SUSTAINABLE FORESTRY AND REDUCED IMPACT LOGGING PRACTICES OF PEAT SWAMP FORESTS IN MALAYSIA

by

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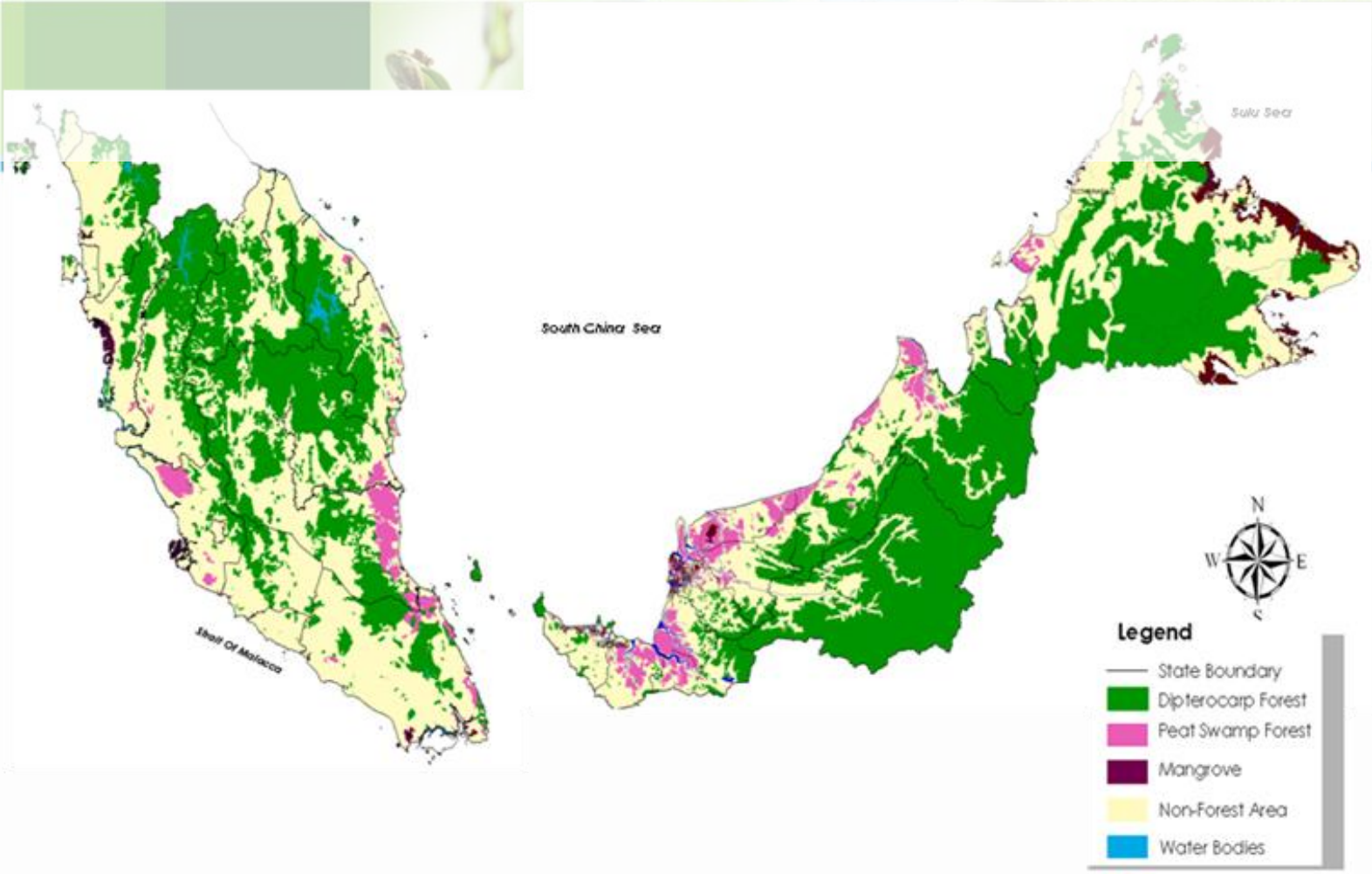
Peat Swamp Forests in Malaysia



PSF in Malaysia (2007)	1.56 million ha	Remarks
Sarawak	1.14 million ha	Production forest
Sabah	0.12 million ha	Conservation forest
Peninsular Malaysia	0.30 million ha	Production forest only in State of Pahang

Sustainable Forestry of Peat Swamp Forest

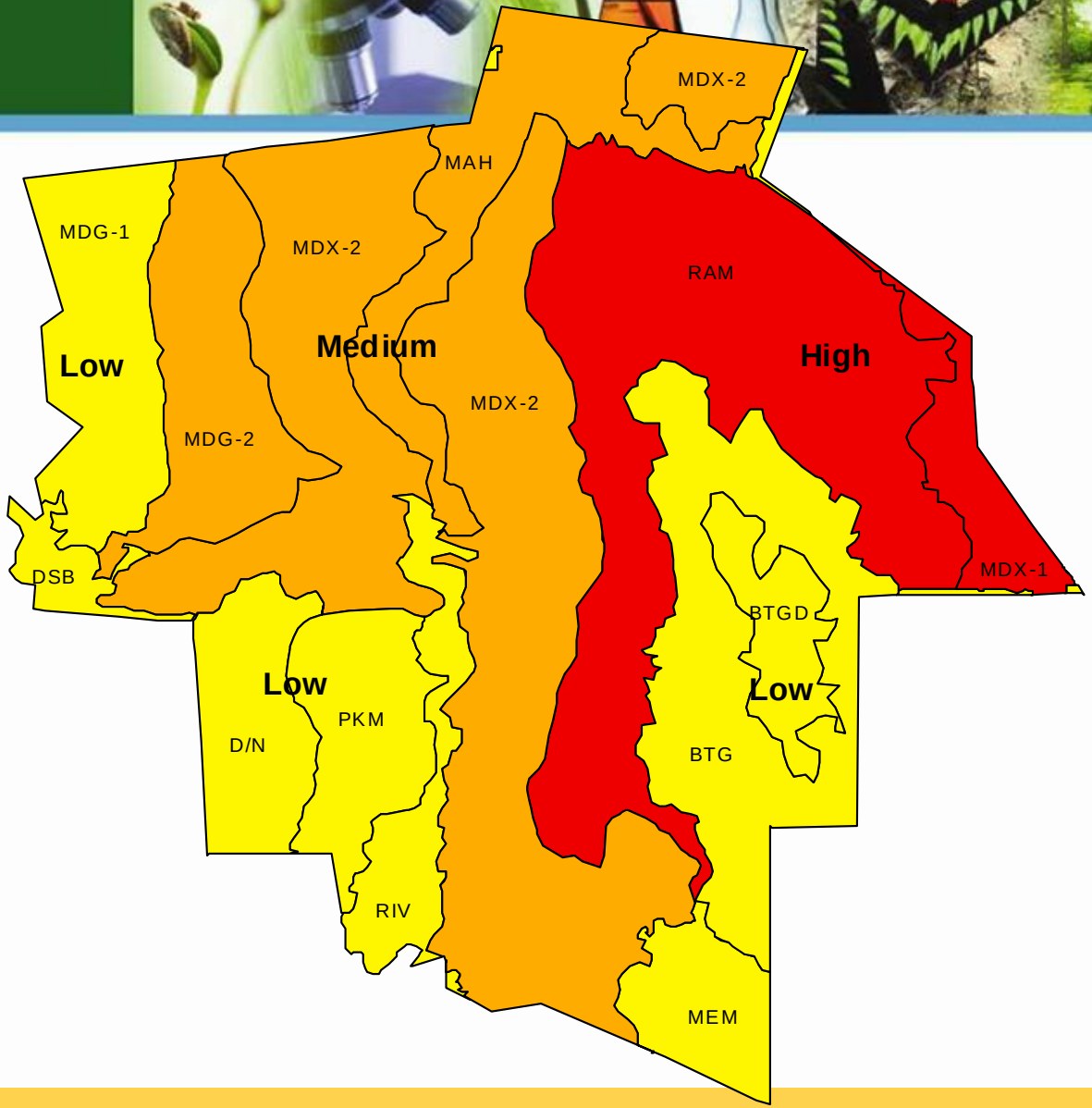
- The management of peat swamp forest (PSF) in Peninsular Malaysia currently adopts the selective cutting approach or called as Selective Management System (SMS) that originally developed for dry inland forests. PSF of Sarawak is being managed by using modified Malayan Uniform System (MMUS).

- As the stand conditions in dry inland forests differ from those of the PSF in terms of species composition, stand structure as well as the habitat condition, it is only appropriate that PSF management prescription should be developed based on its own characteristics.

- In addition, the method of harvesting of PSF should use Reduced Impact Logging (RIL) to minimize impacts on the residual stands. Zulkifli (2005), Mohd Hizamri (2006) and Ismail (2009) had showed that RIL method could be implemented successfully in the PSF environment. Thus, they recommended that the RIL method should be continued to be used, promoted and enforced in PSF harvesting.

Reduced Impact Logging (RIL) in PSF of Pahang

- **Harvesting method used in Pekan Forest Reserve (FR) is Rimbaka Timber Harvester or simply called as Rimbaka. The machine employs the reduced impact logging (RIL) method developed by Syarikat Upayapadu Sdn. Bhd. Since 1999 when the Pekan FR started to be harvested; this has been the only system used for timber harvesting.**



Economic Zones of Pekan FR (source: Danida & UNDP/GEF PSF Project, 2004-2008)

Harvesting method: RIL

Rimbaka timber harvester

Harvesting operation in PSF of Pekan FR, Pahang

Summary of results from the study by Zulkifli (2005) and Ismail (2009) (dbh ≥ 15 cm) on Rimbaka Harvesting

Parameter	Zulkifli (2005)	Ismail (2009)
Trees felled (stems ha^{-1})	8.8	36.9
Log production (m^3 ha^{-1})	43.6	87.0
Undamaged trees (%)	82.4	63.5
Light & medium damaged trees (%)	5.6	10.8
Heavy damaged trees (%)	5.1	11.4
Dead trees (%)	6.9	14.3

Mean Annual Increment (MAI) & Optimum cutting cycle for Pekan FR

Parameter	Range
Vol. MAI (m3/ha/year)	1.75 – 1.88
Optimum cutting cycle (year)	30 - 45

Cost of Harvesting in PSF of Pekan FR (USD1.00 = RM3.50)

No	Items	%	RM/tonne	RM/m3	RM/ha
	Administration cost:				
1	Premium	46.44	216.79	119.24	10,518.84
	Subtotal	46.44	216.79	119.24	10,518.84
	Logging operation cost:				
	Pre-felling				
2	Pre felling inventory	1.55	7.21	3.97	175.00
3	Boundary demarcation	0.17	0.78	0.43	37.75
4	Tree marking	0.44	2.07	1.14	100.31
	Subtotal	2.16	10.06	5.54	313.06
	Felling				
5	Felling	1.50	7.00	3.85	339.63
6	Log haulage (Rimbaka)	3.43	16.00	8.80	776.33
7	Log skidding (excavator)	10.71	50.00	27.50	2,425.93
8	Log transportation (lorry)	1.07	5.00	2.75	242.59
9	Base camp/kongsi construction	1.03	4.80	2.64	232.89
10	Matau construction	1.03	4.80	2.64	232.89
11	Road construction	4.58	21.36	11.75	1,036.36
12	Other cost	28.07	131.04	72.08	6,358.18
	Subtotal	51.42	240.00	132.01	11,644.80
	Total	100.00	466.85	256.79	22,476.70

JTR 5 months after logging

Sequence of operational activities in the Annual Coupe System of PSF in Sarawak for Harvesting Operation

Sequence of Operations	Operational Activities
1	Cut ‘rentis’ for rail lines, and demarcate and survey coupe and block boundaries.
2	Carry out 100% enumeration of annual coupe.
3	Construct rail lines.
4	Construct "Kuda-Kuda", fell and extract timber.

‘Kuda-Kuda’ System in PSF of Sarawak

(source: Sawal 2005)

Harvesting in PSF of Selangor (year of 1999)

Harvesting in PSF of Selangor (year of 1999)

Conclusion

It is important to develop a specific harvesting system for the PSF based on its own physical and ecological characteristics. Among the critical aspects of the harvesting system is a minimized impact of the harvesting operations on the residual stands. This will then in return minimize the cost of silviculture treatments and speed the natural recovery of the trees in the harvested areas.

Studies show that the implementation of the RIL method in PSF helps to minimize damage to the residual stands. It showed that the RIL method had successfully produced relatively low damage and mortality of the residual stands and therefore should be continued and encourages to be used in harvesting of the productive PSF areas.

THANK YOU