

Evidence-based Conservation

Lessons from the Lower Mekong

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6 Hoang Lien – Van Ban Nature Reserve

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Hoang Lien – Van Ban Nature Reserve (VBNR) is located in Van Ban, a mountainous district of Lao Cai Province in the north-west uplands of Vietnam. It contains the largest extent of forest cover in the north-west of the country (BirdLife International, 2004; Nguyen Quang Truong, 2002) and is situated in a contiguous stretch of protected areas along the Hoang Lien Mountains in north Vietnam and the Ailao Mountains in south China. Van Ban acts as an important link in trans-boundary conservation efforts (Tran Van Phung *et al.*, 2007). Most importantly, Van Ban is one of the very few areas in the world that harbours the global Endangered species the western black crested gibbon (*Nomascus concolor*) (Le Trong Dat and Le Huu Oanh, 2006). In 2007 Van Ban was included in the special-use forest system of Vietnam and officially gazetted as a nature reserve with an area of approximately 25,669 hectares (VBNR, 2007) in the administration areas of Nam Xe, Nam Xay and part of Liem Phu communes (Tran Van Phung *et al.*, 2007).

Environmental context of the landscape

Biophysical context

VBNR is located in the Hoang Lien Mountain Range between 21° 53' to 22° 09' north and 103° 56' to 104° 20' east (VBNR, 2007). The topography of the nature reserve from north to east is characterized by high mountains and hills intermixed with valleys (Anon, 2004). VBNR has a monsoonal tropical climate with the rainy season lasting from April to September and the dry season from October to March (Anon, 2004). According to the weather station closest to Van Ban, average rainfall in the area is approximately 2,100 mm per year, with most of the rainfall during the summer months. The high topography influences the high humidity levels, which peak at 82 per cent. The annual average temperature is low at 19°C (Nguyen Quang Truong, 2002).

There are no major rivers within VBNR, but there are several streams that originate mainly from Nam Xe and Nam Xay communes. Other smaller streams form only during periods of heavy rain. The rising water levels following heavy rain causes landslides in steeply sloping areas. The nature reserve helps to keep

water levels stable thanks to its higher protective capacity than other areas in Van Ban district.

Biodiversity values

The forest area of the nature reserve is 25,669 hectares, and covers 95 per cent of the total natural area of the Nam Xe, Nam Xay and Liem Phu communes. Natural forest accounts for approximately 82 per cent, and plantation forest accounts for 18 per cent of the forested land (VBNR, 2007). The forest in the reserve is still in good condition compared to that in the rest of Lao Cai province in general, and in the Van Ban district in particular (VBNR, 2007; Slayback and Sunderland, in Chapter 20 of this volume). In addition, the area is one of the few parts of the Hoang Lien Mountains to support significant areas of hill evergreen forest, a vegetation type that has been almost entirely lost from elsewhere in northern Vietnam (BirdLife International, 2004).

The area boasts four main types of forest: lowland forests, sub-montane or hill forests, mountain forests and upper montane forests (Leonid *et al.*, 2002; Anon, 2004). Furthermore, there are also areas of mixed bamboo and secondary evergreen lower mountain forest (Long *et al.*, 2000). The nature reserve is estimated to consist of 2.5 million m³ of wood and many types of NTFPs, primarily edible and medicinal plants (Tran Van On *et al.*, 2002). In VBNR a number of globally threatened plant species have been recorded, including the globally Vulnerable conifer *Taiwania cryptonerioides* and the globally near-threatened conifer *Fokienia hodginsii* (BirdLife International, 2004). There are also orchids endemic to Hoang Lien Mountain range (Long *et al.*, 2000).

In one study, 42 species of mammals were recorded in Van Ban area (Anon, 2004). In another study, 24 species of mammals were recorded in Nam Xay commune, of which 11 species are identified by IUCN as globally threatened or Near Threatened (Long *et al.*, 2000). The most important mammal species found in the area are the globally threatened western black crested gibbon *Nomascus concolor* (Le Trong Dat and Le Huu Oanh, 2006), the Owston's civet *Chrotogale owstoni* and the Vietnamese salamander, *Paramesotriton deloustali* (BirdLife International, 2004). The western black crested gibbons are of particular importance because their distribution is restricted to one area spanning the countries of Laos, Cambodia, China and Vietnam (Le Trong Dat and Le Huu Oanh, 2006).

A total of 217 species of birds were identified in a survey by BirdLife International; they include many important bird species, especially the globally Vulnerable beautiful nuthatch (*Sitta Formosa*). Van Ban was recognized as an Important Bird Area (Tordoff *et al.*, 2002; BirdLife International, 2004).

There are 28 species of reptiles and 31 species of amphibians (Nguyen Quang Truong, 2002), making Van Ban's forests very diverse. The species found there include 12 nationally threatened species listed in the 2000 edition of the Red Data Book of Vietnam; 6 species are globally threatened and listed in the 2000

edition of IUCN Red List of Threatened Species (Leonid *et al.*, 2002; Nguyen Quang Truong, 2002).

The Operation Management Plan of Van Ban, however, lists a higher number of species, including 60 mammals, 310 species of birds, 64 reptiles and 52 amphibian species (VBNR, 2007), and this number could increase as more surveys are conducted.

Socio-economic conditions

VBNR covers two communes, Nam Xe and Nam Xay, and part of Liem Phu commune in Van Ban district (Tran Van Phung *et al.*, 2007). The total population in the core zone of the nature reserve is around 500 households, with approximately 3,000 people (VBNR, 2007); the population in the buffer zone is much higher, with about 9,500 people (BirdLife International, 2004). Most of the population are from ethnic minority groups who migrated to settle in the area in the 1940s. They include H'mong, Dao, Tay and a very few Kinh people (Cox and Tran Manh Hung, 2002).

People's livelihood activities are typical of northern upland Vietnam, with agriculture as a main activity, especially the cultivation of cassava, maize and upland rice, and livestock rearing (Long *et al.*, 2000). Upland cultivation and livestock rearing are carried out for subsistence purposes, and have a long tradition in Van Ban. However, agricultural activities nowadays cannot cover the needs of the local communities due to the limited land in the area. This is allocated through a "red book" land tenure system for cultivation and livestock rearing and is now exhausted. There is little land left to be allocated to the growing population (Cox and Tran Manh Hung, 2002), and the per capita area suitable for cultivation and for livestock rearing has decreased over the last twenty years because of the lack of areas with suitable fertile soils (Buckingham and Tu Minh Tiep, 2002).

Although agriculture is the main activity in the area, it is carried out mainly for subsistence purposes. Extracting and selling forest resources is a source of cash. Forest resource exploitation activities include the collection of firewood, NTFPs and wildlife hunting. While the collection of firewood and NTFPs such as bamboo and mushrooms is solely for daily household use, hunting is very common and driven by the demand from urban areas. Among NTFPs products, rattan is collected for both local utilization and commercial sale. However, the over-exploitation of rattan has almost led to the loss of rattan habitat in the area (Long *et al.*, 2000). People in Van Ban are also involved in growing indigenous plant species, for example cardamom (Buckingham and Tu Minh Tiep, 2003) and cinnamon (Tran Van On *et al.*, 2002). These were first introduced to local people in the early 1990s and, since then, have contributed greatly to income generation for many of the households (Tran Van On *et al.*, 2002). However, cardamom cultivation is having negative impacts on the forest and has become one of the main threats to Van Ban Nature Reserve because of the need for forest clearance for its cultivation (Buckingham and Tu Minh Tiep, 2003).

Access to basic needs for local people in VBNR is very limited, mainly due to the remoteness of the area. Infrastructure is very basic as almost all villages have no access to the national electricity grid and communities lack fresh water and sanitation facilities. Furthermore, education levels are low, with many people graduating only from primary schools, due to the lack of schools and teachers and the inability to pay for further education (Cox and Tran Manh Hung, 2002).

Institutional context: background and main issues

Van Ban Nature Reserve was established as a protected area by the Lao Cai Provincial Forest Protection Department (FPD), with support from WWF's Strengthening Protected Areas Management in Vietnam Project. Since the early 2000s, Lao Cai Provincial FPD had proposed the establishment of a nature reserve at the site. This proposal had been incorporated into the approved provincial management strategy for special-use forests (BirdLife International, 2004) under Decision 451/QD-CT dated 1 March 2003 (VBNR, 2007). After many studies on Van Ban biodiversity and recommendations to protect the area, in 2006 the Provincial People's Committee (PPC) of Lao Cai approved the investment plan from Lao Cai Provincial FPD. Finally, in February 2007 Lao Cai PPC decided to establish Van Ban forest as a nature reserve named Hoang Lien – Van Ban Nature Reserve by Decision No. 399 (Tran Van Phung *et al.*, 2007). However, all the forest in Van Ban remains under the jurisdiction of the district FPD (Long *et al.*, 2000).

Following the zoning applied for the special-use forest, the nature reserve is divided into three sub-zones: a Strictly Protected sub-Zone (SPZ), an Ecological Restoration sub-Zone (ERZ) and a Service Administration sub-Zone (SAZ), with areas of 21,629 hectares, 4,040 hectares and 5 hectares respectively (Tran Van Phung *et al.*, 2007). SPZ is divided into three areas within three communes, which are SPZ I in Nam Xe commune, SPZ II in Nam Xay commune, and SPZ III in Liem Phu commune (Tran Van Phung *et al.*, 2007). The functions of SPZs are: (a) to protect and maintain the present ecological and biological systems against any activities that negatively affect this function, such as wood exploitation, firewood collecting and wildlife hunting; (b) to monitor the forest ecological system and sample plots in the sectors and (c) to conduct applied scientific research on the status and conservation of wild animal and plant populations and valuable genetic resources. According to Government Decision No. 186, the main function of ERZs is to reforest and afforest the area of the natural forest ecological systems lost due to human disturbances. ERZs also serve the function of mitigating conflict between conservation goals of the core zone and economic development of the eleven ethnic households who are living in the ERZ by effective participatory land use planning and making forest land near their resident areas available to local farmers for protection. Finally, the SAZ is used to build the headquarters for the reserve (Tran Van Phung *et al.*, 2007). This zoning has been designed to protect the area, while not putting too much burden

on the livelihoods of local people. It was undertaken through a participatory process, where local people were involved in the zoning and demarcation, and helped in identifying the different functions of the sub-zones. Besides the main instrument of zoning, there are still only limited laws and regulations from the government relating to VBNR; the exceptions are some scattered attempts from local authorities. So far, there is a policy from local government of attempting to reduce the extension of the cardamom cultivation area that encroaches into primary forest, in order to limit the impacts on the protected area (Tran Van Phung *et al.*, 2007). Other actions from local governments include protection from hunting wildlife in Van Ban through the confiscation of guns and traps from hunters (Le Trong Dat and Le Huu Oanh, 2006).

Despite the zoning efforts mentioned above, the protection of Van Ban forest still faces difficulties, especially because of the gaps in existing regulations and the absence of coordination between regulations from the Forest Protection Department and VBNR management board (VBNR, 2007). This demonstrates the lack of coherence between regulations on hunting and logging from central government and those from the local authorities (Anon, 2004). Regulations on hunting and selective logging are good examples of loopholes that can be exploited. Hunting of large mammals, such as bears and gibbons, is illegal, but hunting of smaller common animals, such as snakes, fish, and frogs, is considered an acceptable activity (Le Trong Dat and Le Huu Oanh, 2006). Similarly, the exploitation of dead *Fokienia hodginsii* is allowed with permission, as mentioned in several government decisions (416/CP-NN dated 3 May 2000; the 3652/BNN-PTLN dated 28 November 2001; and the 236/CP-NN dated 5 March 2002 [Anon, 2004]). However, with few resources and little enforcement capacity (two officers to manage the forest and control illegal activities in three communes (Long *et al.*, 2000), the district FPD is not able to monitor the activities of hunters and loggers and really check if they hunt big or small mammals or whether loggers extract dead *Fokienia hodginsii* or live *Fokienia* timber (Anon, 2004).

For the Forest Protection Department, illegal activities became even more difficult to monitor when the central government released Decision 178, granting locals the right to exploit their contracted forest land, instead of only holding a forest protection contract (Long *et al.*, 2000). This causes authorities difficulties in controlling hunting and logging activities if there is no synchronized action of banning hunting and logging in the forest. Even so, it is still very difficult to really ban these activities in Van Ban forest since they provide economic benefits for local people. Another difficulty for VBNR is that the province still has limited funding to enable VBNR to run its activities, pay its staff and ensure the daily operation of the reserve.

Environmental and conservation threats

There are concerns about the environment and conservation in VBNR. It is a new protected area and there are still people living in the core zone. When

a protected area is new, its future effectiveness is uncertain and its management faces difficulties in applying laws and regulations for forest protection, especially when it concerns the local people in the core zone. There has been no evaluation of forest protection in VBNR, but there are threats reported that urgently need to be addressed.

The first threat stems from local people living in the core zone and buffer zone of the reserve. Most of the population here are ethnic minorities. Compared to the majority group (the Kinh people), they are poorer and known to be highly dependent on forest resources, not only for subsistence but also for cash income. Due to the economic demand, traders are willing to pay a high price to local people for selling valuable and rare species, and as a result hunting and logging are still widespread in the area (Le Trong Dat and Le Huu Oanh, 2006). According to Barney Long *et al.* (2000), almost every household in Van Ban has a gun or trap to catch wild animals. It is also very common to see hunters equipped with guns walking in the forest, and gunshots are heard most days (Le Trong Dat and Le Huu Oanh, 2006). Logging faces the same issues as hunting. Selective logging, which is said to be the main threat to the structure of the forest (Long *et al.*, 2000), is still occurring in Van Ban forest. The most exploited species are *Fokienia hodginsii* (Le Trong Dat and Le Huu Oanh, 2006) and the *Taiwania cryptomerioides* (Anon, 2004). *Fokienia hodginsii* was previously exploited by the State Forest Enterprise and local loggers (Le Trong Dat and Le Huu Oanh, 2006). This species has a very high economic value, a cubic metre reaching prices of up to USD 600. Furthermore, its resin is sold as an essential oil on the international market (Anon, 2004). Even though it is illegal to harvest this species, there are still people who log and trade it in the informal markets. *Taiwania cryptomerioides* was harvested in the past (Anon, 2004).

Agricultural encroachment, and the forest fires associated with it, is another threat; it involves the conversion of forest land near villages into agricultural land (Le Trong Dat and Le Huu Oanh, 2006). Previously, forest land and fallow land in Van Ban were converted for cultivation and livestock rearing. As the area of suitable fertile soil declines, however, it becomes less of a threat. But today the main cause of forest land conversion into agriculture is cardamom cultivation (Buckingham and Tu Minh Tiep, 2003). Cardamom is grown in primary forest areas, using unsustainable methods that include the clearance of the understorey, the thinning of the canopy and the burning of fuel wood to dry the fruits. The drying of the fruits causes many of the forest fires in Van Ban forest. While paddy rice is cultivated close to local communities, corn and cassava fields are located in nearby regenerating forest within the ERZ. Forest fires often occur in this area during the dry season due to human activities (Tran Van Phung *et al.*, 2007).

Gold mining is also a threat to the environment and conservation in Van Ban. There are at least two forest margin areas within Minh Luong and Nam Xay communes with gold mines. Mining activities are locally operated with very

poor management and involving hundreds of people. This not only causes environmental damage to waterways and land from toxic chemicals but also indirectly threatens forest and wildlife. Miners, who stay in or near the forest, are often involved in hunting, logging and causing accidental fires (Le Trong Dat and Le Huu Oanh, 2006).

Infrastructure development without environmental impact assessments is also an important threat. For instance, the government is now building hydropower plants in Nam Xe and Nam Xay communes. According to a survey done by Van Ban management board in 2007, labourers working with the hydropower plants in the core zone of the reserve are also extracting natural resources and causing pollution. Another example is the poor environmental impact assessment in the implementation of the government's Programme 135. A road that was build by this programme fragmented the natural habitat and increased the threats to the reserve through increased access (VBNR, 2007).

The landscape initiative

VBNR was established in 2007 with the aim of reaching the Vietnamese government's target of improving and expanding the biodiversity conservation area in the country (Cox and Tran Manh Hung, 2002; Tran Van Phung *et al.*, 2007). The concrete objectives of the establishment of VBNR are:

- to protect the valuable and precious gene resources of the wild flora and fauna of Vietnam including the populations of globally threatened western black crested gibbons *Nomascus concolor*, beautiful nuthatch *Sitta formosa* and the pine *Taiwania cryptomerioides*;
- to protect and maintain the water sources used for local irrigation and agricultural production in the buffer zones and by downstream users;
- to enhance local people's awareness of natural resource and environmental conservation, and enhance local livelihoods of buffer zone residents through implementing programmes of forest regeneration, protection and production (Tran Van Phung *et al.*, 2007).

The management of the reserve is carried out by Lao Cai Forest Protection Department. The VBNR management board was established soon after the place was announced as a nature reserve, and eleven staff started working at the site. Since then, the management board of VBNR has been working closely with international organizations in conducting programmes and projects on conservation and development in the area. Over the period 2009 to 2011 most of the efforts have been centred on conservation endeavours; very few have focused on development activities. Furthermore, so far there have been few national and international NGOs working in Van Ban apart from Fauna & Flora International and BirdLife International. The reason might be that Van Ban is a remote area with a low population, when compared to other well-known

protected areas such as the Hoang Lien – Sapa National Park. In terms of development, there are some government programmes with limited funding in the area, such as Programme 135, in which the Vietnamese government gives support to extremely poor communes to build schools, roads and an irrigation system, and supports rice-based agriculture for ethnic minority households (Cox and Tran Manh Hung, 2002). Unfortunately, this governmental support to the improvement of physical infrastructure for local people in Van Ban district is not consistent with the targets of the nature reserve.

Reforestation and afforestation activities are supported by governmental Programme 661, and by State Owned Forest Enterprises (SFEs) during 1999 to 2010. However, only the forest under the management of SFEs received support from the 661 Programme (Cox and Tran Manh Hung, 2002).

With funding from the Darwin Initiative FFI implemented a three-year project from 2001 to 2003: “Community-based conservation of the Hoang Lien Mountain Ecosystem” in Van Ban district. The objectives of the project were to reduce the potential conflict between the conservation objectives of the nature reserve and the livelihood development of people (Tran Van Phung *et al.*, 2007). The approach applied was to engage local people in identifying and demarcating the boundaries of the three SPZs (Tran Van Phung *et al.*, 2007). As a result both awareness of the importance of the nature reserve and the engagement of local people in protecting the biodiversity and natural resources of the area have increased. The project also collaborated with national and international scientists to undertake a series of surveys on the rich biodiversity of Van Ban, such as an NTFP survey (Tran Van On *et al.*, 2002), gibbon population survey (Le Trong Dat and Le Huu Oanh, 2006) and a survey of cardamom cultivation and its effects on the forest environment (Buckingham and Tu Minh Tiep, 2003). The project also developed village-level regulations on forest protection and development at Van Ban (FFI, 2007b), developed an environmental education curriculum to be piloted at three secondary schools in Van Ban (FFI, 2007a) and, together with Van Ban management board, developed an Operation Management Plan for Van Ban from 2008 to 2012 (VBNR, 2007). The main parties involved in this project included the Lao Cai provincial Forest Protection Department (FPD), Van Ban district Forest Protection Bureau (FPB) and the management board of the reserve (Tran Van Phung *et al.*, 2007).

As a continuation of the Darwin Initiative, in 2003 the European Commission funded the FFI Vietnam Programme to promote conservation in the Hoang Lien Mountains. This project took place in Van Ban from 2003 to 2007, in collaboration with the Lao Cai, Yen Bai and Son La Provincial FPDs, Lao Cai Provincial Department of Agriculture and Rural Development (DARD) and Hoang Lien National Park (BirdLife International, 2004). Since then, there have been number of projects ongoing in Van Ban district, including community based natural resources management and further protected area development (BirdLife International, 2004).

Future vision and likely trends

In the future, VBNR needs to focus more on intensifying enforcement of existing rules and regulations, and mobilizing more resources for the reserve. VBNR is facing many of the challenges and difficulties faced by all newly established protected areas. To achieve the objectives of its establishment the most important task should be providing local authorities and the Van Ban management board with knowledge of conservation through training courses as well as upgrading working facilities in the reserve.

The next step is to organize groups to follow up and monitor activities that negatively affect the forest resources. To achieve this target, the reserve needs to conduct basic surveys to identify threats and find solutions to monitor those threats. Obtaining information on the reserve's biodiversity is important for better understanding of species ranges in the reserve and for monitoring. Social mobilization of mass organizations and local people in planning and implementing conservation activities and forest protection together with the management board is very important, particularly in the development of the Operation Management Plan for the nature reserve (VBNR, 2007).

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