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# Traditional ecological knowledge of the Dayak people in North Kalimantan and REDD-Plus implementation in the future

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# Research for thesis: Ethnobotany analysis of the Dayak people in North Kalimantan

## Medicinal Plants

Species, uses, habitat, life form

## Important species

People's perceptions of knowledge and uses, relative importance index (medicinal plants data)



## Socio-cultural situation

Situation of the Dayak communities in Apau Ping and Wa' Yagung villages

## Policy

Local policies of development for the communities in Malinau and Nunukan

# Indonesia

## Legend

research sites



Google Earth

Image Landsat / Copernicus

Christmas Island Flying Fish Cove

Timor Sea 1000 mi



# Research sites



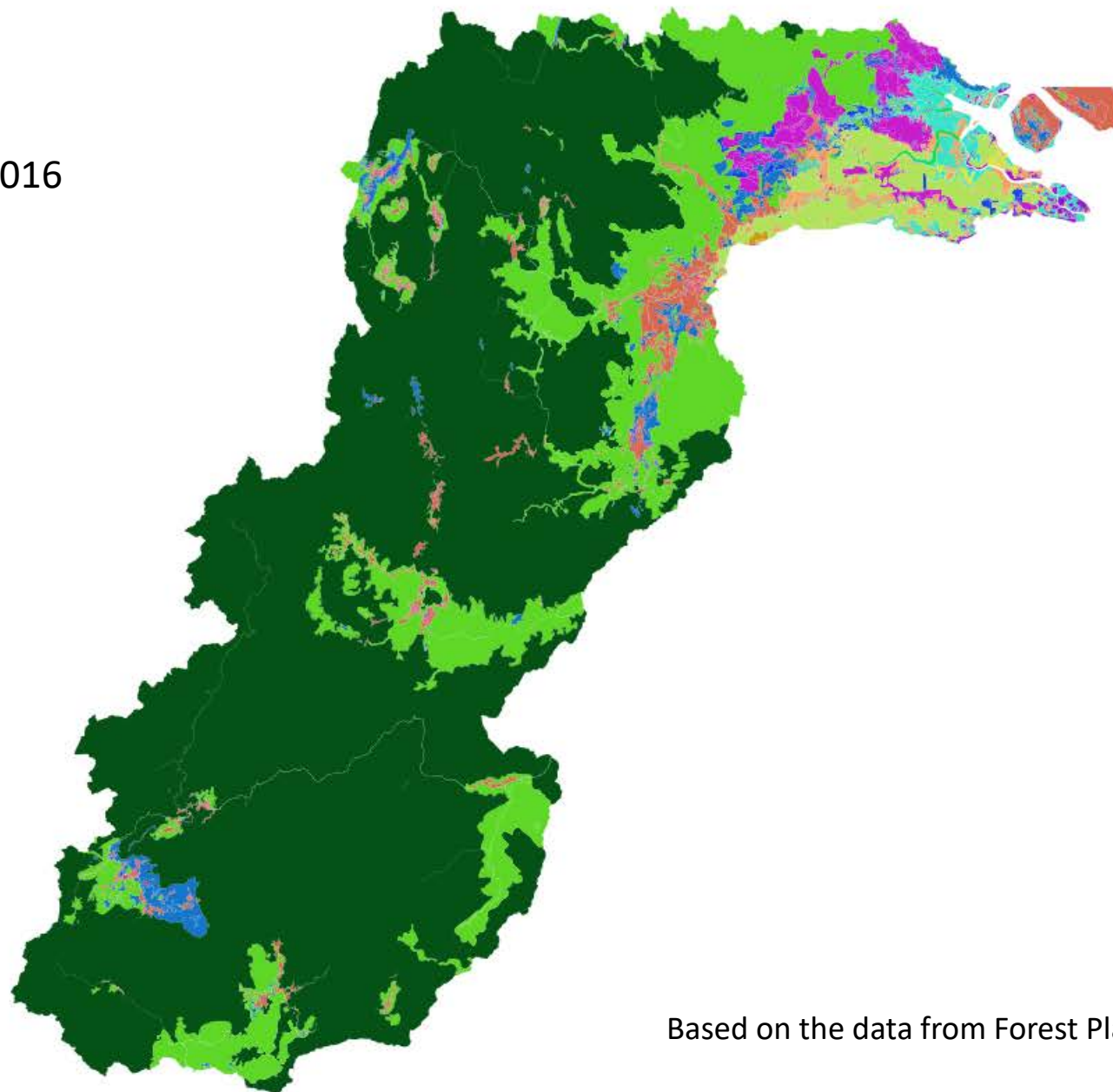
Social situation	Apau Ping	Wa' Yagung
Population (2018)	233 (F: 110; M: 123)	319 (F: 166; M: 153)
Main livelihood	Subsistence farming, collecting gaharu	Subsistence farming, collecting gaharu

Biophysical characteristics	Apau Ping	Wa' Yagung
Coordinates	3°06'06.93" N 115°49'06.67" E	3°57'30.30" N 115°51'18.35" E
Altitude	400 – 1120 masl	540 – 1190 masl
Rainfall	2000-4000 mm year <sup>-1</sup>	>2000 mm year <sup>-1</sup>
Soil	Dominated by inceptisol	Alluvial deposits and sandstone
Agricultural system	Swidden agriculture	Wet rice cultivation
Geomorphology system	Sedimentary mountain ridges and hills	Highland plateau

Based on the data from National Statistics Agency and WWF

## Background

Land use change 1990-2016

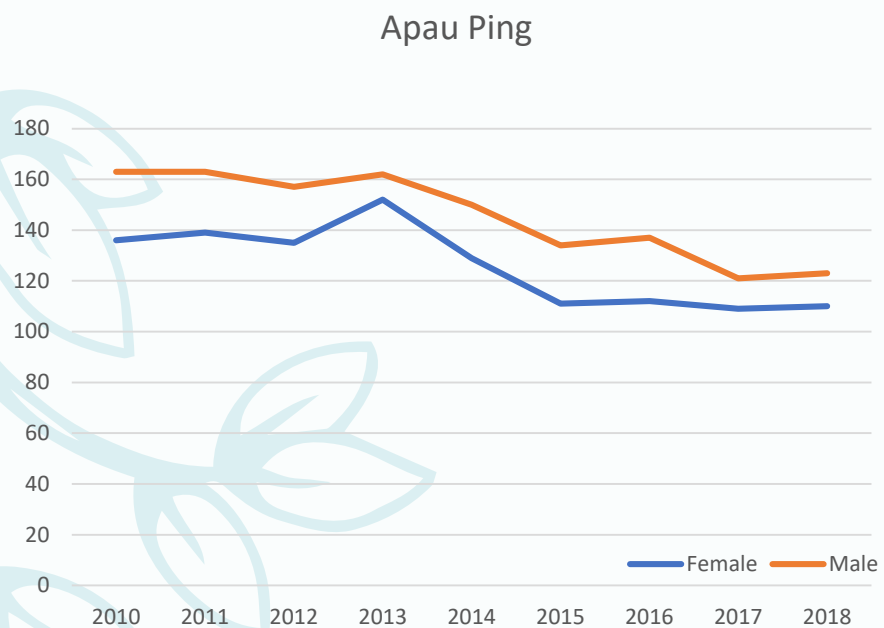


Based on the data from Forest Planning Agency Samarinda



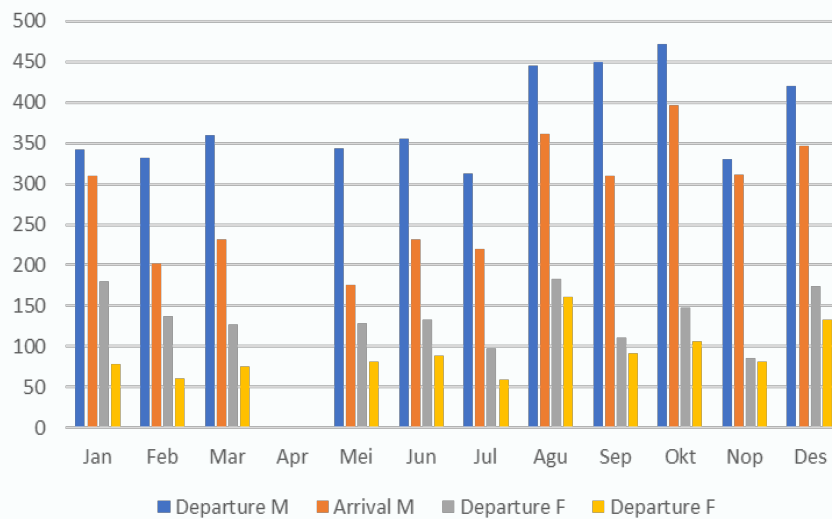
# Background

## People's migration

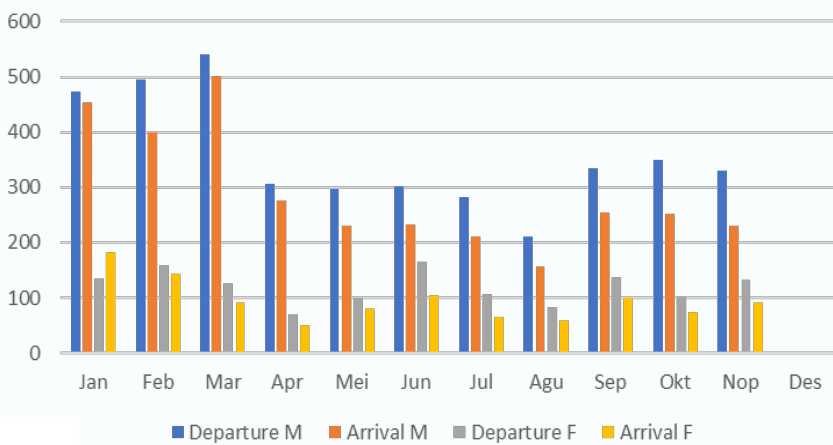


# Krayan

Villagers crossing the border to Malaysia 2016



Villagers crossing the border to Malaysia 2017



Based on the data from National Statistics Agency and Krayan Immigration Office



# Ethnobotany in forest management

Conservation of forest resources

Part decentralized  
approach – people  
give solution  
(Cunningham,  
2001)

Botany – use,  
cognition, ecology  
(Abbasi et al., 2012)

Interdependency – locals  
and plant biodiversity  
(Ghimire and Bastakoti,  
2009)

Valued source of  
medicines (Sedjo, 2000)

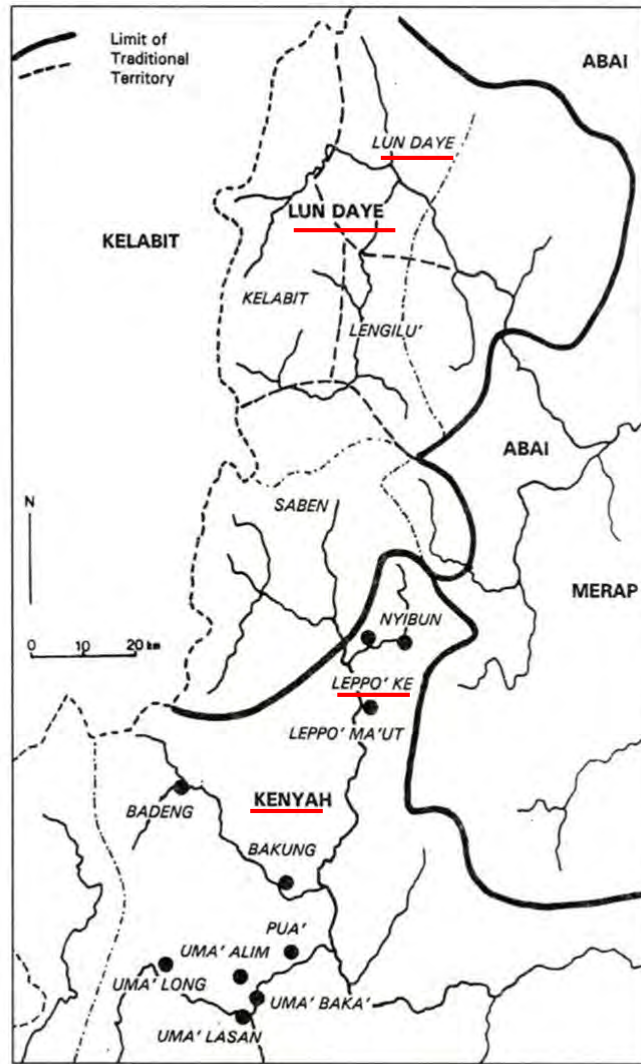
## Ethnobotany

## Medicinal plants

Quantitative analysis –  
potential tool for  
conservation (Helida  
et al., 2015)

Four main efforts:  
document, use and  
mgt, benefits,  
maximize value for  
local people (Martin,  
2004)

# The Dayak people



Ethnolinguistic situation in North Kalimantan (Sellato, 1997)



Archaeological remains from hundreds years ago (Arifin and Sellato, 1999)



Typical of traditional ethnic community (Sardjono, 2004)



Rely on the forest resources for daily necessities (Uluk et al., 2001)



# First frequent cited

## Wa' Yagung



1. Tabar (*Cinnamomum cuspidatum*)  
Lauracea, tree, about three km from village  
Use: digestive systems

All found in old secondary forest



2. Temawar (*Aristolochia* sp.) Aristolochiaceae,  
climber, about three km from village  
Use: antidote



3. Angeh (*Alstonia scholaris*) Apocynaceae, tree, about five km from village  
Use: diabetes, rheumatism, digestive system





1. Pa'onglong (*Homalomena* sp.)  
Araceae, herb, about six km from  
village, old secondary forest

Use: Fever headache, cold

## Apau Ping



2. Ternga' Mu'dung (*Boesenbergia stenophylla*)  
Zingiberaceae, herb, about 12 km from village, primary  
forest

Use: fever, diarrhea, antidote



Dayak people of sub-ethnic  
Kenyah in Malinau regency  
practice rotation swidden  
agriculture

Traditional practice of agriculture of the Dayak people

Swidden farming in Apau Ping

Activities	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
1 <i>Ngetem</i> (harvesting)												
2 Mencari lokasi												
3 <i>Melidik</i> (land clearing)												
4 <i>Nepeng</i> (tree felling)												
5 <i>Miting</i> (wood splitting)												
6 <i>Nutung</i> and <i>Mekuk</i> (burning)												
7 Benih pade (seeds preparation)												
8 <i>Lepau</i> (building the hut)												
9 <i>Nu'gan</i> (sowing)												
10 <i>Ma'bau</i> (weeding)												

Source: Lawing (2017); Sindju (1999)





Paddy farming in Wa' Yagung

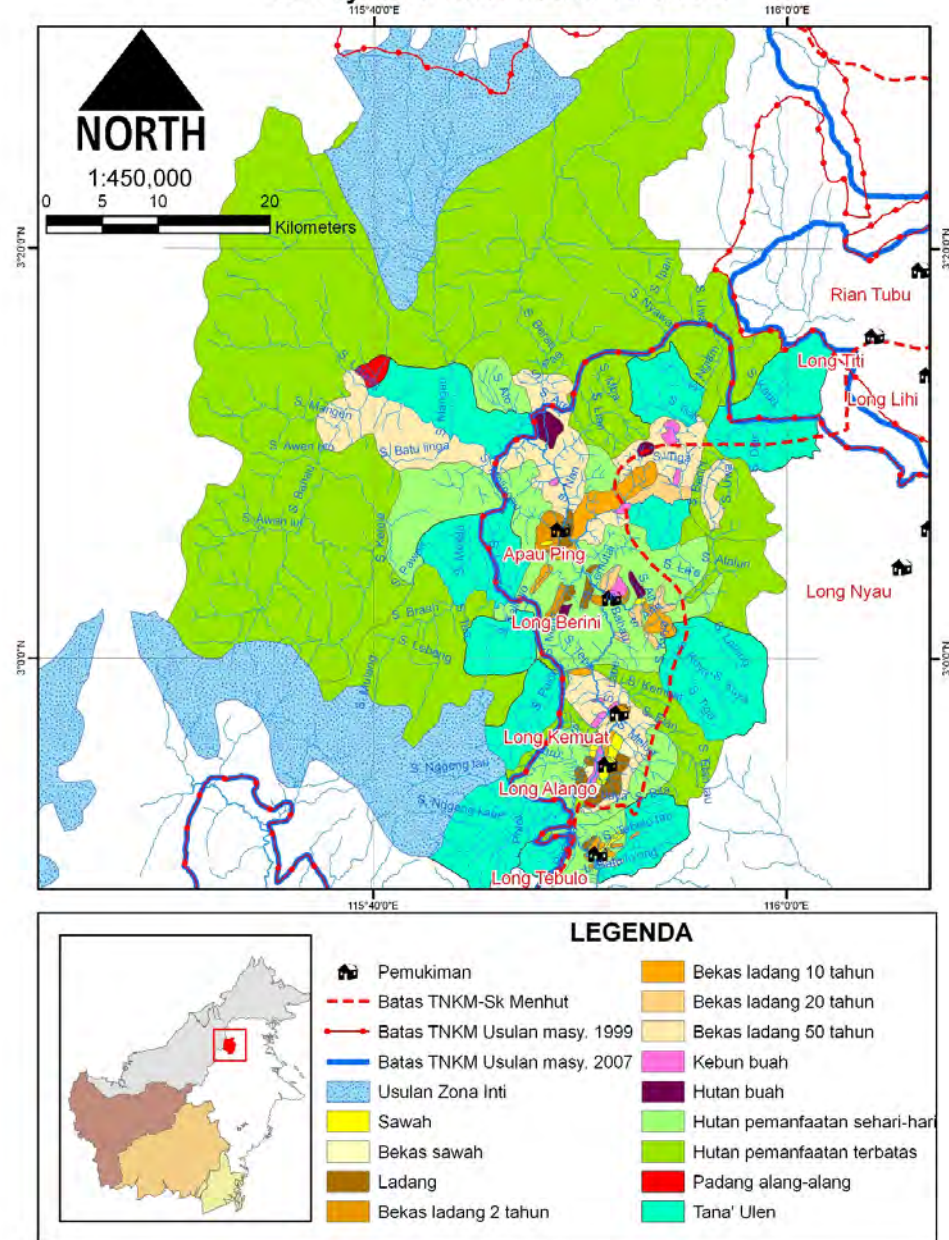
Dayak people of Lundayeh sub-ethnic in Krayan, Nunukan regency, practice wet rice cultivation

Activities	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
1. <i>Pemanenan</i> (harvesting)	—											
2. <i>Kerbau dilepaskan di sawah</i> (the Buffaloes leash to the paddy field)			—	—	—							
3. <i>Membersihkan lahan</i> (land clearing)					—	—						
4. <i>Penyiapan benih</i> (seeds preparing)							—					
5. <i>Penanaman</i> (sowing)								—				
6. <i>Kerbau dilepaskan ke hutan</i> (the Buffaloes leash to the forest)										—	—	—

Source: Kapung (1997)



## Peta Tata Guna Lahan & Tata Batas TNKM Wilayah Adat Hulu Bahau



Participatory map of land use for management entitlement by the community in the future

Map copyright WWF-Indonesia and FoMMA-TNKM

(<http://wwf.panda.org/?209065/The-social-nature-of-forest-resources-Community-Mapping-for-more-effective-and-equitable-management-in-the-Kayan-Mentarang-National-Park>, retrieved on December 1, 2018)



# Implementation of REDD-plus

