SUMMARY REPORT

Pha Taem National Park on domesticated wild orchid

Naris

BHUMPAKPHAN

Summary Report on Study visit to Pha Taem National Park on domesticated wild orchid

Naris BHUMPAKPHAN

Kasetsart University's Faculty of Forestry, e-mail: ffornrb@ku.ac.th

Cover

According to Sub-contract on "the study visit to Pha Taem National Park on domesticated wild orchids to reduce illegal collection in park". This sub-contact was run under ITTO Project PD-A/ 60-396 by Kasetsart University's Faculty of Forestry. Arrangement a study tour for fifteen participants of Mae Hong Sorn, was planned and designed the program of visits to 5 local communities, one Buddhist temple in Buffer zones of Pha Taem Forest Complex (PTFC) and visited 4 Reserve Areass (2 Wildlife Sanctuaries/ 2 National Parks) in Ubon Ratchathani Province during 21 to 23 February 2025. There were such as various points of view from the visit, mainly wild orchids and adding with some potential forest minor resources that were helpful so that participants could come across and learn, namely utilizations of Malve nut, bamboo, *Pandanus* spp., tree barks for dying cotton cloths and medicinal plants used by local communities in buffer zones of PTFC. The study visit provided better understanding in many view points and ideas via communication, interview local communities. Also, their visuals were directly from local demonstration both utilization and recovery.

The outcomes from 3 days visit would be helpful and providing of the lesson learn of utilize those potential forest minor products from domesticated wild orchids, bamboo species and others in buffer zone areas to reduce illegal collection in the 4 reserve areas (National Parks and Wildlife Sanctuaries). Forest restoration and the recovery program of wild orchids to four reserve areas. Eventually, the fifteen participants from Mae Hong Sorn Province could realize and obtain some new ideas to domesticate wild floras in their communities and in their Community Forests in Mae Hong Sorn.

Rationales

Increasing of local population, communities and intensively uses of forest minor products, fuel woods and increasing forest land encroachment in natural forested areas in Province of Tak and Mae Hong Sorn Province along the border of Thailand and Myanmar. Recently, the crisis of civil conflicts of fighting between Naypritaw government and ethnic groups in Myanmar has pushed increasing emigrant refugees to Thailand territory thus these might be caused negatively affect to forest and natural resources in Thailand as well. Study tour of participants from Mae Hong Sorn to visit Pha Taem Forests Complex (PTFC) in Ubon Ratchathani Province would provide new knowledge gains, cause PTFC, are located along border with Lao PDR and Kingdom of Cambodia, which passed the same situations threats and disturbance and has solved by previously ITTO's supporting projects since 2001 to 2016.

The lesson learn form According to preliminary wildlife studied in PTFC in Ubon Ratchathani Province during Phase I (year 2001 to 2003), treats that found are composed of 1) forestland encroachment, 2) wildlife poaching, 3) illegal wildlife trade, 4) collecting forest minor products: FMP (fuel wood, mushroom, bamboo stem and shot, medicinal plant, wild orchid, edible insect, and rock crab), 5) livestock raising, and 6) landmines (Thammaroekrit and Bhumpakphan, 2003). How to mitigation the threats are to put activities with budgets to benefit local communities, the fruitful results from supporting of ITTO and Japanese Government during Phase II which covered the projects along buffer zone of PTFC in Thailand and Cambodia (year 2008 to 2010). In Phase III (from 2012-2015) the projects covered the larger areas called Emerald Triangle Protected Forests Complex (ETPFC) which composed of PTFC in Ubon Ratchathani Province, Dong Khan Thung Protected Forest in Lao PDR and Preah Vihear Protected Forest in Cambodia. One objective of ITTO project was to support local communities to engage in activities that improve their livelihood while reducing their dependence on the forest minor product resources of the ETPFC was target. Under the project, several subprojects called "integrated conservation and development pilots" (ICDPs) were implemented in selected communities to improve their livelihoods while advancing conservation and rehabilitation. Six promising ICDPs projects from Phase II and the another six ICDPs projects from Phase III,

some project samples were as followed: produce production of bamboo handicrafts, tourist homestays, create a food bank or fruit tree plantation, propagate wild orchid used a micro-technique, agroforestry food bank, tissue-culture labs in two schools, and nursery for seedling production (Maneethong, 2015; Boonsermsuk *et al*., 2017; Bhumpakphan *et al*., 2018).

There are some active uses with natural forest minor product resources, such as wild orchids, many species of bamboo, collecting nuts of Malva nut tree and so on. Wild orchids were illegal collected from times to times in PTFC and sold at the boarder market and eventually that made them almost extirpation from many PTFC reserves. Groups of local people have ideas of cultivate wild orchids in nursery and orchard rather than stolen for the wild. They could maintain wild orchid more than 80 to 100 species in *ex-situ* collection and propagated some for sell. Manipulation on forest minor products lead to the goals of sustainable basis, there are some activity from locals in Bamboo plantation mixed in Para-rubber trees in form of Ago-forestry, products of bamboo plantation can support to make production of rice streamer and rice box handicrafts in local communities. Also, fruits of Malva nut tree (*Scaphium affine*) became so popular in Ubon Ratchathani, Chantha Buri and Trat Province as fruit material to produce a drink called "น้ำหมากจอง หรือน้ำสำรอง (Malva nut water)" which produced and put in bottle for delivery. Their cycle of seed year and off year of Malva nut tree could make the different price of selling 400-90 baht/ kg. Due to high demand and illegal collecting in the wild, namely in National ark/ Wildlife Sanctuary during collecting period in April-May, it reaches the idea to propagate them. Recently, Phu Jong – Na Yoi National Park have produces seedling and distribute to local communities surround the park. Ban Kaeng Ruang near head office of Phu Jong – Na Yoi NP, now locals started to grow the Malva nut tree in PTFC buffer zone and try to propagate seedling and sell off by price 8 baht/ seedling. By hoping that in near future products would come out from plantation to support the need of high demand from markets.

Study tour program of visiting local communities in buffer zone of Pha Taem Forests Complex in Ubon Rachathani Province would be so helpful and be benefit to participants from Mae Hong Sorn Province to study and to gain new highlight knowledge of utilization and managing FMP from visit local communities.

Objectives

1) To providing background information of Local communities and stakeholders used of forest minor products via domestication in the buffer zones of the Pha Taem Forested Complex
2) To provide knowledge and information of natural resources, conservation and protection of natural resources and park
3) To lead participants from Mae Hong Sorn to learn and to obtain knowledge gains from local communities and stakeholder used of minor forest products from domestication in buffer zones of Pha Taem Forest complex
4) To create future collaboration and networks between the participants from Mae Hong Sorn and local communities in PTFC of Ubon Rachathani would be benefits for both sides of two communities from Mae Hong Sorn and communities from Ubon Rachathani

Methodology

1) To see how possible to make the proper visiting program via literature reviews and interview staff from Conservation Area Administration No 9 (Ubon Rachathani) and all the chiefs of Pha Taem National Park (NP), Phu Jong- Na Yoi NP, Bun Thrik -Yod Mon Wildlife Sanctuary (WS) and Yod Dome WS in Ubon Ratchathani Province the process spent around two weeks between 6-20 January 2025
2) Preliminary survey during 24-26 January 2025 to visit the potential visiting sites with interesting issues: 1) bamboo and Pandanus utilization, 2) wild orchids nursery, 3) Malva nut tree (*Scaphuim affine*) plantation, 4) uses of various species of tree barks for dying various color in cotton and 5) ethnobotany of medicinal plants used by locals
3) Arrange the routes and sequencing of visiting program. Contacting all hosts for three days study visiting. Draft the final study visit program for Mae Hong Sorn participants
4) Visiting tour was carrying on the 21-23 February 2025 by followed up the details from no 3).

5) Preparation topics of lecture, brief and information provided to participants. Direct learning, opening with question and answer between participants and host communities. Also support for future collaboration between two
6) Eventually discussing, brainstorm uses and recovery/ restoration of natural resources between participants and staff of ITTO Project and enclosing the visit program

Program

Table 1 The visit program during 21-23 February 2025, the details see Attachment 1.

Time	Activitiy	Authority
February 21, 2025 Visit the area at Yod Dom Wildlife Sanctuary and Phu Chong Na Yoi National Park		
09:00 - 12:00	Study visit at the beekeeping and crocodile breeding pond at Yod Dom Wildlife Sanctuary.	1. Project staff Team (8 people) 2. Participants from Mae Hong Son (15 people)
12:00 – 13:00	Lunch	
13:00 – 14:30	Visit the beekeeping of the Tai Yoi village group at Ban Mae Suwan Phan Sawang.	
14:40 – 16:00	Study visit the orchid cultivation at Mae Ramphueng Orchid Garden	
16:30 – 17:30	Study visit the areca nut seedling and areca nut crab nursery at Huai Luang Charoentham Forest Monastery.	
18:00	lecture about Phu Chong Na Yoi National Park by the park chief and Check in to the accommodation at Phu Chong Na Yoi National Park.	
February 22, 2025, visit the work area in Buntharik District.		
08:00 – 09:30	Travel to Buntharik District, Ubon Ratchathani Province.	1. Project staff Team (8 people) 2. Participants from Mae Hong Son (15 people)
09:30 – 12:00	Observe the use of weaving, bamboo planting and natural forest restoration by the Ban Kham Sombun people group, Ko Lan Subdistrict, Buntharik District, Ubon Ratchathani Province.	
12:00 – 13:00	Lunch	
13:00 – 16:00	Visit the tree restoration project in Buntharik-Yotmon Wildlife Sanctuary. Stop by Phu Phrao Temple to worship Buddha in Khong Chiam District.	
17:00	Lecture about Pha Taem National Park by the park chief and check into the accommodation at Pha Taem National Park.	
February 23, 2025, visit the work area in Khong Chiam District.		
08:00 – 10:00	Historical study at Pha Taem National Park viewpoint.	1. Project staff Team (8 people) 2. Participants from Mae Hong Son (15 people)
10:00 – 12:00	Study visit Ban Tamui, using bark to dye cloth and weave cloth.	
12:00 – 13:00	Lunch	
13:00 – 16:00	Study visit Ban Tha Long, weave rice baskets and pandanus weaves. Summarize the results of the visit and exchange opinions.	
16:00 – 17:30	Travel to Ubon Ratchathani Airport	
20:55 – 22:00	Travel from Ubon Ratchathani Airport to Don Mueang Airport (Thai AirAsia FD3373)	

List of Participants

Three days of visit program (see Table 1) for the Mae Hong Son participants were composed of 4 school teachers, 3 staff from Royal Forest Department and 8 leaders of local communities who have responsibilities to Community Forest Areas from 4 Districts in Mae Hong Sorn Province and Project Field-Coordinator (see Table 2).

Table 2 List of Participated on study visit to Pha Taem National Park on domesticated wild orchid

No.	Name	Affiliation
1	Mr. Chaidech Suthinnakron	Ban Tor Pae Community Forest
2	Mrs. Aunruan Konhiran	
3	Mr.Kongpool Boonyoung	Thung Pham Community Forest
4	Mrs.Jutathip Boonyuang	
5	Mr.Suphachai Kwangthu	Pratu Muang Community Forest
6	Miss Kodchakorn Prakhongnit	
7	Mr.Rphin Praphaphiman	Lekoh Community Forest
8	Mr. Worawet Khirimatphadung	
9	Miss Supattra Duangdee	Ban Huai Sing School
10	Mrs.Amporn Choengsaard	
11	Mrs. Supaluk Suriya	Tor Pae Wittaya Community School
12	Miss Arphatsara Supichathirakun	
13	Miss Phachtheerat Sutthawan	Forest Resource Management Office 1, Mae Hong Son Branch
14	Mr. Ativut Srepramoon	
15	Mr.Naphon Phonrungreuengkit	
16	Miss Worarampa Prodpannam	Project Field-Coordinator

Lecturer Team

The program was leaded by Naris Bhumpakphan and lecturers: Yongyut Trisurat, Suchart Kalayawongsa, Sapol Boonsermsuk, Cakrit NaTakuathung, and Naris Bhumpakphan.

Study sites in Ubon Ratchathani

The study visit routes were carrying out passed through 10 study sites in three districts of Ubon Ratchathani. Starting of starting visit was from site no. 1 to 10, the details were as follows: 1) Head office of Yod Dome Wildlife Sanctuary (WS), 2) Ban Tayoi and 3) Ban Nong Crok in Nam Yuen District, Ubon Rachathani where are in the Southern part of buffer zone of PTFC; 4) Wat Pa Huai Luang Charoen Thamma and 5) Phu Jong – Na Yoi National Park (NP) in Nacharuay District, 6) Ban Kham Somboon and 7) Bun Thrik – Yod Mon WS in Bun Thrik District; 8) Pha Taem NP, 9) Ban Tayoi, and 10) Ban Tha Long in Kong Chiam District, Ubon Ratchathani Province (see Fig 1).

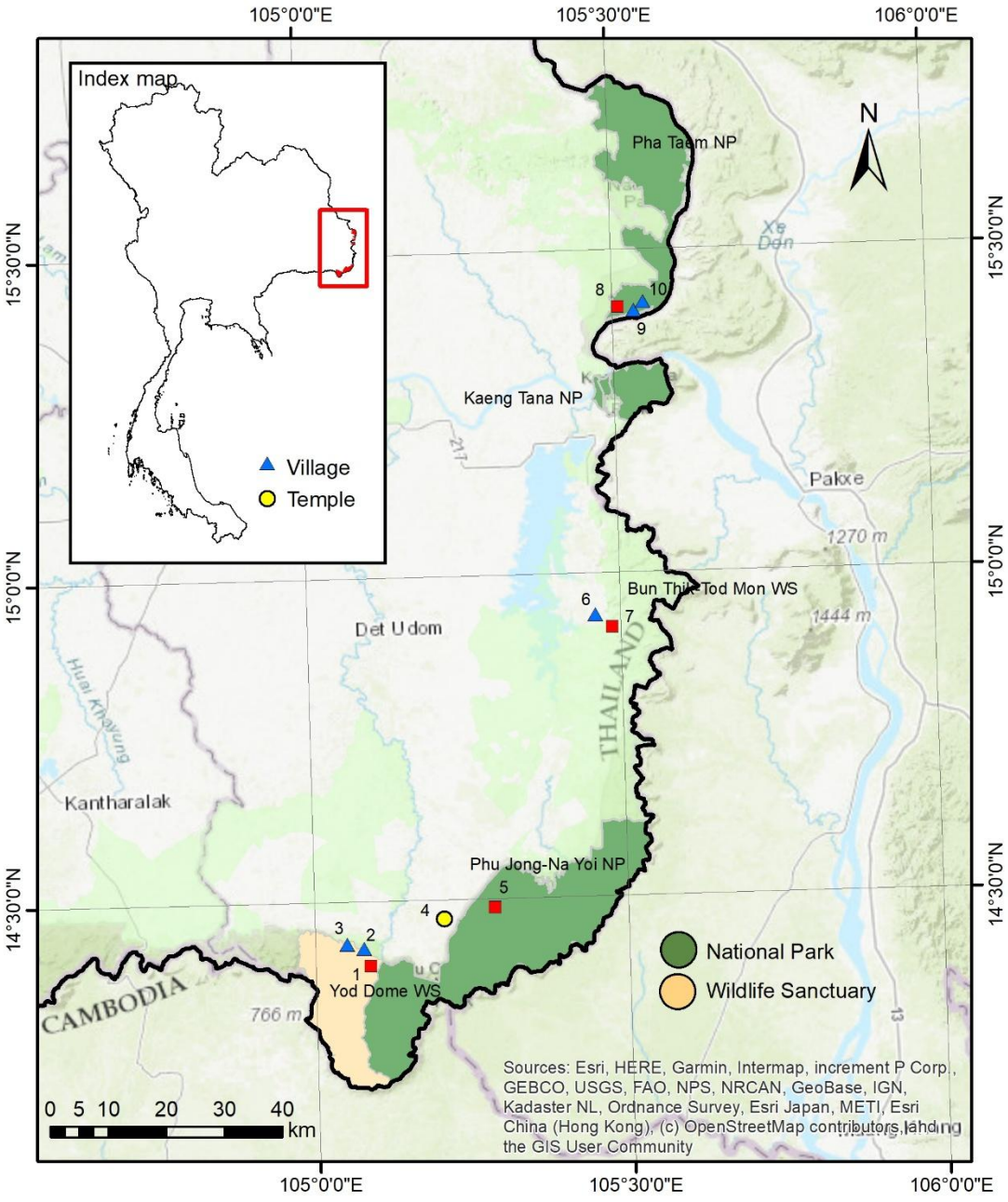

Fig. 1 Maps of Pha Taem Forest Complex and focal visiting sites.

Source: Modified from Trisurat 2015

Results

Assessment results

Participants from Mae Hong Sorn Province visit to local communities in the buffer zone areas of PTFC, they could see local people livelihoods and their ways of manage nursery to propagate wild orchids for selling and return some to the wild. Some potential species of forest minor products collecting from wild and from their cultivating of FMP that would be benefit for uses without collecting from wild in the future. Some selected species mentioned in this report were as follows:

Wild orchid nursery Visiting to wild orchid orchard in Ban Nong Crok Nam Yuen District to see how local work on wild orchid in their nursery and produce some incomes from selling. Eighty to a hundred species of wild orchids from Ubon Ratchathani and other regions were collected in the orchard. Mrs. Rampueng gave talks introduce to her interested in wild orchid collection and showed some activities in orchard, nursery and planting wild tree with crop by apply of agroforestry knowledge in managing. After all, she and her colleague receive good income from wild orchid farm and other crop production.

Some of the native wild orchids of Ubon Ratchathani, namely in PTFC ecosystems were composed of ไอยเรศ (*Rhynchostylis retusa*) ช้างกระ (*Rhynchostylis gigantea*) เอื้องผึ้ง (*Dendrobium lindleyi*) เอื้องเขาพระวิหาร (*Vandopisis lissochiloides*) เอื้องกุหลาบพวง เอื้องกุหลาบกระเป๋าเปิด (*Aerides falcata*) เข็มแสด (*Vanda miniata*) เพชรหึงษ์ (Tiger orchid: *Grammatophyllum speciosum*) กาเรการ่อน (*Cynbidium aloifolium*) แดงอุบล (*Phalaenopsis ubonensis* or synonym *Phalaenopsis pulcherrima*) ว่านจุก กล้วยไม้ดิน (*Spthoglottis plicata*) and so on. Other ornamental plants that could be found in orchard were ferns, สั้มเช้า (*Euphorbia neriifolia*), จันผา (*Dracaena* spp,) and many others.

This orchid nursery run by Mrs. Ramphueng became “Learning Centre of wild Orchids of Ubon Ratchathani”. By support from Ubon Ratchathani University and Thailand Research Fund, Muracheva *et al*. (2008) managed participation of local of Ban Nong Crok and Banta Yoi communities in sustainable basis management of wild orchids. The Orchid Centre returned some species of wild orchids to Yod Dome WS for

rehabilitation. Some survival of those rehabilitated wild orchids which could be seen at the trees near Head Office of Yod Dome WS and at Huai Pra Chao Forest Guard Station.

Malva nut tree This study visit added issue of Malva nut tree (*Scaphium affine*) into the program. Mulva nuts were so well known and popular in Ubon Ratchathani Province. The price of Malva nuts were 400 baht/ kg at the rural sites and up to 600-900 baht/ kg in the city markets. Illegal harvesting its fruits were found in Phu Jong – Na Yoi NP and Yod Dome WS were in April, both local Thai and Khmer from Cambodia entered to the parks and collected. Someone fell down the tree for their quick and easily collecting in high number. Thus, chief of Phu Phu Jong – Na Yoi NP tried to plant Malva nut tree, seedlings were distributed to local communities surround the park and also donated seedling at different aging to temple. Planting site of Malva nut trees at Wat Pha Huai Luang Charoen Thamma in Nacha Ruay District could show how those trees growth. Because of planting them in different year in the temple were showing different growth and development of trees. Right now, Ban Kaeng Ruang community at the entrance to the park, have done activities of sold fruit and seedling of Malva nut trees to other communities. Participants saw the Malva nut tree in the wild and saw the sixteen years old cultivated trees had the first time of flowering during their visit in February.

The idea of planting Malva nut trees, would provide chance for Mae Hong Sorn participants to cultivate another native Malva nut tree from Mae Hong Sorn which was called Taiphao (*Scaphium scaphigerum*). The second species was traditional uses as Chinese medicinal hot tea.

Basketry and Bamboo species Local people from many localities in Ubon Ratchathani have skillful for bamboo basketry as a part of their culture. At Ban Kham Somboon in Bun Thrik District, they made rice streamer from ไผ่พุง หรือไผ่สะพุง (Phai Pung; *Cephalostachyum* sp.) while at Ban Tha Long from Kong Chiem District, they made rice box from ไผ่ซางผา (Phai Sang Pha; *Bambusa* sp.). Due to high demands and difficulty of searching bamboo, they had to go further and further to border area or sometimes enter into neighboring countries for cutting bamboo. The coming of new idea of planting Phai Pung induced by Chief of Huai Done Watershed Management Station in Ubon Ratchathani, local members of Ban Kham

Somboon in Bun Thrik District have joined the project of bamboo planting with supporting of bamboo seedling and budget (50,000 baht/ year from DNP funds) since 2004. From information provided by Mr. Thanong Chitchan and directly sighting, there were three age classes of plantation with aging 3 years old, 5 years old and 10-12 years old plantation. Production from the 10 years old bamboo plantation could support to bamboo basketry in the community. In addition, Kham Soomboon Community had totally 80% of bamboo material for basketry from plantation and bought 20% of materials from other sources.

Basketry of "sticky rice steamer" and "sticky rice box", Kham Somboon and Tha Long local people had shown how to weave bamboo sticks to make bamboo rice steamer and rice box to Mae Hon Sorn participants and some participants learned to do so. Locals of Kham Somboon kind presented each "rice steamer" to visitor as souvenir gifts. Young bamboo seedlings of *Cephalostachyum* sp. and bamboo basketry were ordered and shipping to Mae Hong Sorn.

Note that Ban Kham Somboon Community was quite successful in bamboo planting while Ban Tha Long community had no any bamboo plantation. Thus, they had to climb up the mountain to cut down bamboo near the cliff in Pha Taem NP. At Ban Kham Somboon Community became successful and popular of bamboo plantation, so that could provide experience and sold bamboo to other communities in Ubon Rachathani and Yasothorn. Regarding to Phai Pung (*Cephalostachyum* sp.), its stem has long internodes, one bamboo stem contains 7 internodes. It costs 70 baht/ stem or 10 baht/ a piece of internode (75-80 cm) when sold to neighbor who needed buy in term of pieces. Mr. Thanong Chitchan mentioned his garden planted bamboo in row between Para rubber trees (*Hevea brasiliensis*), he got annually 1,000 bamboo stems/ rai and he obtained 50,000 baht/ rai/ 5 years. Comparing to planting of 12 Eucalyptus trees/ rai, which cost only 12,000 baht of income. Here now, Bamboo plantation in form of Agro-forestry in Ban Kham Somboon became famous "Learning Centre of Bamboo Plantation".

Tree barks for cotton dying There were many tree barks that were cut from trees near Ban Tamui communities in Kong Chiem District. Specific color from various tree species, namely *Irvingia malayana*, *Cariya aborea*, *Vitex* sp. and *Dialium cochichinensis* were valuable resin materials to create color for cotton

yarns (raw materials to cloths. Mrs. Sa-ard Hansupho had experience of uses barks from learning by doing and found with different species could provide different color in cotton yarn or mixed some of them would provide new medium color. At Ban Tamui community, demonstration of process to prepare cotton yarn, dying and weaving were shown to participants. Good samples of high quality of hand-made cotton cloths were shown and sold out at their village.

Pandanus species Pandanus leaves were used for making Pantanus mat, could see from Ban Tamui and Ban Tha Long communities in Kong Chiem District, locals going to search for leaves from two Pandanus species: 1) เตยน้ำ *Pandanus capusii* and 2) เตยต้น *Pandanu*s sp. from the mountainous stream in reserves. One piece of Pandanus mat spent 3 days of making and could be sold at price of 600 baht per each. Noted that there was no planting of the *Pandanus* spp. in communities for raw materials of leaves in uses.

Medicinal plants Uses of minor forest products could be seen from visited communities, were medicinal plants from wild. Ethnobotany knowledge was transfer from generation to generation in communities throughout in many regions of Thailand, Southeast Asia and China local have known which species that could be eating and/or used for medicinal purposes, from various species of plants were dried and made in powers, some of them cut and mixed in boiling or put in whiskey. Right now, using of traditional medicinal plants were replaced by western style of medicine. At Ban Tha Long community in Khong Chiem District, senior locals demonstrate how to boil mixed medicinal plants by believing that the results from drink would make them had a strong healthy body. According to our interview to locals at Ban Tha Long Community, there were composed of ten medicinal plant species, such as ขมิ้นต้น (*Hedyotis fruicosa*) ขมิ้นเถา (unknown sp.) หมักหม้อ (*Rothmannia wittii*) วัวเถลิง (*Anaxagorea luzonensis*) กำลังเสือโคร่ง (*Strychnos axillaris*) ม้ากระทืบโรง (*Ficus foveolata*) สนทราย (*Baeckea frutescens*) พลังช้างสาร (*Beamontia murtonii*) พญามือเหล็ก (*Strychnos lucida*) อ้อยสามสวน (*Merioptron extensum*). In order to make pretty good smell for a drink, locals added เตยหอม (Fragrant pandon; *Pandanus amaryllifolius*) into the boiling.

Fuel woods Fuel woods were so important for energy in household for rural communities in buffer zone of PTFC. From direct observation, it seemed all households used fuel wood in dairy life of cooking. Some data from Doi Ang Khang in Northern Part of Thailand, Dr. Somkit Siripattanadilok, former faculty member from Kasetsart University's Faculty of Forestry, studied uses of fuel woods by hill tribal people and found that locals in averaging used 4-5 tons of fuel woods/ house/ year (or 12.3 kg./ house/ day) while local communities located on higher altitudinal mountains in Yunnan Province was utilized around 5-6 ton/ house/ year (or 15.0 kg./ house/ day) (Prof. Luo Xu from SWFU, personal comm.).

Study cases related with fuel woods from People's Republic of China, many poor highland communities in Yunnan Province cutting and use of wood for sources of energy in households, cause forest degradation and affecting to endangered species, namely Yunnan snub-nosed monkey (*Rhinopithecus bieti*) in Baima Snow Mountain National Nature Reserve and White-browed gibbon or Hoolock (*Hylobates hoolock*) habitats in Gaoligong Mountain National Nature Reserve. Local forestry offices, try much to campaign of used efficiency model of electricity stove and solar cell for warm water. At Xishuangbanna Dai Autonomous Prefecture in Yunnan China, Dai ethnic people and their communities in Jinghong, Mengyang Menghun, Mengla, they planted bamboo, banana and ต้นขี้เหล็ก (Thai copper pod; *Senna siames*) for family uses. Thai Copperpod were introduced from Siam and planted in large areas by using as food, medicine and especially fuel wood for more than 400 years.

Increasing of human population density in buffer zone of PTFC, those demands of fuel woods with no replacement from planting trees in communities, it would make cutting and caused degradation to nature forest ecosystems which slightly pressure to all of PTFC reserves. Planting trees for fuel woods were source of energy in dairy lives, thus they were so important for future consideration and implementation.

Forest and Natural Resource Recovery

During 3 days study visits, Mae Hong Son participants had come across of projects and activities of Restoration and Rehabilitation of natural resource in buffer zone and in PTFC reserves of Ubon Ratchathani Province.

Raising Stingless bees and Eastern Honey bee Participant learned some pilot projects that were brought to Ban Tayoi in buffer Zone of PTFC in Nam Yuen District to see the activities of raising ชันโรง (stingless bees; *Tetragonula* spp.) and ผึ้งโพรง (Eastern honey bee; *Apis cerana*). These projects were introduced to communities by Dr. Praphan Triyasuthi of Rachabhat University of Ubon Ratchatani. These projects have just started activities in buffer zone area. No honey could be collected now.

Both stingless bee and other honey bees could be benefit to forest ecosystem and agricultural ecosystems. Roles of pollination to wild plants and agriculture plants were so significantly important to increase rate of recovery of nature floral plant species and also high production of crops as well. To raising stingless bees and honey bee for honey production need to take care of good environment without agrochemical and insecticides in order to save the lives of all bee species. These activities also have very beneficial to local people livelihoods to be away from side-effects of the silent treats from agrochemical, herbicide and insecticide in agriculture area and nature ecosystem which were not good for their human healthy body and toxic in food chain and food webs in ecosystems.

Forest protection against wild fire in PTFC Protected Area Forest fire in PTFC was one of the serious problem cause there were a lot of dry materials in agriculture land, Dry Deciduous Dipterocarp forest and Mixed deciduous forest, thus during the fire season most of park ranger were ready to keep watch and tried to control and stop wild fire. During our visit to Ban Kham Somboon community, locals, staff of Huai Don watershed Management Station and staff of Bun Thrik - Yod Mon WS showed the area where planted seedling of trees, namely bamboo (*Cephalostachyum* sp.), rattan, *Anisoptera costata*, *Dipterocarpus alatus*, *D. obtusifolius*, *Hopea odorata*, and so on. Locals helped making strips of fire line with no and fuel stubs in the forest. Local people had good attitude to replant trees to protect against wild fire. Also, Ban Kham Soomboon and Ban Nong Kob Communities spent times of keep watching their response part of the forested area in the wildlife sanctuary. We heard good sentence from locals "*Now, it's times to restoration of forest and natural resources, cause of they used and cutting down many trees in the past*", said they.

Wild Orchid Rehabilitation During implementation of ITTO's Phase I and Phase III projects in PTFC, of both the project managers Phirat Tharchai and Kamol Wishuprakan had run tissue culture lab in school and nursery of orchid in some communities in buffer zone of PTFC. Fruitful from propagation made possible of rehabilitation of some wild orchids to Pha Taem National Park and other reserves in PTFC. The same as faculty member from Ubon Ratchathani returned แดงอุบล to Pha Taem NP. Recently, local community of Ban Nong Crok orchid nursery returned wild orchids to Wildlife Sanctuary and National Park in FTFC.

During the visit PTFC, the National Park Association of Thailand (by Naris Bhumpakphan and Suchart Kulayawongsa) bought wild orchids from Ban Crok Orchid Learning Center and donated 5 species of wild orchids, namely ไอยเรศ (*Rhynchostylis retusa*) เอื้องผึ้ง (*Dendrobium lindleyi*) เอื้องเขาพระวิหาร (*Vandopisis lissochiloides*) เอื้องกุหลาบพวง (*Aerides falcata*) เข็มแสด (*Vanda miniata*) to Chiefs of Yod Dome WS, Pu Jong – Na Yoi NP, Bun Thrik - Yod Mon WS and Pha Taem NP. Also, participant from Mae Hong Sorn Province and members from National Park Association of Thailand with the staff of four reseves put the orchids to nature and the other specimens of orchids were kept in nursery at their Reserve Offices for future distribute to the wild.

Siamese crocodile Rehabilitation Yod Dome WS has run the protection and rehabilitation of Siamese crocodile (*Crocodylus siamensis*) in Lam Dome Yai River. This endangered crocodiles are very rare in Thailand and could be found some in the wild inside Yod Dome WS. Crocodile Learning Centre was set aside near the Raising crocodile porn with information provide to local and school students. Two from ten Siamese crocodiles which were donated from PanyaFarm, Nakorn Prathom Provice, were raising in the pond.

Survival of Hairy crab/ Rock crab ปูขน หรือปูหิน (Hairy crab/ Rock crab) was a famous and endemic arthropod invertebrate of Bunthrik District. Visiting Korland Sub-district of Bun Thrik District, anyone would hear about "คอแลน แดนปูขน คนสานหวด" or "Korland land of hairy crab and local rice streamer handicraft!" these reflect to nature resource and local livelihood. Rock crabs were found along the rocky stream on the mountain in and nearby areas surround Kham Somboon community. Due to high

harvesting for food that doomed crab population became more rarer and rarer to find out. Discussion with local leaders and Chief of Bun Thrik – Yod Mon WS for future recovery program to save the unique species of crab was seem to be implement by the near future. To save population and natural habitat of rocky stream was to save the good quality of water from head water to local communities. Bag limits in number of collect, harvesting times, hunting areas should be designed the common regulation with local communities surround the wildlife sanctuary.

Sustainability

We found that mitigation on activities from locals in searching, gathering secondary forest minor products and disturbance of wildlife habitat sites in PTFC reserves. Later on, forest minor product resources become rare and rare and had to spend much times and searching far away with more and more longer distance and very risk when entering to the neighboring countries to get raw materials. High demands also make conflicts between locals and PTFC park ranger.

Mitigation the long times conflicts, thus, local people in PTFC buffer zone, researchers and park ranger staff of local government came and worked together with new inspiration to recover the natural resources by returning wild orchids to Yod Dome WS, to plant bamboo and tree seedling with creating fire control line in the forest. Also, the keep watch and maintain the remnants of forest trees for utilization of medicinal plants, bamboo species, Pandanus, fuel woods, special trees for their uses of color barks and so on. The fruitful of their try to maintain natural resources with propagation planting and take care for nursery, orchards and Agro-forestry tusks in buffer zone would provide basic needs for their livelihood and incomes to family and have very pretty good support to FTFC nature and reserves. At Ban Nong Crok, Ban Kham Somboon Ban Ta Yoi and Ban Tha Long now become famous educational site for visitors come to learn regarding to wild orchids, bamboo, uses of tree barks and so on from their experience of managing those resource of forest minor products in buffer zone.

Ex-situ conservation needs times, knowledge and experience to carrying out to achieve the goals of their own enough resources. Eventually, it needed times to wait for success of colleting honey production.

Propagation and planting of Malva nut tree was leaded by Chief of Phu Jong – Na Yoi NP., seedling of Malva nut tree were distributed to Wat Huai Luang Charoen Thamma and Ban Kaeng Ruang local communities in Na Chaluay District near the park by hoping that in the future locals would be able to collect fruits from their own lands.

Note that most documents mentioned how to use of materials from many species of plants in livelihoods and culture of Ubon Ratchthani people, but none mentioned for which confirm to species in Botanical names. Ethnobotany in use of medicinal plants should go along with Plant taxonomy to confirm. Chemical substance, qualities and quantities with demand of how to use in amount. Medicinal plant could provide of both positive and negative results to human body. Cause, many vernacular names / local names from various places of different region in Thailand might be the same sound of calling but they may be different species identification. In terms of uses medicinal plants ought to be careful the side effect of the different plant by the same local names.

Wise uses of natural resources of FMP by local communities on sustainable basis with propagate and planting in buffer zone would be so helpful for local livelihoods. Also, forest, natural resources protection and restoration from knowledge transfer working closely together between locals, academy and PTFC staff were so important to maintain natural resource, good environment of head water in forest reserves for our next generation.

Lesson learn from this study visit

Mae Hong Son participants would obtain experience and knowledge gains from visited local communities in PTFC and visited four reserves of PTFC in Ubon Ratchathani Province. Short lectures and some guidelines for reading which already provided to participants via group line would be helpful Bamboo and Malva nut tree plantation, orchid nursery and orchard, raising stingless bee and Eastern honey bee in dairy lives and generating some incomes to families. Activities of *ex-situ* conservation for bamboo, Malva nut tree and perhaps fuel wood trees plus with some good samples of *in-situ* conservation would be made balancing between uses of forest minor product resources in dairy lives and recovery rehabilitation of some resource

species, namely, techniques of planting bamboo, rattan, wild trees and returned some of orchids back to the wild.

Acknowledgements

This study visit program in PTFC would not be success without kind support from many person and staff of Wildlife Sanctuary and National Park. Sincere thanks go to Pramote Ratee, Director of Wildlife Conservation Section of Protected Area Regional Office 9; Thaneth Buakaew former ITTO/ RFD staff; and to Ms. Suwannee Phansawang, leader of stingless bee raising at local communities of Ban Tayoi; Mrs. Ramphung Kaeokhiew from Wild orchids Garden of Ban Nong Crok in Nam Yuen District; Mr. Thanong Chitrachan from Ban Kham Somboon in Boon Thrik District; Mrs. Sa-ard Hansupho, Ban Ta Mui; and also to Mr. Theerakiet Kaoew-Sai, Ban Tha Long in Kongchiem District, Ubon Ratchathani Province for their warm hospitality and provide culture and ethnobotany knowledge to Mae Hong Sorn participants during our study tours visiting their communities and see activities, materials and demonstration.

We are thankful Ms. Vassana Maiphrom, Chief of Yod dom WS; Mr. Chinna Samsi, Chief of Phu Jong – Na Yoi NP; Mr. Asanai Nilputsa, Chief of Bunthrik – Yod Mon WS; and Mr. Pramual Rattanawan, Chief of Pha Taem NP for their kindly support for the program of study visiting tour and our staying in Pha Taem Forest Complex, Ubon Ratchathani Province. The lastest thanks go to Ms. Saichon Mutarapat and Ms. Jenejira Fungchantuek of the KU-ITTO's Project staff for supporting in contacting those visit sites and looking after transportation of participants during study visit.

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