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Article

Illegal Logging in the Northern Sierra Madre Natural Park, the Philippines

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Abstract

Illegal logging is a threat to biodiversity and rural livelihoods in the Northern Sierra Madre Natural Park, the largest protected area in the Philippines. Every year between 20,000 and 35,000 cu. m wood is extracted from the park. The forestry service and municipal governments tolerate illegal logging in the protected area; government officials argue that banning an important livelihood activity of households along the forest frontier will aggravate rural poverty. However this reasoning underestimates the scale of timber extraction, and masks resource capture and collusive corruption. Illegal logging in fact forms an obstacle for sustainable rural development in and around the protected area by destroying ecosystems, distorting markets, and subverting the rule of law. Strengthening law enforcement and controlling corruption are prerequisites for sustainable forest management in and around protected areas in insular southeast Asia.

Keywords: illegal logging, law enforcement, corruption, poverty, Northern Sierra Madre Natural Park, Philippines

INTRODUCTION

In February 2005, a village councillor in San Isidro, a small barangay (village) on the boundary of the Northern Sierra Madre Natural Park (NSMNP) in Isabela province, placed an improvised signpost along the road: 'Informing all homebound trucks to drop one board for the barangay hall, church and cottage as requested by the barangay councillor AP'. Every day four trucks loaded with premium timber pass through San Isidro. Each truckload represents a market value of around 100,000 PHP (Philippine peso; 2,000 USD), roughly twice the annual average income of households in this remote village on the Philippine forest frontier (National Statistical Coordination Board 2007). Most young men in San Isidro make regular trips to the forest to haul timber. Government officials turn a blind eye to the illegal logging activities in the protected area; they claim that environmental legislation cannot be enforced as the rural poor depend on timber revenues. But not everyone benefits from logging in San Isidro. Farmers have to cope with high transport prices as the heavily loaded logging trucks are deteriorating the unpaved roads. Fishermen are confronted with declining fish catches as rivers are increasingly silted. Hunters complain that the constant sound of chainsaws scares wildlife away. Tensions have risen in the village over access to forest resources and benefit sharing. How should we read the notice in San Isidro? Is it an attempt to capture an equitable share of the profits of logging for local developmental needs? Is it an informal recognition of the needs of the rural poor which underlie illegal forest activities? Or is it a silent protest of a marginalised community to the ongoing plunder of their forest?

San Isidro exemplifies the situation prevailing in many remote rural areas in the Philippines. Illegal logging, the harvesting of timber in contravention of national laws, is a

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major problem in the management of the country's protected areas (Mallari *et al*. 2001; Ong *et al*. 2002).[1] In recent years public awareness of the detrimental effects of illegal logging has grown in the Philippines, especially in relation to flooding and land slides (Broad & Cavanagh 1993; Goldoftas 2006; Chokkalingam *et al*. 2006). Successive administrations have placed illegal logging at the top of the political agenda. In 2000, President Estrada created an anti-organised crime commission tasked to investigate and prosecute crime syndicates involved in illegal logging. After the landslides that killed 1,800 people in Quezon Province in 2004, President Arroyo identified illegal logging as one the 'most serious crime against our people' and directed the police and the army to join forces against illegal loggers and their financiers 'the way we do terrorists, kidnappers, drug traffickers' (Magallona 2004: 53). But on the ground a different reality prevails: the Department of Environment and Natural Resources (DENR), the national government agency mandated to enforce environmental legislation, tolerates illegal logging activities.

The DENR officials argue that it is illegitimate to ban 'small-scale timber poaching' of poor rural households; the strict enforcement of forestry regulations risks aggravating rural poverty and fuelling civil insurgency (Gascon 2001: 14). Forestry officials therefore informally sanction logging activities of the rural poor, a strategy locally called 'humanising the law' (van den Top 1998: 219). The provincial DENR director of Isabela, for example, says that people have 'to resort to cutting of trees to sustain their basic needs' (Lagasca 2008a: 29). Municipal government officials and the DENR officials claim that illegal logging can only be controlled by providing 'alternative livelihood projects' (Lagasca 2008b: 29).

This paper describes the social dynamics of timber extraction in the NSMNP and reflects on various policy responses to address the entwined problems of illegal logging and rural poverty in and around protected areas. It disputes the view that rural poverty is the driving force behind illegal logging operations in the NSMNP. The illegal timber trade in the park is controlled by a few businessmen who operate in collusion with government officials. The pro-poor rhetoric of the DENR officials actually masks the role of corruption in illegal logging operations, and the detrimental social and ecological impacts of uncontrolled timber harvesting (Ravnborg 2003; Grainger & Malayang III 2006). Illegal logging in the NSMNP creates a barrier for sustainable rural development by destroying ecosystems, distorting markets, and breeding corruption. Policy interventions aimed to counter illegal timber extraction by alleviating rural poverty, creating an alternative wood supply or enhancing the capacity of the DENR, fail to control illegal logging activities in the absence of effective law enforcement. Based on recent developments in Isabela where a coalition of civil society organisations and the reform-oriented provincial governor had remarkable success in controlling illegal logging activities, we conclude that improving the rule of law is a prerequisite for community-based forest conservation and poverty alleviation in insular southeast Asia.

For analytical clarity, we focus exclusively on the harvesting and marketing of timber. Fuel wood gathering, bamboo harvesting and slash-and-burn farming (*kaingin*) are important economic activities for the rural poor in the Northern Sierra Madre, which in theory are illegal under Philippine forestry laws, but in practice are tolerated by government officials. However, in our view there are important differences in 'the level of illegality' of these livelihood activities (Inoguchi *et al*. 2005). Gathering non-timber forest products such as bamboo, rattan or resin has little impact on the protected area. Agricultural encroachment is an important proximate cause for deforestation in the NSMNP, but unlike timber extraction, it is primarily motivated by subsistence needs (Overmars 2006).

METHODS

Illegal logging and associated corruption are by definition difficult to measure. Philippine forestry statistics are notoriously unreliable and are often manipulated for political purposes (Kummer 1992). The information presented in this paper is, therefore, largely based on insights gained through our research and conservation activities in the NSMNP over the past nine years (2001–2009). Our involvement in Northern Sierra Madre Natural Park Conservation Project, the Multi-Stakeholder Forest Protection Committee, the Protected Area Management Board of the NSMNP, and more recently the Anti-illegal Logging Taskforce of the provincial government of Isabela gave us an insider's view of bureaucratic decision-making processes and local politics.

We mainly rely on field observations and informal interviews with municipal government officials, forest rangers, traders, loggers, and farmers. We kept detailed notes of these informal interviews in the different municipalities of the protected area. Additional qualitative data on perceptions on environmental legislation, fraud, and corruption was collected by Dutch and Filipino graduate students who worked under our supervision in different barangays along the forest fringe from 1992 to 2008 (see Appendix for a list of student reports; available on request). This information was complemented by a comprehensive review of the grey literature on illegal logging in the NSMNP (provincial forestry statistics, project reports, conference proceedings, and newspaper articles).

Quantitative information on wood extraction volumes was collected from 2006 to 2008. In all major river systems in the NSMNP we counted log transports, and estimated the number of chainsaws based on informal on-site interviews with barangay officials and farmers at major hauling points (barangays along the forest frontier), and with loggers and transporters in the extraction areas. Van der Ploeg collected data along the Disabungan (barangay Del Pilar), Catalangan (Villa Miranda, San Isidro), and Ilaguen (Tappa, Ibujan) rivers in the municipality of San Mariano from February to May 2007. During the same period, Arnold Macadangdang, our field assistant, collected information along Pinacanauan de Tumauini (Antagan), Bintacan River (Batong Labang), and Abuan River (Cabeseria 27). Information in Pinacanauan de San Pablo (Tupa) and Puerta (Dy Abra and Masipi East)

was collected in July and August 2007 by van der Ploeg. Van Weerd and van der Ploeg conducted surveys along the Pacific Coast in March 2006 and January 2008 (in the municipalities of Divilacan and Palanan). In general, loggers and middlemen were transparent about their activities during informal interviews. We did not experience any form of obstruction or threats during fieldwork. The information gathered in the field was validated during interviews with key informants working for government, civil society groups, and universities in the region.

Information on forest protection activities was obtained from the regional office of the DENR in Tuguegarao, and the office of the provincial governor in Ilagan. The provincial office of the DENR in Ilagan did not respond to our requests for information.

THE NORTHERN SIERRA MADRE NATURAL PARK

The NSMNP covers an area of 359,486 ha, of which 287,861 ha are terrestrial habitats (Mallari *et al*. 2001). The NSMNP is one of the 10 priority protected areas in the Philippines: it holds 25% of the remaining primary lowland forest of the archipelago (Nordic Agency for Development and Ecology & Department of Environment and Natural Resources 1998). The park has remarkably high levels of endemism: 30% of bird species and 62% of mammal species recorded in the NSMNP are endemic to the Philippines. Thirty-five globally threatened species are recorded in the protected area, including the critically endangered Philippine eagle *Pithecophaga jefferyi* and the Philippine crocodile *Crocodylus mindorensis.* By protecting the NSMNP, a large proportion of the region's biodiversity will be maintained.

The NSMNP covers a large part of the Northern Sierra Madre mountain range.[2] The park includes nine municipalities in the province of Isabela: San Pablo, Cabagan, Tumauini, Ilagan and San Mariano in the Cagayan Valley, and Maconacon, Divilacan, Palanan and Dinapigue along the Pacific Coast (Figure 1). Around 25,000 people live within the NSMNP boundaries, mainly on the narrow coastal strip. The indigenous people of the Northern Sierra Madre, the Agta, now form a minority in the protected area; approximately 1,800 Agta live in and directly adjacent to the NSMNP (Minter 2010). Their livelihood activities consist mainly of hunting, fishing, collecting forest products, and swidden agriculture. Palanan is the largest population centre in the park with 16,000 people. It has been a permanent settlement for more than 300 years. Maconacon and

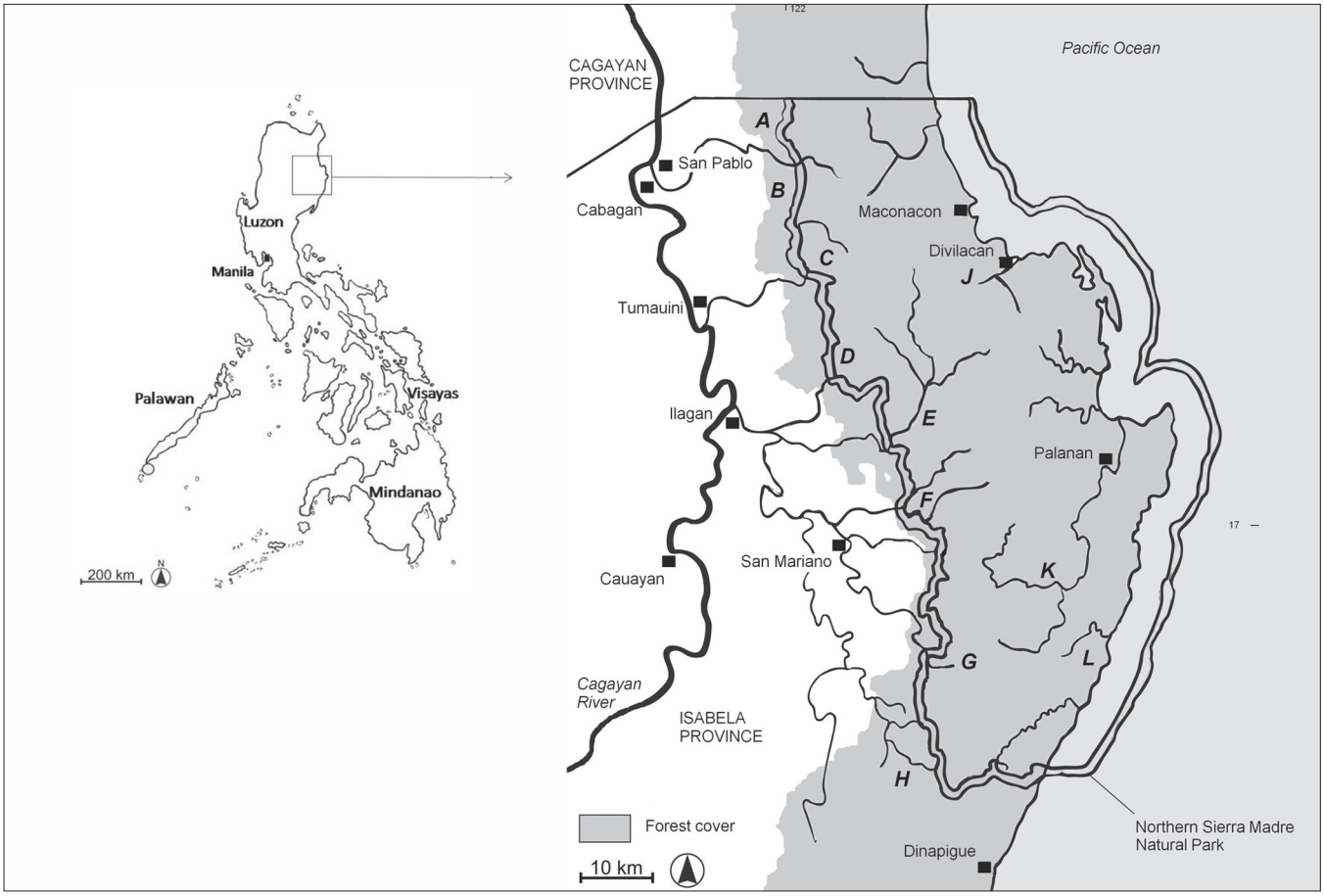

Figure 1

Logging hotspots in the Northern Sierra Madre Natural Park
A. Pinacanauan de San Pablo, B. Puerta, C. Pinacanauan de Tumauini, D. Bintacan, E. Abuan, F. Catalangan, G. Disabungan, H. Ilaguen, J. Divilacan, K. Palanan River, L. Palanan Coast

Divilacan are much smaller towns, which were created in the 1970s by logging corporations. Along the Pacific Coast fishing is an important source of income. Coconut plantations and irrigated rice are the most important farming systems.

In the western side of the protected area, population centres are located relatively far from the park boundary. Around 32,000 people reside in 24 barangays along the forest frontier. In the uplands of Cagayan Valley, corn, bananas, and upland rice are the main agricultural products. The majority of people are Ilocano immigrants who migrated to Isabela in the 1950s. Corporate logging led to a second wave of immigrants in the 1980s; aided by logging roads farmers settled in the secondary forests of the Northern Sierra Madre (van den Top 1998; Seki 2004). A contemporary development is the inflow of Ifugao immigrants, who create small settlements in the forest (van der Ploeg *et al.* 2007). Most people in and around the NSMNP live below the poverty threshold, and depend on forest resources for food and cash (Department of Environment and Natural Resources 2001a). Another 1.5 million people in Cagayan Valley rely on the hydrological services the NSMNP provides. All land in the NSMNP is classified as 'forest land' and thus officially belongs to the state, with the exception of the privately-owned lowlands along the coast.

In 1979, President Ferdinand Marcos declared all public lands within a 45 mile (72 km) radius around Palanan as the Palanan Wilderness area (Letter of Instruction 917-A), with the dual objective of protecting forest resources and countering the civil insurgency that gripped northeast Luzon. In practice this meant very little: in the early 1980s, at the height of the 'logging boom', there were 44 concessions active in the Northern Sierra Madre, legally extracting 2 million cu. m wood per year (van den Top 1998: 285). Cronyism, corruption, and anarchy characterised the corporate logging industry during the Marcos administration (1965–1986) (Vitug 1993). In most cases the concession holders, well-connected businessmen, army officers, and politicians in Manila, sub-contracted the logging operations to entrepreneurs in Isabela province. These sub-contractors organised the logging operations and paid royalties to the concession holders. The so-called 'Bataan-system' became the dominant mode of operation; timber was extracted from the forest by teams using a bulldozer, chainsaws and several logging trucks. The labourers, often hired from upland communities, were paid by the volume of timber produced. Silviculture regulations were violated to maximise profits: areas were clear cut, logging roads were improperly constructed, annual allowable cuts were exceeded, protected species were harvested, logging took place outside or in suspended concessions, and reforestation efforts were minimal. These illegal practices were tolerated by government foresters in exchange for personal favours and payments (van den Top 1998).

The democratisation and decentralisation processes that followed the People Power revolution of 1986 had profound effects on corporate logging and protected area management. In 1991, there remained 10 active forestry concessions in the Northern Sierra Madre with an annual allowable cut of 241,600 cu. m (Danielsen *et al*. 1994). In 1992, in the wake of the Ormoc tragedy in which more than 5,000 people died in mudslides on Leyte, the Aquino administration (1986–1992) issued a ban on commercial logging in all primary forests in Ilagan and San Mariano (Guiang 2001; Persoon & van der Ploeg 2003). Logging operation in Maconacon stopped in 1992, after the sawmill and staff quarters of the Southern Plywood Corporation—one of the largest concessions in the Northern Sierra Madre—were attacked and burned to the ground by the New People's Army (NPA), allegedly because the company had refused to pay the so-called 'revolutionary taxes'. Most logging companies were blackmailed by the Maoist insurgents and had to provide food, fuel, and cash (Goldoftas 2006). At present only three logging companies legally harvest wood in areas adjacent to the NSMNP.[3]

After the fall of President Marcos in 1986, the country adopted a progressive forest policy that emphasised participatory decision-making and equitable access to natural resources (Walpole *et al*. 1993). The National Integrated Protected Area System Act (Republic Act 7586) of 1992 provided a new regulatory framework for biodiversity conservation in the Philippines. Substantial investments were made by international donors to build the capacity of the DENR, municipal governments and civil society organisations (World Bank 2003). Two internationally-funded projects aimed to support the DENR in the proclamation and management of the NSMNP; the Conservation of Priority Protected Areas of the Philippines project, which was implemented by a consortium of civil society organisations called NGOs for Integrated Protected Areas from 1994 to 2002 funded by the Global Environment Facility; and the Northern Sierra Madre Natural Park-Conservation Project, which was implemented by Plan International from 1996 to 2002 funded by the Dutch government (Persoon & van Weerd 2006). In 1997, the Palanan Wilderness Area was enlarged and renamed the Northern Sierra Madre Natural Park (Presidential Proclamation 978). A management plan with a zoning system should regulate local use of forest resources. All inhabited areas became multiple use zones; the rest was designated as strict protection zone. The Northern Sierra Madre Natural Park Act (Republic Act 9125) was adopted in 2001. At present only nine other protected areas in the Philippines have been proclaimed by Congress. But despite the legal recognition and international funding, the NSMNP remains a 'paper park'.

In theory the DENR and local stakeholders co-manage the NSMNP through the Protected Area Management Board. This management board consists of the mayors of the municipalities in the park, the head of the environmental service of the provincial government, the director of the provincial DENR, civil society organisations, barangay captains (village leaders), and representatives from farmers' cooperatives, indigenous peoples, and youth and women groups. The office of the Protected Area Superintendent, based in Palanan, is mandated to enforce the NSMNP Act and the resolutions of the management board. All timber harvested in the NSMNP

is by definition illegal.[4] In practice, however, environmental legislation and resolutions of the Protected Area Management Board are seldom enforced.

ILLEGAL LOGGING

Illegal logging poses a serious threat to biodiversity and rural livelihoods in the NSMNP (Nordic Agency for Development and Ecology & Department of Environment and Natural Resources 1998; Department of Environment and Natural Resources 2001a). Timber is harvested in all lowland dipterocarp forest areas of the protected area, particularly on the western side (Figure 1). We estimate that 20,000 to 35,000 cu. m wood per year is illegally extracted from the NSMNP, representing a minimal market value of 238 million PHP (4,750,000 USD). By way of comparison: the annual allowable cut of the three remaining logging concessions in Isabela combined is 37,794 cu. m.

We identified 11 illegal logging hotspots in the NSMNP. In the Cagayan Valley, timber extraction is concentrated along all major river systems of the protected area, most notably the Abuan River and the Bintacan River in Ilagan, and the Catalangan River, the Disabungan River, and the Ilaguen River in San Mariano (Figure 1). Here wood is transported out of the protected area by river. In San Pablo, Cabagan and Tumauini logging activities are taking place on a much smaller scale; in this area most timber stands are located at an elevation of 800 m and are commercially less interesting. Accessibility is the main factor why illegal logging is relatively limited in Divilacan and Palanan. Produced volumes of timber, payment arrangements, and profit margins vary considerably by location, which explains the wide ranges of our calculations (Table 1).

Illegal timber extraction (locally called *salabadiok*) in the NSMNP is financed by seven prominent businessmen in the urban centres of the province. In most cases, these financiers are registered lumber dealers or timber plantations owners, which enable them to legalise illegal wood. We estimate that the seven financiers in Cagayan Valley jointly have an annual net profit of 42–200 million PHP (840,000–4,000,000 USD). The financiers operate through middlemen in the

Table 1

Illegal logging hotspots in the Northern Sierra Madre Natural Park (2007)

Logging hotspots (Hauling points)	No. of chainsaws[a]	No. of labourers	Annual extraction (cu. m)	Market value[b] (PHP)	Missed forest charges[c] (PHP)
A. Pinacanauan de San Pablo (Tupa)	10	60	377-755	3,996,200-8,003,000	527,800-1,057,000
B. Puerta (Dy Abra, Masipi East)	15	120	566-1,132	5,999,600-11,999,200	792,400-1,584,800
C. Pinacanauan de Tumauini (Antagan)	5	60	189-377	2,003,400-3,996,200	264,600-527,800
D. Bintacan River (Batong Labang)	20	100	755-1,509	8,003,000-15,995,400	1,057,000-2,112,600
E. Abuan River (Cabeseria 27)	100	500	2,830-7,547	29,998,000-79,998,200	3,962,000-10,565,800
F. Catalangan River (Villa Miranda, San Isidro)	50	400	3,774-6,792	40,004,400-71,995,200	5,283,600-9,508,800
G. Disabungan River (Del Pilar)	70	560	5,283-8,491	55,999,800-90,004,600	7,396,200-11,887,400
H. Ilaguen River (Tappa, Ibujan)	80	640	6,038-7,075	64,002,800-74,995,000	8,453,200-9,905,000
J. Divilacan coast (Dilakit, Dimasalansan, Bicobian)	25	200	354-382	9,756,240-10,527,920	1,062,000-1,146,000
K. Palanan River (Dilacnadanom, Culasi)	30	240	382-425	10,527,920-11,713,000	1,146,000-1,275,000
L. Palanan Coast (Didadungan, Divinisa, Dimatatno)	20	200	283-509	7,799,480-14,028,040	849,000-1,527,000
Total	425	3,080	20,831-34,994	238,090,840-393,255,760	30,793,800-51,097,200

a. Based on field observations and interviews, we estimated the number of chainsaws and the number of *bugadores* in every logging hotspot, which enabled us to compute annual timber extraction rates for the year 2007. We assumed that on the western side loggers harvest 1,000 to 2,000 bdft (2.35 to 4.7 cu. m) per trip and make two trips per month from February to September (8 months per year). On the Pacific Coast loggers harvest 500 to 2,000 bdft per trip and work only in the dry season (6 months per year). An example: the annual extraction rate along Pinacanauan de San Pablo was calculated as follows: 10 chainsaws * 1,000 bdft * 2 trips * 8 months = 160,000 bdft/424 = 377 cu. m. In San Mariano (Catalangan, Disabungan and Ilaguen) these estimations were substantiated with information on the number of logging trucks leaving the collection points, and on the Pacific Coast the number of boats transporting wood (determined by repeated field observations). Forest guards and barangay officials have detailed information on illegal wood production as bribes are paid per bdft. The accuracy of the information presented in the table was validated by an aerial survey of the NSMNP by the provincial government in 2008, which determined the number of logging trucks and logging camps in the NSMNP and estimated the amount of wood in the clandestine sawmills (pers. comm. R. Araño 2008). b. Market value was calculated based on 2007 wood prices: 25 PHP per bdft (as most timber on the western side is softwood), thereby most probably underestimating the market value. On the Pacific Coast however we used 65 PHP per bdft, as most timber is narra. c. Missed forest charges are based on DENR regulations specifying forest taxes (Department Administrative Order 2000-63). These missed forest charges are hypothetical as marketing wood from a protected area is by definition illegal.
Note: the letters A to L refer to the locations mentioned in Figure 1.

remote villages. The middlemen, often barangay officials, organise specialised logging teams to harvest timber in the forest. Without connections to a middleman and financier, it is impossible to transport or sell timber in Isabela. Financiers and middlemen claim exclusive extraction rights to specific areas in the forest, the so-called 'area-area' system. Sometimes these 'concessions' are marked with signboards. Middlemen organise logging teams, order a certain amount of timber and provide a cash-advance for fuel and supplies, which is deducted from the payment upon delivery of the timber.

The logging teams consist of surveyors, a chainsaw operator, helpers, and transporters. The surveyors identify suitable trees for harvesting. Sometimes Agta are hired as surveyors (Minter 2010). The chainsaw operators, locally called *atcheros*, are often former skilled employees of the logging companies (Figure 2). The helpers carry the equipment, fuel and supplies, maintain the chainsaw and prepare the food. The transporters, *bugadores*, are responsible to transport the timber to the hauling points. In most cases these young men, between 16 and 30 years old, are recruited from the barangays along the forest frontier. We estimate that around 3,000 men are working in the illegal logging operations in the NSMNP (Table 1). This is consistent with earlier estimations that around 50% of the households in the barangays directly adjacent to the western boundary of the NSMNP are involved in illegal logging operations (Laarman *et al*. 1995; Seki 2004; Hobbes & Kleijn 2007).

The logging teams make regular logging trips of 5–10 days in the forest, depending on the location. The *bugadores* transport the timber through the rivers to the collection points and travel back with supplies: a complex logistical operation. Bugadores usually make two trips per month to haul timber. It takes two to five days to transport the timber to the hauling points. Logging mainly takes place in the dry season from February to September. The working conditions in illegal logging operations are harsh: felling, sawing, and transporting timber through the river are hazardous activities, and there are often accidents. In the rainy season, the harvesting and transport of timber becomes too difficult.

The logging teams make temporary camps along the rivers. The chainsaw operator fells the tree and saws the log into square beams (flitches) at the felling site. All trees that exceed a diameter of 1 foot (30.48 cm) are harvested. Water-buffaloes (*carabaos*) are used for skidding the logs to the camps, which function as log landings. Loggers light forest fires to facilitate skidding. In the camp, the square beams are sawn into 2 inch (5.08 cm) thick boards: *dos lapad*. Large rafts, sometimes more than 25 m long, are constructed to facilitate the transport of these boards through the river. The boards are kept afloat with interior tire tubes. Approximately 60–70% of the wood is wasted as a result of chainsaw milling and transportation over water (van den Top 1998). The *bugadores* transport the rafts to a hauling point in the lowlands where the lumber is loaded into trucks, and transported to a saw mill. Trucks load 3,000 to 5,000 bdft (board foot; 7 cu. m to 11 cu. m). The saw mills, locally called *simpin*, process the lumber. From here the wood is distributed to lumber dealers or furniture makers in the region, or directly transported to the urban centres in Central Luzon.

Timber is primarily harvested in riparian forest. Narra (*Pterocarpus indicus*) is the preferred timber species, primarily used for furniture. It is however becoming increasingly scarce on the western side of the NSMNP (van den Top 1998). Here, loggers mainly harvest other species: white lauan (*Shorea contorta*), red lauan (*Shorea negrosensis*), mayapis (*Shorea squamata*), yakal (*Shorea astylosa*), guiho (*Shorea guiso*), tanguile (*Shorea polysperma*), tindalo (*Afzelia rhomboidea*), and almaciga (*Agathis philippinensis*). These species, locally called 'soft wood', are mainly used for construction. In the coastal municipalities, loggers focus specifically on narra. Here, the wood is transported from the hauling points by motorised boats to saw mills in Central Luzon (particularly in the harbours of Mauban and Infanta). These *bancas* can load up to 9,000 bdft per trip (21 cu. m).

In general, the logging teams are paid per board foot of lumber by the middlemen. A chainsaw operator receives 2 to 3 PHP per bdft (Table 2). A skilled chainsaw operator can earn around 400 PHP (8 USD) per day. Bugadores and helpers are paid 1 to 2 PHP per bdft per trip (around 120–150 PHP per day, i.e., 2.4–3.0 USD per day). This makes logging one of the most profitable income generating activities in the forest frontier (van den Top 1998; Aquino 2004). Middlemen are also paid by the volume produced: 3.5 to 5 PHP per bdft. All payments are done on consignment, which places the *bugadores* at risk: if illegal timber is confiscated by the authorities they are not paid. The credit system is an important characteristic of the logging operations in the NSMNP, and makes it difficult to determine production volumes, profit margins and spending patterns. It creates a strong patronage bond between the middlemen and the *bugadores* that extends beyond logging; often credit for agricultural inputs is paid back with logging revenues (Huigen & Jens 2006). In interviews, loggers also often cite the need to pay school fees of children and siblings. A considerable part of the money earned in logging is spent on alcohol, tobacco, and prostitutes.

Many young men are attracted to the outdoor life and the 'easy money'. But other people in communities along the forest

Figure 2
Chainsaw operator in Abuan, Ilagan

Table 2

Costs of wood production in the Northern Sierra Madre Natural Park

	Costs per bdft (PHP)	% of total
Direct costs		
Fuel (gasoil and oil)	0.5-1.0	2-4
Supplies (food, cigarettes, gin)	0.5-1.0	2-4
Labour costs		
Surveyor	1.0-1.5	4-6
Chainsaw operator	2.0-3.0	8-12
Helper	1.0-1.5	4-6
Hauler	1.5-2.0	6-8
Transport (truck)	1.0-2.0	4-8
Middleman	3.5-5.0	14-20
Bribes		
DENR	0.0-1.0	0-4
NPA	0.0-1.0	0-4
Armed Forces of the Philippines	0.0-0.5	0-2
Philippine National Police	0.0-0.5	0-2
Profits		
Financiers	5.0-14.0	20-56

Source: Informal interviews with *atcheros* and *bugadores*

frontier are confronted with the negative impacts of logging. Farmers complain that logging trucks destroy farm-to-market roads. Fishers claim that fish catches have declined as a result of erosion and silting. The Agta mention that loggers disturb wildlife, destroy swiddens, and harass women (Minter 2010). The wives of the *bugadores* are concerned about the harsh working conditions in the forest. In many upland villages there is a shortage of labour as many young men are working in the forest. Most people living in and around the NSMNP know that harvesting and transporting timber is against the law.[5] There is growing awareness on the negative environmental impacts of logging, but barangay officials feel disempowered to do anything about the uncontrolled timber extraction.

CORRUPTION

Timber from the protected area is legally processed and marketed in Isabela. The Department of Trade and Industries, and municipal governments have issued licenses to 148 furniture shops in the five municipalities on the western side of the protected area. It is estimated that these furniture shops process more than 9,215 cu. m of illegally harvested hardwood per year, mainly for the domestic market (van den Top 1998: 171; Greenpeace 2006: 19). In addition, there are eight registered lumber dealers in San Mariano and Ilagan, who legally sell and transport the timber harvested in the protected areas to the urban centres in Central Luzon. The furniture makers form the largest manufacturing sector in Isabela province, employing approximately 1,500 people.[6]

The incongruence between illegally harvested timber and the legal sale of lumber and furniture is solved by fraud and corruption.[7] Middlemen collude with the DENR officials to authenticate illegal wood through a variety of legal loopholes. A popular method is the issuance of permits for supposedly damaged or dead wood that has washed ashore after typhoons or residual timber left in the forest by logging companies in the 1980s. This practice has generated a flow of so-called 'salvaged logs' or 'tops and branches' to the furniture shops (van den Top 1998: 226). Another way to legalise illegal wood is the 'old-stock' method (Aquino 2004: 269). Over the past 15 years, the furniture industry was on several occasions granted an amnesty that enabled the shops to legally sell their clandestine wood on the condition that they would make a transition to gmelina (yemane) or mahogany from plantations in the region. But stocks were over-declared with tacit approval of the DENR officials and are continuously replenished (Greenpeace 2006: 21). Transport permits are forged or 'recycled': several wood transports are covered by the same permit (Nordic Agency for Development and Ecology & Department of Environment and Natural Resources 1998). In other cases, wood is simply transported and sold without any permits or receipts.[8]

Middlemen bribe forest guards to secure passage for logging trucks at checkpoints and issue certificates. In many areas these payments are fixed: in San Mariano 1 PHP per bdft goes to the DENR officials. We estimate that 8–14 million PHP (160,000–280,000 USD) per year is paid in bribes to the DENR officials in Isabela. The DENR officials are not in this alone; the NPA is also claiming 'revolutionary taxes' from the logging syndicates: 1 PHP per bdft. Loggers sometimes also have to provide food and gasoline to the insurgents. Several barangays on the forest frontier have set up checkpoints and demand 50 PHP (1 USD) per logging truck, or several boards for the construction of a school or a barangay hall as happened in San Isidro. Furthermore, to pass the checkpoints of the Armed Forces of the Philippines and the Philippine National Police a payment of 1,500 PHP (30 USD) per truck is usually required. To transport wood from Isabela to Central Luzon trucks have to pass at least 11 checkpoints along the national highway (United States Agency for International Development 2004). Bribes are paid in order to ignore environmental legislation, evade forest charges, and maximise profits.

Senior DENR officials often downplay these 'standard operating procedures' (van den Top 1998: 231) as 'petty corruption', in which forest guards receive small bribes to look the other way so that the rural poor can meet their needs. But corruption associated with illegal logging operations in the NSMNP can best be described as collusive corruption, in which the financiers conspire with government officials to avoid regulations and taxes (Laurance 2004; Smith *et al*. 2007). In some cases, the interests of these actors is so closely interwoven that rent seizing occurs; local politicians and government officials actively undermine institutional safeguards and legislation to capture timber revenues for private gain (Ross 2001; Kishor & Damania 2007). Illegal logging is deeply entrenched in political patronage networks in Isabela (Coronel *et al*. 2004). Several financiers in Isabela hold prominent political positions in the province. Election campaigns are financed with money generated by illegal timber extraction (Inoguchi *et al*. 2005). The DENR officials feel pressured by elected politicians: 'if I confiscate the wrong timber transport

I risk being transferred to the Sulus'. As a result, forest guards have little confidence in the police or the judicial system; the few cases against middlemen and *bugadores* that are filed in municipal trial courts are dismissed or settled.

The failure to enforce environmental legislation, and the persistent allegations of corruption undermine the credibility and legitimacy of the DENR (Masipiqueña 1993; van der Ploeg & van Weerd 2004). Law enforcement in the NSMNP by the DENR is a farce. The DENR forest guards rarely patrol in the uplands; the remote and rugged terrain and the civil insurgency make this impossible, according to DENR officials (Harrison *et al*. 2004). Instead, the DENR has set up several check points at strategic locations to prevent the transport of timber, for example in Cabeseria 27, Masipi East, and San Mariano town. Table 3 gives an overview of illegal timber confiscations by the DENR in Isabela from 2003 to 2007. In 2006, the amount of illegal wood intercepted by the DENR was at an all time high. It earned the provincial director of the DENR, Felix Taguba, nationwide recognition as the 'outstanding forester of the year' (Cadabona 2007: 19). However, none of these confiscations have actually led to a conviction in court. Based on our estimates, the DENR did not confiscate more than 2.6% of the volume extracted from the protected area in that year. In interviews, forest guards admit that confiscations are actually often staged to meet confiscation targets; *bugadores* surrender several boards at the DENR checkpoints to secure passage.

Table 3

Total volume of wood confiscated in Isabela (2003–2009)

Year	Confiscated wood (cu. m)	% of estimated annual illegal wood extraction in NSMNP
DENR (Source: Regional DENR)		
2003	190	1.5-3.0
2004	129	0.7-1.1
2005	219	0.8-1.3
2006	478	1.7-2.6
2007	67	0.2-0.3
Provincial anti-illegal task force (Source: P. Fernandez pers. comm.)		
2008	1,212	3-5
2009	2,883*	23-47

*As of 1 October 2009

POLICY INTERVENTIONS

Policy interventions to control illegal logging are based on several flawed assumptions on the scale and organisation of the timber trade.[9] First, it is argued that as poor households along the forest fringe depend on timber revenues it is illegitimate to enforce forestry regulations without first alleviating rural poverty (Inoguchi *et al*. 2005; Custodio & Molinyawe 2001). This argument has initiated a multitude of 'alternative livelihood projects' that aim to reduce the dependency of rural communities on timber revenues, for example, by adopting agro-forestry, marketing non-timber forest products, developing irrigation facilities, organising farmers' cooperatives, or improving access to basic public services such as health care, education, and infrastructure. However most of these efforts fail to control illegal logging (Utting 2000). The Northern Sierra Madre Natural Park–Conservation Project for example built schools, trained village leaders, assisted farmers to secure land tenure, and distributed fruit trees to farmers in an effort to create a 'social fence' around the NSMNP. This integrated conservation and development project enabled upland farmers to establish agro-forestry farms in the buffer zone of the NSMNP; people now harvest citrus, coconut, and yemane. But in the absence of monitoring and enforcement, the *atcheros* and *bugadores* continued to harvest timber in the protected area (General 2005: 197).

Second, it is thought that by creating an alternative supply of wood, illegal logging activities will be minimised (Guiang 2001). This thinking is based on the insight that the closure of most corporate logging concessions lead to a scarcity of legal wood in the domestic market. Efforts have been made to reform the Philippine wood industry, mainly by promoting the establishment of smallholder tree plantations and by issuing Community-based Forest Management Agreements to upland communities (Chokkalingam *et al*. 2006). However, both strategies have failed to reduce illegal logging activities (Lasco & Pulhin 2006). In Isabela, the community-based forestry program was plagued by mismanagement and fraud, and widely misused to authenticate illegal wood from the NSMNP (Tarun-Acay 2004). The failure to enforce environmental legislation actually impedes the development of a sustainable and legal wood industry; throughout the province farmers have established yemane and mahogany plantations but the availability of cheap, illegal lumber depresses wood prices (Masipiqueña *et al*. 2008; Seki 2004). Despite the availability of legal wood from plantations, the furniture makers continue to use illegal narra.

Third, it is argued that forest protection activities should be based on inclusive multi-stakeholder co-management processes (DENR 1997; Food and Agriculture Organisation 2005). This vision has led to the establishment of Multi-sectoral Forest Protection Committees and the formation of local protection groups (*Bantay Kalikasan* and *Bantay Gubat*) throughout the Philippines. The National Integrated Protected Areas System Act clearly reflects the idea that participation minimises forest crime; every protected area is managed by a Protected Area Management Board in which all important stakeholders are represented. But the call for broad societal involvement in forest protection currently serves as an apology for the inability of the DENR to enforce forestry regulations. The Multi-sectoral Forest Protection Committee in the Northern Sierra Madre has been a failure, mainly because of conflicts with the DENR (Guzman 2003). The deputation of NGO staff, church leaders, fishermen, and indigenous people has led to much frustration; the DENR officials rarely respond to information on illegal logging activities, which fuels suspicion of corruption. On several occasions names of informants (including ours) have leaked from the DENR officials to the middlemen and financiers. The same problem paralyses the Protected Area Management Board of the NSMNP; illegal logging activities

are regularly reported by representatives, but the DENR does not take action (Perez & Minter 2004).

Fourth, to address forest crime it is deemed necessary to reform the legal framework (Food and Agriculture Organisation & International Tropical Timber Organisation 2005). Despite the fundamental policy reforms in the early 1990s aimed to foster 'good governance', there remain calls for the creation of a macro-coherent forest policy (Utting 2000). As we have seen, illegal logging operations in the NSMNP thrive in a seemingly biased, inconsistent, and over-regulated forest policy framework. Most producers, consumers, and municipal government officials do not fully understand the technical details of forestry regulations (Masipiqueña *et al*. 2008). Obtaining permits is a time-consuming and complex process (United States Agency for International Development 2004). Loggers, consumers, and furniture makers think that legal restrictions are just a means for the DENR officials to extract money (Greenpeace 2006). Law enforcement in the NSMNP is further hampered by institutional conflicts within the DENR (between district, provincial, regional, and national offices), between the DENR and municipal governments, and between the DENR and the National Commission on Indigenous Peoples. However, the permanent chaos and confusion that characterises forest policy implementation in the Northern Sierra Madre is to a certain extent deliberately created and maintained by the DENR officials (Garrity *et al*. 2001). Rules are selectively interpreted and implemented. The difficulties with the implementation of the Chainsaw Act (RA 9175) show that the formulation of new policies will not provide any solution. Since 2002 all chainsaws should be registered by the DENR; a straightforward measure to control illegal logging. In 2008, the DENR issued 43 chainsaw (merely 10% of the chainsaws active in the protected area) permits to registered lumber dealers and wood producers in Isabela (Table 1). Chainsaws can be heard daily along the rivers inside the protected area. In the barangays along the western boundary of the NSMNP, numerous chainsaw repair shops continue to serve customers, sometimes next to the DENR checkpoints. Since 2003, the DENR has confiscated 21 unregistered chainsaws (less than 5% of the estimated total number of chainsaws in the park) in the NSMNP. Efforts aimed at 'harmonising forest policies' distract attention from the real challenges of improving law enforcement and controlling corruption in the ranks of the DENR (Global Environment Facility 2008).

Finally, capacity building of the forestry service is often seen as the solution for the illegal logging problem (Food and Agriculture Organisation 2005). Over the past two decades, substantial investments have been made by international donors to enhance the institutional capability and accountability of the DENR. The results have been limited; the DENR is still plagued by high overhead costs (95% of the total budget) and corruption (World Bank 2003). The NSMNP remains structurally under-staffed and under-funded; the office of the protected area superintendent has two cars, five motorbikes, and two boats to manage a protected area of almost 360,000 ha. However, logistical, financial, and personnel constraints are too often used as excuses for incompetence, corruption or political interference (Grainer & Malayang III 2006). The provincial director of the DENR for example repeatedly claimed that 'there is only one forest ranger for every 4,601 ha' (Lagasca 2006: A-25). He added that 'despite these personnel and budgetary constraints we are still able to minimise, if not totally control illegal logging in the province'. In fact the protected area superintendent and the district offices of the DENR in Naguilian and Cabagan jointly employ 222 people who could, in theory, effectively monitor and control the 11 logging hotspots in the NSMNP (Table 1). The reasoning that the DENR officials are prime candidates for bribery because their salaries are too low (Broad & Cavanagh 1993) is also flawed. A forest ranger in Isabela earns around 8,000 PHP (160 USD) per month, excluding field allowances, insurance premiums, and other benefits. The higher ranking DENR officials earn considerably more; the monthly net salary of a district officer is around 20,000 PHP (400 USD), a middle-class income in the Philippines (National Statistical Coordination Board 2007). The additional benefits, pension, and security makes the DENR an attractive employer. Capacity building will not stop illegal logging without fundamental political and bureaucratic reforms (Tacconi 2007).

CONCLUSION: THE PRIMACY OF LAW ENFORCEMENT

In this paper, we have argued that illegal logging in the NSMNP is not a small-scale livelihood activity of the rural poor as is often claimed by government officials. The amount of timber harvested in the protected area is comparable to a commercial logging concession. Although logging generates cash for men along the forest frontier to meet short term needs, it undermines sustainable rural development in the long term by destroying the resource-base on which rural communities depend, eroding the rule of law, and distorting markets (Brack 2007; Kaimowitz 2007). Most profits are captured by middlemen and financiers who operate in collusion with government officials. The argument that strict law enforcement aggravates rural poverty and fuels the civil insurgency is misused by DENR and local government officials to mask the detrimental impacts of timber extraction and to cover collusive corruption (Grainger & Malayang III 2006; Richards *et al*. 2003).

Recent developments in Isabela show that illegal logging can effectively be controlled by enforcing existing policies. In August 2008, the reform-oriented governor of Isabela province, Grace Padaca, set up the Provincial Anti-illegal Logging Taskforce.[10] Pressured by the diocese of Ilagan and local environmental groups who stressed the negative social and environmental impacts of illegal logging, and anxious to take on her political opponents who allegedly financed their electoral campaigns with logging revenues, Padaca decided to take action against illegal logging.[11] Despite fierce opposition from the DENR and municipal governments, four checkpoints were set up and manned by staff of the provincial government, the army, the police, and volunteers of the public interest

environmental law group *Tanggol Kalikasan*. In 18 months, the Provincial Anti-illegal Logging Taskforce confiscated more than 4,000 cu. m illegal timber (Table 3). Timber extraction practically stopped along Abuan River. In San Mariano, the logging teams continued operating until the taskforce raided clandestine sawmills in June 2009 (Lagasca 2009). Criminal cases were filed in court against middlemen and financiers. The provincial director of the DENR was replaced (and promptly re-assigned by the DENR Secretary in neighbouring Cagayan Province). Deliberately, no legal action was taken against the *bugadores* and *atcheros* (Severino 2009).

Local and national media extensively covered the enforcement activities in the NSMNP. The anti-illegal logging campaign gained Padaca nationwide recognition as a pro-poor, green, and reform-oriented politician. Padaca consistently linked illegal logging to flooding and landslides, and argued that the interests of 3,000 poor rural households along the forest frontier and the profits of seven businessmen should not outweigh the massive damage to crops, property, and lives that result from flooding in Cagayan Valley (Lagasca 2008c). In 2008, four tropical typhoons claimed more than 100 lives and caused a damage of about 4.8 billion PHP to crops and infrastructure in Cagayan and Isabela. The natural calamity reaffirmed the urgency to control illegal logging, and justified the actions of the taskforce in the eyes of the public. The urban middle-class is increasingly concerned about the environmental impacts of deforestation, indignant about the systemic corruption in the public service, and demands political reforms and greater accountability of government (Contreras 2002). But the support for the taskforce was not limited to the urban areas of the province, which form the political base of Padaca. Many people in the uplands also supported Padaca's stand against illegal logging. Illegal logging epitomises the lawlessness in remote forest areas and the marginalisation of rural communities (Erni 2006), and many people along the forest frontier therefore considered the strict enforcement of forest policy a legitimate and positive change (Figure 3).

The Provincial Anti-illegal Logging Taskforce stopped illegal logging in the NSMNP by monitoring illegal hotspots, confiscating chainsaws and timber, and prosecuting middlemen and corrupt government officials (Figure 4). This underlines that improving the rule of law, in the form of enforcing existing regulations and addressing corruption, is a critical first step towards sustainable forest management and poverty alleviation, especially in areas where uncontrolled resource extraction will lead to irreplaceable environmental damage such as in the Northern Sierra Madre (Rudel & Roper 1997; Kishor & Belle 2004; Ravenel & Granoff 2004; Gibson *et al*. 2005).

Empirical case studies of illegal logging operations in other protected areas in insular southeast Asia draw similar conclusions. For example, McCarthy (2002) describes how organisers of illegal logging gangs backed by local government officials and army officers co-opt rural communities living in and around the Gunung Leuser National Park in Sumatra to harvest timber. Casson & Obidzinski (2002) document how illegal logging is deeply entrenched in local economies and

Figure 3
Civil society protest against logging, San Mariano

Figure 4
Wood confiscated by the provincial anti-illegal logging taskforce, Ilagan

political patronage systems in Kalimantan, and how local politicians legitimise resource plunder by using concerns about the well-being of rural communities. Strengthening the rule of law is widely regarded as a prerequisite to address unprecedented forest loss in Indonesia, but how to do this in the current socio-political context remains elusive (Jepson *et al*. 2001; Sodhi *et al*. 2006). The experiences with the Provincial Anti-illegal Logging Taskforce in Isabela suggest that the devolution and democratisation processes that are reshaping power relations in the region offer an opportunity to improve forest protection. Much can be gained if international donors would support decentralised forest protection initiatives. A starting point would be to enable civil society groups to hold the DENR and local government officials accountable, if necessary in criminal court (Glastra 1999; Ross 2001; Colchester *et al*. 2006). In the Philippines, existing legislation provides enough possibilities to do so; in the NSMNP Act a special provision is made to act against government officials who 'shall unjustifiably refuse or refrain from instituting prosecution or shall tolerate the commission of offences' (Department of Environment and Natural Resources 2001b: 24). In this light, the proliferation

of public interest environmental law groups throughout the country, such as *Tanggol Kalikasan* or the Environmental Legal Assistance Centre, is a promising development.

The signboard in San Isidro illustrates the position of poor rural communities in the illegal logging operations in the NSMNP. Barangay officials are trying to extract some lumber from the loggers to improve public services in the village. Their request was ignored. It is telling that a community living in one of the most valuable forests in the country has to beg for lumber to construct a church.

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Notes

1. Forest cover in the Philippine archipelago declined from 50% in 1950 to 24% in 2005 (Food and Agriculture Organisation 2005); the remaining lowland forests are severely degraded. Deforestation and forest degradation form a major threat to biodiversity (Brooks *et al*. 2002; Posa *et al*. 2008), and contribute significantly to CO_2 emissions (Lasco & Pulhin 2000). The social and economic costs of deforestation are large, and disproportionally affect the rural poor (Broad & Cavanagh 1993; Goldoftas 2006).
2. The Northern Sierra Madre mountain range covers 4 provinces in northeast Luzon: Cagayan, Isabela, Quirino and Nueva Vizcaya.
3. The Luzon Mahogany Timber Corporation (LUZMATIM) was granted a concession for 23,543 ha, allowing the company to harvest 15,714 cu. m wood per year in Dinapigue, just outside the NSMNP. The concession of the Pacific Timber Export Corporation (PATECO) covers 33,454 ha with an annual allowable cut of 14,900 cu. m in the southern part of Isabela province. And the Liberty Logging Corporation annually harvests 7,135 cu. m in a concession of 25,887 ha, southwest of the NSMNP.
4. In theory, a registered people's organisation can harvest timber in the sustainable use and multiple use zones of the protected area for 'domestic purposes' (e.g., house construction), under a Protected Area Community-based Resource Management Agreement (PACBARMA). Private land owners in the protected area can apply for a Private Land Timber Permit (PLTP). But the DENR has not issued these tenure agreements in the NSMNP so far. Timber can be harvested outside the protected areas under tenure instruments issued by the DENR. Logging corporations operate under an Industrial Forest Management Agreement (IFMA). Another important legal source of wood in Isabela is the Community-Based Forest Management (CBFM) program. The DENR issued 12 Community-based Forest Management Agreements, together covering 48,065 ha, to people's organisations in the barangays directly adjacent to the NSMNP. Timber can also be legally harvested on public land covered by Socialized Industrial Forest Management Agreements (SIFMA): 521 agreements, totaling 2,789 ha, were issued to smallholders in the buffer zone of the NSMNP. These areas are mainly located along the forest frontier where farmers have established yemane (*Gmelina arborea*) plantations. These 'legal sources' are widely misused to authenticate illegal wood from the NSMNP (Nordic Agency for Development and Ecology & Department of Environment and Natural Resources 1998).
5. *Atcheros* and *bugadores* use the creative verb '*agillegal*' (doing illegal) when they talk about logging. During interviews, middlemen and financers acknowledge the illegality of logging operations.
6. The wood industry is well organised and politically influential: there are three large cooperatives in Isabela that are associated at the regional level in the Cagayan Valley Chamber of Furniture Producers Association.
7. Corruption is defined as the abuse of public office for private gains. In the literature, a distinction is often made between non-collusive corruption in which government officials receive a payment for allowing a (semi-) legal activity such as harvesting fuelwood, and collusive corruption in which government officials conspire with entrepreneurs to avoid regulations and taxes (Laurance 2004; Smith *et al*. 2007).
8. A Certificate of Lumber Origin (CLO) and Certificate of Transport Agreement (CTA) are required by law, to transport and sell lumber.
9. In Philippine forest policy discourse, a distinction is often made between 'small-scale timber-poaching activities' or 'carabao logging' by rural communities and 'large-scale illegal logging' by logging companies (Department of Environment and Natural Resources 2001a: 52), implying different degrees of equity, sustainability, and legitimacy. But a striking characteristic of the illegal logging operations in the Northern Sierra Madre is the continuity over the past forty years, and the similarities between the corporate Bataan logging system in the 1970s and 1980s and current timber harvesting practices. In fact this historical continuity can be extended to the nineteenth century. Bankoff (2009) documents how in 1882 rich and influential traders (*contratistas*) from Manila ordered wood from middlemen (*acopiadores*) in the provinces. These middlemen often held prominent political positions. They organised labor gangs to harvest wood, and bribed forestry government officials to tolerate destructive harvesting practices.
10. In a fiercely contested election in May 2004, Grace Padaca, a former investigative radio-broadcast journalist, surprisingly defeated the incumbent Governor of Isabela, Faustino Dy Jr. The Dy family had ruled Isabela for 34 years. Padaca consolidated her position when she defeated Ben Dy in the elections in 2007. In the 2010 elections that were marred with massive vote-buying and violence, Padaca lost to Faustino Dy III with a narrow margin.
11. The Provincial Anti-illegal Logging Taskforce was initiated by a democratically elected provincial governor in cooperation with grassroots civil society groups, primarily out of concern for the welfare of rural communities. To a large extent this is probably the reason for its effectiveness and legitimacy in the eyes of most people in Isabela.

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