B09 ASSESSMENT OF DEFORESTATION & FOREST HABITAT FRAGMENTATION IN JAMBI PROVICE

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A. INTRODUCTION

Indonesia has the third largest extent of the world's remaining humid tropical forest which has high rate of deforestation. Sumatera Island, which is one of the five biggest islands of Indonesia contributes a lot and becomes a centre of significant and rapid forest cover loss in the humid tropics which has implications for carbon dynamics, biodiversity conservation, and local livelihoods (Linkie et al., 2003; Mark et al., 2011; Nyhus & Tilson, 2004). It can be seen that during the period of 2000 – 2011, forest cover of Sumatera Island decrease from 15.1 million to 12.8 million hectare, or approximately 2.3 million forests were converted into other land uses, such as plantation, upland agricultural & bush/grasslands. The changes resulted in fragmented forest across the landscape of Sumatera Island in which, the remnant forest are fragmented and isolated by matrix of man made habitat such as agricultural land & plantation. For the purpose of species conservation, only information the magnitude of changes is not enough, since the species will adapt differently with regard the forest landscape arrangement. For their mobility, some species need continuous forest, another species should be facilitated by a corridor/stepping stone and meanwhile the other don't need forest corridor. Therefore, assessment on the forest landscape structure is important, as a basic information in understanding species distribution and abundance.

B. OBJECTIVES

Objectives of the research are :

a. Conducting assessment on forest landscape structure in Jambi Province during the period 1996 – 2014,
b. Proposing future research agenda

C. METHOD

Analysis of Land cover were based on National Land cover data that produced by Ministry of Environment and Forestry of Indonesia. The data were processed by ArcGIS and *Fragstats* software. Landscape indices were developed by using window moving average of 1 km x 1 km.

D. RESULT & DISCUSSION

D.1. Deforestation

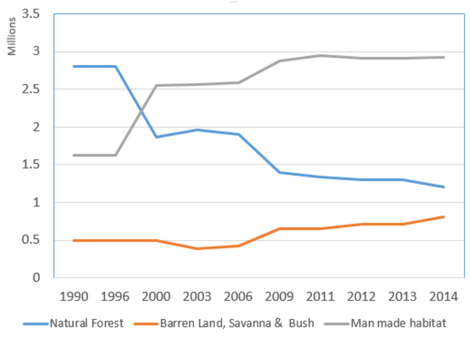

Fig. 1. Changes of Natural Forest

Since 1990 - 2014, natural forest gradually decrease, meanwhile unproductive land cover and man made habitat in the form of plantation, upland agriculture, settlement and other infrastructure increase (Fig.1). As a result, the natural forest were fragmented & isolated by man made matrix habitat (Fig. 2)

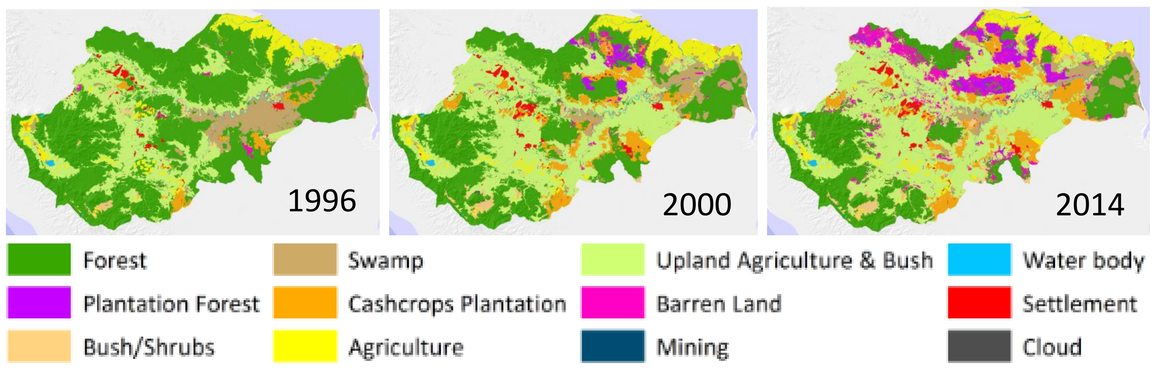

Fig. 2. Land cover changes during 1996 – 2014 in Jambi Province

D.2. Landscape Indices

(a) Number of Natural Forest Patch (NP)

Deforestation and fragmentation also can be revealed by observing value of Natural Forest Patch (NP) of Jambi Province. A lot of natural forest patches were converted into other land uses (NP = 0), meanwhile the remaining natural forest were more fragmented, indicated by greater value of NP within 1 km^2 (Figure 3).

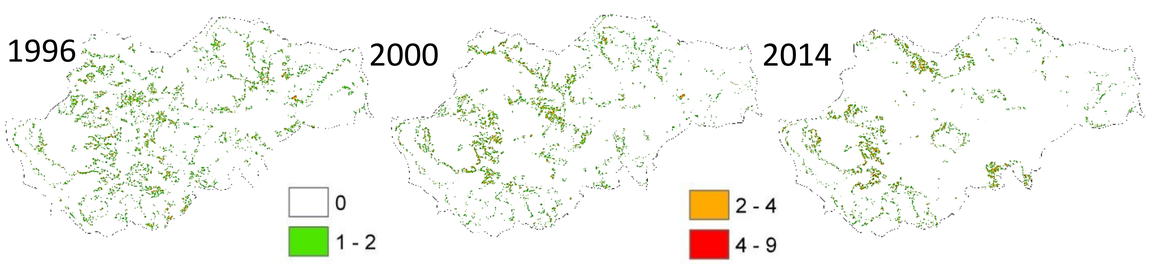

Fig. 3. Changes of Number Forest Patch (NP) within 1 km^2 area

(b) Total Natural Forest Edge (TE)

Number Patch (NP) decrease resulted in lowering the Total Forest Edge (TE = 0), meanwhile the remaining remnant forest were more fragmented, which is shown by greater TE (Fig. 4)

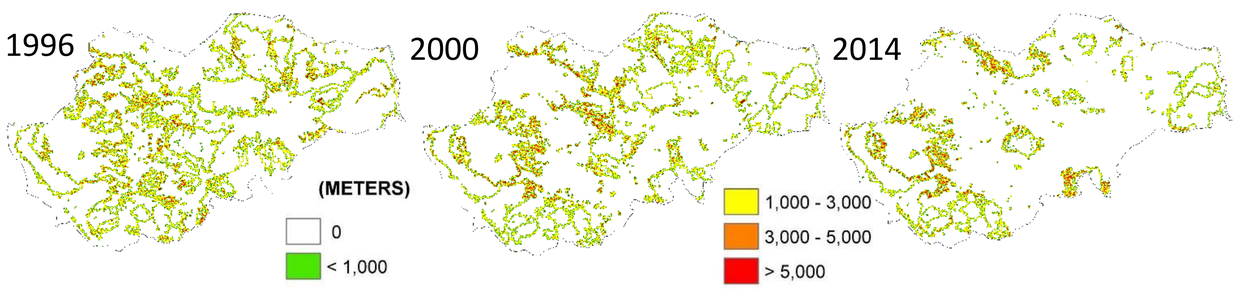

Fig. 4. Changes of Total Forest Edge within 1 km^2 area

(c) Edge Density (ED)

Small ED indicated compact remnant forest, meanwhile higher ED indicated fragmented forest. During the period of 1996 – 2014, the remaining remnant forest were more fragmented (Fig.5)

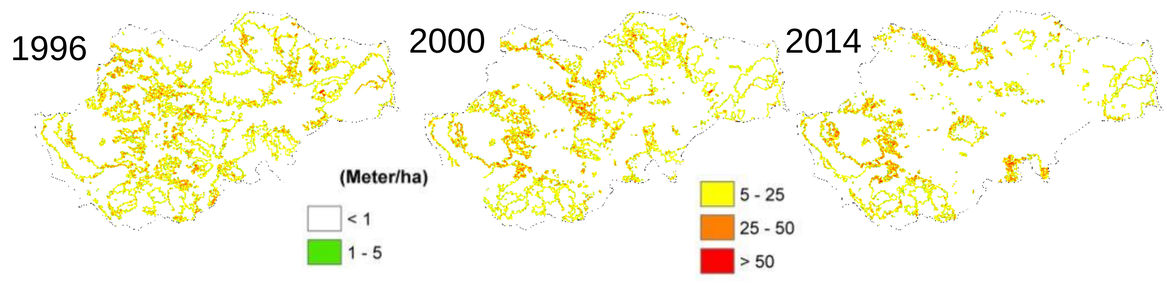

Fig. 5. Changes of Forest Edge density within 1 km^2 area

E. CONCLUSION

Natural forest of Jambi Province were deforested and fragmented indicated by three variable of Landscape Indices, namely NP, TE and ED. Natural forest specialist species would be threatened, meanwhile generalist species with large home range, such as Elephant & Sumatran tiger would face movement difficulties. Conflict between human and wildlife would apparently increase. Forest corridor development and human adaptation strategy are urgently needed. Determining potential wildlife corridor is interesting topic for next research agenda.