Jungle Rubber Provides Important Forest Function of Biodiversity Conservation

World Agroforestry Centre
TRANSFORMING LIVES AND LANDSCAPES

Chandra Panjiwibowo, Laxman Joshi, Endri Martini, Saida Rasnovi, Gregoire Vincent, Meine van Noordwijk

Correspondent: L.Joshi@cgiar.org

The main 'service' that differentiates rubber agroforests, as in Jambi Indonesia, from other 'tree crop' production systems, is the diversity of plants and animals. With rubber trees (*Hevea brasiliensis*) typically below 50% of the total tree basal area, the diversity of forest trees, epiphytes, birds, insects and mammals is around 50-70% of that in natural forests. In the landscape where natural forests are fast disappearing, species such as the endangered Sumatran tiger and *Rafflesia arnoldii,* the world's biggest flower, use jungle rubber for movement and dispersal. In many places in Sumatra jungle rubber connects national parks and protected areas, hence functioning as important corridors that allow movement of wild animals and dispersal of plant species. These agroforests are also a primary source of daily income for millions of rubber farmers. Jungle rubber provides one of the best examples of an 'integrate' approach to ecological agriculture, combining conservation and income generating opportunities.

Plant diversity

Of total 971 tree species recorded inside rubber agroforests (RAF) systems, 376 species are 'common' species between RAF and natural forest: 75% species spread by animals - birds, bats, primate, and dung beetles

	Local Name	Latin Name	Family	Notes
1.	Tebalun	*Parashorea lucida*	Dipterocarpaceae	In the RAF close to forests
2.	Meranti kalip	*Shorea parvifolia*	Dipterocarpaceae	In old RAF
3.	Meranti bungo	*Shorea sp.*	Dipterocarpaceae	In old RAF
4.	Bunga bangkai	*Amorphophallus titanium*	Araceae	In old RAF
5.	Bedaro putih	*Eurycoma longifolia*	Simaroubaceae	In old RAF – medicinal use
6.	Jelutung	*Dyera costulata*	Apocynaceae	In Lubuk Saung landscape
7.	Kulim	*Scorodocarpus borneensis*	Olacaceae	In RAF – high timber value

Mammal diversity

37 mammals species in the RAF (in National Park - 85 species)
RAF as:

- Nest and food provider for Beruk (*Macaca nemestrina)*, ciga (*Macaca fascicularis*), pig (*Sus scorfa*) and ungko (*Hylobates agilis)*
- Migration area for Nangoi (*Sus barbatus*), tupai jenjang (*Callosciurus notatus* and *Callosciurus prevostii*), and bats (*Pteropus vampyrus*)
- Habitat for endangered animals due to human hunting - deer (*Cervus unicolor* and *Mutiacus muntjak*), *Tragulus javanicus*, *Tragulus napu*, *Hystrix brachyura*, *Manis javanicus*
- Habitat for endangered animals due to their behavior - *Nyctecibus coucang*, *Cynocephalus variengatus*, *Ursus malayanus*
- Feeding ground for Tapir (*Tapirus indicus*), forest dog (*Cuon alpinus)*

RAF have a very important value for conservation of some endangered animal species

Bats

10 species (8 fruit bats and 2 insect bats in RAF
Several forest bats (*Balionycteris maculata*, *Megaerops ecadatus* and *Dyacopterus spadiecus*) live in RAF – similar habitat

Dung beetle

Diversity and high quantity of big trees in RAF -> higher number & diversity of primates -> higher number & diversity of dung beetles.

Dung beetle population in young RAF lower than in old RAF

Primate

Six primates inside RAF: Simpai (*Presbytis melalophos nobilis*), Lutung (*Trachypithecus cristatus*), Beruk (*Macaca nemestrina*), Macaca (*Macaca fascicularis*), Siamang (*Hylobates syndactylus*) and Ungko (*Hylobates agilis*).

Two additional primitive primates - kukang (*Nycticebus caucang*) and tarsius – were reported by local people in RAF

Bird survey

- 167 species of birds recorded
- 28 protected species under Indonesian law
- 10 species in the CITES criteria
- RAF >20 years high bird diversity - 130 species
- RAF <5 years - 17 species