



Background



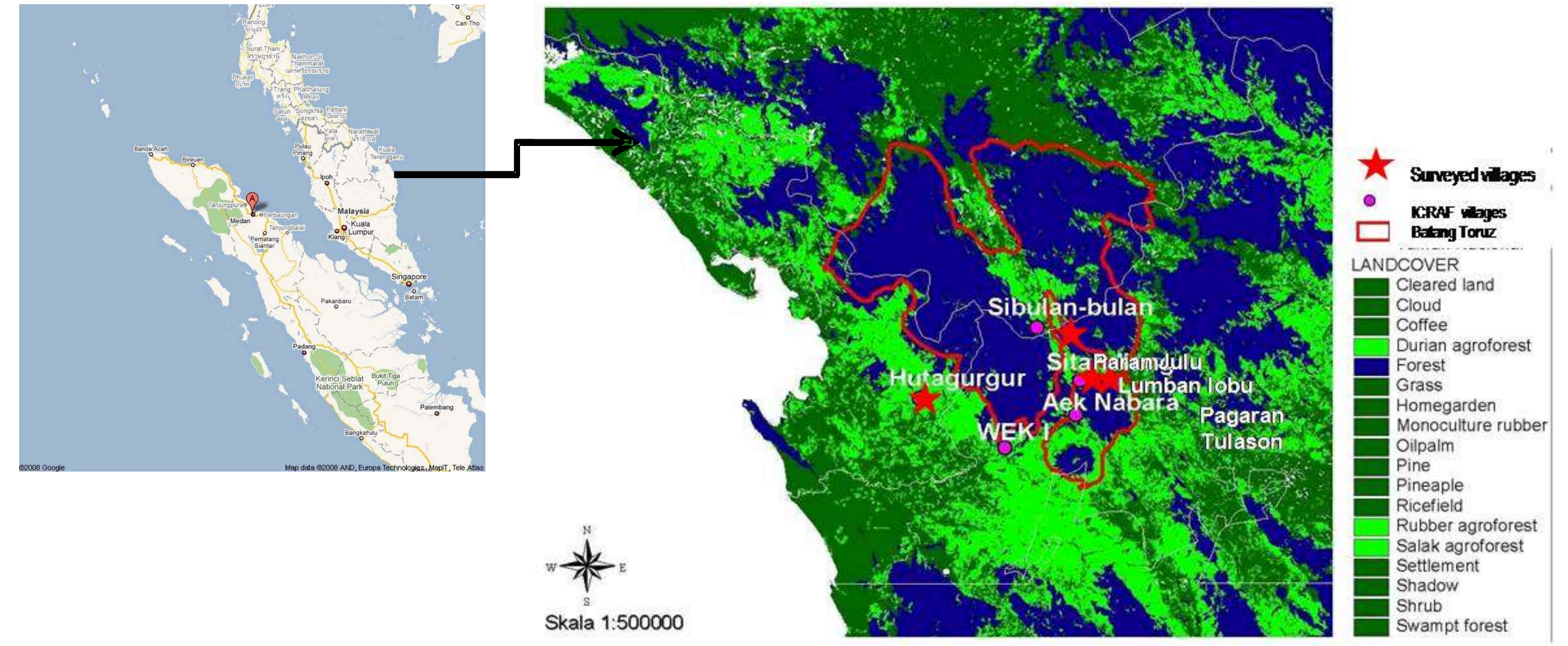
Aren (*Arenga pinnata*) contributes significantly to the livelihood of many farm families in the Batang Toru area (North Sumatra). An important 'non-timber forest product', the cultivation of Aren is based on natural regeneration, with secure tree ownership and controlled harvesting. In many parts of Indonesia Aren is in a similar low level of 'domestication' (Mogea et al. 1991). At the interface of local livelihoods and biodiversity, we studied the options for 'intensification' and 'domestication'.

Arenga pinnata

Aren (*Arenga pinnata*, syn. *Arenga saccharifera*) is a large palm belonging to the order Caryotoideae, Arecaceae family. Normally, Aren is found in tropical Asian landscapes growing under full sun, in well drained soils with access to abundant water (usually near rivers). Aren grows best at elevations of 500-800 masl, with precipitation above 1200 mm/year, a rainy season of 7-10 months and average temperature 25°C.



Site Description



Batang Toru is located in North Sumatra province, Indonesia and covers approximately 105,000 ha, with elevation ranging from 200-1500 masl and annual precipitation 1500-3000 mm. It is dominated by primary rainforest that is an ideal habitat for the Sumatran Orangutan (*Pongo abellii*).

Aren in Batang Toru area was selected as:

- the area is habitat for the largest population of Sumatran orangutan outside protected areas (at least 400 individuals);
- the indigenous Batak people make customary use of Aren, including the production of a traditional alcoholic beverage called *tuak*; and
- Aren is common in the area and contributes to the diets of orangutans and other wildlife.

Methodology

Assessments were carried out regarding:

- (i) Aren's importance to the livelihoods of the local people; and
- (ii) Aren's potential role in environmental conservation.

Data was collected in 4 villages from interviews with key stakeholders, direct observations (transect walks), focus group discussions, market visits and review of project reports.

Results

Aren's roles on local livelihood



Sugar - provides weekly income
Contributes 50% of weekly income for producer families. Producers live near the forest and have easy access to firewood for processing sap into sugar.



Thatch ('*ijuk*') - provides yearly income
Contributes less than 10% of yearly income for Aren farmers. Thatch can be harvested a maximum of 2 times a year.



Alcoholic beverage ('*tuak*') - provides weekly income
Contributes 40-50% of weekly income for producer families. Producers are mostly Christian. *Tuak* is commonly drank daily by community members, who gathered in *Tuak* café that also known as *Lapo*. *Tuak* is an important part of Batak cultural.



Aren fruits ('*kolang-kaling*') - provides yearly income
Contributes 20% of yearly income for Aren farmers. *Kolang-kaling* is usually harvested once a year. The demand for *kolang-kaling* is greatest during the annual Ramadhan holiday. The primary markets are on both Sumatra and Java.

Domestication level



Domestication intensity	Village	Main products	Tree propagation	Tree regeneration in gardens	Maintenance	Land use types
Type 1 Naturally growth for sugar production	Paranjulu	Palm sugar	None	Natural regeneration	None	Mixed gardens, Rubber agroforests, Intensive rubber gardens
Type 2 Domesticated	Pagaran tulason	Palm sugar	Propagate seedlings (wild seed); Select and plant wild seedling	Planted at regular spacing (8m x 8m)	Remove thatch to stimulate trunk growth.	Degraded lands, Rubber agroforests, Intensive rubber gardens, Mixed gardens
Type 3 Naturally growth for tuak production	Huta gur gur	Alcoholic beverage (<i>tuak</i>)	None	Natural regeneration	None	Mixed gardens, Rubber agroforests, Intensive rubber gardens
Type 4 Naturally growth aren in farmland	Lumban lobu	Palm sugar and Thatch	Collect and plant wild seedlings	Enrichment planting	Remove thatch to stimulate trunk growth.	Mixed gardens Rubber agroforests; Intensive rubber gardens

Profitability

Table 1. Profitability (return to labor) of different Aren systems.

Scenario	Location	tappable aren unit	Return to labor Rp/ps-day
Type 1 - Natural regen, Sugar	Paranjulu	9	136,661
Type 2 - Enriched, Sugar	Pagaran tulason	12	46,975
Type 3 - Natural Regen, Tuak	Hutagurgur	5	349,481
Type 4 - Planted, Sugar	Lumban lobu	10	35,849

Note
Base year: 2008 ; IR: 11% ; labor wage: Rp 30,000/day ; USD 1 = IDR 10,000

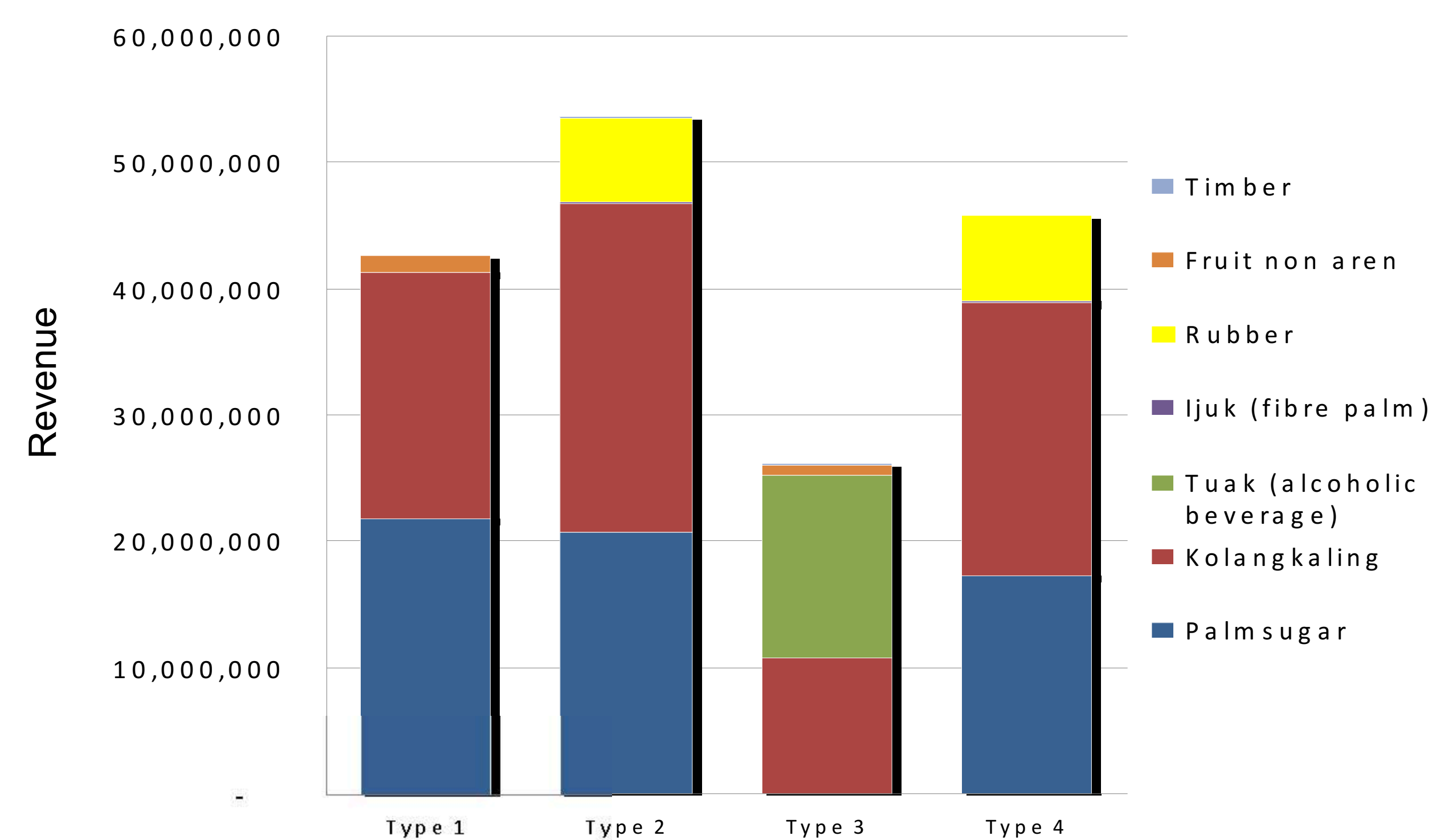


Figure 1. Discounted revenue of different Aren systems (over 25 year production scenario, i = 11%).

Conclusions

- Aren in Batang Toru is common in mixed gardens, agroforests and intensive rubber gardens under a range of domestication intensities from natural regeneration (wild), to enrichment planting, and planted.
- All Aren systems contribute significantly to local incomes, with major products being kolangkaling, palm sugar, and tuak.
- Profitability assessment indicates higher returns to labor (under low management intensity) for tuak production from natural regeneration based systems.
- Although Aren has significant economic value for local livelihoods, very few farmers intensify Aren cultivation – engage in tree planting or land use modification.
- Farmers preference for 'wild Aren' is in line with orangutan conservation efforts through protection of natural forests in the area. Aren in all systems contributes to the diets of orangutan and other wildlife in the area. Reliance on wildlife for Aren regeneration supports appreciation for natural processes.

