ROLE OF REMNANT FOREST AS HABITAT AND SOURCE OF BIODIVERSITY

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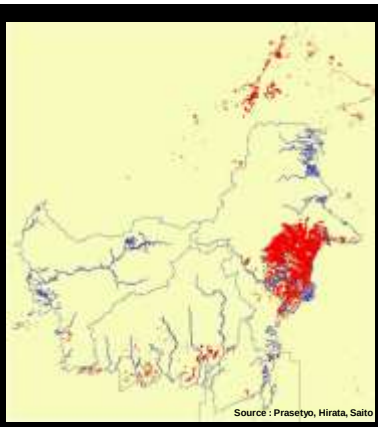
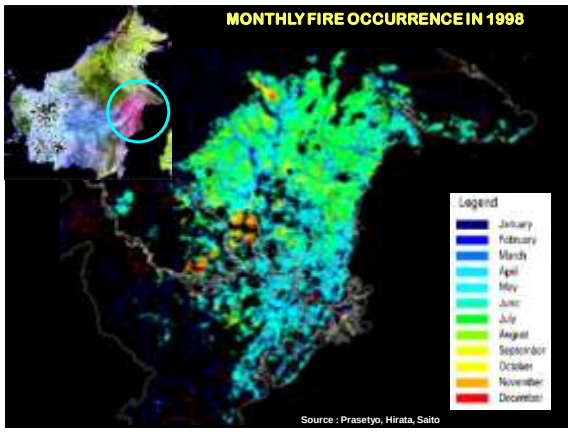
Forest fire 1998

Total affected area :
3.4 million Ha



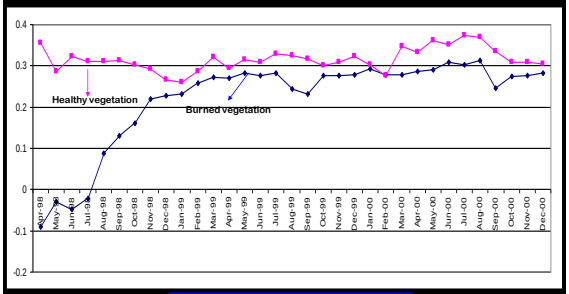
Source : Prasetyo, Hirata, Saito

MONTHLY FIRE OCCURRENCE IN 1998



Source : Prasetyo, Hirata, Saito

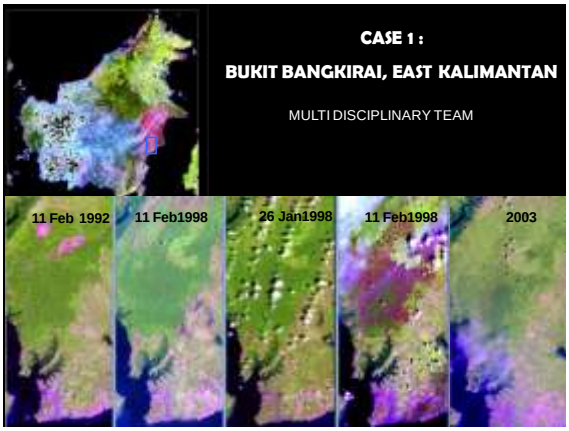
DYNAMIC CHANGES OF MONTHLY NDSWIR DURING 1998 - 2000

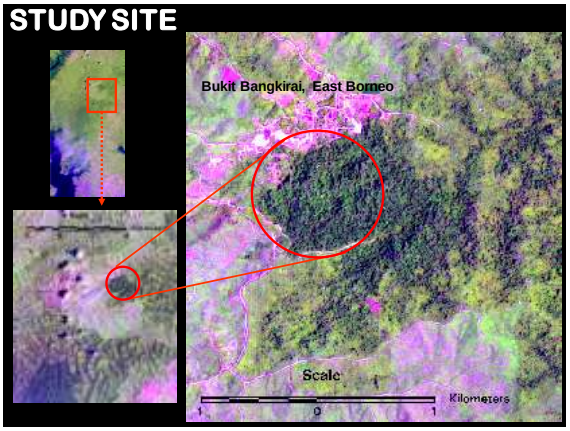


$(NIR - SWIR)/(NIR + SWIR)$

$(4 - 3/(4 + 3)$

RECOVERY AFTER 10 years, Bukit Suharto Park



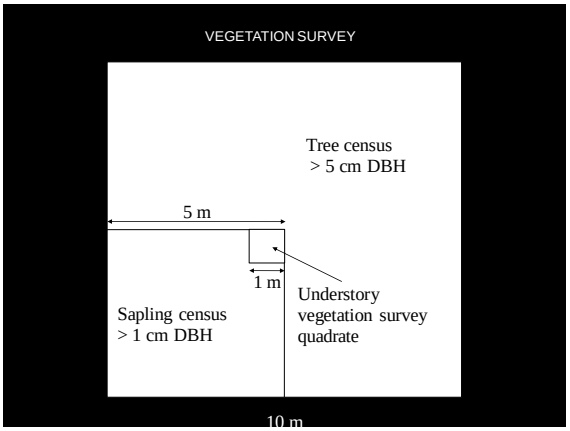


Design Observation Plot

Three type of plots

a. Remnant/Undisturbed Forest (100 x 100 m)
b. Light Damage Forest (Low Disturbance) (60 x 60 m)
c. Heavy Damage Forest (Heavy Disturbance) (100 x 100 m)

- Divided into 10 x 10 m, sub plot
- Vertical profile
- Hemiview photo
- Inventory : trees, sapling, Shrubs/herbs, small mammals



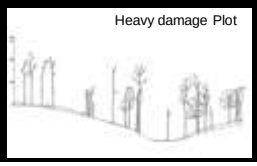
Hemispherical View
Leaf Area Index

PLOT KONTROL

PLOT LIGHT DAMAGE

PLOT SEVERE DAMAGE

Forest Vertical Profile

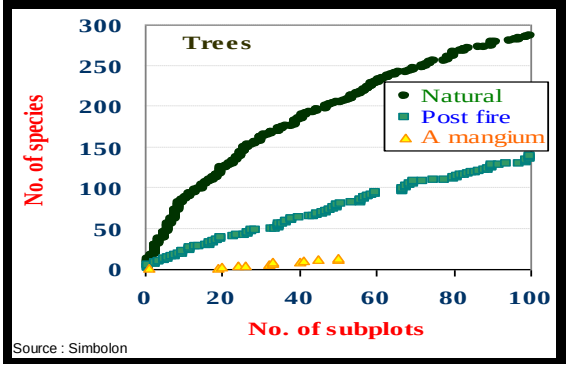


Source : Simbolon

7 years after fire : comparison

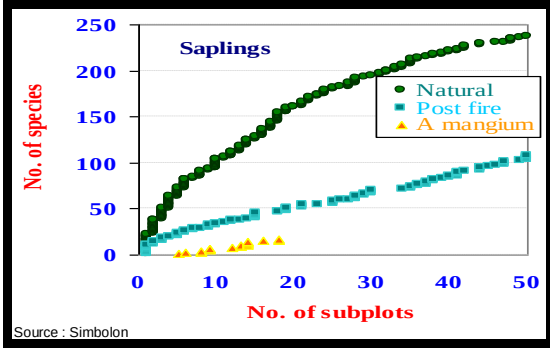
Subject	Plot Type: Remnant (undisturbed)	Light Disturbance FF	Heavy Disturbance FF
Plot size (m x m)	100 x 100	60 x 50	100 x 100
Number of life trees per ha	1391	1000	488
BA of life trees per ha (m^2)	29.86	20.87	5.92
Number of standing dead trees per ha	190	500	583
BA of standing dead trees per ha (m^2)	8.26	8.81	17.47
Crown cover *DBH* ≥10cm (m^2/sub plot)	108.16	82.63	23.17
Number of species	280	128	94
Number of genus	116	76	60
Number of family	43	35	34
Shannon's Diversity Index	2.0706	1.8634	1.3312

Tree Species Number 7 years after Fire



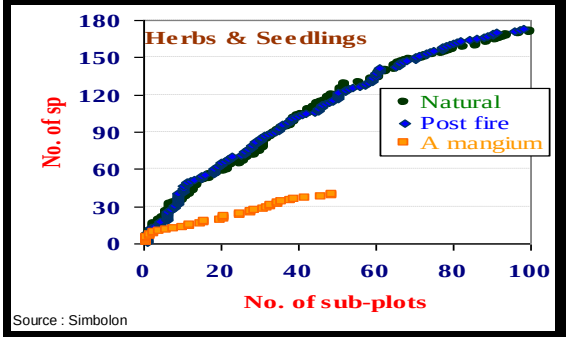
Source : Simbolon

SPECIES NUMBER



Source : Simbolon

SPECIES NUMBER

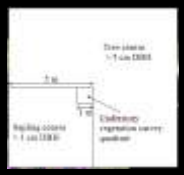


Source : Simbolon

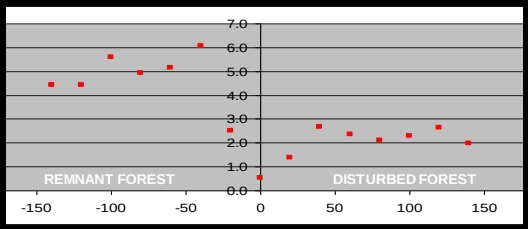
Conclusion : Restoration is just started

REMNANT FOREST AS RESOUCE SPECIES (2008)

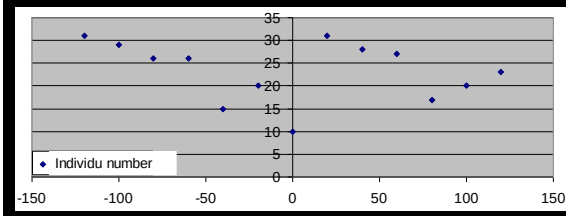
LAI (LEAF AREA INDEX)



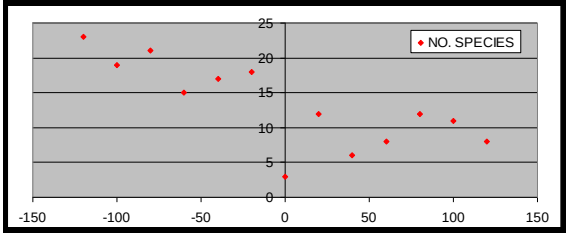
GRADIENT OF LAI



GRADIENT OF INDIVIDU NUMBER



Gradient of No. Species



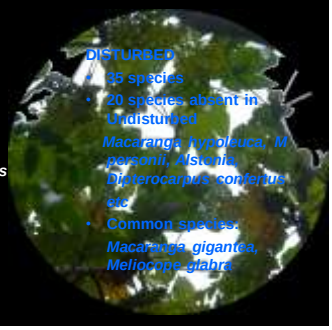
SPECIES COMPARISON

UNDISTURBED

- **73 species**
- **58 species absent in disturbed forest**

Aglaia, Canarium, Shorea, Dacryodes crostata, Dysoxylum, Ochanostachys sp

. **Common species:** ***Shorea leprosula, S ovalis, S johorensis, parvifolia***



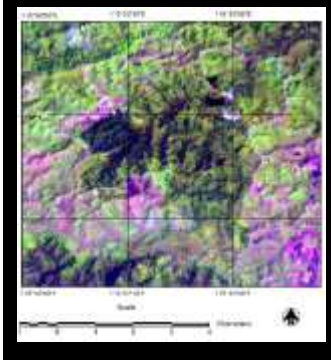
DISTURBED

- ***45 species***
- ***20 species absent in Undisturbed***

Macaranga, hypoleuca, M pruinosa, Alstonia, Dipterocarpus conferta etc

- ***Common species: Macaranga gigantea, Mellocope glabra***

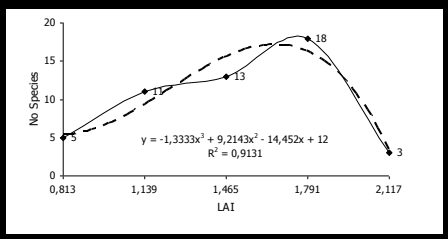
Small Mammal Distribution



LAI (LEAF AREA INDEX)

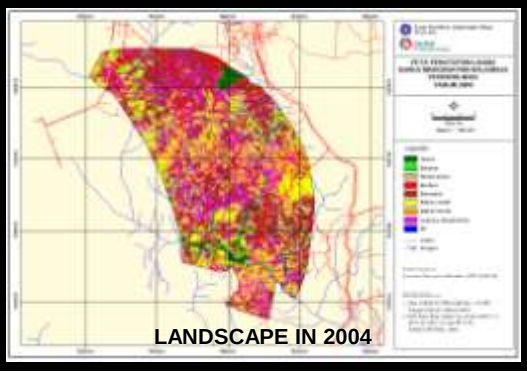
SMALL MAMMAL TRAP

PRELIMINARY RESULT



Most Species captured in the area is not interior forest species specialist, but edge species

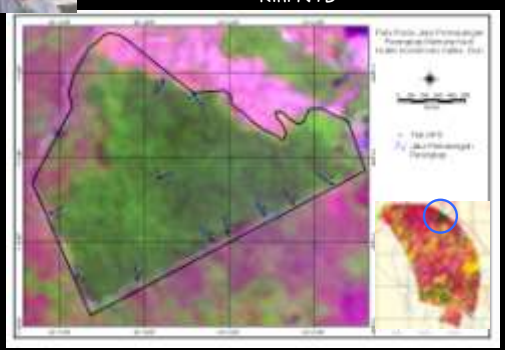
CASE 2 : BALAIRAJA NATURE RESERVE, RIAU



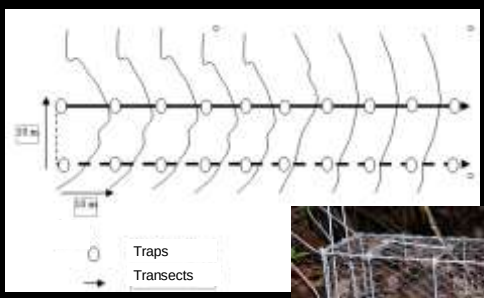
LANDSCAPE IN 2004

SMALL MAMMAL DISTRIBUTION IN REMNANT FOREST : RIAU

Rini NTB

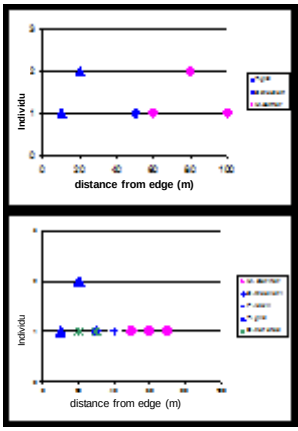


Trap location :



Identified species :

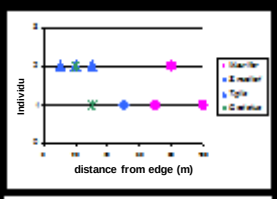
No	Spc name	Line transect											Σ
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	
1	*S.muelleri*	4	3	6	1	-	-	1	1	1	1	2	20
2	*R.tiomanicus*	2	1	-	3	2	2	-	-	-	2	3	15
3	*T.glis*	1	1	-	-	3	2	6	3	3	1	1	21
4	*M.surifer*	-	-	2	4	4	4	4	3	4	-	-	25
5	*C.notatus*	-	-	-	-	1	2	3	2	-	-	-	8
6	*P.lowii*	-	-		-		-	-	1	-	-	-	1
	Total	7	5	8	8	10	10	14	10	8	4	6	90

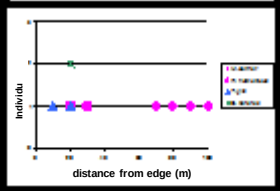


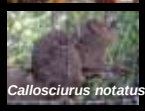
INTERIOR SPECIES :
SEED DISPERSAL

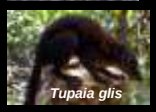
INTERIOR SPECIES

EDGE SPECIES : SEED DISPERSAL









EDGE SPECIES

Summary

- Remnant forest have important role as habitat
- Remnant forest as species source
  - Enhance restoration (seed source)
- Research Question ?
  - How long they can survive ?
    - How long isolation effect take place ?
  - How do we manage the remnant ?
    - How large to ensure species ?
    - What species should be pay more attention ?

Professor **Ilkka Hanski**

- impact of habitat fragmentation on the ecology, genetics and evolution of species.
- From landscapes to molecules,
- Mathematical models of populations and their interaction with the environment