have been just over 32,000 ha of deforestation on Nusantara Fiber's six concessions. The most were seen on PT Santan Borneo Abadi, a 37,825 ha industrial tree concession in East Kutai in East Kalimantan⁵¹.

These concessions are operated in Indonesia under PT Borneo Hijau Lestari. This company is majority-owned by Green Meadows Finance Ltd in Hong Kong.

Green Meadows is a subsidiary of Green Meadows Holdings Ltd, registered in the Polynesian island country Samoa. Samoa is on the European Union's list of non-cooperative jurisdictions for tax purposes, due, among others, to its "harmful preferential tax regime". It is also regarded as a secrecy jurisdiction, with company ownership documents not publicly available⁵¹.

While little is known about Nusantara Fiber, the few publicly available ownership documents suggest it has links to Royal Golden Eagle, one of the largest companies in Indonesia. The links are largely via the first three directors of Green Meadows Fiber Products Limited in Hong Kong. In newspaper articles and social media accounts, Green Meadows is mainly referred to as the Nusantara Fiber group⁴⁹.

PT Bumi Hijau Prima

Directly north of PT Industrial Forest Plantation and PT Kalteng Green Resources is the industrial tree concession PT Bumi Hijau Prima (Figure 10). The concession contains 18,783 ha of forested orangutan habitat. PT Bumi Hijau Prima is registered to an individual named Sunarno.

No further information about Sunarno can be found. There is no website affiliated with PT Bumi Hijau Prima and no information about sustainability policies or activities in place to conserve the orangutans. A road measuring approximately 13 metres runs in between PT Kalteng Green Resources and

PT Bumi Hijau Prima, providing a significant barrier to any movement between forest patches. The road runs into PT Industrial Forest Plantation, cutting through the forest in the concession's northwest portion.

PT Bumi Agro Prima

This is an oil palm concession that contains 6,378 ha of forested orangutan habitat (Figure 10). Between October 2020 and March 2021, 25 ha of clearing occurred within the concession. PT Bumi Agro Prima is 99% owned by PT Bumi Gading Prima Group (BGP Group)⁵⁰. They are a known supplier to Musim Mas and Apical, both of which have an NDPE policy. After engagement from both

traders, BGP Group has issued a temporary suspension⁵¹ of new land clearing on the concession, as of 17 May 2021. Further engagement from Musim Mas has included recommendations they conduct an HCV/HCS assessment.

PT Bumi Agro Prima shares an approximately two-kilometre border with PT Kalteng

Green Resources, providing opportunities for orangutan movement westwards from PT Kalteng Green Resources. The road that demarcates PT Kalteng Green Resources' northern border also runs into PT Bumi Agro Prima, dividing the forest into a north and south section.

PT Ramang Agro Lestari

Opportunities for connectivity southwards from PT Kalteng Green Resources are provided by PT Ramang Agro Lestari (RAL), an industrial tree concession with 8,090 ha of forested orangutan habitat remaining (Figure 10). PT Ramang Agro Lestari is owned by PT Graha Utama Lestari, which is itself owned by PT Ciliandry Anky Mandiri, whose owners are Silvia and Martias Fangiono. Silvia and Martias are the owners of Ciliandry Angky Abadi⁵².

The Fangiono family started in the Indonesian timber sector operating PT Surya Dumai Industri before moving into the palm oil sector via Ciliandry Angky Abadi, FAP Agri (formerly PT Fangiono Agro Plantation) and First Resources Limited, one of the biggest palm oil producers in Southeast Asia⁵⁴.

The Fangiono family group has a very opaque corporate structure, where they employ the use of shadow companies and secrecy jurisdictions to hide ownership⁵⁴. This is possibly to distance their flagship company, First Resources, from activities that are not compliant with NDPE policies and RSPO membership commitments. For example, in the time that First Resources has been both a member of the RSPO and been committed to an NDPE policy, FAP Agri and Ciliandry Angky Abadi have cleared an estimated 60,000 ha of forest and Ciliandry Angky Abadi have had conflicts with local communities in all but one of their subsidiaries⁵⁴.

There is substantial evidence that connects Ciliandry Angky Abadi, FAP Agri and First Resources. They often share resources and staff members⁵⁴. For example, First Resources Limited is owned by Eight Capital Incorporated⁵³, which lists Wirastuty Fangiono as one of its major shareholders. Despite First Resources denying it for over a decade, a definitive connection between them and FAP Agri was proven in December 2020 when FAP Agri became listed on the Indonesian stock exchange and Wirastuty Fangiono was revealed to be FAP Agri's beneficial owner⁵⁴. There is also substantial evidence that links First Resources to Ciliandry Angky Abadi, which First Resources also denies. A complaint against First Resources is currently going through the RSPO to have First Resources' RSPO membership include Ciliandry Angky Abadi.

Ciliandry Angky Abadi has a poor sustainability performance and has not hitherto committed to conservation initiatives. In January 2022, nine of Ciliandry Angky Abadi's concessions, three in Papua and six in Central Kalimantan, were among the over 2,000 concession permits revoked by the President of Indonesia⁵⁵.

‘ Despite First Resources denying it for over a decade, a definitive connection was proven ’

PT Hutan Produksi Lestari

PT Hutan Produksi Lestari is 10,050 ha industrial tree concession, with 8,736 ha of forested orangutan habitat remaining. PT Hutan Produksi Lestari is owned by the Indonesian businessmen Iman Hartono and Willem Alexander Hartono. The pair also own a wood processing company named PT Prima Parquet Indonesia, located in Java³⁷. This company produces plywood and flooring. Indonesian export data from 2020 show that plywood was sold to companies in Singapore, Malaysia, and South Korea.

Neither PT Hutan Produksi Lestari nor PT Prima Parquet Indonesia has any known sustainability commitments. Despite having a SVLK (Indonesia's timber legality system) certificate⁵⁶, in early September 2021 timber from PT Hutan Produksi Lestari was stopped by the governor of Central Kalimantan from being shipped from a port in Palangkaraya, Central Kalimantan⁵⁷. It was suspected that some of the timber was not in line with official documents. However, the results of the investigation remained undisclosed.

Priority area for conservation

There are no known conservation organisations working in the Kahayan-Kapuas landscape and little information about the distribution or extent of any orangutan population. Surveys are badly needed in this area for relevant conservation interventions to be developed.

1.

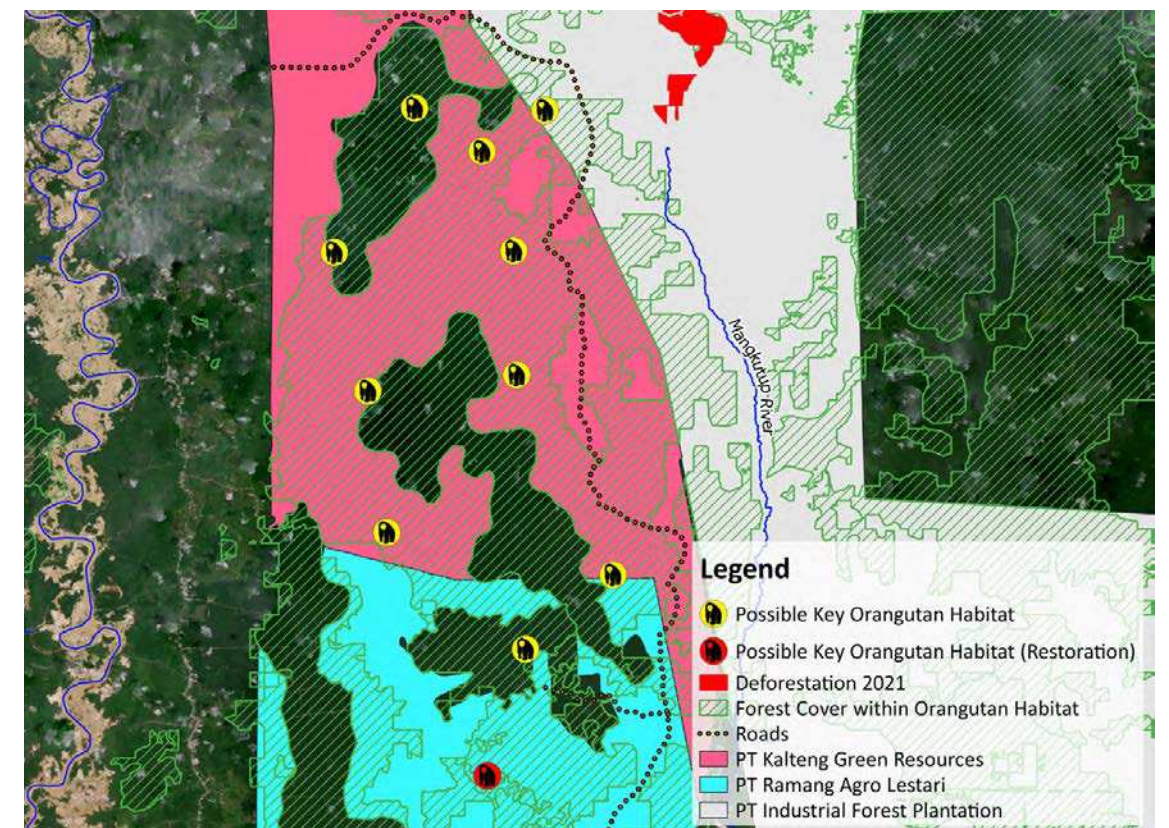
Within the landscape, most of the remaining forest is contained within PT Kalteng Green Resources and PT Industrial Forest Plantation. The most logical intervention here would therefore be to use the adjoining forest areas of PT Kalteng Green Resources and PT Industrial Forest Plantation to create a central undisturbed block for orangutan conservation (Figure 15).

This proposed area (Figure 15) represents over 23,000 ha of forest and intersects land owned by PT Industrial Forest Plantation, PT Kalteng Green Resources and PT Ramang Agro Lestari. The central block of forest is still in good condition and is not intersected by roads or rivers, allowing unfettered movement for orangutans. The

forest block is nevertheless surrounded by roads, the largest of which intersects the proposed area's eastern flank, preventing orangutans from reaching the Mangkutup river. It is unknown whether there are orangutans present between the eastern side of the road and the Mangkutup river. If there are, they could be trapped within this small forest patch.

To the south of the proposed area, a road cuts across PT Ramang Agro Lestari, but it is unclear where this road ends or whether it cuts across the entire concession. On the western side of PT Ramang Agro Lestari, there has been previous clearing that encroaches towards the proposed area from the southwest (Figure 16).

Figure 15
Potential orangutan conservation intervention within the Kahayan Kapuas landscape



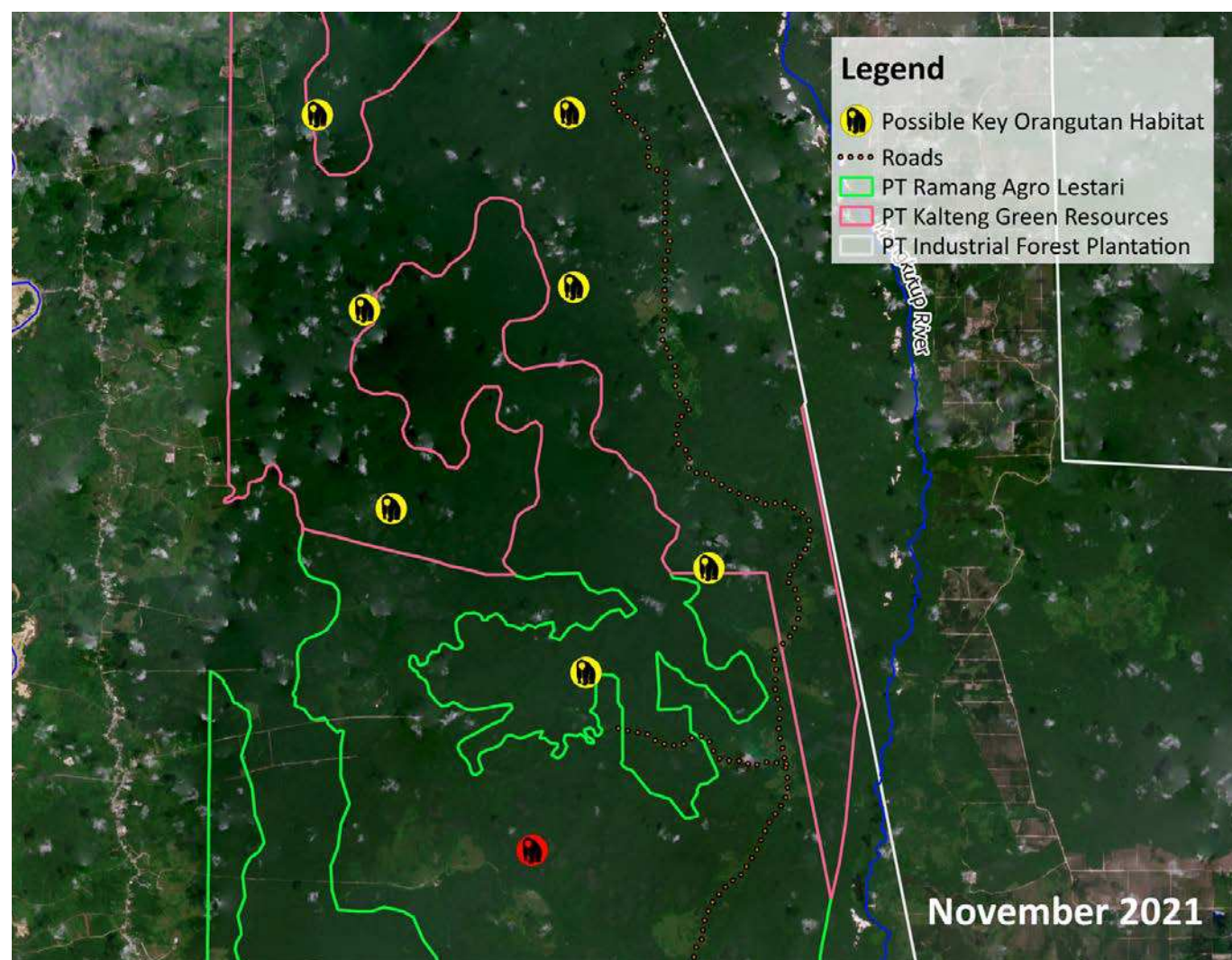


Figure 16
Potential orangutan conservation intervention
within the Kahayan Kapuas landscape

2.

One area possibly suitable for conservation intervention (Figure 17) is surrounded by two roads, a river to the north and large amounts of cleared land within PT Industrial Forest Plantation to the southeast. To the west, PT Kalteng Green Resources is bordered by an unprotected area of land outside of concessions, which itself borders PT Bumi Agro Prima. Within the core zone of the proposed habitat area, there are some small patches of degraded forest. It is unclear whether the road that runs north to south through PT Industrial Forest Plantation (Figure 17) forms a complete intersection of the forest in this area, or whether the western and eastern parts of PT Industrial Forest Plantation are still connected. If this road does not completely cut off the two areas, then this proposed area could extend out into the central and eastern parts of PT Industrial

Forest Plantation. If the connection has been lost, then it would be impossible to link these areas without restoration interventions. The proposed intervention area represents around 7,500 ha of forested orangutan habitat. To the west of PT Kalteng Green Resources, there has been substantial deforestation in recent years and further areas have been prepared for clearing in 2021 (Figure 18). It is unclear who is responsible for this clearing, as some of it falls into the area between PT Kalteng Green Resources and the neighbouring oil palm concession. Some of the deforestation falls within PT Bumi Agro Prima's boundaries, however, the clearing pattern is typical of an industrial tree concession, whereas PT Bumi Agro Prima is an oil palm concession.

Figure 17

Potential orangutan conservation intervention
within the Kahayan Kapuas landscape

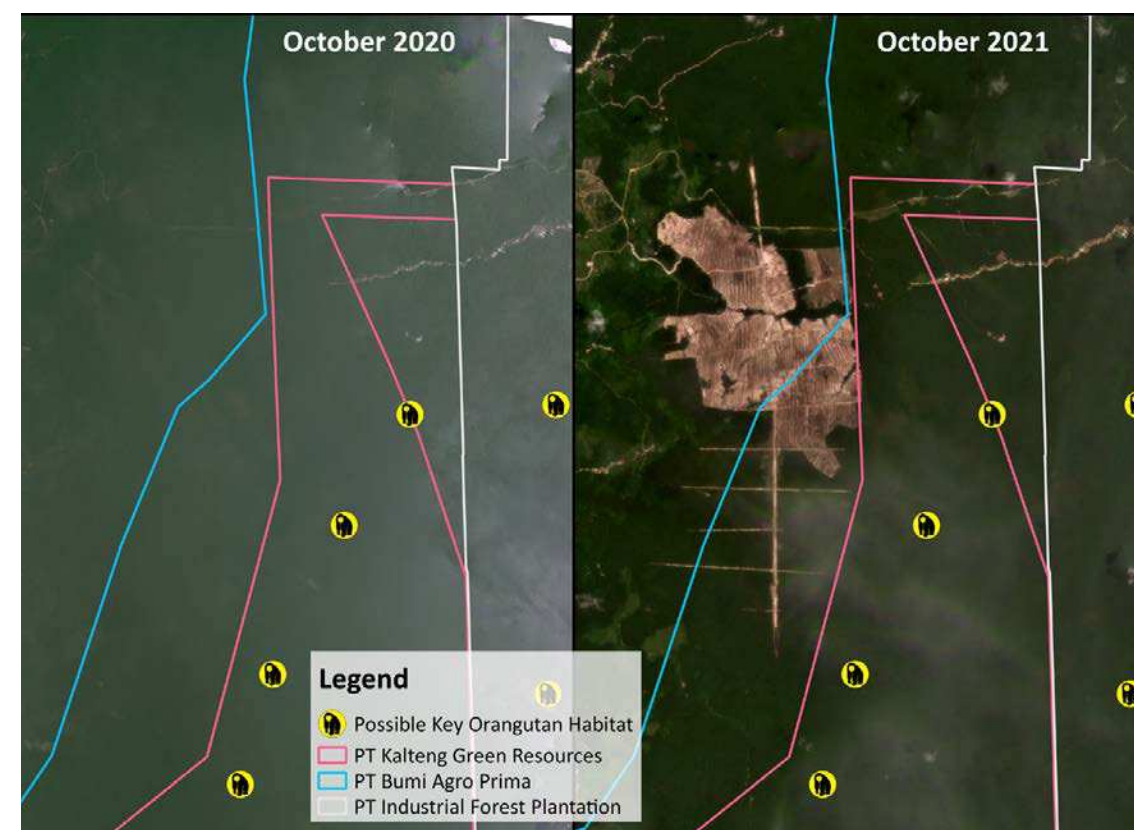
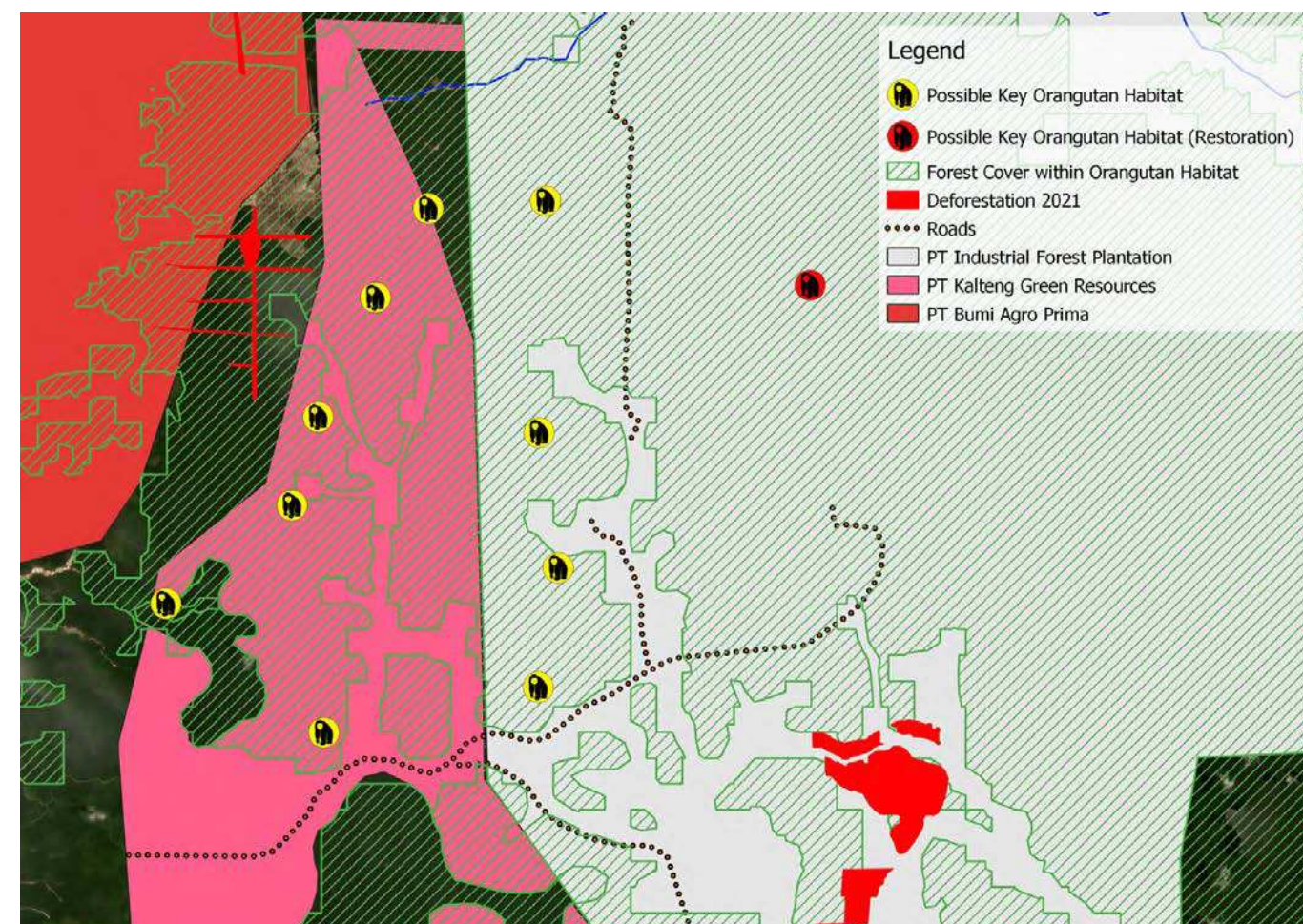
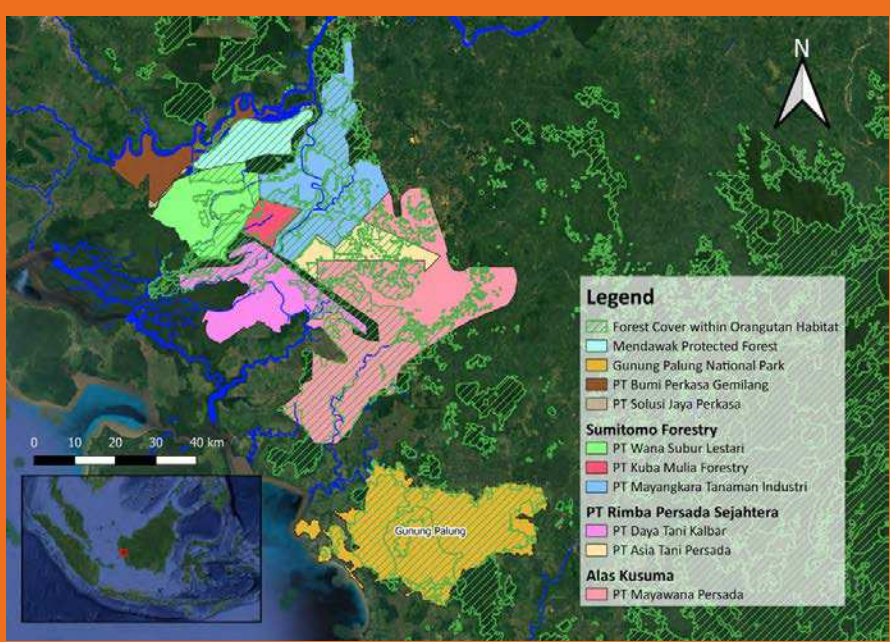


Figure 18
Potential orangutan conservation intervention
within the Kahayan Kapuas landscape

The Kubu Raya Landscape

Figure 19
Industrial tree concessions within
the Kubu Raya landscape



Gunung Palung National Park is one of the most important strongholds for the orangutans in West Kalimantan. Covering 108,000 ha, approximately 2,500 orangutans live within a 90,000 ha forested area within Gunung Palung. Unlike Gunung Palung, the landscape located just to its north, Kubu Raya, has received little conservation attention despite its potential significance for orangutan conservation. Kubu Raya landscape covers an area of 284,481 ha and although most of the area has not been surveyed, it could contain as many as 1,348 orangutans². The PHVA declares that the orangutan population in the Kubu Raya has good viability, but it is declining².

Aidenvironment's analysis indicates the forested orangutan habitat in the area is 223,014 ha (Figure 19), more than double the amount of that in Gunung Palung National Park. The landscape is covered almost entirely by eight corporate concessions, with just one conservation area, the 20,000 ha Mendawak Protected Forest (Figure 19). The Mendawak Protected Forest provides, on paper, the most viable habitat for the orangutans in the landscape. However, the forest has been heavily impacted by illegal logging. There is also conflicting information about whether the reserve is home to any orangutans⁵⁸. Field surveys conducted by WWF Indonesia in 2020 indicate

there are orangutans there. However, the presence of orangutans in the reserve has been disputed⁵⁹. From Aidenvironment's own engagement in the area, we believe that there are no orangutans within the Mendawak Protected Forest. However, the area could be a suitable reintroduction site for orangutans in the future. It is understood that an Integrated Sustainable Landscape (ISLA) project, implemented by IDH and Kemitraan, is aiming to support sustainable development in the landscape, but little information about the project is available. WWF Indonesia is also developing a conservation plan for the landscape, but the plan is not yet published.



Logging road in Mendawak
Protected Forest
© Aidenvironment

Alas Kusuma's PT Mayawana Persada

The 137,000 ha PT Mayawana Persada is the industrial tree concession with the most remaining forested orangutan habitat in Indonesia with 68,776 ha. It borders the Ketapang and North Kayong districts of West Kalimantan, and represents the largest block of continuous forested orangutan habitat within the Kubu Raya landscape (Figure 19).

From Aidenvironment's engagement in the area, we are aware that orangutans are present in at least two areas along the eastern side of PT Mayawana Persada's concession boundaries, but the size of the population and its range are unknown. Despite this, there is a distinct lack of available information regarding conservation activities on PT Mayawana Persada, owing to a lack of transparency from both PT Mayawana Persada and parent company, Alas Kusuma. Specifically, it is unclear how many orangutans are present within PT Mayawana Persada, how much forest is designated for clearing and for protection, or whether the company has policies in place to protect orangutans.

Orangutans are also known to be present in each of the surrounding concessions and within the thin undesignated strip of forest

between PT Mayawana Persada and PT Asia Tani Persada (Figure 19). Therefore, it is reasonable to assume that there could be a considerable population within the core 68,776 ha block of PT Mayawana Persada. All of this is set amongst the backdrop of increasing deforestation within the concession, with 5,250 ha of orangutan habitat cleared last year alone (Figure 20). This demonstrates how under threat orangutans are in this area, and why PT Mayawana Persada should stop clearing immediately and conduct orangutan surveys of their concession. Based on current available evidence the orangutan habitat, and orangutans it may contain, within this concession appear to be under significant threat.

The latest (September 2020) Indonesian government-instigated audit document on sustainable management by PT Mayawana Persada provides little information on any conservation efforts⁶¹. A HCV assessment was conducted on the concession and submitted to the HCV Resource Network for peer review by PT Hatfield Indonesia in 2014⁶⁰. Although the assessment is not publicly available, media reports of the assessment claim it deemed 66,900 ha of

forest to be of high conservation value, but only 20,700 ha was demarcated as protected⁶¹. Aidenvironment was able to gain access to a peer review assessment of PT Mayawana Persada's HCV assessment. It reveals a number of issues with the original assessment, particularly a lack of clarity over which areas of the concession are HCV, what areas are designated for clearing. Because of this, the peer review recommended that all clearing within the concession should be halted until this is properly explained. Further problems with the original assessment are that there is a lack of management plan, only generic suggestions, and that it is unclear whether Free Prior and Informed Consent (FPIC) methodology was followed.

PT Mayawana Persada's latest audit makes no mention of orangutans or company policies pertaining to orangutans, although it does state that operations within the concession are not based on their validated spatial plan as agreed with their Timber Forest Product Utilisation Business Plan (RKUPHHK)⁶¹. This means that where they have planted likely does not correspond with the findings of the HCV assessment.

Deforestation on PT Mayawana Persada

Between 2018 and 2021, the company cleared 8,852 ha of forest (Figure 20), of which a small part was caused by third-party bauxite mining. During this period, deforestation has been most aggressive in 2021, with 5,250 ha.

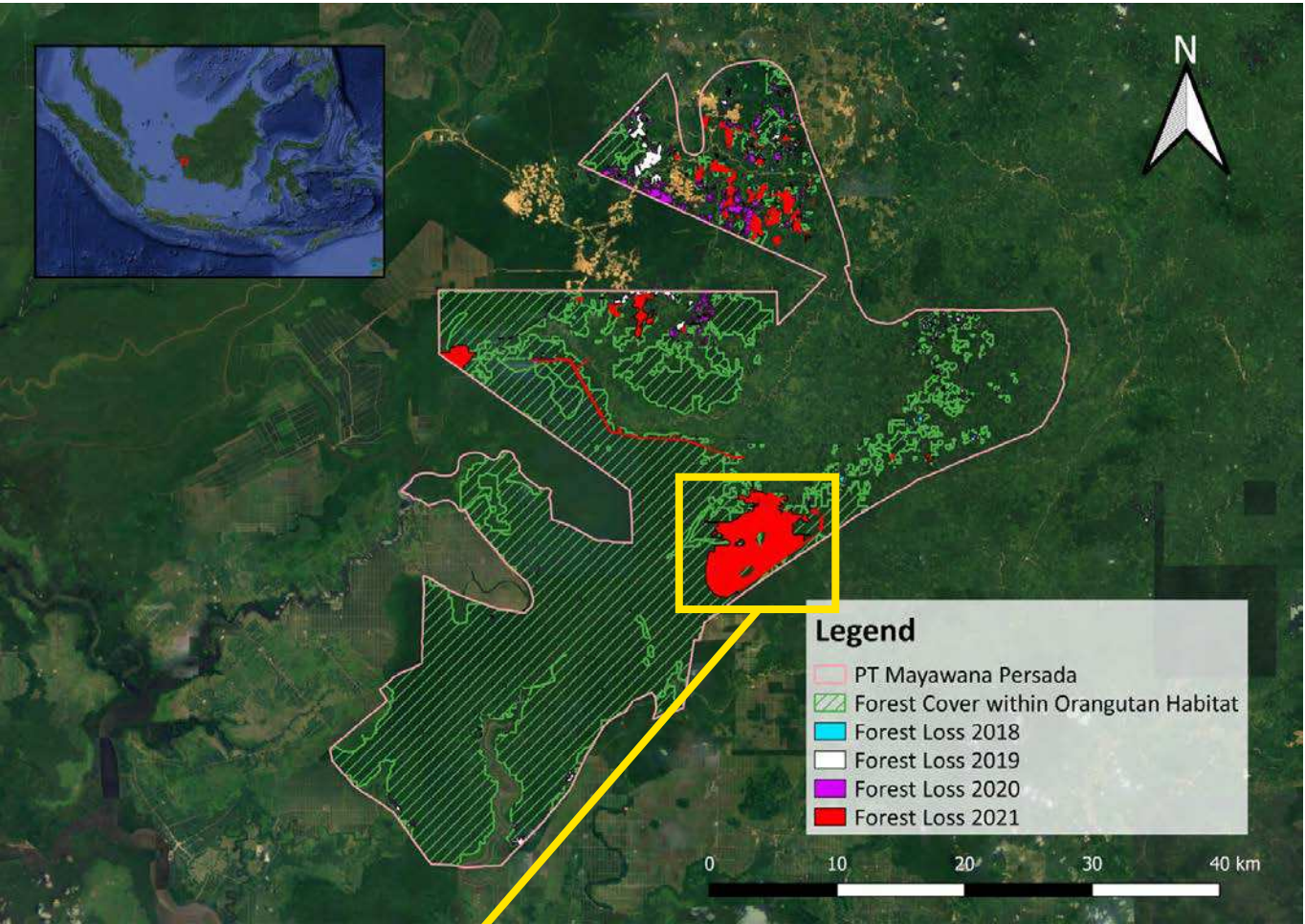
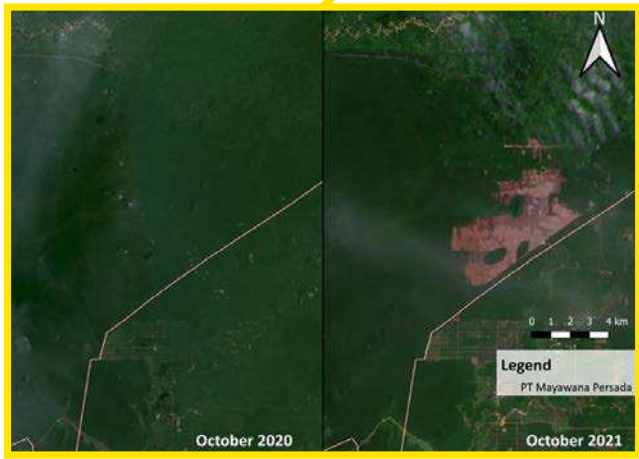


Figure 20
8,852 ha of deforestation between 2018-2021 within PT Mayawana Persada. Satellite image from October 2021 (Source: Planet)



**** Part of Figure 20**
Approximately 2,137 ha deforestation within orangutan habitat, in the southern section of PT Mayawana Persada (Source: Planet)



Figure 21
Deforestation within PT Mayawana Persada. (Source: Aidenvironment)



Figure 22
Deforestation within PT Mayawana Persada. (Source: Aidenvironment)

PT Mayawana Persada has denied that it has cleared forest. In an e-mail submission to Mongabay, a representative said: “There’s no deforestation activity in orangutan’s habitat by PT Mayawana Persada. This can be seen from the company’s working map and the company’s activities on the ground, which have taken into account the results of studies on orangutan and high conservation values areas.” PT Mayawana Persada said the studies were conducted by a consultancy called Ecology and Conservation Center for Tropical Studies (Ecositrop)⁶². However, satellite and drone analysis by Aidenvironment shows HCV areas have been cleared (Figure 21,22).



Figure 23
Early-stage plantation forest regeneration after recent deforestation within PT Mayawana Persada. (Source: Aidenvironment)

‘ **Alas Kusuma does not have a website, and it does not have a known companywide NDPE policy**’

Alas Kusuma

The company that owns PT Mayawana Persada, Alas Kusuma, is an Indonesian company that operates logging, oil palm and industrial tree concessions. Despite having been operating since the 1970s, Alas Kusuma has little transparency. Alas Kusuma does not have a website, and it does not have a known companywide NDPE policy. In the latest SPOTT (Sustainable Palm Oil Transparency Toolkit) assessment, Alas Kusuma was awarded a score in the

very low range, just 10.6%⁶³. The company is best known for its plywood business, having 455,000 ha of logging concessions in West and Central Kalimantan. Two of Alas Kusuma’s logging companies, PT Sari Bumi Kusuma and PT Suka Jaya Makmur, hold FSC certificates⁶⁴. Additional to FSC certification, PT Suka Jaya Makmur has the beforementioned collaboration with WWF Indonesia to monitor and conserve orangutans on the concession⁶⁵.

PT Mayangkara Tanaman Industri, PT Wana Subur Lestari & PT Kubu Mulia Forestry

The concession with the second largest forested orangutan habitat remaining in the Kubu Raya landscape and fourth overall amongst industrial tree concessions in Indonesia, is PT Mayangkara Tanaman Industri with 39,716 ha. Along with two other concessions in the landscape, PT Wana Subur Lestari and PT Kubu Mulia Forestry, it is owned by Sumitomo Forestry. PT Wana Subur Lestari and PT Kubu Mulia Forestry have 16,899 and 2,243 ha of forested orangutan habitat remaining respectively.

Sumitomo appears to have the most developed conservation programme in the landscape. PT Mayangkara Tanaman Industri conducts orangutan population surveys every two years within their 12,318 ha conservation area, although it does not make the results available. They also conduct regular habitat surveys within their conservation area and have robust water management practices within their concession to prevent subsidence and reduce the risk of fires. In a media interview in 2020, Tsuyoshi Kato, the President Director of PT Mayangkara Tanaman Industri and PT Wana Subur Lestari⁶⁶, said there were 70 orangutans on PT Mayangkara Tanaman Industri⁶⁷. Populations in their conservation area have been increasing, and camera traps installed in 2019 have

captured footage of female orangutans with dependent offspring. Sumitomo confirmed to Aidenvironment that orangutans are not present in the 16,899 ha of remaining forested orangutan habitat on PT Wana Subur Lestari. PT Kubu Mulia Forestry also does not have any orangutans.

Sumitomo states “For orangutans, PT Wana Subur Lestari and PT Mayangkara Tanaman Industri has established conservation areas around existing habitats, calling them “core zones” and focusing on patrolling the entire core zone”⁶⁸. “Green corridors” then link these core zones to other key habitats, set along the riverbanks and mangroves, between 300 and 500 m in width. The two identified core zones are the Mendawak Protected Forest and a conservation area in the northeast section of PT Mayangkara Tanaman Industri. Sumitomo has publicly doubted that the Mendawak Protected Forest contains orangutans, so it’s unclear what role the green corridors play in orangutan conservation, but the location of the core zone in PT Mayangkara Tanaman Industri and the lack of orangutans in both PT Wana Subur Lestari and PT Kubu Mulia Forestry indicates that the easternmost section of the landscape is where most orangutans are living.



The start of the conservation area in PT Mayangkara Tanaman Industri which contains approximately 70 orangutans.

© Aidenvironment



Water management zone within PT Mayangkara Tanaman Industri © Aidenvironment



Conservation area of PT Mayangkara Tanaman Industri and camera trap within this conservation area. © Aidenvironment



PT Asia Tani Persada

The “green corridors” on PT Mayangkara Tanaman Industri descend southwards into the PT Asia Tani Persada concession. PT Asia Tani Persada is owned by PT Rimba Persada Sejahtera and operated by a former staff member of Sinar Mas. PT Asia Tani Persada is a supplier to Sinar Mas⁶⁸. According to the PHVA, there are over 150 orangutans in and around PT Asia Tani Persada². The concession has 8,665 ha of forested orangutan habitat and the presence of orangutans is confirmed in the company's latest audit⁷⁰. Despite this, the HCV assessment summary report for PT Asia Tani Persada does not refer to orangutans being present within the concession⁷⁰.

PT Asia Tani Persada is understood to be conducting High Carbon Stock (HCS) assessments, which will be ready in 2023. The rules of the HCS assessment state that no land development can take place until HCS assessments have been peer-reviewed and officially accepted, so any orangutans on the concession have a temporary reprieve from any disturbance and should be protected by the HCS process. However, within the concession, there is a 930 ha area operated by PT Karya Utama Tambang Jaya for the mining of bauxite⁷⁰. Satellite analysis reveals that PT Karya Utama Tambang Jaya is encroaching into PT Asia Tani Persada's HCV area.

PT Daya Tani Kalbar

To the west of PT Asia Tani Persada but separated by a narrow stretch of land outside of the concessions is another concession owned by PT Rimba Persada Sejahtera and supplying to APP, PT Daya Tani Kalbar. The concession has 15,341 ha of forested orangutan habitat remaining. PT Daya Tani Kalbar's public summary document confirms the presence of orangutans within the concession⁶⁹. Northeast of PT Daya Tani Kalbar, in between the concession and

PT Mayawana Persada, PT Asia Tani Persada, and PT Mayangkara Tanaman Industri is a narrow stretch of land. Nest surveys carried out in the landscape in 2015 by International Animal Rescue and Borneo Nature Foundation found 90 orangutan nests in this stretch of land.

Priority areas for conservation

In the Mendawak landscape, deforestation and large rivers present the most significant obstacles to orangutan movement. Orangutans prefer not to cross open ground, especially those with young as they are extremely vulnerable to hunting. Although they are thought to not be able to swim, they will wade through water bodies, especially if there are no arboreal pathways.

Based on this, the most important areas to focus on the Mendawak habitat unit are:

1.

PT Daya Tani Kalbar to Mendawak Forest, via PT Mayangkara Tanaman Industri, PT Kubu Mulia Forestry, and PT Wana Subur Lestari. There is a continuous stretch of forest between PT Daya Tani Kalbar and the Mendawak Protected Forest passing through the three Sumitomo Forestry concessions in the landscape (Figure 24). Starting in PT Daya Tani Kalbar, this forest runs along the northern border of the Mendawak river in the northern section of PT Daya Tani Kalbar and the Kali Cimanuk river on the western side of PT Mayangkara Tanaman Industri. The

forest then turns north and passes through PT Kubu Mulia Forestry and PT Wana Subur Lestari before ending up in the Mendawak Protected Forest (Figure 24). Although there is a river between PT Wana Subur Lestari and Mendawak Protected Forest, it is small enough that orangutans could possibly cross it using overhanging trees.

Within this forest area, PT Daya Tani Kalbar have confirmed the presence of orangutans within their concession⁷⁰. Orangutans are not living on PT Wana Subur Lestari and

PT Kubu Mulia Forestry, and PT Mayangkara Tanaman Industri maintains that orangutans only live on the eastern side of the Kali Cimanuk river. PT Mayangkara Tanaman Industri also states that there are no orangutans within the Mendawak Protected Forest. If orangutans are living in the northern part of PT Daya Tani Kalbar and there are individuals present within the Mendawak Protected Forest, this forest corridor would represent the only remaining connection between the two populations. This stretch of forest covers approximately 36,000 ha.

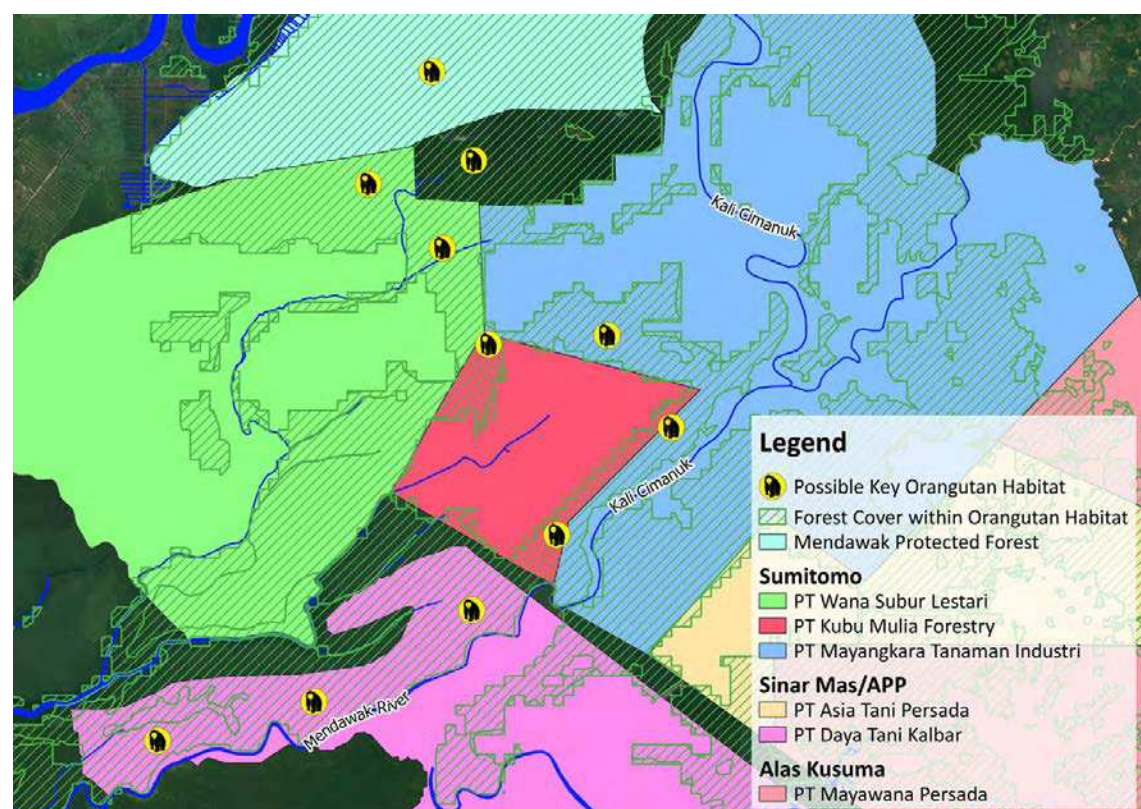


Figure 24
Possible priority area for orangutan conservation within the Kubu Raya Landscape

2.

West/Southwestern PT Mayawana Persada & forest strip between PT Daya Tani Kalbar, PT Mayangkara Tanaman Industri, PT Asia Tani Persada and PT Mayawana Persada. There is approximately 38,000 ha of forest that stretches from the coastal areas on the outskirts of PT Mayawana Persada until the thin strip of forest that lies between PT Mayawana Persada and PT Daya Tani Kalbar (Figure 25). From the coastal area,

orangutans can travel through PT Mayawana Persada along the northern side of the Simpang river until drainage canals within PT Mayawana Persada prevent orangutans from going any further north. There are several small rivers within this forest block, but none so wide that they would prevent orangutans from crossing using overhanging trees.

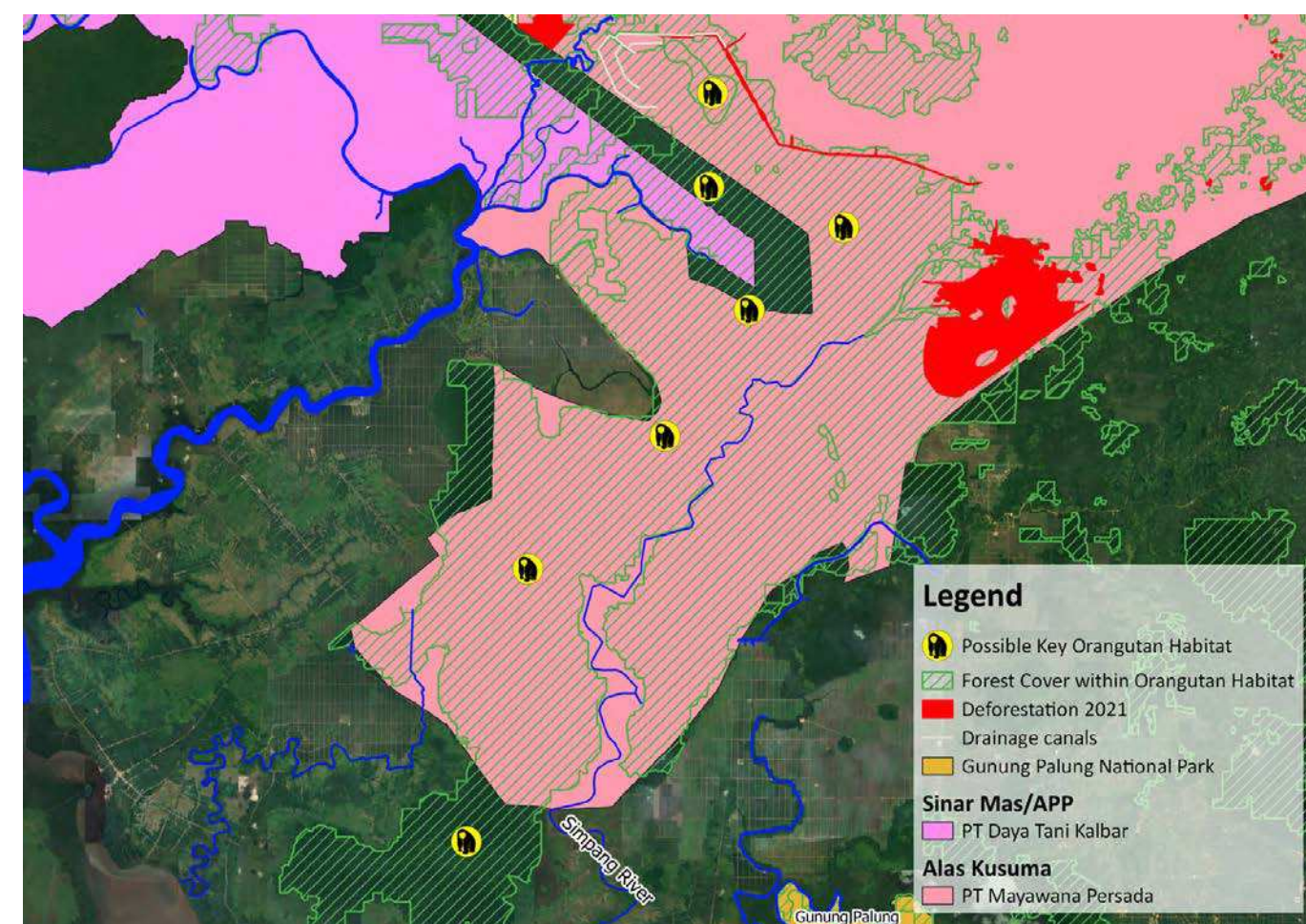


Figure 25
Possible priority area for orangutan conservation within the Kubu Raya Landscape

The main river running through PT Mayawana Persada is the Simpang river, which splits the concession in two. Despite not being a wide river, less than 10 metres in some sections, it has for the most part badly degraded riparian areas. More surveys would be needed, but it's possible that orangutans could traverse this water.

References

1. The IUCN Red List of Threatened Species 2016, Ancrenaz, M., Gumal, M., Marshall, A.J., Meijaard, E., Wich, S.A. & Husson, S., Pongo pygmaeus, Pongo abelii, Pongo tapanuliensis, 2016, <https://bit.ly/3J01tjX>
2. Utami-Atmoko, S. Traylor-Holzer, K. Rifqi, M.A., Siregar, P.G., Achmad, B., Priadjati, A., Husson, S., Wich, S., Hadisiswoyo, P., Saputra, F., Campbell-Smith, G., Kuncoro, P., Russon, A., Voigt, M., Santika, T., Nowak, M., Singleton, I., Sapari, I., Meididit, A., Chandradewi, D.S., Ripoll Capilla, B., Ermayanti, Lees, C.M. (eds.) 2017. Orangutan Population and Habitat Viability Assessment: Final Report. IUCN/SSC Conservation Breeding Specialist Group, Apple Valley, MN, <https://bit.ly/34sABty>
3. Knott, C., Emery Thompson, M. and Wich, S., 2008. The ecology of female reproduction in wild orangutans. Orangutans, pp.171-188. <https://bit.ly/34ybuGU>
4. Aidenvironment, The need for cross-commodity no-deforestation policies by the world's palm oil buyers, August 2021. <https://bit.ly/3HoMob5>
5. Orangutan Foundation UK. <https://bit.ly/3w7A6Be>
6. Indonesian Orangutan Foundataion (YAYORIN). <https://bit.ly/34H133c>
7. KTH company website, <https://bit.ly/3IV722O>.
8. Sinar Mas, Aidenvironment, Earthqualizer Foundation, 2020. Study Report: Verification of land fire in the concession area of PT Arrtu Energi Resources, <https://bit.ly/3ofleMr>
9. Eagle High Plantations, Six-Month Report Project Amour, 2018. <https://bit.ly/3AX66ll>
10. PT Suka Jaya Makmur website, <https://bit.ly/3oirJOx>.
11. WWF, 2015. Upswing in the world's largest orangutan population. <https://bit.ly/3HmBr9X>.
12. WWF, 2013. PT. Dwimajaya Utama in the Heart of Borneo (HoB) receives FSC certification. <https://bit.ly/3HfdXn8>.
13. Partnerships for Forests, 2019. Eagle High commits 25 years of conservation funding in Central Kalimantan. <https://bit.ly/3oc0rcs>.
14. Partnerships for Forests website, <https://bit.ly/3AONcna> [Accessed 10 November 2021].
15. Golden Agri Resources, 2018. Golden Agri-Resources and OFI continue collaboration to release orangutans and educate people about orangutan conservation. <https://bit.ly/3ANIZA9>.
16. Sawit Subermas Sarana website, <https://bit.ly/3ggzCzq> [Accessed 15 November 2021]
17. Gokkon, B., 2017. Alarms raised as timber firm said to pierce one of Indonesia's last orangutan strongholds. Mongabay Environmental News. <https://bit.ly/3sc9BXP>.
18. Suwastoyo, B., 2018. Overlapping Concessions Jeopardize Borneo Orangutan Corridor - The Palm Scribe, The Palm Scribe, <https://bit.ly/3Gx4pmc>.
19. Burhani, R. (2011). Konservasi hutan lindung Ketapang terancam eksplorasi pertambangan. Antara News. <https://bit.ly/3sm4q7z>.
20. HCV areas being destroyed by bauxite mining company. Foresthints News. (2018), <https://bit.ly/3uwY9p>.
21. Bumitama Agri Ltd. "KAWASAN EKOSISTEM ESENSIAL" AREAS CLEARED FOR ROAD DEVELOPMENT. (2018), <https://bit.ly/3Lq4UIY>.
22. 50 Years in the Field – Official Orangutan Foundation International Site. Official Orangutan Foundation International Site. (2021), <https://bit.ly/3Lhcuig>.
23. RSPO NOTIFICATION OF PROPOSED NEW PLANTING. Rspo.org. (2014), <https://bit.ly/3AZW8Gs>.
24. Butler, R. (2013). Greenpeace photos expose palm oil giant's deforestation in Indonesia. Mongabay Environmental News, <https://bit.ly/3GCcjux>.
25. Complaint. Askrspo.force.com. (2013), <https://sforce.co/35JZOjW>.
26. Parker, D. (2013). Palm oil company Bumitama under fire for clearing rainforest, endangering orangutans. Mongabay Environmental News, <https://bit.ly/3uwdB84>.
27. Butler, R. (2014). Procter & Gamble's palm oil suppliers linked to deforestation (photos). Mongabay Environmental News, <https://bit.ly/3LhQHYf>.
28. Askrspo.force.com. 2012. <https://sforce.co/3spdKRB>.
29. Yayasan Masyarakat Kehutanan Lestari, Forest Peoples Programme. (2020). Preliminary findings from a Review of the Jurisdictional Approach initiative in Seruyan, Central Kalimantan, Indonesia. Forest Peoples Programme, <https://bit.ly/3GBY0Lo>.
30. InfiniteEARTH®Rimba Raya Biodiversity Reserve Project. (2011). Rimba Raya Biodiversity Reserve Project. PT Rimba Raya, <https://bit.ly/34DLJnR>
31. Direct and Indirect Suppliers Grievances. LDC.com. (2021), <https://bit.ly/3Hx05F6>.
32. InfiniteEARTH®Rimba Raya Biodiversity Reserve Project Fact Sheet. (2016). Rimba Raya Biodiversity Reserve Project. PT Rimba Raya, <https://bit.ly/34DLJnR>
33. Aidenvironment (2021). The Industrial Tree Plantations of the Nusantara Fiber Group. <https://bit.ly/37EirqJ>
34. PT Marubeni website. <https://bit.ly/3tcXZW7>
35. Chain Reaction Research, NDPE Policies Cover 83% of Palm Oil Refineries; Implementation at 78%, 2 June 2020, bit.ly/38XvjGM. Calculated from data used for the report
36. Trase Insights (2021). Trase website. Indonesia Pulp Sector's Progress on Deforestation Hangs in the Balance. <https://bit.ly/3l9YgNT>
37. Aidenvironment (2021). Four Indonesian Pulp and Paper Companies Responsible for 11,000 Hectares of Forest Loss in 2021. <https://bit.ly/3tfhz4a>
38. Borneo Foundation Website. (2022). Rungan Landscape. <https://bit.ly/3rvpKIG>
39. Save the Orangutan Website (2018). Rungan River: 'New Land' for Save the Orangutan. <https://bit.ly/35Ve0XQ>
40. Holzacker, R. L., & Tan, W. G. Z. (Eds.). (2021). Challenges of Governance: Development and Regional Integration in Southeast Asia and ASEAN. Springer Nature, <https://bit.ly/3orA6as>
41. Chain Reaction Research (2020). The Chain: PT Pradiksi Gunatama's IPO Raises Risk of Further Deforestation. <https://bit.ly/34F2bEa>
42. Mongabay (2018). Jong, H. Indonesia to investigate death of journalist being held for defaming palm oil company, <https://bit.ly/34CT9aM>
43. Hidayat, M. (2021). VIDEO Pabrik Biodiesel Jhonlin di Kabupaten Tanbu Kalsel Akan Diresmikan Presiden, Banjarmasin Post, <https://bit.ly/3B4aNQU>
44. SVLK (2014). Studi Independen Terhadap Sertifikasi: Catatan Kritis Koalisi LSM Terhadap Legalitas & Kelestarian Hutan Indonesia. <https://bit.ly/37rde5b>
45. Metro Online (2021). Yuk... Mengenal Lebih Dekat Dr. Suheldi, SE, MM, Balon Walikota Binjai. <https://bit.ly/3uuOqD1>
46. Pirard, R., Cossalter, C. (2006). The Revival of Industrial Forest Plantations in Indonesia's Kalimantan Provinces. <https://bit.ly/3w9SYzt>
47. Murdiyarso, D., & Lebel, L. (2007). Southeast Asian fire regimes and land development policy. In Terrestrial ecosystems in a changing world (pp. 261-271). Springer, Berlin, Heidelberg. <https://bit.ly/3B1Duhg>
48. Provinsi Kalimantan Tengah - PDF Free Download. Docplayer.info, <https://bit.ly/3Jas11W>
49. Trustindo Certification, Resume of PHPL (sustainable management of production forest) performance assessment, PT Industrial Forest Plantation, 24 June 2019, bit.ly/338FAfz
50. Trustindo Certification, Resume of PHPL (sustainable management of production forest) performance assessment, PT Industrial Forest Plantation, 17 July 2020, bit.ly/3b8VLy
51. Aidenvironment (2021). The Industrial Tree Plantations of the Nusantara Fiber Group. <https://bit.ly/37EirqJ>
52. Mighty Earth, MapHubs, Waxman (2021). Rapid Response Palm Oil Report 33. <https://bit.ly/3Jaz9vi>
53. Musim Mas Website, Bumi Agro (Bumi Agro Prima) – Bumi Gading Prima (Bahasa) - Musim Mas, <https://bit.ly/3ouYbgE>
54. MacInnes, Angus. (2021). Forest Peoples Programme. First Resources: Hiding in the shadows? Oil Palm Group linked to 'shadow companies' that are devastating Kalimantan's forests and peoples with impunity, <https://bit.ly/3B0xrcY>
55. Eight Capital Inc. (2014). Form For Substantial Shareholder(s)/Unitholder(s) in Respect of Interests In. <https://bit.ly/3gsAW2a>
56. IDX. (2020). PT FAP AGRI TBK Prospektus, <https://bit.ly/3HLrIKo>
57. Mongabay (2022). KEPUTUSAN MENTERI LINGKUNGAN HIDUP DAN KEHUTANAN REPUBLIK INDONESIA NOMOR: SK.01/MENLHK/SETJEN/KUM.1/1/2022 TENTANG PENCABUTAN IZIN KONSESI KAWASAN HUTAN (2022). Indonesia, <https://bit.ly/3ovETyw>
58. PT Hutan Produksi Lestari SVLK Audit Borneo. Wana Indo Website. <https://bit.ly/3JwQ9fT>
59. Kumparan Website (2021). Diduga Ilegal, Ribuan Kayu Log di Kalteng Disegel Dinas Kehutanan, <https://bit.ly/3owwX9f>
60. Kato, T., Silsigia, S., Yusup, A. A., & Osaki, M. (2021). Coexistence of Humans and Nature in Tropical Peatlands. In Tropical Peatland Eco-management (pp. 135-161). Springer, Singapore. <https://bit.ly/336qKJS>
61. PT Ayamaru 2021. Pengumuman Hasil Audit PHPLV Penilaian IUPHHK HTI PT Mayawana Persada, <https://bit.ly/3gKH9Hf>
62. HCV Resource Network, 2014. Annual Report 2014. [online] HCV Resource Network. <https://bit.ly/3gtFAx3>
63. Harfenist, E., 2014. Huge swath of forest in Indonesian Borneo slated for clearing by 'sustainable' company. Mongabay Environmental News, <https://bit.ly/3GBhBqe>
64. Ecositrop Website, Ecology and Conservation Center for Tropical Studies, <https://bit.ly/3HOQxdz>
65. SPOTT.org, <https://bit.ly/3JbJzdM>
66. Forest Stewardship Council. Info.fsc.org. (2022). Retrieved 7 February 2022, <https://bit.ly/3320Jez>
67. PT. Suka Jaya Makmur website (2022), <https://bit.ly/3B0nvAd>
68. International Tropical Peatlands Center. Tsuyoshi Kato - International Tropical Peatlands Center, <https://bit.ly/3B58aOP>
69. Pahlevi, A., 2020. Meninjau Lebih Dekat Pendekatan Lansekap untuk Kelestarian Gambut dan Hutan Kalbar. Mongabay Environmental News, <https://bit.ly/3uqMjQC>
70. APP Sinarmas Website. PT. Asia Tani Persada - Sustainability Dashboard, <https://bit.ly/3HzIn3K>
71. PT. Daya Tani Kalbar - Sustainability Dashboard. Sustainability-dashboard.com, <https://bit.ly/34s4c6O>



aid
environment