

Conservation & Society



Landless Farmers, Sly Opportunists, and Manipulated Voters: The Squatters of the Bukit Barisan Selatan National Park (Indonesia)

Patrice Levang^{a,b,#}, Soaduo Sitorus^c, David Gaveau^c and Terry Sunderland^c

^aInstitut de Recherche pour le Développement (IRD), Unité Mixte de Recherche Gouvernance, Risque, Environnement, Développement (UMR GRED), Montpellier, France

^bCenter for International Forestry Research (CIFOR), BP 2008, Yaoundé, Cameroon

^cCenter for International Forestry Research, Bogor, Indonesia

[#]Corresponding author. E-mail: p.levang@cgiar.org

Abstract

The Bukit Barisan Selatan National Park in southern Sumatra (Indonesia) has been on the UNESCO list of World Heritage Sites since 2004. Home to tigers, elephants, and rare Sumatran rhinos, the Park is also home to numerous squatters since the early 1970s. Part of the Park was restored after forcible evictions in the 1980s. However, since the end of General Suharto's authoritarian rule in 1998, the number of squatters has been on the increase. This paper provides for the first time a reliable estimation of the number of people encroaching in the Park and presents a profile of the various kinds of squatters living in and around the Park. It shows that all encroachments are not alike, nor are the squatters. Poor landless migrants side with opportunists taking advantage of weak law enforcement, while local politicians try to build a constituency by backing illegal activities in the Park. As a consequence, any action to salvage the Park will have to take into account the complexity of the political ecology, policy environment, and socio-economic nature of each encroachment.

Keywords: Bukit Barisan Selatan National Park, Sumatra, Indonesia, protected areas, conservation and development trade-offs, law enforcement

INTRODUCTION

The issue of protected areas and their impacts on rural communities is somewhat contentious (Brockington and Igoe 2006; Cernea and Schmidt-Soltau 2006). Despite an acknowledged lack of empirical evidence that protected areas universally deleteriously affect local livelihoods (Brockington and Igoe 2006; Robinson 2006; Wilkie et al. 2006), it is often reported that the creation of protected areas ultimately leads

to human and/or economic displacements, through voluntary or forcible relocation of populations living inside protected area boundaries (Brockington 2004; Brockington et al. 2006; Norgrove and Hulme 2006; Rangarajan and Shahabuddin 2006; Johannesen 2007), or by restricting access to land and other natural resources within protected areas (Cernea 2005; Agrawal and Redford 2009). However, such discourse is rarely a 'black and white' issue (Wiens 2007), as the social and political implications of biodiversity conservation through protected area establishment are inherently complex (Brechin 2002; Adams and Hutton 2007), and a growing body of literature is questioning the veracity of such assumptions for a number of reasons (Hayes 2006; Bray 2007; Caro and Scholte 2007; Holmes 2007; Maisels et al. 2007; Curran et al. 2009). This is because the very issue of protected area 'effectiveness' has been questioned (Hayes 2006; Caro and Scholte 2007; Porter-Bolland et al. 2011) as many protected areas lack the institutional or financial capacity to undertake

Access this article online	
Quick Response Code: 	Website: www.conservationandsociety.org
	DOI: 10.4103/0972-4923.101838

the minimal amount of law enforcement required to relocate enclaved communities or restrict access to forest resources (Hayes 2006). In addition, local resistance to conservation, even if it is only perceived as impinging on local livelihoods, characterises many protected areas (Holmes 2007). As such, in many protected areas human impacts continue relatively unabated, and non-compliance to regulations is customary (Robbins et al. 2006). For example, it is claimed that many protected areas are in fact encroached upon for agricultural production (Scherr and McNeely 2005). Law enforcement is also considerably compromised by poverty and corruption (Wright et al. 2007). Tropical protected areas, where they are established and where enforcement is a deterrent to illegal activities, are reported to displace deforestation to their adjacent areas ('neighbourhood' leakage), i.e. by attracting migrants and development projects in adjacent lands, thereby increasing deforestation along the protected area boundary, in areas that would have otherwise remained undisturbed (Oates 1999; Scholte 2003; Wittemeyer et al. 2008), although this has been disputed (Hoffman et al. 2011).

Are protected areas well-managed institutional entities that oppress the weak (Brockington 2004) and does protected area establishment result in loss of resource access for the poor (Cernea and Schmidt-Soltau 2006)? Porter-Bolland et al. (2011) argue that community managed protected areas are more effective at achieving conservation outcomes than those that exclude local people, and suggest that the social impacts of many protected areas are overstated. We are cognisant of the fact that different national or regional contexts may lead to quite different outcomes. However, the recent history of the Bukit Barisan Selatan National Park shows that even in the case of a single national park, the social and political issues surrounding the management of protected areas are extremely complex and require a deeper understanding of the political ecology, policy environment, and socio-economic nature of each single encroachment.

This paper attempts to draw a portrait of the Bukit Barisan Selatan National Park squatters, their numbers, and actual location. Are they indigenous people rejecting forcible eviction from their ancestral lands, or are they poor landless migrants? Are they pushed into the Park by utmost poverty, or are they migrating in response to an interesting economic opportunity? Why did the new encroachment appear immediately after the fall of Suharto in the late 1990s? Has poverty been on the rise? Or has encroachment been the result of the fact that forceful evictions were no longer possible during the *reformasi* era? How is it that these squatters feel empowered to encroach upon the Park? In Indonesia, no individual would take such a risk, unless he is part of a determined group and/or benefits from strong backing, and with few punitive measures as a result. Who is behind these squatters? How are they organised? Furthermore, encroachments do not appear at random locations. Without question, more accessible areas are at higher risk. But some encroachments are opened in rather remote areas; obviously this cannot be spontaneous.

THE BUKIT BARISAN SELATAN NATIONAL PARK: A WORLD HERITAGE SITE IN JEOPARDY

Historical background

Until the beginning of the twentieth century, 90% of southern Sumatra was still covered by forests and its population was low. The total population of the province of Lampung for instance, was estimated at 150,000 inhabitants in 1905 (Benoit et al. 1989). The population was essentially located around the Ranau lake, on the fertile levees of the main rivers and at the water resurgence areas at the foot of volcanoes or basaltic outcrops. The development of Dutch colonial plantations was the first attempt at large scale deforestation outside areas of traditional swidden cultivation, as practiced by local inhabitants. The *Kolonisatie* projects¹ (Pelzer 1945; Levang 1997), aiming at resettling rice farmers from overpopulated Java to Lampung, soon took over between 1905 and World War II. The colonisation front initially progressed along the major roads and the railway to the north and the east of the province, with numerous spontaneous migrants joining the government sponsored ones. Once the eastern penneplain was colonised and land became scarce, the deforestation front progressively moved towards the west of the province.

In 1935, the government of the Dutch East-Indies created the South Sumatra I Nature Reserve (SS1NR). Thanks to the very low population density prevailing in western Lampung and southern Bengkulu at the time, the Reserve could be created without infringing the local *marga* customary land rights². The SS1NR could be preserved from deforestation by the absence of major road infrastructure and the very low population density until the early 1970s. The building of the road from Bukit Kemuning to Liwa and Krui, and the creation of the transmigration centres at Sumberjaya (BRN projects³) from 1951 till 1957 were the first attempts to open up the area (Benoit et al. 1989). With the advent of the authoritarian *orde baru* (=new order in Indonesian) regime of General Suharto after the coup allegedly fomented by the Indonesian Communist Party, a second influx of migrants from Java was recorded, when former members of the BTI⁴ fled to the mountains of Lampung to escape the violent reprisals by the army (Benoit et al. 1989). The growing influence of the military in the Indonesian economy was soon to be felt in the forestry business. Logging companies operated by the military increased their activities around and often inside the SS1NR throughout the 1970s (Scholz 1983; Benoit et al. 1989).

However, the major turning point in terms of in-migration was the 1977 peak in the international price of robusta coffee (*Coffea robusta*), which triggered spontaneous mass migration to the mountainous areas of southern Sumatra (Scholz 1983; Benoit et al. 1989; WWF 2007; Gaveau et al. 2009) and led to the development of a major deforestation front on the eastern fringe of the Park. Between 1976 and 1982, about 195,000 ha were cleared and converted into coffee plantations by an estimated 100,000 immigrants mainly originating from Java (Gaveau et al. 2009). Deforestation rates were closely

correlated with local⁵ coffee prices. By the end of the twentieth century, all easily accessible forests under protection status (*hutan lindung*⁶) to the east of the Park had been converted into coffee plantations. Today, a few forest patch remnants are found on the mountain tops, while the forest area of the Park has reduced by 63,726 ha⁷, representing a 21% loss of forest cover from 1972 to date (Gaveau et al. 2009). Migrant coffee farmers produced an estimated 20,000 metric tons of robusta coffee in 2006 inside the Park (WWF 2007). This represented ca. 4% of Indonesian overall annual robusta coffee production (Gaveau et al. 2009).

Until the early 1980s, the Indonesian government was more interested in development than in conservation, and achieved little in preventing illegal logging and encroachment in protection forests and in nature reserves. However, three events during the early 1980s have caused Indonesia to revise its conservation policies and lay the foundation for its current national park system. These were the UNDP/FAO National Parks Development Project (De Wulf et al. 1981), the promulgation of the first Environmental Management Act (EMA) (Law of 1982, State Gazette 1982, n° 3215), and the third World Parks Congress (WPC) held in Bali in 1982 (Sakumoto 1999). Following these policy changes, the Indonesian government upgraded the SS1NR to the status of a National Park in 1982 under the name of Bukit Barisan Selatan National Park, and then subsequently increased regulations, which were to be enforced in order to safeguard the remaining forests. One intensive but protracted eviction campaign took place inside the Park during the period 1982–1985 (Gaveau et al. 2009). Park rangers patrolled the southern area of the Park regularly, discouraging newcomers from entering the Park (Sakumoto 1999), and when necessary, used more coercive measures with the help of the military and the police to expel hundreds of squatters from the Park. In the northern part of the Park, encroachment persisted in specific areas but remained limited in scale, mainly because forest land was still plentiful outside Park boundaries, and because road networks were not yet well developed.

The 1997 Asian financial crisis and the 1998 turmoil put an end to 32 years of General Suharto's rule. The financial crisis started with a 400% devaluation of the Indonesian rupiah (IDR) versus the US dollar, and consequently high local coffee prices acted as a major incentive for opening new coffee plantations. The crisis further translated into less investment in the national parks service and hence the number of patrols was reduced and there was a virtual cessation of evictions of illegal farmers. Many evicted squatters subsequently returned to their former plantations inside the Park or cleared new plots for coffee development, and from 1999 onwards, the process of encroachment increased significantly, especially in the northern part of the Park. Much to the contrary of the previous period, the new clearings were not always adjacent to older encroachments.

In 2004, the Park, along with the Gunung Leuser and the Kerinci Seblat National Parks, was added to the UNESCO list of World Heritage Sites. Encroachments in the three parks were

so numerous that it was even considered to directly include them in the list of endangered World Heritage Sites.

To date, Park rangers have proved unable to control the flow of newcomers or expel long time encroachers. Local elites usually blame this ineffectiveness on allegedly inefficient and corrupt Park rangers, while the latter complain about the lack of political support by the former. Both assertions are partly true. While publicly lamenting the destruction of the Park, the local elite rigidly opposes any attempt at expelling squatters from inside the Park as most candidates cannot resist promising their constituents open access to the protected area. In periods of electoral campaign, suspicions of backing by local elite give way to absolute certainty; such backing of encroachers, and thus potential voters, by local elites has been shown in other parts of the country (McCarthy 2002).

Who are these squatters?

Throughout this paper, the term 'squatter' refers to people illegally farming plots inside the Park. They might live and farm inside the Park boundaries, or live in villages close to the Park with at least part of their holding inside the Park. To us there is no value judgment attached to the term and it should not be considered as pejorative. Squatters leave nobody unconcerned. They are either considered as illegal occupants endangering the Park's wildlife and biodiversity, or as poor landless farmers with no option other than encroaching the Park. However, nobody has a clear idea of who these squatters are. The overall purpose of this paper is to investigate whether landlessness (poverty), opportunism, or social networks of power (backing by political elite) are the driving forces of deforestation in the Park.

METHODS

Sampling technique

The first stage in our research consisted of locating agricultural encroachments into the Park using satellite imagery. Detailed processing methods for generating and validating forest cover and deforestation maps inside and outside the Park covering a total area of 11,700 sq. km have been described previously (Gaveau et al. 2007). A total of six time-series LANDSAT satellite images acquired in 1972 and in 2006 have been analysed to identify encroachment into the Park, defined as those areas within the Park where forest has been removed since 1972. The imagery for these years had negligible cloud cover (<3.5%), and allowed the generation of an encroachment map spanning 34 years.

Based upon the encroachment map, we selected 10 encroachment sites from north to south along the Park border where we carried out socio-economic surveys. These were Sidorejo, Dusun Lama, Pulau Tengah, Rata Agung, Cawangaro, Summersari, Way Haru, Karang Brak, Way Nipah, and Bumi Hantatai (Figure 1, Table 1).

Interviews were conducted from north to south along the Park

border at 10 locations (Figure 1). Respondents were chosen along the main tracks leading from the border of the Park to the most remote hamlets inside the Park. Eighty eight hamlets were visited in the 10 areas of encroachment. The sampling size was maximum (all squatters met were interviewed) in the smaller and remotest hamlets, and randomised in the large and more accessible encroachments (one household out of five was included in the sample along a transect from the border to the inside of the Park).

Field surveys were organised in four periods starting in early 2006 to mid-2007 and lasted a total of five months. Altogether, 10 trained enumerators were hired for gathering information to complete the questionnaires. A total of 1,384

households representing 5,771 people were interviewed. Questionnaires were semi-structured, enabling the possibility for more open-ended questions concerning perceptions and broader livelihood choices. The data collected concerned the household composition, age, gender, place of origin, ethnic group, education and training, history of migration, livelihood options, size of holding, tenure and cropping choices, etc. Additional semi-structured interviews were carried out with key persons such as group leaders, village heads, village elites, etc. A specific survey of perceptions about conservation and development issues of local, district, and provincial elites was carried out separately. The results of this survey are presented in another paper (Levang et al. 2007). Complementary

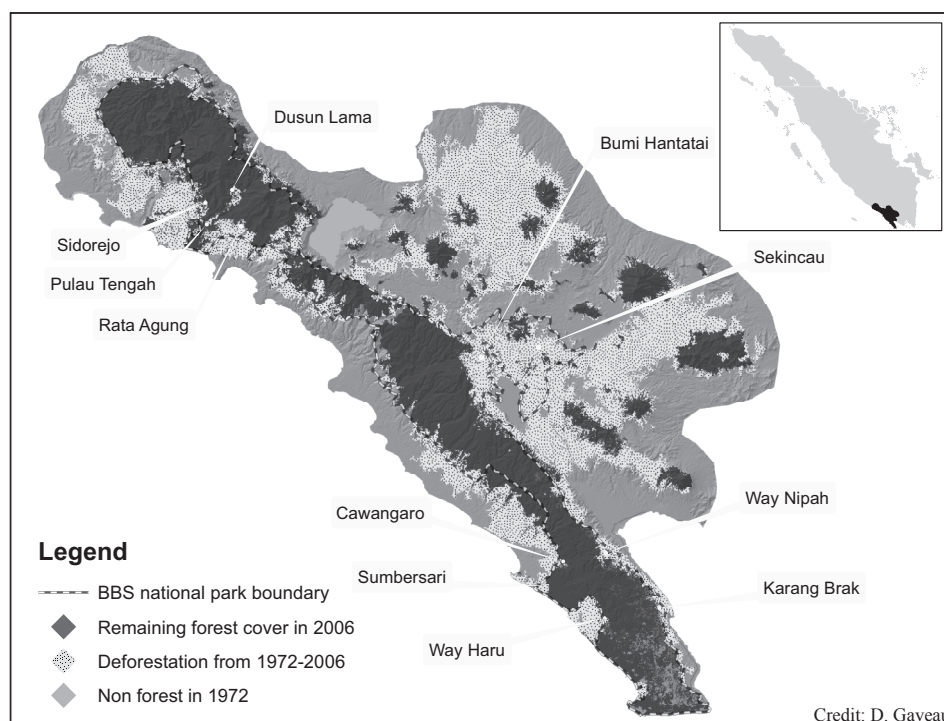


Figure 1
Cumulative forest loss from 1972 to 2006

Table 1
Estimation of the number of squatter households in the park

Code	Encroachment	Area of encroachment (ha)	Average holding size per HH inside NP (ha)	Estimated number of squatters (HH)	Average size of HH	Estimated number of squatters (individuals)
1	Sidorejo	1,687	2.2	778	3.75	2,920
2	Dusun Lama	721	1.8	398	3.72	1,480
3	Pulau Tengah	442	1.5	295	3.72	1,097
4	Rata Agung	3,124	1.2	2,603	4.26	11,077
5	Sumbersari	639	1.0	620	4.46	2,763
6	Cawangaro	241	0.5	483	4.82	2,328
7	Way Haru	366	2.8	130	5.25	683
8	Karang Brak	1,722	1.3	1,344	4.04	5,432
9	Way Nipah	1,976	1.2	1,620	4.33	7,020
10	Bumi Hantatai	8,393	1.9	4,336	3.94	17,071
11	Sekincau	26,200	1.9	13,537	3.94	53,291
12	Other enc.*	9,579	1.7*	5,505	4.02*	22,130
	Total	55,090	1.7	31,650	4.02	127,293

*Concerns about 10 active encroachments scattered around the Park. Average holding and family size values were used in the absence of precise data.

household income surveys were carried out in 2009 in specific locations. Detailed results of these surveys will be presented in separate papers.

Reliability of answers

Concentrating our survey exclusively on squatters living inside the Park could have been negatively interpreted. Therefore, we focused our survey on the areas around the Park rather than on squatters inside the Park. Another reason for doing so was that in some encroachments, most farmers were living outside the Park and as such could not be considered as squatters *sensu stricto*. However, to simplify matters, in the following text, we will keep the same definition as mentioned above, ‘squatter’ referring to a household owning (or claiming the ownership) or farming at least one plot of land located inside the Park boundaries.

Surprisingly, such data were quite easy to obtain. Once convinced that we were not working for the Park authority, respondents felt they had nothing to fear from us and answered most of our questions very honestly, even the more sensitive ones. For instance, no squatter tried to argue that he wasn’t infringing on the Park⁸. In some specific locations, settlers argued that they legally bought the land from village officials and only later discovered that, unbeknown to them, the plots were located inside the Park.

More technical questions (regarding farming systems, cropping techniques, etc.) were answered without hesitation. The only reluctance concerned questions about active backing by Park rangers or local elites. However, after spending a few days with the squatters, enumerators were able to solicit even this sensitive information.

RESULTS

According to the definition retained for a squatter (owner or farmer of a plot inside the Park), not all households interviewed during the field surveys were eligible. From a total of 1,384 households surveyed, 354 households living close to the Park’s border did not own or farm a plot inside the Park (or did not admit it). Thus ‘only’ 1,030 households could be considered as squatters. Further data analysis will be limited to these households only.

Estimation of the number of squatter households in the Park

Between 1972 and 2006, a total of 63,000 ha of primary forest were cleared inside the Park. Among these, about 8,000 ha were returned to forest after the forcible evictions of the 1980s. For 2006, according to the latest satellite image analysed, a total of 55,000 ha can be recorded as active encroachments. Considering the surface area of encroachments in the Park and the average holding sizes and household sizes obtained by field surveys, we can provide a relatively reliable estimation of the number of households and household members whose livelihoods depend, at least partly, on income generated inside the Park (cf. Table 1).

The 26,200 ha Sekincau encroachment is by far the largest, Bumi Hantatai / Suoh coming second with 8,400 ha. The two encroachments were cleared by a massive wave of Javanese immigrants between 1976 and 1979. Assessing accurate numbers of squatters is problematic, as many illegal farmers live in villages bordering the Park. Commuting is facilitated by the easy access to the Park from the Suoh enclave and to the Sekincau outgrowth. The two encroachments together contain approximately 18,000 families (~70,000 individuals).

The 3,124 ha Rata Agung encroachment comes third, with an estimated number of 2,600 squatter households, or approximately 11,000 individuals. Squatters gradually gained ground on the Park from 1985 onward. But following the fall of President Suharto’s regime, the number of squatters sharply increased, for reasons described above. All other encroachments are less than 2,000 ha in size and scattered all around the Park.

In 2006, for the whole Park, about 32,000 households (127,000 individuals) encroach on 55,000 ha. These impressive figures might well be a conservative estimate, as we could not reach the households locally called ‘seasonal squatters’, who entrust their coffee plantations to neighbours and only come to the Park during the harvesting season.

Origin of the squatters: migrants and local migrants

When the South Sumatra I Nature Reserve was created in the 1930s, there were very few small settlements close to or inside the Park. Some enclaves such as Suoh, Kubu Perahu, and Way Haru were created. The small Semendo settlement of Dusun Lama located inside the Park was relocated, probably by agreement, as we couldn’t find any account of forcible closure of the settlement. At the time of creation of the Reserve, considerable areas of forest were still present in much more accessible areas.

There is a great ethnic variability between encroachments as can be seen from Table 2. The majority of encroachments, such as Sidorejo, Summersari, Bumi Hantatai, and Way Nipah, are dominated by Javanese settlers. Rata Agung is the only encroachment with a majority of Lampung Pesisir settlers. Semendo and Pasemah are still numerous in Dusun Lama and Pulau Tengah settlers, but are progressively replaced by newcomers⁹ from Java or other distant places.

Most squatters are recent or second-generation immigrants originating from the neighbouring island of Java: Javanese, Banten, Sundanese, and Madurese. The second largest population belongs to southern Sumatran ethnic groups: Lampung Pesisir, Semendo, and Pasemah. All other groups from all over the archipelago are a minority. Even squatters belonging to groups indigenous¹⁰ to the south of Sumatra originate from villages located far away from the Park. A great majority of the Lampungese squatters of Rata Agung originate from villages in the vicinity of Krui¹¹, where they still have their official residence. Only two squatters (out of the 386 of our sample) were born in Rata Agung.

By considering the ethnic composition and relative importance of the various encroachments, we can estimate the

overall ethnic composition of the Park squatters (Figure 2).

Javanese migrants greatly outnumber all other ethnic groups. The Lampung Pesisir ethnic group ranks second in the total number of settlers, thanks to their domination of the Rata Agung encroachment. Sundanese migrants from West Java follow; they are present in most encroachments dominated by the Javanese. All other groups are of secondary importance. Overall, it appears clear that no indigenous people can claim that they have been displaced by the creation of the Park. Over time, by natural population increase and substantial migration from other parts of Lampung, Bengkulu and South-Sumatra, local ethnic groups gradually moved closer to the border of the Park yet the influence of these local groups remains negligible compared to the huge impact of immigrants from the neighbouring island of Java.

Household characteristics

Forest encroachments are typically frontier areas characterised by poor governance, a lack of infrastructure, and poor social support such as health and educational facilities. As such, the household heads are generally male, young (under 30 years of age), and often remain unmarried. Their level of education is generally low, with the majority of them being school dropouts. A similar observation was made by Tsing (2005), in what she labelled ‘fringe communities’.

The distribution of heads of household according to their current age is typically lognormal, with an average value of 36.8 years. However, if one considers the age at arrival on the

encroachment, then the distribution is much tighter, with an average of age 28.8 years. A vast majority (62%) of household heads arrived on their present location before the age of 30. Some were even born on the encroachment (Figure 3).

The average size of households is currently 4.1 people, but this size is much smaller in more recently established settlements, or if we consider the households’ sizes upon arrival to the area.

Among the 1,030 illegal households, only a very small minority is headed by women (1.7%). This is specific to forest frontiers as the percentage of female headed households is usually much higher, especially in Javanese settlements. Another specificity is the rather high number of bachelors (13.7%), which is typical of forest frontier areas.

The level of education is highly variable; it depends less on the encroachment than on the squatter’s ethnic group. On average, the education level is higher among the Lampung Pesisir and South-Sumatranese ethnic groups, and lower among the Javanese and Sundanese groups. The proportion of primary school dropouts is especially high in the case of Javanese and it even reaches 53% of the Sundanese squatters (Figure 4).

At the average national level (BPS 2002), 39% of Indonesians over the age of 15 possess at least a junior high school degree. In our sample, only the Pasemah, who are best ranked among all ethnic groups, approach this score (34.5%). Among the Javanese and Sundanese squatters, respectively only 14.6%, and 8.6% of the household heads are in possession of a junior high school degree.

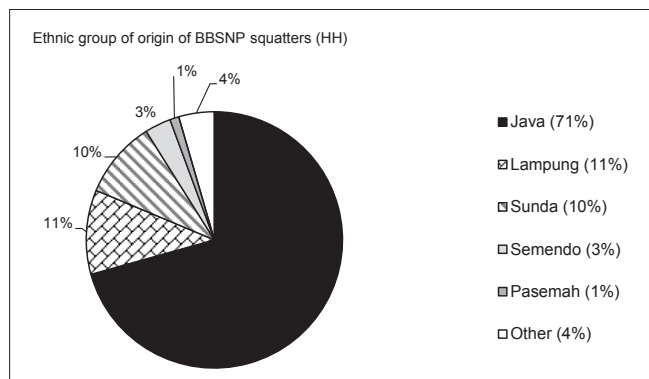


Figure 2
Ethnic group of origin of the Park squatters

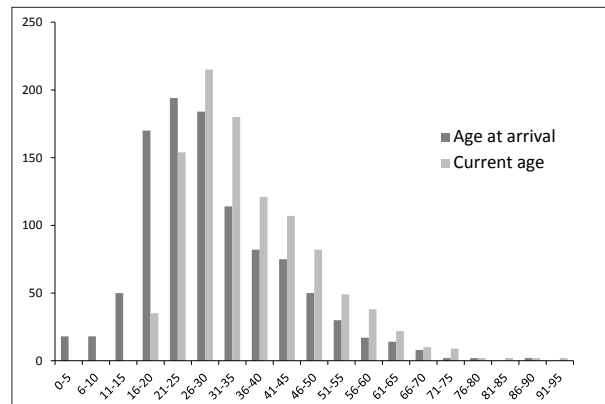


Figure 3
Age of the head of household (current and at arrival on present location)

Table 2
Ethnic distribution among encroachments

Code	Encroachment	Javanese (%)	Lampung (%)	Sundanese (%)	Semendo (%)	Pasemah (%)	Other (%)
1	Sidorejo	73.0	3.6	3.6	10.2	5.1	4.4
2	Dusun Lama	6.6	3.6	21.9	36.5	21.2	10.2
3	Pulau Tengah	5.6	8.3	0	5.6	52.8	27.8
4	Rata Agung	3.5	83.8	6.6	3.5	0.7	1.9
5-6	Sumbersari / Cawangaro	84.9	5.8	3.6	1.4	0	4.3
8-9	Karang Brak / Way Nipah	84.7	9.7	4.2	1.4	0	0.0
10-11	Bumi Hantatai / Sekincau	79.7	1.3	11.4	2.5	0	5.1

Among each ethnic group, the average education level of immigrants is always much lower than in their area of origin. Lampungese youngsters benefitting from higher education prefer migrating to urban centres such as the metropolis of Jakarta-Bogor-Tangerang-Bekasi in order to look for salaried jobs. Javanese and Sundanese youngsters benefitting from higher education have numerous and more attractive job opportunities closer to their homes. School dropouts however, often have little other choice than clearing new plantations to the detriment of the last patches of forest, i.e. inside the National Park.

Farming characteristics: three types of encroachments

At first, the great variability between encroachments strikes the observer. Some are dominated by Javanese settlers, others by Lampung or Semendo and Pasemah. Coffee dominates everywhere, but in some locations, it is farmed as a monocrop, in some others it is associated with cocoa, in others it is a simple stage in the building of a more complex agroforest. But what best differentiates encroachment types is their history, or as a proxy, the date of arrival of settlers. We retained three types of encroachments: the most recent ones which emerged with the *reformasi* era, the rather old ones dating back to the 1960s, and an intermediate type.

Type 1: Recent encroachment

The most recent encroachments of Sidorejo, Pulau Tengah, and Dusun Lama are located in the northern part of the Park. They were all opened after 1998, taking advantage of the political turmoil following the fall of Suharto in 1998, and the sharp rise of local coffee prices due to devaluation of the IDR versus the US dollar.

Type 2: Intermediate encroachment

This intermediate type started as an extension of the Rata Agung village in the early 1980s. The new clearings opened by Lampungese settlers originating from villages of the vicinity of Krui progressively encroached onto the Park, but at a rather limited pace. An exponential upsurge started in the mid-1990s, with an unprecedented peak after 1998 for the same reasons as in type 1.

Type 3: Old encroachment

The long term encroachments date back to the late 1970s,

during the first coffee boom during which time international prices reached a record high. They are dominated by Javanese settlers and located primarily in the southern part of the Park: Summersari, Cawang Aro, Way Haru, Sekincau, Bumi Hantatai (Suoh), Way Nipah, and Karang Brak. The encroachments have experienced ups and downs, ejections and returns and a slight upsurge since *reformasi*, especially in Way Nipah and Karang Brak.

Land “ownership” inside and outside the park

Respondents claim ownership over holdings ranging between 0.125 and 12 ha. The average size of a plot is 1.44 ha, but most families own, on average, 1 or 2 ha plots. Squatters of type 1 encroachments own larger holdings (an average of 2 ha) than squatters in types 2 and 3 (an average of 1.2 ha). 3.6% of the squatters in our sample own holdings of 4 ha and more inside the Park. This figure rises to 6.5% if one considers holdings of 4 ha or more both inside and outside the Park. Only 4.5% of squatters do not own plots at all (but sharecrop plots inside the Park).

A greater proportion of respondents from type 3 own land outside and inside the Park. This is due to the fact that most squatters live outside the Park but close to its border. The average surface area of holding in type 2 is nearly half that of the size of holdings in type 1. This difference can be explained by the exclusive use of axes¹² in type 2 while chainsaws are usually used to clear forest in type 1 (Table 3).

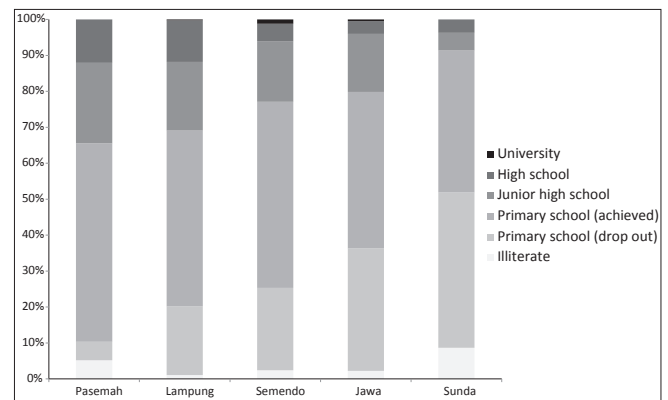


Figure 4
Education level per ethnic group

Table 3
Land ownership according to encroachment type

Land ownership (claimed)	Recent encroachment	Intermediate encroachment	Old encroachment
Inside holding only			
% of respondents	82.6	76.5	67.3
Surface of holding (ha)	1.98	1.18	1.50
Mixed holding			
% of respondents	17.4	23.5	32.7
Inside NP plots (ha)	2.00	1.27	1.19
Outside NP plots (ha)	1.25	1.13	1.27
Surface of holding (ha)	3.26	2.40	2.46

Origin of plots and condition of plots at acquisition

Out of 1,088 plots, ownership was obtained mainly through clearing of primary forest in encroachments of type 2. In types 1 and 3, the occurrence of purchases is close to 50% of the plots. Even in remote and inaccessible areas, with significant forest cover, and where tenure is insecure and unclear, newcomers generally have to buy land from, or at least pay, previous owners (rightful or claimed ownership) to gain access to forest land. Prices can vary by as much as 1,000%, according to the plots' location and condition. In some cases, the buyer acquires a productive coffee plantation, in others a simple right to clear a patch of forest. In type 3, about half of the plots acquired by clearing were obtained from secondary forest, which means that the 'formal owner' (or first clearer) of the plot was unknown or no longer claiming his property. Migration history is quite complex in this type of encroachment. Many squatters were evicted by rangers in the 1980s and early 1990s, and some but not all came back after *reformasi* in 1998. Absentees were usually replaced by newcomers or new households. Land accumulation is relatively rare in type 3 encroachments. According to our data, only 13% of households own more than 2 ha in type 3 encroachments.

It appears that a large majority of squatters do not own land outside the Park, especially in types 1 and 2. The Park is the last frontier to acquire a landed property to the detriment of the forest¹³. Gaining control over land is often more important than productive objectives, as can be seen by the considerable extent of bush fallows in the recent encroachments of type 1. In type 2, Lampungese youngsters are creating (or extending) the plantations they couldn't inherit in their village of origin because of their rank of birth¹⁴. But in nearly half of the cases in types 1 and 3, the plots have been acquired by purchase, be they covered by primary or secondary forest, or a plantation has already been established. The price of land is generally cheaper in frontier areas especially where tenure is insecure. However, even if the transaction involves a relatively poor buyer, it also involves an opportunistic seller. The Semendo have a well-established strategy of capital accumulation through the opening of new clearings in protected areas. After

the first peak of harvests in the fourth or fifth year, before yields start to decrease, they sell the young coffee plantations at a high price to newcomers. Thus, they cash in the highest possible return for their labour investment and minimise the risk of being forcibly evicted. This risk is thus handed over to the buyer, generally a Javanese migrant.

Land use and cropping combinations

In all encroachments, coffee is the dominant crop, subsistence crops are always secondary or temporary. The preference for coffee as the major cash crop is due to multiple factors: soils and climate are suitable; seedlings are easy to find; the crop is not too susceptible to pests; it starts producing after only 3 years; it is easy to store and transport; prices fluctuate but never stay low for long; and it is easy to sell as there are many buyers. According to the type of encroachment, coffee is cultivated as a monocrop, part of a complex agroforestry system, or simply intercropped with cocoa or various fruit trees.

The market orientation is obvious. Subsistence food crop farming can only be found in type 3, and generally as a component of a more diverse farming system involving coffee and cocoa cultivation. In type 2, in the Rata Agung encroachment, the dominant cropping system is a replica of the typical *repong damar*¹⁵ system of the Lampung Pesisir people of the Krui area: coffee, damar, pepper, durian, and chilli (Michon et al. 2000).

Households' assets and income

Data about households' assets are relatively easy to obtain. For the recent and intermediate encroachments of types 1 and 2, we limited ourselves to assessing the assets owned by the households before moving to the Park, and assets presently owned for the older encroachments of type 3 (cf. Table 4).

The rather high percentage of households of types 1 and 2 owning a permanent house in their village of origin is proof that these households are far from belonging to the poorest layers of the rural society. This proportion is much smaller in type 3 encroachments, as squatters most often only own poor shacks. However, the percentage of motorbike owners is

Table 4
Assets owned by households (% of households owning the asset)

Asset	Recent encroachment	Intermediate encroachment	Old encroachment	All encroachment
House	54.5	51.4	23.8	44.5
Radio	48.7	64.1	29.9	49.7
Electricity	7.1	23.7	4.4	13.2
TV	5.2	8.9	10.9	8.3
Parabola	0	0	2.4	0.7
Telephone	0	1.4	5.4	2.1
Motorbike	6.1	9.6	30.3	14.5
Car	0.3	0	0.3	0.2
Sprayer	45.5	49.8	66	53.1
Diesel engine	1.9	4.2	4.8	3.7
Huller	1.6	0	3.4	1.5
Chainsaw	1.3	0	3.1	1.3

highest in type 3. The villages in this type are remote and only accessible by motorbikes via poor condition mountain tracks.

Assessing income in recent encroachments is of limited interest as most households are in a transitory stage, living on their savings¹⁶ or by their wits¹⁷, waiting for coffee to yield a crop. In type 3 encroachments, where livelihoods are settled and where activities and income are somewhat consistent from year to year, we obtained on average a figure of IDR 9,500,000 per household per year (or IDR 2,260,000 per capita¹⁸).

While these figures seemed representative of the economic conditions prevailing in the poor villages to the south and southwest of the Park, they didn't really match with the impression of wealth given by villages like Trimulyo in the sub-district of Gedung Surian close to Sekincau. Therefore, we initiated a complementary household survey in this area in 2009, comparing 'true squatters', squatters with mixed holdings (partly inside and partly outside the Park), and villagers living close to but not encroaching the Park. On average, the three groups earned respectively IDR 24.5, IDR 41.2, and IDR 43.9 million per year per household. Considering the net coffee income alone, figures averaged at respectively IDR 17.5, IDR 35.6, and IDR 32.1 million per year per household. Most non-coffee earnings were still linked to the coffee sector, wage labour for the first group, transportation, trade, and related activities for the second and third group (Cai 2009). In brief, a 'true squatter' household in Gedung Surian earns more than a primary school teacher, whereas a squatter with a mixed holding earns twice as much! In such conditions, it is no doubt that the game is worth the candle.

DISCUSSION

Those who pull the strings: *preman*, businessmen, and politicians

Among village elite, there are some influential and charismatic individuals, usually designated as *preman* in Indonesian. The term derives from the Dutch 'free man', referring to someone who is free of legal constraints. The *preman* generally devote their activity to any kind of lucrative business with, unfortunately, the more illegal activities being the more lucrative. Illegal logging is particularly common. *Preman* generally own capital and equipment (cars and trucks), lead a small team of henchmen, and are active at networking local authorities. Considering *preman* as gangsters would be an exaggeration, though the distinction is sometimes tenuous. Recently, many *preman* showed their interest in politics, running (often successfully) for positions as village head, as deputy of the district assemblies, or even as district head. Thus, the distinction between *preman*, gangster, and politician has become increasingly blurred.

The history of the various encroachments is quite edifying.

Sidorejo

Soon after the Suharto rule started to weaken in the spring of 1998, rumours about a new transmigration project in Sidorejo

were propagated throughout Lampung and as far as Java. By the end of 1998, the first migrants who had paid off their registration fees to the local head of village were allotted 2 ha of forest per household. Allotment maps were produced by a special team directed by the village head. In 1999 and 2000, a hundred families moved to the encroachment. At the same time, a local logging company belonging to a well connected politician opened an access road and started operating in the area. In 2001, the logging company was tried for illegal logging and its manager sentenced to prison. Neither the owners of the company nor the head of the village were prosecuted. Following the trial, many migrants took fright and left the encroachment. Some never came back, while others waited for the tension to subside before returning. Between 2001 and 2003, only very few squatters entered the encroachment. During the 2004 campaign for the election of the head of the district, the protection of the squatters against eviction was among the main promises of the major candidates (among whom was the owner of the already mentioned logging company). As a direct result of the election, in 2005 the number of squatters increased again.

Dusun Lama

The history of Dusun Lama is quite similar to that of Sidorejo, although figures involved are much smaller. In 1997/98, a well-connected district official of Bengkulu dealing with district dividing up matters proposed a plan for the creation of a transmigration centre in Dusun Lama. He had strong links with a group of Semendo who had decided to (re)claim Dusun Lama as their customary land. The group even secured the support of a local NGO, ironically sponsored by a well-known foreign institution dealing with the empowerment of indigenous people and forest conservation. In 1998, a handful of Semendo, Pasemah, and Lampung made the first clearings in Dusun Lama. The following year, more households from South-Sumatra joined the group. In order to attract more households, the group decided to send three 'recruiting officers' directly to Java. The first Sundanese and Javanese families arrived in 2000 and were offered to buy plots already opened up by the South Sumatranese. Resale of clearings became a major source of income for the latter. Between 2000 and 2005, more Sundanese joined the encroachment; however, the Semendo and Pasemah are still the majority.

Rata Agung

The village of Rata Agung started to attract settlers from 1983 onwards, once the road from Krui to Bengkulu was opened. As much forest was still available outside the Park, encroachments remained very limited. With the surfacing of the road in 1993, the site became more attractive and the number of settlers inside the Park increased steadily. In 1996, the Park rangers decided to evict all squatters from the Rata Agung encroachment. One month before the raid, the Park office had been leaking information to this effect and the squatters were able to move their shacks to the Park border. In 1997/98, the monetary crisis resulted in more households joining the encroachment. In 1999,

a member of the village elite in Rata Agung managed to obtain a logging permit for a location outside the Park, where the last tree had been felled long ago. For two years, logging operations went on inside the Park (with alleged backing by some Park officers), and the number of squatters increased considerably. In 2001, operations were stopped, the rangers involved were transferred, and the village elite were sued. This attempt at law enforcement had an immediate effect on the reduction in the number of squatters. But in 2002, the village elite were freed of all charges (through an unofficial 'outside court' settlement) and thus won additional renown. From then on, the number of squatters increased regularly.

Bumi Hantatai (Suoh)

This village is located outside the Park but close to its border. In the early 1980s, a local entrepreneur engaged about 30 Javanese workers to build a road from Suoh to Bumi Hantatai. At the end of the project, rather than releasing his employees he switched to illegal logging activities, and the workers opened clearings inside the Park. The manager was soon arrested and sentenced to one year imprisonment. The workers moved their residence outside the Park but continued to farm their plots located inside the Park. In 1994, a member of the local elite running as a candidate for mayor claimed the major encroachments around the village as being customary forests. Thus, he gained the support of all squatters living in the vicinity. Once elected, he took advantage of the presence of the numerous squatters to obtain more subsidies from the district and imposed land taxes even on plots inside the Park. Electoral promises were never fulfilled.

Way Nipah

In 1968, the Indonesian Navy started to run a logging concession in the area. Clear-cutting affected areas both inside and outside the Park. Squatters soon followed, taking advantage of forest tracks and previously cleared areas. The number of squatters increased dramatically in 1986 when the squatters of Talang Kejadian and Talang Canguk, two encroachments located well inside the Park, were driven off by the Park rangers. Subsequently, around 3,000 people resettled in Pematang Sawah, close to the Park's border.

CONCLUSION: THE LAST CHANCE SALOON OR A REASONABLE GAMBLE?

It is generally admitted in the literature that farmers are risk averse and that tenure security is a prerequisite for investing in agricultural activities. How is it, in this case, that poor farmers are willing to invest labour and capital in converting forests into coffee plantations inside a National Park? When asked the question, squatters often reply that they have no other option at hand. A popular answer is: "Better encroaching in the Park than becoming a thief." Extreme poverty and the lack of alternative jobs are the main reasons put forward by squatters for encroaching the Park, and by local authorities for not reacting swiftly against squatters. If one challenges

their level of poverty or lack of other opportunities, then the next reason is generally: "I am not the only one. Others do the same, especially the more wealthy ones who open large tracts of forest. They are never bothered by the police." When asked why the number of squatters started to peak after the end of Suharto's authoritarian rule, no one appeals to a sudden rise in poverty. Obviously, reduced law enforcement is the main determining factor (in the absence of more attractive legal opportunities).

But conditions differ from place to place, and as we saw above, there are a great variety of squatters. However, among the three types of encroachments we determined, there are major similarities.

In the old encroachments of type 3, squatters can be considered as poor farmers, at least upon arrival. In the lower altitude encroachments with poor soil fertility in the south and southwest of the Park, they still struggle to make a living, decades after arrival. But in villages like Trimulyo (see above), success stories are the rule. Squatters are predominantly Javanese or Sundanese, of rural origin and with little formal education. They generally live outside the Park, close to its border, and farm plots on both sides. They increase the size of their holdings by 'borrowing' some land from within the Park. They seldom open new clearings but rather crop old ones or reopen secondary regrowth forest. They do not have much to lose. The villages where they live are remote, difficult to access, and few economic opportunities other than farming are available. Illegal logging activities might be an option, provided some well-connected timber baron decides to organise such operations.

In the progressive encroachment of type 2, Rata Agung, the squatters belong to the sly opportunist type. Most of them belong to the Lampung Pesisir ethnic group and originate from the vicinity of Krui. They took advantage of the political chaos following the financial crisis and the end of the authoritarian rule of President Suharto to create new damar agroforests. Rata Agung, though quite far from Krui, presents numerous advantages. Accessibility is excellent since the tarring of the Western Trans-Sumatra road; biophysical conditions are favourable to coffee, pepper, and damar plantations; and some families originating from Krui have been living in the village since the early 1980s. Last but not least, the head of the village is a wealthy businessman and influential politician, willing to attract a large number of people to his village with the perspective of the future dividing up of districts and sub-districts. In these conditions, the level of risk is acceptable. Investments are limited to labour for the clearing and for buying seedlings. Both are rather cheap, and the young squatters are often subsidised by their wealthier relatives¹⁹. Day wages for transportation, and eventually illegal logging, provide an income while waiting for the first coffee shrubs to yield a crop. The risk is also limited because forest rangers don't have the means (let alone the will) to enforce the law. Squatters organise themselves in small groups, with leaders responsible for organising the security and the collection of small amounts of money proposed to the more tolerant rangers.

In case of a forceful intervention by the less tolerant rangers, the squatters are generally informed well in advance. In case they are not, they use an efficient and modern radio alarm system which they have developed, doubled by the more traditional drum alert.

In the recent encroachments of type 1, some households were deceived by wily businessmen offering to sell plots prior to the opening of new transmigration areas. Other migrants were offered plots already cleared by Semendo swiddeners at bargain prices. But making money through selling land were not their only objectives. By attracting numerous migrants to the encroachment, the organisers secured their own businesses, as it is more difficult to evict a larger number of squatters. Last but not least, a large number of dependent squatters make up a promising constituency for local elections.

Thus, Bukit Barisan Selatan National Park squatters can be grouped into three categories: poor farmers, sly opportunists, and manipulated voters. Again, the distinction between the groups is rather blurred.

Leadership is the key

All squatters are aware that they break the law when they clear land within the Park. However, as long as others do the same, and they are not bothered by the authorities, such encroachment will continue. No individual squatter dares to go alone; but in a group, everything becomes possible. The key is having a charismatic leader, the daring preman, or the well-connected politician. Heads of villages, preferably wealthy businessmen, well related to high ranking officials at the district and provincial level are the key persons who provide such backing and level of organisation. In this sense, regional autonomy has been counterproductive. Meant to give power to the lower levels for a better control on corruption by civil society, it has only decentralised corruption and self-interest by giving more power to the local elites. Of course, not all local elites are corrupt. But decentralisation means that local elections become more important in terms of controlling access to resources and the resultant benefits. This provides an opportunity for wealthy families to get involved in politics in order to secure a hold on public funds. And gaining the support of huge numbers of squatters by promises of open access to the Park is part of this process.

But strong leadership can also have positive outcomes [cf. Ribot (2008) for a complete review of local leadership and natural resource interventions]. In Way Haru for instance, in a location very close to the Park, we found very few encroachers. The head of the village strictly forbids his citizens to open clearings in the Park. He works closely with the Park rangers and no one dares to disobey him. But at the next election, he might well be pushed aside by a less strict candidate.

Can the Bukit Barisan Selatan National Park be saved? The answer to this question has become increasingly contentious. Very few people openly admit that they want to get rid of the Park. But when discussing the matter more in depth with local elites, one easily gets a hint of their limited interest

in protecting the Park by the arguments they regularly put forward: “What about the customary rights on the land of indigenous people? Should one evict poor landless farmers from the Park? Do you want to organise a remake of the violent evictions of the 1980s? What counts more to you, people or elephants?” Quite obviously, to the last question, conservationists have a preference for the latter, and local politicians for the former. Presently, all stakeholders stand by conservation *or* development. The oft-praised win-win scenario of integrated conservation *and* development seems to be merely wishful thinking.

Indeed, the literature abounds with examples of local solutions and policy recommendations to promote sustainable forest management through forest governance reform processes aiming to secure the rights of forest-dependent communities (Ribot 2008; Bond et al. 2009; Hatcher 2009). In Latin America, indigenous communities are increasingly winning recognition of rights to lands and forests that they have managed and used historically under customary institutions (Larson 2010; Porter-Bolland et al. 2011). The situation in the Bukit Barisan Selatan National Park is radically different. Here we do not deal with low-density forest dependent communities who could become the stewards of the forest through the revival of century old customary institutions. Quite far from this idyllic image, we are dealing with a huge number of landless migrants eager to convert the forest into dense coffee plantations. With an average holding size of 2 ha per family, the demographic density exceeds 200 people per sq. km. Nothing, of course, prevents the sustainable agricultural use of the landscape, and one could even imagine the introduction of agroforestry techniques like in the nearby Sumberjaya district²⁰ (Suyanto et al. 2001; Verbist et al. 2005). If this were the case, the major environmental services of forests could be preserved, but we should not delude ourselves; such high population densities do not allow for a harmonious cohabitation of farmers wanting to feed their families, with tigers, rhinos, and elephants.

If nothing is done to evict the squatters, the present trend will become irreversible, and the Park will be converted into plantations. The number of squatters is regularly on the increase. Many farmers outside the Park start thinking that by abiding by the law they are missing an economic opportunity. Saving the Park from conversion into coffee plantations will not be possible without strict law enforcement, preferably combined with opportunities for alternative livelihoods. Our study shows clearly that forceful and brutal evictions of squatters as they were organised in the 1980s and 1990s are no longer necessary. Encroachments are all but spontaneous. The masterminds behind the recent encroachments are well known and a crackdown on a few well selected leaders would have a considerable impact. Of course, to launch such a crackdown, the rangers would need strong political support, something they will not receive from politicians whose families are involved in local businesses that are related to Park encroachment. The Park management must remain with the central administration, and law enforcement must be implemented independently of local elites.

The rangers have proved able to curb illegal logging in

the Park. The masterminds were well known, they were relatively easy to arrest and prosecute. One might argue that they were seldom fined or sentenced to imprisonment. Most of them managed to leave the courtrooms with their heads held high. But bribing higher level officials is very expensive and therefore has a deterrent effect. Up to now, no repetition of the offense has been recorded. It appears that corruption can be as efficient as fines.

Law enforcement is necessary, but not sufficient. Villages in the vicinity of the Park must also be involved in its protection. These villages generally host present or future squatters. Their village leaders are key to the protection of the Park. The management of the Park must therefore secure their support. Decentralisation per se does not guarantee democracy or sustainable resource management. As noted by Ribot (2008), "local democracy is a process whereby local leaders become accountable to citizens and responsive to their needs and aspirations." In our case, the aspirations of the citizens are clearly to access more land and not to conserve the Park. Therefore, the Park must support the village leaders by providing them with adequate and alternative incentives: job opportunities for villagers (as guards, guides, and ecotourism), scholarships and training opportunities, or other payments for environmental services. In short, the Park must be perceived as more than a simple opportunity to open a coffee plantation.

Notes

1. Kolonisatie was an agricultural colonisation programme developed by the Dutch in 1905, aiming at correcting the demographic imbalance between the islands of Java and Sumatra. Renamed Transmigration after Independence, the programme was amplified during the Suharto era.
2. In Lampung, every *marga* or clan controls a specific area of land. The Dutch colonisers decided to superpose their own administrative boundaries with *marga* boundaries.
3. BRN or Biro Rekonstruksi Nasional was in charge of demobilising former Independence fighters in the framework of agricultural colonisation projects under the auspices of the Transmigration programme.
4. BTI stands for Barisan Tani Indonesia, a mass farmers' organisation closely linked to the Indonesian Communist Party (PKI) and active in forced land redistributions in the early 1960s. PKI and BTI were banned after the counter coup of 1965.
5. The impact of increasing international prices is amplified locally by the regular devaluation of the national currency.
6. Hutan lindung—literally meaning 'protected forest'—is an official category recognised by the Indonesian Ministry of Forestry.
7. From a total surface area of approximately 325,000 ha.
8. In fact, some attempted to deny that they were infringing, but only until they were confronted with our GPS measurements. Dusun Lama is the only exception, as squatters claim the area as customary land. In some cases, there is a hundred meter uncertainty about the exact location of the limit of the Park, as boundary stones were displaced back and forth over time.
9. The Semendo often sell their young coffee plantations to Javanese settlers, and move to open new swiddens.
10. In this paper, we do not try to oppose indigenous and non-indigenous communities. In fact, all squatters in the Park are outsiders, either indigenous to other parts of Sumatra or indigenous to Java; no group as such can claim more rights than another.
11. The main villages of origin are (in order of importance): Penengahan, Way Sindih, Penggawa Lima, Way Napal, Way Nuka, Menyancang, La'ay, Ulak Pandan, Balai Kencana, and Way Suluh. The distance between Krui and Rata Agung is about 60 km by road.
12. The local elite asked the squatters to avoid using chainsaws because the encroachment of Rata Agung is close to the road and chainsaws can be heard from afar. Encroachments belonging to type 1 are very remote.
13. Virtually no forest is left on private (or customary) land. The last areas of forest can only be found in remnants of protected forests or former concessions.
14. According to customary rules, the major part of the inheritance goes to the eldest son. The younger ones are incited to gain new plantations from primary forests.
15. The *repong damar* is a complex agroforest where damar seedlings (*Shorea javanica*) are intercropped with coffee, pepper, and fruit trees in an upland rice swidden. Rice is harvested during the first three years, coffee and pepper are harvested for the following seven years, and fruit trees start yielding fruits after 10 to 15 years. Damar resin is tapped 25 years after planting.
16. On average, the squatters in our sample arrived on the encroachment with a starting capital of IDR 1,255,000 (USD 140).
17. While waiting for the first harvests, daily wages provided by wealthier neighbours or former settlers already harvesting coffee are generally the only options at hand.
18. In 2006, the poverty line for rural areas in Lampung had been fixed at IDR 1,568,000 per capita per year (BPS 2010). At the time of the surveys, the exchange rate was approximately IDR 9,000 for USD 1.
19. The inheritance system prevailing amongst the Lampung Pesisir privileges the eldest son to the detriment of his younger brothers. However, the elder brothers have the moral obligation to help set up their younger brothers.
20. In the Sumberjaya district, squatters on 'protection forests' were offered usufruct rights (Five years at first, expandable to 25 years or more) on the condition that they adopted agroforestry techniques.

REFERENCES

- Adams, W.M. and J. Hutton. 2007. People, parks and poverty: Political ecology and biodiversity conservation. *Conservation and Society* 5(2): 147–183.
- Agrawal, A. and K. Redford. 2009. Conservation and displacement: An overview. *Conservation and Society* 7(1): 1–10.
- Benoit D., P. Levang, M. Pain and O. Sevin. 1989. *Transmigration et migrations spontanées en Indonésie. Transmigration and spontaneous migrations in Indonesia: Propinsi Lampung*. Paris: Office de la Recherche Scientifique et Technique Outre-Mer (ORSTOM).
- Bond, I., M. Grieg-Gran, S. Wertz-Kanounnikoff, P. Hazlewood, S. Wunder and A. Angelsen. 2009. *Incentives to sustain forest ecosystem services. A review and lessons for REDD*. London: International Institute for Environment and Development.
- BPS (Badan Pusat Statistik). 2002. Indonesia, 2002 - National Socio-Economic Survey (SUSENAS). Jakarta: Badan Pusat Statistik.
- BPS (Badan Pusat Statistik). 2010 <http://www.bps.go.id>. Accessed on July 30, 2010.
- Bray, D.B. 2007. From displacement-based conservation to place-based conservation: Notes on the governance of biodiversity protection and human livelihoods. In: *Protected areas and human displacement* (eds. Redford, K.H. and E. Fearn). Working Paper No. 29. Pp. 103–106. New York, NY: Wildlife Conservation Society.
- Brechin, S.R. 2002. Beyond the square wheel: Toward a more comprehensive understanding of biodiversity conservation as a social and political process. *Society and Natural Resources* 15: 41–64.
- Brockington, D. 2004. Community conservation, inequality and injustice: Myths of power in protected area management. *Conservation and Society* 2(2): 411–432.

- Brockington, D. and J. Igoe. 2006. Eviction for conservation: A global overview. *Conservation and Society* 4(3): 424–470.
- Brockington, D., J. Igoe and K. Schmidt-Soltau. 2006. Conservation, human rights and poverty reduction. *Conservation Biology* 20(1): 250–252.
- Cai, H. 2009. Feasibility study on practical PES mechanisms for conservation and improving livelihoods at Bukit Barisan Selatan National Park in Indonesia. M.Sc. Thesis. University of Copenhagen, Copenhagen, Denmark and University of Montpellier, Montpellier, France.
- Caro, T. and P. Scholte. 2007. When protection falters. *African Journal of Ecology* 45(3): 233–235.
- Cernea, M.M. 2005. Restriction of access is displacement: A broader concept and policy. *Forced Migration Review* 23: 48–49.
- Cernea, M.M. and K. Schmidt-Soltau. 2006. Poverty risks and National Parks: Policy issues in conservation and development. *World Development* 34(10): 1808–1830.
- Curran, B., T. Sunderland, F. Maisels, J. Oates, S. Asaha, M. Balinga, L. Defo, et al. 2009. Are Central Africa's protected areas displacing hundreds of thousands of rural poor? *Conservation and Society* 7(1): 30–45.
- De Wulf, R., D. Supomo and K. Rauf. 1981. Barisan Selatan game Reserve: Management plan 1982–1987. Bogor: Food and Agriculture Organization.
- Gaveau, D.L.A., H. Wandono and F. Setiabudi. 2007. Three decades of deforestation in southwest Sumatra: Have protected areas halted forest loss and logging, and promoted re-growth? *Biological Conservation* 134(4): 495–504.
- Gaveau, D.L.A., M. Linkie, S. Suyadi, P. Levang and N. Leader-Williams. 2009. Three decades of deforestation in southwest Sumatra: Effects of coffee prices, law enforcement and rural poverty. *Biological Conservation* 142(3): 597–605.
- Hatcher, J. 2009. *Securing tenure rights and Reducing Emissions from Deforestation and Degradation (REDD). Costs and lessons learned*. Washington, DC: Rights and Resources Initiative.
- Hayes, T.M. 2006. Parks, people and protected areas: An institutional assessment of the effectiveness of protected areas. *World Development* 34(12): 2064–2075.
- Hoffman, D.M., D. Fay and L. Joppa. 2011. Introduction: Human migration to protected area edges in Africa and Latin America: Questioning large-scale statistical analysis. *Conservation and Society* 9(1): 1–7.
- Holmes, G. 2007. Protection, politics and process: Understanding resistance to conservation. *Conservation and Society* 5(2): 184–201.
- Johannesen, A.B. 2007. Protected areas, wildlife conservation and local welfare. *Ecological Economics* 62(1): 126–135.
- Larson, A. 2010. Making the 'rules of the game': Constituting territory and authority in Nicaragua's indigenous communities. *Land Use Policy* 27(4): 1143–1152.
- Levang, P. 1997. *La terre d'en face. La transmigration en Indonésie*. Paris: Office de la Recherche Scientifique et Technique Outre-Mer (ORSTOM).
- Levang, P., S. Sitoru, D. Gaveau and Z. Abidin. 2007. *Elites' perception about the Bukit Barisan Selatan National Park*. Bogor: Center for International Forestry Research CIFOR.
- Maisels, F., T. Sunderland, B. Curran, K. von Liebenstein, J. Oates, L. Usongo, A. Dunn, et al. 2007. Central Africa's protected areas and the purported displacement of people: A first critical review of existing data. In: *Protected areas and human displacement* (eds. Redford, K.H. and E. Fearn). Working Paper No. 29. Pp. 75–90. New York, NY: Wildlife Conservation Society.
- McCarthy, J.F. 2002. Power and interest on Sumatra's rainforest frontier: Clientelist coalitions, illegal logging and conservation in the Alas Valley. *Journal of Southeast Asian Studies* 33(1): 77–106.
- Michon, G., H. de Foresta, A. Kusworo and P. Levang. 2000. The damar agroforests of Krui, Indonesia: Justice for forest farmers. In: *People, plants, and justice* (ed. Zerner, C.). Pp. 159–203. New York, NY: Columbia University Press.
- Norgrove, J. and D. Hulme. 2006. Confronting conservation at Mount Elgon, Uganda. *Development and Change* 37(5): 1093–1116.
- Oates, J.F. 1999. *Myth and reality in the rainforest: How conservation strategies are failing in Africa*. Berkeley, CA: University of California Press.
- Pelzer, K.J. 1945. *Pioneer settlement in the Asiatic tropics*. New York, NY: American Geographical Society.
- Porter-Bolland, L., E.A. Ellis, M.R. Guariguata, I. Ruiz-Mallén, S. Negrete-Yankelevich and V. Reyes-García. 2012. Community managed forests and forest protected areas: An assessment of their conservation effectiveness across the tropics. *Forest Ecology and Management*. 268: 6–17.
- Rangarajan, M. and G. Shahabuddin. 2006. Displacement and relocation from protected areas: Towards a biological and historical analysis. *Conservation and Society* 4(3): 359–378.
- Ribot, J.C. 2008. *Building local democracy through natural resource interventions. An environmentalist's responsibility*. Washington, DC: World Resources Institute.
- Robbins, P., K. McSweeney, T. Waite and J. Rice. 2006. Even conservation rules are made to be broken: Implications for biodiversity. *Environmental Management* 37(2): 162–169.
- Robinson, J.G. 2006. Conservation biology and real world conservation. *Conservation Biology* 20(3): 659–669.
- Sakumoto, N. 1999. Development of environmental law and land reform in Indonesia. In: *Reforming laws and institutions in Indonesia: An assessment* (eds. Juwana, H. and N. Sakumoto). ASED P n°51. Institute of Developing Economies/Japan External Trade Organization (IDE-JETRO).
- Scherr, S.J. and J.A. McNeely. 2005. Biodiversity conservation and agricultural sustainability: Towards a new paradigm of 'ecoagriculture' landscapes. *Philosophical Transactions of the Royal Society B* 363(1491): 477–494.
- Scholte, P. 2003. Immigration: A potential time bomb under the integration of conservation and development. *Ambio* 32(1): 58–64.
- Scholz, U. 1983. *The natural regions of Sumatra and their agricultural production pattern: A regional analysis*. Bogor: Central Research Institute for Food Crops; Padang: Sukarami Research Institute for Food Crops.
- Suyanto, S., N. Khususiyah and R.P. Permana. 2001. *The role of land tenure in improving sustainable land management and the environment in a forest zone in Lampung-Sumatra*. Bogor: International Center for Research in AgroForestry (ICRAF), Center for International Forestry Research (CIFOR) and European Union.
- Tsing, A.L. 2005. *Friction: An ethnography of global connection*. Princeton, NJ: Princeton University Press.
- Verbist, B., A.E.D. Putra and S. Budidarsono. 2005. Factors driving land use change: Effects on watershed functions in a coffee agroforestry system in Lampung, Sumatra. *Agricultural Systems* 85(3): 254–270.
- Wiens, J. 2007. The dangers of black and white conservation. *Conservation Biology* 21(5): 1371–1372.
- Wilkie, D.S., G. Morelli, J. Demmer, M. Starkey, P. Telfer and M. Steil. 2006. Parks and people: Assessing the human welfare effects of establishing Protected Areas for biodiversity conservation. *Conservation Biology* 20(1): 247–249.
- Wittmeyer, G., P. Elsen, W. Bean, A. Coleman, O. Burton and J.S. Brashares. 2008. Accelerated human population growth at protected area edges. *Science* 321(5885): 123–126.
- Wright, S.J., A. Sanchez-Azofeifa, C. Portillo-Quintero and D. Davies. 2007. Poverty and corruption compromise tropical forest reserves. *Ecological Economics* 17(5): 1259–1266.
- WWF (World Wide Fund For Nature). 2007. Gone in an instant: How the trade in illegally grown coffee is driving the destruction of rhino, tiger and elephant habitat. wwf.panda.org/what_we_do/endangered_species/elephants/asian_elephants/areas/news/trade_coffee/. Accessed on July 30, 2010.