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Short communication

Rethinking the 'back to wilderness' concept for Sundaland's forests

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ABSTRACT

Traditional biodiversity conservation approaches emphasize the protection of pristine forests. However, it has become increasingly difficult to secure large tracts of undisturbed forests, particularly in the developing tropics. This has led some conservation scientists and organizations to explore the conservation potential of human-modified habitats, such as selectively logged forests. On the other hand, other scientists have highlighted the perils of overselling the conservation value of degraded habitats and advocate for re-focusing of efforts and resources on protecting primary forests. While there are merits to both contentions, we argue that the "back to wilderness" paradigm has limited relevance in the Sundaland region. This is because: (1) primary forest only makes up a small minority of the remaining forest in the region and most of it is already protected by law; (2) vast areas of selectively logged forest are still susceptible to plantation conversion; and (3) selectively logged forest are important habitats for some of the world's most endangered species. To meet both conservation and development goals, we suggest that tracts of selectively logged forest be assessed for their ecological value and forests of high conservation value be prioritized for better protection through their inclusion into existing protected area networks and/or improved sustainable forestry management.

1. Introduction

In most tropical regions, humans have modified landscapes to such radical degrees that we would be hard pressed to find areas conforming to Thoreau's 'wilderness' ideology. Owing to the growing demand for food, energy, and raw materials, forests are logged (Asner et al., 2005; Shearman et al., 2009) and/or converted wholesale into croplands (Tilman, 1999) and industrial plantations (Koh and Wilcove, 2008; Aziz et al., 2010). The rate of forest loss and degradation is highest in the tropics (Hansen and DeFries, 2004; FAO, 2010) which also harbor the bulk of Earth's known species and are likely centers of undescribed biodiversity (Hamilton et al., 2010; Giam et al., 2011; Joppa et al., 2011). The congruence between the geographic centers of habitat loss and biodiversity richness has therefore resulted in a global biodiversity crisis.

To ameliorate this environmental catastrophe, a logical approach would be to identify and protect remaining pristine old-growth forests. Studies demonstrating the negative impact of logging and agricultural conversion on forest communities (Barlow et al., 2007a; Sodhi et al., 2009; Koh and Wilcove, 2008; Williams-Guillen and Perfecto, 2010) provided empirical support for this strategy. However, scientists have recently called for increased attention to afford better protection to habitats in human-modified environments such as forest fragments and logged forests (Sodhi et al., 2010; Gardner et al., 2009). In fact, several studies have demonstrated the value of certain types of degraded lands (*e.g.*, secondary and selectively logged forests) in conserving some groups of forest biodiversity (Sodhi et al., 2005; Barlow et al., 2007b; Edwards et al., 2010; Gibson et al., 2011; Slade et al., 2011). In particular, the study by Edwards et al. (2010) has attracted considerable interest as it concluded that repeatedly logged forests in Malaysian Borneo could still harbor more than 75% of both bird and dung beetle species found in primary forests.

In response to this controversial claim, a recent commentary expressed concern that overselling the conservation value of degraded lands may inadvertently justify the logging of pristine

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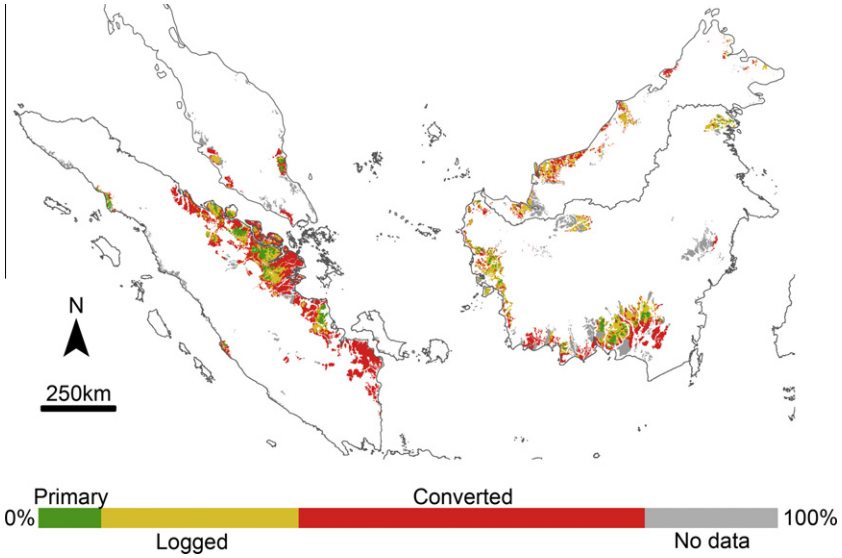

Fig. 1. Distribution of primary forests, selectively logged forests, and converted land on peatland in Peninsular Malaysia, Sumatra, and Borneo in 2008. The bar graph below the map shows the percentage of land area covered by each land-use type. Areas in white are non-peatland. Data from Miettinen and Liew (2010a).

forests (Didham, 2011). Indeed, many of the concerns raised are valid, but echoing the author's own words that 'context is everything', we argue that a paradigm shift toward preserving logged forests in addition to primary forests may be necessary in some scenarios. Here, we provide examples from forests in the Sundaland biodiversity hotspot (*i.e.*, Peninsular Malaysia, Borneo, and Sumatra; Myers et al., 2000).

2. Extent of primary forests and selectively logged forests in Sundaland

Sundaland's forests have suffered the largest deforestation rates in Southeast Asia in the period 2000–2010 (1.5% per annum; Miettinen et al., 2011) and are in greatest need of conservation intervention and management. Plantations and secondary regrowth are predominantly replacing forests. For example, Koh and Wilcove (2008) estimated that more than half of oil palm plantations established between 1990 and 2005 were created by clearing forests. If we were to heed the call to embrace the wilderness concept instead of focusing on the biological importance of selectively logged forests, we must first know the current relative proportions of primary and selectively logged forest, as well as be cognizant of their imminent threats and protection status.

As region-wide remotely-sensed data on the spatial distribution and conversion rates of primary versus logged forests is unavailable for Sundaland, we infer their distribution and relative vulnerabilities based on two recent sources: (1) the 2010 Global Forest Resources Assessment report on Malaysia (FAO, 2010); (2) peatland forest cover datasets across insular Southeast Asia (Miettinen and Liew, 2010a,b). In Malaysia, 57% of the total terrestrial area remains under the cover of natural forests (19,324,000 ha), of which 20% (3,820,000 ha) are reportedly primary forests and 80% (14,829,000 ha) are classed as "other naturally regenerated forest" (*i.e.*, selectively logged forests and secondary forests) (FAO, 2010). As FAO did not consider possible pockets of primary forest within permanent reserved forests (with the exception of virgin jungle reserves) and stateland forests, these figures may slightly underestimate the primary forest area in Malaysia. Conversely, FAO may have overinflated the area of primary forests as it did not consider the fact that some virgin jungle reserves have in fact been previously logged and/or disturbed (Laidlaw, 1998, 2000). However, in the absence of more precise data for Malaysia, we believe that the FAO data provides a reasonable estimation of the primary forest extent as the magnitude of the uncertainty highlighted above is likely to be low. In the peatlands of Peninsular Malaysia, Sumatra and Borneo, only 10% (1,560,000 ha) remain as primary forests (defined as those showing no or little sign of human disturbance) while logged forests cover more than 3 times the area of primary forests (4,912,000 ha) (Miettinen and Liew, 2010a; Fig. 1). In Sumatra and Kalimantan, forests that are completely undisturbed only cover 3% of the total peatland area (Miettinen and Liew, 2010b). If we were to conserve only primary forests in Sundaland, we may be leaving large expanses of potentially ecologically-valuable logged forest open to the possibility of conversion.

3. Protected area coverage in primary versus selectively logged forests

In terms of protection, 100% of the primary forests in Peninsular Malaysia, for example, are already legally protected (FAO, 2010) as wildlife reserves under the Protection of Wildlife Act (1972) [now the Wildlife Conservation Act (2010)], protection forests under the National Forestry (Amendment) Act (1993), and national or state parks under various state enactments. Therefore, conservationists in Malaysia have been looking towards getting production forests gazetted as protected areas for some time; the newest protected areas in Malaysia, in fact, consisted of forests that were previously selectively logged in some areas (*e.g.*, Perlis State Park, Gunung Stong State Forest Park, Royal Belum State Park, Penang National Park). Now, more than ever, logged forests require urgent attention as they have become more susceptible to conversion to plantations (Aziz et al., 2010). Indeed, according to FAO (2010), forest conversion in Malaysia from the period 1990–2010 involved only selectively logged forest (Fig. 2).

In Indonesia, under the moratorium on forest clearing issued via presidential decree on 20 May 2011, all primary forests on mineral soil, as well as primary and secondary forests on peatland, will be protected from conversion for the next two years (Instruksi Presiden Republik Indonesia, No. 10/2011; http://sipuu.setkab.go.id/PUUdoc/17176/INPRES0102011.pdf). Although the definition of 'primary forest' is not stated in the presidential decree, it most likely follows the definition given by the Indonesian Ministry of Forestry which classifies primary forests as those that have never been logged (Wells and Paoli, 2011), thereby excluding selectively