

Assessing conservation value of rubber agroforest in the Sumatran lowlands: a landscape level assessment of plant diversity

Conservation of forest species in the Sumatran lowlands has become critical because of the rate and extent of forest conversion in the past decade. Previous research has shown that rubber agroforests have high local biodiversity (albeit significantly lower than natural forest) and could play a significant role in conservation of forest species in the future.

However, most of the research to date has been limited to plot level inventories and tells us little about larger scale biodiversity in rubber agroforests. There is therefore a need to scale-up previous biodiversity assessment from plot to region. This implies stratifying the landscape into ecologically meaningful units and conducting a balanced sampling. It also implies assessing the impacts of landscape features (fragmentation, connectivity) on community composition.

In order to make robust predictions about biodiversity levels at landscape scale there is a need to shift attention from simple species count to ecological processes. In this project which focuses on tree species, plant community data will be assessed both in terms of species composition and functional group composition

Satellite images are used to map vegetation cover

Satellite image

Land Cover Map

Overlays of land use map, geological map and topography are used to stratify the landscape for sampling planning

The plant diversity data and the spatial data are combined for the analysis of community composition.

		Sampling units					
		1	2	3	4	...	N
Species / Functional group (abundance or presence/absence)	A						
	B						
	C						
	...						
	S						
Biophysical	Land facet						
	Soil type/geology						
	Altitude						
	...						
Factors & covariates	Management						
	Land Use type						
	Plot age /seral position						
	Plot structure						
Landscape	...						
	Patch size						
	Distance to patch edge						
	Distance from forest						
	...						

Field inventory data are stored in a specially designed database which also provides plant identification facilities.

Plant

CodePlot: MKJC5 Plot Collection: Save Record

CodeSubPlot: 3

Code	Local Name	Occurrence	Resprout
MKJC 5.3.6	isSpecimen ?	1	1
MKJC 5.3.7	isSpecimen ?	1	0
MKJC 5.3.8	isSpecimen Asam kandis buiung	4	3
MKJC 5.3.9	isSpecimen Barit hitam batang lebar d	1	1
MKSR 1.1.1	isSpecimen Karet	2	0
PM 10	isSpecimen Sebekal	8	7

Plant Code: MKSR 1.1.1 DateDescribed: 9/20/01

Morphotype: MKSR 1.1.1 SET Team: Fahmi

Used as reference for Unidentified Species Name Name: Sula

Used as reference for Morphotype Determination

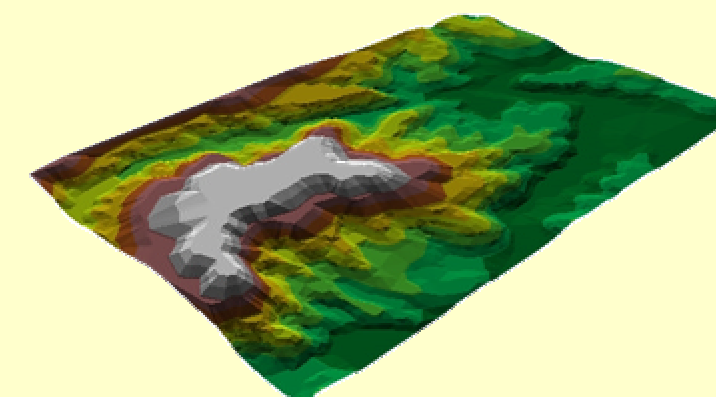
Species: Hevea brasiliensis DateDetermined: 9/30/01

Genus: Hevea Family: Euphorbiaceae Team: Sula man

Refresh species list Name: Bari

Records: 25 of 26

From Digital Elevation Model (DEM), landscape is further classified into land facets (ridge, upper slope, middle slope, lower slope, valley bottom)



(a species being allocated to a functional group according to its pollination, dispersion, seral position characteristics). Landscape related attributes of sampling units, such as distance to natural forest, size of (agro)forest patch, distance to patch edge, etc. will be assessed using GIS to try and disentangle local from inherently supra-local determinants of plant diversity.