

**LOCAL PEOPLE PARTICIPATION IN FIREFLY ECOTOURISM
MANAGEMENT: A CASE STUDY IN BAN SAMAECHEI,
PETCHABURI PROVINCE**



**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
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Thesis
Entitled

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PROVINCE**



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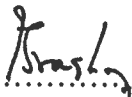
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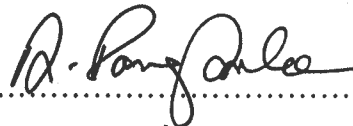
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LOCAL PEOPLE PARTICIPATION IN FIREFLY ECOTOURISM
MANAGEMENT: A CASE STUDY IN BAN SAMAECHAI, PHETCHABURI
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ABSTRACT

Ban Samaechai is located near the estuary where Phetchaburi River and sea water merge. Ban Samaechai is a suitable area for fireflies, small bugs of scientific interest. In 2002, this place was promoted as an ecotourism site. Ecotourism activities require participatory management from local people to make the balance between economics and environmental protection.

The objectives of this study were to investigate the development of firefly ecotourism management, to study factors influencing the local participation, to study the relationship between the level of local participation in firefly ecotourism management and the level of firefly conservation. A questionnaire was used as a quantitative research method. Seventy one household respondents were selected based on an accidental sampling method. Meanwhile, in-depth interview and focus group were administered as a qualitative research method.

The study results demonstrated that occupation, monthly income, length of residence, and distance from house to river were personal factors influencing the level of people participation in firefly ecotourism management. In addition, attitude, communication systems, interpersonal communication, and group communication were other factors that influenced the level of participation. Both levels of participation in firefly ecotourism and firefly conservation were categorized at medium levels. The results show that level of participation and level of firefly conservation were directly proportional. Positive impacts and a negative impact occurred from firefly ecotourism. Problems from ecotourism management could be accounted for by lack of managing knowledge, lack of main agency, and lack of initial facilities.

It is recommended that all stakeholders should unite to increase cooperative working. Activities during day-time should be provided instead of only night-time activities. Notice boards and regulations must be legible and noticeable to educate tourists. Homestay, a current popular kind of tourism in Thailand, is not suitable for management in Ban Samaechai right now.

KEY WORDS: CONSERVATION / ECOTOURISM / ECOTOURISM
MANAGEMENT / FIREFLY / LOCAL PEOPLE
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การมีส่วนร่วมของชุมชนในการจัดการท่องเที่ยวเชิงนิเวศหิ่งห้อย: กรณีศึกษา บ้านสามชาย จ.เพชรบุรี
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บทคัดย่อ

หมู่บ้านสามชายตั้งอยู่บนพื้นที่สภาพแวดล้อมเป็นแบบป่าชายเลน มีน้ำกร่อยและต้นลำพูโดยรอบ สภาพแวดล้อมเช่นนี้เหมาะกับชีวิตการอาศัยอยู่ของหิ่งห้อย ซึ่งเป็นสิ่งมีชีวิตขนาดเล็กที่น่าสนใจทั้งในทางวิทยาศาสตร์และความสวยงาม จนถึงปี 2545 บ้านสามชายได้รับการสนับสนุนผลักดันให้เป็นแหล่งท่องเที่ยวเชิงนิเวศ โดยมีหิ่งห้อยและความเป็นอยู่อย่างเรียบง่ายของชาวบ้านเป็นสิ่งดึงดูด แต่อย่างไรก็ตามการจัดการการท่องเที่ยวเชิงนิเวศหิ่งห้อยต้องอาศัยความร่วมมือของประชาชนในหมู่บ้านสามชาย เพื่อรักษาสมดุลระหว่างรายได้จากการท่องเที่ยว และการอนุรักษ์ทรัพยากรที่ชุมชนมีอยู่

งานวิจัยชิ้นนี้มีวัตถุประสงค์เพื่อศึกษาพัฒนาการความเป็นมาของการจัดการการท่องเที่ยวเชิงนิเวศหิ่งห้อย ศึกษาปัจจัยที่มีอิทธิพลต่อการมีส่วนร่วมของชุมชน หาความสัมพันธ์ระหว่างระดับการมีส่วนร่วมของชุมชนในการจัดการการท่องเที่ยวเชิงนิเวศหิ่งห้อยกับระดับของการอนุรักษ์หิ่งห้อย รวมทั้งรวบรวมปัญหาอุปสรรค และแนวทางแก้ไขปัญหา วิธีการศึกษาใช้วิธีการวิจัยเชิงปริมาณ คือใช้แบบสอบถามเป็นเครื่องมือในการวิเคราะห์ และสำหรับการศึกษาเชิงคุณภาพ การสัมภาษณ์เชิงลึกกับการประชุมกลุ่มย่อยเป็นเครื่องมือ

ผลการศึกษาพบว่า อาชีพ, รายได้, ระยะเวลาพำนักในหมู่บ้าน, และระยะทางจากบ้านถึงแม่น้ำ เป็นปัจจัยส่วนบุคคล ส่วนทัศนคติ, ระบบการติดต่อสื่อสาร, การติดต่อสื่อสารแบบตัวต่อตัว, และการติดต่อสื่อสารภายในกลุ่ม เหล่านี้เป็นปัจจัยที่มีอิทธิพลต่อการมีส่วนร่วมของชุมชนในการจัดการการท่องเที่ยวเชิงนิเวศหิ่งห้อย นอกจากนี้ระดับการมีส่วนร่วมของชุมชนพบว่าอยู่ในระดับปานกลาง ซึ่งตรงกับระดับการอนุรักษ์ทรัพยากรธรรมชาติ ผลกระทบทั้งทางบวกและทางลบเกิดขึ้นระหว่างการดำเนินการท่องเที่ยว รวมถึงปัญหาที่สามารถแยกออกได้เป็นเรื่องของการขาดการจัดการความรู้, ขาดหน่วยงานหลักที่มาดูแลอย่างจริงจัง, และขาดอุปกรณ์ที่จำเป็นเบื้องต้น

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CHAPTER 1

INTRODUCTION

1.1 Background and Justification

Tourism industry is an important source of income for Thailand since Thai Government promoted tourism through the Sixth National Economic and Social Development Plan in 1987-91, economic growth rate raised continuously with an average of 10.5% a year which was twice higher than the predicted rise (NESDB, 2003). At present, tourism is a sector that earns an income of more than 300,000 million baht a year (TAT, 2001). Although tourism helps boosting the national economic growth, unfortunately, environment and natural resources are deteriorated in some cases at the cost of tourism. During 1992-96 the policy of the Seventh National Economic and Social Development Plan started to aim to improve the environment and natural resources, recognizing their threats, especially, from human activities. Hence, the management of environment and natural resources conservation strategy has aimed towards sustainability of tourism in the 9th National Economic and Social Development Plan for 2001-2005. In addition, the United Nations Conference on Environment and Development in 1992 (Agenda 21) has resulted to achieve sustainable development in social, economic, and environmental fields that included tourism sector, leading to the concept of ecotourism in Thailand (TAT, 2001). In 1997, the National Ecotourism Council was set up comprising of representatives of the public, academic, and private sectors, and non-government organizations in order to develop a National Ecotourism Policy and Action Plan. The government provided a budget of 480 million baht for the 5-year Master Plan on Ecotourism from 2002 to 2006. The investment shows the significance of ecotourism.

Tourists, natural surroundings, and local communities are the main important components of ecotourism development and are related to the goal of an ecotourism idea such as the conservation of the environment, minimization of impacts upon it,

respect for local culture and improvement of community welfare (Foucat, 2002). In addition, local community must involve in the ecotourism development process that includes the participation in formulating tourism management plan. Local representatives should be encouraged at all levels of tourism management (TAT, 2001). Foucat (2002) mentioned that community involvement in ecotourism management process encouraged local people to the conservation because people know how to manage their natural resources while they get benefits.

Ecotourism is considered to be more than just tourism in natural areas and can be combined with other types of tourisms popular in Thailand. Though there are many similar kinds of natural tourisms such as adventure, trekking, or travel in the forest, it is with ecotourism that Thai society is familiar. According to one of the ten ecotourism principles defined by TAT (2002), local communities play important role in this kind of tourism service because they have the possessive feeling and have relationship to their living area. The attractive tourism sites mostly have the dominant resources such as places with natural beauty, ecologically and scientifically significant biodiversity. These can beguile tourists and keep the visit to such place as an everlasting memory.

Petchaburi Province in Central Thailand has a high potential to be an ecotourism place because the province is surrounded by natural resources and is only 123 km. far from Bangkok. In addition, Petchaburi is an ancient town. Its history was shown on stone inscriptions dating back to the Sukhothai period. Petchaburi province has a river body flowing into the Gulf of Thailand known as Petchaburi River. This river originates and ends within the same province. Ban Samaechai is one of ten villages located in Banlaem district, and adjacent to Petchaburi river and 20 kms far from Petchaburi city. Ban Samaechai provides the aesthetic values, unique firefly ecotourism and simple local people lifestyle. Sumon Sutawiriyawat, the president of environment and natural resource conservation club in Petchaburi, explains that *“tourists who visit Petchaburi should come to see temples by boat in Petchaburi River, but should not miss to enjoy firefly tour”* (DEQP, 2001).

Firefly tourism has been promoted by the Tourism Authority of Thailand as an innovative approach towards tourism since 2002. Fireflies usually stay near rivers. Encouraging firefly tourism will yield benefits in various spheres in the case of Ban Samaechai because tourists have already visited the temples in the area touring by

boat. Ban Samaechai is situated along the Petchaburi River where sea water merges with freshwater also called an estuary. Fireflies, therefore, live in the area near to the brackish water, while the bank of the river is surrounded by mangrove.

Fireflies are grouped as ecosystem and water pollution indicators because of their life cycle, particularly, their eggs and worms live in clean water. The human benefit from fireflies includes their predation of intermediate hosts of snail that can cause parasite ailments in humans and animals. From its beauty and benefit, firefly's life has been studied for conservation and tourism. Ban Samaechai has been set as Firefly Park since the ecotourism idea was promoted in 2002. Local Development Institute (LDI) has also supported the firefly' tourism project in Ban Samaechai. In 2004, Her Majesty the Queen of Thailand visited Ban Samaechai because of her interest in fireflies. That special occasion made the local people feel proud of their resources. With support from several ecotourism organizations to Ban Samaechai became an ecotourism site, many facilities and infrastructures such as road and public lighting have been provided to develop ecotourism activities.

Once the firefly ecotourism project was started, people in Ban Samaechai were interested in this program because they expected to earn money from tourism as an extra income. Conflicts began between groups of people who were not interested in the program and who have willingness to join. The result became an obstacle for firefly tourism. People who could not earn money from tourism up to their expectations did not want to get involved in the firefly ecotourism management.

From problems mentioned above, the negative impact does not affect only human interrelationship, but also natural resources such as mangrove forests and fireflies. Thus, to clarify the root of the problem and recommend the solution, the research needs to study the ecotourism management process since the program started through local people participation in Ban Samaechai. The ecotourism program needs people participation to operate activities as it cannot be implemented without people's cooperation. The results from this research will be useful for other similar tourism sites and can be utilized for improving the ecotourism plan.

1.2 Ban Samaechai characteristics

Petchaburi River has different names depends on where it flows. Petchaburi River flows through Banlaem District, in this district the river has a tributary flowing into the gulf of Thailand through Bang Ta Boon (Fig. 1.1). The tributary is further divided into a number of canals being named after the places they flow through. One of such canals is 'Bang Krog Canal' getting its name as the canal flows through Bang Krog. Similarly is 'Kao Ta Krao Canal'. The Kao Ta Krao Canal merges with Samor Rabang Canal and Ban Noi Canal at Samprake the river is called 'Samprake Canal'. Then Samprake Canal merges with Yee San Canal at Samprang, the river is called 'Bang Ta Boon River' it is bigger than Petchaburi River. Finally, Bang Ta Boon River flows to the Gulf of Thailand.

The main river Petchaburi flows through Banlaem and flows to Ban Samaechai before merging in the Gulf of Thailand. In Ban Samaechai, Petchaburi River is very crucial resource for local people. Most area is covered by mangrove forest and nipa trees which are habitats for forest monkeys.

Nowadays, area has been changed to shrimp ponds and other buildings. Three years ago, the river situation was very poor, aquatic life died and fireflies decreased because of chemical emissions from shrimp ponds. Once people realized the problem, they stopped using chemicals and switched to natural compound. Generally, people in Ban Samaechai catch fish, shrimp and crab by using simple methods. For example, a person in Ban Samaechai uses canned meat as bait for crab. There is decline in the sea crab at present but the local 'Samae' crab can be found. The next thing after source of living the place of living in Ban Samechai does not demand many resources; people make nipa roof from nipa leaves or some of them select to make charcoal as occupation.

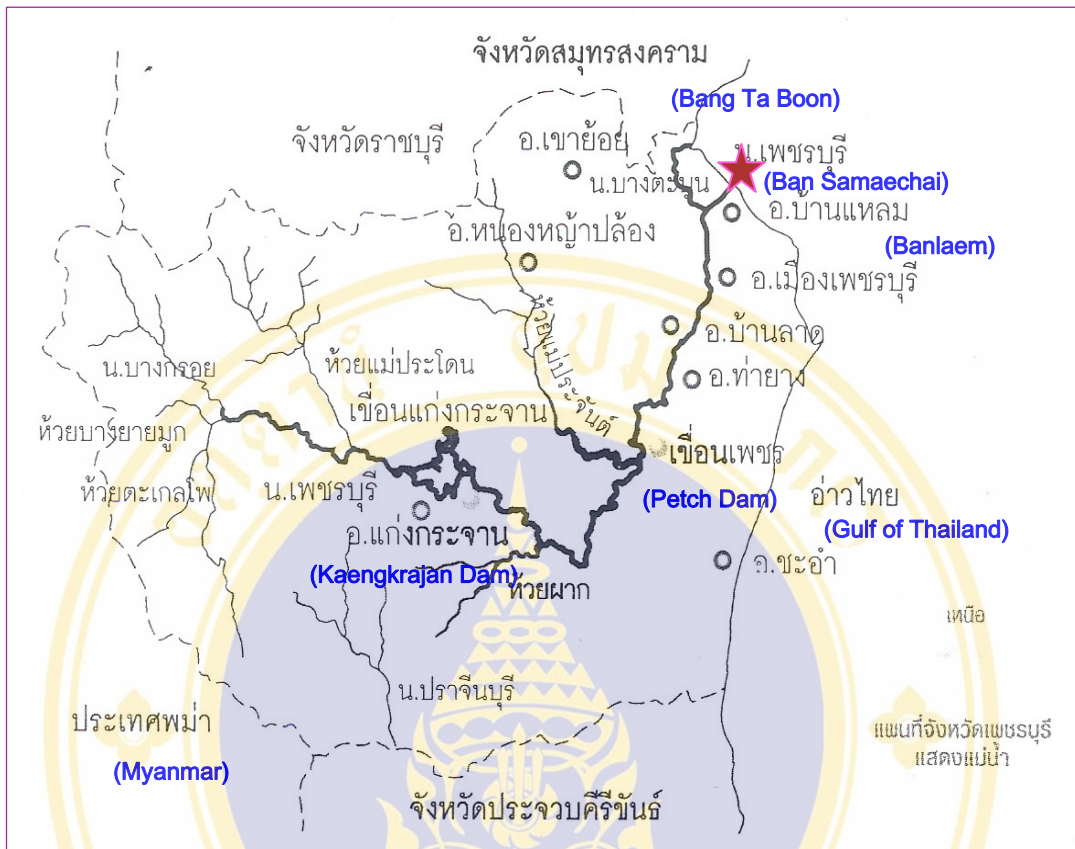


Figure 1.1 Petchaburi River and Ban Samaechai areas

Udomviet (2004) noted that estimate tourists visit Ban Samaechai for fireflies 3,000 people a year. Tourism places near Ban Samaechai such as Kao Ta Krao Temple and Bang Hor Temple are also popular places. About 30,000 tourist’s visit Kao Ta Krao Temple a year and 1,500 people visit Bang Hor Temple a year. Moreover, the ancient history of this area tells about war between Myanmar and Thailand. Both troopers fought at Bang Ta Boon until Thai won the war, this area was given name ‘Samaechai’ meaning victory at Samae Forest.

Ban Samaechai has a unique characteristic for firefly’s habitat. With suitable geography, temperature, forest, and river, plenty of fireflies lived in this area more than 100 years ago. Although firefly builds aesthetic condition, local people do not excite when they see fireflies which is different from people in urban area. Firefly ecotourism makes some people look at benefits from natural resources that they did not invest. Meanwhile, firefly ecotourism needs the cooperation from local people to take care of natural resources for the next generation.

1.3 Research Questions

This research emphasizes ecotourism management by local people participation process of Ban Samaechai. Research questions for this study would be:

1. What are factors affecting the level of the local people participation in firefly ecotourism management under the constraints of i) personal social and economic conditions, ii) attitude in firefly ecotourism, iii) knowledge of ecotourism, and iv) communication methods and;
2. Does the level of participation affect the firefly conservation?

1.4 Objectives

The focus of “Local People Participation in Firefly Ecotourism Management” will be on the condition of ecotourism management on firefly in Ban Samaechai. Therefore, the purpose of the study will involve:

1. To study the development of firefly ecotourism management,
2. To study factors influencing the local people participation in firefly ecotourism management and relationship among factors,
3. To study the relationship between the level of local people participation in firefly ecotourism management and the level of firefly conservation,
4. To determine problems, obstacles, and suggestions of people participation in firefly ecotourism management.

1.5 Hypotheses

To find out the answer for research questions and objectives, three hypotheses were formed as follow:

1. There is a relationship between personal factors (such as gender, age, educational level, occupation, length of residence, and distance between house and river) and level of local people participation.

2. There is a relationship between other factors (such as attitude, knowledge, and communication methods) and level of local people participation.

3. The level of local people participation and level of firefly conservation is directly proportional.

1.6 Significance of the Study

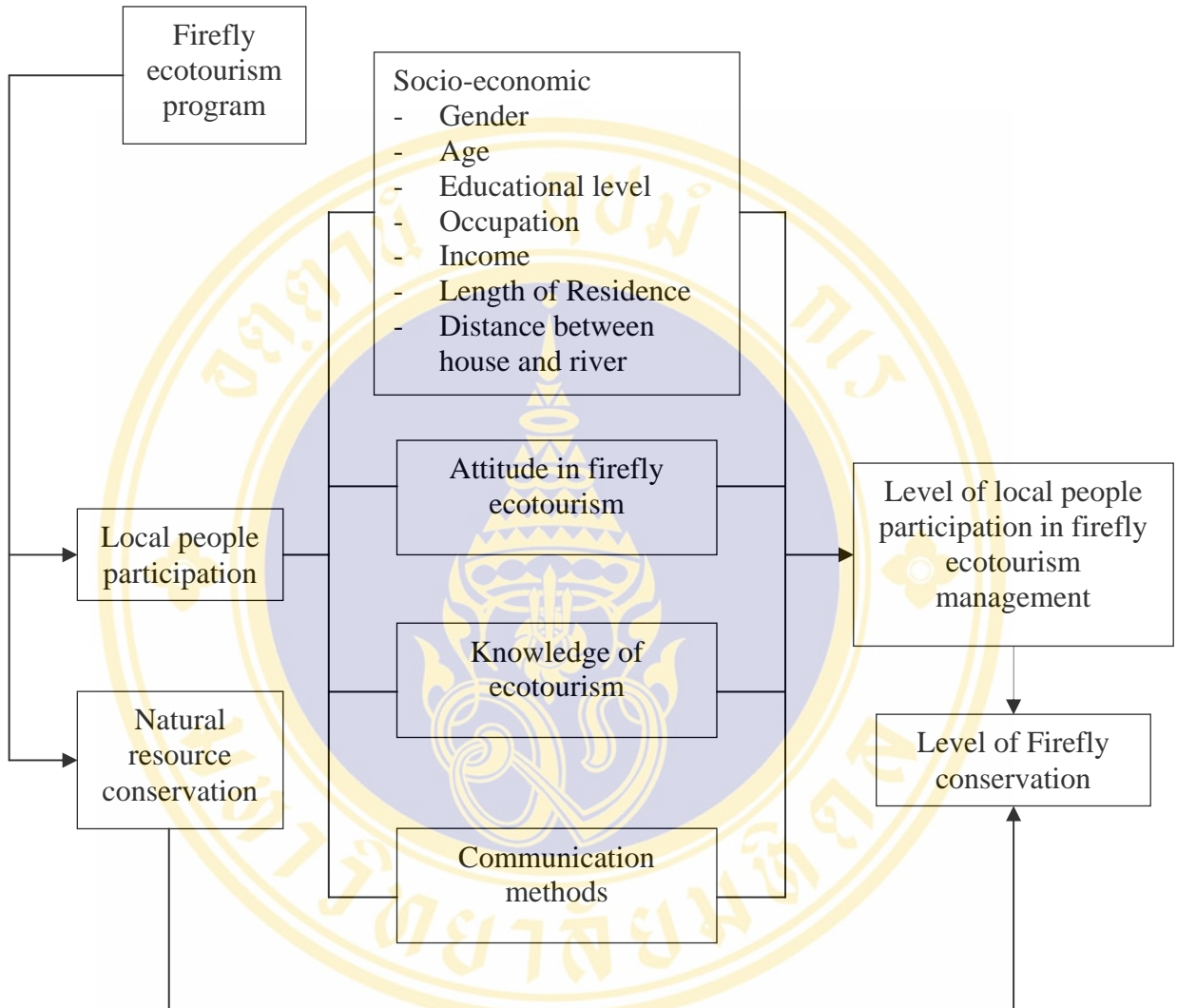
The process of ecotourism management from the early stage will be studied. Advantages and disadvantages from those processes can be used for developing a conservation plan coupled with resource management plan. In addition, this research can also be used for exchanging ideas and information for forthcoming ecotourism projects.

The finished research will be submitted to the Tourism Authority of Thailand and Tourism Authority of Petchaburi Province in order to promote local people participation further, coupled with natural resource conservation.

1.7 Scope of the Study

The research will focus on Ban Samaechai, moo 9 of Banlaem district, Petchaburi Province. This includes adjacent 500 meter-section of Petchaburi River that is used for firefly ecotourism. The research will emphasize the firefly ecotourism management by local people in terms of both positive and negative impacts from firefly ecotourism, level of local community participation and the awareness of firefly conservation.

1.8 Conceptual Framework



1.9 Definitions of Terms

Ecotourism refers to responsible travel in areas containing natural resources that possess endemic characteristics and cultural or historical resources that are integrated into the area's ecological system. Its purpose is to create awareness among all concerned parties of the need for and the measures used to conserve ecosystems and as such are oriented towards community participation as well as the provision of a joint learning experience in sustainable tourism and environmental management (TAT, 2001).

The participation in firefly ecotourism management refers to the behavioral expression of a person or group in order to step in the part or the whole activities related to firefly ecotourism management.

Local people refers to persons who stay in Ban Samaechai area from 18 to 60 year-old persons that can give information.

Attitude refers to the preference of an individual towards or away from firefly ecotourism.

Knowledge refers to the psychological result of perception and learning and reasoning that differs from data or information about firefly ecotourism.

Communication refers to transmitting information from one person to another person or from organization to another which is transmitted via a channel to a receiver (Crystal, 1992).

CHAPTER 2

LITERATURE REVIEW

2.1 Concepts of Ecotourism

2.1.1 Ecotourism Background and Definition

The world trend of a Green Global Environment indicates that everyone must be concerned about how to conserve the world's environment. The event is of great importance as the international community has paid greater attention to the course of environmental and cultural protection. The United Nations Conference on Environment and Development in 1992 has resulted in the signing by 182 countries of the “Agenda 21” which is programmed to achieve sustainable development in various social, economic and environmental fields (TAT, 2001). The approach of this Agenda is to keep the sustainable balance among the pattern of consumption, demography, the world's capability to support lives, the development of technologies to respond to human needs, and the careful management of natural resources. This includes tourism sector. Then in year 1997, World Ecotour’97, the First World Congress and Exhibition on Ecotourism in Brazil was organized by the Brazilian Society for the Environment (BIOSFERA). The key outcome of the conference was the realization that ecotourism is not a passing fashion but has well and truly arrived, bearing the promise of environmental conservation, community well-being and economic benefits (Dowling, 1998).

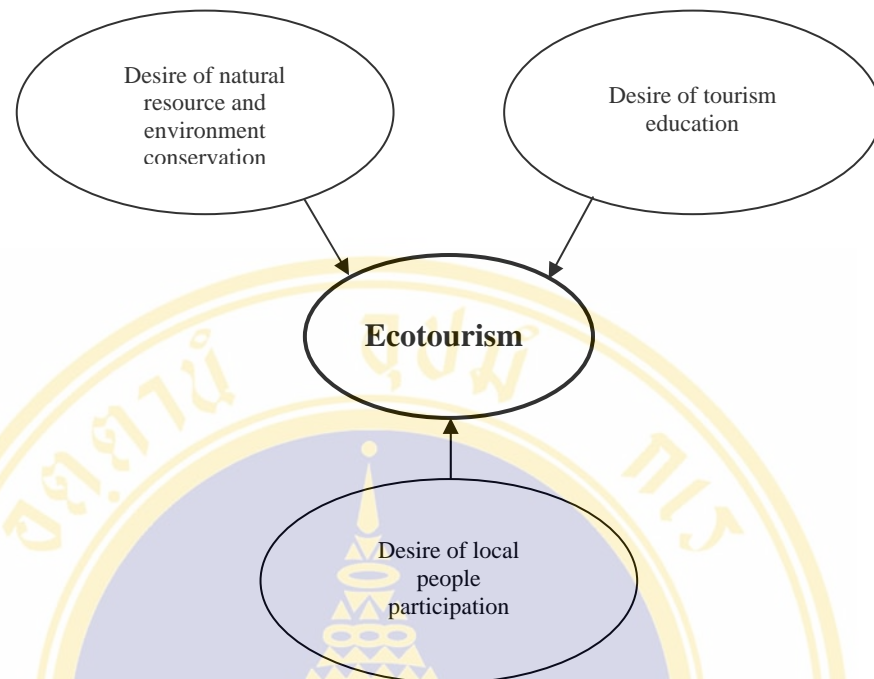


Figure 2.1 Current of change in the ecotourism desire (TISTR, 1997)

Many researches have defined ecotourism in various perspectives. By the strictest definition, “ecotourism involves travel to natural destinations, minimizes impact, builds environmental awareness, provides direct financial benefits for conservation, provides financial benefits and empowerment for local people, respects local culture and supports human rights and democratic movements” (Honey, 1999). In simpler terms, ecotourism basically involves responsible travel to natural destinations where the flora and fauna and cultural heritage are the primary attractions, in which its activities and services promote conservation and sustain the livelihood of local people (Weaver, 2001).

From the different definitions from many points of views, TAT (2001) concluded that “Ecotourism is responsible travel in areas containing natural resources that possess endemic characteristics and cultural or historical resources that are integrated into the area’s ecological system. Its purpose is to create awareness among all concerned parties of the need for and the measures used to conserve ecosystems and as such are oriented towards community participation as well as the provision of a joint learning experience in sustainable tourism and environmental management.” According to TAT, ecotourism is a concept that entails three important factors: the

promotion of public awareness in natural and environmental conservation, tourist satisfaction, and the participation of local communities, as well as income distribution (Israngkura, 1996).

2.1.2 Principles of Ecotourism Development

Epler wood (1996, cited by Bornemeier 1997) summarized that The International Ecotourism Society (TIES) has developed seven basic principles of ecotourism:

1. Avoids negative impacts that can damage or destroy the integrity or character of the natural or cultural environments being visited,
2. Educates the traveler on the importance of conservation,
3. Directs revenues to the conservation of natural areas and the management of protected areas,
4. Brings economic benefits to local communities and directs revenues to local people living adjacent to protected areas,
5. Emphasizes the need for planning and sustainable growth of the tourism industry, and seeks to ensure that tourism development does not exceed the social and environmental “carrying capacity”,
6. Retains a high percentage of revenues in the host country by stressing the use of locally-owned facilities and services,
7. Increasingly relies on infrastructure that has been developed sensitively in harmony with the environment- minimizing use of fossil fuels, conserving local plant and wildlife, and blending with the natural environment.

TAT (2002) stated that four necessary components of ecotourism concept are area, management, activity, and process including participation of local community. Therefore, government determined the ten main ecotourism principles within ecotourism policy and plans as below:

1. The tourism resources must be managed to maintain their natural conditions as far as possible, and to avoid or to refrain from traveling to sensitive area which are very fragile and adverse impact can be occurred and difficult to rehabilitate.
2. Emphasis is put on the natural characteristics of existing tourism resources

into management consideration in determining appropriate tourism activities and to ensure the compatibility between ecotourism and the original activities carried out in the area. This should include the avoidance of being in serious conflict with other forms of tourism. The benefits of ecotourism should also flow to the wider tourism system.

3. Educational development must be promoted and stimulation of awareness from all concerns to jointly maintain the ecosystem of the area must be done rather than focus on economic growth and income generation only.

4. Ecotourism management must facilitate the involvement of the local people and local organization in the tourism development process, particularly in the management of the resources, services, and programs designed to transfer knowledge and community culture. This should include their participation in formulating tourism management plan. Local representatives should be encouraged at all tourism management levels.

5. Ecotourism management must determine priority and provide all concerned organizations clear roles in promoting ecotourism. This can be done through appropriate budget allocation, personnel provision, and management system design.

6. An ecotourism development plan should be incorporated into the development plan at all levels, namely district, provincial and regional development plan, along with sufficient budget allocation to ensure effective plan implementation.

7. The tourism research should be carried out to determine or improve management guidelines, to solve any problems which arise, and to improve the plans.

8. Law should be enforced strictly to control and maintain good environmental condition of tourism resources by focusing on providing advises and cautions along with cultivating discipline among tourists.

9. Operating guidelines or tourism code of conduct should be provided for all related parties.

10. An ecotourism network should be established both vertically and horizontally, through the co-ordination of information and joint- management at all levels.

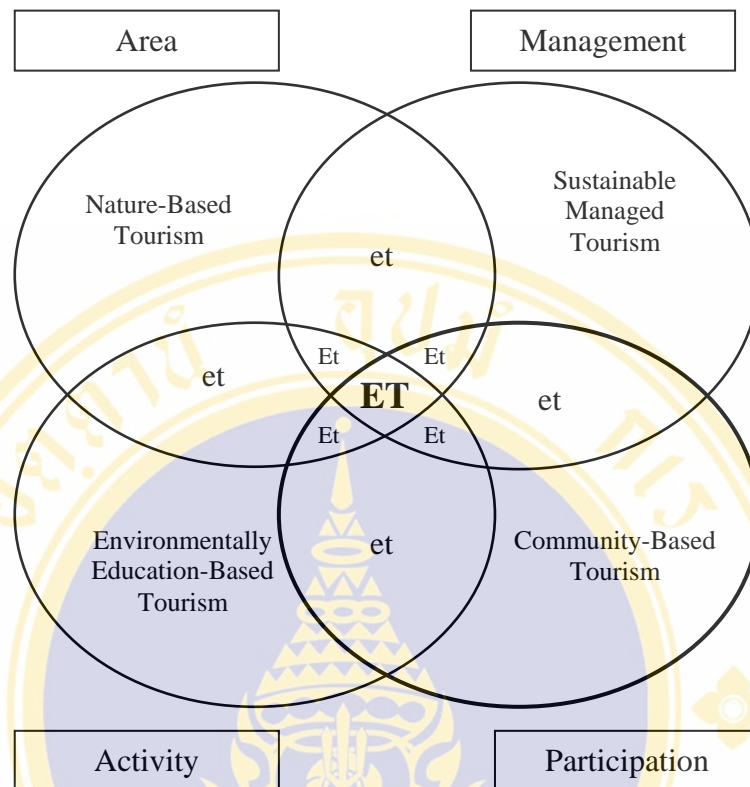
2.1.3 Elements of ecotourism

Weaver (2001) said that three core elements can be distilled from the many attempts that have been made to define ecotourism. Firstly, the focus of attraction is natural environments. Secondly, ecotourism emphasizes learning as an outcome of the interaction between ecotourists and the natural environment. Finally, ecotourism should be sustainable. These three criteria can be combined to form the following working definition of ecotourism. Ecotourism is a form of nature-based tourism that strives to be ecologically, socio-culturally, and economically sustainable while providing opportunities for appreciating and learning about the natural environment or specific elements.

Thailand Institute of Scientific and Technological Research (TISTR) (1997) highlighted that elements of ecotourism consist of:

- 1) Element of area-wise: it is a nature-based tourism. It is an identical of authentic or unique based on nature tourism. This must includes cultural and historical tourist attractions that are affiliated to the area ecosystem.
- 2) Element of management-wise: there is a sustainable management tourism that will bring about responsibility travel that has no or low impact to the environment and society.
- 3) Element of activity-wise: it is a learning process by giving education about environment and ecosystem of the tourist attractions. It is done to increase the level of knowledge, experience and appreciation to build realization and consciousness for the tourists, local people and involving businesses.
- 4) Element of participation-wise: it deals with the involvement of local communities or people participation to attain local benefits. This means the distribution of income, the improvement of life quality, and the benefits gained to maintain and manage tourist attractions.

Buckley (1994, cited in TISTR 1997) illustrated the model of elements of ecotourism



Note: 1. Modified from Buckley (1994)

2. ET, Et, et show the concentration of ecotourism

Figure 2.2 Elements of ecotourism

The figure above (figure 2) is a graphical representation of the importance of the four elements of ecotourism explained earlier. In the figure ET, Et and et are the levels of fusion between elements. ET in the first level means that the conglomeration of all the elements is the highest, ET is followed by Et and then by et. It is found that the sense, identity or uniqueness of the area is necessary. The necessity is often fulfilled in form of culture, history and the ecosystem of the site. This form of tourism is called as “Nature-Based Tourism”. From an environmental point of view it can be said that improving the area for tourist purpose at the cost of environment might threaten the natural conditions of the area. Hence, the concept of management comes into play. Management here has to be sustainable where the impact is reduced or nullified and environmental stewardship also influences the management. This sort of

management is termed as “Sustainable Managed Tourism”.

Apart from the area and management, there has to be proper dissipation of education about the environment so that both the managers and the stakeholders increase their awareness on the issue. This is termed as “Environmental Education Based Tourism”. The recipients of all the above benefits or losses are the local people who dwell in the area and hence their co-operation and participation is necessary in any of the above tourism elements and thus they become the fourth element making the picture of Eco-tourism full. This stage of local participation oriented tourism is “Community-Based Tourism”. Thus the levels of fusion i.e. ET, Et and et depend upon the inter-relations between all the four elements viz. Area, Management, Activity and Participation. The more the fusion among all the four elements the more complete is the concept of Eco-tourism.

2.1.4 Ecotourism and sustainability

The core concept of sustainable development is to reduce human impacts so that global ecosystems can continue to sustain human life and societies indefinitely. This requires unprecedented changes to human population, lifestyle and behavior (Buckley, 2003). Ecotourism under nature tourism promises to be one aspect of sustainable tourism that promotes conservation sustainable development (Boo, 1992; Manning & Dougherty, 2000). The origins of sustainable development lie in concerns over conservation and can be traced back to the conservation movement of the mid-nineteenth century (Stabler and Goodball, 1996). This concept first originated in the World Conservation Strategy published by the World Conservation Unit (IUCN) in 1980 as stated by Reid (1995). Then the International Year of Ecotourism (IYE) 2002 launched slogan, “Ecotourism is sustainable development” which is derived from the concept that this is a natural activity, and that small and medium enterprises (SME) can promote ecotourism through local participation without environmental degradation and cultural impact (DEQP, 2002).

Shores (2001) noted that ecotourism is one of the fastest growing sectors in the tourism industry and is increasingly viewed as a solution to the host of environmental problems caused by mass tourism. While difficult to measure, ecotourism is believed

to be the fastest growing tourism segment (Deardon and Harron, 1993). According to the World Tourism Organization, ecotourism achieved an annual growth rate of 5% worldwide and representing 6% of the world Gross Domestic Product (GDP) and a total of 11.4 % of all consumers spending (Lindberg, 1997). Data that supports this growth rate is found in Lew's (1997) survey of tour operators in the Asia-Pacific region who have experienced annual growth rates of 10% to 25% in recent years (Lindberg, 1997). Thus, ecotourism clearly shows economic potential for the tourism industry.

Al-Sayed and Al-Langawi (2003) stated that ecotourism is one way to ensure the process of conservation (effective use of resources). There are numerous administrative and technical means for conserving the biological resources and biodiversity in the arid environments. Buckley (2003) gave support to this idea which is highlighted that ecotourism is a potential tool to improve sustainability by modifying human social behavior in regard to environmental conservation. Tourism is also large-scale activity in major components of global human society, with its own detrimental impacts on the natural environment; and ecotourism may be able to provide models to reduce these impacts. This argument has unfortunately led to the creation of the popular perception that 'tourism is bad' and 'ecotourism is good' (Holden, 2000). However, increasing trend of ecotourism is not easily avoidable. Suansri (2002), the coordinator of Responsible Ecological social Tours Project (REST) showed an idea that although ecotourism or environmental tour has become a catchword, it still has a good effect on society in general. It encourages Nature Tour and Ecotourism. Having good management and knowing ecotouristic behavior, certainly, could be the best way to ecotourism sustainability. Ross and Wall (1999) shared the idea of ecotourism sustainability by figure.

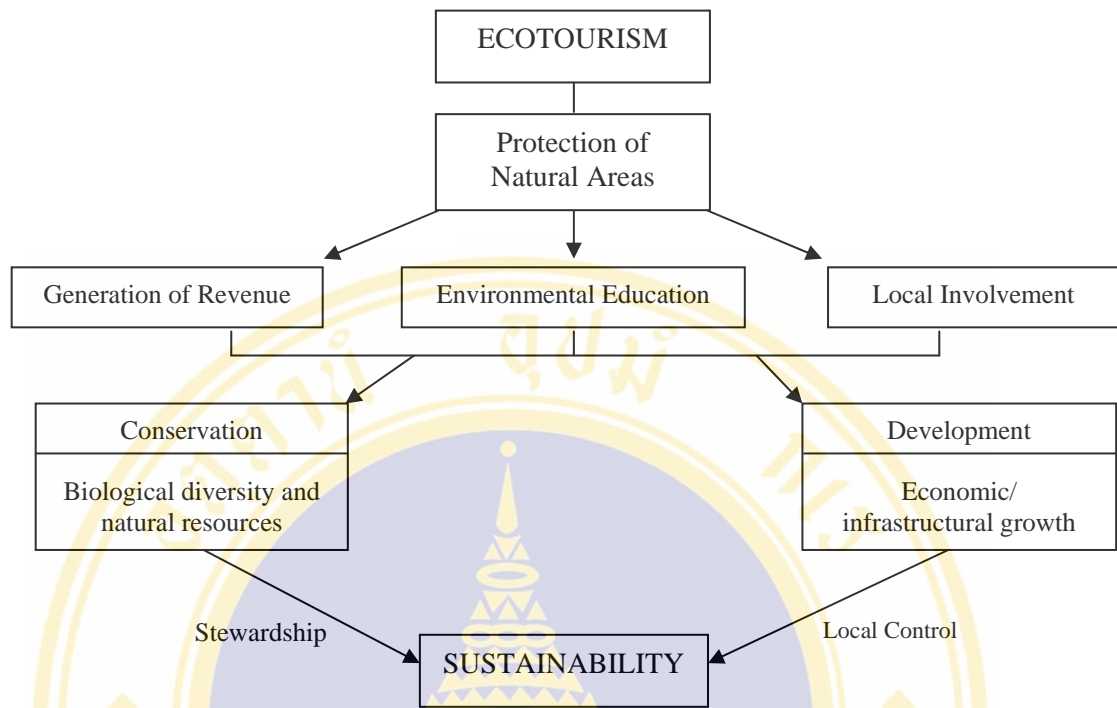


Figure 2.3 Ecotourism protects the environment while contributing to socio-economic development, and thus strives for sustainability

2.1.5 Ecotourism Management

Garrod (2001) summarized the eight stages of model approach to incorporating local participation into planning and management of ecotourism

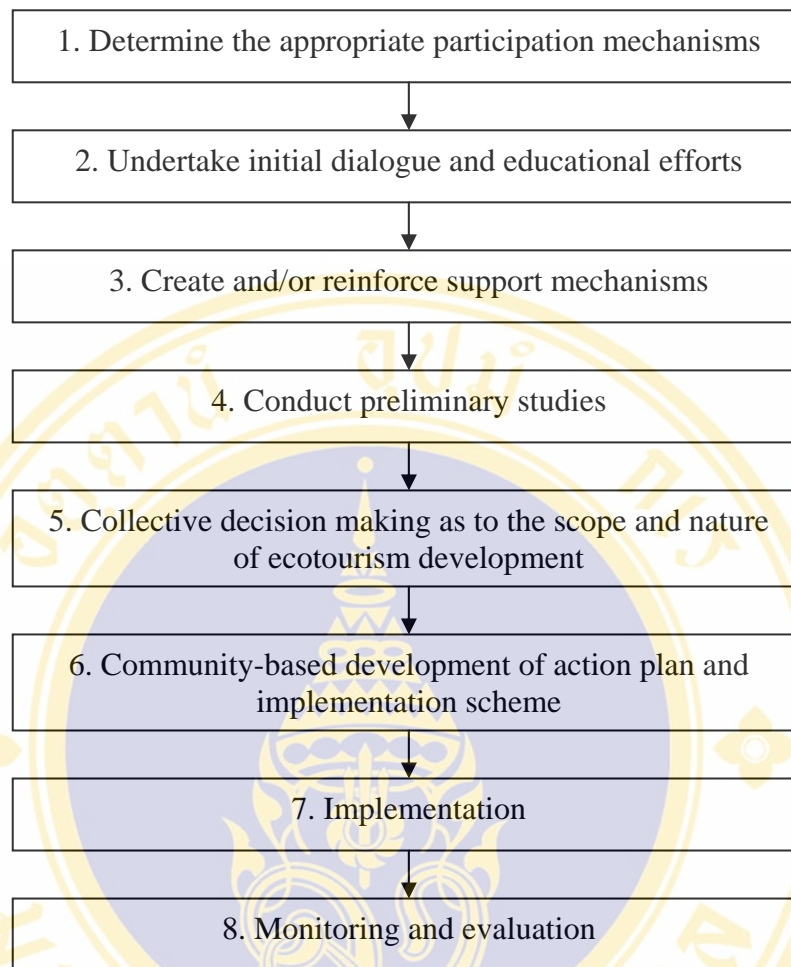


Figure 2.4 Stages of Model of Local Participation in Planning and Managing Ecotourism

This model illustrates eight stages of local participation in planning and managing ecotourism which was developed initially for a research project about marine ecotourism for the Atlantic Area. Generally this model can be used for others ecotourism projects via firefly ecotourism. The stage one explains the local participation by taking part for granted from the very outset of the ecotourism project. Garrod (2001) suggested that the most appropriate mechanism for local participation in ecotourism projects will depend on the intensity at which local participation is taking place. It will also depend on the nature of existing organizations and the characteristics of the local communities.

Stage two, undertaking initial dialogue and educational efforts, is set to build up a high degree of consensus among local people regarding all of the basic principles of planning and managing ecotourism in a participatory manner. If local people do not

agree on whether and how the local community should participate in the processes involved in ecotourism planning and management, the added value of local participation is likely to be seriously constrained. This stage is to ensure that the local community is involved from the outset in determining who is going to make the decisions about how ecotourism is to be planned and managed in their local area.

Creating and/or reinforcing support mechanisms are included in the stage three. Drake (2001) stated that it is important to establish, ideally in conjunction with the local stakeholders, a set of support mechanisms to facilitate local participation in the decision making processes involved. This includes a resource base that can serve to underpin whatever support mechanisms are set in place. The most appropriate support mechanism will be in the form of the establishment of a project research team. This team will probably require initial facilitation, in order to get the process off to start and to help those involved in the process of identifying sources of more long-term leadership from within their membership.

Stage four is conducting preliminary studies. The purpose of this stage is to seek to appreciate more completely the economic, political and social situation in which the local community presently finds itself. Key tasks might include determining the perceived needs and wants of the local community, who the principal leaders are, the best newspaper and other media to employ, the capacity and constraints of local government and other local institutions to support local participation.

Collective decision making as to scope and nature of ecotourism development is the fifth stage. When local participation activity is usually at its most intense, and the effectiveness of this stage will depend to a great extent on how well local participation has been planned for and achieved in the previous stages. Generally speaking, the greater the level of local participation that can be achieved at this stage, the more effective it will be in enhancing the outcomes of the ecotourism planning and management process.

Stage six is community-based development of action plan and implementation scheme. In this stage of the project cycle, the project team along with the local community representatives develops an action plan based on the decisions made at the previous stage in respect of the desired scope and nature of ecotourism development in the local area. The action plan can be worked up into an implementation scheme.

The implementation is set into stage seven that is ecotourism project must seek to establish and maintain strong linkages between the economic benefits of ecotourism and the conservation of the resource based upon which ecotourism ultimately depends. And the final stage is monitoring and evaluation. This eighth stage is often neglected, although it is considerable importance. The role of this phase is to assess the performance of the project at regular intervals, and to identify areas where the project's implementation might be sharpened or re-designed in order to meet its objectives more effectively. Unforeseen problems can also be picked up and the implementation of the project adjusted accordingly.

2.2 Concepts of participation

2.2.1 Local participation

Tourism areas need to have local owners. This has been developed into the concept of community based sustained tourism. The principal guiding direction is that tourism benefits go to local people, while tourists and natural resources are the components. The primary groups to reap the benefits are the people living in tourism areas (Suansri, 2002). Communities are part of ecotourism ecosystems, and these community residents should have the greatest voice in the development and the conservation of their natural resources (Garrod, 2001). The idea of community participation is not new. Timsutin (2004) notes that the participation has been induced into the Fifth National Economic and Social Development Plan in 1982-1986, in order that this concept can be a guideline for national development. Until now the people participation idea is still not a success as much as it is expected since government officials have more power to make decision than local people for the important issue. In addition, people do not understand their roles exactly to get involved.

Sawarbrooke (1999) summarizes the rationale for community involvement in tourism planning that it is believed to:

- Be keeping with the concept of democracy,
- Give a voice to those who are most affected by tourism,
- Make use of local knowledge to make sure that decisions made are well

informed,

- Reduce potential conflict between tourists and the host community by involving the latter in shaping the way in which tourism develops.

Wild (1994) suggests that ecotourism which encourages local employment and small business development promotes higher economic multipliers, and that a community values are respected. Similarly, Brandon (1993, cited in Garrod 2001) mentions that there is no stage in the project cycle which is too early or too late to involve local stakeholders. It is therefore considered particularly important to ensure that community involvement takes place from the very start of any ecotourism development initiative. If the local community is given a chance to shape the process and its major outcomes from the outset, they are more likely to remain committed to it in the longer term. If, on the other hand, the local community is excluded from the early stages of the ecotourism initiative, it will be very difficult to get them to sign up to it at a later stage.

2.2.2 Advantages and Disadvantages of the participatory approach

Ecotourism is being argued as it has two sides. The local participatory in ecotourism also has two sides. Drake (1991, cited in Garrod 2001) suggests the benefits associated with local participation in ecotourism projects are following:

- Increasing project efficiency by consulting with local people or involving them in the management of the project's implementation and/or operation,

- Increasing project effectiveness through greater local involvement to help ensure that the project aims are met and the benefits are received by the intended group,

- Building capacity among beneficiaries to understand what ecotourism is and how it can contribute to sustainable development (by ensuring that participants are actively involved in the project at every stage and by formal and/or informal training and awareness-raising activities),

- Increasing local empowerment by seeking to give local people greater control over their resources and the decisions relating to the use of such resources that affect their lives (this means ensuring that local people receive the benefits associated with

the use of those resources),

- Sharing costs with the local beneficiaries, for example labour costs, the costs of financing, operating and maintaining the project, and/or the project's monitoring and evaluation costs.

At the same time, Drake notes the following disadvantages with the participatory approach:

- Managing local participation frequently increases the number of staffs required to run the project,
- Pressure is often exerted by the community to extend the scope or form of the project beyond that originally planned for, with consequent increases in project costs,
- Planners risk losing the project to opposing forces who are looking to take control of the project away from the implementing agency.

Alike Swarbrooke (1999) suggests the negative side of community involvement of tourism. Giving great influence to the host community can:

- Add greatly to the cost of tourism planning and development,
- Lengthen the period needed to develop plans or carry out controversial projects,
- Provide an opportunity for local interest groups to deny opportunities for leisure and employment to people from outside the area, who may be less well off than them,
- Allow the majority of local community to discriminate against local ethnic minority groups.

2.2.3 Factors influencing participation

Cohen & Uphoff (1977) stated that there are important parts of participation in environmental performance which consist of people in local area, leaders of local community, officers and people outside local area. The local people participation also has the following concerned factors based on socio-economic characteristics: 1) age and gender, 2) status in family, 3) level of education, 4) social status, 5) occupation, 6) income and asset, 7) duration of residence in community, and 8) area and status of working.

Prichalai (2002) studied the factors affecting local people participation on environmental management. It has been found that factors were as follows: 1) gender, 2) membership of social group, 3) social status, 4) beneficiary on environment, 5) access to environmental information, 6) attitude towards environment and encounter with environmental problems.

Pimpa (2002) stated that the participation of local people is a behavior and basic needs of human being for their better life. So, the researcher expressed that the personal factors that are influencing the participation of local people are gender, age, occupation, monthly income, education, duration of residence in community, social status, and environmental activity participation.

Prathana Prichalai (2002: 100-102) studied the “Factors affecting of local people participation on environmental management: a case study in Khon Kaen province”. The result of analysis found that respondents had a low level of participation in environmental management. The personal factors affecting participation, gender, age, and educational level, caused significant difference in participation for the overall of environmental management. Meanwhile occupation, income and length of living did not cause significant difference.

Yongyudha Supon (2002: 75-77) studied the “Local people’s participation in the conservation of environment at Budha Udhayan Water Reservoir Amnatcharoen province”. The result of study found that gender is a factor influencing the people participation. Male group had participated on the conservation of the water reservoir environment more than the female group. Age and income were also personal factors influencing the level of participation. But educational level and occupation did not show any significant effect on the level of participation.

Ratanawadee Chulaphant (2004: 146-148) studied “Local people’s participation in Ecotourism Management: A Case Study of Koh Larn, Chonburi Province”. The results of the study showed that local people’s participation in ecotourism management at Koh Larn was at a low level. The result of study revealed that the different gender, age, educational level, and income did not significantly lead to different participation in ecotourism management. Occupation and duration of settlement in community were factors influencing the level of people participation in ecotourism management.

Cohen & Uphoff (1977) highlighted that the above mentioned factors include social status and area of working influencing local participation, but many studies resulted in the opposite way. Some of studies mentioned above considered social status, even though people understand social status in different aspects. Social status might include an individual's race, ethnicity, gender, age, skin color, economic class, caste, religious sect, and regional grouping (Maiese, 2003). This study considers personal factors that consist of gender, age, educational level, occupation, individual income, and length of residence. This study hypothesizes that personal factors are associated with level of local people participation in firefly ecotourism. After the research, if this hypothesis is tested then the ecotourism program would be increased appropriate activities related to the personal factors to further encourage firefly ecotourism.

2.3 Concepts of Conservation

2.3.1 Ecotourism and Conservation

Seafriends Marine Conservation and Education Centre (SMCEC) (2004) stated that conservation is akin to problem solving, hence the emphasis on the art of solving problems, and the critical-analytical approach toward understanding the underlying issues. Conserving nature is thus related to solving problems arising from human interference. It thus combines the complexity of nature with the human dimension, which is complicated to say the least.

From the human dimension, conservation has the following aspects:

1) Preventing problems: the cheapest and most effective way is to prevent problems from occurring, by applying foresight. However, this method gains little support, because the need for this type of action cannot be demonstrated. People become motivated only when a threat can be seen, particularly when it affects them already.

2) Knowing the laws: conservation is against unplanned development that breaks ecological as well as human laws. Problems can be predicted by knowing the laws of ecology and how a project breaks such laws. This is still a form of

prevention, but difficult to win in court since ecological laws are not part of human laws.

3) Finding solutions: once problems have arisen, solutions must be found. As shown in the article on resource management, solutions have several dimensions, leading all the way back to human need. Finding lasting and efficient solutions requires smart thinking. This aspect finds support easily, but requires high expenses and guarantees only limited success.

4) Adjusting demand: adjusting demand below the natural replenishment cycles or finding alternative sources and substitutions. Ironically, the availability of a substitute resource (another fish species), often leads to the complete depletion of the first species.

5) Setting aside for now: concessions can often be won easily as part of a new development. Keen on going ahead with the profitable venture, developers often concede easily to conservation demands to set aside samples of undisturbed natural communities, areas for recreation, and so on.

6) Setting aside for tomorrow: setting aside for our children should find easy support because everyone has children and has altruistic behavior towards them, in order to survive as a species. However, support for someone else's children, is not easily forthcoming. We should set aside for the future: use, enjoyment, scientific discovery (archaeological sites), even oil fields for purposes as yet unknown.

Therefore, once the conservation has been addressed in the ecotourism aspect, it has been described as 'one of the most potent tools in the arsenal of the contemporary conservationists'. It presents an environmentally friendlier and potentially more sustainable alternative to extractive activities such as farming, logging, mining, or harvesting of wildlife. It offers local people the chance to escape a cycle of poverty and, by sharing their knowledge of the local terrain and ecology with visitors, to develop a stronger sense of community pride and a broader, more global perspective that recognizes the value of biodiversity to all people (Lindberg, 2003). In addition, Langoya and Long (1998) supported that most significantly, ecotourism is seen as an opportunity for local people living in tourism destinations to gain positive benefits from tourism development and the conservation of forests and protected areas.

Appropriate recreational and special interest activities, such as trail walking,

photography and participatory conservation programmes, may also be part of ecotourism. In some locations, some activities like hunting and fishing may be included as appropriate activities, provided that they are carefully researched and controlled within a management plan that supports conservation. This kind of sustainable use relies on local knowledge, provides significant local income, and encourages communities to place a high value on wildlife, resulting in net conservation benefits (WWF, 2001).

Plai Pongpang sub-district in Samut Songkhram has a unique Thai-Style homestay. Firefly tourism in Plai Pongpang has been promoted making the place popular tourism place. Chuethahan (2004) studied the ecotourism management of Thai-Style homestay of Plai Pongpang and mentioned the local participation and conservation as a part of the study. Chuethahan found that local people have good potential to manage natural resources and get benefit from several kinds of activities, even though local people have lack of network cooperative. Negative impact from firefly tourism to natural resources occurred in this area. Noise pollution from motorboat and tourists who enjoy firefly at night caused the problems. For example, noise pollution from motor boat disturbed firefly mating and effecting their reproduction. Noise pollution also annoyed local people who live near river. To stop boat traveling near their house, some of local people cut mangrove trees in order to get rid of fireflies.

According to the Chuethaha's study, Plai Pongpang environment is similar to Ban Samaechai because both are adjacent to Gulf of Thailand. An the environmental features are suitable for tourism. Nevertheless, local people in Plai Pongpang have low participatory attitude towards firefly ecotourism, and so in conservation aspect. The result showed the contradiction of an ecotourism idea i.e. when ecotourism is established, local people must highly participate leading to natural conservation. Therefore, objective three of this research will be clarified by finding the relationship between the strength of local people participation.

2.3.2 Economic benefits from ecotourism and conservation

Lash (1997, cited in Bornemeier 1997) mentioned that economic benefits from

tourism should be distributed to the local people around a protected area, as well as to government and park agencies. Through income generation, ecotourism can provide improved health care and education to the local inhabitants, as well as employment in the tourism industry. Demonstrating the economic benefits of conservation to the local population is one key to the successful protection of an area. While Kutay (1992) stated the environmental benefits of community participation, arguing that a close working relationship between the local community and other stakeholders will provide the means to support conservation efforts.

Brandon (1993, cited in Garrod 2001) suggested a number of ways in which the linking economic benefits to conservation can be strengthened. Firstly, ensuring that ecotourism providers purchase their inputs from local suppliers and employ local people can ease this situation. This helps economic benefits of ecotourism within the local area, and gives local people more of an incentive to ensure that those benefits will still be received in the long term.

Secondly, ensuring that the benefits are spread widely within the local community can also enhance the linkage between the economic benefits of ecotourism and its conservation objectives. This will help to ensure that the incentive to look after the resource base on which ecotourism depends is spread as widely as possible among those who are likely to have negative impacts upon it.

Thirdly, the linkage between economic benefits and conservation can be made more direct. One way of doing this is to ensure that any access fees that are channeled directly into efforts concerned with the management of ecotourism activity and the conservation of its resource base.

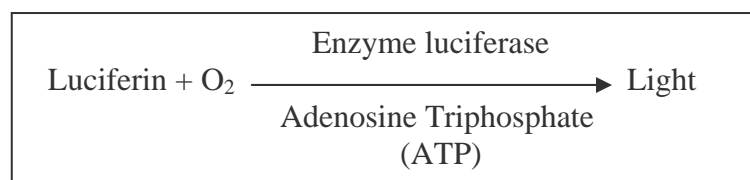
Wander (1999) highlighted that a principle criterion for classifying a tourism operation as 'ecotourism' is that local residents at the site should receive substantial economic benefits, which serve both to raise local living standards and as enhanced incentives for nature conservation. Similarly, Kiss (2004) noted that the premise is that ecotourism depends on maintaining attractive natural landscapes and a rich flora and fauna; therefore, helping communities to earn money from ecotourism provides both an incentive for conservation and an economic alternative to destructive activities.

2.4 Firefly Information

2.4.1 Characteristics of Firefly

Fireflies are 'beetles' as entomologists group them into the family Lampyridae, Order Coleoptera. Firefly, Lightning Bug, and Glowworm are common names use to call this beetle. While all other winged insects have two pairs or four wings altogether, fireflies have only one pair of wings (Branham, 1998). Fireflies are found in lowland, freshwater and brackish ecosystem, up to highland. Previously, fireflies were easily found all around Thailand but at the present fireflies have disappeared because their habitat is destroyed by human activities such as settlements, streets, and light from electricity. Moreover, contamination of agriculture pesticide, and chemical substances from industries and households along rivers has influenced firefly populations (Thancharoen, 2001).

The fireflies flash lights at night searching for their mates. A male firefly flashes a specific form of light and wait for responses from same species of female. Naturally, male provides light brighter than female because male has 2 light producers at its tail while female has one. Their lights are produced from luminous organ at the tip of their abdomen (Carlson and Copeland, 1978 cited in Thancharoen, 2001). The cold light from fireflies is called bioluminescence. Fireflies produce light via a chemical reaction consisting of Luciferin (a substrate) combined with Luciferase (an enzyme), and received energy from Adenosine Triphosphate (ATP). The production of light is very efficient, with very little heat being given off as wasted energy (Branham, 1998). Department of Agriculture (DOA) of Thailand showed the chemical formula of the light producing process of firefly.



Fireflies account for more than 2,000 species all around the world. In Thailand, at least 100 species have been found (DOA, 2005). From the evidence only 2 families

and 7 species can be identified in 1927-1996 (Chunram and Lewvanich, 1996). Then in 1996-1997, the research program entitled 'A study of diversity of fireflies in Thailand' was launched by HM Queen Sirikit. Lewvanich (2001) studied the diversity of fireflies in 35 provinces and identified fireflies into 10 families as following:

- | | |
|--------------|------------------|
| - Diaphanes | - Pyrocoelia |
| - Lamprigera | - Pyrophanes |
| - Lucidina | - Rhagophthalmus |
| - Luciola | - Stenocladus |
| - Pteroplyx | - Vesta |

Furthermore, Lewvanich estimated more than 100 species of fireflies that cannot be identified because of the lack of fireflies' information in Thailand.

2.4.2 Habitat and Life Cycle

The highest species diversity of fireflies are found in Tropical Asia and Central and South America where the climate is warm and humid (Branham, 1998). Many firefly species tend to be found around water such as ponds, streams, marshes or even depressions, ditches, etc., that may retain moisture longer than the surrounding areas. However, fireflies are also found in very dry regions of the world as well. Different firefly species are found in different ecosystems. Some species live on the edges of streams, river, and brackish waters, whereas some live on the ground in the forest. At the present, fireflies nearby freshwater and brackish areas mostly are classified into family *Luciola*. They have small size. Fireflies that are found on the ground is classified into *Pyrocoelia*. They have bigger size than *Luciola* (Chunram and Lewvanich, 1996).

Firefly life cycle has 4 periods started from egg, worm, cocoon, and firefly mature. Firefly eggs need clean water to grow up. In each ecosystem, fireflies have different life cycle but with an average of 3-12 months. The different life cycle depends on temperature, light, humidity, and food. Firefly lays eggs as a group or individual on soil, in water, or on leaves (RSPG, 2003). Firefly larvae feed on earthworm, snails and slugs. Larvae can detect a snail or slug from their slime trail, and follow it to the prey. After locating their prey, the larvae inject an anesthetic

substance through hollow ducts in their mandibles into the prey to immobilize and eventually digest it. Multiple larvae have also been observed attacking large prey items, such as large earthworms. Other observations suggest larvae sometimes feed on dead snails, worms and similar organic matter (Branham, 1998). In cocoon period, firefly can live without feeding. While adult firefly feeds on plant nectar or dew in order to sustain their energy requirements in the adult stage.

2.4.3 Benefits from Firefly

The results of firefly study from Department of Agriculture (2005) show the several benefits of firefly as follows:

- 1) Firefly is an indicator for ecosystem and natural environment,
- 2) The worm period of firefly has a very important role to kill intermediate host of snail that cause the parasite in human and animals,
- 3) Luciferin in firefly is used to find out the successful of gene modification,
- 4) Scientists use the light causing genes or hormones in fireflies for a faster checking of bacteria in animal flesh,
- 5) Scientists in USA squash Luciferin from firefly and leave into human body, let it catch human gene and find out cancer easier,
- 6) Firefly creates the aesthetic value because of its light. Firefly place can be managed to an ecotourism place.

2.4.4 Conservation of Firefly

The local community requires understanding of the characteristics of the firefly in order to conserve them and yield the benefit. The following provides information on the characteristics of the fireflies: have to take sufficient care in not making loud noises, especially, at night because noise can be a hindrance for firefly reproduction,

- 1) Fireflies flash light because of searching for their mates. People must not disturb fireflies by shaking the trees, catching fireflies or enlighten to fireflies otherwise the number of firefly populations might decrease,
- 2) Firefly larvae live in clean water and feed on tiny snails, and slugs. If water

quality is deteriorated, the amount of snails and slugs decrease there by reducing the available food for the larvae. This is an indication that people need to take proper care of the water quality in order to attain desired results from fireflies,

3) Mature fireflies live in trees and feed on plant nectar or dew, hence destroying trees can reduce the firefly populations. (TAT, 2001; Jareonwattana, 2003).

As local people can get benefits from firefly, they need to understand the ways to conserve fireflies along with dispersing environmental knowledge to their children in the community and also to the tourists.

2.5 Concepts of Attitude, Knowledge and Communication

2.5.1 Attitude

Scholl (2002) stated that attitudes are defined as a mental predisposition to act that is expressed by evaluating a particular entity with some degree of favor or disfavor. Individuals generally have attitudes that focus on objects, people or institutions. Mental orientations towards concepts are generally referred to as values. Attitudes are comprised of four components:

1) **Cognitions**- Cognitions are our beliefs, theories, expectancies, cause and effect beliefs, and perceptions relative to the focal object.

2) **Affect**- The affective component refers to our feeling with respect to the focal object such as fear, liking, or anger.

3) **Behavioral intentions**- Behavioral intentions are our goals, aspirations, and our expected responses to the attitude object.

4) **Evaluation**- Evaluations are often considered the central component of attitudes. Evaluations consist of the imputation of some degree of goodness or badness to an attitude object.

Additionally, Human Resources and Skills Development Canada (HR SDC, 2002) addressed the attitude approaches community development that attitude is the preference of an individual or organization towards or away from things, events or people. Attitude is very difficult to define with precision as it consists of qualities and beliefs that are non-tangible. The important thing is the attitude needs to successfully

lead or actively participate in a community development initiative by following:

- 1) Respect for the individual, group and community;
- 2) Strong sense of responsibility and commitment;
- 3) Empathy (understanding where others are coming from);
- 4) Openness to look at alternate solutions, new opportunities and ways to improve;
- 5) Patience, perseverance and endurance;
- 6) Creativity, innovation and intuition;
- 7) Willingness to participate without always having to lead;
- 8) Trust in others; and
- 9) Self-confidence.

Kvena Jongthitnon (2004: 78) studied “Knowledge of attitude to and participation in solid waste management of people in Samui Island Surathani province”. The result found that knowledge and attitude had related to participation by significance at level 0.05. So the planning for increasing participation in solid waste management needed to consider the knowledge of and attitude to solid waste management.

Therayan Chotipaporn (2001: 67) studied “Knowledge attitude and participation on wastewater management of sub-district administration organization members: a case study of Muang district Samutsakhon province”. The experiment showed that no effect of knowledge and attitude on the sub-district administration organization members’ participation in wastewater management or any activities with significant value at 0.05 level.

2.5.2 Concepts of Knowledge

Benjamin (1956) stated that knowledge is to realize some specific things, methods and process, objectives on knowing well on psychology of necessities of relating new rules. Benjamin divided the level of knowledge from cognitive domain into 6 levels from the easiest to the hardest as follows:

- 1) Knowledge- the ability of the brain which can store things. In order to measure how much a person can remember, it is suggested to look at what person

selects the things individual has stored.

2) Comprehension- the ability to communicate so that other people understanding his/her intention and he/she understands the meaning and others' wish.

3) Application- the ability to apply knowledge, memory and understanding in solving new problems effectively. This ability does not mean learning of imitation but the ability to solve problems by using what has been learned.

4) Analysis- the ability of considering things in parts.

5) Synthesis- the ability of putting parts together and it is the ability of considering things in different aspects then put them in the new structure and this create new things which are more effective.

6) Evaluation- the ability of making decisions, judging by using the set criteria and standard.

Chusa Saowaphak (2002: 127) studied on “The participation of local people in environmental conservation: a case study on Pak Meng Beach district Trang province” found that local people having knowledge on environmental conservation at moderate level had participation in environmental conservation more than other groups. And based on the statistic test local people with different knowledge on environmental conservation provide different participation in environmental conservation a statistical significance 0.05 level.

Yongyudha Supon (2002: 79-80) found that the difference level of knowledge of people concerning the conservation of the environment did not create any different level of participation on the conservation of the water reservoir environment. On the other hand, the attitude toward the conservation of the water reservoir environment had different level of participation on the conservation.

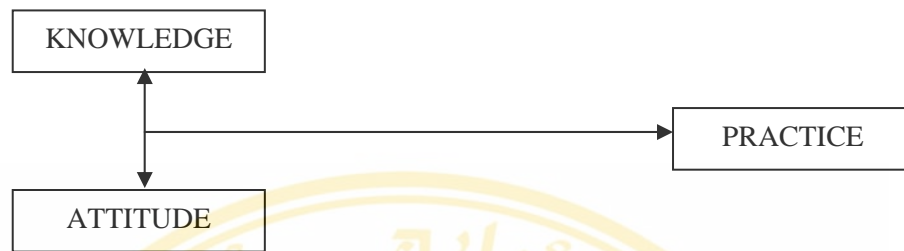
2.5.3 Concepts of Behavior from Attitude and Knowledge

Suwan (1977, cited in Nawajareonkul, 1997) stated that attitude and knowledge influence people's behavior or cognitive domain in different ways:

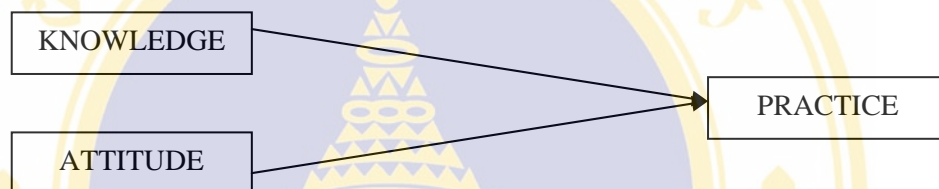
1) Attitude leads to knowledge and practice.



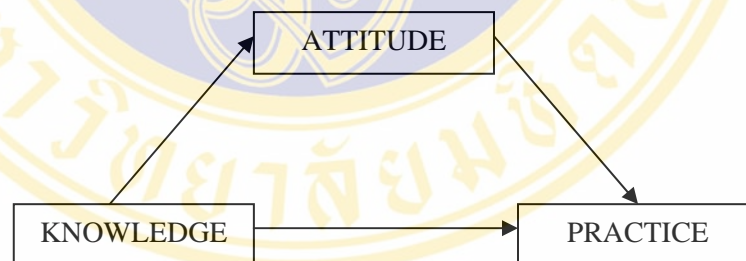
2) Attitude and knowledge are an association. Both lead to practice.



3) Attitude and knowledge are not an association. Each of them can lead to practice without relationship.



4) Knowledge is a cause of attitude, and attitude can lead to practice. Knowledge leads to practice.



It is found that attitude and knowledge do not always influence people's behavior. The above four figures show that attitude and knowledge affect the practice of the local people which influences their behavior. This study proposes to test whether attitude and knowledge influences the level of local people participation. After testing the hypothesis, if the hypothesis is true, the ecotourism can be increased people's attitude and knowledge about firefly ecotourism further.

2.5.4 Concepts of Communication

Communication theory and human interaction model has been developed by Shannon (Roger, 1994 cited in McKain, 1999). The success of this interaction would then be measured by the feedback the receiver would give to the sender once the message has been transmitted. Feedback, in an instructional setting, may take the form of discussions, observations or tests.

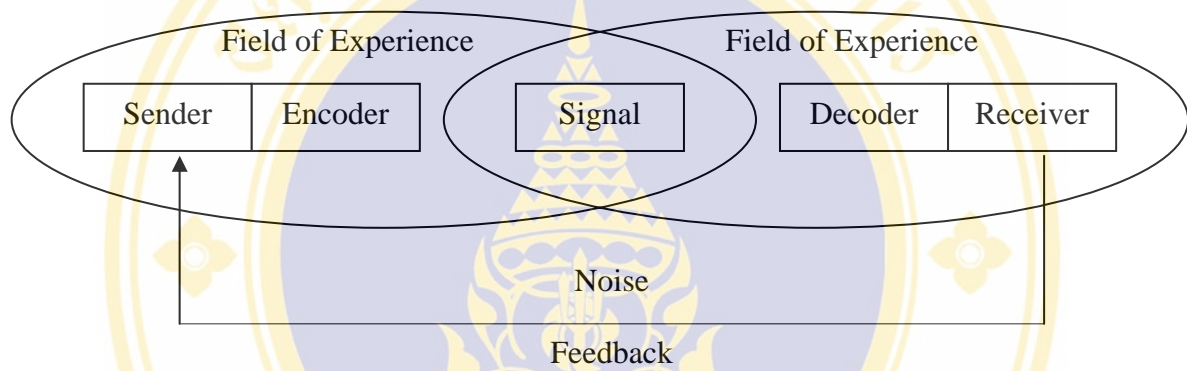


Figure 2.5 The communication model

Human communication is a vast field and ranges from talking to yourself to mass communication. Devito (2000) classified types of communication in several levels.

1) **Intrapersonal communication:** Talking, learning, evaluating, persuading and reasoning to ourselves about possible decisions to make as well as rehearsing the message intends to send to others.

2) **Interpersonal communication:** The interaction of learning about others and revealing themselves to others. In this type of communication people can establish, maintain and sometimes destroy (sometimes repair) their personal relationships.

3) **Small group communication:** The interaction with other in terms of solving problem, developing new ideas and sharing knowledge and experiences.

4) **Public communication:** Others inform and persuade us as receiver. And we in turn inform and persuade others to do, to buy, or to think in a particular way, or to change an attitude, opinion or value.

5) **Mass communication:** We are entertained, informed and persuaded by the media movies, television, radio, newspapers and books.

Pornpattana Rakjit (2004: 50) studied on “Communication methods and people participation in promoting mangrove conservation of Bangkaew sub-district administration organization Samut Songkhram province”. The result found that in terms of communication methods, group communication and interpersonal communication had significant relationship with people participation in mangrove conservation. The finding corresponds to Ganagasai (1997 cited in Rakjit, 2004) which stated that communication was one of the most effective factors to people participation in mangrove conservation.

In brief, communication is an important factor, it focuses on how people use messages to generate meanings within and across various contexts, cultures, channels, and media. Communication actions reflect skills which foster personal, academic, and professional success (ACA, 1995). An assumption is made such that there is a relationship between communication methods and level of local people participation. After testing, if this assumption is true, trainer can check what the best method people perceive and understanding is. Then communication methods will be revised for firefly ecotourism development.

2.6 Relevant Research

Chulaphant (2004) set independent and dependent variables in the study of local people’s participation in ecotourism management: a case study of Koh Larn, Chonburi Province. Gender, age, educational level, occupation, monthly income, duration of settlement in community, social status, awareness of ecotourism information, knowledge on ecotourism, experience in training on ecotourism activity, perception of impact, and value place on natural resource and environment are group of independent variables. Local people’s participation in ecotourism management is dependent variable. Chulaphant used questionnaires as an instrument to collect data

and found that the level of local people's participation was low. The results of an association between independent and dependent variables showed that occupation, and duration of settlement in community were factors influencing the level of people participation in ecotourism management. Unlike gender, age, educational level, and income did not significantly lead to different participation in ecotourism management. From the qualitative data Chulaphant found that problems and obstacles to the participation in ecotourism management include lack of information about ecotourism by local people, lack of knowledge and understanding about ecotourism, and lack of proper cooperation between local people and government officers and conflict in interests.

Leuangdee (2001) studied the ecotourism management of Ban Khokket, Tambon Playphongphang, Amphoe Amphawa, Samutsongkhram Province which is it has similar environmental condition to Ban Samaechai. The study based on qualitative research method. On the participation of the community in the ecotourism management, the villagers participate in making decisions, project planning, project conducting and making conclusions and evaluations. However, on the prevention of negative impact on culture, there have still been no measures for both the villagers and tourists in order to prevent the impacts of tourism on the local culture. There have been no marketing and public relation plans in order to promote the project to travel agents and general tourist groups locally or internationally.

CHAPTER 3

METHODOLOGY

This research was conducted in both qualitative and quantitative methods. In-depth interview with the people involved in firefly ecotourism and focus group were used for collecting qualitative data. The survey through questionnaires was used for collecting quantitative data from 71 respondents from Ban Samaechai.

3.1 Qualitative Research Method

3.1.1 In-depth Interview

In-depth interview was conducted with the following persons in regard to the development process of firefly ecotourism management, impacts from firefly ecotourism including environmental issues, activities and projects relevant to local people participation in firefly ecotourism management. Questions in this part emphasize the facts of the ecotourism development, impacts from firefly ecotourism, activities of local people participation in firefly ecotourism, preventing people from outside, potential conflict, benefit sharing, communication problems, obstacles, and suggestions. Key respondents consist of 13 persons as follows:

1) Village headman (Moo 9 Ban Samaechai)	1
2) Village headman's assistant	2
3) Firefly ecotourism members	2
4) Researchers	2
5) Boat driver	1
6) Villager	2
7) Pioneer	1
8) Environmentalists	2

3.1.2 Focus Group

The participants invited to be involved in the investigation were separated into 2 groups. The first group emphasized on group of people who participate in the firefly ecotourism management. The second group emphasized on group of people who did not get involved in the firefly ecotourism management. This study selected 8 respondents for each group. These respondents are not representatives of the community related to firefly ecotourism program. Questions for discussion accentuated people's opinion. For example, questions about firefly ecotourism program, organizations step in firefly ecotourism, changes in the community, communication problems, firefly conservation, potential conflicts, benefit sharing, and reasons for each group joined the firefly ecotourism program.

3.2 Quantitative Research Method

3.2.1 Population

The target group of the study is local residents in Ban Samaechai Moo 9 of Bangkok sub-district, Petchburi Province.

3.2.2 Sample Size

The total area in Ban Samaechai is divided into two parts. A part connected to Petchaburi River that had an easier opportunity to get involved in the firefly ecotourism than the other part that was far from the Petchaburi River. Data from local administrator revealed that there were a total of 87 households in Ban Samaechai. This study took 71 households in total from both sides of the river. The respondents for each household could be anyone who stayed in the house and could give information.

3.2.3 Sampling

Accidental sampling method was used for selecting respondents. Researcher visited every household in the village and asked the head of family. In the case that the head of family was not in the house, researcher asked anyone who could give information about firefly ecotourism.

3.2.4 Design of the Questionnaire

The questionnaire comprised seven sections as follows.

Part 1 The first section consisted of general information of local residents' social economic and demographic characteristics such as Gender, Age, Educational level, Occupation, Income, and Length of residence at Ban Samaechai.

Part 2 The second section included the attitude of local people in firefly ecotourism. A Likert Scale method is used to conduct this part (Nueman, 2003). The interviewer started asking questions with “do you think...” There were 20 questions in part 2 and each having 4 different choices. The scale of the score was shown below.

Level of Attitude	Score of positive message	Score of negative message
Strongly agree	4	1
Agree	3	2
Disagree	2	3
Strongly disagree	1	4

Positive and negative messages were cross checked with the questions.

Question No. 1 was positive and number 11 was negative message.

Question No. 2 was negative and number 12 was positive message.

Question No. 3 was positive and number 13 was negative message.

Question No. 4 was negative and number 14 was positive message.

...

Question No. 10 was negative and number 20 was positive message.

To find out the level of attitude in firefly ecotourism management, this research was classified into three levels by considering Mean and Standard Deviation

(SD). Three levels of attitude in firefly ecotourism were classified as following:

1. Low level of attitude refers to the scores in range lower than Mean minus SD.
2. Medium level of attitude refers to the scores in range lower than Mean minus SD to higher than Mean plus SD.
3. High level of attitude refers to the scores in range higher than Mean plus SD.

Part 3 This section used Guttman Scale method to design questions and answer choices (Nueman, 2003). Part 3 concerned about knowledge of ecotourism, the statements are measured by “True” or “False”.

Knowledge	Score
True	1
False	0

To measure the level of knowledge, this study used percentage to classify:

- 1) Low level of knowledge refers to scores were lower than 75%
- 2) Medium level of knowledge refers to scores were between 75-90%
- 3) High level of knowledge refers to scores were higher than 90%

Part 4 This part concerned about the communication methods. Likert Scale (Nueman, 2003) was utilized in part 4. There were 3 choices for answer selecting in this section.

Level of understanding from communication methods	Score
Understand very much	3
Neutral	2
Do not understand	1

To find out the level of understanding from communication, this research classified three levels by considering Mean and Standard Deviation (SD). Three levels of local people participation in firefly ecotourism were classified as follow:

- 1) Low level of understanding from communication refers to the scores in range lower than Mean minus SD.
- 2) Medium level of understanding from communication refers to the scores in range lower than Mean minus SD to higher than Mean plus SD.

3) High level of understanding from communication refers to the scores in range higher than Mean plus SD.

Part 5 This part aimed the local people participation in firefly ecotourism management. The investigation found out how often local people get involved in firefly ecotourism. A Likert Scale method was used in this part (Nueman, 2003). Questions were measured by “Always”, “Sometimes”, or “Never”.

Participation	Score
Always	3
Sometimes	2
Never	1

To find out the level of local people participation in firefly ecotourism management, this research classified three levels by considering Mean and Standard Deviation (SD). Three levels of local people participation in firefly ecotourism were classified as follow:

- 1) Low level of local participation refers to the scores in range lower than Mean minus SD.
- 2) Medium level of local participation refers to the scores in range lower than Mean minus SD to higher than Mean plus SD.
- 3) High level of local participation refers to the scores in range higher than Mean plus SD.

Part 6 This part concerned about the level of firefly conservation. A Likert Scale method was also used in this part (Nueman, 2003). Questions were measured by “Always”, “Sometimes”, or “Never”.

Conservation	Score
Always	3
Sometimes	2
Never	1

To find out the level of firefly conservation, this research classified three levels by considering Mean and Standard Deviation (SD). Three levels of firefly conservation were classified as follow:

1) Low level of firefly conservation refers to the scores in range lower than Mean minus SD.

2) Medium level of firefly conservation refers to the scores in range lower than Mean minus SD to higher than Mean plus SD.

3) High level of firefly conservation refers to the scores in range higher than Mean plus SD.

Part 7 This part was an open question, local people can show their opinion on problems, obstacles, and give suggestions for firefly ecotourism.

3.2.5 Reliability Test

1) In-depth interview and Focus group

All questions of in-depth interview part and focus group were consulted and verified by the experts and the thesis committee. Their comments and recommendations were used as guidelines for improvement and revision.

2) Part 2, part 4, part 5, and part 6 of questionnaires were for testing attitude of firefly ecotourism, understanding of firefly ecotourism from communication, level of local people participation, and level of firefly conservation. Reliability test indicated the consistency of questions. The reliability results come from pre-test of questionnaires. A group of 10 samples in Ban Samaechai was selected to test the reliability of questions.

These parts were tested by Cronbach method (Sangkaew, 1998 cited in Punpinij, 2004).

$$\alpha = \frac{N}{N-1} \left(1 - \frac{\sum S_i^2}{S_t^2} \right)$$

Where as: α = The Reliability coefficient

$\sum S_i^2$ = The Summation of the variance of each question

S_t^2 = The Total variance of all questions

N = The Number of questions

The result of α is reliable if the value is higher than 0.6

According to (Punpinij 2004), the strength of reliability levels was classified

into 5 levels:

0.80 – 1.00	Excellent reliability
0.60 – 0.79	Good reliability
0.40 – 0.59	Fair reliability
0.20 – 0.39	Poor reliability
0.10 – 0.19	Unreliable

After questionnaire part 2, part 4, part 5, and part 6 were tested the reliability by using Cronbach method in SPSS program. The results show below:

Part 2: Attitude of respondents in firefly ecotourism

$$\alpha = 0.74$$

Part 4: Communication methods to receive ecotourism information

$$\alpha = 0.71$$

Part 5: The level of local people participation in firefly ecotourism

$$\alpha = 0.94$$

Part 6: Level of firefly conservation

$$\alpha = 0.96$$

Therefore, part 2 and part 3 had good reliability with the scores 74% and 71%. For part 5 and part 6 were excellently reliable having scores 94% and 96%. The results of α were higher than 0.6 in every part, thus the set of questions was remained unaltered.

3) Part 3 of questionnaire: knowledge of ecotourism

This part was tested by Kuder Richardson method (KR-20).

$$r = \frac{N}{N-1} \left(1 - \frac{\sum p_i q_i}{\sigma_T^2} \right)$$

Where as: r = Reliability coefficient of the instrument

p_i = The proportion of respondents passing a given questions

q_i = The proportion of respondents that did not pass a given questions

$\sum p_i q_i$ = The summation of $p_i q_i$

σ_T^2 = The variance of the total scores on all questions

N = The number of all questions

The result of r is reliable if the value is higher than 0.6

According to Punpinij (2004), the strength of reliability levels was classified into 5 levels:

0.80 – 1.00	Excellent reliability
0.60 – 0.79	Good reliability
0.40 – 0.59	Fair reliability
0.20 – 0.39	Poor reliability
0.10 – 0.19	Unreliable

In this section, Microsoft Excel calculated variables as shown below:

N = The number of all questions, in this case is 15 questions

$\sum p_i q_i$ = The summation of $p_i q_i$, in this case is 2.47

σ_T^2 = The variance of the total scores on all questions, in this case is 7.12

Therefore, 0.69 of the 'r' value was good reliability and acceptable to use questionnaire for part 3. The value of questionnaire was higher than 0.6, the set of questions remained unchanged.

3.3 Data Collection

Data was collected by using self-administered questionnaire from August to September 2005.

3.4 Data Analysis

3.4.1 Qualitative data analysis

The data from in-depth interview and focus group were used for description to support the quantitative data. Questions in in-depth interview covered the facts of development process, impacts, activities, problems, and suggestion. Focus group questions collected opinions of respondents between two groups. Questions covered

firefly ecotourism, organizations involved in firefly ecotourism, changes noticed after implementation firefly ecotourism, communication problem, firefly conservation, shortages in concerning firefly ecotourism, and the reason of non-participation in firefly conservation

3.4.2 Quantitative data analysis

Data was analyzed by using SPSS program. Independent factors in this study were personal, social, economic (e.g. Gender, Age, Educational level, Occupation, Income, and Length of residence) and other factors (e.g. attitude, knowledge, communication methods). Dependent factor in this study was the level of local people participation in firefly ecotourism management. This study followed an assumption of making a relationship between the dependent and independent factors. In addition, another dependent factor was the level of firefly conservation. This factor was assumed to have a directly proportional relationship with level of local people participation.

1) Personal data was analyzed by using descriptive statistics: Frequency, Percentage, Arithmetic mean, Standard Deviation (SD).

2) Relationship between independent factors (personal factors and other factors) and dependent factor (level of local people participation in firefly ecotourism management) was tested using Chi-square test. From the result, Chi-square could tell researcher about relationship between independent factors and dependent factor.

3) Relationship between level of local people participation in firefly ecotourism management and level of firefly conservation was explained through description provided by the respondents.

CHAPTER 4

RESULTS AND DISCUSSION

The data presentation from the study of “Local People Participation in Firefly Ecotourism Management: A Case Study in Ban Samaechai, Phetchaburi Province” could be analyzed and presented by quantitative and qualitative data. SPSS program was used for analyzing the results. This chapter explains the results and the chapter is divided into sections mentioned below along with the method of analysis.

4.1 Personal social-economic factors were analyzed using descriptive statistics such as frequency and percentage.

4.2 Local people’s attitude towards firefly ecotourism was analyzed using descriptive statistics such as frequency, percentage, mean, and standard deviation (SD).

4.3 Local people’s knowledge towards ecotourism was analyzed using descriptive statistics such as frequency and percentage.

4.4 Communication methods about firefly ecotourism were analyzed using descriptive statistics such as frequency, percentage, mean, and standard deviation.

4.5 Level of local people participation was analyzed using descriptive statistics such as frequency, percentage, mean, and standard deviation.

4.6 Level of local people conservation in firefly was analyzed using descriptive statistics such as frequency, percentage, mean, and standard deviation.

4.7 The analysis of relationship between dependent factors and level of local people participation were analyzed using Chi-square.

4.8 The analysis between level of local people participation and level of firefly conservation in the directly proportional relationship.

4.9 Firefly ecotourism conditions in Ban Samaechai.

Fireflies are common among Ban Samaechai local people because they have been seeing them since birth. In year 2002, Ban Samaechai has been initiated by a

person outside the village with various organizations to promote firefly ecotourism. The present ecotourism structure was formed by learning through direct experiences. Members of firefly ecotourism set their own regulations toward firefly conservation. Positive and negative impacts occurred since firefly ecotourism was introduced in Ban Samaechai. Personal and other factors were studied which could be explained at the level of people participation in firefly ecotourism.

4.1 Personal factors

According to the data gathered from 71 households from Moo 9 Ban Samaechai, the results showed that general environmental condition of sample were classified as personal characteristics and social economic condition, as shown in Table 4.1

Table 4.1 Respondents’ socioeconomic characteristics

Personal characteristics and socioeconomic condition	Number of people	Percentage (%)
Gender		
• Male	35	49.3
• Female	36	50.7
<i>Total</i>	<i>71</i>	<i>100</i>
Age		
• Lower than 20 years	7	9.9
• 21 – 30 years	7	9.9
• 31 – 40 years	16	22.5
• 41 – 50 years	20	28.2
• 51 – 60 years	10	14.1
• More than 60 years	11	15.5
<i>Total</i>	<i>71</i>	<i>100</i>

(Continued)

Table 4.1 Respondents' socioeconomic characteristics (Continued)

Personal characteristics and socioeconomic condition	Number of people	Percentage (%)
Education level		
• Elementary school	44	62.0
• Secondary school	12	16.9
• High school	10	14.1
• Bachelor degree	2	2.8
• Never studied in school	3	4.2
<i>Total</i>	<i>71</i>	<i>100</i>
Occupation		
• Make sugar	7	9.9
• Shop keeper	5	7.0
• Housewife	3	4.2
• Employee	37	52.1
• Etc.	19	26.8
<i>Total</i>	<i>71</i>	<i>100</i>
Household income per month		
• Less than 5,000 baht	50	70.4
• 5,001 – 10,000	17	23.9
• 10,001 – 15,000	4	5.6
<i>Total</i>	<i>71</i>	<i>100</i>
Length of residence		
• Length of residence from birth	56	78.9
• Lived for some years	15	21.1
<i>Total</i>	<i>71</i>	<i>100</i>
Distance from house to Phetchaburi River		
• Connect to Phetchaburi River	52	73.2
• Do not connect to Phetchaburi River	19	26.8
<i>Total</i>	<i>71</i>	<i>100</i>

4.1.1 Gender and age

The results showed that the percentage of male and female respondents was nearly the same at 50.7% male and 49.3% female. Most of the respondents were at the age group of 41-50 yrs (28.2%), followed by respondents of the age group of 31 – 40 yrs (22.5%). While, 7% of the respondents were of age groups 21 - 30 yrs and lower than 20 yrs. The results also showed that 14.1% of the respondents were 51 - 60 yrs and 15.5% were more than 60 yrs.

4.1.2 Education level

Majority of the respondents (62%) were elementary school graduates while 16.9% were secondary and 14.1% were high school educated. There were even respondents (2.8%) who held a bachelors degree. However, 4.2% of the respondents were either diploma holders or entirely illiterate.

4.1.3 Occupation

The results found that the majority of occupation that the respondents held was being an employee (52.1%) at factories nearby the village, these employees felt that the job they hold got them more money than other jobs in the community. On the other hand the least popular job that the respondents held in the community was being a housewife (4.2%). Moreover, several occupations in Ban Samaechai such as fisherman, agriculturist, making thatch (nipa leaves), and temporally government job were found 26.8%. Next to Ban Samaechai is a popular sugar making village, making 9.9% respondents in Ban Samaechai being sugar makers and 7% shop keepers. For people in Ban Samaechai, firefly ecotourism is not the main occupation due its seasonal nature, especially from September to October when water is high at night.

4.1.4 Household income per month

It has been found that the majority income range was lower than 5,000

baht/month or 70.4% of total respondents. The group of household respondents who had income 5,001 to 10,000 baht/month was found to be 23.9% followed by 5.6% of respondents earning 10,001 to 15,000 baht/month. However, many service activities to serve firefly tourists such as boat driver, tourist guide, residence, and shop keeper were found to support main income. The results showed the amount of money these services could earn start from 100 baht to 6,000 baht/month; yet the majority of 500 baht was frequently reported. The dominant activity to earn extra income from firefly ecotourism was shown as boat tour service. The average household income from firefly ecotourism activities was 2,265.52 baht.

4.1.5 Length of residence

By interview it was found that there were five races in Ban Samaechai: 1) Native Thai, 2) Song Laos (or Thai Song Dam), 3) Thai Mon, 4) Muslim, and 5) Chinese. The results revealed that most of respondents lived in Ban Samaechai since birth (78.9%) while 21.1% of respondents lived in the community as immigrants.

4.1.6 Distance from house to Phetchaburi River

Based on the location of house, most area of Ban Samaechai Moo 9 is located in the unique area near Phetchaburi River, surrounded by mangrove trees that attracted fireflies, some households are situated far from Phetchaburi River. Thus, majority of the respondents stayed in the house near the Phetchaburi River (73.2%) and households where far from Phetchaburi River were 26.8%.

4.2 Attitude towards firefly ecotourism

Table 4.2 Respondent’s attitude towards firefly ecotourism

(Values are number of respondents followed by percentage in parentheses)

Questions about attitude	Respondent's attitude					\bar{X}	SD
	Strongly disagree	Disagree	Agree	Strongly agree	No opinion		
1. Ecotourism can generate extra income to the community	1 (1.4%)	2 (2.8%)	38 (53.5%)	29 (40.8%)	1 (1.4%)	3.44	0.19
2. To plan and manage the firefly ecotourism is waste of time	21 (29.6%)	40 (56.3%)	6 (8.5%)	3 (4.2%)	1 (1.4%)	3.21	1.01
3. Firefly ecotourism makes your community have stronger relationship with neighbor	1 (1.4%)	3 (4.2%)	49 (69.0%)	17 (23.9%)	1 (1.4%)	3.25	0.89
4. Firefly is just one type of insects, it does not have an important role in the ecosystem	22 (31.0%)	35 (49.3%)	7 (9.9%)	7 (9.9%)	-	3.01	0.90
5. There is not much change in daily lifestyle after developing firefly ecotourism	3 (4.2%)	31 (43.7%)	29 (40.8%)	7 (9.9%)	1 (1.4%)	2.66	1.05
6. Firefly ecotourism does not encourage people to have more concerns in other environmental conservation such as river, and mangrove	10 (14.1%)	35 (49.3%)	12 (16.9%)	13 (18.3%)	1 (1.4%)	2.69	1.21
7. Local people should participate in planning and managing of firefly ecotourism at the early stage	3 (4.2%)	2 (2.8%)	39 (54.9%)	27 (38.0%)	-	3.27	0.72

(Continued)

Table 4.2 Respondent's attitude towards firefly ecotourism (Continued)

Questions about attitude	Respondent's attitude					\bar{X}	SD
	Strongly disagree	Disagree	Agree	Strongly agree	No opinion		
8. If there is no firefly ecotourism program, local people would concern the firefly conservation at the same level	6 (8.5%)	10 (14.1%)	29 (40.8%)	26 (36.6%)	-	1.94	0.92
9. Ban Samaechai has a unique natural resource like firefly and you want to show to others	-	1 (1.4%)	31 (43.7%)	39 (54.9%)	-	3.54	0.53
10. It is not necessary to give knowledge about firefly and its relevant ecosystems to tourists	25 (35.2%)	40 (56.3%)	5 (7.0%)	1 (1.4%)	-	3.25	0.65
11. Firefly ecotourism has been promoted but local people cannot earn extra income from ecotourism service	9 (12.7%)	48 (67.6%)	11 (15.5%)	3 (4.2%)	-	2.89	0.67
12. Willingness to join and help in firefly ecotourism management anytime	2 (2.8%)	2 (2.8%)	40 (56.3%)	27 (38.0%)	-	3.30	0.66
13. Firefly ecotourism reduces the strength of relationship within community	11 (15.5%)	42 (59.2%)	13 (18.3%)	4 (5.6%)	1 (1.4%)	2.94	1.04
14. Firefly plays an important role in the ecosystem	1 (1.4%)	4 (5.6%)	29 (40.8%)	35 (49.3%)	2 (2.8%)	3.58	1.14
15. The process of firefly ecotourism is very complex and hard to manage by community itself	7 (9.9%)	40 (56.3%)	20 (28.2%)	3 (4.2%)	1 (1.4%)	2.82	1.02

(Continued)

Table 4.2 Respondent’s attitude towards firefly ecotourism (Continued)

Questions about attitude	Respondent’s attitude					\bar{X}	SD
	Strongly disagree	Disagree	Agree	Strongly agree	No opinion		
16. Firefly ecotourism is a stimulating program that help people take care of other environments	1 (1.4%)	2 (2.8%)	40 (56.3%)	28 (39.4%)	-	3.34	0.61
17. Local people can join the firefly ecotourism at any stages. It has no difference if local people get involved at the first stage	5 (7.0%)	20 (28.2%)	32 (45.1%)	13 (18.3%)	1 (1.4%)	2.34	1.16
18. Firefly ecotourism increase the want of firefly conservation	1 (1.4%)	7 (9.9%)	30 (42.3%)	33 (46.5%)	-	3.34	0.72
19. Firefly is a common beetle, there is no point to promote for firefly ecotourism	25 (35.2%)	31 (43.7%)	12 (16.9%)	2 (2.8%)	1 (1.4%)	3.21	1.05
20. Tourists should get knowledge about firefly behavior and conservation from local participation during the tour in order that people can help to conserve firefly and its environment	2 (2.8%)	1 (1.4%)	30 (42.3%)	37 (52.1%)	1 (1.4%)	3.54	0.94

\bar{X} refers to average value of each question that people had attitude

SD refers to standard deviation of each question that varies from average value

Respondent’s attitude towards firefly ecotourism questions were divided into two directions. One was positive, and another was negative in order to check balance of the answer. Attitude question number 1 and 11, 2 and 12, 3 and 13, 4 and 14, 5 and 15, 6 and 16, 7 and 17, 8 and 18, 9 and 19, 10 and 20 were in the same issue, but were

in different directions. Positive direction consisted of questions 1, 3, 5, 7, 9, 12, 14, 16, 18, and 20. Negative direction comprised of questions 2, 4, 6, 8, 10, 11, 13, 15, 17, and 19. To analyze the results, positive and negative questions were separated to demonstrate the clear picture first, then combined and analyzed for the same issues.

4.2.1 Positive attitude questions

Attitude question number 1 “Ecotourism can generate extra income to the community”, this attitude relied on the principle of The International Ecotourism Society (TIES) number 4 about bringing economic benefits to local communities and directs revenues to local people living area. The results found that respondents agreed with this attitude at 53.5%. Followed by 40.4% respondents who strongly agree. While strongly disagree and no opinion showed same level of percentage at 1.4%. Average of this question, mean, was 3.44 and SD was 0.91.

Attitude question number 3 “Firefly ecotourism makes your community have stronger relationship with neighbor”, Drake (1991, cited in Garrod 2001) stated that one of the advantages of participatory approach was that increasing local empowerment. Most respondents, 69.0%, agreed with this question, and 23.9% strongly agreed. Meanwhile strongly disagree and no opinion illustrated the lowest results at 1.4%. Average attitude of the question was at 3.25 and SD was 1.05.

Attitude question number 5 “There is not much change in daily lifestyle after developing firefly ecotourism”, this attitude related to TIES’s principle number 1 about avoiding negative impacts that can damage or destroy the integrity or character of the nature or culture being visited. Most respondents, 43.7% agreed to the question. 40.8% of the respondents strongly agreed, while opinion showed the minimum results at 1.4%. Mean of the attitude and SD were 2.66 and 1.05 respectively.

Attitude question number 7 “Local people should participate in planning and managing of firefly ecotourism at the early stage”, according principle number 4 of TAT, ecotourism management must facilitate the involvement of the local people and local organization includes their participation in formulating tourism management plan. Local representatives should be encouraged at all tourism management levels. 54.9% of respondents agreed with this attitude followed by 38% respondents strongly

agree. However, 2.8% of respondents disagreed. Average attitude of this question was 3.27 and SD was 0.72.

Attitude question number 9 “Ban Samaechai has a unique natural resource like firefly and you want to show to others”, along with the benefit from firefly of DoA which was stated that firefly creates the aesthetic value because of its light. Firefly place can be managed to an ecotourism place. The results found that 54.9% of respondents strongly agreed and 43.7% agreed with this attitude. 1.4% respondents did not agree with this attitude. By average, mean of the attitude was 3.54 and SD was 0.53.

Attitude question number 12 “You are willing to join and help in firefly ecotourism management anytime”, according to Sawarbrooke (1999), community must participate in the ecotourism planning because who are most affected by ecotourism should give a voice with the concept of democracy. Also, make use of local knowledge to make sure that decisions make are well informed. Most of respondents 56.3% agreed followed by strongly agreed at 38.0%. On the other hand, 2.8%, respondents disagreed and strongly disagreed with this attitude. Mean was 3.30 and SD was 0.72.

Attitude question number 14 “Firefly plays an important role in the ecosystem” as firefly is an indicator for ecosystem and natural environment, particularly water and air pollution. The results showed that most respondents strongly agreed (49.3%), followed by agreed (40.8%). However, 1.4% respondents had no opinion and 2.8% strongly disagreed. Mean was 3.58 and SD was 1.14 for this attitude.

Attitude question number 16 “Firefly ecotourism is a stimulating program that help people take care of other environments” continuing from question number 14 that firefly plays an important role in the ecosystem make firefly conservation important. Moreover, once the conservation has been addressed in the ecotourism aspect, it has been described as one of the most efficacious tools in presenting an environmentally friendlier and potentially more sustainable alternative. It was found that 56.3% of respondents agreed along with strongly agreed 39.4% to the attitude. Nevertheless, 1.4% of respondents strongly disagreed with this attitude. Mean was 3.34 and SD was 0.61.

Attitude question number 18 “Firefly ecotourism increase the want of firefly

conservation”, Kutay (1992) stated that a close working relationship between the local community and other stakeholders will provide the means to support conservation. Majority of respondents 46.5% strongly agreed followed by 42.3% respondents agreeing with this attitude. Only 1.4% strongly disagreed that firefly ecotourism leads to firefly conservation. Mean was 3.34 and SD was 0.72.

Attitude question number 20 “Tourists should get knowledge about firefly behavior and conservation from local participation during the tour in order that people can help to conserve firefly and its environment”. According to ecotourism principle of TIES number 2 about educating the traveler on the importance of conservation, and ecotourism principle of TAT number 3 about educational development must be promoted and stimulation of awareness from all concerns to jointly maintain the ecosystem of the area. The results found that most of respondents (52.7%) strongly agreed, and 42.3% agreed with this attitude. meanwhile respondents disagreed and had no opinion showed the same level at 1.4%. mean was 3.54 and SD was 0.94.

4.2.2 Negative attitude questions

Attitude question number 2 “To plan and manage the firefly ecotourism is waste of time”. It was created to check the balance of attitude question number 12 under the same issue. The results found that 56.3% of respondents disagreed and 29.6% strongly disagreed with this attitude. Only 1.4% of respondents had no opinion. mean of attitude was 3.21 and SD was 1.01.

Attitude question number 4 “Firefly is just one type of insects, it does not have an important role in the ecosystem” was matching with a positive attitude question number 14 based on the same issue. 49.3% and 31.0% of respondents disagreed and strongly disagreed, whereas 9.9% respondents strongly agreed or agreed with this attitude. Mean was 3.01 and SD was 0.90.

Attitude question number 6 “Firefly ecotourism does not encourage people to have more concerns in other environmental conservation such as river, and mangrove” was corresponding to positive question number 16. Majority of respondents (49.3%) disagreed followed by strongly agreed 18.3%. However, 1.4% of respondents had no opinion. Mean and SD were 2.69 and 1.21.

Attitude question number 8 “If there is no firefly ecotourism program, local people would concern the firefly conservation at the same level” was created to check the positive attitude question number 18. 40.8% and 36.6% of respondents agreed and strongly agreed. The minimum percentage 8.5% strongly disagreed with this attitude. Mean was 1.94 and SD was 9.24.

Attitude question number 10 “It is not necessary to give knowledge about firefly and its relevant ecosystems to tourists” was matching with positive attitude question number 20. Majority 56.3% disagreed and 35.2% strongly disagreed. 1.4% of respondents strongly agreed. Mean and SD were 3.25 and 0.65.

Attitude question number 11 “Firefly ecotourism has been promoted but local people cannot earn extra income from ecotourism service” was alike with positive question number 1, but opposite direction. More than half of respondents (67.6%) disagreed followed by agreed 15.5% with this attitude. Only 4.2% of respondents strongly agreed. Mean was 2.89 and 0.67 was SD.

Attitude question number 13 “Firefly ecotourism reduces the strength of relationship within community” was matching with positive question number 3 in order to cross check the answer. The results found that 59.3% of respondents disagreed while 18.3% agreed. 1.4% of respondents had no opinion with this attitude. Mean and SD were 2.94 and SD were 1.04.

Attitude question number 15 “The process of firefly ecotourism is very complex and hard to manage by community itself” was created under same issue with positive attitude question number 5. The results from survey respondents showed 56.3% of respondents disagreed with this attitude. Followed by respondents who agreed (28.2%) and only 1.4% had no opinion. mean was 2.82 and SD was 1.02.

Attitude question number 17 “Local people can join the firefly ecotourism at any stages. It has no difference if local people get involved at the first stage” coupled with positive attitude question number 7. It was found that 45.1% of respondents disagreed; meanwhile, 18.3% strongly disagreed with this attitude. The results showed 1.4% of respondents had no opinion. Mean was 2.34 and SD was 1.16.

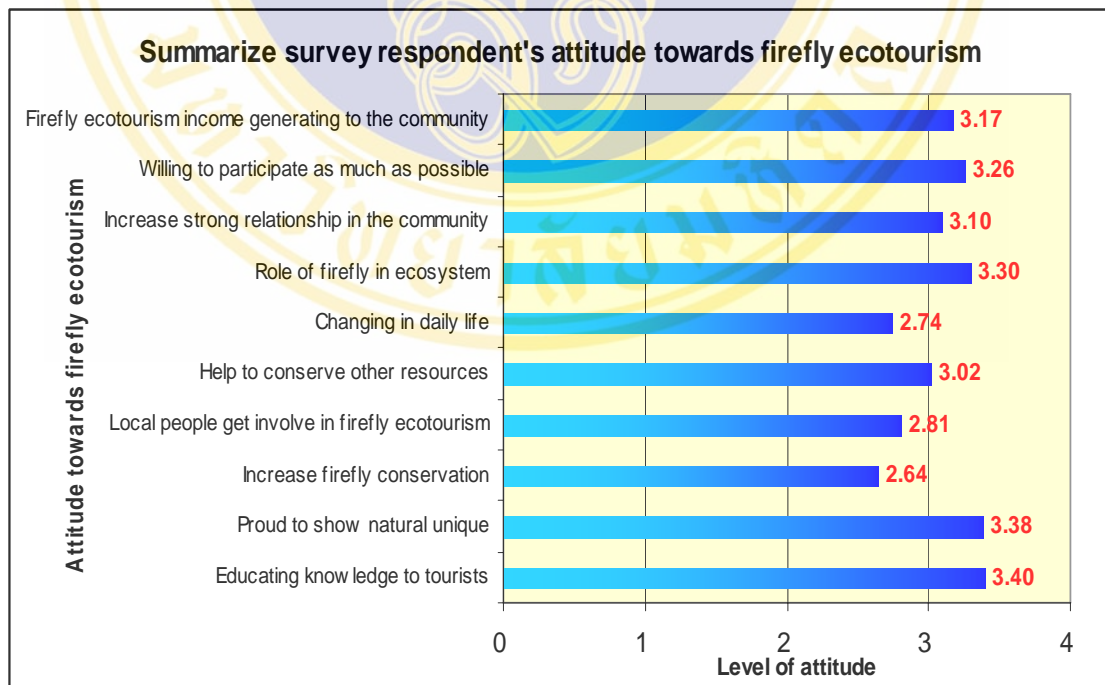
Attitude question number 19 “Firefly is a common beetle, there is no point to promote for firefly ecotourism” was created to check the positive attitude question number 9 under same issue. 43.7% of respondents disagreed with this attitude

followed by 35.2% strongly disagreed. Only 1.4% of respondents had no opinion. Mean and SD were 3.54 and 0.94.

4.2.3 Combine both positive and negative attitude questions

In the big picture, mean of attitude towards firefly ecotourism was 3.03 and SD was 0.31. Three levels of attitude were classified, low level of attitude refers to the scores in range lower than mean minus SD, medium level of attitude refers to the scores in range lower than mean minus SD to higher than mean plus SD, and high level of attitude refers to the scores in range higher than mean plus SD. Therefore, three levels can be classified as below:

3.34 – 4.00	high
2.73 – 3.33	medium
1.00 – 2.72	low

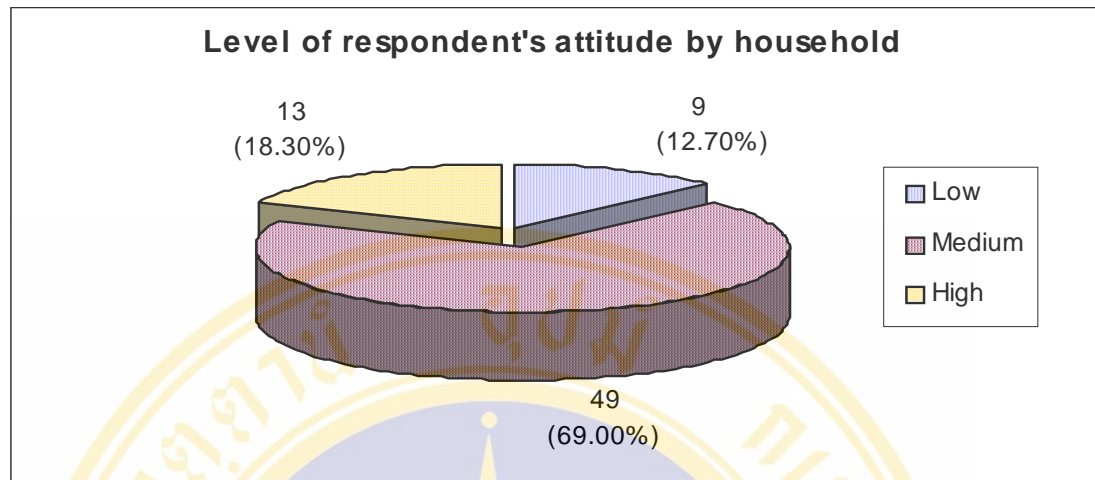


Value in graph = level of respondent's attitude

Figure 4.1 Summarize survey respondent's attitude towards firefly ecotourism

Question number 1 and 11 based on income generating from firefly ecotourism to the community. Mean of both was 3.17 in the medium attitude. *Question number 2 and 12* relied on time spending that respondents want to participate in firefly management. The result showed that mean of this issue was 3.26 in the medium attitude. *Question number 3 and 13* depended on the idea of firefly ecotourism helps increasing strong relationship among people in the community. It was found that medium attitude or 3.10 was the mean for this attitude. *Question number 4 and 14* based on the attitude related to the significance role of firefly in ecosystem and showed 3.30 medium attitude. *Question number 5 and 15* were created to see attitude of local people in changing surroundings around their daily life from firefly ecotourism such as environment and culture. The results found that that average attitude of both questions was 2.74 or medium attitude.

Question number 6 and 16 based on the concept of firefly ecotourism can increase the need to conserve other resources such as river, mangrove, and land. The results demonstrated mean was 3.02 in the medium attitude. *Question number 7 and 17* were created to look at the need of local people participation in firefly ecotourism in any stages. Average attitude value was 2.81 in the medium attitude. However, *Question number 8 and 18* relied on the attitude that firefly ecotourism encourages more firefly conservation. The results showed that mean was 2.64 in the low attitude because local people are familiar with firefly for long time. Normally, people do not do any harm to firefly. When firefly ecotourism was set up, it does not change the level of firefly conservation in the community much. *Question number 9 and 19* based on the community is proud to present firefly as a unique resource to other people outside the community. Respondents had high attitude or 3.38. The reason is that the environment in Ban Samaechai is suitable for firefly to live. A lot of fireflies live in this area more than other places, even though compared to famous firefly place like Plai Pongpang. *Question number 10 and 20* based on the idea of educating local knowledge about people's lifestyle, firefly, and place. Mean showed the most value of all attitudes at 3.40 in the high attitude. To make an impression, local people want to interact with tourists so that conservation knowledge or firefly story in the community can be passed on to tourists.



Total respondents = 71 people

Value in graph = the number of respondents for each level

Percentage = level of attitude based on total respondents

Figure 4.2 Summary of level of respondent's attitude towards firefly ecotourism by household

The results from Figure 4.2 could be explained that respondents had positive attitude through firefly ecotourism in medium level or more than half (69%). High level was shown in the next order (18.30%). This could be referred to positive attitude in Ban Samaechai for firefly ecotourism was quite high because people who responded to firefly ecotourism in negative way were only 12.7%. Survey information showed that Ban Samaechai still had chance to develop firefly ecotourism program since people wanted to run the program couple with conservation.

4.3 Knowledge towards firefly ecotourism

This part was surveyed to get the knowledge level of local people about firefly ecotourism into 3 categories: high, medium, and low. 15 questions were tested and indicated in Table 4.3 below.

Table 4.3 Respondent's knowledge towards firefly ecotourism

(Values are number of respondents followed by percentage in parentheses)

Question	Correct	Wrong	Missing
1. Ecotourism is tourism that concerns the society and environmental resource	68 (95.8%)	2 (2.8%)	1 (1.4%)
2. Ecotourism requires local people to participate the process	68 (95.8%)	2 (2.8%)	1 (1.4%)
3. Tourists do not need to search for information of tourism site before visiting the site	56 (78.9%)	15 (21.1%)	-
4. On a boat tour the tourists enjoy watching fireflies from close and they can catch fireflies	45 (63.4%)	26 (36.6%)	-
5. Local people should keep all income from firefly ecotourism and improve only their life quality	54 (76.1%)	17 (23.9%)	-
6. Educational development must be promoted, all concerns to jointly maintain the ecosystem of the area must be done rather than focus on economic growth and income generation only	68 (95.8%)	2 (2.8%)	1 (1.4%)
7. Ecotourism deals with involvement of local community or people participation to attain local benefit. This means distribution of income, improved life quality, and benefits to come back to maintain and manage tourist attractions	68 (95.8%)	3 (4.2%)	-
8. Local people give knowledge about the site and the significance of natural resources whether tourists ask or not	68 (95.8%)	3 (4.2%)	-
9. The word 'ecotourism' can use for marketing but it does not need to follow the principles of ecotourism	58 (81.7%)	11 (15.5%)	2 (2.8%)
10. Ecotourism can be approached to sustainable goal	65 (91.5%)	5 (7.0%)	1 (1.4%)
11. Any infrastructures of facilities can be built without thinking about following effects there will be balance in nature because people can get money from tourists from those facilities.	51 (71.8%)	20 (28.2%)	-
12. The importance of ecotourism is morality or responsibility and study concerning the environment.	67 (94.4%)	4 (5.6%)	-
13. Cutting mangrove trees has an effect on fireflies that live in the mangrove area near river.	48 (67.6%)	22 (31.0%)	1 (1.4%)
14. Disposing of rubbish such as foam, plastic bags, and glass bottles from households and tourists has no bad effect to fireflies because rubbish can disintegrate.	58 (81.7%)	13 (18.3%)	-
15. One reason of having ecotourism is keeping the balance of nature and human activities.	70 (98.6%)	1 (1.4%)	-

Value in graph = the number of respondents who answered correct or wrong for each question

Percentage = percentage based on the number of respondents who answered correct or wrong

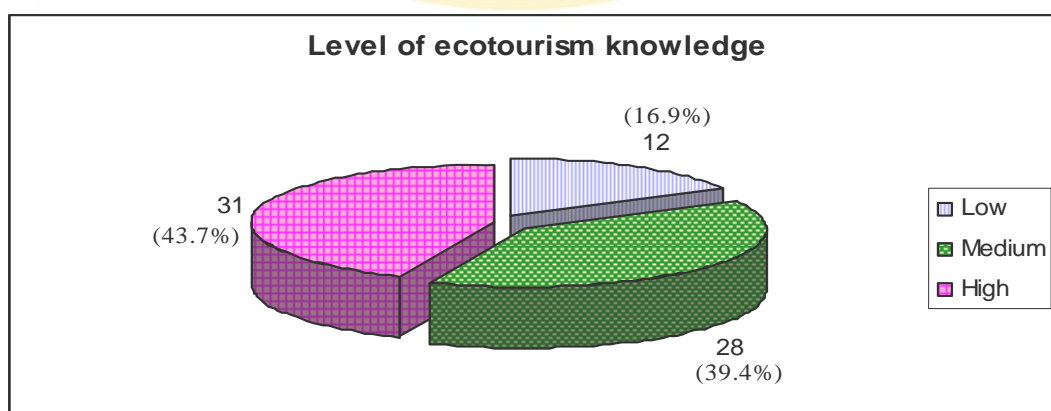
The results found that from all 15 questions, respondents had knowledge for each question more than 50% all respondents. Most respondents (98.6%) had knowledge about “One reason of having ecotourism is keeping the balance of nature and human activities”. This showed the understanding of people in the direction of balancing between tourism activities and nature as one goal.

95.8% of respondents had knowledge about “Ecotourism is tourism that concerns the society and environmental resource”, “Ecotourism requires local people to participate the process”, “Educational development must be promoted, all concerns to jointly maintain the ecosystem of the area must be done rather than focusing on economic growth and income generation only”, and “Local people give knowledge about the site and the significance of natural resources whether tourists ask or not”.

However, the question number 4 “On a boat tour the tourists enjoy watching fireflies from close and they can catch fireflies” was the lowest percentage. It was found that 63.0% had the correct knowledge. People do not forbid tourists to catch fireflies because after catching tourists will leave them to the nature and there is no effect to many big groups of fireflies.

According to the measurement level of knowledge, three levels were classified by percentage as below:

Higher than 90%	high
Between 75% and 90%	medium
Less than 75%	low



Total respondents = 71 people

Value in graph = the number of respondents for each level

Percentage = level of attitude based on total respondents

Figure 4.3 Level of ecotourism knowledge

31 people or 43.7% of respondents had high knowledge while 28 and 12 people or 39.4% and 16.9% of respondents had medium and low knowledge respectively. Respondents got knowledge from their experience, information transferred from one generation to another generation, or from academicians.

4.4 Communication methods to receive firefly ecotourism information

According to Devito (2000), communication was classified into 4 categories: 1) system of encouraging the knowledge, 2) individual interpersonal communication method, 3) group communication, and 4) mass communication. Each category was concerned on receiving the ecotourism information from different sources of communication, this section will discuss the ability the respondents could receive information through each category.

4.4.1 Communication systems of encouraging perception

Table 4.4 mean, SD, and level of receiving communication systems
(Values are number of respondents followed by percentage in parentheses)

Communication system of encouraging perception	Level of receiving information					\bar{X}	SD
	Not receiving	Low	Medium	High	No opinion		
Government officials provide information or media about ecotourism	13 (18.3%)	17 (23.9%)	37 (52.1%)	4 (5.6%)	-	1.78	0.56
Private sector provides information or media about ecotourism	23 (32.4%)	17 (23.9%)	25 (35.2%)	6 (8.5%)	-	1.77	0.66
You contact information about ecotourism by yourself	24 (33.8%)	14 (19.7%)	29 (40.8%)	4 (5.6%)	-	1.79	0.59

\bar{X} refers to average value of each question that people received

SD refers to standard deviation of each question that varies from average value

Survey results demonstrated 18.3% of respondents did not receive the ecotourism information from government officials, while 52.1% of respondents who received ecotourism information from government had medium perception. 13

respondents or 32.4% did not receive media or information from private sector; nevertheless, 35.2% of respondents had medium perception after getting ecotourism information from private sector. Besides, it was found that 33.8% did not contact for information and did not searched useful ecotourism information by themselves. However, 40.8% of respondents had medium perception as they gained information when they were first contacted by other organizations and asked for ecotourism information from these organizations.

Table 4.5 mean, SD, and level of receiving individual interpersonal communication method

(Values are number of respondents followed by percentage in parentheses)

Individual interpersonal communication method	Level of receiving information					\bar{X}	SD
	Not receiving	Low	Medium	High	No opinion		
Government officers visit your house and give consult about firefly ecotourism	27	17	24	3	-	1.68	0.60
	(38.0%)	(23.9%)	(33.8%)	(4.2%)			
You contact and ask for firefly ecotourism information to government office by phone	28	19	18	6	-	1.70	0.71
	(39.4%)	(26.8%)	(25.4%)	(8.5%)			
You go to meet government officers at the office and ask information about firefly ecotourism	22	21	19	9	-	1.76	0.75
	(31.0%)	(29.6%)	(26.8%)	(12.7%)			

\bar{X} refers to average value of each question that people received

SD refers to standard deviation of each question that varies from average value

For the question “Government officers visit your house and give counsel about firefly ecotourism”, 38.0% of respondents did not receive information by this method. On the other hand, 62.0% had medium perception from government officers who visited the village. Majority of the survey respondents (39.4%) did not contact and ask for firefly ecotourism information from government office on phone, but respondents (26.8%) who contacted by this method had low perception. Similarly, 29.6% of respondents had low perception because respondents went to meet government officers at the office and ask information about firefly ecotourism. Nonetheless, 22

respondents or 31% did not use this method.

Table 4.6 mean, SD, and level of receiving group communication method
(Values are number of respondents followed by percentage in parentheses)

Group communication	Level of receiving information					\bar{X}	SD
	Receiving or not	Low	Medium	High	No opinion		
Informal talking among people in the community and discuss about firefly ecotourism	2 (2.8%)	10 (14.1%)	44 (62.0%)	15 (21.1%)	-	2.07	0.60
Informal meeting between local people and other organizations	10 (14.1%)	12 (16.9%)	36 (50.7%)	13 (18.3%)	-	2.02	0.65
Formal meeting between local people and other organizations	16 (22.5%)	10 (14.1%)	38 (53.5%)	7 (9.9%)	-	1.95	0.56

\bar{X} refers to average value of each question that people received

SD refers to standard deviation of each question that varies from average value

Communication within group was the easiest way in Ban Samaechai because Ban Samaechai was not big area so local people talked and met each other easily and at a regular basis. Therefore, informal talking among people in the community and discussion about firefly ecotourism often happened; only 2 people or 2.8% did not use this method to get firefly ecotourism information. However, 62.0% of respondents had medium perception when they discussed within a group. 14.1% of respondents did not have informal meeting with other organizations, but respondents who used this method had medium perception (50.7%). For the option of “Formal meeting between local people and other organizations” 16 respondents or 22.5% responded that they did not receive any information while 53.5% respondents had medium perception after using this method.

Table 4.7 mean, SD, and level of receiving mass communication method

(Values are number of respondents followed by percentage in parentheses)

Mass communication	Level of receiving information					\bar{X}	SD
	Receiving or not	Low	Medium	High	No opinion		
You watch tourism program from television and learn about ecotourism	3	5	51	12	-	2.10	0.49
	(4.2%)	(7.0%)	(71.8%)	(16.9%)			
You listen to tourism program from radio and learn about ecotourism	4	6	50	11	-	2.07	0.50
	(5.6%)	(8.5%)	(70.4%)	(15.5%)			
You read tourism column from newspaper and learn about ecotourism	6	11	46	8	-	1.95	0.54
	(8.5%)	(15.5%)	(64.8%)	(11.3%)			
You read tourism document or book and learn about ecotourism	6	9	51	5	-	1.94	0.46
	(8.5%)	(12.7%)	(71.8%)	(7.0%)			

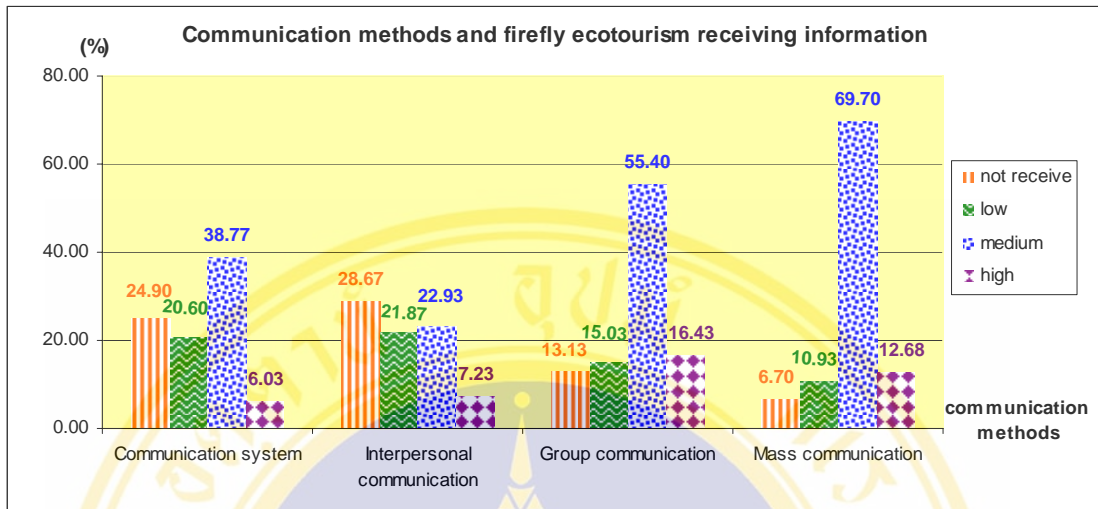
 \bar{X} refers to average value of each question that people received

SD refers to standard deviation of each question that varies from average value

Mass communication was taken into account of the study to look at what kind of media that local people could receive information about ecotourism. Majority of respondents (71.8%) reported that they received information from television and had medium perception; meanwhile, 4.2% did not receive ecotourism information from this kind of media. 5.6% of respondents did not receive ecotourism information from radio but a group of respondents who listened to radio could receive medium perception (70.4%). Newspaper and document showed the same number of 6 respondents or 8.5% did not receive ecotourism information. Respondents had medium perception from newspaper (64.8%) lower than from tourism document (71.8%).

4.4.2 Summary of survey communication methods and perception of respondents

As study showed details of each group above, all results could be summarized into 4 groups as shown in Figure 4.4.



Value in graph = percentage of receiving firefly ecotourism information for each communication method

Figure 4.4 Communication methods and firefly ecotourism receiving information

The results from graph could be explained that people in Ban Samaechai did not receive ecotourism information by interpersonal communication method or discussed face to face with other organizations as majority (28.67%). While mass communication method could provide information to Ban Samaechai people the most because the result showed 6.70% of respondents not receiving information. Even though majority of receiving information was mass communication, people had medium understanding level. On the other hand, group communication method demonstrated the most effective for dispersing ecotourism information, once people received information they had high understanding level (16.43%).

The study found that communication method can be applied to the real situation by using group communication. Government or private organizations can provide proper firefly ecotourism information in form of informal discussion among Ban Samaechai people so that people can get the right way of thinking and practice.

4.5 Level of people participation in firefly ecotourism management

Ecotourism management concept started from study on the potential of the community to firefly ecotourism, then planning, implementation, following up and evaluation, and the last was maintenance.

4.5.1 Level of primary potential participation in the community

Table 4.8 mean, SD, and level of primary potential participation in the community

(Values are number of respondents followed by percentage in parentheses)

Study on the potential of the community to firefly ecotourism	Level of participation				\bar{X}	SD
	Never	Sometimes	Always	No opinion		
Think that your area can developed to be firefly ecotourism site	5 (7.0%)	30 (42.3%)	36 (50.7%)	-	2.44	0.63
Confident that you can service tourists well	6 (8.5%)	34 (47.9%)	31 (43.7%)	-	2.35	0.63
Invite your cousins or neighbors to participate in firefly ecotourism	15 (21.1%)	31 (43.7%)	25 (35.2%)	-	2.14	0.74

\bar{X} refers to average value of each question that people participated in firefly ecotourism

SD refers to standard deviation of each question that varies from average value

It is necessary to know the community potential for firefly ecotourism in order to check the readiness of the site and people. The results indicated that 50.7% of respondents always participated by means of thinking to develop community to be an ecotourism site; whereas, 7% never participated. Mean and SD were 2.44 and 0.63 respectively.

47.9% of respondents sometimes had confidence of servicing and making impression on tourists. Table 4.7 shows that a low percentage of respondents (8.5%) never felt confident that they can service tourists well. mean was 2.35 and SD was 0.63.

43.7% of respondents sometimes invited their cousins or neighbors to participate in firefly ecotourism while 21.1% have never invited their kin to involve in the management. Mean was 2.14 and SD was 0.74 for this response.

Average mean of primary potential of the community was 2.27 and SD was 0.61 in the medium participation level.

4.5.2 Level of participation in planning

Table 4.9 mean, SD, and level of respondent's participation in planning
(Values are number of respondents followed by percentage in parentheses)

Planning	Level of participation				\bar{X}	SD
	Never	Sometimes	Always	No opinion		
Join with the government officers or related organizations when they give training	14 (19.7%)	39 (54.9%)	18 (25.4%)	-	2.06	0.67
Share your idea and giving opinion or suggestion in the planning stage	17 (23.9%)	47 (66.2%)	7 (9.9%)	-	1.86	0.57
Present your plans or projects concerning the firefly ecotourism	34 (47.9%)	26 (36.6%)	11 (15.5%)	-	1.68	0.73

\bar{X} refers to average value of each question that people participated in firefly ecotourism

SD refers to standard deviation of each question that varies from average value

Fundamental of management is planning to carry out work efficiently. 54.9% of survey respondents sometimes joined the government officers or related organizations in the training but 19.7% did not join this process. Mean was 2.06 and SD was 0.67.

The majority of respondents (66.2%) sometimes suggested and shared idea in the planning stage whereas 9.9% of respondents did not participate. It was found that 1.86 and 0.57 were the mean and SD respectively.

The majority of respondents (47.9%) had never presented plans or projects concerning the firefly ecotourism but on the contrary 15.5% of respondents always presented. mean was 1.68 and SD was 0.73.

The results indicated that the average mean in planning stage was in the medium participation level or 1.85, and SD was 0.58.

4.5.3 Level of participation in implementation

Table 4.10 mean, SD, and level of respondent's participation in implementation
(Values are number of respondents followed by percentage in parentheses)

Implementation	Level of participation				\bar{X}	SD
	Never	Sometimes	Always	No opinion		
Ever been an ecotourism committee	35 (49.3%)	24 (33.8%)	12 (16.9%)	-	1.68	0.75
Spend your time to participate in the activities concerning the firefly ecotourism	19 (26.8%)	35 (49.3%)	17 (23.9%)	-	1.97	0.72
Donate money to improve the firefly ecotourism or buy facilities for firefly ecotourism	21 (29.6%)	44 (62.0%)	6 (8.5%)	-	1.79	0.58

\bar{X} refers to average value of each question that people participated in firefly ecotourism

SD refers to standard deviation of each question that vary from average value

It was indicated in Table 4.10, that 49.3% of respondents had never been in an ecotourism committees while 16.9% had been the committee members. In this case the same group of members continued to be members in the next term. Mean was 1.68 and SD was 0.75.

49.3% of respondents sometimes and 23.9% of respondents always spent their time to participate in the activities concerning the firefly ecotourism such as serving tourists by rowing boat, contacting and introducing tourists to visit the place, guide tourists and providing knowledge about natural environment in Ban Samaechai area including firefly. The results showed that mean of participation in this stage was 1.97 and SD was 0.72.

Furthermore, 62% of survey respondents sometimes donated money to improve the firefly ecotourism or bought facilities for firefly ecotourism. Meanwhile 8.5% always did. Mean and SD were 1.79 and 0.58.

Average mean of implementation stage was 1.89 which is categorized in medium participation level and SD was 0.69.

4.5.4 Level of participation in following up and evaluation

Table 4.11 mean, SD, and level of respondent’s participation in following up and evaluation

(Values are number of respondents followed by percentage in parentheses)

Following up and evaluation	Level of participation				\bar{X}	SD
	Never	Sometimes	Always	No opinion		
Follow and monitor the operation of the firefly ecotourism and consult the problems occurred from ecotourism	21	41	9	-	1.83	0.63
	(29.6%)	(57.7%)	(12.7%)			
Observe and inform the government officers when local people have problems due to firefly ecotourism	30	32	9	-	1.70	0.68
	(42.3%)	(45.1%)	(12.7%)			
Solve any problems created from firefly ecotourism	24	37	10	-	1.80	0.67
	(33.8%)	(52.1%)	(14.1%)			

\bar{X} refers to average value of each question that people participated in firefly ecotourism

SD refers to standard deviation of each question that vary from average value

After planning and implementation, respondents should follow and monitor the operation and have regular discussions for improvement. 57.7% of respondents sometimes participated, but only 12.7% always followed and monitored the planning process. Mean of this stage was 1.83 and SD was 0.63.

45.1% of respondents observed and informed the government officers when local people have problems from firefly ecotourism while 12.7% always helped to observe. Mean was 1.70 and SD was 0.68.

It was found that sometimes respondents (52.1%) solved any problems that occurred from firefly ecotourism themselves, however, 14.1% always helped to solve problems. mean was 1.80 and SD was 0.67

Average mean of following up and evaluation stage was 1.82 which is categorized in medium participation level and SD was 0.64.

4.5.5 Level of participation in maintenance

Table 4.12 mean, SD, and level of respondent's participation in maintenance
(Values are number of respondents followed by percentage in parentheses)

Maintenance	Level of participation				\bar{X}	SD
	Never	Sometimes	Always	No opinion		
Look after or clean of area in front of your house such as collect garbage from river	4	30	37	-	2.46	0.61
	(5.6%)	(42.3%)	(52.1%)			
Planting mangrove trees	6	47	18	-	2.17	0.56
	(8.5%)	(66.2%)	(25.4%)			
Investigate the destruction of the constructions located in the area	5	39	27	-	2.31	0.60
	(7.0%)	(54.9%)	(38.0%)			

\bar{X} refers to average value of each question that people participated in firefly ecotourism

SD refers to standard deviation of each question that vary from average value

The last stage of firefly ecotourism is maintenance of facilities and natural resources. The resulted showed that 52.1% of respondents always looked after or cleaned the area in front of their house such as collecting garbage from river. Only 4% of respondents had never looked after their house. It was found that mean and SD of this stage were 2.17 and 0.56.

Besides, 66.2% of respondents sometimes helped to plant mangrove trees which are the main habitats for firefly to live. However, 8.5% of survey respondents had never planted mangrove trees in order to maintain the firefly's habitats. mean was 2.17 and SD was 0.56.

There were 54.9% of respondents who sometimes investigated the destruction of the constructions located in the area, but 7% had never helped to investigate the destruction of the constructions. Mean and SD were 2.31 and 0.60.

Average mean of maintenance stage was 2.31 and 0.85. The results demonstrated that the maintenance was in the medium participation level.

4.5.6 Summary of the level of firefly ecotourism participation

Average mean of level of firefly ecotourism was 2.03 and SD was 0.48. To classify level, low level of attitude refers to the scores in range lower than mean minus SD, medium level of attitude refers to the scores in range lower than mean minus SD to higher than mean plus SD, and high level of attitude refers to the scores in range higher than mean plus SD. Therefore, three levels can be classified as below:

- 2.52 – 4.00 high
- 1.56 – 2.51 medium
- 1.00 – 1.55 low

Value in graph = level of survey respondents participation in firefly ecotourism management by stage

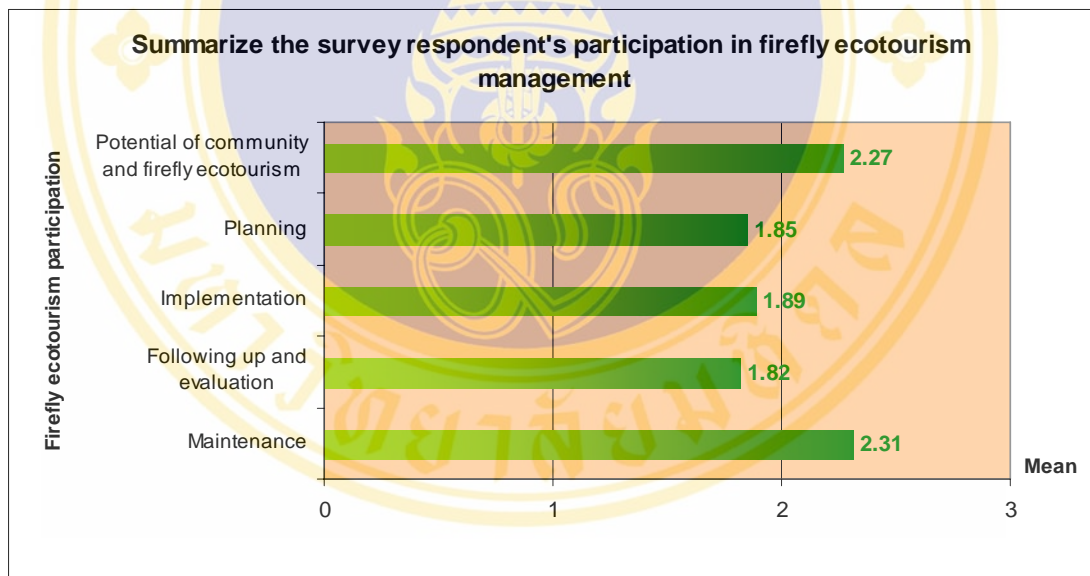
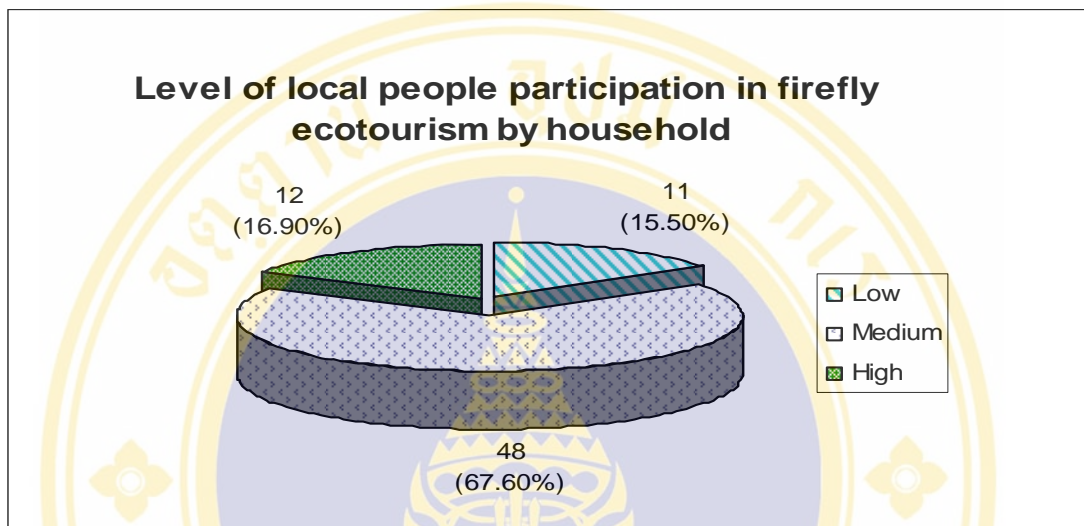


Figure 4.5 Level of respondent’s participation in firefly ecotourism management

Figure 4.5 indicated that mean values in 5 stages were in between 1.82 and 2.31; therefore, respondents had medium firefly ecotourism in every process of participation. Once every stage was compared, the results illustrated that maintenance was the most interesting stage (2.31) that respondents participated. To maintain facilities and natural resources, respondents could take care of their house and mangrove area. Second highly level was the potential of the community towards

firefly ecotourism (2.27). It was in accordance with respondent's attitude not only proud of their resources like firefly, but also educated tourists. Mean from following up and evaluation was the lowest value (1.82) but in the range of medium level.



Total respondents = 71 people

Value in graph = the number of respondents for each level

Percentage = level of firefly ecotourism participation based on total respondents

Figure 4.6 Level of respondent's participation in firefly ecotourism management by household

The study found that respondents had medium level of participation for all stages of firefly ecotourism activities (67.60%). Next level was high level (16.90%) which was similar to low level (15.50%) as depicted in Figure 4.6.

4.6 Level of firefly conservation

According to principles of ecotourism development of Epler Wood (1996, cited by Bornemeier 1997) and TAT (2002), firefly conservation should be carried out in the same stage as firefly ecotourism management five stages included 1) Study on problems and causes, 2) Planning, 3) Implementation, 4) Following up and evaluation, and 5) Maintenance.

4.6.1 Level of firefly conservation about study on problems and causes

Table 4.13 mean, SD, and level of respondent’s firefly conservation about study on problems and causes

(Values are number of respondents followed by percentage in parentheses)

Study on problems and causes	Level of participation				\bar{X}	SD
	Never	Sometimes	Always	No Opinion		
Identify problems and obstacles of firefly conservation	11 (15.5%)	46 (64.8%)	14 (19.7%)	-	2.04	0.60
Exchange knowledge relevant factors concerning firefly conservation with people in the community	10 (14.1%)	46 (64.8%)	15 (21.1%)	-	2.07	0.59
Offer the problems about the environment and fireflies to government officers	26 (36.6%)	36 (50.7%)	9 (12.7%)	-	1.76	0.66

\bar{X} refers to average value of each question that people participated in firefly conservation

SD refers to standard deviation of each question that vary from average value

The results indicated that 64.8% of respondents sometimes identified problems and obstacles of firefly conservation while 15.5% of respondents never identified any problems. Mean from Table 4.13 showed 2.04 and SD was 0.60.

Respondents (68.4%) sometimes exchanged knowledge relevant factors concerning firefly conservation with people in the community, 14.1% of respondents never exchanged any knowledge. It was found that mean was 2.07 and 0.59.

The results demonstrated that sometimes respondents (50.7%) offered problems about the environment and fireflies to government officers, but only 12.7% of respondents always told problems to government. mean and SD were 1.76 and 0.66.

The results showed that average mean and SD of study on causes and problems through firefly conservation were 1.93 and 0.52 in the medium level.

4.6.2 Level of firefly conservation on planning

Table 4.14 mean, SD, and level of respondent's firefly conservation in planning

(Values are number of respondents followed by percentage in parentheses)

Planning	Level of participation				\bar{X}	SD
	Never	Sometimes	Always	No Opinion		
Share your idea for promoting people in firefly conservation	9 (12.7%)	45 (63.4%)	17 (23.9%)	-	2.11	0.60
Make decision for firefly conservation activities	12 (16.9%)	41 (57.7%)	18 (25.4%)	-	2.08	0.65
Present your plans or projects concerning the firefly conservation	21 (29.6%)	34 (47.9%)	16 (22.5%)	-	1.93	0.72

\bar{X} refers to average value of each question that people participated in firefly conservation

SD refers to standard deviation of each question that vary from average value

In planning stage, 63.4% of respondents sometimes shared their idea for promoting people in firefly conservation but 12.7% never took part. Mean and SD were 2.11 and 0.60.

The majority of respondents (57.7%) sometimes made decision for firefly conservation activities. 16.9% of respondents neglected or have never helped to make decision. The results showed that mean was 2.08 and SD was 0.65.

The results, moreover, indicated that 47.9% of respondents presented plans or projects concerning the firefly conservation while 22.5% of respondents always presented them. Mean was 1.93 and SD was 0.72.

Average mean of planning stage about firefly conservation was 2.04 in the medium level and SD was 0.64.

4.6.3 Level of firefly conservation in implementation

Table 4.15 mean, SD, and level of respondent’s firefly conservation in implementation

(Values are number of respondents followed by percentage in parentheses)

Implementation	Level of participation				\bar{X}	SD
	Never	Some-times	Always	No Opinion		
Support your family member for joining the firefly conservation	7 (9.9%)	44 (62.0%)	20 (28.2%)	-	2.18	0.59
Spend your time to participate in any activities concerning the firefly conservation	9 (12.7%)	42 (59.2%)	20 (28.2%)	-	2.15	0.62
Support financial or instruments for firefly conservation activities	20 (28.2%)	45 (63.4%)	6 (8.5%)	-	1.80	0.58

\bar{X} refers to average value of each question that people participated in firefly conservation

SD refers to standard deviation of each question that vary from average value

The results from survey respondents showed that 62% of respondents sometimes supported their family members to join the firefly conservation; meanwhile, 9.9% were respondents who have never supported. Mean was 2.18 and SD was 0.59.

At the same time, 59.2% of respondents sometimes spent their time to participate in any activities concerning the firefly conservation, but 12.7% of respondents never have spent time to join the firefly conservation activities. The results found that mean was 2.15 and SD was 0.62.

It was found that 63.4% of respondents sometimes spent money to support the firefly conservation activities. 8.5% of respondents always had financial or other instruments for supporting firefly conservation activities. Mean and SD were 1.80 and 0.58.

Average mean and SD of implementing firefly conservation were 2.07 and 0.54 in the medium level.

4.6.4 Level of firefly conservation on following up and evaluation

Table 4.16 mean, SD, and level of respondent's firefly conservation in following up and evaluation

(Values are number of respondents followed by percentage in parentheses)

Following up and evaluation	Level of participation				\bar{X}	SD
	Never	Sometimes	Always	No Opinion		
Follow the activities concerning firefly conservation and evaluate how successful of activities	16 (22.5%)	44 (62.0%)	11 (15.5%)	-	1.93	0.62
Express views for further firefly conservation activities	16 (22.5%)	48 (67.6%)	7 (9.9%)	-	1.87	0.56
Solve any problems created from firefly conservation	23 (32.4%)	41 (57.7%)	7 (9.9%)	-	1.77	0.61

\bar{X} refers to average value of each question that people participated in firefly conservation

SD refers to standard deviation of each question that vary from average value

The results found that 62% of respondents sometimes followed the activities concerning firefly conservation and evaluated the success of activities. It was found that 15.5% were respondents who always followed the firefly conservation activities. Mean and SD were 1.93 and 0.62.

Besides, 67.6% of respondents looked further to improve firefly conservation activities while only small group of respondents (9.9%) always expressed views for further activities. mean and SD were 1.87 and 0.56.

The majority of respondents (57.7%) sometimes solved problems that resulted from firefly conservation; meanwhile, 9.9% of respondents always helped to follow and solve problems. The results showed that mean was 1.77 and SD was 0.61.

Average of mean in following up and evaluating the firefly conservation was at the medium level 1.87 and SD was 0.56.

4.6.5 Level of firefly conservation on maintenance

Table 4.17 mean, SD, and level of respondent’s firefly conservation in maintenance

(Values are number of respondents followed by percentage in parentheses)

Maintenance	Level of participation				\bar{X}	SD
	Never	Sometimes	Always	No Opinion		
Take care of maintenance the outcome derived from the firefly conservation	16	40	15	-	2.00	0.66
	(22.5%)	(56.3%)	(21.1%)			
Inform the government officers or other related organizations about problems that occurred	18	40	13	-	1.93	0.66
	(25.4%)	(56.3%)	(18.3%)			
Investigate the destruction of firefly environment	17	40	14	-	1.96	0.66
	(23.9%)	(56.3%)	(19.7%)			

\bar{X} refers to average value of each question that people participated in firefly conservation

SD refers to standard deviation of each question that vary from average value

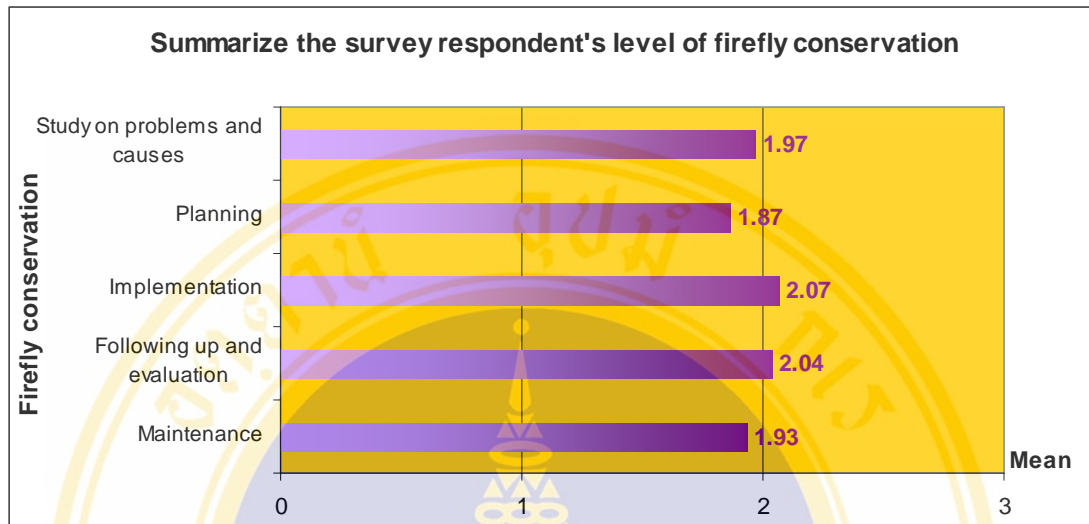
There were 56.3% of respondents sometimes looked after the maintenance of outcome derived from the firefly conservation such as guide board, boat, pier, and including the firefly ecotourism structure. 21.1% of respondents always took care of maintenance of the outcome. Mean was 2.00 and SD was 0.66.

The results found that 56.3% of respondents sometimes informed the government officers or other related organizations about problems that occurred while 18.3% always informed. Mean was 1.93 and SD was 0.66.

It was found that 56.3% of respondents sometimes investigated the destruction of firefly environment while 19.7% of respondents always investigated. mean and SD were 1.96 and 0.66.

Average mean of maintenance stage in firefly conservation was 1.97 in the medium level and SD was 0.63.

4.6.6 Summary of the survey respondent's level of firefly conservation



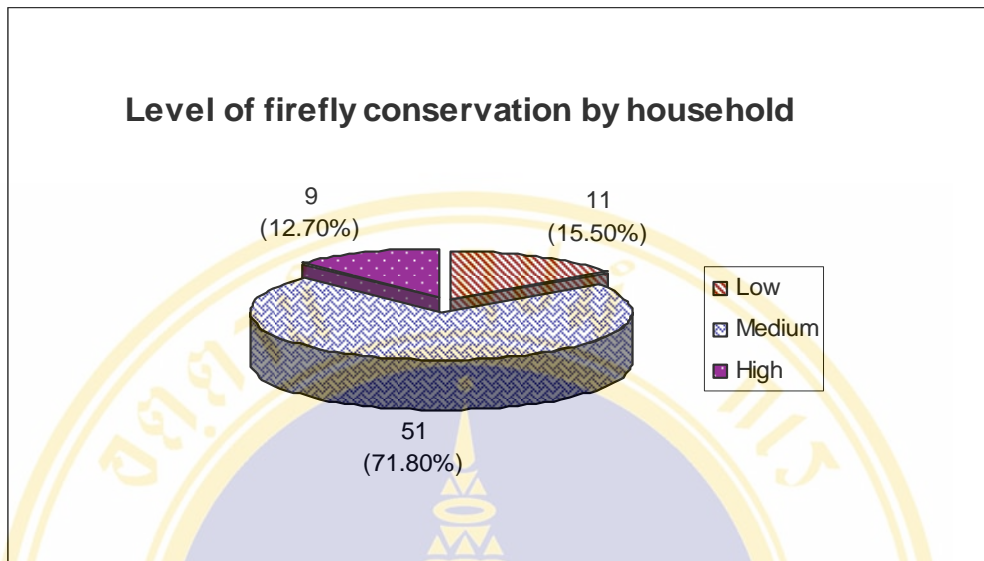
Value in graph = level of survey respondents participation in firefly ecotourism management by stage

Figure 4.7 Level of firefly conservation

Average mean of level of firefly ecotourism conservation was 1.98 and SD was 0.46. To classify level, low level of attitude refers to the scores in range lower than mean minus SD, medium level of attitude refers to the scores in range lower than mean minus SD to higher than mean plus SD, and high level of attitude refers to the scores in range higher than mean plus SD. Therefore, three levels can be classified as below:

2.45 – 4.00	high
1.53 – 2.44	medium
1.00 – 1.52	low

Study on problems and causes, planning, implementation, following up and evaluation, and maintenance were in the medium level of firefly conservation. Planning was in the lowest level (1.81), Figure 4.7, when compared to other stages. Respondents thought they usually conserve firefly and their resources so they did not need to plan much about firefly conservation. The reason was in accordance with the highest value, implementation stage (2.07) because respondents usually look after firefly's surroundings.



Total respondents = 71 people

Value in graph = the number of respondents for each level

Percentage = level of firefly conservation based on total respondents

Figure 4.8 Level of respondent’s participation in firefly conservation by household

It was found that the majority of respondents had medium level in firefly conservation (71.80%) followed by low and high level (15.50% and (12.70%). Similar to the level of respondent’s participation in firefly ecotourism management, the results presented level of firefly conservation was in the same medium level.

4.7 Explaining the level of local people participation in firefly ecotourism management

This study was based on level of local people participation under three hypotheses:

1. There is a relationship between personal factors (such as gender, age, educational level, occupation, length of residence, and distance between house and river) and level of local people participation.
2. There is a relationship between other factors (such as attitude, knowledge, and communication methods) and level of local people participation.
3. There is a relationship between level of local people participation and level

of firefly conservation in the directly proportional i.e. if level of local people participation is low then level of firefly conservation is low too.

To prove the hypotheses, SPSS was used to compute survey data from 71 sampling households.

4.7.1 Level of local participation in firefly ecotourism management and personal factors

Table 4.18 Chi-square analysis of local participation level in firefly ecotourism management and personal factors

Relationship	df	Sig.
Gender * level of participation	2	0.479
Age* level of participation	10	0.334
Education level * level of participation	8	0.307
Occupation * level of participation	8	0.041*
Income * level of participation	4	0.010*
Length of residence * level of participation	2	0.000*
Distance from house to river * level of participation	2	0.002*

* Significant at the 0.05 level

The Chi-square analysis indicated that gender, age, and education level had no significant effect on the level of people participation in firefly ecotourism management whereas occupation, income, length of residence, and distance from house to river showed significant value of relationship with level of participation. It can be explained that there was a 95.9% chance of relationship between occupation and level of local participation because the majority occupation of respondents was employees; they wanted to take a rest after their job and did not want to join ecotourism activity at night.

Households that earned income less than 5,000 baht a month tended to participate more in firefly ecotourism because they wanted to increase their income from firefly ecotourism activities. To support this statement, the result showed a 99%

chance of relationship at the 0.05 significance level.

Length of residence and level of participation were almost 100% associated because people who lived in Ban Samaechai since birth had feelings of possessiveness of their resources; they wanted to show and educate tourists. Therefore, local people who lived in Ban Samaechai since birth participated more in firefly ecotourism.

Most houses in Ban Samaechai are connected to Phetchaburi River. Local people who lived in those houses participated more in firefly ecotourism than people who lived far from Phetchaburi River because it was convenient to join the firefly activities at night or ecotourism meeting for people near the river. Table 4.18 presented that there was a 99.8% probability between distance from house to river and level of local people participation in firefly ecotourism management had relationship.

4.7.2 Level of local participation in firefly ecotourism management and other factors

Table 4.19 Chi-square analysis of local participation level in firefly ecotourism management and other factors

Relationship	df	Sig.
Attitude * level of participation	4	0.008*
Knowledge* level of participation	4	0.147
Communication systems * level of participation	4	0.000*
Interpersonal communication * level of participation	4	0.037*
Group communication * level of participation	4	0.001*
Mass communication * level of participation	4	0.143

* Significant at the 0.05 level

The Chi-square analysis indicated in Table 4.19 that knowledge and mass communication had no significant effect on the level of people participation in firefly ecotourism management. While the results showed that attitude, communication

systems, interpersonal communication, and group communication effected on level of people participation in firefly ecotourism. There was a 99.2% chance of relationship between attitude and level of participation at the significance 0.05 level. People who had positive attitude participated more in firefly ecotourism than people who had different ways of attitude.

Communication systems such as government and private organizations provide useful ecotourism information including local people access information through any organizations by themselves influenced almost 100% probability on level of participation. Reason to support this result is that people who got ecotourism information from organizations knew the process and opportunity to run the firefly ecotourism program. Unlike the condition without approach from any communication systems, people did not know what direction they should take in firefly ecotourism.

At the significant level 0.05, there was a 96.3% chance of relationship between interpersonal communication and level of people participation. People in Ban Samaechai would participate more in firefly ecotourism if they could access ecotourism information face to face from officers in organizations. This method also showed in Figure 4.4 above that it was least approached; however, interpersonal communication highly influenced the level of people participation.

The relationship between group communication and level of people participation illustrated that there was a 99% chance of association. Group communication was the most effective method to make people understand firefly ecotourism (see Figure 4.4). People who discussed among group participated more than people who did not join group communication. Ban Samaechai can develop firefly ecotourism further by supporting from any organizations. Group communication method can be used to increase people's understanding and participation level towards firefly ecotourism. From the study, government or private organization should take an informal way into group discussion and also interpersonal communication.

4.7.3 Level of local people participation in firefly ecotourism management and level of firefly conservation

The relationship between level of local people participation in firefly ecotourism and level of firefly conservation can be explained that both of them related directly proportional. Figure 4.5 and 4.7 demonstrated that all stages of firefly ecotourism management and firefly conservation were in medium level such as study on the potential of the community to firefly ecotourism, study on problems and causes, planning, implementation, following up and evaluation, and maintenance. Therefore, level of local people participation in firefly ecotourism management and level of firefly conservation were associated. People did not take only firefly ecotourism as fashion or marketing but also conserved natural resources.

Figure 4.1 above presented that people's attitude towards firefly ecotourism was categorized in medium level. Fireflies existed in Ban Samaechai even before firefly ecotourism was set up. People have taken care of fireflies and their natural environment before year 2002 not because of firefly ecotourism. For example, people did not cut trees which are firefly habitat except in summer people cut young treetops in order to get rid of aphids, plant louse. After that new young treetops will grow again and this method could help to increase number of fireflies. Furthermore, people in Ban Samaechai planted mangrove trees to save firefly's habitat. People use rowing boats instead of motor boats, which are considered environmental friendly to Phetchaburi River. However, people gained more knowledge about firefly's behavior from outside organizations. This information could additionally support people's conservation activities in Ban Samaechai. For instance, fireflies love to live in clean rivers; they do not like loud noise, air pollution, and bright light. Hence, people continued their conservation activities and added those activities to guide tourists.

Although people in Ban Samaechai look after their resources, additionally keeping a close watch on wastewater from upstream and downstream is required seriously. Water is flowing to Ban Samaechai directly effects fireflies. It can be said that environment needs cooperation not only from Ban Samaechai people but also from all Phetchaburi people.

4.8 Firefly ecotourism conditions in Ban Samaechai

The results were summarized within this part: 1) firefly ecotourism development, 2) impacts from firefly ecotourism to the community and surroundings, 3) reasons for local people not participate, 4) problems and obstacles from firefly ecotourism, 5) other significant findings.

4.8.1 Firefly ecotourism development

Fireflies are common among local people in Ban Samaechai, a 76 year-old resident saw fireflies since birth. In year 2002, a non-native person of Ban Samaechai initiated the idea of promoting firefly in Ban Samaechai as ecotourism activity. At the beginning, ecotourism project went well, many officers from different organizations visited the site and studied in order to promote firefly ecotourism place. At the present, ecotourism center is set within the community at the main shop of Ban Samaechai as shown in Figure 4.9. However, Local people often discussed at the office opposite to the shop as shown in Figure 4.10.



Figure 4.9 Firefly ecotourism center



Figure 4.10 Place for local people exchange idea

There are fifteen members in firefly club. Five committee members were voted at the beginning in the meeting to be main group responsible for conducted firefly ecotourism. The leader was always the village head. Nevertheless, members could be changed; there is close network of interaction among the members.

Tourists could contact the head of village or ecotourism center by phone. Most

tourists contacted to the ecotourism center by phone which was in the shop. Once one of members got a call and number of tourists, the head of village and committees would arrange boats by queue. Local people who are interested in rowing boat had to sign their names and queue would be ranked by queue number. Normally, one boat contained 3 passengers and 1 boat rower. Local people usually used rowing boats. 50 baht per head or 150 baht from 3 passengers was the fare for the boat. The boat rower for 100 baht and the ecotourism center 50 baht. Thus, in the case of 2 passengers, there was no money generated to ecotourism center. Income was about 600 baht at this time. “Although there was little money, local people used money to repair water supply pipe and ecotourism sign instead of spending our money” said by shop owner, ecotourism center accountant. Sometimes, a group of tourists had 40 to 50 people; the fee rate per head was decreased. With a big group of tourists, local people rent motor boat that contained about 30 passengers per boat from other places and had car service to pick tourists at the entry of Ban Samaechai, so the money flow to the ecotourism center was fluctuating.

It was found that local people had good knowledge about fireflies biology and ecosystem passed from one generation to another generation or from academic learning such as television, newspaper, or schools. To make clear that firefly ecotourism would not cause any harm to firefly, regulations were set as follows:

- 1) Do not catch fireflies
- 2) Do not make loud noise
- 3) Do not shake trees
- 4) Do not use too bright light
- 5) Do not use motor boat

These rules were shown on the big board at the beginning project period. However, no sign has been observed during the study. So far, tourists followed regulations; if not local people would remind the tourists about the rules. Local people did not have rules against non-Ban Samaechai people in getting benefit from firefly because Phetchaburi River and fireflies were commons for the community. In the fact that non-Ban Samaechai tour operators usually used motor boat because they took longer distance than rowing boat from Ban Samaechai; moreover, in the sense of getting more passengers and faster.

4.8.2 Impacts from firefly ecotourism to the community and surroundings

First advantage from firefly ecotourism was that local people could earn extra income to their family. Compare time and income, local people spent about 1 hour to 2 hours to take tourists on boat and get 100 baht. In term of economics, firefly ecotourism increased income to community. Secondly, ecotourism made Ban Samaechai to be well-known place. “Before ecotourism was set up, Ban Samaechai was the place that few people knew where it was on the map. “After local people operated the firefly ecotourism program, tourists visiting Ban Samaechai increased”, said by member of firefly ecotourism. From second advantage led to third advantage, it was easier when local people asked for budget to improve the ecotourism site than the residual area.

There was no change in the number of fireflies, mangrove trees, or culture because Ban Samaechai did not provide home stay, so tourists come at night to enjoy fireflies. Only one house provided a home stay under the chief of sub-district name. The reasons for not providing home stay were that the initial facilities such as toilet, light, and road were not convenient for tourists. Also, there were many children in Ban Samaechai; local people afraid of children might disturb tourists. On the other hand, tourists might spoil children.

Negative impact, for example, when Ban Samaechai started promoting firefly ecotourism by an outsider, its people were divided into small groups. Until local people discussed and realized that firefly ecotourism should be conducted by local people and drove the outsider away. Main cause of conflict began from benefit of boat tour. As the concept was introduced by a non-local and brought many tourists to Ban Samaechai, and collected 100 baht per head as a fee. The local boatmen were given 100 baht out of the whole and the rest of the money was taken by the non-local. With this method, there was no money generated to ecotourism center. Therefore, one side of local people felt that it was not fair to let money go to a non-local person than local people who lived in Ban Samaechai. However, another side agreed to learn the way to manage ecotourism from non-Ban Samaechai person and accepted that the person is the one who promoted Ban Samaechai to be well-known about firefly area. In this

case, it could be said that firefly ecotourism arose the conflict between Ban Samaechai people and non-Ban Samaechai and carried out the conflict between two sides. Each side included Ban Samaechai people who had different idea. About two years ago, after driving away the non-local, the situation in Ban Samaechai became normal. Sometimes, local people disputed due differences of opinion, but it was a normal in the group or society. Benefits were shared to people who get involved in the firefly ecotourism and to ecotourism center.

4.8.3 Reasons for local people not participate

- 1) In fact, the number of people who get involved in the firefly ecotourism did not own a boat, so they were not interested to join firefly ecotourism.
- 2) Firefly ecotourism was a seasonal business, only during rainy season from August to October and at night. It was not regular money.
- 3) Most respondents were employees, after their job they wanted to take a rest for the next day. Sometimes, when tourists contact firefly club and canceled plan, which made some people dejected.
- 4) People expected help from outside and inside organizations very much. Once they did not get continual support, they were not interested in firefly ecotourism participation.

4.8.4 Problems and obstacles from ecotourism management

From local people's opinion, problems could be divided into two main causes.

- 1) Lack of managing knowledge: local people run firefly ecotourism themselves. Although government gave knowledge to local people, it was not continual and mostly unorganized. "Government should provide information to community at least one or two times a month such as benefits from fireflies, tree, and river, how they link each other. This useful information should be educated to young generation so that those children will have awareness of their natural resource and good for the future" said a boat driver.
- 2) Lack of main agency: there was no main agency that took firefly ecotourism

seriously. This problem started when different people had different ideas. In the early stage, a person outside Ban Samaechai initiated firefly ecotourism seriously but had different way to run the program, the conflict occurred. After that situation, Ban Samaechai people managed program followed their way. Although firefly ecotourism was supported by government sector and non-government organization in term of providing knowledge, it happened only when the program was boom and many organizations paid attention on it.

3) Lack of initial facilities for tourists: toilet, road and safety jacket were initial facilities. In Ban Samaechai, there was no public toilet for tourists. Tourists had to go to local people's house in order to use toilet. Entry road to Ban Samaechai was also a big problem. In rainy season, road was cut because river bank near road was eroded by water current. Sometimes, tourists contacted to get there, but local people had to refuse because of transportation problems. Even though there was one more road to get Ban Samaechai, it is farther than the main road. Moreover, some tourists could not swim so they afraid of getting on the boat without safety jacket. Safety jacket was required for not only people who could not swim, but also for all tourists.

4.9 Other significant findings

Ban Samaechai had dominant activity suitable for fireflies' growth, whereas many interesting activities around the area could be included into one program. Tourists can visit places near Ban Samaechai before enjoying fireflies at night.

1).Bang Ta Boon Estuary: The biggest section of Phetchaburi River before freshwater flows to the Gulf of Thailand. Tourists can see mussel pole and pongpang, long fishing nets setting in a river as a trap for catching fish, which was traditional way for local people's life. Ban Ta Boon itself has long history. In this area, tourists can see the fertile mangrove ecosystem and people's lifestyle.



Figure 4.11 Bang Ta Boon Estuary and pongpang

2) Bang Hor village: Moo 4, 5, 6, 7, 10, 11, and 12 were famous places of making coconut sugar. Especially Moo 12 or Bang Hor village produced coconut sugar under One Tambon One Product (OTOP) program. Tourists can learn how coconut sugar can be made from the beginning to the end. In this case, tourists can learn from real situation by walking in coconut garden, they will know what instruments required for making coconut sugar such as pa-ong (a special ladder to climb up to the top of coconut tree), knife and cover to cut coconut flower, and stove to burn water from coconut flower.



Figure 4.12 Coconut sugar from Bang Hor Village

3) Kao Ta Krao Temple: The sacred temple of Phetchaburi people. There were 2 legends of this temple. One was believed that Kao Ta Krao monk had two brothers; one was Phutthasothon Monk from Cha Cheung Sao, and another was Ban Laem Monk from Samutsongkhrum. One more legend was believed that Kao Ta Krao Monk had two brothers; one was Bang Plee Yai Monk from Samutprakran,



Figure 4.13 Kao Ta Krao Temple

and another was Rai King Monk from Nakornpathom. Udomviet (2004) stated that the evidence showed the history in Ayutthaya period. When people migrated from Myanmar to Mae Klong River, they found 2 monks in the river. One of them was given to Ban Laem Temple and another monk was settled in Kao Ta Krao Temple until the present. Every year, there is a big festival in this temple.

4) Other activities in Ban Samaechai: Out of firefly ecotourism, some activities in Ban Samaechai were attractive based on local people's life style. Cooking fruit from nipa tree was interesting because nipa grows well in mangrove area. Nipa fruit comes only at the same time as season of firefly lightening. Making roof from nipa leaves also interesting, some households did as occupation. Most old people and women have duty to make nipa roof and sell for 50 Satang (0.50 baht per set) to middle man.

Tourists could join and learn indigenous knowledge that could be disappeared by time. Observing environment in mangrove area should not miss birds, marine animals, and different kinds of trees. Some households caught those animals and cooked for their family. Tourists can experience local people's simple lifestyle.



Figure 4.14 Local people carry nipa leaves from another side of river by boat



Figure 4.15 Making thatch from nipa leaves

This chapter summarized the findings of the survey. Questionnaire, in-depth interview and focus group were carried out. Frequencies, Mean, and SD were shown in parts of personal characteristics, other factors, level of local people participation, and level of firefly conservation. In a holistic view, level of local people participation in firefly ecotourism management was medium similar to medium level of firefly conservation. Level of participation was influenced by several factors such as gender, income, length of residence, distance from house to river, knowledge, and communication methods. Meanwhile the relationship between level of local people participation in firefly ecotourism management and level of firefly conservation was correlated in the same direction. Furthermore, firefly ecotourism development, impacts from firefly ecotourism to community and surroundings, reasons for local people not participating, problems and obstacles, and other significant findings that not necessarily relevant to the study objectives were described in this chapter. Conclusion for the study and recommendations will be discussed in the next chapter based on the results and discussion mentioned in this chapter.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

The purpose of this chapter is to summarize all findings from the study of “Local People Participation in Firefly Ecotourism Management: A Case Study in Ban Samaechai, Phetchaburi Province”. The survey research used questionnaire as a tool in the study with 71 units of sampling number. Also, in-depth interview and focus group were used for collecting data in describing part. The findings can be drawn as follows:

5.1 Major findings

This section will discuss the summary of major findings from the study based on the objectives, i) development of firefly ecotourism management, ii) factors influencing the local people participation in firefly ecotourism management, iii) relationship between the level of local people participation in firefly ecotourism management and the level of local people in firefly conservation, and iv) problems, obstacles, and suggestions of people participation in firefly ecotourism management.

5.1.1 Development of firefly ecotourism management

5.1.1.1 Firefly ecotourism development process

Since firefly ecotourism started in year 2002, the structure of firefly management was formed by group of people in Bangkrog sub-district. At the first stage, firefly ecotourism group was bigger than a group at the present. Small group of staff continued conducting this program. Staff worked in firefly ecotourism in an informal structure by helping each other without a structured responsibility. Naturally, firefly ecotourism could be managed from the end of rainy season to beginning of winter and only at 8 to 9 pm at night. Hence firefly ecotourism was not a stable

activity and it was not generating regular money in some people's idea. Benefits from firefly ecotourism mainly served boat driver, ecotourism center, and shop.

Ban Samaechai has been doing firefly ecotourism till date, whereas people wanted help from organizations outside community especially government to provide and train the management. Although there were some organizations who gave knowledge about firefly ecotourism, those organizations were in contact for a very short period. Local people had lack of management experience, so they did trial and error in management. Co-operation in Ban Samaechai should be considered in order to flow money from local products and firefly ecotourism. Local people also asked help from government to do work continuously.

5.1.1.2 Regulations from firefly ecotourism club

Local people in Ban Samaechai followed regulations that were set up by firefly ecotourism members. All regulations concerned to firefly. People from outside community could take tourists to enjoy firefly in Ban Samaechai too, but start point was different. There was no rule for preventing people out of Ban Samaechai to do firefly tourism, even though those people might not follow regulations.

5.1.1.3 Impacts from firefly ecotourism

Big problem from benefit has risen among people in Ban Samaechai, a person from outside introduced tourists and shared money not satisfied local people. Currently, that person separated and runs individual business tour. Small conflicts among people in Ban Samaechai usually happened because of different ways of thinking, but those conflicts would be fine by the next day. There was no change in the number of fireflies, mangrove trees, boats, or culture. Meanwhile, three main benefits generated to community, i) extra income from tourists, ii) Ban Samaechai had chance to be reputed, and iii) tourism place could be improved easily in term of facilities.

5.1.2 Factors influencing the local people participation in firefly ecotourism management

The findings indicated that gender, income, length of residence, and distance from house to river were personal factors that influenced level of local people participation in firefly ecotourism management in different stages. Only length of residence influenced every stage of firefly ecotourism management. Nonetheless, age, education level, and occupation did not effect to level of local people participation.

Knowledge, communication system, interpersonal communication, group communication, and mass communication were other factors influenced to level of local people participation in firefly ecotourism management, particularly; group communication had strongly influence in every stage. On the other hand, attitude did not effect to level of local people participation.

5.1.3 Relationship between the level of local people participation in firefly ecotourism management and the level of local people in firefly conservation

By using the Pearson Correlation, the results showed the relationship between the level of local people participation in firefly ecotourism management and the level of local people in firefly conservation in every stage in the same direction.

5.1.4 Problems, obstacles, and suggestions from local people's comment

People in Ban Samaechai presented problems that can be barrier for firefly ecotourism as follows:

1) Road: most people complained that big problem they faced was broken road. This problem usually happened during rainy season, as water flows very fast. This year (2005/2548), Kaengkrajan dam contained less water and released little amount of water to downstream (Ban Samaechai and Bang Ta Boon Estuary), therefore, during high tide sea water crashed bank of river very strong without supporting form fresh water. Main road, from Petchburi to Ban Samaechai, became

poor resulting in an inaccessible transport for people and tourists. Sometimes, people had to deny tourists because of inconvenience transportation which might cause an accident. Figure 5.1 shows the condition of Ban Samaechai entry way from Petchburi in September this year, and Figure 5.2 shows the condition of road before ecotourism center in September.



Figure 5.1 Broken concrete road at the entry way
(Picture from Matichon, 8/9/2005)



Figure 5.2 Broken road near to ecotourism
center, September 2005

Road problem is an urgent situation requiring organizational solution. As many as 500 concrete poles plunged down into river for reducing the current did not help much in this case. Local people suggested that using simple technique like rock dam can be over whelmed near river bank, or using water gate in long term.

2) Initial facilities: For instance, boat, safety jacket, and toilet were required for firefly ecotourism. People who had their own boats could participate through the firefly ecotourism process. At the first stage, government offered plan to buy boat and safety jacket for Ban Samechai. Until now that plan did not materialize yet. People used boats as many as they had without safety jacket. Furthermore, there was no public toilet provided to tourists except toilet in shop near ecotourism center which was for personal use of the shop owner. Normally, toilet is required in any tourism site. The problem occurred when tourists wanted to use toilet accidentally. People again emphasized on government that already informed about building standard toilet in Ban Samaechai to service tourists. Only money from local people was not enough to build.

3) Benefits conflict: Some people did not get benefit as they did not have boat. In the community there were more than one harbor and did not have standard price

among harbors. Except ecotourism center, rest harbors did not concern about environment much because they used motor boat in order to contain many tourists. People suggested that Ban Samaechai should setup only one firefly ecotourism center. Tourists can contact to one place and local have different activities to service tourists. Real business and marketing should not be arisen in firefly ecotourism program. If possible, Ban Samaechai should have ecotourism fund for the community.

4) Unclear guideline: Firefly ecotourism was discussed and guided among local people and organizations at the first stage. After that there was no monitoring the program, although people expected more tourists visit Ban Samaechai. If people confused and lost the standpoint to other kinds of tourism, problems would occur to the community and surroundings. People, sometimes, expected too much. Therefore, Ban Samaechai people suggested that follow up the program should do continuously so that the previous mistakes can be solved soon, should not run program without reviewing what they did.

5) Activities disturbed fireflies: Tourists did not know the correct ways to protect and maintain firefly tourism; for example, loud noise from tourists disturbed fireflies, garbage from households and tourists went into the river disturbing firefly's habitat. The suggestion was that before touring, local people or boat driver should inform tourists every time about regulations.

5.2 Limitations of the study

In the questionnaire part, the total household population was 87 units. However, this study could collect 71 sampling units. The study was limited by factors as follows:

5.2.1 Capability of giving information

Some households had no literate member who able to literate. Only old people stayed in the house, they could not give information about firefly ecotourism that related to the question.

5.2.2 Unwillingness to respond

Some households were not willing to answer.

5.3 Recommendations

Recommendations from the study can be divided into 2 categories: i) further research, and ii) firefly ecotourism in Ban Samaechai.

5.3.1 Further research

Lesson learnt from this study, further research can be studied about appropriate guideline for firefly ecotourism in Ban Samaechai. This is very important to ensure people have understanding about firefly ecotourism in the same direction, so an appropriate guideline is required.

Expectation of tourists before visiting Ban Samaechai compare to satisfaction after they enjoy firefly ecotourism can also be explored in the future. Research would find the awareness of tourists toward firefly ecotourism. The results can be developed matching the firefly ecotourism plan. However, this study will be limited by time range because tourists frequency is high between end of rainy season and beginning of winter.

5.3.2 Recommendations for firefly ecotourism

Ban Samaechai has potential to have firefly ecotourism because of several factors such as suitable conditions for firefly, people's lifestyle, and tourism place nearby community. Therefore, recommendations for maintaining firefly ecotourism can be shown below:

- 1) To develop firefly ecotourism, all stakeholder *viz.* local people, sub-district office, government, and private sector should unite each other. Particularly, sub-district office, Bangkok sub-district that closes to Ban Samaechai community should look after of firefly ecotourism. According to the Act of sub-district council

and sub-district administration 1994 (Office of the Council of State, 1994), Bangkok sub-district office has duty to take care of people's career and maintain natural environment in its area. Furthermore, village headman should be the one who contact both sub-district office and villagers. It is possible to continue from this point further, but the program should usually be reviewed or provided meeting occasionally. In Thai society, normally, people stick to their prestige so few people would accept to other ideas. The basic idea to solve the problem is that open mind and listens to other people. Even though several stakeholders get involved, only one contact center and one harbor should be enough. Boats should be contributed to central boat service because people who do not have boat can join activity by getting in queue.

2) Due to firefly ecotourism activity can be arranged only at night, tourists visit Ban Samaechai and go back in short time. Value added in community during day time can be linked to other villages near Ban Samaechai. For example, tourists can spend day time at famous temple, Kao Ta Krao, then visit Bang Hor village to see the process of making coconut sugar, after that rowing in the river and have dinner, then see fireflies. Or people in Ban Samaechai might provide some day time activities that belongs to indigenous knowledge such as tourists can join the way of cooking nipa fruit, making nipa roof which is rarely used in present times, helping to plant mangrove tree at least one so that tourists would get involved in sense of firefly conservation. These activities are possible to arrange together with firefly ecotourism. People not only in Ban Samaechai, but also from community around can earn extra income.

3) Guideboard must be legible and noticeable. It is needed not only the guideboard at the entry way, but also all regulations for firefly ecotourism near harbor. Sometimes, tourists need to be reminded some cases because the condition in Ban Samaechai is required specific concerning to environment. Furthermore, guide should inform tourists again about regulations and knowledge in order that tourists would understand and follow the correct way.

4) The simple lifestyle of people in Ban Samaechai is attractive to tourists. The occupation relied on natural resources and their spirit to help other people is charming. If tourists want to stay over night, a house would be free provided. Few groups of tourist in the past stayed over night, most tourists came and went back after

firefly ecotourism. Homestay, current popular kind of tourism in Thailand, is not suitable to manage in Ban Samaechai right now. From the previous homestay cases, culture in community was disturbed, environment was changed, and high benefit competition occurred. For Ban Samaechai case, therefore, this area is not ready to have homestay yet, but the simple way of living should be maintain.



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APPENDIX A: SURVEY QUESTIONNAIRE

A questionnaire for studying the local people participation in firefly ecotourism management: a case study on Ban Samaechai, Pethburi province

This questionnaire survey is used as a tool for studying the local people participation in firefly ecotourism management. You have been randomly selected as one of respondents of the study. Your information will be useful in term of improving firefly ecotourism by local people. All data will be strictly kept confidential.

Suggestion: This questionnaire has a total 7 parts as follow:

1. The questionnaire asking about the respondents' social and demographic data.
2. The questionnaire asking about the attitude of respondents in firefly ecotourism.
3. The questionnaire asking about the knowledge of ecotourism.
4. The questionnaire asking about the communication methods and people's perception.
5. The questionnaire asking about the level of local people participation in firefly ecotourism management.
6. The questionnaire asking about the level of firefly conservation.
7. The open-ended questionnaire about the problems, obstacles, and suggestions.

Part 1: Social Economic Collecting

Direction: Please check into or give your real matters on the blank

1. Gender

1. Female 2. Male

2. Age _____ (more than 6 months equal to 1 year)

3. Educational level

1. Elementary school 2. Secondary school
 3. High school 4. Bachelor's degree
 5. Master's degree 6. etc. _____

4. Occupation

1. Make sugar 2. Shop keeper
 3. Housewife 4. Employ
 5. Government Officer 6. etc. _____

5. Household income per month

1. <= 5,000 2. 5,001 – 10,000
 3. 10,001 – 15,000 4. >= 15,001

6. Length of residence

 1. From birth 2. Lived for _____ year

7. Distance from house to river

 1. Connect to Petchburi River 2. Do not connect to Petchburi River

8. What are activities you serve tourists in firefly ecotourism

Activities	Participation	
	Yes	No
1) Firefly boat service		
2) Guide		
3) Resident (homestay)		
4) Food shop		
5) etc. _____		

If you have activity relates to firefly tourism, how much you can earn per month?

_____ baht.

Part 2: Attitude of respondents in firefly ecotourism

Direction: Please check ✓ into on the real matters

Suggestion: Interviewers ask the question with beginning by the wording of “do you think...”

Questions	Strongly agree	Agree	Dis-agree	Strongly Disagree
1. Ecotourism can generate extra income to the community				
2. To plan and manage the firefly ecotourism is waste of time				
3. Firefly ecotourism makes your community have stronger relationship with neighbor				
4. Firefly is just one type of insects, it does not have an important role in the ecosystem				
5. There is not much change in daily lifestyle after developing firefly ecotourism				
6. Firefly ecotourism does not encourage people to have more concerns in other environmental conservation such as river, and mangrove				
7. Local people should participate in planning and managing of firefly ecotourism at the early stage				

Questions	Strongly agree	Agree	Dis-agree	Strongly Dis-agree
8. If there is no firefly ecotourism program, local people would concern the firefly conservation at the same level				
9. Ban Samaechai has a unique natural resource like firefly and you want to show to others				
10. It is not necessary to give knowledge about firefly and its relevant ecosystems to tourists				
11. Firefly ecotourism has been promoted but local people cannot earn extra income from ecotourism service				
12. You are willing to join and help in firefly ecotourism management anytime				
13. Firefly ecotourism reduces the strength of relationship within community				
14. Firefly plays an important role in the ecosystem				
15. The process of firefly ecotourism is very complex and hard to manage by community itself				
16. Firefly ecotourism is a stimulating program that help people take care of other environments				
17. Local people can join the firefly ecotourism at any stages. It has no difference if local people get involved at the first stage				
18. Firefly ecotourism increase the want of firefly conservation				
19. Firefly is a common beetle, there is no point to promote for firefly ecotourism				
20. Tourists should get knowledge about firefly behavior and conservation from local participation during the tour in order that people can help to conserve firefly and its environment				

Part 3: Knowledge of ecotourismDirection: Please check ✓ into depends on your idea

Questions	True	False
1. Ecotourism is tourism that concerns the society and environmental resource		
2. Ecotourism requires local people to participate the process		
3. Tourists do not need to search for information of tourism site before visiting the site		
4. On a boat tour the tourists enjoy watching fireflies from close and they can catch fireflies		
5. Local people should keep all income from firefly ecotourism and improve only their life quality		
6. Educational development must be promoted, all concerns to jointly maintain the ecosystem of the area must be done rather than focus on economic growth and income generation only		
7. Ecotourism deals with involvement of local community or people participation to attain local benefit. This means distribution of income, improved life quality, and benefits to come back to maintain and manage tourist attractions		
8. Local people give knowledge about the site and the significance of natural resources whether tourists ask or not		
9. The word 'ecotourism' can use for marketing but it does not need to follow the principles of ecotourism		
10. Ecotourism can be approached to sustainable goal		
11. Any infrastructures of facilities can be built without thinking about following effects there will be balance in nature because people can get money from tourists from those facilities.		
12. The importance of ecotourism is morality or responsibility and study concerning the environment.		
13. Cutting mangrove trees has an effect on fireflies that live in the mangrove area near river.		
14. Disposing of rubbish such as foam, plastic bags, and glass bottles from households and tourists has no bad effect to fireflies because rubbish can disintegrate.		
15. One reason of having ecotourism is keeping the balance of nature and human activities.		

Part 4: Communication methods to receive ecotourism information

Direction: Please check ✓ into □ on the real matters

Suggestion: Interviewers ask the question “What methods do you get in order to encourage your firefly ecotourism perception? And how much you perceive?”

System and method to encourage firefly ecotourism	Receiving or not	Level of perception		
		Low	Medium	High
1. System of encouraging the knowledge				
1.1 Government officials provide information or media about ecotourism				
1.2 Private sector provides information or media about ecotourism				
1.3 You contact information about ecotourism by yourself				
2. Individual interpersonal communication method				
2.1 Government officers visit your house and give consult about firefly ecotourism				
2.2 You contact and ask for firefly ecotourism information to government office by phone				
2.3 You go to meet government officers at the office and ask information about firefly ecotourism				
3. Group communication				
3.1 Informal talking among people in the community and discuss about firefly ecotourism				
3.2 Informal meeting between local people and other organizations				
3.3 Formal meeting between local people and other organizations				
4. Mass communication				
4.1 You watch tourism program from television and learn about ecotourism				
4.2 You listen to tourism program from radio and learn about ecotourism				
4.3 You read tourism column from newspaper and learn about ecotourism				
4.4 You read tourism document or book and learn about ecotourism				
4.5 etc. _____				

Part 5: The level of local people participation in firefly ecotourism

Direction: Please check ✓ into □ on the real matters

Suggestion: Interviewers ask the question with beginning by the wording of “how often have you...”

Questions	Level of participation in firefly ecotourism management		
	Always	Sometimes	Never
1. Study on the potential of the community to firefly ecotourism			
1.1 Think that your area can be developed to firefly ecotourism site			
1.2 Confident that you can service tourists well			
1.3 Invite your cousins or neighbors to participate in firefly ecotourism			
2. Planning			
2.1 Join with the government officers or related organizations when they give training			
2.2 Share your idea and giving opinion or suggestion in the planning stage			
2.3 Present your plans or projects concerning the firefly ecotourism			
3. Implementation			
3.1 Ever been an ecotourism committee			
3.2 Spend your time to participate in the activities concerning the firefly ecotourism such as service tourists by rowing boat, contact and introduce tourists to visit the place, guide tourists and provide knowledge about natural environment in your area including firefly			
3.3 Donate money to improve the firefly ecotourism or buy facilities for firefly ecotourism			
4. Following up and evaluation			
4.1 Follow and monitor the operation of the firefly ecotourism and have meeting within community and consult the problems occurred from ecotourism			
4.2 Observe and inform the government officers when local people have problems due to firefly ecotourism			
4.3 Solve any problems created from firefly ecotourism			

Questions	Level of participation in firefly ecotourism management		
	Always	Sometimes	Never
5. Maintenance			
5.1 Look after or clean of area in front of your house such as collect garbage from river			
5.2 Planting mangrove trees			
5.3 Investigate the destruction of the constructions located in the area			

Part 6: Level of firefly conservation

Direction: Please check into on the real matters

Suggestion: Interviewers ask the question with beginning by the wording of “how often have you...”

Questions	Level of participation in firefly conservation		
	Always	Sometimes	Never
1. Study on problems and causes			
1.1 Identify problems and obstacles of firefly conservation			
1.2 exchange knowledge relevant factors concerning firefly conservation with people in the community			
1.3 Offer the problems about the environment and fireflies to government officers			
2. Planning			
2.1 Share your idea for promoting people in firefly conservation			
2.2 Make decision for firefly conservation activities			
2.3 Present your plans or projects concerning the firefly conservation			
3. Implementation			
3.1 Support your family member for joining the firefly conservation			
3.2 Spend your time to participate in any activities concerning the firefly conservation			
3.3 Support financial or instruments for firefly conservation activities			

Questions	Level of participation in firefly conservation		
	Always	Sometimes	Never
4. Following up and evaluation			
4.1 Follow the activities concerning firefly conservation and evaluate how successful of activities			
4.2 Express views for further firefly conservation activities			
4.3 Solve any problems created from firefly conservation			
5. Maintenance			
5.1 Take care of maintenance the outcome derived from the firefly conservation			
5.2 Inform the government officers or other related organizations about problems that occurred from take care of maintenance			
5.3 Investigate the destruction of firefly environment			

Part 7: Problems, obstacles and suggestions

Direction: Please give your opinion

1. What do you think about problems and obstacles of participation in firefly ecotourism in Ban Samaechai?

2. What do you think about the ways to solve those problems?

3. What are your suggestions to develop firefly ecotourism together with conservation in Ban Samaechai?

In-depth Interview

Local People Participation in Firefly Ecotourism Management A Case Study in Ban Samaechai, Pethburi Province

1. The development process of firefly ecotourism management:
 - Number of membership in firefly ecotourism program
 - The way to get into membership
 - Rules or regulations in firefly ecotourism program
 - The way of evaluation and following program
 - The method of sharing benefits
2. Impacts from firefly ecotourism including environmental issue
 - Changing number of fireflies
 - Changing number of mangrove trees
 - Changing number of boats
 - Changing economic
 - Changing culture and lifestyle
3. Activities and projects relevant to local people participation in firefly ecotourism management
4. The method of sharing benefits from firefly ecotourism activities in the community
5. The way of preventing people from outside to join the activities about firefly ecotourism
6. Problems, obstacles, and suggestions of local people participation in firefly ecotourism management

Focus Group Questions

1. What do you think about firefly ecotourism program? Is it a suitable program for your community? Please justify your answer.
2. What organization do you think should play the dominant role in firefly ecotourism management? And why?
3. After of implementation firefly ecotourism, what changes have you noticed in your community?
4. Are there any problems come from communication system? If so, do you think what is the cause?
5. What do you think about firefly conservation in your community? Do you satisfy the cooperative in firefly conservation right now? And why?
6. Are there any conflicts within the community that cause from firefly ecotourism program? If so, how do you solve those conflicts?
7. What shortages do you face currently in concerning firefly and increase tourism? (for a group of people who participate in firefly ecotourism)
8. What is the reason for your non-participation in conservation of firefly ecotourism? (for a group of people who are not participate in firefly ecotourism)

APPENDIX B: SPSS OUTPUTS OF CHI-SQUARE ANALYSIS

(Personal factors and level of local people participation in firefly ecotourism management)

Chi-Square Tests

Relationship	Chi-Square	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
					Sig.	Lower Bound	Upper Bound
Gender * level of participation	Pearson Chi-Square	1.471 (a)	2	.479	.525 (b)	.516	.535
Age * level of participation	Pearson Chi-Square	11.302 (a)	10	.334	.342 (b)	.332	.351
Education level * level of participation	Pearson Chi-Square	9.436 (a)	8	.307	.289 (b)	.280	.297
Occupation * level of participation	Pearson Chi-Square	16.063 (a)	8	.041	.044 (b)	.040	.048
Monthly income * level of participation	Pearson Chi-Square	13.267 (a)	4	.010	.015 (b)	.013	.017
Length of residence * level of participation	Pearson Chi-Square	25.673 (a)	2	.000	.000 (b)	.000	.000
Distance from house to river * level of participation	Pearson Chi-Square	12.247 (a)	2	.002	.003 (b)	.002	.004

N of valid cases is 71
Significant at 0.05 level

(Other factors and level of local people participation in firefly ecotourism management)

Chi-Square Tests

Relationship	Chi-Square	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
					Sig.	Lower Bound	Upper Bound
Attitude * level of participation	Pearson Chi-Square	13.896(a)	4	.008	.010(b)	.008	.012
Knowledge * level of participation	Pearson Chi-Square	6.792(a)	4	.147	.154(b)	.146	.161
Communication systems * level of participation	Pearson Chi-Square	27.565(a)	4	.000	.000(b)	.000	.000
Interpersonal communication * level of participation	Pearson Chi-Square	10.197(a)	4	.037	.043(b)	.039	.047
Group communication * level of participation	Pearson Chi-Square	19.635(a)	4	.001	.001(b)	.000	.001
Mass communication * level of participation	Pearson Chi-Square	6.864(a)	4	.143	.142(b)	.135	.149

N of valid cases is 71
Significant at 0.05 level

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