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Devolution of Natural Resource Management and Crocodile Conservation: The Case of San Mariano, Isabela

Jan van der Ploeg and Merlijn van Weerd

*The local government unit of San Mariano plays a pivotal role in the in-situ conservation of a small, fragmented and critically endangered population of Philippine crocodile (*Crocodylus mindorensis*) that survives in the remote rivers and creeks of the municipality. Defying cultural prejudice, San Mariano has declared the crocodile as its flagship species. It has prohibited the killing of crocodiles and established a municipal crocodile sanctuary. So far the results have been promising. San Mariano's conservation program appears to be a success story in the devolution of power and authority on natural resource management to the local level. But the long-term effectiveness of this approach is still uncertain. This paper describes the challenges of protecting crocodiles in remote areas characterized by poverty, insecure land tenure, violent insurgency, and a history of state-sponsored resource depletion.*

KEYWORDS: *Philippine crocodile (*Crocodylus mindorensis*), biodiversity conservation, community-based natural resource management, devolution, environmental governance*

The Philippine crocodile (*Crocodylus mindorensis* Schmidt 1935) is a small freshwater crocodylian endemic to the Philippines. Intensive commercial hunting, unsustainable fishing, and habitat loss have decimated the population below critical threshold levels throughout the Philippine archipelago (Ross and Alcala 1983; Ross 1998; van Weerd and van der Ploeg 2004).¹ The single other crocodile species that exists in the Philippines, the Estuarine crocodile (*Crocodylus porosus*), is restricted to coastal habitats. Although threatened with extinction in the Philippines, this species is not globally threatened.

Responding to the alarming results of Philippine crocodile surveys in the early 1980s (Ross 1982; Ross and Alcala 1983), the Philippine government established an *ex-situ* conservation program in 1987: the Palawan Wildlife Rescue and Conservation Center (PWRCC).² Captive breeding was considered the best solution to guarantee survival of the species (Messel et al. 1992; Ortega 1998; WCSP 1997). The PWRCC has successfully bred Philippine crocodiles in captivity, but no crocodiles have so far been reintroduced in the wild. Negative community attitudes towards crocodiles and the absence of any form of effective protection of the species and its habitat make the reintroduction of *C. mindorensis* in the wild almost impossible (Banks 2000).

The rediscovery in 1999 of a small and fragmented Philippine crocodile population in the municipality of San Mariano, Isabela Province in northeast Luzon (van Weerd 2000) and the subsequent conservation efforts (van Weerd et al. 2000; van Weerd and General 2003) created new opportunities for the survival of the species in the wild (van Weerd and van der Ploeg 2004). In this remote municipality in the northern Sierra Madre an alternative conservation strategy was developed. Here, conservation activities have focused on protecting *C. mindorensis* in its natural habitat through mobilizing public support for crocodile conservation, and establishing sanctuaries with the consent and cooperation of local authorities and rural communities.

The aim of this paper is to document the Philippine crocodile conservation activities in the municipality of San Mariano, and place them in the wider context of natural resource management and environmental governance in the Philippines. We give special attention to the pivotal role of the local government unit (LGU) in the protection of the species. We argue that the devolution of power to the municipal government has been instrumental for the design of a legitimate and effective policy to protect *C. mindorensis* in the wild. In the current sociopolitical context that characterizes the uplands of northeast Luzon, only local governments are able to effectively enforce laws protecting the Philippine crocodile and its freshwater habitat.

In many parts of Southeast Asia processes of decentralization and devolution have started as a result of the failure of centralized forms of government to solve certain problems, especially those pertaining to

environment and development (Persoon et al. 2004). In the Philippines, devolution has largely become synonymous with transfer of authority on natural resource management from the DENR to LGUs, as stipulated in the 1991 Local Government Code. Some authors have stipulated that this is essentially a top-down attempt to extend the authority and influence of the central state in remote upland areas (Magno 2001; Edmunds and Wollenberg 2004). Interestingly, this state-initiated devolution process has created a context in which local politicians, rural communities, and civil society groups are able to design new institutions for the sustainable management of natural resources at the local level (Contreras 2003). Throughout the Philippines people are currently experimenting with participatory approaches to conserve wildlife and natural resources. In contrast to the punitive national laws or the technocratic and capital-intensive captive breeding projects of the national government, these efforts epitomize adaptive and flexible comanagement approaches that strengthen multifunctional local institutions and ingenuity (Scott 1998). This article aims to contribute to the growing body of empirical case studies describing local experiences to creatively overcome environmental degradation and rural poverty.

It is important, at the outset, to clarify our own position and methodology. This paper is largely based on our experiences in the Crocodile Rehabilitation, Observance and Conservation (CROC) project (van Weerd and van der Ploeg 2004), which aims to conserve the Philippine crocodile in the wild in northeast Luzon. Data were collected from 1999 to 2004 with the objective to strengthen conservation efforts for the Philippine crocodile. Crocodile populations were monitored on a quarterly basis (van Weerd and van der Ploeg 2004). We supervised several students of Isabela State University and Leiden University who systematically collected data on peoples' perceptions and awareness in San Mariano and conducted interviews to obtain information of threats and potential conservation actions (Acorda 2004; Garduque 2004; Gatan 2004; Guingab 2004; Oudejans 2002; Tarun 2004; Tarun et al. 2004). Most important perhaps in understanding the problems surrounding the centralized government bureaucracy was our participation in formal meetings with government officials, scientific seminars, sessions of the Sangguniang Bayan and community consultations, and, above all, our

informal contacts with key informants over a period of time. All in all, we think that this form of participatory action research enabled us to gain an in-depth understanding of the processes and context of environmental governance in contemporary rural Philippines.

A Short History of Crocodiles in San Mariano

The municipality of San Mariano covers an area of 1,469.5 square kilometers located in the foothills of the northern Sierra Madre. It consists of a small town center, San Mariano, and thirty-three barangays. Three main rivers drain the municipality: the Catalangan River, the Disabungan River, and the Pinacanauan de Ilagan River (see figure 1).³

The Philippine crocodile used to be common in the wetlands of San Mariano. Early Spanish accounts talk about the crocodile-infested rivers of the province of Isabela. The indigenous peoples of the area, the Agta and Kalinga, depended heavily on the rivers and streams for fish, but had very limited impact on the crocodile population. These indigenous communities still have strong cultural taboos on eating crocodile meat, and in many cases attach supernatural powers to the animal. In 1896, the Spanish colonizers established an administrative center on the convergence of the Pinacanauan and Disabungan rivers, and called it San Mariano (Keesing 1962). It marked a turning point in the political control of the area and the fate of the Philippine crocodile.

After the Revolution of 1898 and under the new colonial administration of the United States, San Mariano experienced an influx of Christian Ibanag migrants (Huigen 2004). These groups claimed the best agricultural lands along the extensive riverbanks and flood plains for the cultivation of upland rice, root crops, vegetables, and bananas. The indigenous peoples from the area, the Kalinga and the Agta, were assimilated or pushed further into the forests (Scott 1979). Crocodiles were associated with the devil and regularly killed, but human population was too low to severely threaten *C. mindorensis*: in 1939 there were 7,046 people in San Mariano (Keesing 1962, 262).

Large-scale commercial logging of the vast forests began after independence. With the construction of Maharlika highway in the 1960s, which facilitated over land transport to Manila, logging corporations

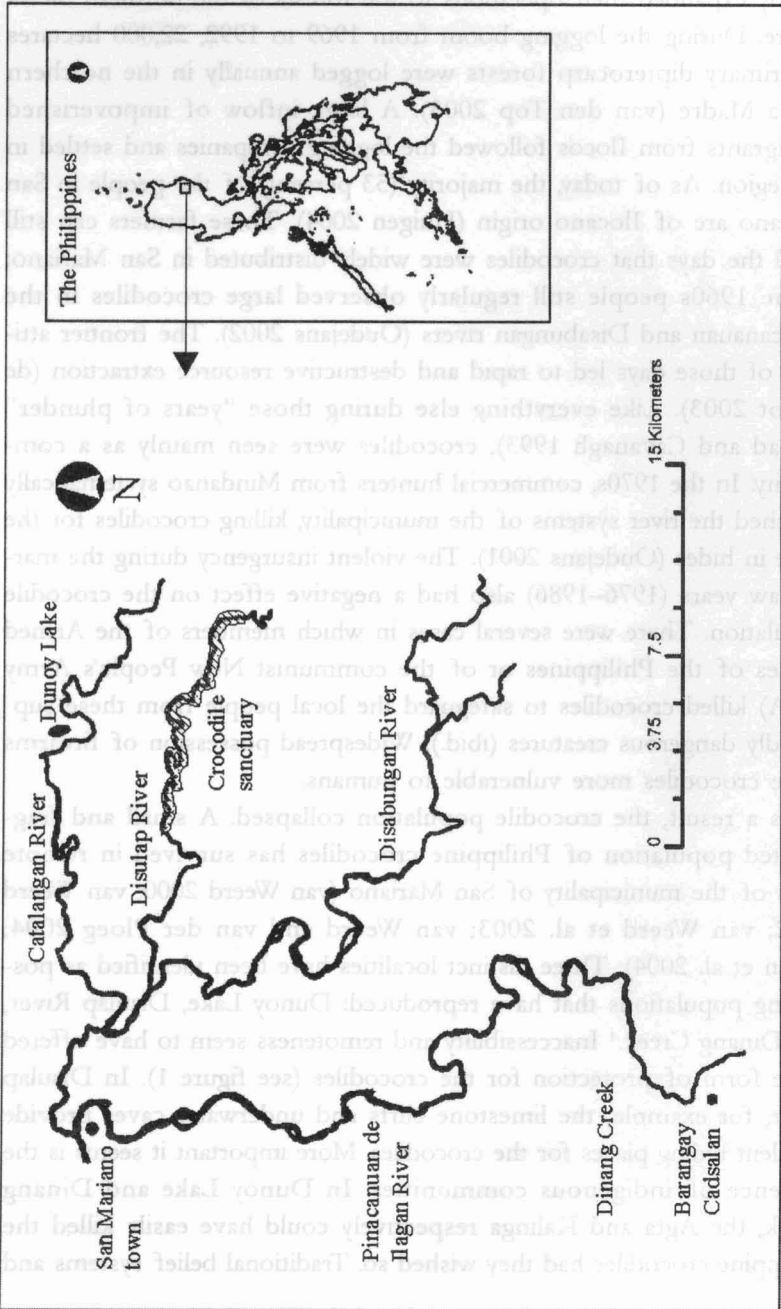


Figure 1. Map of San Mariano, Isabela, showing the location of the Philippine crocodile sanctuary and breeding sites.

quickly expanded their operations to the forests of the northern Sierra Madre. During the logging boom from 1969 to 1992, 22,000 hectares of primary dipterocarp forests were logged annually in the northern Sierra Madre (van den Top 2003). A large inflow of impoverished immigrants from Ilocos followed the logging companies and settled in the region. As of today, the majority (53 percent) of the people in San Mariano are of Ilocano origin (Huigen 2004). These farmers can still recall the days that crocodiles were widely distributed in San Mariano; in the 1960s people still regularly observed large crocodiles in the Pinacananan and Disabungan rivers (Oudejans 2002). The frontier attitude of those days led to rapid and destructive resource extraction (de Groot 2003). Like everything else during those “years of plunder” (Broad and Cavanagh 1993), crocodiles were seen mainly as a commodity. In the 1970s, commercial hunters from Mindanao systematically searched the river systems of the municipality, killing crocodiles for the trade in hides (Oudejans 2001). The violent insurgency during the martial law years (1976–1986) also had a negative effect on the crocodile population. There were several cases in which members of the Armed Forces of the Philippines or of the communist New People’s Army (NPA) killed crocodiles to safeguard the local people from these supposedly dangerous creatures (*ibid.*). Widespread possession of firearms made crocodiles more vulnerable to humans.

As a result, the crocodile population collapsed. A small and fragmented population of Philippine crocodiles has survived in remote areas of the municipality of San Mariano (van Weerd 2000; van Weerd 2002; van Weerd et al. 2003; van Weerd and van der Ploeg 2004; Tarun et al. 2004). Three distinct localities have been identified as possessing populations that have reproduced: Dunoy Lake, Disulap River, and Dinang Creek.⁴ Inaccessibility and remoteness seem to have offered some form of protection for the crocodiles (see figure 1). In Disulap River, for example, the limestone cliffs and underwater caves provide excellent hiding places for the crocodiles. More important it seems is the presence of indigenous communities. In Dunoy Lake and Dinang Creek, the Agta and Kalinga respectively could have easily killed the Philippine crocodiles had they wished so. Traditional belief systems and

resource use practices have prevented the killing of crocodiles, and although these cultural attitudes are now rapidly changing they have given some form of protection to the species.⁵

After democracy was restored in the country during the People Power revolution in 1986, the new constitution introduced major policy reforms. In response to the centralized and autocratic government of Marcos, under which the small and well-connected elite in Manila profited from resource destruction, local governments were given more autonomy (Vitug 1993). Civil society blossomed, and a wide variety of environmental civil society organizations (CSOs) advocated environmental protection and rural development, a process that was also fuelled by renewed international attention (van den Top and Persoon 2000; Vitug 2000). In San Mariano, several CSOs concentrated on the protection of the Northern Sierra Madre Natural Park (NSMNP), which is partly situated in the municipality of San Mariano. The plight of the Philippine crocodile, however, was ignored, simply because of the fact that scientists and conservationists were unaware of its existence in the municipality.

Social and economic changes continued to threaten the remnant crocodile populations. Dynamite and electro fishing regularly killed the remaining crocodiles. Freshwater swamps and marshes were rapidly converted into rice paddies. Crocodiles were often captured: purposively for the pet trade or accidentally in fishing nets, and sometimes crocodiles were killed because they were perceived as dangerous (van Weerd 2002).⁶ These factors, combined with a strong growing human population—in 2000 San Mariano had 40,995 inhabitants (Huigen 2004)—jeopardized the survival chances of the species in San Mariano.

National Legislation

There is no specific national legislation protecting crocodiles in the Philippines, nor is there an overriding policy framework protecting Philippine wetlands (DENR and UNEP 1997). However, there are several national policies that offer, in theory, possibilities for in-situ conservation of *C. mindorensis* (see Appendix A).⁷ The DENR is the government

agency responsible for the enforcement of national laws that govern the country's natural resources and environment.⁸ The DENR's Protected Areas and Wildlife Bureau (PAWB) is tasked with the protection of the country's wildlife, including its crocodiles. But aside from proposing several wetlands as crocodile sanctuaries, the PAWB does not have an in-situ conservation program for *C. mindorensis*.⁹ Following Executive Order No. 192 of 1987, the functions of the DENR were decentralized to the twelve administrative regions, and subsequently to the Provincial Environment and Natural Resource Offices (PENRO), and the Community Environment and Natural Resource Offices (CENRO). The enforcement of environmental laws has become the exclusive responsibility of the regional offices (van den Top 2003; Oposa 2002). San Mariano falls under the jurisdiction of the CENRO of Naguilian, the PENRO of Isabela province, and the regional DENR office of Region 2.

Unfortunately, the lack of financial resources, political support, and technical capacity of the DENR seriously hinders the enforcement of these national laws. The DENR is responsible for managing half of the Philippines' total land area, but has an underdog position in the ranks of the government (van den Top 2003). To give an indication of its political importance: the DENR receives 1.7 percent of the total budget allocation to national government agencies (CPBD 2003). Lack of financial resources and manpower is often cited as a reason for weak enforcement of environmental laws and policies (NORDECO and DENR 1998, iv). The CENRO Naguilian, for example, with a jurisdiction consisting of the municipalities of San Mariano, Benito Soliven, Gamu, Naguilian, and Ilagan, has fifty-three staff members of which five are assigned to the Protected Area Wildlife Service (PAWS). Political patronage and a hierarchical bureaucratic culture traditionally focused on resource extraction, and a low esteem for field activities, further weaken the capacity of the DENR to effectively monitor and implement the national policies that could protect *C. mindorensis* in the wild (Utting 2000).

Consequently, crocodiles remain de facto outlawed: the DENR is unable to stop dynamite and electro fishing, despite stiff penalties provided for in the Fisheries Code of the Philippines (R.A. 8550), and it

considers slash-and-burn farming in critical crocodile habitats unavoidable notwithstanding its illegality as specified in the Revised Forestry Code of the Philippines (P.D. 705).¹⁰ In many cases, the DENR considers the prosecution of violators too dangerous. Forest rangers are regularly threatened and there have been several murder cases of DENR officers on duty in the region. Law enforcement is hampered by the sporadic civil violence in the uplands of San Mariano. Related to this, DENR officials also consider the strict implementation of laws unethical given the socioeconomic position of the violators, and fear that punishment would fuel the insurgency—a widespread practice called “humanizing the law.” In addition, DENR personnel often cite the lack of information dissemination as a reason not to enforce rules and regulations: how does one penalize somebody for clearing his fields in a crocodile habitat, when he is not aware that this is unlawful? In fact, awareness and knowledge of DENR officials themselves about wildlife conservation in general, and national policies protecting crocodiles in particular, is low: of twenty DENR officials interviewed in 2003 in five different DENR offices (CENROs of Naguilian, Cauayan and Cabagan, the office of the Protected Area Superintendent (PASu) of the NSMNP in Tumauni, and the PENRO office in Ilagan), twelve (60 percent) were not aware of the existence of the Animal Welfare Act. Nine officials (45 percent) had never heard about the Wildlife Act. The NIPAS Act and the Revised Forestry Code were better known: only seven officials (35 percent) did not know these acts (Guingab 2004).¹¹

The DENR, in short, suffers a serious credibility crisis: “the idealistic and ambitious objectives of DENR are in sharp contrast with its public image as a corrupt and inefficient organization” (van den Top 2003, 234). Ironically, DENR officials are often called *buwayas*, crocodiles, by local people in San Mariano. The inability of the DENR to effectively enforce national laws and policies at the local level is a major problem for the effective protection of *C. mindorensis* in the wild, and for biodiversity conservation and environmental protection in the Philippines in general. In the absence of structural administrative reforms, this grim local reality forces us to consider alternative solutions for wildlife conservation in the Philippine uplands.

Local Alternatives

In March 1999, Mr. Samuel Francisco, a fisherman from the village of San Isidro, accidentally caught a crocodile hatchling in Disulap River, thereby revealing its previously unknown existence in northeast Luzon. This by-catch triggered new initiatives for in situ Philippine crocodile conservation.

The Northern Sierra Madre Natural Park-Conservation Project (NSMNP-CP), an integrated conservation and development project aimed at preserving the Northern Sierra Madre Natural Park, spear-headed the conservation activities for *C. mindorensis* in San Mariano.¹² Since 2002, crocodile research and conservation activities have been conducted by the CROC project.¹³ Surveys were carried out in cooperation with the Protected Areas Wildlife Service of the DENR Region 2 and the PWRCC to determine the status and distribution of the Philippine crocodile population in San Mariano (van Weerd et al. 2003). These surveys highlighted the difficulties of preserving the species in the wild. Local attitudes towards crocodile conservation were outright negative. Not so much out of fear for the crocodile as people regularly encountered the animal and considered it relatively harmless, but because these upland farmers feared that crocodile conservation would have a negative impact on their livelihood. The NPA, which basically has been in control of the remote uplands of San Mariano, reinforced these fears as they suspected crocodile conservation to be a front for a government organized land grabbing scheme (*Baringkuas* 2003). The most direct threat to the crocodiles, however, was the lack of effective protection of the species and its freshwater habitat.

The Local Government Code of 1991 has decentralized the power and authority over natural resource management to the Local Government Units (LGUs).¹⁴ The devolution of the functions of the DENR to the LGUs, as specified in Department Administrative Order (DAO) No. 30-92 section 3, has provided municipal authorities, in theory at least, with considerable influence over Philippine crocodile conservation; for example, through the devolved authority for the management, protection, and rehabilitation of small watersheds and the conservation of endangered species. In the municipality of San Mariano, it has opened

a window of opportunity for effective protection of the Philippine crocodile in the wild.

After the discovery of breeding crocodile populations in San Mariano, conservationists actively lobbied to get the support of the municipal authorities of San Mariano for a long-term in-situ conservation strategy for the species. The strategy focused on the proclamation and management of crocodile sanctuaries with the consent and cooperation of local people (van Weerd and General 2003). The first step was to create a comprehensive policy protecting the species in the wild.¹⁵ On 23 July 1999, the Sangguniang Bayan (Municipal Council) responded to this call of civil society by approving Municipal Ordinance No. 1999-025, which prohibits "the collection and annihilation of Philippine crocodiles in the municipality." It includes a modest penalty for violators: "Violators shall be fined one thousand pesos or will be imprisoned for 15 days." For the first time in Philippine history, *C. mindorensis* had a protected status.

This ordinance marked the start of an intensive involvement of the LGU in crocodile conservation. On 21 January 2000, the municipal council enacted Municipal Ordinance No. 2000-002 declaring the Philippine crocodile the flagship species of the municipality, a remarkable action in a country where crocodiles are generally associated with corrupt government officials (Banks 2000). On 17 April 2000 the council approved Municipal Resolution No. 2000-133 requesting the NSMNP-CP and the DENR to put up a crocodile rescue center in the municipality.¹⁶ Most importantly, on 7 September 2001 the Sangguniang Bayan approved Municipal Ordinance No. 01-17, declaring the upper part of Disulap River as a municipal sanctuary for the Philippine crocodile.¹⁷

The proclamation of the crocodile sanctuary could be seen as a model for devolving authority over natural resource management to local governments. Assisted by the NSMNP-CP, the LGU organized a series of public consultations with local communities residing near the municipal sanctuary. These meetings sought to balance conservation goals with the development needs of the community. The boundaries of the sanctuary were negotiated, and it was decided to limit fishing, hunting and agricultural activities within the sanctuary.¹⁸ With the minimal resources available, a well functioning system of self-enforcement was

considered essential. Therefore, the LGU aimed to form a protection team composed of local people, the Bantay Sanktuwaryo, to monitor and enforce the rules and regulations of the crocodile sanctuary (van Weerd and General 2003).¹⁹

An intensive communication and awareness-raising campaign, conducted in cooperation with CSOs working in the municipality, highlighted the flagship status of the crocodile. It aimed to counter negative community attitudes towards crocodiles, and mobilize public support for the conservation of the species (van Weerd and General 2003). Newsletters, posters, flyers, and a comic album were distributed in the municipality. Billboards were placed in strategic locations throughout the municipality. A bulletin board highlighting the existence of *C. mindorensis* was placed prominently in the lobby of the municipal hall. The incumbent municipal mayor, Jesus Miranda, printed T-shirts showing the Philippine crocodile and generously gave them to municipal officials, guests, and staff members.

Communication and creating public awareness have turned out to be a key factor for effective conservation (van Weerd et al. 2004). Information from the DENR does not reach the barangays, and most people are simply not aware of the national environmental policies and laws (Acorda 2004; Garduque 2004; Tarun 2004). In many cases, the CENRO offices themselves do not receive a copy of the laws and their implementing rules and regulations (Guingab 2004). Municipal ordinances, on the contrary, are discussed during joint sessions of the Sangguniang Bayan and the Sangguniang Barangay (Barangay Council), and during informal discussions between the barangay council and local people and are disseminated during the annual barangay assembly meetings.

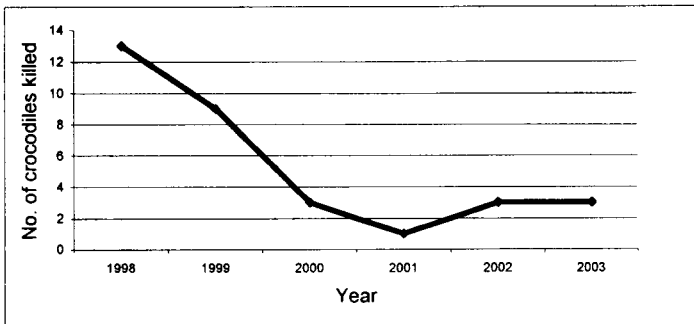
To match the rhetoric in the municipal ordinances, the LGU actually allocated financial resources for crocodile conservation. In 2003, the Sangguniang Bayan budgeted P500,000 (US\$10,000) for the preservation of the species, equivalent to about 0.6 percent of the total budget of the municipal government of San Mariano.²⁰ More significantly, the LGU prioritized the delivery of basic social services to barangays with a crocodile population in order to mobilize local support for crocodile conservation. Farm-to-market roads were improved to assist farmers,

and also to stimulate ecotourism. In Barangay Disulap, the LGU financially supported a proposal of the local people's organization to provide security of tenure for their upland possessions.²¹ In Barangay Cadsalan the LGU cofinanced the construction of four pump wells, meant to provide clean water and minimize human-crocodile interaction. In addition, the LGU prioritized the construction of a rural health clinic in this remote village.

As a result of these activities a transformation has taken place in the attitudes of local communities towards crocodiles.²² Whereas people once regarded *C. mindorensis* as a dangerous pest or a delicious snack, they now believe the crocodile is "something to be proud of!"²³ The fact that the Philippine crocodile survives in the municipality has become a special source of pride. More importantly, the actual killing of crocodiles has largely stopped (see figure 2), and the total number of non-hatchling crocodiles in San Mariano has increased from 12 in 2000 to 31 in 2003, ultimately the best indicator for successful crocodile conservation (van Weerd and van der Ploeg 2004; see also note 4).

These efforts have not remained unnoticed. The crocodile conservation activities of the LGU received national attention when it was featured in one of the most popular television shows on prime time, *Magandang Gabi Bayan!*, hosted by then Senator (and now Vice President) Noli de Castro. Several national newspapers covered the conservation activities of the LGU. The conservation activities in San Mariano are now widely regarded as offering the best hope for the recovery of the Philippine crocodile in the wild (van Weerd and van der Ploeg 2004).

Figure 2. Reported crocodile killings in the municipality of San Mariano



Discussion: Local Solutions to Local Problems²⁴

In four years' time, the LGU of San Mariano has taken a number of steps to conserve the Philippine crocodile. The involvement of the LGU has proven to be an important factor in the effective protection of the species in the wild. It created a breakthrough in the downward spiral of local extinctions, negative community attitudes, and passive governance that has long characterized crocodile conservation in the Philippines. As such, the conservation strategy in San Mariano appears to be a success story in the legislative efforts to devolve authority on natural resource management from the national agencies to the local level. This discussion focuses on three arguments that are often mentioned in the scientific literature on decentralized natural resource management that challenge the validity and effectiveness of devolving power from the DENR to LGUs: (a) local governments are not inclined to focus on global conservation priorities but focus on local development, hence a centralized expert system is needed to preserve the common good; (b) devolution of power fuels institutional confusion in which corruption and incompetence thrive; and (c) without reforming underlying sociopolitical structures, devolution will lead to resource capture by powerful local elites. Together these arguments form what has been labeled "the Achilles heel of localization" (Bryant and Bailey 1997, 74). Here we will argue, based on the experiences in San Mariano that, contrary to these arguments, the devolution of power to the LGU has been instrumental for effective wildlife conservation in the Philippines. The main reason for this outcome, we believe, is that the enforcement of laws protecting crocodiles and other wildlife is only possible if it is considered *legitimate* by the majority of local people (Brechin et al. 2003), a role that only local governments can play in the contemporary sociopolitical context of the Philippine uplands.

Cash for Crocodiles

The first argument often used to question the devolution of power to local governments is that only a supra local expert system can assure the preservation of natural resources without a direct utilitarian value, such as crocodiles or biodiversity in general (Bryant and Bailey 1997).

The central state, in this view, remains indispensable because it is the only actor in a position to address ecological problems at larger scales and on a longer term. Essentially this is a question of scale: not all environmental problems, especially those where there is no direct benefit for the local people, can be solved at the local level.

The San Mariano case proves that local governments can preserve a globally threatened species even when there are no direct local benefits. The extremely low population and the shy nature of the Philippine crocodile rule out any short term cash benefits for the municipality through harvesting or ecotourism, a fact fully recognized by local government officials. The only benefits derived from crocodiles by the municipality are immaterial: a source of pride and media attention.²⁵ Of course, the LGU has a (very legitimate) focus on rural development. But this does not contradict conservation efforts as is so often assumed.

Interestingly, critics of decentralized biodiversity conservation focus on what the local government supposedly could not do. But this line of reasoning inverts the argument: after all, it is the lack of capacity of the central government that forces us to find alternatives for sustainable natural resource management. In fact, the incompetence, ignorance and corruption in the ranks of the supra local actor have allowed the Philippine crocodile to go nearly extinct.²⁶ The critics also underestimate the capacity of LGUs to understand the supra local importance of conserving a critically endangered species. In San Mariano, the LGU was informed, trained, and supported by civil society; but without the political will from the LGU itself the conservation of the Philippine crocodile would never have taken place.

This brings us to another argument often used against the devolution of authority to the local level: it is often thought that the influence of CSOs and other grassroots groups can be disproportionate and can effectively undermine good governance at the local level (see, for example, Bryant and Bailey 1997; van den Top and Persoon 2000; Utting 2000; Contreras 2000).²⁷ The CSOs' focus on a single issue, such as Philippine crocodile conservation, can influence local governments to put aside more pressing and relevant issues, or so it is argued. In San Mariano crocodile conservation has been put on the agenda by CSOs.

Although the continued involvement of civil society is likely, especially with regard the provision of technical expertise, to say that these groups can have disproportionate influence is to disregard the capacity of local government officials. The LGU of San Mariano, for example, has always stressed that crocodile conservation has to be linked to rural development; it has increased accessibility of remote crocodile areas by providing farm to market roads for affected communities, a development that conservationists would normally rather not advocate. Local communities and the LGU have been able to access funds for rural development that are linked to crocodiles that otherwise would not have been available.²⁸ The partnership between CSOs and the LGU in San Mariano, what Gerhard van den Top and Gerard Persoon (2000, 176) have called the “leapfrogging of the murky waters of the nation state,” has actually resulted in in-situ conservation action for *Crocodylus mindorensis*.

Devolution, according to the skeptics, should be checked and balanced by a continuing role for central government to safeguard supra local and intergenerational interests, and intrinsic values (Lutz and Caldecott 1996). In San Mariano devolution has helped to increase local responsibility for Philippine crocodile conservation, making this process more relevant and interesting for local people; not because of its utilitarian value but on intrinsic grounds and associated indirect benefits.

Confusion over Crocodiles

The second argument often used against the transfer of power and authority to the local level is that it will lead to more institutional confusion, which paralyzes government. Devolution, it is argued, has to be accompanied by a coherent and supportive macro policy (Utting 2000). A structural problem that characterizes biodiversity conservation in the Philippines are the overlapping jurisdictions of the DENR and LGUs, leading to what Dennis Garrity et al. (2001, 132) have called “the continuing confusion over government lines of responsibility and authority.” The parallel processes of devolution of power from the DENR to the LGU and the decentralization of the DENR to the regional, PENRO and CENRO levels create systematic confusion about the division of tasks and responsibilities of the DENR and the LGU.²⁹ As Rowena Reyes-Boquiren (2002, 104) observes:

The institutional arrangement for addressing biodiversity loss is highly bureaucratized, compartmentalized, and segmented, oftentimes resulting in competition, conflicts, duplication, disjointed action and the like. The bureaucratization is reflected in the enforcement of policies and program implementation. . . . A key area for advancing conservation is the harmonization of policy conflicts and program implementation issues.

This is familiar talk for everybody working on natural resource management in the Philippines. Crocodile conservation in San Mariano permanently has to deal with institutional uncertainties and questions, caused by the DENR bureaucracy, that usually lead to delays: this applies to the deputization of the Bantay Sanktuwaryo, the issuance of appropriate land tenure instrument to farmers in crocodile habitat, the implementation of a Biodiversity Monitoring System (BMS) in the Disulap River crocodile sanctuary, the applications for permits to conduct ecological research, the authorization of the municipal rescue center, and so on. Red tape and bureaucracy make conservation activities sometimes grind to a halt.

A fundamental problem is that most people, including most local government officials and DENR staff, think that only the DENR can enforce environmental laws. This has profound consequences for law enforcement: apparently, a difference is made between environmental laws to be enforced by the DENR and "normal" laws to be enforced at the barangay level by the barangay *tanod* (barangay police) or at the municipal level by the Philippine National Police.³⁰ Another problem is the sheer size of the DENR bureaucracy and its enormous responsibilities. Officers in charge tend to change position frequently, usually without properly turning over their responsibilities, and there is little or no communication between different bureaus and divisions.³¹ Institutional conflicts between the DENR and other government agencies, such as the National Commission on Indigenous Peoples (NCIP) or the Department of Agrarian Reform (DAR); occasional rifts between CSOs, the DENR, and LGU; and personal conflicts resulting in bureaucratic resistance further aggravate this bureaucratic confusion.

In summary, the mandate, jurisdictions and responsibilities of the LGU and the DENR are far from clear for most officials, let alone

for local people.³² This situation is indeed hampering environmental governance, and is a major cause of the failed implementation of environmental laws and policies. But in San Mariano progress has been made because the LGU has assumed a leading role and has been able to function despite the DENR bureaucracy.³³ Concerns about the effects of devolution on macrocoherency are valid, but it is the supra local structure itself which creates the confusion. In effect, this structure becomes an argument for devolution: confusion is avoided when the authority lies solely with local governments. The national government and the DENR, however, do play an important role in creating a macrocoherent framework for environmental conservation by ratifying international agreements and creating national legislation, tasks that can never be adopted by local governments. A distinction should be made between the creation and the implementation of the framework. The boundaries of what is possible are set by the macro policy, ensuring that local governments do not allow illegal activities or jeopardize international agreements. The implementation possibilities are greatly enhanced by involving local governments through devolution.

Crocodiles in Congress

A more fundamental concern raised about the Local Government Code is that the devolution of power to the local governments, before any significant sociopolitical reforms have taken place, will simply replicate the plunder of the past at the local level:

The Local Government Code aimed to correct longstanding imbalance in political and economic power between 'Imperial Manila' and the provinces. For centuries, Metro Manila siphoned resources and people away from the provinces for a kind of 'national development' that widened the economic gap between these urban centers and the rural periphery. It is questionable whether devolution is the way to redress the resulting social and political imbalances. In environmental terms, devolution carries the risk of replicating the past national development pattern in the provinces. . . . It remains to be seen whether local institutions can take the place of a weakened DENR in balancing these pressures and channeling these along a

more sustainable course than the one pursued by the nation as a whole. (van den Top 2003, 338)

Arguably, local elites will capture the natural resources of the municipalities if not checked by a centralistic expert system like the DENR. Given the longstanding tradition of using public office for personal gain or for defending the interest of the elite, it is feared that the transfer of responsibilities to local authorities associated with decentralization will result in abuse of power and corruption (Aguilar 1994; Utting 2000; Contreras 2000).

San Mariano is, of course, no benign exception. In this remote municipality too the "pork barrel state" (Coronel et al. 2004) infiltrates all aspects of public life. But the absence of clear material benefits in crocodile conservation has not influenced the conservation activities for the species (see above). Crocodile conservation has largely been an apolitical oddity for local government officials. The Sangguniang Bayan members generally see crocodiles as something exciting and fun to be discussed during a session break, or as a way to generate attention. More relevant perhaps is the observation that things are also changing: in the 2004 elections the people of San Mariano massively voted against the political dynasty that had controlled southern Isabela for generations. Crocodiles may have nothing to do with it, but local people are starting to make their politicians accountable for their actions. The words of Maria Cacha and Julian Caldecott (1996, 102) might provide a counterweight against the prevailing pessimistic views of devolution and the state of Philippine politics:

The reform process that began in the mid-1980s has a long way to go before all the damaging effects of [a history of social strife and environmental degradation] can be turned to benefit. Nevertheless, much progress has been made, and the pace of change has accelerated during the early 1990s. The former centralized and coercive style of governance, development and conservation essentially has been abandoned in favor of a model based on participation, accountability and community tenure in the rural areas. . . . Although abuses persist and shortages of funds and skill exist among the newly empowered LGUs, the decentralization process continues to accelerate and is probably now irreversible.

Legitimacy

Of course there are dangers associated with the transfer of power and authority to the local level. But, as the San Mariano case has shown, the local government has successfully handled the threats facing *Crocodylus mindorensis* in the municipality. The municipal ordinances are generally followed; not because of strict law enforcement, but because the majority of the people complies voluntarily with the measures of the LGU to protect crocodiles. This outcome is in sharp contrast to the national regulations of the DENR that are widely seen as illegitimate and are often simply disregarded.

During the Marcos presidency, national government agencies, especially the DENR, became equated with corruption, patronage, and the unequal distribution of wealth:

One structural factor that results in widespread violations of DENR policies and constrains the capability of DENR to curtail these violations is the *degree of legitimacy* that the citizenry attribute to the government in general, the “acceptance, even approbation, of the state’s rules of the game, its social control, as true and right . . . [and] the acceptance of the state symbolic configuration within which the rewards and sanctions are packaged.” (van den Top 2003, 327, emphasis added)³⁴

After democracy was restored to the country in 1986, the new administration reinforced the concepts of decentralization, democratization, and people’s participation in mainstream policy formulation: the Local Government Code of 1991 and the NIPAS Act of 1992 are clear examples of this recognition of the sociopolitical dimension of natural resource management. The pendulum swung back during the Eleventh and Twelfth Congresses: the Wildlife Act is again a testament to a centralistic and technocratic vision of resource management, combined with a complete ignorance and disregard of the socioeconomic and political context of the Philippine uplands (Luna 2004). An example from the field can make this clear.

In San Mariano, 1000 posters were distributed by the Mabuwaya Foundation to inform local citizens of the municipal ordinances prohibiting the killing of crocodiles. Interestingly, the same poster was distrib-

the job.³⁶ The main question, however, is which law to apply in case of a violation? The answer, in the Philippine judicial system, basically lies in the hand of the prosecutor, who can decide on which law or ordinance to base his case.³⁷ For our purpose it suffices here to note that the municipal ordinances appear to be far more effective. In contrast to the national law, the penalties of the municipal ordinances are realistic and considered by local people to be just punishment for the offence, and as such are taken seriously.

The key to effective law enforcement is to create rules that are understood and supported by the majority of the local community. In contemporary Philippine society only self-imposed enforcement will be effective; and only the LGUs seem to be able to define rules that are considered to be just, correct and appropriate; in other words, *legitimate*. As Steven Brechin et al. (2003, 14–15) state:

Since conservation and other agencies will likely never have enough resources to universally enforce the law and since confusion over the legitimacy of enforcement acts at times creates conflict, a more practical, long term approach would be to negotiate agreements that participants view as legitimate and feasible.

The municipal government of San Marino has succeeded in defining rules protecting *C. mindorensis* that are widely accepted by local people as important and fair. This experience suggests that local governments can be very effective in creating laws that work, and that future strategies to protect crocodiles in the Philippines should make use of the authority of the barangay and municipal governments.

Conclusion: The Importance of Local Governments for Wildlife Conservation

In this paper we have argued, based on the experiences in the municipality of San Mariano, that in the contemporary Philippine context only local governments can effectively protect *Crocodylus mindorensis* in its natural habitat. In this remote municipality in the northern Sierra Madre, an alternative strategy has been developed in response to the failure of

centralized attempts by the DENR to protect the Philippine crocodile in the wild. In the absence of any credible form of law enforcement by the national government, the LGU and conservationists negotiated a set of rules and regulations with rural communities that effectively protect the species and its habitat. This approach largely depends on self-imposed control by local people. The Local Government Code of 1991 made such an alternative model for natural resource management possible by "creating space," to use the words of Antonio Contreras (2003, 3), to initiate conservation action at the local level. As such it was not a purposive response of the central state to its own failure, but rather a spontaneous and organic grassroots initiative: an anomaly tolerated, at best, by the central bureaucracy (Contreras 2003; Magno 2001; Scott 1998).

This is not to say that decentralization and devolution can solve all problems pertaining to the conservation of crocodiles in the Philippines. Some form of centralized control and supportive macro policy remains necessary to tackle supra local threats such as international trade and climate change especially in a rapidly globalizing world (Persoon 2004; Utting 2000; Lutz and Caldecott 1996). Local efforts to manage natural resources can only succeed if the structural institutional reforms of the DENR that started in 1987 will continue.

As this article shows, the devolution of authority over natural resource management to local governments has opened a window of opportunity for in-situ conservation of endangered wildlife in the Philippines. Throughout the archipelago, civil society groups are working closely together with LGUs to conserve biodiversity (see, for example, Widman et al. 2003; Contreras 2003; Lavidés et al. 2004). It remains to be seen whether the experiences of this single species program can be applied to other forms of natural resource management, especially when vital vested interests are at stake. But so far this approach seems currently to be the most effective in addressing the serious problems the Philippines is facing with regard environmental conservation. The coming years will show whether these local efforts suffice in creating the necessary conditions for the recovery of the Philippine crocodile in the wild.

Appendix A. A Legal Arsenal for Philippine Crocodile Conservation

The following national policies give some form of legal protection to the critically endangered Philippine crocodile and its freshwater habitat in the municipality of San Mariano:

a. P.D. 705, the Revised Forestry Code of the Philippines of 1975, and subsequent amendments redefines the use of, access to, and control over public forests. Section 16 specifies that “strips of mangrove or swampland at least twenty (20) meters wide, along shorelines facing oceans, lakes and other bodies of water, and strips of land at least twenty (20) meters wide facing lakes, may not be classified as alienable and disposable land” (Oposa 2002, 84);

b. P.D. 1067, the Water Code of the Philippines of 1976, identifies the basic legal principles related to the appropriation, control and conservation of freshwater resources. Article 51 specifies that “the banks of rivers and streams and the shores of the sea and lakes throughout the entire length and within a zone of . . . twenty meters in agricultural areas, and forty in forest areas are subject to the easement of public use” (ibid., 437). Article 74 states that “swamps and marshes which are owned by the state and which have primary value for waterfowl and propagation of other wildlife purposes may be reserved and protected from drainage operation and development” (ibid., 439);

c. P.D. 1152, the Philippine Environment Code of 1977, calls for a rational exploitation of threatened wildlife resources. Chapter II-Wildlife, Section 29 identifies measures for rational exploitation that include: (i) regulating the marketing of threatened wildlife resources; (ii) reviewing existing rules and regulations on exploitation and formulating guidelines for systematic and effective enforcement; and (iii) conserving threatened species of fauna, increasing their rate of reproduction, maintaining their original habitat, habitat manipulation, population control in relation to the carrying capacity of any given area, banning indiscriminate and destructive means of catching or hunting them” (ibid., 13);

d. Presidential Proclamation No. 2146 on environmentally critical areas and projects of 1981 requires an Environmental Impact Statement (EIS) for all activities in areas “which constitute the habitat for any endangered species of indigenous Philippine wildlife” (ibid., 21);

e. R.A. 7586, the National Integrated Protected Areas System (NIPAS) Act of 1992, defines the terms of establishing protected areas in the Philippines. Hunting of wildlife is prohibited in areas under NIPAS, except in some specific circumstances (for example, for traditional or religious purposes of indigenous commu-

nities). A large part of San Mariano falls under the NSMNP, which is one of the ten priority sites established under the NIPAS (see below under R.A. 9125);

f. R.A. 8485, otherwise known as the Animal Welfare Act of 1998, regulates the treatment of captive animals. The killing of crocodiles, the act specifies, can only be done "through humane procedures" (ibid., 171). In the act no difference is made between *C. porosus* and *C. mindorensis*; moreover the act is not very relevant to wild animals and offers no protection to wild crocodiles;

g. R.A. 8550, the Philippines Fisheries Code of 1998, ensures the rational and sustainable development, management and conservation of the fishery and aquatic resources in Philippine waters and protects the right of local fisherfolk. Chapter 2, Section 11, mentions that the "Department shall declare closed seasons and take conservation measures for rare, threatened and endangered species in concurrence with concerned government agencies" (ibid., 385). Note that this act is to be implemented by the Department of Agriculture (DA). All other acts in this appendix fall under the jurisdiction of the DENR. Also contrary to the other acts presented here is the clear definition of terms provided in this act. Endangered, rare and/or threatened species are defined as "aquatic plants, animals . . . in danger of extinction as provided for in the existing fishery laws, rules and regulations of the PAWB of the DENR and in CITES" (ibid., 380);

h. R.A. No. 9147, the Wildlife Resources Conservation and Protection Act of 2001, usually referred to as the "Wildlife Act" aims to: "(i) conserve and protect wildlife species and their habitats; (ii) regulate the collection and trade of wildlife; (iii) pursue, with due regard to the national interest, the Philippine commitment to international conventions; (iv) initiate or support scientific studies on the conservation of biodiversity" (ibid., 117). The R.A. specifically mentions the jurisdiction of the DENR over crocodiles and other wetland species; the DA for its part has jurisdiction over all declared aquatic critical habitats and all aquatic resources (ibid.). After a three-year delay, the DENR, DA and the Palawan Council for Sustainable Development (PCSD) issued their joint IRR pursuant to the Wildlife Act (Joint DENR-DA-PCSD Administrative Order No. 01). In October 2004, the Wildlife Act came finally into force;

i. R.A. 9125, the Northern Sierra Madre Natural Park Act of 2002, is of special importance for San Mariano. The forested areas of San Mariano were largely identified as strict protection zones in the general management plan of the NSMNP. A crocodile habitat management zone, encompassing the watersheds of the Catalangan and Disulap rivers, was also identified in San Mariano (DENR 2001). In addition, there are various international agreements and conventions to which the Philippines is a signatory: (a) the Philippine crocodile is listed on Appendix 1

of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), banning all international trade in the species or species-derived products (CITES 1998); (b) the Convention on Biological Diversity (CBD), ratified by the Philippine Senate in 1993, urges for a national strategy for biodiversity conservation; (c) the Ramsar Convention that protects internationally significant wetlands; and (d) the Pulau Rambut Declaration that urges all governments in Southeast Asia to stop the loss of wetlands (DENR and UNEP 1997; Oposa 2002). The Philippine constitution gives a ratified international treaty the same weight and value as a statute of Congress (de Leon 2002, 47).

Notes

Abbreviations used:

BP	British Petroleum
CBD	Convention on Biological Diversity
CDCAS	College of Development Communication Arts and Sciences
CENRO	Community Environment and Natural Resources Office
CEPF	Critical Ecosystem Partnership Fund
CFI	Crocodile Farming Institute
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CML	Institute of Environmental Sciences
CROC	Crocodile Rehabilitation, Observance and Conservation project
CSO	Civil Society Organizations
CVPED	Cagayan Valley Program on Environment and Development
DA	Department of Agriculture
DAR	Department of Agrarian Reform
DAO	Department Administrative Order
DENR	Department of Environment and Natural Resources
EIS	Environmental Impact Statement
IPRA	Indigenous Peoples' Rights Act
IRA	Internal Revenue Allotment
IRR	Implementing Rules and Regulations
ISU	Isabela State University
IUCN	World Conservation Union
LGU	Local Government Unit
MENRO	Municipal Environment and Natural Resources Office
M.O.	Municipal Ordinance
NCIP	National Commission on Indigenous Peoples
NIPAS	National Integrated Protected Areas System

NORDECO	Nordic Agency for Development and Ecology
NPA	New People's Army
NRDC	Natural Resources Development Corporation
NSMNP	Northern Sierra Madre Natural Park
NSMNP-CP	Northern Sierra Madre Natural Park Conservation Project
PAMB	Protected Area Management Board
PASu	Protected Area Superintendent
PAWB	Protected Areas and Wildlife Bureau
PCSD	Palawan Council for Sustainable Development
P.D.	Presidential Decree
PENRO	Provincial Environment and Natural Resources Office
PWRCC	Palawan Wildlife Rescue and Conservation Center
R.A.	Republic Act
SIAFDMPC	San Isidro Agro-Forestry Development Multi-Purpose Cooperation
WCSP	Wildlife Conservation Society of the Philippines
WWF	World Wildlife Fund

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1. The IUCN classifies the Philippine crocodile as "Critically Endangered," defined by a continuing declining mature population of less than 250 individuals in fragmented subpopulations, which each do not hold more than 50 mature individuals (Criterion C2a) and a population reduction of more than 80 percent during the last three generations based on declining areas of occupancy, extent of occurrence, and the quality of habitat (Criterion A1c). When a taxon is classified as Critically Endangered it is facing an extremely high risk of extinction in the wild in the immediate future (IUCN 2003).

2. The PWRCC was formerly known as the Crocodile Farming Institute (CFI). The Japanese International Co-operation Agency provided the financial and technical support to set up the CFI from 1987 to 1994, amounting to a total of US\$1.5 million.

3. The following paragraphs draw heavily on Persoon and van der Ploeg 2004.

4. The observed (counted, no extrapolation) non-hatchling Philippine crocodile population in San Mariano increased from 3 in 1999, 12 in 2000, 16 in 2001, 13 in 2002 to 31 in 2003. The increase can be attributed to successful reproduction (and surviving hatchlings) and a decline of crocodile killings; see figure 2 in the main text. No crocodile surveys could be carried out during the dry season of 2004 due to election-related security issues. Crocodile population numbers are usually presented as non-hatchling populations because hatchlings (one year old crocodiles) generally have very high mortality rates. The Philippine crocodile population in San Mariano and its population structure, population dynamics and habitat characteristics have been described in greater detail elsewhere (van Weerd 2002; van Weerd and van der Ploeg 2004; Tarun et al. 2004).

5. This is in stark contrast to the wetlands used and controlled by Ibanag or Ilocano farmers. The latter groups, like most people in the Philippines nowadays, regard crocodiles as a dangerous pest to be exterminated or a delicious snack (Banks 2000).

6. The Philippine crocodile is a very small and shy species. Its maximum length is 3 meters, with most adults between 1.5 to 2 meters (Banks 2000). No fatal attacks on people are known and the very small number of known instances in which Philippine crocodiles have hurt people is connected to harassment and disturbance or to instances when people tried to protect livestock that had been attacked by crocodiles (Oudejans 2002). Local residents who live near the surviving crocodiles in San Mariano are generally not afraid of crocodiles and are aware that the Philippine crocodile does not attack people unprovoked (Gatan 2003).

7. The Spanish and American colonial legacy is still very relevant in Philippine legislature (see, for example, the continuing debate about the Regalian doctrine), but there are, as far as we know, no special provisions relevant for crocodile conservation.

8. The DENR is the mandated government agency for environmental protection. It is responsible for: (a) the conservation, management and development of the country's natural resources, including those in reservation and watershed areas and lands of the public domain; (b) the preservation of the cultural and natural heritage through wildlife conservation and segregation of national parks and protected areas; and (c) the enforcement of policies, standards and rules and regulations for the control of pollution and conservation of the country's genetic resources, biodiversity and endangered habitats (Oposa 2002, 2). It was created pursuant to Executive Order No. 192 of 1987, which merged the Ministry of Natural Re-

sources, the National Pollution Control Commission, and the National Environmental Protection Council. There are six bureaus under the cabinet secretary: (a) Mines and Geosciences, (b) Forest Management, (c) Land Management, (d) Ecosystem Research and Development, (e) Environmental Management, and (f) Protected Areas and Wildlife. Attached to the DENR is the NRDC, the corporate arm of the DENR responsible for promoting natural resource development through investment in technology and forest management ventures (Oposa 2002). The PWRCC is currently managed by the NRDC in an attempt to create financial sustainability and continuity for *ex-situ* crocodile conservation efforts.

9. Several wetlands throughout the country have been identified as critical habitats and are officially protected under the NIPAS Act of 1992 (R.A. No. 7586). These include, among others, Naujan Lake in Mindoro, Liguasan Marsh, Sumalig Island, Mainit Lake, and Agusan Marsh in Mindanao (WCSP 1997; Banks 2000).

10. More disturbingly, DENR does not respond to direct threats to crocodiles. When a Philippine crocodile was captured by fishermen in 2002 and kept on a rope for several weeks in the municipality of Divilacan in the NSMNP, no action was taken by DENR officials and consequently the crocodile died. The remains of the crocodile were collected by DENR staff and buried, only to be exhumed later and thrown into the sea as local DENR staff blamed extensive rains on revenge by the crocodile's spirit. Under the NSMNP Act (R.A. 9125) killing a crocodile in the NSMNP carries a penalty of 6 years and 1 day in jail and a fine of P1 million. Dynamite fishing carries a maximum penalty of 10 to 12 years imprisonment; fishing with "obnoxious substances," 8 to 10 years; and electro fishing, 6 months to 2 years (Peña 2001, 199; Oposa 2002, 413). See also Appendix A.

11. Awareness and knowledge were defined during this undergraduate study as knowing the title of the law (Guingab 2004). Obviously, awareness of specific provisions or the penalties is much lower.

12. The Northern Sierra Madre Natural Park-Conservation Project was funded by the Netherlands Government and implemented by Plan Philippines from 1996 to 2002. The long-term objectives of the project were to (1) preserve biodiversity in the protected area and its buffer zone, (2) rehabilitate degraded areas in the park, and (3) protect its watersheds. The project gave technical advice on protected area management and biodiversity conservation to the DENR and the park's PAMB. The second phase of the project is currently being implemented by WWF-Philippines.

13. After the phase-out of the NSMNP-CP in 2002, crocodile conservation activities were continued by the CROC project of the newly formed Mabuwaya Foundation. The CROC project won the BP Conservation Program Gold Award in 2002 and the Top Follow-Up Award in 2003.

14. R.A. 7160, the Local Government Code of 1991, Section 3i, reads: "local government units shall share with the national government the responsibility in

the management and maintenance of ecological balance within their territorial jurisdiction, subject to the provisions of this Code and national policies” (Defensor-Santiago 2000, 5). The local government consists of: (1) the provincial government, with the provincial governor as chief executive and the Sangguniang Panlalawigan as legislative body responsible to adopt measures for the preservation of the natural ecosystem in the province; (2) the municipal government, with the municipal mayor as chief executive and the Sangguniang Bayan as the legislative body responsible for the approval of ordinances for the protection of “the environment and impos[ing] appropriate penalties for acts which endanger the environment, such as dynamite fishing and other forms of destructive fishing, illegal logging and smuggling of logs, smuggling of natural resources products and of endangered species or flora and fauna, slash and burn farming, and such other activities which result in pollution . . . of rivers and lakes” (Section 447; Oposa 2002, 640); and (3) the *punong* barangay, or barangay captain, who shall enforce all laws and ordinances which are applicable in the barangay, including those relating to the protection of the environment (Section 389; Oposa 2002, 639). In this article we focus only at the barangay and municipal levels.

15. In San Mariano, *Crocodylus mindorensis* can be found mostly outside the existing protected areas as defined in the NIPAS Act, with the exception of Dunoy Lake. A conventional conservation program, based on minimizing people-crocodile interactions and complete protection of crocodile habitat, is therefore not a possibility there. Resettling people from crocodile-inhabited areas will not be accepted by the local people and local government in the current sociopolitical context (van Weerd and General 2002).

16. The NSMNP-CP established a Philippine crocodile holding pen in 2001. Here, three crocodiles retrieved from captivity by the municipal mayor, Jesus C. Miranda, have been kept. The holding pen serves as a focus point for the public awareness campaign in San Mariano. Over the past three years, more than one thousand people have visited the holding pen.

17. In addition, on 21 November 2003, the council approved Municipal Resolution No. 2003-285, accrediting the Mabuwaya Foundation “as one of the non-government organizations in San Mariano and as a partner of the local government in development particularly in the preservation of the Philippine crocodile which is the flagship species of the municipality and other program affecting the conservation of *Crocodylus mindorensis*.”

18. Local government units are authorized to prepare comprehensive land use plans, enacting thorough zoning ordinances (R.A. 7160, Section 20c). In short, the regulations of the sanctuary include: (1) no hunting or disturbing crocodiles and other wildlife, (2) no destructive fishing methods, (3) no cultivation and infrastructure development, (4) no deforestation, and in currently cultivated areas reforestation has to take place, and (5) nesting areas can be closed for entry. A 10-meter

buffer zone on each site of the river should protect the breeding and nesting sites of the crocodiles, minimize human-crocodile interaction, and protect the river banks from erosion. The Local Government Code specifies that the DENR retains the ultimate say in deciding whether resource management plans developed by LGUs are acceptable in the light of national environmental considerations (Defensor-Santiago 2000).

19. The actual creation of the Bantay Sanktuwaryo, and the allocation of a budget to it, had to wait for another three years. On 30 September 2004, the Sangguniang Bayan approved Municipal Ordinance No. 04-011 allotting P70,000 (US\$1,400) per year for the honorarium and insurance of a local protection group to enforce the rules and regulations protecting crocodiles in Disulap River and other parts of the municipality.

20. Following the Local Government Code of 1991, 40 percent of the internal revenue allotment (IRA) is to be delivered to the provincial, municipal, and barangay governments. For each level of LGU, the distribution is according to population (50 percent), land area (25 percent), and equal sharing (25 percent) (Defensor-Santiago 2000). San Mariano is a first class municipality.

21. The NARRA project of the San Isidro Agro-Forestry Development Multi-Purpose Cooperation (SLAFDMPC) and the LGU of San Mariano aims to reforest 26 hectares in the watershed of Dunoy Lake and Disulap River. The project won P1 million (US\$20,000) during the first Innovative Development Marketplace organized by the World Bank in January 2004. The LGU allocated P852,000 (US\$17,040) to the project, especially to rehabilitate the road to the project site.

22. For more information on local peoples' attitudes and awareness, see van Weerd, van Boven, and van der Ploeg 2004.

23. "The Philippine crocodile, something to be proud of" is the official slogan of the crocodile conservation activities in the municipality of San Mariano.

24. The Philippine constitution advances the following reasons for transferring powers from the national to the local governments: to (1) allow maximum participation of citizens in governmental activities, (2) find local solutions to local problems, (3) orderly manage local affairs, (4) achieve self reliance, (5) develop local governments, and (6) fulfill the innate desire for self government (de Leon 2002, 312).

25. In their book *Decentralization and Biodiversity Conservation* Ernst Lutz and Julian Caldecott (1997, 161) argue that

Decentralization . . . is not driven by public interest in conservation but rather by a desire for better access to the fruits of economic development through democratic participation. Conservation will only benefit from this only to the extent that ecosystems and the biodiversity they contain are seen as resources to sustain development—in order words as valuable resources that some may wish to control for their own benefit. If no such perception

exists, then conservation benefits will accrue from decentralization only accidentally and, if biodiversity continues to be perceived as valueless by newly empowered groups, only temporarily. Because conservation requires permanent solutions to problems of species extinction and environmental degradation, it must involve changing perceptions and values among the people who control the fate of ecosystems.

The San Mariano experience shows that this is too simplistic a view. In San Mariano there has been a fundamental shift in how people perceive crocodiles: from dangerous pests to "something to be proud of!" It can be argued that the success of crocodile conservation activities is due to the fact that at the moment the crocodiles hardly represent any commercial value. The extremely low population and the ban on international trade in Philippine crocodile hides make hunting non-profitable. Ironically, crocodile conservation succeeded because there was *no* perception that crocodiles were valuable resources to control for benefits. In other words: we doubt whether the same could have been achieved with high-value timber resources.

26. Devolution of legislative and executive powers from the DENR to LGUs is bound to increase in the coming years: DAO No. 30-92 explicitly mentions that the DENR shall transfer the personnel and assets to the devolved functions. Unfortunately, most LGUs, including San Mariano, have not yet created the MENRO. LGUs have the opportunity to create a MENRO which shall, among others: (1) develop plans and strategies which have to do with environment and natural resources; (2) establish, maintain, protect and preserve the environment and natural resources; and (3) coordinate with government agencies and non-government organizations measures to prevent and control land, air, and water pollution (Defensor-Santiago 2000).

27. Of course, it is highly debatable whether such disproportionate influence is less likely when dealing with the central government.

28. The Chicago Zoological Society is funding a small project to establish a crocodile sanctuary along Dinang Creek in Barangay Cadsalan. The funding has been used to construct water pump wells, and to conduct land surveys for land title acquisition by local farmers and for community consultations. The LGU provided a counterpart budget but, thanks to the external funding, these rural development activities, which would normally have to be entirely funded by the LGU, could be carried out. The People's Organization of Sitio San Isidro (see note 21) won a grant for a reforestation project from the World Bank because the activities had been linked to Philippine crocodile conservation, and technical advice for the project had been given by CSOs.

29. In this respect the creation of a MENRO by the LGU, mentioned above, becomes highly interesting. It would make sense if the MENRO would replace the

CENRO. Or, in other words, that the CENRO will be dissolved once the MENROs are in place. However, it must be feared that these two offices will coexist, which will, arguably, lead to more confusion and conflicts. The creation of the MENROs is promising to provide an interesting case of the transfer of power to the local level in the Philippines. The Local Government Code, in this respect, specifies that the national government will transfer power and authority, together with the corresponding personnel, equipment, assets, liabilities, and records to the LGU to perform specific functions and responsibilities (Defensor-Santiago 2000).

30. Obviously, the Local Government Code (Sec. 388) and the Revised Penal Code, specify that the *punong* barangay, the barangay council, and the barangay *tanod* are "person in authority" in their respective jurisdiction responsible for the enforcement of laws, including environmental laws. In addition, community members can organize a so-called *posse comitatus* to implement environment and natural resources laws in their jurisdiction (Oposa 2002, 638).

31. But this is supposed to change with the creation of the regional Philippine crocodile coordinating team by the Regional Executive Director Antonio G. Principe (DENR Region 02 Special Order 422 series of 2003).

32. Add to that the implementation of the Indigenous Peoples Rights' Act (IPRA) by the NCIP, and Comprehensive Agrarian Reform Program of the DAR, and the legal mumbo jumbo surrounding natural resource management in upland areas in the Philippine becomes clear.

33. The seeming absence of the DENR in the protection of the Philippine crocodile in the municipality of San Mariano is perhaps the most striking element of this case. However, the DENR was omnipresent, often as a complicating and delaying factor for the conservation activities of the local government and CSO.

34. In fact, during martial law an official perception that regional, environmental and social cases were linked with the political left promoted polarization of views that discouraged decentralization and effective conservation (Cacha and Caldecott 1996)

35. Students from the College of Development Communication, Arts and Sciences (CDCAS) of the Isabela State University designed the poster within the framework of the CROC project of the Mabuwaya Foundation.

36. Especially when considering the constitutional protection against excessive penalties (Article III, section 19). However, the Philippine constitution also states in Article XII on social justice that "*poverty* [cannot be used as] *an excuse for violating [laws]*" (de Leon 2002, 392).

37. One might further ask whether the prosecution, trial and conviction of an offender for a violation of the municipal ordinance serve as a bar for the prosecution of the same act under national law. Yes, it is under the constitutional right against double jeopardy (see Oposa 2002, 633; de Leon 2002).

References

- Acorda, Dexter M. 2004. Knowledge level of the barangay officials of crocodile conservation in the municipality of San Mariano. BsES thesis, CVPED student report, Isabela State University.
- Aguilar, Filomeno Jr. 1994. Of cocks and bets: Gambling, class structuring, and state formation in the Philippines. In *Patterns of power and politics in the Philippines*, ed. James Eder and Robert Youngblood, 147–96. Tempe: Program for Southeast Asian Studies, Arizona State University.
- Banks, Chris. 2000. National recovery plan for the Philippine crocodile, *Crocodylus mindorensis* (2000–2006). Manila: DENR and the Royal Melbourne Zoological Gardens.
- Baringkuas*. 2003. Saan a panagdur-as no di kinarigat. Rebolusyonaryo a dyaryo ti umili iti Cagayan Valley [Not progress but poverty. This revolutionary newspaper has come to Cagayan Valley]. 2(March-April): 11–12.
- Brechin, Steven R., Peter R. Wilhusen, Crystal L. Fortwangler, and Patrick C. West, ed. 2003. *Contested nature: Promoting international biodiversity with social justice in the twenty-first century*. New York: State University Press of New York.
- Broad, Robin and John Cavanagh. 1993. *Plundering paradise: The struggle for the environment in the Philippines*. Berkeley: University of California Press.
- Bryant, Raymond L. and Sinéad Bailey. 1997. *Third world political ecology*. London: Routledge.
- Cacha, Maria D. M. and Julian Caldecott. 1996. Philippines. In *Decentralization and biodiversity conservation*, ed. E. Lutz and J. Caldecott. Washington, D.C.: World Bank.
- CITES. 1998. *Checklist of CITES species*. CITES Secretariat, World Conservation Monitoring Center.
- Congressional Planning and Budget Department (CPBD). 2003. *An analysis of the president's budget for fiscal year 2003*. <http://www.congress.gov.ph/download/12th/budget2003.pdf>.
- Contreras, Antonio P. 2000. Rethinking participation and empowerment in the uplands. In *Forest policy and politics in the Philippines: The dynamics of participatory conservation*, ed. Peter Utting, 144–70. Quezon City: Ateneo de Manila University Press and UNRISD.
- Contreras, Antonio P., ed. 2003. *Creating space for local forest management in the Philippines*. Manila: La Salle Institute of Governance, De La Salle University.
- Coronel, Sheila S., Yvonne T. Chua, Luz Rimban, and Booma B. Cruz. 2004. *The rulemakers: How the wealthy and well-born dominate congress*. Quezon City: Philippine Center for Investigative Journalism.

- Defensor-Santiago, Miriam. 2000. *Local government code annotated*. Quezon City: Phoenix Press, Inc.
- DENR. 2001. *Management plan Northern Sierra Madre Natural Park*. Tuguegarao City: DENR, NIPA, NORDECO, CI, and Plan International.
- DENR and UNEP. 1997. *Philippine biodiversity: An assessment and plan of action*. Makati City: Bookmark.
- de Groot, Wouter. 2003. Thünian land use theory, vision on nature and the future of the Sierra Madre forest. In *The Sierra Madre mountain range: Global relevance, local realities*, ed. Jan van der Ploeg, Andres B. Masipiqueña, and Eileen C. Bernardo. CVPED. Tuguegarao City: Golden Press.
- de Leon, Hector S. 2002. *Textbook on the Philippine constitution*. Manila: Rex Bookstore.
- Edmunds, David and Eva Wollenberg, ed. 2004. *Local forest management; the impacts of devolution policies*. London: Earthscan.
- Garrity, Dennis P., Victor B. Amoroso, Samuel Koffia, and Delia Catacutan. 2001. Innovations in participatory watershed resource management to conserve tropical biodiversity. In *Seeking sustainability: Challenges of agricultural development and environmental management in a Philippine watershed*, ed. Ian Coxhead and Gladys Buenavista, 112–37. Los Baños, Laguna: Philippine Council for Agriculture, Forestry, and Natural Resources Research and Development (PCARRD).
- Garduque, Carlo M. B. 2004. Knowledge level of local government unit (LGU) officials towards the Philippine crocodile conservation. BsES thesis, CVPED student report, Isabela State University.
- Gatan, Raquel S. 2003. Perceptions and attitude of the community towards the conservation of the Philippine crocodile. BsES thesis, CVPED student report, Isabela State University.
- Guingab, Josephine M. 2004. Knowledge level of DENR officials in Isabela towards Philippine crocodile conservation. BsES thesis, CVPED student report, Isabela State University.
- Huigen, Marco G. A. 2004. First principles of the MameLuke multi-actor modeling framework for land use change, illustrated with a Philippine case study. *Journal of Environmental Management* 72:5–21.
- IUCN 2003. *2003 IUCN red list of threatened species*. www.redlist.org.
- Keesing, Felix M. 1962. *The ethnohistory of northern Luzon*. Stanford: Stanford University Press.
- Lavides, Margarita, Neil A. Mallari, Annabelle Plantilla, Blas Tabaranza Jr., Belinda de la Paz, and Cristi M. Nozawa. 2004. Haribon's journey of transformations. *Haring Ibon* 16(1): 13–19.

- Luna, Maria Paz G. 2004. Comments in a presentation at a forum organized by the Haribon Foundation, Manila. April.
- Lutz, Ernst and Julian Caldecott, ed. 1996. *Decentralization and biodiversity conservation*. Washington, D.C.: World Bank.
- Magno, Francisco A. 2001. Forest devolution and social capital: State-civil society relations in the Philippines. *Environmental History* 6(2): 264–86.
- Messel, Harry, F. Wayne King, Graham Webb, and Charles A. Ross. 1992. Summary report on the workshop on the prospect and future strategy of crocodile conservation of the two species (*Crocodylus mindorensis*, *Crocodylus porosus*) occurring in the Philippines. In *Crocodile conservation action: A special publication of the Crocodile Specialist Group of the Species Survival Commission of IUCN*. Gland and Cambridge: IUCN.
- National Statistical Coordination Board (NSCB). 2003. *The Philippine statistical yearbook 2003*. Makati: NSCB.
- NORDECO and DENR. 1998. *Integrating conservation and development in protected area management: Northern Sierra Madre Natural Park, the Philippines*. Quezon City: DENR.
- Ortega, Gerardo V. 1998. Philippine crocodile conservation. In *Crocodiles. Proceedings of the 14th working meeting of the Crocodile Specialist Group*, 101–34. IUCN: Gland and Cambridge.
- Oposa, Antonio A. Jr. 2002. *A legal arsenal for the Philippine environment*. Muntinlupa City: Batas Kalikasan.
- Oudejans, Petra. 2002. The Philippine crocodile *Crocodylus mindorensis*: A study on factors determining distribution and population size in the Northern Sierra Madre, Northern Luzon, Philippines. MSc. thesis, CVPED student report No. 108, Institute of Environmental Sciences, Leiden University.
- Peña, Narciso. 2001. *Philippine law on natural resources*. Quezon City: Rex Printing Company, Inc.
- Persoon, Gerard A., Tessa Minter, Barbara Slee, and Clara van der Hammen. 2004. *The position of indigenous peoples in the management of tropical forests*. Tropenbos Series 23. Wageningen: Tropenbos International.
- Persoon, Gerard A. and Jan van der Ploeg. 2003. Reviewing the projected future of San Mariano, a boomtown at the Sierra Madre forest fringe. *Philippine Studies* 51(3): 451–74.
- Persoon, Gerard A. and Diny M. E. van Est. 2003. Co-management of natural resources: The concept and aspects of implementation. In *Co-management of natural resources in Asia: A comparative perspective*, ed. Gerard A. Persoon, Diny M. E. van Est, and Percy E. Sajise. Copenhagen: NIAS Press.

- Reyes-Boquiren, Rowena. 2002. Saving the Philippine hotspots—are we succeeding? A social science view from the ground. *Kasarinlan* 17(1): 91–113.
- Ross, Charles A. 1982. *Philippine crocodile* *Crocodylus mindorensis*. *Final report*. Washington, D.C.: Smithsonian Institution and World Wildlife Fund Philippine Crocodile Project.
- Ross, Charles A. and Angel C. Alcalá. 1983. Distribution and status of the Philippine crocodile (*Crocodylus mindorensis*). *Kalikasan: The Philippine Journal of Biology* 12:169–73.
- Ross, Perran J. 1998. *Crocodiles, status survey and conservation action plan*. 2d ed. Gland and Cambridge: IUCN/SSC Crocodile Specialist Group.
- Scott, James. 1998. *Seeing like a state: How certain schemes to improve the human condition have failed*. New Haven and London: Yale University Press.
- Scott, William H. 1979. Semper's "Kalingas" 120 years later. *Philippine Sociological Review* 27:93–101.
- Tarun, Rhyan G. 2004. Knowledge level of local communities and the conservation of the Philippine crocodile. BsES thesis, CVPED student report, Isabela State University.
- Tarun, Bernard, Jessie Guerrero, Dominic Rodriguez, Samuel Telan, Merlijn van Weerd, and Jan van der Ploeg. 2004. The current distribution and population size of the Philippine crocodile and estuarine crocodile in northeast Luzon, the Philippines. In *Crocodiles. Proceedings of the 17th working meeting of the Crocodile Specialist Group*, 166–73. Gland and Cambridge: IUCN.
- Utting, Peter. 2000. An overview of the potential and pitfalls of participatory conservation. In *Forest policy and politics in the Philippines: The dynamics of participatory conservation*, ed. Peter Utting, 171–215. Quezon City: Ateneo de Manila University Press and UNRISD.
- van den Top, Gerhard. 2003. *The social dynamics of deforestation in the Philippines: Actions, options and motivations*. Copenhagen: NIAS Press.
- van den Top, Gerhard and Gerhard Persoon. 2000. Dissolving state responsibilities for forests in northeast Luzon. In *Old ties and new solidarities: Studies on Philippine communities*, ed. Charles J-H. Macdonald and Guillermo M. Pesigan, 158–76. Quezon City: Ateneo de Manila University Press.
- van Weerd, Merlijn. 2002. The status and conservation of the Philippine crocodile *Crocodylus mindorensis* in the northern Sierra Madre, Luzon, the Philippines. In *Crocodiles. Proceedings of the 16th working meeting of the Crocodile Specialist Group*, 97–107. Gland and Cambridge: IUCN.
- van Weerd, Merlijn. 2000. Update on Philippine crocodile occurrence in the Northern Sierra Madre Natural Park. *Crocodile Specialist Group Newsletter* 19(4): 12–14.

- van Weerd, Merlijn, Gwen van Boven, and Jan van der Ploeg. 2004. Using communication to involve local communities and local governments in protected area management: two related cases from northeast Luzon, Philippines. In *Communicating protected areas*, ed. Denise Hamú, Elisabeth Auchincloss, and Wendy Goldstein, 139–54. Commission on Education and Communication. Gland and Cambridge: IUCN.
- van Weerd, Merlijn and Jan van der Ploeg. 2004. A new future for the Philippine crocodile *Crocodylus mindorensis*. *Sylvatrop* 13(1 and 2): 31–50.
- van Weerd, Merlijn and Alex A. General. 2003. Conserving the Philippine crocodile in the northern Sierra Madre: The results of three years research and conservation action. In *The Sierra Madre mountain range: Global relevance, local realities*, ed. Jan van der Ploeg, Andres B. Masipiqueña, and Eileen C. Bernardo, 17–33. CVPED. Tuguegarao City: Golden Press.
- van Weerd, Merlijn, Jan van der Ploeg, Chris Banks, and Alex A. General. 2003. Report on Philippine crocodile developments in northern Philippines. *Crocodile Specialist Group Newsletter* 22(1): 8–11.
- van Weerd, Merlijn, Alex A. General, and Gwen van Boven. 2000. Update on Philippine crocodile conservation in the Northern Sierra Madre Natural Park. *Crocodile Specialist Group Newsletter* 19(4): 11–12.
- Vitug, Marites D. 2000. Forest policy and national politics. In *Forest policy and politics in the Philippines: The dynamics of participatory conservation*, ed. Peter Utting, 11–39. Quezon City: Ateneo de Manila University Press and UNRISD.
- Vitug, Marites D. 1993. *Power from the forest: The politics of logging*. Manila: Center for Investigative Journalism.
- WCSP. 1997. *Philippine red data book*. Makati: Bookmark.
- Widman, Peter, Indira D.L. Widman, and Marc Boussekey. 2003. Some good news about the Philippine cockatoo. *Cynaopsitta* 68 (March): 18–19.