

# **ITTO/IUCN International Workshop on Increasing the Effectiveness of Transboundary Conservation Areas in Tropical Forests**

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## **Strategies for Trans-Boundary Biodiversity Conservation: A Case of Pha Taem Protected Forests Complex Between Thailand, Cambodia and Laos**

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Thailand has established more than 280 protected areas to safeguard the national biological diversity. Existing protected areas cover approximately 18% of the country's total land area, exceeding the IUCN target of 10%, and many protected forest complexes linked with neighboring countries. Currently, the International Tropical Timber Organization (ITTO) has provided assistance to the Royal Thai Government to initiate strategy for cooperation in trans-boundary biodiversity conservation. The Pha Taem Protected Forests Complex (PPFC) in Ubon Ratchathani Province in Northeastern Thailand has been selected as a pilot project because there is an increasing pressure on biodiversity from trade in plant parts and animal poaching across the border with Cambodia and Laos. To the east of PPFC is Mekong River and Laos, and to the south is Cambodia. The PPFC covers an area nearly 173,000 ha which comprises four protected areas, namely Pha Taem, Kaengtana, and Phu Jong Na Yoi National Parks, and Yot Dom Wildlife Sanctuary, as well as the proposed Buntrik-Yot Mon Wildlife Sanctuary.

Specific objectives of the project's Phase I or the preparation stage (2002-2003) are to start a management planning process for the PPFC in a framework of trans-boundary biodiversity conservation and to initiate cooperation between Thailand, Cambodia and Laos. Key activities includes setting up an organization, collection of biodiversity and socio-economic data, installation of Geographic Information System (GIS) database, initiating contacts with conservation authorities in Cambodia and Laos. These activities will be directed toward management planning.

The project is on-going and preliminary findings from data collection, remote sensing and GIS analysis reveal that PPFC contain 3 main vegetation types i.e., dry evergreen forest, mixed deciduous forest, and dry dipterocarp forest. At least 49 mammal species, 145 bird species, 30 reptile species and 13 amphibian species are found but large wildlife species such as wild elephant, banteng, and gaur are observed only along the national borders. Recently, the Siamese freshwater crocodile was poached by villager in Yot Dom. Besides the illegal trading across the border, other important issues include illegal logging, grazing, encroachment in buffer zone in Thailand, the proposed Emerald Triangle Development Project, landmine along the border and legal logging concession in Laos. Meanwhile, there are two main obstacles for cooperation, including suspended bilateral relationship between Thailand and Cambodia, and reluctance from Laos to participate in trans-boundary biodiversity conservation.

This paper also attempts to propose key strategies for trans-boundary biodiversity conservation at the landscape level beyond the boundaries of existing protected areas. The proposed strategies are establishment of linkages between 5 protected areas, community-based management in buffer zone, protection of wildlife corridors among tri-national countries, and reducing international tensions through ecotourism.

### **Introduction of the PPFC Project**

Thailand has established 282 existing protected areas to safeguard the national biological diversity. Existing protected areas cover approximately 18.02% of the country's total land area, exceeding the IUCN target of 10%. These protected areas can be grouped into 19 complexes and four complexes are linked with neighboring countries. With the technical support and financial assistance from the International Tropical Timber Organization (**ITTO**), the Royal Forest Department (now Department of National Park, Wildlife and Plant Conservation or DoNp) has initiated trans-boundary biodiversity conservation area (TBCA) and the Pha Taem Protected Forests Complex (**PPFC**) has been selected as a pilot project because there is an increasing pressure on biodiversity from trade in plant parts and animal poaching across the border with Cambodia and Laos (ITTO/RFD, 2000).

Phase I of the PPFC Project started on 1<sup>st</sup> October 2001 and will be ended on 30<sup>th</sup> September 2003. There are two main specific objectives of Project Phase I: 1) to start a management planning process for the PPFC in a framework of trans-boundary biodiversity conservation and 2) to initiate cooperation between Thailand, Cambodia and Laos. The objectives of this paper are to elaborate on-going activities and preliminary findings, to present issues and opportunities for implementation of PPFC project. Meanwhile, draft strategies to strengthen TBCA in Pha Taem and neighboring countries are proposed for formulation of long-term management plan.

### **Descriptions of the Pha Taem Forest Complex**

PPFC is located between latitude 14° 12.5' - 15° 13.9' N and longitude 104° 58.5' - 105° 8.5' E in Ubon Ratchathani Province (Map 1). This complex covers an area nearly 173,600 ha which comprises four protected areas, namely Pha Taem, Kaengtana, and Phu Jong Na Yoi National Parks, and Yot Dom Wildlife Sanctuary, as well as Buntrik-Yot Mon Proposed Wildlife Sanctuary. To the east of PPFC is Mekong River and Phouxeingthong National Biodiversity Conservation Area (NCBA) (120,000 ha) of Laos, and to the south is Chom Ksan Forest (190,000 ha) located to the north of Virachey National Park in Cambodia (Galt et al, 2000). Approximately 317 km or 43% of total border length is adjoining with Laos (258 km) and Cambodia (58 km). Currently, 18 ranger stations have been established and eight park officials as well as 350 temporary employees deployed to operate the PPFC (Forestry Research Center, 2002).

Landscape feature of PPFC is flat to undulating terrain. Elevation is ranging from 100 m to 747 m above sea level. The terrain in the west and northwest is relatively low and is uprising to the east and to the south of the complex. Besides Mekong River, there are four major streams/rivers, namely Nam Mun, Nam Mun, Lam Dom Noi and Lam Dom Yai. These streams are impounded in Pak Mun and Sirinthorn Hydropower reservoirs, respectively before drain to Mekong River.

The preliminary findings reveal that PPFC contain 3 main vegetation types i.e., dry evergreen forest, mixed deciduous forest, and dry dipterocarp forest and more than 288 tree species are identified. At least 49 mammal species, 145 bird species, 30 reptile species and 13 amphibian species are recorded but large wildlife species such as wild elephant, banteng, freshwater crocodile and tiger are observed only along the national borders (Forestry Research Center, 2002).

There are 82 villages located within the distance of 3 km from PPFC's periphery and total population is estimated 89,000 individuals and density per household is 4.6 individuals. There are only 4 villages situated in the revoked area inside the PPFC (Pha Taem National Park). Major

occupations are agriculture, livestock raising and fisheries, and income average per year per household is US\$662 or one-fourth of Ubon Ratchathani (<http://www.nso.go.th> 9/11/2002).

### **Status of PPFC Implementation**

The summaries of project activities for each objective are as follows:

#### ***Specific Objective 1: To start a management planning process for PPFC in a framework of trans-boundary cooperation for biodiversity conservation***

Two tangible outputs are expected for this objective, including 1) effective organization and management system for the PPFC and 2) a long-term management plan (years 2003-2023) and a medium term working plan (years 2003-2006). So far, the PPCF Project Steering Committee (PSC), National Joint Task Force and multi-stakeholders committees were established. The Joint Task Force comprises all Superintendents of protected areas in PPFC and Chief of CITES checkpoint. Their responsibility is to implement day-to-day activities to manage protected area and protect biodiversity on the ground. Beside the organization, the PPFC has contracted the Forestry Research Centre of Kasetsart University Faculty of Forestry (KUFF) to provide technical services on five areas, including GIS database, wildlife ecology, forest ecology, socio-economic, research programme and human resources development. The results of these activities will be directed toward management planning.

#### ***Specific Objective 2: To initiate cooperation for biodiversity conservation in respective trans-boundary protected areas***

Two outputs are expected for this objective, including 1) a framework for trans-boundary cooperation between Thailand, Cambodia and Laos and 2) an information service to reach out the public. During the 1<sup>st</sup> Tri-national meeting, counterparts from Thailand, Cambodian and Laotian had discussed on several joint activities such as a research programme and strategies to combat poaching across the national borders. At local level, PPFC staff in collaboration with the Joint Task Force and multi-stakeholders has conducted workshops to raise local awareness on biodiversity conservation and the benefits of trans-boundary cooperation. Villagers also received materials for guiding them to establish food bank to supplement nutrient and to conduct ecotourism-based activities such as home stay, souvenir gift as an alternative income to reduce the impacts of agriculture on biodiversity.

### **Issues/Opportunities**

The PPFC Project has been implemented for one year and four months. It is found that there are both issues or weaknesses and opportunities to achieve the designated objectives and benefits of TBPA.

#### **Issues**

##### ***1. Reluctance from Laos and suspended bilateral relationship between Thailand and Cambodia***

Laos could not nominate the Phouxeingthong NBCA to join the 2<sup>nd</sup> Phase of the trans-boundary biodiversity conservation as prior agreed because Phouxeingthong has another project implemented. However, Laos is looking forward to strengthening cooperation in other areas in the future (*Ref. No 1404/Dof2002*). This event occurs may be due to Laos being afraid that after joining TBPA they have to ban commercial logging concession which is one of important national income. On Cambodia side, after Cambodian people attacked the Thai Embassy in Phnom Penh

on 29 January 2003, diplomatic ties between Thailand and Cambodia were downgraded and all joint projects on technical and economic cooperation between Thailand and Cambodia were suspended.

## **2. Encroachment and legal logging concession**

Forest encroachment for agriculture in buffer zone along PPFC is still going-on while disappearance of forest cover in Laos and Cambodia is mainly due to unsustainable commercial logging. Logging concession is becoming significant threat to biodiversity conservation in Pha Taem TBCA because Thailand increases in demands for wood since Thailand has enacted logging for 10 years (Galt et al, 2000). Exploitation of timber not only eliminates forest cover but also disturbs wildlife habitat. Recently, park rangers at Buntrik-Yot Mon, Phu Jong Na Yoi, and Yot Dom reveal that large mammal species avoid disturbance from Laos and migrated to PPFC.

## **3. Poaching and trade of wild animals and plant parts**

Wildlife poaching and collection of plant part for trading are practiced along the border of three countries. This issue is substantial along Thailand and Laos because PPFC shares border with Laos 258 km or 82% of total country boundary length (Appendix 1). There are 11 checkpoints along the border but only one CITES Checkpoint was established at Chong Mek. Wildlife poaching is difficult to solve in Laos because wildlife meat comprises up to 80% of protein of rural household (Galt et al, 2000) and Laos has not ratified CITES Convention. It is reported that a number of domestic animals such as cattle and water buffalo are illegally transported into Thailand without control and disease investigation. On the other hand, wildlife poaching is also found in PPFC area, especially in southern part. Last December 2002, a fresh water crocodile, the most endangered crocodiles in the world, was shot by villager on Lam Dom Yai in Yot Dom.

## **4. Poor management of PAs and inadequate implementation capacity in Cambodia and Laos**

Management of protected areas both in Cambodia and Laos is very poor. In Laos, there is insufficient standard of capacity and professional training of staff at all levels, lack of budget and park rangers on the ground. In Cambodia, it is a lack of legal framework and in adequate of field staff, resources and capacity to support PA management Galt et al (2000).

## **5. Landmine**

It is assumed that thousands of explosions were mined along the border between Thailand, Cambodia and Laos named as *Emerald Triangle* after the civil war occurred in Cambodia. Each year a few park rangers and poachers are wounded by explosion. In mid-2002, the Thai Government would like to initiate the *Emerald Triangle Project* in this place. However, demining would cost more than 3 billion baht or US\$ 70 million, therefore this project was cancelled. Landmine is also a major threat for researchers and park rangers to conduct biodiversity survey and to patrol poaching, respectively.

Other threats on biodiversity include forest fire and livestock raising in PPFC. However, forest fire is not serious due to dry dipterocarp forest and mixed deciduous forest can resist with forest fire to some extent.

## **Opportunities**

### **1. Multi-lateral cooperation**

Even though, bilateral relation between Thailand and Cambodia is downgraded, but it does not affect on-going multi-lateral cooperation in this region such as Mekong River Commission (MRC), Asian Research and Cooperation on Biodiversity Conservation (ARCBC), Asian Cooperation Dialogue (ACD) etc. Recently, Asian Development Bank (ADB) and UNEP RRC.AP have implemented Sub-regional Environmental Monitoring Project (SEMIS) since 1995 in the six Greater Mekong Sub-region (GMS) countries. The goal of the project is to allow resource allocation and environmental management decision affecting the Greater Mekong sub-regional to be based on up-to-date and accurate information (Trisurat, 2002). Meanwhile, WWF and WCS are also aiming to conduct conservation activities for rare and endangered species such as tiger and elephant in this area.

### **2. Management of Protected Areas Complex**

The concept of forest management in Thailand has been significantly changed from logging concession, to sustainable management and now ecosystem management. With technical and financial support from DANCED, the DoNp is implementing ecosystem management in Western Forest Complex. Experience and lesson learned from that project and trends of protected area management in Thailand will support the implementation of PPFC Project.

### **3. Field Level Cooperation**

Chief Technical Advisor (CTA) and Project Manager (PM) were former senior officials of the RFD (now DoNp). Both of them are highly respected by junior staff therefore the relationship between staff of PPFC and protected area management are fruitful both at local and regional level.

### **4. Diverse habitats inhabiting endangered species**

Most area in the south of PPFC is wilderness and not easily accessed by normal people in the last 20 years, thus the remaining forest cover is still abundance. In addition, the PPFC is only protected forest complex in Thailand that contains both terrestrial and aquatic ecosystems. It is expected that rare and endangered species such as freshwater crocodile, tiger, Eld's deer and possibly kouprey can be found in this region.

### **Strategies for trans-boundary biodiversity conservation**

By considering issues and opportunities on biodiversity conservation within and around PPFC, the author formulated draft strategies to increase effectiveness of PPFC Project in broader landscape planning relevant to the IUCN "good practice guidelines for TBCA (Sandwith et al, 2001) as follows:

#### **1. Use regional cooperation as a gateway for bilateral relationship**

Even though, bilateral relationship between Thailand and Cambodia is temporally bared, there are several international and regional co-operations to dialogue and resolve this political tension, especially cooperation on environment and biodiversity such as TBCA, MRC, SEMIS, ARCBC, CITES, etc. In addition, China offers also herself to mediate this conflict.

#### **2. Joint research and training program as well as mutual visit**

Although, Laos is reluctant to participate PPFC but geographically Phouxeingthong is already joining the PPFC and wildlife usually migrates between two countries. Meanwhile, there are

ample opportunities to start long-term cooperation and are of interests for three countries such as joint research program to survey tiger, freshwater crocodile and kouprey. Distribution of kouprey in this region is still a mystery and a challenge for all scientists and it is of interest for international donors. Meanwhile, long-term permanent plots to monitor vegetation dynamic and GIS management system were established at the PPFC HQ. Thus, soft cooperation on training program e.g. protected areas management and GIS application and joint research program is a promising vehicle to initiate cooperation among Thailand, Laos and Cambodia. Meanwhile, a mutual visit among park officials of three countries should be conducted as well to further strengthen cooperation among.

### **3. Broader PPFC landscape planning**

Phase I of the PPFC Project originally targeted on four protected areas in Thailand. Fortunately, the last PSC Meeting endorsed the proposal to establish Buntrik-Yot Mon Wildlife Sanctuary which is situated to the north of Phu Jong Na Yoi. However, this complex still has two “gaps” 1) between Pha Taem and Keangtana about 7 km, and 2) between Keangtana and Buntrik-Yot Mon with approximately distant 17 km. In Thai side, gap 1 is covered by degraded reserve forest and four villages are located in between, while in Laos side this area is a part of Phouxeingthong. Therefore, community-based management and ecotourism (visiting Mekong) should be promoted to substitute agricultural practice. PPFC should ask assistant from Provincial Forest Office because they have long experience to conduct community forestry since 1984. The gap 2 is quite wide but there is a possibility to establish conservation corridor to link isolated PA cluster in the north and the south (see Map 1). It is proposed that wildlife scientists both Thai and Laotian should conduct wildlife survey in this area and assess the possibility to establish and rehabilitate wildlife corridor. Meanwhile, any kind of conservation area should be established to the west of Phu Jong Na Yoi in Laos.

### **4. Investigating animal disease and restricted livestock raising in certain places**

Inactive checkpoints should be permanently closed for domestic animal transportation while transported animals must be temporarily halted at a certain places and investigated by veterinarian to check animal disease. Based on wildlife survey and vegetation mapping, ecological management zones using Biosphere Reserve Zoning Concept should be developed (in process) to define core biodiversity area, buffer zone and transition zone where domestic animal raising is allowed in certain areas of PPFC. This practice will not only prevent dispersal of disease from domestic animal to wildlife but also safeguard hotspots of biodiversity.

### **5. Promote nature-based tourism on common products**

Nature-based tourism and/or ecotourism are becoming more popular for visitors in this region and from overseas. Packet tour to explore scenery along Mekong River, visiting Thai and Laotian community should be promoted. In addition, PPFC should provide guidance to local people living buffer zone to conduct ecotourism-related activities such as home stay, souvenir. This activity will bring economic benefits to local people and finally reduce encroachment and poaching in PPFC.

### **4. Cooperation between protected areas and military**

Protected areas in PPFC and neighboring countries are adjoining each others. Thus, impact of encroachment and wildlife poaching will go beyond each protected area boundary. Therefore integrated joint task force to combat encroachment and poaching should be conducted as necessary. In remote area where accessibility is limited and dangerous due to landmine,

cooperation with military field staff and border patrol police to reduce poaching and illegal logging is essential.

### **5. New forestry concept for logging concession**

Since legal logging concession is the main foreign income to Laos and it is very difficult to persuade Laos Government to ban commercial logging at the moment. International organizations such as ITTO, IUCN, WWF and others should encourage Vientiane Government to aware consequent impacts of logging on biodiversity and environment. Sustainable forest management or new forestry practice that maintains the structural diversity by leaving behind some old trees, standing dead trees and fallen trees to serve as habitat for animal species in the next succession cycle should be promoted in existing logging concession.

### **Conclusion**

The PPFC Project funded by ITTO is a pilot project to conserve biodiversity across trans-boundary among Thailand, Cambodia and Laos. Project Phase I aims to start a management planning process for the PPFC in a framework of trans-boundary biodiversity conservation and 2) to initiate cooperation between Thailand, Cambodia and Laos. Most activities are implemented in Thailand and preliminary findings of the project are accomplished as planned. The great challenge of the Project Phase II is to strengthen cooperation with Cambodia and Laos to participate in TBCA. This is due to the current bilateral relationship between Thailand and Cambodia is suspended while Laos is reluctant to participate in the coming phase. Other issues and threats on biodiversity conservation in this region include unsustainable logging concession, smuggling of wild animal and plant parts into Thailand, poor management of protected areas in Laos and Cambodia, as well as landmine.

Future strategies to increase effectiveness of Pha Taem TBCA should cover two main areas. The first one is to strengthen cooperation through multi-lateral cooperation such as MRC, GMS/SEMIS, ARCBC, CITES. Cooperation should start from soft activities such as joint research project, training program and followed by mutual visit. The second area is the boarder PPFC landscape planning in terms of areas and participation or partnership. The habitat corridor between Pha Taem and Kaengtana should be rehabilitated and managed through community-based forest management. In addition, alternative income generation through ecotourism should be promoted to communities situated around PPFC. Finally, the most important factor to the success of the PPFC TBCA Project is the role of international communities to educate Laos to clearly understand the long-term benefits of TBCA and participate in PPFC TBCA.

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**Appendix 1 Summary of key features of Pha Taem Forest Complex**

Name	Established <sup>1/</sup>	Area (km <sup>2</sup> ) <sup>2/</sup>	Perimeter (km) <sup>2/</sup>	Country bound. Km (%) <sup>4/</sup>	Shape Index <sup>5/</sup>	Ranger Station	Official s <sup>6/</sup>
Pha Taem NP	31 Dec 91	353.16	242.67	63.32 (27%)	3.64	5	3/100
Kaengtana NP	13 Jul 91	84.62	62.52	29.96 (48%)	1.92	4	2/90
Phu Jong Na Yoi NP	1 Jun 87	697.38	215.88	93.87 (43%)	2.31	4	1/90
Yot Dom WS	11 Oct 77	235.93	88.21	33.21 (37%)	1.62	4	1/60
Buntrik-Yot Mon	Proposed	365.86	186.15	96.40 (52%)	2.75	1	1/15
Total		1736.9 5	730.04 <sup>3/</sup>	316.76 (43%)		18	8/355

Notes:

1 = Royal Gazette

2 = Calculated by GIS

3 = Excluding shared border

4 = Length of country boundary

5 = Perimeter/2( $\pi \times a$ )

6 = Government Official/temporally employee