### Elephant conflicts management in the Lao PDR

Fongkeo Boualapha

Faculty of Forestry, National University of Laos

Large land areas in the Lao PDR designated as wildlife and flora sanctuaries have been gazetted as National Biodiversity Conservation areas (NBCAs) by the Government.

Several researchers have noted the high international conservation significance of forests and other habitats in the Lao PDR, (e.g. MacKinnon and MacKinnon (1986), Berkmüller *et al.* 1995b, MacKinnon (1997), Duckworth *et al. 1999).* A more specific assessment has been made through the analysis of ‘ecoregions’ – contiguous habitats or ecosystems of an identifiable type. WWF also compiled "The Global 200" (Olson and Dinerstein 1998) a global priority list of the ecoregions of highest significance in the world for biodiversity conservation. Four of these Ecoregions occur in the Lao PDR and its NBCAs:

1. Annamite Range Moist Forests
2. Indochina Dry Forests
3. Northern Indochina Sub-tropical Moist Forests
4. Mekong River and its catchment.

The mountains of the north are biogeographically distinct from the Annamites in the central and southern parts of the country, with a different assemblage of species. Although they have received less attention than the Annamites, they are nonetheless an important habitat type. Representations occur in northern NBCAs such as Nam Ha, Phou Dene Din, Nam Et and Phou Loey.

This is considered the most biologically distinct ecosystem within the FLMEC. Species endemism is high for many taxa and there are extremely wet forests, formed by an interaction of monsoon patterns and local topography. Annamite forests are found in neighbouring countries, but they are probably the most pristine in the Lao PDR, due in part to lower human pressure. The Annamites proper are represented in the Nakai-Nam Theun, Xe Sap, and Dong Ampham NBCAs (although the biological communities in each are quite different). Annamite foothills are represented in NBCAs such as Nam Kading.

Similar to the Annamites, species endemism is high and this habitat is otherwise only found in Vietnam. It is represented in the Lao PDR in the Phou Hin Poun and Hin Nam No NBCAs.

This massif between the Mekong and the Annamites in the southern Lao PDR is a very distinctive habitat with in the FLMEC. It occurs only in the Lao PDR, and part of it is protected in only one gazetted NBCA, Dong Houa Sao.

Found mainly in areas of low elevation in the southern Lao PDR, and characterized by relatively flat land, with grass and herbs growing under widely spaced deciduous trees (predominantly *Dipterocarpaceae*), it is typically studded by permanent or seasonal pools. These are of high importance for a variety of wildlife, from large ungulates to rare water birds. This habitat is best represented in the Xe Pian NBCA.

The Lao PDR plays a central role in the conservation of the biodiversity of the Mekong River. Large sections of the river flow through the Lao PDR and along its border, making the country the largest catchment area of the Mekong. The Lao PDR plays a greater role in the river's biodiversity conservation than Thailand with whom it shares the river as a border. The Mekong forms the boundary of a NBCA (Phou Xiang Thong), but at present biodiversity management focuses solely on the four major forest habitats and not the river.

Because rainfall is very seasonal across most of the catchment area, the Mekong shows one of the largest seasonal variations in flow rates of all the world’s major rivers. The habitat exposed in the channel during the low-flow season is of outstanding significance to wildlife (Duckworth *et al.* 1999).

Because of the extensive mountainous topography of the Lao PDR, streams are a common key habitat. The diversity of fish species in streams of the Lao PDR is very high, and so is endemism (Baird 1998, Baltzer *et al*., in prep). Many NBCAs, especially the mountainous ones, include important sections of pristine streams. A highly threatened, distinct habitat type are larger, slow moving rivers, such as the Nam Theun/Nam Kading in central Lao PDR and the Xe Kong and Xe Banhiang in southern Lao PDR. Very few unaltered stretches of these rivers flow through protected areas.

Commencing in 1988, the Department of Forestry, with support from Sida and IUCN, began a survey of suitable areas for conservation. Stimulated by this work there has been a rapid expansion in wildlife surveys and in knowledge of the vertebrate fauna of the Lao PDR (Salter 1993; Duckworth *et a*l, 1999).

There is also virtually no tradition of forest silviculture, which can be built on. More detailed ecological and behavioural studies are virtually non-existent, and there are no integrated research programmes of the kind that have led to an accumulation of understanding of tropical forest ecosystems elsewhere in southeast Asia (e.g. Marshall and Swaine, 1992). Compared with most other countries in topical Asia, or in Africa and the Neotropics, Lao forest biodiversity and ecology remains relatively unknown.

The important provisions in this Regulation are:

1. Classification of NPAs- National Parks and Nature Conservation Areas.
2. Lists of restricted and controlled species.
3. NPAs Development Fund

Recognizing the role and importance of forests in the national economy and people’s livelihood in rural and remote areas the Government of the Lao PDR is fully aware of its commitments to regional and international communities. Since 1993 it has established 20 National Biodiversity Conservation Areas covering approximately 13 % of the country’s area. This percentage is higher than the percentage of forests to be set-aside as conservation areas as recommended by IUCN. In addition, the Lao PDR has a number of protected areas at provincial and district levels.

The priority of this policy is to link the conservation of National Biodiversity Conservation Areas to the improvement of living conditions, the decrease of shifting cultivation, the stabilization of populations and poverty alleviation within and around the National Biodiversity Conservation Areas. The Government is aware that poverty and shifting cultivation are threats to forest and water rehabilitation, environmental improvement and biodiversity conservation. People and villages should be involved in every stage of the NBCA management process and benefit from their participation.

The Lao PDR experienced and still experiences rapid declines in biodiversity as a result of unsustainable market and subsistence hunting, and habitat conversion (Duckworth *et al.* 1999, Nooren & Claridge 2001). This has resulted in food shortages during times of drought, and has also led to increases in flooding as watersheds have lost their water retention ability. The National Protected Area system for the Lao PDR was legally established in 1993 through the Prime Minister’s Decree No 164 in an effort to reduce these negative developments (Berkmuller *et al.* 1995). The Decree lays out the system’s three main objectives:

* Protection of forests, wildlife and water.
* Maintenance of natural abundance and environmental stability.
* Protection of natural beauty for leisure and research.

Ministerial regulation 0524 describes how Protected Areas should be administered, zoned and run. It provides for and promotes sustainable use of biodiversity in the more than 1,100 villages that are inside and within 5 km of the 20 existing national protected areas (Southammakhot 2000).

Surveys towards this aim began in 1988 and by 1993 18 areas covering approximately 10% of the land area of the country were decreed as National Biodiversity Conservation Areas. A further two (Dong Phou Vieng and Xe Sap) were added in 1995-1996, bringing the total number of NBCAs to 20.

Other NBCAs have been expanded as at the end of 2000, the PM Decree No 193 established contiguous areas between three NPAs as corridors, namely:

1. The corridor between NaKai Nam Teun NPA and Phou Hinpoun NPA.
2. The corridor between Nakai Nam Teun NPA and Hin Nam Nor NPA.

NBCAs are the only national-level areas devoted to nature conservation in the Lao PDR.

The protected area system, although well planned, primarily conserves species through PA remoteness and terrain inaccessibility. Active conservation measures have had a slow start and it is estimated that conservation measures are fully operational in approximately 50% of the area designated as National Protected Areas, effectively reducing the Lao NPA size from 13.4% to 6.7% of the country.

Robichaud *et al*. (2001) reviewed the status of protectedareas in the Lao PDR and evaluated 12 components of effective protected area management, drawn from international standards for protected area managers (Hocking 2000). The conclusion of this review indicates that out of a perfect score of 100, only two protected areas in the Lao PDR scored a 50, 8 protected areas scored above 33 and the remaining 9 protected areas’ scores ranged from 17 to 32. This illustrates the current lack of capacity of protected area institutions to, among other things, actively reduce the problem of the over-harvesting of wildlife.

Since the writing of the status report, two events have occurred that further affect the funding of PA management activities. The first is the decentralization of authority that puts the responsibility of funding many government activities (including protected area management) with the provinces. The second is the completion of many internationally funded conservation projects. Efforts to sustainably fund protected area management through funds generated from eco-tourism permits or other user taxes have not been successful, as the province feels these funds are needed for other activities.

The system is intended to place representative areas of all significant and natural habitat (forest and wetland) types occurring within the country under protected area management. This should result in the inclusion of representative populations of most wildlife species, but specific attention is needed for certain species in the design and management of the system, including:

1. Wetlands that are currently underrepresented habitats in the system. Remaining wetlands, however, are very important due to the following two reasons: (i) they are a source of fish and other sources of protein, and (ii) they host unique biological communities, which include highly threatened species e.g. large waterbirds and Siamese crocodiles (Robichaud *et al.* 2001).
2. Very large and/or wide ranging species where the home ranges of a sufficient number of individuals to constitute a viable population cannot feasibly be included within individual protected areas (e.g. Tiger, Dhole, Asian Elephant and wild cattle; see Duckworth and Hedges 1998a);
3. Species occupying habitats that are also the foci for human activity (e.g. water birds; see Thewlis *et al*. 1998);
4. Threatened species of which the Lao population is of very high global importance and thus all populations merit protection (e.g. Saola);
5. Species with very restricted distributions in the Lao PDR (e.g. The Black-cheeked Crested Gibbon and the Pileated Gibbon, whose limited known ranges are not included within any declared NBCA); and
6. Species with very narrow habitat requirements (i.e. a species occurring only in level lowland evergreen forest below 500 m in the Lao PDR north of Vientiane; such habitat

At present the Department of Forestry policies favour the cautious development of ecotourism as a way to generate modest funds for PA management (Robichaud, *et al.* 2001). Government PA management policy supports local participation and decentralized management that benefits local residents. Villages residing inside PA’s retain traditional rights of access and land use privileges. These progressive policies enable the integration of community-based ecotourism development into protected area management and have wider socio-economic and conservation implications than simply raising modest funds for PA management.

