

Biodiversity and ecosystem services for local indigenous people -Lessons from a case study in rural area in Sarawak, Malaysia

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Biodiversity and ecosystem services for local people

Biodiversity: a key component of natural capital, and it allows or limits any type of ecosystem service as well as human wellbeing.

Ecosystem services: 60 million indigenous people entirely depend on forests for their culture and survival, 1.6 billion people (~25% of world population) depend on forests for their livelihood and subsistence (Forest Peoples Programme 2012)

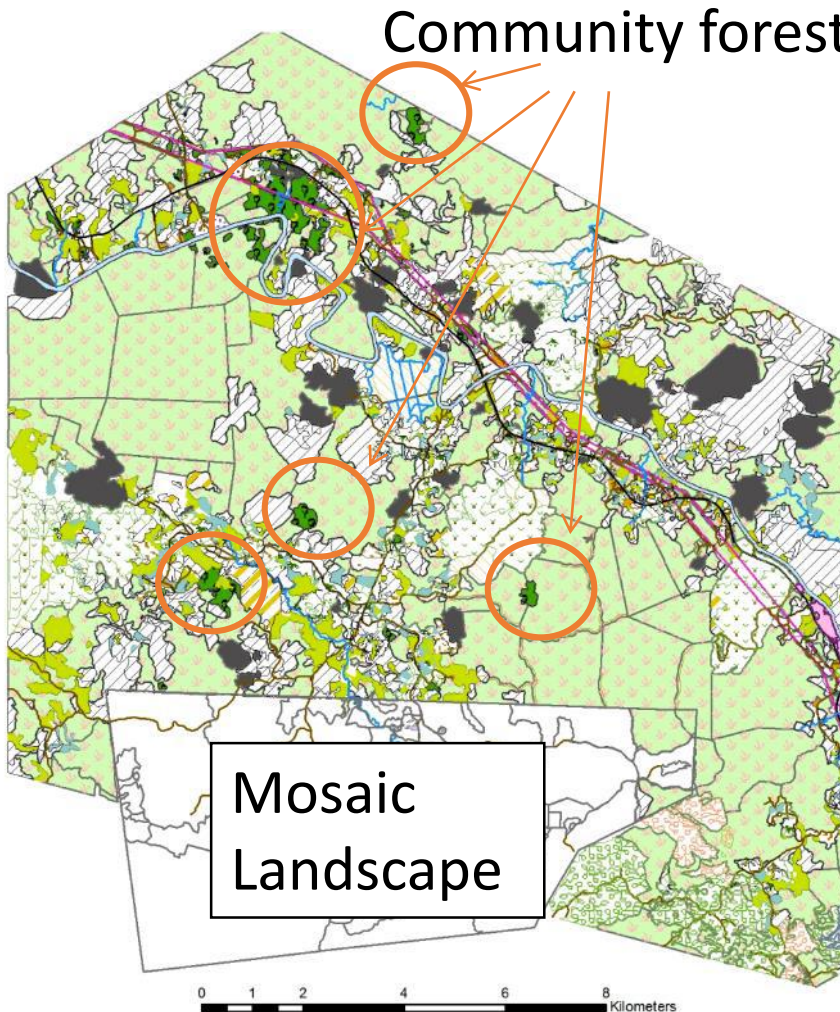


Conservation values of community forests managed by indigenous communities in Borneo



Rural landscape in Borneo

Community forest '*pulau*' (means a 'island')



Community forests

Iban longhouse

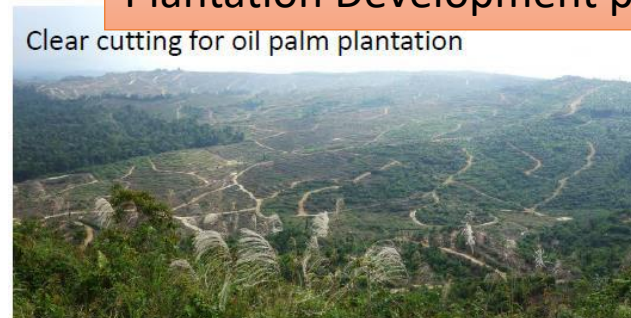


Clear cutting for Acacia plantation



Plantation Development pressure

Clear cutting for oil palm plantation

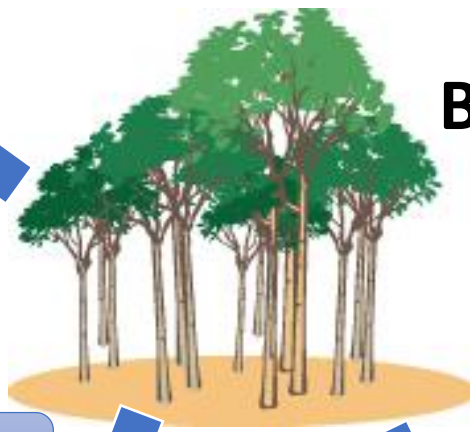


Ecosystem services from community forests

Water resource



Community forests



Carbon storage

Regulating services

Biodiversity

Provisioning services

Cultural services

Foods

Materials for cultural use

Provisioning services

Nuts



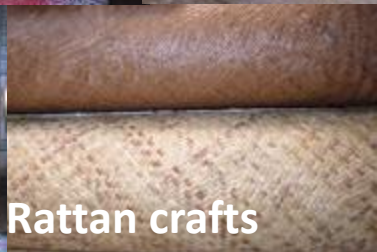
Vegetables



Wild meat

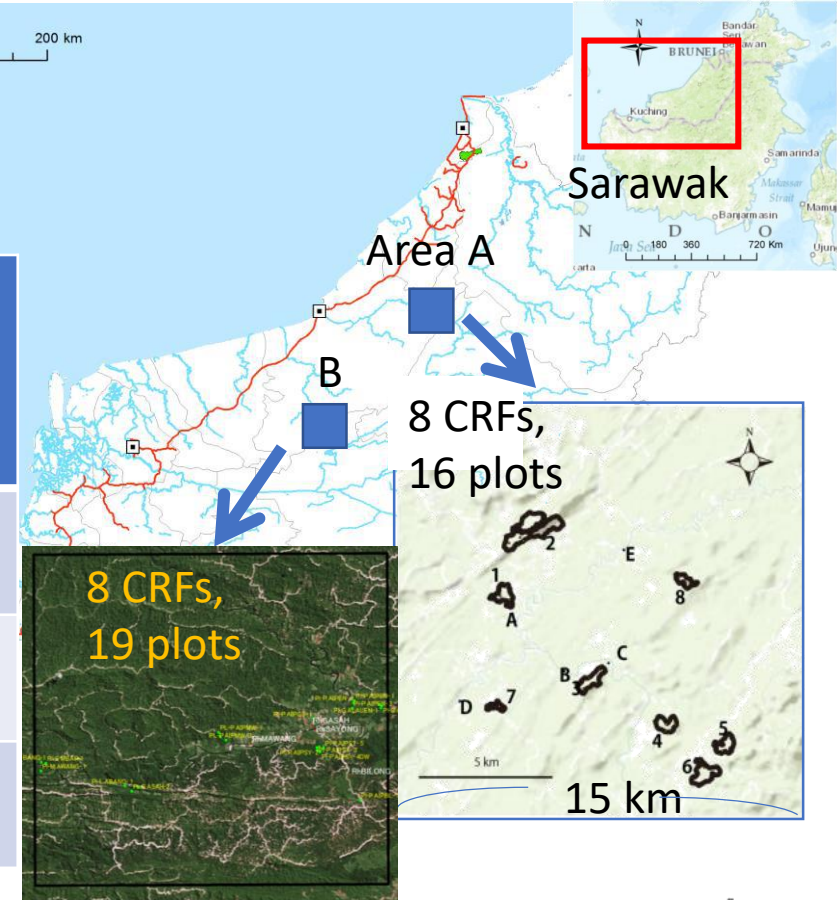
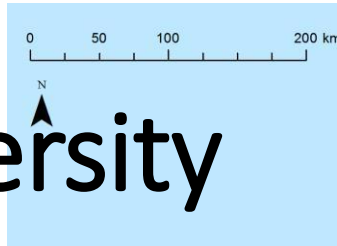


Rattans



Rattan crafts

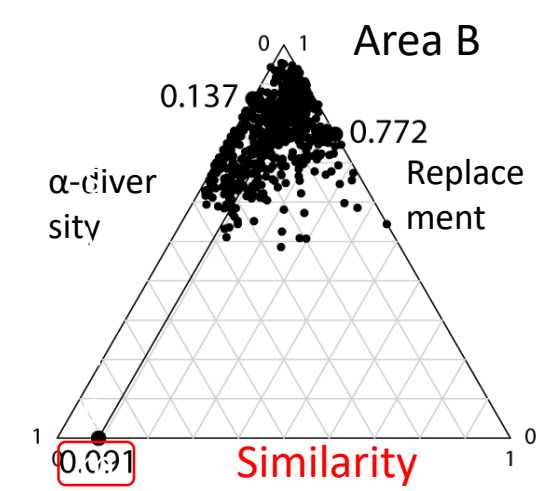
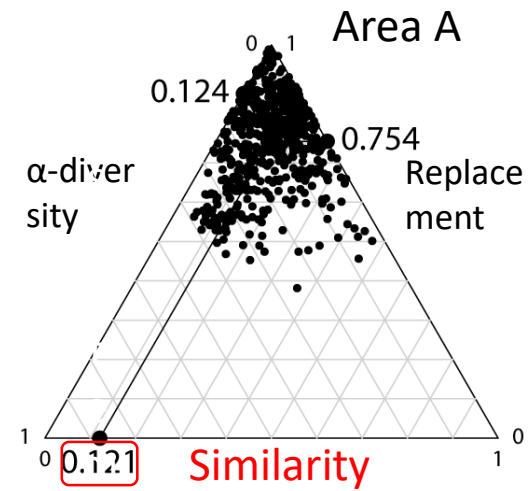
Tree species diversity



Area	No. of community forest	Total area (ha) of plots	No. of Individual	No. of Species	Averaged Shanno's H (SD)	
A	8	4	2741	551	3.90	(0.46)
B	8	4.75	3138	531	3.79	(0.31)
Total	16	8.75	5879	813	3.84	(0.38)

High α -diversity

High β -diversity



Threatened/endangered tree species

- Totally 68 species in the IUCN Red list

Area	CR	EN	VU	Total
A	19	14	13	46
B	14	15	16	45
Total	25	19	24	68

Covering at least 20% of the IUCN Red List Threatened species occurring in Sarawak

Ramin

Gonystylus spp.

IUCN Red list
-Vulnerable
CITES app II



Penyau

Upuna bornensis

IUCN Red list
-Endanger



Provisioning service from community forests: Bioresources

Foods & Medicines



Fuel & Materials



Provisioning service from community forests: Bioresources

Provisioning service

Foods & Medicines

No. of plant species for local use in two area of indigenous communities in Sarawak (Chai, 2000)

	Area A	Area B
Food	176	113
Medicine	57	61
Craft	4	18
Ritual	4	3
Other	4	38
	245	233

al service

Rattan crafts



Rattan crafts



Local name

10 kinds of rattans

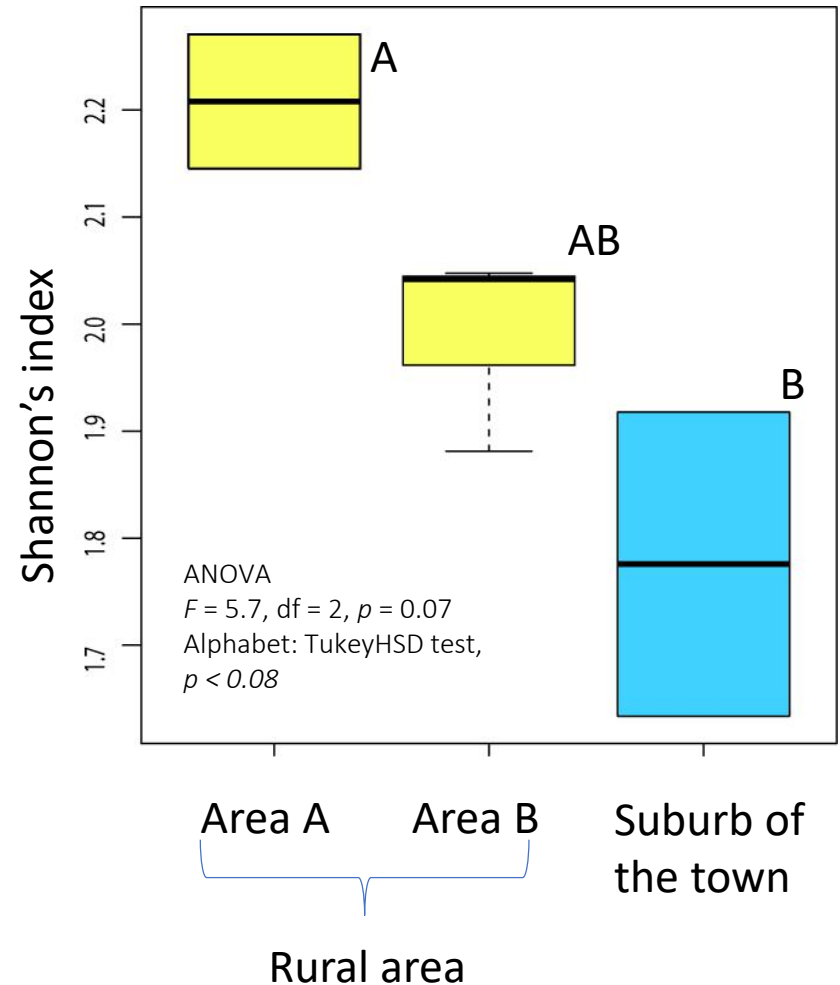
Effect of development on use of rattan species diversity

Interview survey in villages and the suburb of the town



Use of rattan species diversity tended to decrease in the suburb

Based on 7 villages, 35 informants, 781 items



Development

Plantation, logging

Ecosystems

Society

Landscape

Ecosystem service supply potential

Community forest

Local people use and perception

Biodiversity

- High tree species diversity
- Endangered species

Provisioning services

- Traditional use and knowledge
- Vulnerable to development

15 LIFE ON LAND



15.1, 15.2,
15.4,
15.5,
15.7, 15.9

1 NO POVERTY



1.4,
1.5

3 GOOD HEALTH AND WELL-BEING



3.9

Collaboration with Stakeholders

Biodiversity conservation

RIMBA Sarawak (Research for Intensified Management of Bio-rich Areas), Capacity building program

Sarawak government



Sarawak timber company



Sustainable forest management

Permanent sampling plot network in Sarawak

Transdisciplinary approach

Japanese Research institute



At Ta Ann company in Sibul, Sarawak



17.6, 17.7,
17.9,
17.18

**Thank you for your
attention !**

Cám ơn nhiều

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Research outcome sharing in the village