

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

The study was conducted in Sri Nan National Park from 2005-2007. Primary objectives of this study are 1) assessment of tourist site potential and 2) application of environmental management system for ecotourism development in Sri Nan National Park.

5.1 Assessment of tourist site potential

Proper indicators that imply the potential of tourist site for ecotourism in Sri Nan National Park were established and categorized based on 4 components of ecotourism. Of all the identified 20 indicators that indicated tourist site potential, 6 indicators represent nature-based tourism, 8 indicators represent sustainable management tourism, 4 indicators represent environmentally educative tourism, and 2 indicators represent people participation.

The nature-based tourism indicators consisted of visiting occasion, site popularity, route scenery, site uniqueness, aesthetic value, and flora and fauna diversity. The sustainable management tourism indicators included road condition, distance from the main road or headquarters, waste management, parking area, infrastructure and accommodation, safety, environmental impact, and water quality. Environmental education indicators involved environmentally educative media, environmentally educative activities, research and database, and staff's environmental and ecological knowledge. The last component was the indicators of people participation, which included an income from tourism to local people, and an involvement of local people with planning and tourism. The selected indicators were separated into two groups; common indicators for all tourist site evaluation, and specific indicators for each tourist site.

Selected indicators may be used to assess the status of relationships between people and protected areas. Relationship indicators are measurable variables which may be used to reflect antagonistic or symbiotic links between people and resources. An evaluation employing such indicators can provide insight into the challenges and possibilities for local development, environmental management, and ecotourism.

The results showed that 2 nature sites of SNNP, “Pha Chu Clift” and “Sao Din Landform”, were ranked as very high potential for ecotourism because of their fascinating natural appearance. Doi Sa Mer Dao Mountain was ranked as good potential, whereas Pak Nai and Kang Luang were ranked as moderate potential site for ecotourism. The benefit of increasing potential tourist sites in SNNP was to enhance the tourism activities and develop interpretation program. Sustainable management mitigation also recommended for an establishment of waste management system such as preparing more bins in high season and encouraging tourists to be aware of waste separation.

However, the recommended indicators could be changed depending on tourism activity and should be continually monitored by the national park staffs. Particularly, the environmental aspects such as water supply, water quality, and waste management should be examined annually, especially around camping sites and popular tourist destinations.

5.2 Environmental management system for ecotourism development

EMS can be used to solve some environment impacts from tourism in SNNP by integrating the holistic approaches. The major problems occurred during high tourism season are camping site and car park limitation, water shortage, and waste management. To solve such problems and maintain tourist site potential, the integration of environmental techniques has been applied and investigated in SNNP. A baseline of tourism in the protected area was established by reviewing the current provision of services and facilities in SNNP, as well as the interactions between tourism, conservation and the local community.

The specifically designed questionnaire was used to collect attractive flora and fauna species information found at tourist sites and the tourists' appreciation for nature. In addition, baseline information on carrying capacity, solid waste management, water consumption, and eco-camping site were thoroughly studied.

From tourist's statistics, more than 78% of tourists visited SNNP between December and April for camping, admiring sea of mist, sunrise and sunset. Among these, 49.15% stayed overnight. Tourists had a strong interest in unique species such as *Gardenia Turgida* Roxb "Dig Diam" and *Heteropogon contortus* (L.) Roem&Schult "Yah Khem Na Li Ka" at Sao Din, and *Dracaena loureisi* Gagnep "Chan Pha" at Pha Chu Cliff.

The study on camping site areas showed that a tourist needed the space of at least 2 square meters. Due to the water shortage during high season, limiting factor of the optimal amount of tourists is the water supply. As a consequent, the appropriate number of tourists that should stay overnight camping in SNNP is approximately 550 persons per night.

The study on tourist behaviors indicated that the tourists consumed water only for necessary activities such as cleaning dishes and toilet use. Thus, only 10.8 liters of water was estimated to be consumed per person per day. Without wastewater treatment, in effort to reduce environmental impact on fragile ecosystem, the environmental friendly cleanser was provided to SNNP staff and tourist during high tourist season.

Waste characteristics study in SNNP showed that 49% of the total wastes generated by tourists were organic. Recyclable garbage such as plastic, glass bottle, polyethylene, and aluminum made up another 51%. At present, solid waste from SNNP was transferred to Na Noi District for an open-air burning. As a consequence, waste separation program was established at the camp sites. Organic and non-toxic wastes should be collected in the same bin and transferred to a landfill site or an open-air burning location, while other wastes should be collected and transferred to the recycle process. Twenty garbage bins, bags and environmental awareness sign were prepared for SNNP in order to encourage tourists on waste separation.

The study on tourist's perceptions and behaviors was based on specific questionnaire questions. From tourist demographic age and behaviors, the appropriated activities for soft ecotourism were recommended. Soft ecotourism identified the appropriate ecotourism activities for short visit, multi-purpose trip, physical passive, and emphasis on interpretation (Weaver, 2001 cited in Alampayand and Libosada, 2003). Therefore, some environmental friendly activities such as eco-camping, astronomy observation, landscape interpretation, bird watching, and environmental youth camp should be developed in SNNP. As a result, some books and materials were arranged to the park such as eco-camping guidebook, bird guide, stream sampling kit, telescopes, cosmic maps, and

environmental friendly games. The environmental management system for specific tourist sites in SNNP was summarized in Table 5-1.

The baseline data of visitor profile included numbers, age-group, length of stay, mode of travel, activities, perceptions in environmental impact, and behaviors. This profile would be useful in analyzing and separating visitors into different tourist types and their needs. The questions implied the additional facilities and leisure opportunities that the tourists would like to see at the site.

The questionnaire also revealed that tourists drive their own transportation to SNNP. Therefore, car park was ranked as a crucial facility. Furthermore, majority of the tourists, over 70%, visited SNNP for the first time. In order to increase amount of tourists visiting SNNP, advertisement on websites or tourism magazines were recommended. However, tourists amount should not exceed the carrying capacity of the ecosystem and the park facilities as mentioned before.

The major reasons that the tourists visited SNNP, when asked about their appreciation in this national park, included relaxing, admiring sea of mist, and admiring scenery. Particularly, the staff's service mind and friendliness at every prominent tourist sites had made more impression on them.

Approximately 70% of the tourists agreed on the same opinion to bring the garbage out of the park, whereas some of them preferred to pay for the waste management fee of 20 baht per person.

Study on the level of participation between local people and tourism activities in SNNP suggested that the park officers are currently from the surrounding area of the national park. Local people got involved in tourism activities by selling their local food, seasonal fruits, and local handicraft to the tourists.

Table 5-1 Environmental management system for specific tourist sites

Tourist site	Environmental aspects	Problem in SNNP	Mitigation
Sao Din	<ul style="list-style-type: none"> - tourism impact - Garbage - Car park 	<ul style="list-style-type: none"> - Tourists disturb landform - Littering - Distance of car park to landform 	<ul style="list-style-type: none"> - Recommend tourists to follow the trail while walking and do not touch the fragile landform. - Prepare soil sample and specimen of dominant plants. - Arrange telescope at the high area which can view surrounding. - Set the photography corner. - Inform tourists to avoid littering by putting sign board and slogan. - Zoning: car park, education, souvenir and relaxation zone.
Doi Sa Mer Dao, Pha Chu	<ul style="list-style-type: none"> - Number of tourists - Garbage - Water usage - Wastewater - Car park - Carrying capacity 	<ul style="list-style-type: none"> - Limitation of camping site and car park - Waste management - Wastewater - Tourist activity - Carrying capacity 	<ul style="list-style-type: none"> - Set capacity of camping site and car park and provide another suitable area in tourist season. - Develop waste separation program for staff and tourists. - Encourage tourist and staff to use environmental cleansers. - Develop more tourist activities such as star observation and eco-camping guide book for tourists. - Set the booking system for camping sites before high season.

Table 5-1 (cont.)

Tourist site	Environmental aspects	Problem in SNNP	Mitigation
Kang Luang	<ul style="list-style-type: none"> - Garbage - Water quality 	<ul style="list-style-type: none"> - Waste management - Safety - Water quality 	<ul style="list-style-type: none"> - Prepare separate bins. - Inform tourists to avoid littering by putting sign board and slogan. - Display safety sign, do and don't - Training life guard skill, first aids for staff and prepare staff to stay during tourist season. - Set the toilet and washing corner away from water body.
Pak Nai	<ul style="list-style-type: none"> - Tourism impact - Garbage - Wastewater 	<ul style="list-style-type: none"> - Waste management - Water quality 	<ul style="list-style-type: none"> - Prepare waste separation bins. - Avoid discharge of waste water into the reservoir. - Encourage floating restaurant to use environmental friendly cleanser and grease tap. - Prepare sanitary septic tank for park's bungalow. - Monitor water quality annually.

5.3 Recommendations on ecotourism development in Sri Nan National Park

5.3.1 The appropriate indicators to assess the potential of tourist sites may be varied due to the characteristics and uniqueness of the site. The method used to determine the indicators should be divided into 2 groups; the scientists/or experts group by using scientific method with sample test kit or laboratory techniques, and the local staffs group by integrating the simplified techniques with local technologies.

5.3.2 Various studies on national park visitors around the world have shown that nature tourists generally accept conditions different from their home more than other types of tourists. They do not demand international glamour, but are satisfied with or want to use local goods and materials and eat local foods, and that they are more demanding in seeking information about their destination (Boo, 1990). Some recommendations from tourists presented in the similar way to keep the national park as it's being in natural way.

5.3.3 According to the evaluation on uniqueness of the tourist sites, Nan Province was found significance for its aquatic ecosystem (waterfalls, natural water bodies, rapids and hot spring). Thus, ecotourism activities should avoid massive tourism on white-water rafting, and should prepare wastewater treatment system at some potentially impacting areas such as canteens, camp areas, and bungalows (Thirakhupt *et. al*, 2007).

5.3.4 SNNP has several popular tourist sites such as Sao Din Na Noi, Doi Sa Mer Dao camping site, Pha Chu Cliff, Pak Nai Fishery Village, and Kang Luang which are easily to visit in 1 - 2 days. The alternative travel routes with nearby national parks are highly recommended especially in high tourist season.

5.3.5 Investigate water quality at Kang Luang or at Nan River, compare before and after provided environmental cleanser for staffs and tourists.

5.3.6 Establish the early booking system for camping at Doi Sa Mer Dao and Pha Chu in high tourist season. From this study, Doi Sa Mer Dao can support 760 tourists or 152 tents and 129 cars. Pha Chu (include area nearby Headquarters) available for 1387 tourists or 277 tents and 60 cars. According to early booking, camping site zoning should be implementing in SNNP and divided into quiet zone, cooking zone, and family zone.

5.3.7 Closed the park during rainy season from tourism activities are highly recommended in order to keep the ecosystem recovery and for safety transportation.

Finally, to achieve the long term ecotourism development, SNNP needs to continue evaluating and monitoring tourism situation and its impacts on the prestigious environment on a regular basis by the park staffs and the local stakeholders.