

March 2010

Post-Tsunami Ecotourism Development: Solutions for Laem Khruat Village

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Post-tsunami Ecotourism Development: Solutions for Laem Khruat Village



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Post-tsunami Ecotourism Development: Solutions for the Laem Khruat Village

An Interactive Qualifying Project and Social and Science Project submitted to Faculty of
Chulalongkorn University and Worcester Polytechnic Institute

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This report represents the work of four WPI and two Chulalongkorn University undergraduate students submitted to the faculty as evidence of completion of a degree requirement. WPI routinely publishes these reports on its web site without editorial or peer review.

ABSTRACT

This report assesses the tourism industry in Laem Khruat, a rural village in the Krabi Province of Thailand that was affected by the 2004 tsunami. We investigated methods of incorporating the principles of ecotourism into the village's tourism practices. We concentrated on three issues affecting the village: waste disposal, tourism marketing, and water based tourism transportation. We concluded that an expanded garbage bank program, new brochures and a website are necessary for further ecotourism development. We also concluded that a kayak with a Mirage drive pedal system is effective for ecotourism.

ACKNOWLEDGEMENTS

This project could not have been accomplished without the help, advice, and guidance from our sponsors, our professors, the Laem Khruat Village officials, Worcester Polytechnic Institute, Chulalongkorn University, our friends and our families.

We would like to express gratitude to our sponsor, the Population and Community Development Association (PDA), for giving us the opportunity to contribute to Laem Khruat and the communities of rural Krabi. We would like to thank Mr. Wirat, the Director of PDA office Bangkok for familiarizing and introducing us to the work of the PDA. We also appreciate the outstanding efforts of Miss Sheila, who helped us become acquainted with the villages supported by the PDA. Furthermore, we are exceedingly grateful to Mr. Wasant, Mr. Amnuay and Mrs. Nittaya—the co-directors of PDA’s Krabi Community Based Integrated Rural Development (CBIRD) center—for welcoming us with such warmth and providing us with the necessary resources for our success, related or unrelated to the project. We also appreciate Mr. Theng’s and Mr. Chesada, the PDA’s office personnel for driving us to each village as well as providing us with vital information about the villages on site.

We would also like to thank our advisors: Professor Thomas Robertson, Professor Supawan Tantayanon, and Professor Brigitte Servatius. Their advice and feedback throughout the project and proposal periods have driven the project in a direction that allowed us to gain the most from this learning experience. We especially appreciate the dedication of Professor Servatius, who stayed overnight at three village home-stays and provided us with insightful observations that inspired several of our final recommendations, particularly our focus on plastic waste.

We would like to thank the Village Official of Laem Khruat, Mrs. Sine, for providing detailed information about the village needed to complete the project. We express gratitude towards Mr. Nikorn Sarakam, the head of the tourism practices in Kok Krai village, for giving us information about the village’s current practices.

We would like to thank Chulalongkorn University for providing us with the necessary facilities. We would like to thank Worcester Polytechnic Institute for initiating and facilitating this IQP Program. Furthermore, we would like to acknowledge the remarkable success of combining the IQP and SSP projects into an unforgettable cross-cultural experience.

We also appreciate the critiques of Professor Dominic Golding. His feedback helped us to understand the research process and the proper way to prepare the final report. Also, the help of Miss Christine Drew allowed us to find the necessary literature, which was the foundation for our final report.

EXECUTIVE SUMMARY

The 2004 tsunami devastated the livelihoods of many rural, fishing villages on the western coast of Thailand. Along the western coast the tsunami destroyed approximately 5,400 fishing boats and caused an estimated 32.7 million dollars in damage to the village fish farms (Food and Agriculture Organization of the United Nations, n.d.). Some of these villages have since turned to tourism to compensate for their lost income.

Laem Khruat is one of these villages in the Krabi Province attempting to expand its tourism industry to supplement income from its damaged fishing industry. The village, which is ninety percent Thai Muslim, offers home-stays to promote cultural exchange. Also, Laem Khruat is surrounded by mangrove forests, which have many natural resources but are endangered worldwide. The villagers take tourists on boat tours to the mangroves and to nearby islands to showcase the area's natural beauty. Our project sponsor, the Population and Community Development Association, is assisting Laem Khruat in preserving its culture and sensitive environment throughout the expansion of tourism in the village.

PROJECT GOALS AND OBJECTIVES

This project provided suggestions to Laem Khruat, a tsunami affected village in the Krabi province of Thailand, for rural tourism that relies on community participation and control, is environmentally friendly, and generates income to support the village. We pursued three objectives:

1. Characterize the interests and perceptions of Laem Khruat villagers regarding the tourism industry in their village and their environmental concerns relevant to tourism.
2. Conduct a needs-assessment on the current and potential tourism problems of Laem Khruat, in particular water based tourism transportation, coastline waste disposal, and rural tourism marketing.
3. Research and evaluate appropriate solutions to these current and future problems.

OUR METHODS OF OBTAINING INFORMATION IN A THAI MUSLIM CULTURE

We gained our information from interviews, surveys, academic journals, the World Wide Web, and observations in villages along the western coast of Southern Thailand. We interviewed village officials and home-stay and tour operators in Laem Khruat and Kok Krai—a village with an established tourism industry in a neighboring province, Phang Nga—for information about the current state of their tourism industry, water based tourism transportation, waste disposal system and marketing strategies. Kok Krai's effective techniques were used as a basis for many of our suggestions. We conducted three

surveys in Laem Khruat to gauge community awareness of the issues in question and to ensure that our suggestions for development were guided by the views of the villagers. We based our approach and our suggestions on the results of case studies found in academic journals. Also, we made use of the Internet for gauging costs, for contacting businesses such as the Hobie Cat Company for information on their products, and for exploring existing ideas from the online community.

Additionally, we gathered information from villages associated with the PDA. When we visited Kok Krai, four of our group members took a kayak tour through mangroves to formulate specifications for a boat to operate in these forests. In the Hin Lom and Nong Talay villages of the Krabi and Phang Nga provinces, we collected information about the PDA's Trash Bank, an effective recycling system that creates a monetary incentive for villagers to participate in the program. By interviewing villagers and observing the communities, we inferred criteria for the ongoing success of the system and gaps in its effectiveness.

Our research was primarily limited by time constraints and the availability of villagers to take surveys, respond to interviews and lead tours.

OUR FINDINGS ON LAEM KHRUAT'S CURRENT TOURISM INDUSTRY AND OUR RECOMMENDATIONS FOR IMPROVEMENT

Ecotourism is a form of natural resource-based tourism that is educational, low-impact, non-consumptive, and locally oriented: local people must control the industry and receive the bulk of the benefits to ensure sustainable development. Although Laem Khruat has an established tourism industry, the village does not fully meet the standards of a destination for ecotourism. We have compiled recommendations for an eco-friendly, community-run and locally sustainable expansion of Laem Khruat's tourism industry. We have restricted our recommendations to these categories mentioned above: water based tourism transportation, waste disposal in Laem Khruat and Laem Khruat's marketing strategies.

WATER BASED TOURISM TRANSPORTATION

For a human-powered boat to operate properly in Laem Khruat's mangroves, the boat must maintain stability in the water, function in both deep and shallow water, be resilient to damage, transportable on land, and be "one person" thick. For Laem Khruat's tours we found that punt boats, gondolas, portable outboard electric motors on kayaks, and pedal-driven propeller kayaks are impractical. However, the currently used Tri-yak kayak and a kayak with a Mirage drive propulsion

system are viable options. The Mirage drive propels a kayak hull forward using oscillating flippers, which model the motion of fish fins. The oscillatory motion allows the boat to be propelled in extremely shallow water, and the flexibility of the fins prevents damages from obstacles in the mangroves. We recommend that if funds are allocated for expanding ecotourism, the village should construct kayaks with a Mirage drive system because it will reduce the use of longtail boats and make the mangrove tours more accessible. The Mirage drive can be purchased individually and installed in a kayak hull that can be obtained in a neighboring province of Krabi.

WASTE DISPOSAL IN LAEM KHUAT

According to villagers, the unreliability of Laem Khruat’s current weekly government trash collection damages the health and environment of the village. To alleviate these concerns, the villagers are willing to contribute to an improved system. We have found that the Trash Bank systems implemented in Hin Lom Village and Nong Talay Elementary School are successful because they are run by an organized group and are structured around three principles: education, incentive and empowerment. However, these Trash Bank systems are incomplete because they do not incorporate plastic bags, an abundant form of solid waste in Laem Khruat, as part of the recycling process. We recommend that Laem Khruat implements a waste disposal system similar to the Trash Banks in Hin Lom Village and Nong Talay Elementary School but adds a method of recycling and of reducing the use of single-use plastic bags and an education program to increase environmental awareness in the village. This method involves creating reusable bags from the plastic bags. Vendors should charge for single-use plastic bags to encourage villagers to purchase the reusable bags to ultimately eliminate single-use bags.

LAEM KHUAT’S MARKETING STRATEGIES

Laem Khruat’s current marketing strategies are ineffective due to their reliance on unprofessional brochures and business cards that have errors, which prevent tourists from contacting the village. Kok Krai, however, employs effective marketing techniques—including distributing brochures and business cards, forming business relationships with local tourist agencies, posting their tour and home-stay information online and attending tourism conventions. We recommend that Laem Khruat uses these techniques as a marketing model. In addition, we recommend that Laem Khruat provides incentive for tourist agencies and hotels to promote the village, posts information on blogs, creates and maintains a website, sells handicrafts to fair trade companies, creates and distributes a postcard, and forms a coalition with nearby villages.

CONCLUSION

The 2004 tsunami placed hundreds of Andaman coast villages in similar economic situations to that of Laem Khruat. While our research and evaluations were performed for Laem Khruat specifically, our final recommendations can be modified to apply to any village on the Andaman coastline trying to become a destination for ecotourism to compensate for income lost from the tsunami.

CONTRIBUTIONS

ROBERT D'ANGELO

Robert led the research of alternative boat options. He wrote the background, findings, and recommendation sections for the human powered boat. He helped with the editing of the background and helped to design the structure of the background. He worked on developing the interviews for the human powered boats and went on the mangrove tour to characterize the tour. He also helped to write the introduction and organize the logical flow of the final report. He also reviewed each section for grammar and style.

THIRAPHA SACHASIRI

Thirapha was one of the main contacts between our sponsor, the PDA, and our group. She led most of the interviews and surveys and facilitated all communication with the rural villagers. She also worked on the marketing findings and recommendations and helped to develop the model brochure. She helped transcribe the interviews and helped to make the final model of a reusable bag. She helped edit the methodology. She organized Laem Khruat to have a booth at the Thai crafts fair in Bangkok. She helped post information about Laem Khruat's tourist activity on three websites. She contacted individuals and agencies in Thailand to collect much of the statistics and details for our final report. She helped to make the final poster.

ALEJANDRA VARGAS

Alejandra developed and wrote the waste disposal recommendations as well as the background sections on tourism in Thailand and ecotourism. She helped to develop the method for improving the garbage bank program. She wrote the executive summary and helped to edit many portions of the report. She developed the interviews and surveys for the waste disposal section. She helped write the manual for constructing reusable bags from single-use bags. She was in charge of compiling the references.

MEGAN VAN WELIE

Megan helped write the manual for constructing reusable bags. She also developed the method for reproducing them. She also wrote the waste background and findings. She edited the marketing findings and recommendations and wrote the methodology. She developed the interviews and surveys for the waste disposal section. She helped write the introduction and organize the logic flow of the final report. She also reviewed each section for grammar and style.

NICHOLAS VACCARO

Nicholas assisted with the development of the human powered boat findings and recommendations and edited these sections. He also wrote the marketing background and edited many portions of the findings and recommendations. He wrote the overall findings and recommendations as well as the overall conclusion and abstract. He assisted in the making of the boat surveys and interviews. He singlehandedly compiled the final report and designed its format. He worked on developing the interviews for the human powered boats and went on the mangrove tour to characterize the tour.

NUTTIDA YONGSANGUANCHAI

Nuttida was also one of the main contacts between the PDA and our group. She was the note taker for nearly all of the interviews and surveys and led several of them. She also facilitated all communication with the rural villagers. She helped write the marketing findings and recommendations and helped to develop the model brochure. She helped transcribe the interviews and helped to make the final model of a reusable bag. She edited the methodology. She helped organize Laem Khruat's booth at the Thai Crafts fair in Bangkok. She helped post information about Laem Khruat's tourist activity on three websites. She contacted individuals and agencies in Thailand to collect much of the statistics and details for our final report. She helped to make the final poster.

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INTRODUCTION

The 2004 Indian Ocean tsunami devastated the Andaman Coast of Thailand. The surge killed over 8000 people and caused an estimated 32.7 million dollars in damages to fish farms (Food and Agriculture Organization of the United Nations, n.d.). Rural villages on the coast, whose livelihoods rely on the fishing industry, suffered major economic setbacks. Many of these villages have turned to tourism to compensate for their lost income.

The tourism industry in Thailand, which currently constitutes approximately 6% of the overall GDP, generates substantial income and job opportunities throughout the country. The unfettered growth of this industry, however, may damage the environment that the industry relies on, ultimately hurting tourism. An example of these detrimental effects can be seen in the case of Pattaya, a coastal city 140 km south of Bangkok. Excessive pollution, due to an overexpansion of tourism, degraded the natural beauty of this once pristine beach destination. These effects led to a decrease in tourism in Pattaya (Parwell, 1993). Other coastal tourism locations in Thailand including Hua Hin, Phuket, and Ko Samui have also suffered adverse effects of tourism such as water shortages, sewage treatment issues, and water pollution (Parnwell, 1993).

Laem Khruat, one of the rural villages in Krabi Province affected by the 2004 tsunami, is attempting to expand its tourism industry to supplement the income from its weakened fishing industry. Laem Khruat, a predominantly Thai Muslim village, is surrounded by mangroves making it an attractive tourist destination. Mangroves protect the coast from storm surge, are a nursery for the fish and bait that village fishing industries depend on, and have natural resources that are used to make medicines, cleaning products and construction materials. Despite these advantages, mangroves are fragile ecosystems that are endangered worldwide.

The Population and Community Development Association (PDA), a non-governmental organization that has spearheaded several projects promoting environmentally friendly development in many Thai communities, is seeking to assist Laem Khruat in the development efforts of its tourism industry in an attempt to preserve its culture and environment against the potential adverse effects of tourism.

The goal of this project was to provide suggestions to Laem Khruat, a tsunami affected village in the Krabi province of Thailand, for rural tourism that relies on community participation and control, environmentally friendly, and generates income to support the village. We met this goal by addressing three objectives:

4. Characterize the interests and perceptions of Laem Khruat villagers regarding the tourism industry in the village and the environmental concerns relevant to tourism.

5. Conduct a needs-assessment on the current and potential tourism problems of Laem Khruat, in particular water based tourism transportation, coastline waste disposal, and public relations and advertising.

6. Research and evaluate appropriate solutions to the current and potential tourism related problems.

We strove to make recommendations that will be locally sustainable, will engage and empower the community, and will preserve the village's culture and environment. We hope that our research and recommendations will aid in the preservation of Laem Khruat while generating income that can help support and develop the village.

BACKGROUND

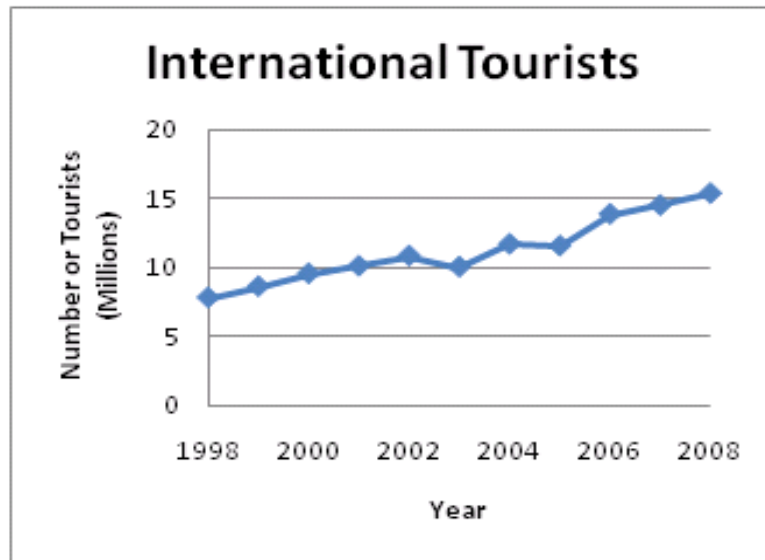
Villages on the coast of the Andaman Sea have begun to take part in the expanding tourism industry to compensate for lost income caused by the 2004 tsunami. Villages such as Laem Khruat are seeking to establish a successful tourism industry while simultaneously maintaining their culture and preserving their precious but fragile ecosystem. This chapter describes and discusses essential background for implementing successful improvements to tourism in Laem Khruat:

- 1.) The tourism industry throughout Thailand: the pitfalls of an unregulated and unstructured tourism industry.
- 2.) The benefits and drawbacks of ecotourism.
- 3.) The economy, culture and tourism practices of the Laem Khruat Village, and how the tsunami affected the village.
- 4.) The three tourism related issues on which we have concentrated are described:
 - a. Human-powered watercraft for mangrove tours.
 - b. Waste disposal in rural areas, the current waste disposal system and potential solutions.
 - c. Advertising methods for rural communities.

TOURISM IN THAILAND AND THE KRABI PROVINCE

In 2008, tourism brought over 15 million international tourists to Thailand (Tourism Authority of Thailand, 2009). The growth of the tourism industry (Figure 1) results from years of work by the Thai government that has substantially increased national revenues from tourism. From 1980 to 1997 the tourism industry in Thailand boomed and has become a major component of the government's strategy to stimulate economic growth (Kuong, 2004).

Figure 1: International Tourists Entering Thailand
(Tourism Authority of Thailand, 2008)



The Thai government has developed plans to coordinate the efforts of promoting tourism. The National Tourism Development Plan, in effect from 1997 until 2003, emphasized the preservation of the resources necessary for tourism. The plan also promoted eco-tourism with a “keep clean” campaign. In addition, the Ninth Plan, put into effect in 2002, strove to improve the lives of the Thai people, promoting economic stability and sustainability with an increased emphasis on tourism (Kuong, 2004).

Much of the tourism industry in Thailand concentrates in specific regions, such as Krabi, located on the southern coast of Thailand (Figure 2). The recent increase in tourism in the Krabi province results from the beautiful beaches and impressive limestone cliffs. In both Krabi and Phang Nga the hotel and restaurant industry, the fastest growing sector of the economy, grew with a 167.67% increase in the GDP contribution from 1997 to 2004.

FIGURE 2: KRABI PROVINCE



THE IMPACTS OF TOURISM IN THAILAND

Tourism affects the economic, socio-cultural and environmental sectors in both positive and negative ways. This section analyzes the specific impacts to each of these sectors. It is essential that communities trying to develop their tourism industry, such as Laem Khruat, understand these impacts and learn from them to better manage future tourism development plans.

The economic benefits of tourism are chiefly the creation of jobs and generation of income. Tourism in Thailand has become the leading sector for earning foreign, bringing in \$7.7 billion in 2002. The tourism industry creates numerous job opportunities in both direct and indirect tourism-related sectors (Leksakundilok, 2006).

Although tourism brings clear, tangible economic benefits to the Thai society, the industry can create an uneven distribution of monetary resources (Leksakundilok, 2006). Many times the bulk of the gains from tourism end up in the hands of wealthy entrepreneurs, many of whom are foreigners. This causes income from tourism to leak out of the Thai economy. If the money goes to a few local entrepreneurs, the imbalance of wealth in a community may cause the adoption of alternative illegal practices to supplement income. “The Study on Impacts of Trekking Tourism on the Environment and Local People” found that the Hmong villages in Chiang Mai started selling illegal drugs and opium as an easy way to earn more income (Leksakundilok, 2006).

Socio-cultural impacts of tourism have only recently received attention from governments. These impacts depend on the level of awareness and respect the tourists have for cultural differences with locals. If differences are respected, tourism can help revitalize traditions, ethnic identity and language in local communities by fostering cross-cultural experiences (Leksakundilok, 2006). These experiences help people learn about and empathize with people from other cultures. Alternatively, if the differences are exploited, the commercialization of culture—including traditions, art festivals, events and ceremonies—can disrupt and degrade the culture of a community. Additionally, culturally insensitive behavior can offend locals. For example, entering rooms or passing spirit gates that are prohibited for non-authorized persons in hill tribe communities offends locals. The offense of local tradition can lead to crime, as has occurred in Ko Samui, Krabi and Ko Samet (Leksakundilok, 2006).

Improper management and planning in tourist areas throughout Thailand has led to pollution of the environment, degradation of the flora and fauna, and risky health conditions for locals. When improperly planned, infrastructure developments cause erosion and landslides on the roadway and create scars on the landscape. These effects have been seen in Phuket and Kaeng Krachan National Park (Cohen, 1996). Another problem of mass tourism is the damage to coral reefs caused by the collection of

marine life and resources—such as seashells, corals, fish, plants, stones—by tourists to keep as souvenirs (Parnwell, 1993). Such damages have been seen in Phuket, Kanchanaburi, Ko Samui and Mae Hong Son (Dowling, 2000). The rise in tourism has also increased boat anchoring and snorkeling. In remote and poorly managed areas such as Krabi, Ko Chang and the Similan Islands National Park, boat anchors and snorkelers commonly damage coral reefs by crushing them or stepping on them respectively (Leksakundilok, 2006).

Excessive waste from tourism harms the ecosystems on which the industry depends. Most of the main tourist attractions in Thailand do not have proper waste management systems (Leksakundilok, 2006). Thus, coastal residents and visitors often throw trash into the sea harming the environment. For instance, plastic bags annually kill thousands of sea turtles and other marine life due to entanglement, starvation, and intoxication from the harmful plastic chemicals (Reusable Bags Depot, 2008). In addition, the lack of water-treatment facilities in most tourist attraction sites leads to disposal of wastewater directly into rivers and seas, polluting the water and producing an unhealthy environment for wildlife (Leksakundilok, 2006).

As tourism booms, water demands in resorts, restaurants and bars increase causing water shortages. Furthermore, large-scale development projects such as golf courses and hotels have astronomical demands for land-use and water supply but leave nothing more than water, air and soil pollution behind for the neighboring community and wildlife (Pleumarom, 2001).

Dowling (2000) explains that tourism itself is not menacing to the environment, but the poor management and planning of tourism is. Therefore, this study has promoted the idea of ecotourism in Laem Khruat as a method of tourism that is planned and regulated to mitigate the negative impacts of tourism, particularly environmental degradation, cultural and social disruption, and the uneven distribution of wealth.

ECOTOURISM: A SHIFT FROM MAINSTREAM TOURISM

Ecotourism emerged in the 1990s as an alternative to mass tourism to meet the needs of sustainable development (Leksakundilok, 2004) and has become the world's fastest growing component of tourism (Amaro, 1999; Panos, 1997; The Economist, 1998). For this paper, ecotourism is defined as a form of natural resource-based tourism that is educational, low-impact, non-consumptive, and locally oriented: local people must control the industry and receive the bulk of the benefits to ensure sustainable development. This brand of tourism typically occurs in natural areas and should contribute to the conservation or preservation of such areas (Fennell, 1999).

Ecotourism has the potential to bring lasting, visible improvements to communities, such as improved water systems and education. Ecotourism can also bring social equilibrium to a community by involving families and individuals of the community to participate towards a successful ecotourism endeavor (Scheyvens, 1999). Participation stimulates self-reliance among community members, creates a sense of ownership, and empowers the community to solve their own problems (Leksakundilok, 2006). As a result, the society will have more control over decision-making, resource allocation and conservation regulations regarding tourism.

Despite benefits of ecotourism, this ideology often does not satisfy the locals' needs, which are typically related to economic growth (Leksakundilok, 2006). Furthermore, rural communities often lack knowledge and awareness to formulate and support a conservation program for their tourism activity; thus, they prioritize visitor satisfaction over environmental preservation (Dowling, 2000; Leksakundilok, 2006; Long, 1991). These two factors can lead villages to deviate from the ideals of ecotourism to increase income.

Ecotourism, if not implemented correctly, can lead to an uneven distribution of income. This effect occurs when the bulk of the income goes to the elite, who also control development in the society. This imbalance causes division and rivalry within the community (Leksakundilok, 2006). Community participation can prevent such detrimental scenarios.

By taking into consideration ecotourism's benefits and limitations, the PDA aims to assist Laem Khruat with training, environmental awareness programs and monetary resources to further their ecotourism efforts in a responsible way, while minimizing the ideology's pitfalls.

LAEM KHRUAT VILLAGE

Laem Khruat is a rural village in the Krabi province on the coast of the Andaman Sea. It has a population of 1200 people (pers. comm.). Ninety percent of Laem Khruat's population is Thai Muslim, and the remaining ten percent are Buddhist.

The 2004 Indian Ocean tsunami devastated Laem Khruat. The village reports two deaths, between one hundred thousand and one million baht in damages to each of their eight seafood farms, and further damages to fishing equipment and boats. After the tsunami, fishermen have also endured the hardship of a drastic change in species of fish that populate the Andaman Sea (pers. comm.). This damage was disastrous for a village that relies heavily on the fishing industry to support itself.

The villagers have overcome their losses by investing in new industries such as tourism for alternative sources of income. The villagers also make jewelry, handicrafts, and embroidered Muslim

headscarves using fish scales to create unique motifs. The PDA supported these efforts by providing initial funding and guidance to the villagers on pursuing their goals efficiently. Laem Khruat is located near interesting islands and caves, many of which were already established sites for ecotourism. Laem Khruat along with other villages and tour companies lead boat tours in this area. Tourists can explore the islands, rocky cliffs and mangrove forests by longtail boat or kayak.

The PDA also helped to establish home-stays in Laem Khruat after the tsunami. Currently, the village has two rooms for home-stay guests and can only house four people at a time. A PDA employee informed us that one of the goals of ecotourism was to limit the number of tourists visiting the village at one time, in this way the village can preserve their culture and ecosystem (pers. comm.). The home-stay operators ensure cleanliness for their guests and speak basic English to communicate with foreign guests. During the home-stays, activities for tourists include fishing, diving, snorkeling, sightseeing, and kayaking. The villagers who own the home-stay businesses offer longtail boat tours for sightseeing in Krabi. The home-stays generate income and promote cultural exchange. For example, visitors in Laem Khruat are expected to respect the village's traditional Muslim customs by dressing modestly and abstaining from alcohol.

THREE FOCUS ISSUES

During the expansion of the tourism industry in the village, current problems can become larger and new problems might emerge. Based on the recommendation of the PDA, our study concentrates on three potential problems: tourism water transportation, waste management, and the marketing of the Laem Khruat Village.

WATER BASED TOURISM TRANSPORTATION BACKGROUND

Due to the location of the villages near the mangroves in the Andaman Sea, boat tours through these areas have become an increasingly popular tourist attraction that the villagers can provide to help replace lost income due to the tsunami in 2004. A ubiquitous concern for the villages, however, is the preservation of the mangrove forests, which are one of the world's most threatened ecosystems (Barbier & Cox, 2002). The forests serve as a nursery for marine life that is vital to the local fishing industry (Hall, 2001). Mangroves also provide natural storm protection and prevent coastal soil erosion and flooding (Sathirathai & Barbier, 2001). Furthermore, the mangrove forests have natural resources that can be harvested to make medicines, cleaning products and construction materials (pers. comm.).

Despite the importance of the mangrove ecosystems, the area of mangroves in Thailand nearly halved between 1961 and 1995 from 368,000 ha to 168,000 ha (Sathirathai & Barbier, 2001; CORIN, 1995).

The villagers of Laem Khruat have taken action to preserve and restore the mangroves. They plant new mangrove trees in areas with less vegetation, and encourage home-stay tourists to participate in this activity. Furthermore, the villagers have sectioned off portions of the mangroves on which further civil development and touring are not allowed (pers. comm.).

Boat tours have the potential to harm the sensitive mangrove ecosystem. Currently, the tours are conducted with longtail boats. The long tail steers and propels the boat and can be used in shallow waters. Despite its advantages for speed and maneuverability, the motorized longtail boats can damage marine ecosystems such as the mangroves. A recent study of tourism in Koh Lanta Yai, an island in southern Krabi, found that motorboat oil discharges and excess noise were damaging the wildlife in the mangroves and that anchors dropped from boats were destroying coral (Chulalongkorn University, University of California, Berkley & Thai Public Policy Foundation, 2007).

In order to prevent damage to the mangroves but still allow visitors to continue touring them, Laem Khruat and other Andaman coast villages offer guided kayak expeditions into the mangroves and into limestone caves in addition to sightseeing tours on the longtail boats. The tours begin at the village pier on an estuary of the Andaman Sea. Along this estuary there are narrow waterways into the mangroves that lead to ancient caves and lagoons. Some of the tours follow the estuary into the Andaman Sea for island hopping. Details of the tours are in Appendix A. The tour guides use longtail boats for most of the tours, but they switch to Tri-yak kayaks (Figure 3) when entering the mangroves or caves to prevent environmental damage. For shorter tours the tourists paddle on kayaks for the entire journey. Our recommendations are for a boat that will either supplement the kayaks or replace the longtail boats on shorter tours.

Figure 3: Tri-yak Kayak used in Mangrove Tours



Villagers and other organizations involved in the local tourism industry are interested in other forms of human-powered transport for tourists to further reduce the use of the motorized boats and to potentially attract more types of tourists. For example, the kayaks lose stability with heavier tourists, such as those from Europe, increasing the likelihood of tipping into the water (pers. comm.). Also, less physically adept tourists may find it difficult to paddle for the entire tour (two or more hours), and other forms of eco-friendly water transport such as pedal boats or portable outboard electric motors may alleviate muscle strain or exhaustion. These eco-friendly alternatives could be used to tour the mangroves casually or, with an appropriate boat, to explore the more sensitive and difficult to reach areas.

Simply identifying a technical solution is insufficient because a major obstacle will be encouraging the Laem Khruat tour operators to adopt our boat recommendations. Therefore, we will consider the appropriateness of the technology that we suggest for the village. Appropriate technology is technology that does not conflict with the local ideology and is locally sustainable (Hazeltine & Bull, 2003). We have identified three criteria for the appropriateness of a new boat technology in Laem Khruat. First, the resources for the construction and maintenance of the boat should be locally available and affordable for the operators. Second, the operators must be involved in decisions regarding any changes to their practices to avoid drastic departure from currently accepted methods. Finally, only

economically justifiable modifications should be made to improve the likelihood that the community will embrace the new solution (Hazeltine & Bull, 2003).

The criteria for appropriate technology and ecotourism combined with other practical concerns limit the types of boats that can be used by the Laem Khruat Village. For example, to ensure the safety of the tourists, the boats and the surrounding areas, the boats must hold more than one passenger so that a villager can always be present on the tour (pers. comm.). A case study on the Siam Safari tours, which took place in Phuket and are similar to the village tours, suggests that a tour leader plays a vital role in maintaining environmental consciousness throughout the tour by collecting garbage and encouraging tourists to do the same (Shepherd, 2003).

Table 1 describes six eco-friendly propulsion techniques that might be utilized by tourists in the mangroves. The table details the ease of use, the durability and the maintainability of each option.

Table 1: Propulsion Techniques

Propulsion Technique	Ease of use	Durability	Maintainability
Pedal-driven Hobie Mirage drive	Hands free	Would not damage or be damaged by water obstacles	Hobie dealer located in Sattahip, Thailand; Cannot be repaired by villagers
Pedal-driven Propeller	Hands free	Would damage and could be damaged by water obstacles	No local dealer; Possibly repairable by villagers
Electric Motor Driven Propeller	Can be used in hybrid with paddles; Conserves metabolic power	Can be lifted out of water to avoid obstacles	Dealer located in Sattahip; Cannot be repaired by villagers
Paddling	Arm paddling	Can be lifted out of water to avoid obstacles	Damaged paddles can be replaced locally
Rowing	Arm paddling	Can be lifted out of water to avoid obstacles	Damaged paddles can be replaced locally
Punting	Requires experienced punter	Can be lifted out of water to avoid obstacles	Would need to train tour guides to punt

The first two options would be powered by pedaling with the feet, allowing the hands to be free during the tour. A study published in the Journal of Sports Science demonstrates that pedal-driven propeller systems can be nearly as efficient as Olympic rowing shells. Furthermore, the study found that significant improvements to propelling efficiency would make such crafts some of the most efficient human-powered watercraft (Zamparo, Carignani, Plaino, Sgalmuzzo, & Capelli, 2007). Hobie Cat, an international boat design and manufacturing company, has developed an innovative design called the Mirage drive (Figure 4) that has significantly higher propelling efficiency than propeller based designs (Hobie Cat, 2009). The Mirage drive converts pedaling into the oscillation of fins beneath the hull that propel the boat forward (Hobie Cat, 2009). Details of this design can be found on Hobie Cat's official webpage: <http://www.hobiecat.com/kayaking/miragedrive.html>.

FIGURE 4: HOBIE MIRAGE DRIVE SYSTEM



Another option would be to attach a portable outboard electric motor to the back of a kayak to create a hybrid system. This motor could be lifted into and out of the water as necessary. When tourists become too fatigued to paddle, they could activate the motor. However, if there is danger of obstacles in the water, the tourists could remove the motor from the water to avoid damaging the ecosystem or the propeller. This hybrid concept could also apply to the pedal-driven options.

The feasibility of more traditional human-powered options—paddling, rowing, and punting—will depend on the types of boats locally available and the conditions of the water in which they must operate.

COASTLINE WASTE DISPOSAL

Laem Khruat currently has an inadequate solid waste disposal system. If unattended to, this problem will hinder the development of ecotourism in the village. When not properly disposed of, solid waste—defined as any discarded material that is not a liquid or gas and does not include sewage or hazardous materials—creates risk of illness and disease (The Town of Eagar, Arizona, 2005). Solid waste is often contaminated with both animal and human fecal matter, which can transfer bacteria when handled causing disease to those exposed (Zurbrugg, 2005). According to Rego, Moraes, and Dourado (2005), the presence of garbage in daily living environments is the leading cause of diarrhea, which is a common cause of death among children, in the developing world. Additionally, littered streets degrade the aesthetics of the affected area and, thus, its appeal to tourists.

The Pollution Control Department of Thailand notes that due to the lack of a widespread garbage collection service, rural Thai must dump or burn their waste locally (Ministry of Natural Resources and Environment, n.d.). Although burning garbage reduces the amount of daily exposure to solid waste, if done in an open, unfiltered environment, the toxic gases released harm local community members and the environment. For example, extended and repeated exposure to smoke produced by open, unfiltered burning causes and aggravates respiratory problems such as asthma and emphysema (US Environmental Protection Agency, 2009). In addition, the unfiltered, open burning of garbage emits pollutant gases into the environment such as nitrogen oxides, volatile organic compounds, carbon monoxide, and particle pollution, which contribute to global warming, ozone depletion, and the formation of smog (US Environmental Protection Agency, 2009).

As an alternative to dumping and burning, a recycling program or trash bank system can be implemented. A study analyzing different recycling motivations states that recycling programs, which rely on environmental concern and conscience, are useful approaches for reducing waste (Burdge, Linn & Vining 1992). For a project such as a village-wide recycling program to be successful, the entire community must participate and have a sense of personal responsibility (Folz & Hazlett, 1991). Additionally, educational and public awareness programs are useful in motivating citizens to recycle (Folz & Hazlett, 1991).

The PDA has successfully implemented a recycling program, called the Trash Bank, in both Nong Talay Elementary School and Hin Lom Village, located in the Krabi and Phang Nga provinces respectively. In Nong Talay, students from the school collect and sort paper, plastic water bottles, aluminum cans, and scrap metal. In the sorting process the students wear safety gloves, rubber boots and dust masks to ensure hygienic working conditions. The school officials buy the trash from the students and sell the

trash to a private company. The Trash Bank in Nong Talay Elementary School has been so effective that the school director commented that the children complain of there no longer being enough trash in the village to collect and sell (pers. comm.). In Hin Lom Village, a similar system exists in which the village's youth group buys sorted trash from the Hin Lom villagers and sells it to a private company. The Trash Bank encourages the community members to maintain a structured waste management system, which keeps their village clean and reduces the amount of trash burned and dumped.

RURAL TOURISM MARKETING

One of the major difficulties in marketing tourism, as stated by Pigram and Wahab, is that it cannot be tested; instead the tourist just reserves access to a location in the future (Dorsey, Steeves, & Porras, 2004). The inability to test the product makes the proper marketing of tourist destinations even more critical than that of other products. Therefore, the only way to attract customers is with a strong marketing campaign. Additionally, the difficulty in marketing is compounded by limited budgets, lack of marketing experience, the misconception of marketing as promotion, and the varying interests of local business owners (Hall, Kirkpatrick, & Mitchell, 2005). In order to effectively market Laem Khruat as a tourism destination, it must combat these problems by developing a detailed marketing plan for effective advertising (Gilbert, 1989).

Tourism advertisements can be strengthened by the formation of a destination image. The destination image, which is an established impression of a location, is drawn through a combination of information provided by the destination itself, and the perceptions and emotional responses of current and potential tourists (Echtner and Ritchie, 1991, 1993). Marketing study and management are effective ways to strengthen a location's destination image in order to increase its appeal. When developing a destination image, the qualities that make the destination stand out over other destinations should be highlighted to attract more tourists. In a study of rural-cultural tourism, the most common motivations for visiting a rural destination were a desire to disconnect, to discover new places, to rest and relax, to go to scenic places, and to enjoy nature (Royo-Vela, 2009). Accordingly, these reasons for travel should be considered while developing a destination image for a rural tourist destination.

Another factor to consider when establishing a destination image for a location is the accurate representation of the destination. If visiting tourists feel misled by a destination image upon arrival to an advertised location, their disappointment will translate into bad reviews, which have the potential to damage long-term tourism growth for the location. An example of the detrimental effects of developing a misleading destination image can be seen in the case of Goathland. Goathland, a town famous for

hosting the set of “Heartbeat”, a popular television series in the 1960’s, experienced a decrease in tourism after visiting tourists were disappointed with the reality of the location versus the advertised “Heartbeat Country” image (Garrod, Wornell & Youell, 2006).

The existing market segments should be understood in order to develop more effective marketing strategies (Park & Yoon, 2009). A study found that the very young, the elderly, and less educated people do not tend to favor rural-cultural tourism; therefore, these groups would not be in the target market segment for rural-cultural tourism. Although segmenting the market will reduce the effectiveness of marketing to a larger general audience, the effectiveness of the marketing to the more interested niche is increased.

With the rise of Internet usage, it is more important than ever for tourist destinations to use a website as a primary form of marketing. The Internet is the only form of media that can provide detailed, up-to-date, accurate, and attractive information to tourists (Beldona, & Cai, 2006). Therefore, an effective website has become vital to improving customer relations and attracting new customers (Law, Qi, & Buhalis, 2009).

For a tourism marketing website to be effective, it needs to have a combination of branding, interactivity, and usability (Law, Qi & Buhalis, 2009). Attractive pictures and videos of the location should be included to improve the aesthetics of the site and create a professional image. Any unique aspects of the destination should be highlighted and described. For example, an ecotourism website should also discuss the aspects that make the destination meet the criteria for ecotourism (Dorsey, Steeves & Porras, 2004).

A study on current rural tourism websites found that although they had sufficient content and described the trips well, there were major shortcomings in the interactivity and promotional value. For example, most of the web sites cited had few or no links to other nearby destinations (Beldona & Cai, 2006). Marketing with other local destinations, known as cooperative marketing, can help to form an overall destination image for an area when a single attraction does not have enough of a draw (Beldona & Cai, 2006). Since rural destinations attract a limited number of tourists, cooperative advertising leads to the sharing of tourists among the destinations, increasing the overall number of visitors to each.

A proper marketing campaign will attract the desired type of tourist while also informing them of what to expect, which will greatly increase the level of satisfaction of tourists (Lai & Shafer, 2006). The higher the satisfaction of the tourists, the better their recommendations of the trip will be. Once a marketing strategy is developed, it is important to monitor the changes in preferences of rural tourists and to adjust the marketing strategy accordingly (Park & Yoon, 2009).

METHODOLOGY

The goal of this project was to provide suggestions to Laem Khruat, a tsunami affected village in the Krabi province of Thailand, for rural tourism that relies on community participation and control, environmentally friendly, and generates income to support the village. We pursued three objectives:

1. Characterize the interests and perceptions of Laem Khruat villagers regarding the tourism industry in the villages and the environmental concerns relevant to tourism.
2. Conduct a needs-assessment on the current and potential tourism problems of Laem Khruat, in particular water based tourism transportation, coastline waste disposal, and rural tourism marketing.
3. Research and evaluate appropriate solutions to these current and future problems.

OBJECTIVE 1: CHARACTERIZE THE INTERESTS AND PERCEPTIONS OF LAEM KHRUAT VILLAGERS REGARDING THE TOURISM INDUSTRY IN THE VILLAGE AND THE ENVIRONMENTAL CONCERNS RELEVANT TO TOURISM

For a community to become empowered by ecotourism, their views and opinions must guide the development of the project from the feasibility stage to its implementation (Scheyvens, 1999). Therefore, to develop recommendations for tourism, we determined the views and opinions of the Laem Khruat villagers on the tourism industry and related environmental issues.

We gathered this information through a survey with Laem Khruat villagers. We chose a survey in order to gather the most responses to accurately assess the views of the whole village. For all of our surveys and interviews we used the same preamble (Appendix B). Due to the limited English spoken by the villagers, the Chulalongkorn students conducted the surveys in Thai. Ten villagers of varying occupations, ages, and levels of community involvement participated in the survey. We read the surveys aloud to include villagers who could not read. Each survey lasted approximately five minutes. We chose the subjects based on their availability during the time we were present in the village. Although the village official was present for the surveys, no prompts were offered. The survey can be seen in Appendix C and the results can be seen in Appendix D. The results of this survey were used to understand the wants and needs of the villagers with regard to their tourism industry.

OBJECTIVE 2: CONDUCT A NEEDS-ASSESSMENT ON THE CURRENT AND POTENTIAL TOURISM PROBLEMS OF LAEM KHUAT, IN PARTICULAR WATER BASED TOURISM TRANSPORTATION, THE COASTLINE WASTE DISPOSAL, AND RURAL TOURISM MARKETING.

Based on requests of the PDA and our impressions from visits to the village and, we conducted needs-assessments on three potential problems: water based tourism transportation, the waste disposal system, and public relations and advertising.

WATER BASED TOURISM TRANSPORTATION

To determine the needs of the water based tourism transportation in Laem Khruat, we first identified the details of the village's current practices. We determined the cost, popularity, strengths and limitations of the current water transportation and the range of conditions in which they are used. To obtain this information we conducted interviews with mangrove tour operators. We conducted these interviews in both Laem Khruat and Kok Krai, a village with a well-established kayak tour operation nearby. We conducted both of these interviews in a semi-structured manner, with our group's Thai speaking members translating when appropriate. We took notes during the interview and recorded it to ensure accurate transcription. The transcript used can be seen in Appendix E.

We took a kayak mangrove tour to make field observations. This tour provided insight into the strengths and weaknesses of the kayaks and their usage requirements including speed, range, and maneuverability in the estuaries and mangroves. Although the tour operators described the mangrove tour and the specifications for boats to operate there, we could experience what the tourists experience and make observations not mentioned by the tour operator by taking the tour ourselves. From this information we evaluated potential human-powered boats.

COASTLINE WASTE DISPOSAL

To conduct a needs-assessment on the current waste disposal system in Laem Khruat, we surveyed the villagers on their desire for improvement and their willingness to participate in a new system. We also interviewed a village official on the village perceptions on garbage disposal and Laem Khruat's daily garbage statistics. We recorded this interview, which lasted approximately half an hour. The questions can be seen in Appendix F. The surveys, which were given to the same ten villagers who participated in the tourism surveys, lasted approximately five additional minutes each. The survey addressed the villagers' perceptions on the garbage in their village, the level of importance that they

give to proper garbage disposal, and the daily garbage statistics of individuals. This survey and the results can be viewed in Appendix G and Appendix H respectively. During the visits to the village, we made observations on the garbage disposal system. Any observations made were recorded in a notebook, or verbally into a recording device.

Interviewing the village official gave us an overview of the problem, making surveys and conversations with villagers more pointed. We used our observations to identify waste management problems that the villagers and officials did not perceive or report. From this information we assessed waste management solutions that the village would support.

RURAL TOURISM MARKETING

We interviewed village officials and made observations with regard to the marketable attractions and current marketing techniques of Laem Khruat. The marketing interview followed the tourism and waste disposal interviews. In the interview we discussed the village's perspective on advertising, the current advertising methods, the limitations of current methods, hindrances to potential advertising methods, and ideas for improving advertising. We interviewed the officials for approximately half an hour and took notes. These can be seen in Appendix I.

To assess the effectiveness of the current marketing campaign, we analyzed the currently used brochures and business cards. The village officials provided these materials and pointed out their flaws.

OBJECTIVE 3: RESEARCH AND EVALUATE APPROPRIATE SOLUTIONS TO THE CURRENT AND POTENTIAL TOURISM RELATED PROBLEMS

Proposed solutions to each of the three tourism related problems were individually researched and evaluated.

WATER BASED TOURISM TRANSPORTATION

Once we determined the usage conditions for the kayaks, we researched alternative technologies by reviewing the prior art such as patents and currently manufactured products. At the request of our sponsor, we emphasized pedal-driven options in our research but considered five other options. We looked for boats that would feasibly supplement kayaks for tours through the mangroves and caves and for boats that could replace the longtail boats on sightseeing tours in the estuaries.

We researched kayak alternatives on the Internet. We predominately researched on the Internet because there is a large collection of information on boating technologies online, and we lacked

access to a local library. To supplement this technical research, we performed an informal interview with a local boat manufacturer, who suggested feasible options, cost estimates and implementation procedures. After taking our mangrove tour, we informally discussed flaws in the current boat tour and potential solutions with the boat operators. From this information we judged the practicality of each option for the Laem Khruat boat tours. We were able to address the needs of each stakeholder in our final suggestions because our information came from the perspectives of the boat operators, the tourists and the manufacturers.

COASTLINE WASTE DISPOSAL

If improvements to the waste management system were to be made, we needed to find potential solutions. Following the advice of our sponsor, we visited the Nong Talay School and the Hin Lom village and examined the PDA's Trash Bank system, described in the Background chapter. Also, based on observed shortcomings of Laem Khruat and the Trash Bank system, we researched on the Internet for other potential waste disposal solutions and for improvements to the Trash Bank system.

At Nong Talay School our two Thai-speaking group members interviewed three school officials in Thai to learn about the Trash Bank system and its strengths and weaknesses. The two interviewers translated the discussion periodically to allow the two English-speaking group members present to participate. We took notes to record the information. The interview lasted approximately one hour and concluded with a tour of the facilities used for the Trash Bank system. Similarly, we interviewed a village official in Hin Lom to learn about its Trash Bank system. The interview lasted approximately one hour and we took notes to document the information. These interviews can be seen in Appendix J. The officials gave us a village tour, on which we observed how effectively the system prevents trash build-up in the streets.

With knowledge of the problem, current solutions and their flaws, we researched appropriate strategies for improving the PDA's Trash Bank system and the waste disposal system in Laem Khruat. We reviewed case studies of established waste disposal systems in rural villages, descriptions of innovative ideas for recycling waste, and studies on the criteria of implementing a successful waste management system.

RURAL TOURISM MARKETING

To create an effective marketing strategy for the Laem Khruat Village, we looked for successful marketing campaigns used by similar villages. We researched appropriate marketing strategies and advertising methods based on our needs-assessment. We also visited Kok Krai, a rural village in Phang Nga that has a successful marketing campaign, to interview village officials about their marketing strategies.

Kok Krai has a tourism group for managing tourist related activity in the village. We interviewed an official in the group for half an hour concerning its current advertising methods. The interview at Kok Krai inspired ideas for improving Laem Khruat's tourism advertising, transcript in Appendix K.

We also reviewed academic journals for case studies that detail existing successful methods of advertisement for tourism in rural villages. Additionally, we consulted marketing textbooks for theoretical information on marketing strategies that helped us refine our final recommendations. The Tourism Authority of Thailand (TAT) provided us with statistics on the tourism industries in the Krabi and Phang Nga provinces. The TAT also gave us brochures from other tourist destinations that we compared to identify the factors that make an attractive and informative brochure.

CHALLENGES AND LIMITATIONS

This study was not without flaws. We encountered several challenges and limitations in our two months working in Thailand. We experienced the majority of these during our fieldwork in Laem Khruat Village, particularly in our interviews and surveys. Our biggest challenge during the interviews and surveys was the language barrier. Although our two Thai speaking partners from Chulalongkorn University effectively led communication with the villagers, difficulties arose when they were unavailable to translate. Additionally, a Laem Khruat official was present for each survey to the Laem Khruat villagers. His presence may have biased the residents' answers because they may have felt pressured to respond in a manner that best represented the village rather than in a truthful way.

We also experienced a limitation when we took our mangrove tour to determine the requirements of an alternative boat for tours in Laem Khruat. Due to scheduling conflicts we took this tour in Kok Krai, a village in the neighboring Phang Nga Province, not in Laem Khruat. However, we considered worst-case conditions so that our final recommendation for an alternative boat could be as versatile as possible.

A more general challenge was our desire to tailor the project to the requests of our sponsor, the PDA, and to the needs of the village. For example, the PDA was seeking a technical solution for alternative water based transportation, but the villagers wanted more professional marketing materials. Additionally, based on personal observations and research, we found that an improved waste disposal system would benefit the village: initially, our investigation into this improvement was not requested by the PDA. Accordingly, our project focused on all three topics – human-powered water transportation, rural tourism marketing and an improved waste management system – in an attempt to cater to the needs of all involved parties.

Finally, our most noteworthy challenge came from the vast differences between rural Thai Muslim culture and our own. Before visiting Laem Khruat, we had no realistic conception of the villagers' way of life, let alone how to improve their development. Conversing with villagers and simply observing their daily routines allowed us to somewhat understand their culture; however, making recommendations that were appropriate for this community remained a challenge.

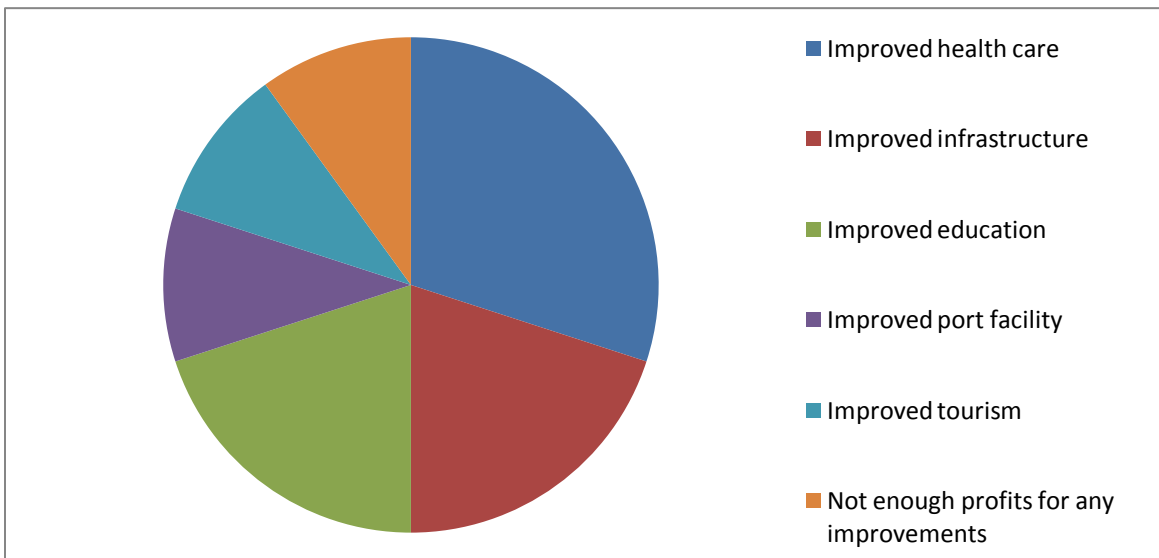
FINDINGS

The results of our survey conducted in Laem Khruat revealed that the villagers of Laem Khruat value their tourism industry. Ten out of ten villagers surveyed stated that the tourism industry contributes to sustaining the village. The surveyed villagers also expressed a unanimous desire to continue the development of tourism in the village. Based on these results indicating a desire for expanded tourism, the advice of the PDA, discussions with village officials, and personal observations, we focused on three topics—water based tourism transportation, waste management system, and rural tourism marketing—for improving tourism in Laem Khruat.

MOST VILLAGERS SURVEYED VIEW THE TOURISM INDUSTRY AS BENEFICIAL TO THEIR COMMUNITY'S HEALTH CARE, INFRASTRUCTURE, AND EDUCATION, BUT DO NOT AGREE ON THE USE OF VILLAGE FUNDS FOR TOURISM'S EXPANSION.

According to the responses of the surveyed villagers, tourism has most benefited the village in three areas: improved healthcare, improved infrastructure, and improved education. These results can be seen in Figure 5.

Figure 5: Laem Khruat Villagers Views of Benefits of Tourism



These responses demonstrate the villagers' belief that the profits from tourism are important to the improvement and sustainment of the village. Our survey showed that many villagers support using village funds to expand Laem Khruat's tourism industry. However, despite the perceived benefits that

tourism brings to the village, one individual responded that he would not support a village investment in tourism, because improving education is more pressing.

WATER BASED TOURISM TRANSPORTATION FINDINGS

FOR A HUMAN-POWERED BOAT TO OPERATE PROPERLY IN LAEM KHRUAT'S MANGROVES, THE BOAT MUST MAINTAIN STABILITY IN THE WATER, FUNCTION IN BOTH DEEP AND SHALLOW WATER, BE RESILIENT TO DAMAGE, TRANSPORTABLE ON LAND, AND BE "ONE PERSON" THICK.

The water of the Andaman Sea and its estuaries are quite calm; thus, the wakes of passing longtail boats and speedboats create the most considerable turbulence. A touring boat must maintain stability in the presence of the resulting waves. Tours will not be run in dangerous weather conditions, so we did not consider this in our evaluation.

The water in the estuaries can be more than 20 feet deep (pers. comm.). In the mangroves the water is shallow, about 50 centimeters deep at low tide (pers. comm.). During our tour we observed tree roots and rocks protruding from and just below the waterline. While it is possible to steer around these obstacles, they could cause immediate or progressive damage to passing boats. The hull and any submersed propulsion system must be durable enough to withstand scraping from rocks and roots or collisions with the rocks.

Many of the water passages lead to caves with narrow entrances that can only be accessed at certain tide levels (pers. comm.). For a boat to physically pass through the narrow waterways and into caves on the tours, it must be as thin as possible while maintaining stability. The obvious minimum width of the boats is the width of a single person. There are also routes commonly followed by tour guides and tourists that require the boat to be light enough to be transported briefly on land by its passengers.

While there are scheduled tours with specific routes offered by Laem Khruat (Appendix A), the villagers do not require tourists to strictly adhere to these routes as long as a tour guide is with them. For this reason, the boat should meet all of the requirements described above and be as versatile as possible so that the tourists can have an experience tailored to their interests and abilities.

FOR LAEM KHUAT’S TOURS, PUNT BOATS, GONDOLAS, PORTABLE OUTBOARD ELECTRIC MOTORS ON KAYAKS, AND PEDAL-DRIVEN PROPELLER KAYAKS ARE IMPRACTICAL, BUT THE CURRENTLY USED TRI-YAK KAYAK AND A KAYAK WITH A MIRAGE DRIVE PROPULSION SYSTEM ARE VIABLE OPTIONS.

By combining our criteria for appropriate technology and ecotourism with our findings about proper boat operation in the mangroves, we evaluated the feasibility of seven eco-friendly boat options for Laem Khruat’s boat tours. These options and specifications are summarized in Table 2.

TABLE 2: COMPARISON OF BOAT OPTIONS

Boat Type	Estimated Cost (baht)	Hull Material	Approx. Carrying Capacity	Approx. Weight	Propulsion Technique	Approx. Size (L x W)
Hobie Mirage Inflatable i14t (MirageDrive)	85,000	Inflatable Plastic	600 lbs	70 lbs	Mirage Drive	14' x 36"
Clinic Fiber Kayak with Mirage Drive	38,000	Fiberglass	600 lbs	150 lbs	Mirage Drive	18'
Wave Walker (Propeller)	72,600	Hard Plastic	475 lbs	120 lbs	Pedal-drive Propeller	13'10" x 31.5"
Tri-yak Kayak	27,500	Hard Plastic	660 lbs	74 lbs	Paddling	14'5" x 32"
Inflatable Kayak/Canoe	45,000	Inflatable Plastic	600-800 lbs	40-60 lbs	Paddling	14' x 36"
Hobie Evolve Torqeedo Motor on Kayak	85,800	Hard Plastic	660 lbs	92 lbs	Removable Propeller	14'5" x 32"
Punt Boat	15,000	Wood	N/A	N/A	Punt Pole	N/A
Gondola	15,000	Wood	N/A	N/A	Rowing	N/A

We considered two options, punt boats and gondolas, in which the tour guide, not the tourists, would propel the boat. The villagers currently have access to wooden longtail boat hulls. These boats can be rowed like a gondola or punted, propelled forward with a large pole, to transport tourists around the mangroves and nearby areas. These options are locally sustainable because the skills to repair wooden boats exist in the village, and the villagers can obtain wooden longtail boat hulls through the PDA’s Boat Bank program, a system in which village boat owners pay for their boats over time (Appendix L). Tour guides would, however, have to learn to punt or to row properly. The villagers of Laem Khruat can purchase a longtail hull of an equivalent size for a punt boat or gondola for about 10,000 baht (pers. comm.). Unfortunately, the water in the estuary is over 20 feet deep and no reasonable punt-pole could reach the floor of the water. The tour guide or the tourists would have to

paddle to reach the mangroves, defeating the purpose of an alternative propulsion method. Also, the draft—the minimum water depth in which a boat can operate—of a wooden gondola greatly exceeds the minimum depth of the water on the tour, 50 centimeters. Furthermore, tourists could not transport punt boats or gondolas on land because the hulls are made of a heavy wood, Phayom (species *Shorea Roxburghii*), which cannot be carried easily. Therefore, punt boats and gondolas are impractical for mangrove tours.

The Tri-yak kayaks that villagers of Laem Khruat currently use meet the criteria for effective operation in the mangroves and attract tourists that enjoy paddling. However, the tour guides complain that they can be unstable and uncomfortable for large passengers, such as European travelers, and cannot be repaired locally if broken (pers. comm.). Reasonable alternatives to the current Tri-yak kayaks are inflatable kayaks or canoes. In an interview with a Kok Krai boat operator, who had researched inflatable canoes, we learned about their advantages and disadvantages. Like the Tri-yak kayaks, they can operate in extremely shallow waters due to the low draft of inflatable boats. Inflatable canoes are more comfortable to sit in than hard plastic kayaks, and their larger beam will provide more stability for heavier passengers. According to the boat operator, professional models are more durable against rock collisions because they are made of a thick material (often leather) that will not puncture easily: unlike hard plastics, the hull compresses rather than breaks on hard collisions (pers. comm.). Inflatable hulls are also inherently lighter than plastic hulls and will be easier to transport on longtail boats and on land by passengers when necessary. The villages can locally obtain inflatable boats for 45,000 baht (pers. comm.). This price difference may not be justifiable if more pressing village issues require the extra funds. As with kayaks, this option would still require tourists to paddle. The tour guides would have to ensure that the canoes are properly inflated before embarking on a tour for the safety of the tourists. A final caveat is that inflatable canoes must be inflated by a small, motor-driven pump and the process can be inconvenient.

Tourists with upper body disabilities and tourists that want a leisurely experience cannot or may not want to paddle. A pedal-driven boat would allow them to participate in the tour. For the tours we evaluated the feasibility of two pedal drive systems: the propeller-based Wave Walker and the Mirage drive propulsion system by Hobie Cat.

The Wave Walker operates by transferring the pedaling motion to a standard rotational propeller motion via a chain (Figure 6). While this creates sufficient propulsion, a 2007 study suggests that due to losses in the chain and excess hydrodynamic drag created by the orthogonal placement of the fins with respect to forward motion, pedaling in a propeller-based pedal boat is more metabolically

efficient than paddling in slalom kayaks but less efficient than paddling in Olympic kayaks, see Figure 7 (Zamparo, Carignani, Plaino, Sgalmuzzo, & Capelli, 2007). Because the losses in efficiency in pedaling are due to the mechanical system, they are similar for each user. The losses from paddling are due to paddling technique; therefore, it would be easier for tourists without boating experience to propel a pedal boat during the tours. Despite this advantage, a propeller system would require a large draft, and common obstacles that we observed such as weeds, fish nets and rocks could damage the propeller because the it cannot be raised like that of an outboard motor.

Figure 6: Wave Walker with Vertical Propulsion System

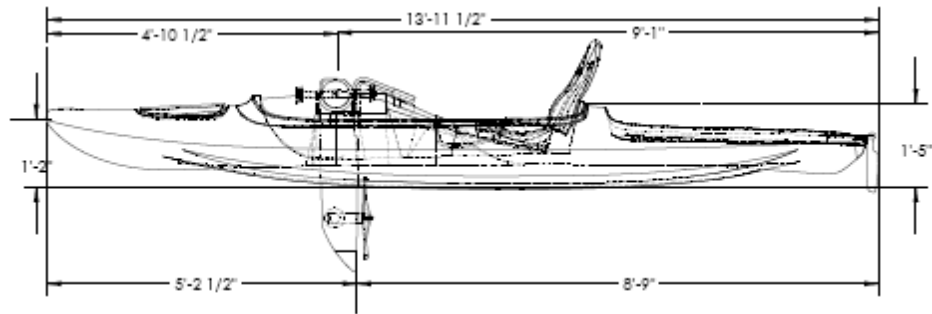
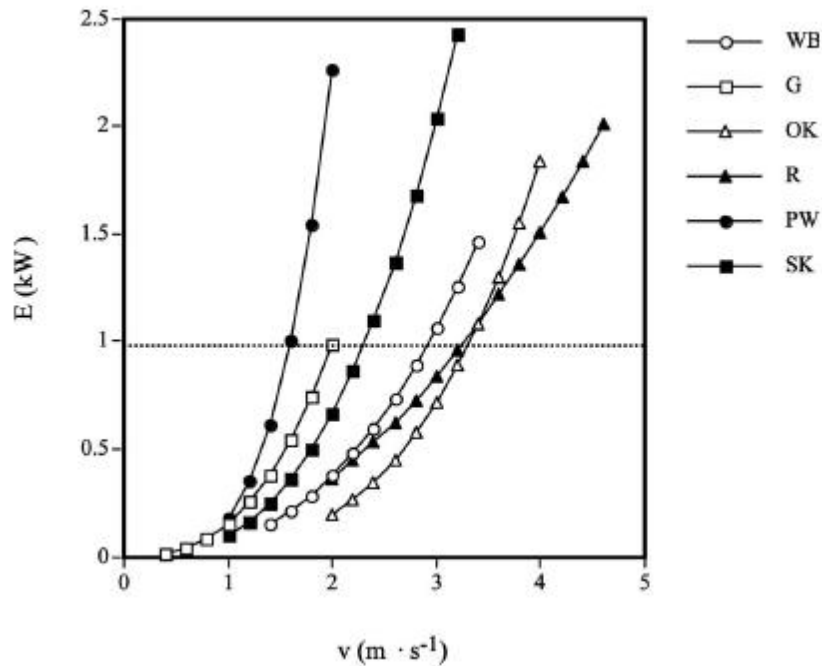


Figure 7: Graph of Metabolic Efficiency of Human Powered Boats



A boat propelled by a Hobie's Mirage drive can be used in shallow water because the fins in this design fold up along the hull of the boat (Figure 8), but still provide forward thrust with their unique

pattern of motion. Furthermore, the fins are flexible and oscillate rather than spin; thus, they will not be damaged by rocks and will not become tangled in debris or fish nets. The Mirage drive system can also be used with an inflatable kayak to gain the advantages of both design options. Mirage drive kayaks are available through a Hobie Cat dealer in Sattahip in the Chonburi province of Thailand. The Hobie Mirage Inflatable i14t is available for approximately 85,000 baht. A quote can be seen in Appendix M.

FIGURE 8: MIRAGE DRIVE SYSTEM FLAT AGAINST HULL



Even with pedal boats a tourist eventually become fatigued. To allow the tour to continue and the tourist to rest, a portable outboard electric motor could be used to drive a propeller. Because the propeller is outboard, it can be lifted from the water to avoid the rocks, weeds and fish nets. In order to minimize pollution, an electric motor should be used because there will be no local air, noise or water pollution. Such motors are available through Hobie Cat and other similar companies, but costs are prohibitively high.

COASTLINE WASTE DISPOSAL FINDINGS

ACCORDING TO VILLAGERS, THE UNRELIABILITY OF LAEM KHUAT'S CURRENT WEEKLY GOVERNMENT TRASH COLLECTION DAMAGES THE HEALTH AND ENVIRONMENT OF THE VILLAGE, BUT THE VILLAGERS ARE WILLING TO CONTRIBUTE TO AN IMPROVED SYSTEM.

The current waste disposal system of Laem Khruat Village consists of weekly government trash collections for a monthly fee of thirty baht per household (pers. comm.). However, a lifetime resident of Laem Khruat stated that the government truck does not come every week and that some houses have to share one garbage bin (pers. comm.). These circumstances force some villagers to either burn their trash or throw it into the sea (pers. comm.), exposing Laem Khruat to the associated health and environmental effects. An alternative garbage disposal system that encourages recycling and reuse would reduce these risks and improve the village's image as a destination for ecotourism.

The results of a survey of ten Laem Khruat villagers show evidence of the community's desire to implement an improved waste disposal system. See Appendix G and Appendix H for survey questions

and results respectively and the Challenges and Limitations chapter for information on the limitations of the survey. Eight of ten Laem Khruat residents ranked proper garbage disposal over paving the roads, building stronger houses, improving the education system, improving health care and improving communication technologies. In the same survey, nine villagers replied that the trash problem in Laem Khruat negatively affects their health, and nine also replied that trash damages the environment. Eight villagers believe that the aesthetics of the village are damaged, and seven villagers cite that the issue compromises their safety.

When questioned on what they would be willing to do to help implement an alternative waste disposal system, nine out of ten of the Laem Khruat villagers surveyed stated that they would be willing to use reusable bags and water bottles in the future to reduce waste. Seven villagers would be willing to attend educational seminars on environmental awareness, and seven would also be willing to actively educate their fellow villagers on an improved system. Six of the residents surveyed currently separate their garbage into recyclables and non-recyclables, three said that they would be willing to, and one villager would not.

**THE TRASH BANK SYSTEMS IMPLEMENTED IN HIN LOM VILLAGE AND NONG TALAY
ELEMENTARY SCHOOL ARE SUCCESSFUL BECAUSE THEY ARE RUN BY AN ORGANIZED
GROUP AND ARE STRUCTURED AROUND THREE PRINCIPLES: EDUCATION, INCENTIVE
AND EMPOWERMENT.**

According to a Laem Khruat Village official, an attempt by the local youth group in 2008 to implement a Trash Bank system failed because the group disbanded when the members left the village to find work (pers. comm.). In comparison, the successful Trash Bank systems in both the Hin Lom village and Nong Talay Elementary have established and well-structured management systems.

Based on our observations at the school and in the village and information gathered from interviews with Nong Talay Elementary School teachers and the Hin Lom Village youth group secretary, we have found that the successful structure of the Trash Bank system is based on three principles: education, incentive and empowerment. Education raises awareness and provides an explanation of the underlying purpose and importance of the system. If the community members are unaware that their current waste disposal system is a problem, they will be less inclined to implement a new system (Derryberry, 1954). Additionally, education leaves a lasting impression, which may lead educated villagers to participate in future environmental conservation efforts. For example, Nong Talay Elementary School incorporates environmental education into all grade levels. According to Nong Talay

School's director, eighty percent of the elementary school's students participate in environmental organizations once in high school (pers. comm.).

The second principle, incentive, is the driving force behind participation in the system. An individual monetary incentive motivates the community members to collect and sell their recyclable trash to the group running the trash bank system. The monetary incentive of reselling the trash to a private company motivates the group to buy the communities' sorted trash. Without the dual incentive for both the community members and the organized group, the trash bank system would not succeed and the recyclable trash would go unsorted and most likely be dumped, burnt, (Ministry of Natural Resources and Environment) or thrown into the sea (pers. comm.). For example, the villagers do not collect single-use plastic bags because the private companies do not accept them as a form of recyclable trash. Due to this lack of incentive, the single-use plastic bags remain a source of pollution in the villages (pers. comm.).

The third principle found to be essential in the development of the Trash Bank is empowerment. As mentioned in the background (personal responsibility), a sense of commitment and belonging in a participant increases their investment in and enthusiasm about a project (Leksakundilok, 2006). For example, in Nong Talay Elementary School, children can accept leadership positions in a school organization relating to the Trash Bank, allowing them to be directly involved. Our personal observations at Nong Talay Elementary School indicate that these positions, such as the accountant or the head sorter, foster a sense of pride and ownership, which resulted in increased enthusiasm and participation in the project.

THE PDA'S TRASH BANK SYSTEM IS INCOMPLETE BECAUSE IT DOES NOT INCORPORATE PLASTIC BAGS, AN ABUNDANT FORM OF SOLID WASTE IN LAEM KHRUAT, AS PART OF THE RECYCLING PROCESS.

In Laem Khruat, villagers use plastic bags extensively for grocery shopping and food packaging (pers. comm.). In our waste management survey of ten Laem Khruat villagers (Challenges and Limitationschallenges and limitations), we found that each of these residents receives an average of three new plastic bags per day. In a village of 1200 residents, we inferred that up to 3600 new bags are circulated around the village every day. We observed that Laem Khruat uses two main types of plastic bags of varying sizes, high-density polyethylene (HDPE) and low-density polyethylene (LDPE). We found that the LDPE bags, traditionally distributed at food and convenience stores, are prevalent in the village while HDPE bags, which are thicker and commonly used in retail clothing shopping, are less evident.

The Trash Banks in Hin Lom Village and Nong Talay Elementary School are incomplete because they do not accept organic matter or plastic bags. The private companies involved in the system (Trash Bank system) will not purchase plastic bags because it costs more to recycle them than it does to manufacture new ones. Without this monetary incentive, organization and awareness, villagers burn the plastic bags, bury them or toss them into the sea (pers. comm.). Organic matter biodegrades quickly and is not a concern. Plastic bags, however, kill marine life when thrown into the sea and require at least 1000 years to biodegrade. During the biodegradation process the bags release toxic chemicals, which presenting a serious environmental problem (Reusable Bags Depot, 2008).

RURAL TOURISM MARKETING FINDINGS

LAEM KHUAT'S CURRENT MARKETING STRATEGIES ARE INEFFECTIVE DUE TO THEIR RELIANCE ON UNPROFESSIONAL BROCHURES AND BUSINESS CARDS THAT HAVE ERRORS, WHICH PREVENT TOURISTS FROM CONTACTING THE VILLAGE.

Laem Khruat currently markets itself with self-printed brochures on standard computer printing paper (A4 paper) and business cards. Both have several errors that could hurt the destination image of Laem Khruat. The brochure, which advertises Laem Khruat's home-stay and kayak tour programs, portrays an unprofessional image of the village with spelling mistakes and ineffective formatting. Although currently placed in a tourist agency in Krabi, according to the village official we interviewed, the brochure has not increased the number of tourists that have travelled to the village despite being available in the tourist agency for one year (pers. comm.). Furthermore, the village's business card, which is distributed to visiting tourists, contains inaccurate information that may hinder the tourists' ability to contact the village.

The current brochure and business card and their major errors can be seen in Figure 9, Figure 10, and Figure 11. On the front side of the brochure, there are two spelling mistakes in the headings. Additionally, the format of the brochure is misaligned causing some text to be cut-off on the folding lines. The map on the back of the brochure lacks the necessary details and labeling of landmarks that would make it an effective tool for locating the village. Furthermore, the details appear only in English, which is ineffective because the majority of tourists are Thai.

Figure 9: Front Side of Current Laem Khruat Brochure



Figure 10: Map on Back of Current Laem Khruat Brochure

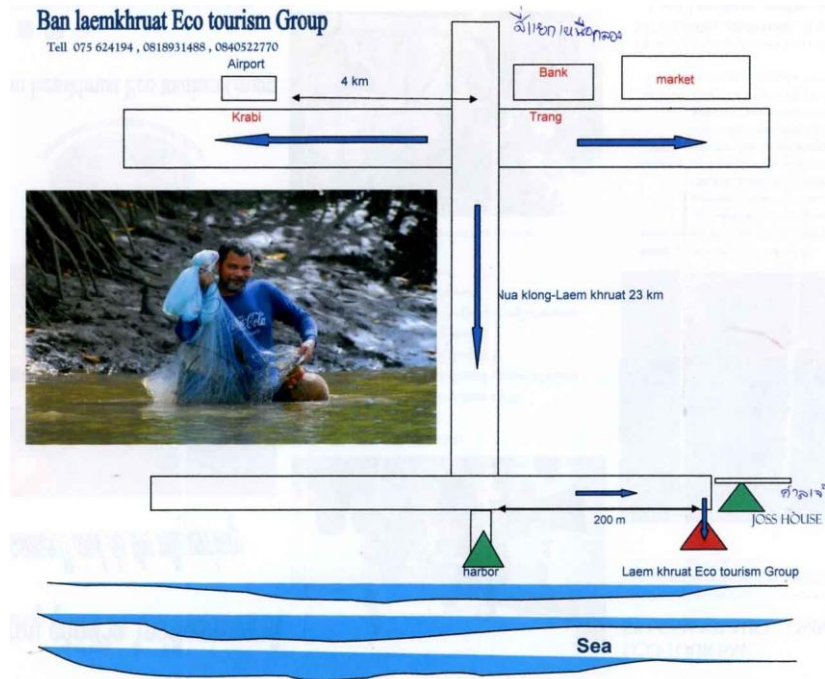


Figure 11: Current Laem Khruat Business Card



KOK KRAI, A VILLAGE IN THE PHANG NGA PROVINCE OF THAILAND, EMPLOYS EFFECTIVE MARKETING TECHNIQUES—INCLUDING DISTRIBUTING BROCHURES AND BUSINESS CARDS, FORMING BUSINESS RELATIONSHIPS WITH LOCAL TOURIST AGENCIES, POSTING THEIR TOUR AND HOME-STAY INFORMATION ONLINE, AND ATTENDING TOURISM CONVENTIONS—AND CAN BE USED AS A MARKETING MODEL FOR LAEM KHRUAT.

Kok Krai advertises with brochures, business cards, post cards, a website, and a booth at the Phang Nga Tourism Convention. Kok Krai provides two versions of their brochure, one describing their village and its attractions and the other detailing their kayak tours around the mangroves and islands near the village. Both the brochures have Thai and English versions.

Kok Krai has also developed a business relationship with a local tourist agency in the Phang Nga province, in which they receive a payment of 1850 Baht for each tourist the agency brings to their village. The tourist agency then charges the tourists more than the sum paid to the village to make a profit. This increased price includes the cost of the translator sent with the tourists to the village.

In 2009, the tourism group of Kok Krai began advertising on Phang Nga Province's website, www.cbtphannga.com, and has set up a booth at a tourism convention. The tourism convention, which is held every November in Khao Lak in the Phang Nga province, allows tourists to sign up for packaged tours at the participating locations. The convention lasted for three days, and cost 30,000 baht. Additionally, Mr. Nikorn Sarakam, the head of the tourism group of Kok Krai village, plans to further promote tourism by joining with five other local villages – Bang Pat, Koh Nok, Phu Nai, Sam Chong, and Kok Krai – to establish a village tourism office in Khao Lak, a popular tourist village in the Phang Nga province.

INFORMATION AND QUOTES GATHERED FROM A PRINTING COMPANY IN BANGKOK
SUGGEST THAT LAEM KHUAT CAN AFFORDABLY PRINT THEIR MARKETING MATERIALS
PROFESSIONALLY.

We obtained quotes for printing brochures by contacting T.D. Masukh Printing and Packaging Company Limited in Bangkok. These quotes are listed according to paper type in Table 3.

Table 3: Cost of Printing Brochures Based On Type Of Paper

Type of paper	Cost of Paper (Baht)	Cost of Printing (Baht)	Cost of Folding (Baht)	The Total cost (Baht)	Cost per unit (Baht)
News Print	60	3500	100	3660	Total cost/500= 7.32
Art glossy (115 gm)	165	3500	100	3765	Total cost/500= 7.53
Art card lamination (230-250gm)	450	4300	100	4850	Total cost/500= 9.7
Art glossy (85 gm)	145	3500	100	3750	Total cost/500= 7.5

As the number of copies printed increases, the price per brochure decreases. The exact prices are shown in Table 4 below.

Table 4: Demonstration of Reduced Cost per Unit with Bulk Orders

Number of copies	The Paper cost	The Printing cost	The Folding cost	The Total cost	Cost per unit
500 copies	165 Baht	3500	100	3765	Total cost/500= 7.53
1,000 copies	330 Baht	3500	100	3930	Total cost/1000= 3.93

According to the company it will cost twenty baht per kilo to mail the brochures from Bangkok to Krabi Province (pers. comm.). According to a village official, the tourism group in Laem Khruat has a marketing budget of 10,000 baht, allowing them to professionally print their marketing materials.

RECOMMENDATIONS

Our project provided recommendations to the PDA for rural tourism that relies on community participation and control, is environmentally friendly, and generates income to support Laem Khruat. We found that although the village has an established tourism industry, it does not meet the standards to be marketed as an ecotourism destination. To meet those standards, improvements can be made to the water based tourism transportation, the waste disposal system, and the tourism marketing strategies of the village. After reviewing many designs, we concluded that the Hobie Mirage drive system is the optimal solution due to its peddle-driven oscillating fins, which are ideal for mangrove conditions. To improve the waste disposal system, we found that implementing the PDA's Trash Bank program with a supplementary Plastic Bag Bank would be an effective solution. Laem Khruat's marketing campaign can be improved with new brochures, participation in tourism conventions and a website. The expansion of the tourism industry in Laem Khruat should be environmentally friendly, generate income for the village, and rely on community participation and control to avoid the potential problems caused by tourism described in the background section (The Impacts of Tourism in Thailand). These methods of improving tourism and the subsequent steps towards ecotourism can be applied to rural villages along the Andaman Coast throughout southern Thailand.

WE RECOMMEND FOR AN ECO-FRIENDLY, COMMUNITY-RUN AND LOCALLY SUSTAINABLE EXPANSION OF LAEM KHRUAT'S TOURISM INDUSTRY.

Based on Laem Khruat villagers' views on tourism, we inferred that there is a desire from the residents to expand the tourism industry in their village. We recommend that Laem Khruat should broaden its tourism industry in a way that is locally sustainable, environmentally friendly, and empowering for the community. To ensure that the villager's understand the benefits of maintaining sustainable tourism, the villagers of Laem Khruat should be exposed to education programs and awareness campaigns on the importance of environmental conservation. To avoid the problems caused by tourism discussed in the background, the community should be educated on the potential drawbacks of tourism, and a development plan should be created and implemented to ensure Laem Khruat's growth toward ecotourism.

RECOMMENDATIONS FOR WATER BASED TOURISM TRANSPORTATION

WE RECOMMEND THAT IF FUNDS ARE ALLOCATED FOR EXPANDING ECOTOURISM, THE VILLAGE SHOULD CONSTRUCT KAYAKS WITH A MIRAGE DRIVE SYSTEM BECAUSE IT WILL REDUCE THE USE OF LONGTAIL BOATS AND MAKE THE MANGROVE TOURS MORE ACCESSIBLE.

If Laem Khruat invests in expanding their efforts towards ecotourism to their boat tours, a pedal boat with a Mirage drive system could replace longtail boats for short tours and could supplement the paddle kayaks for tours into the mangroves. Offering the option to pedal and to paddle would increase the number of tourists that could be accommodated by the tours: less-able tourists, tourists with upper body disabilities, and tourists seeking a more relaxing experience could pedal throughout the tour.

Although most pedal-drive boat designs are unsuitable for touring the mangroves near Laem Khruat, the Hobie Mirage drive system overcomes the limitations that prohibit other pedal boat designs from being used in the mangroves, particularly the shallow water and the frequent obstacles that would damage other drive systems. Hobie Cat's kayaks can be purchased with a plastic or inflatable plastic hull from a dealer in Sattahip, Thailand (details in Appendix M). If Hobie Cat kayaks are purchased, we recommend the purchase of inflatable kayaks to gain the stability, durability and portability of inflatable boats for the same cost as hard plastic hulls.

A local Hobie Cat dealer quoted the pedal kayaks for Laem Khruat at about 85,000 baht per boat (Appendix M), a much higher price than the village's budget of 20,000 baht. In order to produce a more affordable but usable pedal boat for the tours, we recommend the use of the Mirage drive system in a hull that can be manufactured locally at a lower cost than Hobie's kayaks. Several dealers throughout the world sell the drive system alone for about 16,000 baht (this figure was obtained by averaging the prices of the drive from websites see Appendix N for links). If the drive system is purchased over the internet, shipping to Thailand may be a deterrent for several online dealers. If it is necessary to obtain the drive from Hobie, the PDA should contact Hobie to work out the details of purchasing drive systems for custom kayaks. This drive can be locally sustainable because the dealer in Sattahip, Thailand can supply the village with replacement parts if the drive is damaged.

If the drive can be obtained, there are two options for the hull: a locally manufactured fiberglass hull or a wooden hull constructed by the villagers of Laem Khruat. In an interview with employees of Clinic Fiber, a fiberglass boat manufacturer in Surat Thani a neighboring province of Krabi, the manufacturer can build a fiberglass kayak and cut it to fit the Mirage drive system for 22,000 baht if a minimum of ten kayaks are purchased (pers. comm.). Because Laem Khruat is not the only village that offers tours of this nature, the PDA could organize a collaborative purchase of the boats so that no one

village would have to invest in ten boats to make this possible. For example, five villages each purchase two boats and each village purchases two drive systems separately. Due to patent concerns the villagers, not the manufacturer of the hull, will have to install the Mirage drive into the fiberglass hull. Kayak and boat building hobbyists and professionals have successfully installed the Mirage drive system in custom built kayaks using common kayak modification techniques. The details of this installation can be found in Appendix O. These details should be communicated to the hull manufacturer so that the boats can be manufactured appropriately.

Currently, the villagers of Laem Khruat repair their own wooden longtail boat hulls, and these woodworking skills can be applied to building sit-on-top or displacement hull kayaks to house the Mirage drive system. Kayaks of this type are widely considered some of the easiest boats to construct, and many tutorials and publicly available designs exist to facilitate the building of these kayaks by villagers. If a kayak with a Mirage drive is constructed by the villagers, a rudder should be added to steer the boat. This method is the most locally sustainable because the villagers could repair the boats when they break.

In order to further facilitate the purchase of the boats by Laem Khruat, a successful PDA project known as the Boat Bank can be modified to provide boats for tourism in addition to boats for fishing. The current system is described by the PDA as follows:

Small fishing boats and engines will be purchased and then rented to local fishermen for a daily fee that will contribute towards eventual ownership. Buying the boats in small increments like this will help alleviate the debt buildup of the local fishermen as they restart their livelihoods. In addition, the proceeds from the Boat Bank will go directly into the Village Bank, thereby allowing others in their communities a chance to expand their businesses as well (pers. comm.).

Further details can be found in the Appendix L. The Boat Bank has been successful in multiple villages along the Andaman coast including Laem Khruat. In the proposed “Eco Boat Bank,” the kayak and the drive system will be purchased instead of fishing boats and engines.

RECOMMENDATIONS FOR COASTLINE WASTE DISPOSAL

WE RECOMMEND THAT LAEM KHRUAT IMPLEMENTS A WASTE DISPOSAL SYSTEM SIMILAR TO THE TRASH BANKS IN HIN LOM VILLAGE AND NONG TALAY ELEMENTARY SCHOOL BUT ADDS A METHOD OF RECYCLING AND OF REDUCING THE USE OF SINGLE-USE PLASTIC BAGS AND AN EDUCATION PROGRAM TO INCREASE ENVIRONMENTAL AWARENESS IN THE VILLAGE.

As an alternative to the current weekly government trash collection in Laem Khruat, which is insufficient and leads some villagers to burn or dump their trash (pers. comm.), an established organization in Laem Khruat, such as the local women’s group, should spearhead a Trash Bank system. In addition to the strategies used by Hin Lom Village and Nong Talay Elementary School, Laem Khruat should establish a Trash Bank system that includes the collection and recycling of single-use plastic bags. When implementing this new waste disposal system, Laem Khruat should follow the three principles— incentive, education, and empowerment—because we found that they facilitated the success of the Trash Bank in Him Lom Village and Nong Talay Elementary School.

Through research and testing our group has discovered a method of recycling single-use plastic bags commonly found in Laem Khruat by using them to create a sturdier, waterproof material. In this method, we fuse eight layers of the plastic of a single-use plastic bag into a single sheet of thick plastic with the heat of an iron. We created a tutorial for this fusing process, which can be seen in Appendix P. Villagers can create items such as tarps, book covers, fans, and reusable bags with this new material. See Figure 12 for an example of a reusable bag made out of fused plastic.

FIGURE 12: REUSABLE PLASTIC BAG



To reuse the single-use plastic bags littering Laem Khruat and create incentive for the villagers to collect the bags, the group in Laem Khruat that hosts the Trash Bank system should purchase used single-use plastic bags from villagers. The group should then fuse the bags and create reusable bags to sell to villagers, tourists, and private organizations such as the PDA for a profit. The group can decorate the bags to increase their aesthetic appeal as handicrafts.

To reduce the amount of single-use plastic bags in Laem Khruat, village businesses should charge customers for each single-use plastic bag the customer takes. The villagers will then have incentive to stop taking the bags when shopping and instead seek to purchase a reusable bag, allowing them to avoid the reoccurring cost of single-use bags. Reusable bags have a lower environmental impact than any form of single-use bags including conventional HDPE bags and even biodegradable bags (Smith, 2004). The reduced environmental impact is in accordance with Laem Khruat's efforts towards ecotourism.

To promote awareness and enthusiasm about the new Trash Bank system, the hosting organization of the Trash Bank in Laem Khruat should lead an educational night and invite all villagers to attend. During this night the hosting group should emphasize the benefits of participating in the Trash Bank and of reducing the amount of single-use plastic bags in the village. If the villagers are aware that the Trash Bank is a system that relies on the efforts of individuals, the villagers will feel a sense of empowerment and ownership of the new system.

RECOMMENDATIONS FOR RURAL TOURISM MARKETING

WE RECOMMEND THAT, IN ADDITION TO IMPLEMENTING THE TECHNIQUES EMPLOYED BY KOK KRAI, LAEM KHUAT PROVIDES INCENTIVE FOR TOURIST AGENCIES AND HOTELS TO PROMOTE THE VILLAGE, POSTS INFORMATION ON BLOGS, CREATES AND MAINTAINS A WEBSITE, SELLS HANDICRAFTS TO FAIR TRADE COMPANIES, CREATES AND DISTRIBUTES A POSTCARD, AND FORMS A COALITION WITH NEARBY VILLAGES.

Following Kok Krai's strategies, Laem Khruat should develop more effective brochures and business cards. These materials should be published in both English and Thai and distributed to local tourist agencies and hotels. A business relationship should be established with the local tourist agencies to promote their tourism industry and bring additional tourists into the village. Finally, the tourism group in Laem Khruat should set up booths at tourism conventions to gain additional marketing ideas and to publicly promote their village.

The tourism group in Laem Khruat should replace the village's current brochure with an updated version that we have designed and created. Our updated version has corrected the spelling and

formatting errors in the current brochure and promotes Laem Khruat's home-stays, kayak tours, and handicrafts. Also, we added landmarks to the map in the current brochure and descriptions in both English and Thai. The improved brochure can be seen in Appendix Q.

To maximize the quality of the brochures' appearance within their budget, Laem Khruat should print the brochures on the 'Art Gloss 115g' as described in Table 3. The glossy paper enhances the color of the printings, making the brochures attractive and eye-catching. This paper is thick but light enough to mail affordably. Additionally, we strongly suggest that the village should print one thousand brochures instead of only five hundred based on the price reduction for bulk orders (Table 4).

In addition to employing the techniques of Kok Krai, Laem Khruat should experiment with marketing strategies to expand its tourism industry. When forming a business relationship with local tourist agencies and hotels, Laem Khruat should agree on a commission percentage to pay these agencies or hotels for promoting the village. Additionally, Laem Khruat should contact the Krabi and Bangkok offices of the Tourism Authority of Thailand (TAT) regarding the possibility of distributing its brochures at the TAT offices for free.

As an alternative and inexpensive way to attract more tourists to the village, we recommend posting the village's tourism information on blogs and existing websites. The cost of posting on blogs and websites depends on the site, which may allow free posting. Our group posted the information detailing Laem Khruat's kayak tours, longtail boat tours and home-stays on several well-known websites (Appendix R).

Ideally, Laem Khruat should launch its own website and link it to the PDA and CBIRD websites to increase its number of views. Similarly, the website should employ cooperative advertising and include links to other local tourist attractions to increase the appeal of the Krabi area as a tourist destination. In addition, Laem Khruat's website should allow visitors to make instant reservations.

Laem Khruat's women's group should explore alternative ways to sell their handicraft products, such as their intricate rose jewelry sets, handmade with fish scales, and tailor-made headdresses worn by Muslim women. Figure 13 shows a picture of the fish scale jewelry. To spread the village's name and increase sales, the women's group should place tags containing the village name and contact information on their products. Additionally, Laem Khruat should promote these handicrafts through the Thai Craft Fair Trade Company, a company that markets village handicrafts in Thailand. Our group contacted the Thai Craft Fair Trade Company and was able to secure a booth for Laem Khruat to sell its handicrafts in Bangkok at the company's recent craft fair, which showcased over sixty villages. Laem

Khruat made nearly 4,000 baht of revenue in one day at the Thai Craft Fair. In comparison, the villagers were only able to make about 10,000 baht when selling their handicrafts for five days in Phuket.

Figure 13: Fish Scale Jewelry Handcrafted By Women's Group of Laem Khruat



The village should design and print village-themed postcards to sell as souvenirs to visiting tourists. The postcards should contain eye-catching pictures of Laem Khruat and the surrounding area, basic information on the village's attractions, and the contact numbers and emails of tourism operators. The tourists that visit Laem Khruat for kayak tours, longtail boat tours or home-stays can send these postcards to family and friends. The postcards will act as advertisements, spreading the name of the village to potential tourists. Before proceeding with this recommendation, the postcards' printing costs and the potential revenues from the cards should be investigated to ensure that they will be profitable.

Finally, Laem Khruat should set up a booth at tourism conventions, including a convention hosted bi-annually in Bangkok by the TAT. To afford the attendance costs, Laem Khruat's tourism group should travel to the conventions with other villages in Krabi Province and organize co-booths that represent multiple villages.

RECOMMENDATIONS FOR FUTURE RESEARCH

During this project, areas of research were revealed that we were unable to address due to time limitations. In addition to these recommendations for future research, we have compiled a list of general recommendations, which explore changes that can be made to improve tourism in Laem Khruat (Appendix S).

WE RECOMMEND FURTHER RESEARCH INTO SELF-INSTALLATION OF THE HOBIE MIRAGE DRIVE SYSTEM AND THE CONSTRUCTION OF WOODEN KAYAKS FOR THIS DRIVE.

If the villagers were able to build their own boats, they could save money on purchasing and repairing them. The cost of do-it-yourself kayaks is typically lower than that of a factory manufactured model. This reduction in price would allow the villagers to purchase a Hobie Mirage drive pedal system, which they could install in this boat. We have found that this installation is similar to the installation of a dagger-board (see Appendix O), a common job for a kayak builder. When researching the Mirage drive system, we found that online retailers sell the Mirage drive system independently from the kayaks. Also, articles written by boat builders suggest that local Hobie Cat dealers will often sell the drive for custom projects. We contacted several dealers by email but received inconsequential responses. We encourage the PDA, village officials, or both to contact the Hobie Cat Company or visit the dealer in Sattahip, Chonburi in person to discuss the purchase of individual drive systems and the potential for reducing the price for a bulk order.

WE RECOMMEND FURTHER RESEARCH AND ANALYSIS INTO THE PLASTIC BAG BANK.

Some of our recommendations focused on the development and implementation of a Plastic Bag Bank. Although we gathered information on plastic bag usage in Laem Khruat, we recommend that the further development of the system would benefit from more precise usage statistics. Additionally, a financial analysis should be conducted to set prices for the purchasing and selling of the single-use plastic bags and reusable plastic bags. Finally, the health and environmental effects associated with the fusing of the plastic bags should be examined.

WE RECOMMEND ASSISTING LAEM KHRUAT IN DEVELOPING AN OVERALL MARKETING STRATEGY, INCLUDING CREATING A DESTINATION IMAGE.

Our recommendations address numerous marketing techniques; however, we have not developed a complete marketing strategy for Laem Khruat. If the villagers develop a comprehensive marketing strategy, they can increase their tourism industry but still protect themselves against

unregulated growth. This strategy should include the development of a destination image and take into consideration the number and type of tourists that the village wants to attract.

RECOMMENDATIONS FOR FUTURE RESEARCHERS

During our work with the Laem Khruat, we found that aspects of our methodology were particularly helpful. These methods will hopefully aid future research in Laem Khruat Village but may also be applicable to the research of rural villages in other locations.

WE RECOMMEND SPENDING MORE TIME IN THE VILLAGE AND LIVING THERE IF POSSIBLE.

Our group was unable to participate in the home-stay program in Laem Khruat and had limited opportunities to visit the village. More time spent in the village would provide the opportunity to build a closer relationship with the villagers. This relationship could allow for private interviews and surveys, which would increase the likelihood of villagers providing accurate answers. Additionally, extended stays in the village would allow for more extensive observations and give additional insight into the pressing needs and potential problems of the village.

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APPENDIX A

DETAILS OF MANGROVE TOURS IN LAEM KHRUAT

The Laem Khruat Village offers full day and half day sea kayak programs. There are a variety of one day trips to different islands by longtail boat. Tourists can travel both in the mangroves as well as traveling to islands in the Andaman Sea. Another option offered by the village is the rental of a longtail boat or kayak.

Example of full day trip

8am pick up from hotel

8:45am arrive at Laem Khruat Village, drink coffee

- Learn how to canoe
- Row into the sea from the pier to beautiful scenery
- Observe closely with different methods about fishing

12pm have lunch from freshly caught seafood

1pm row into the sea and experience the beautiful limestone mountain the mangrove forest

- Visit caves and beautiful lagoons

3pm row back to Laem Khruat pier

3:30pm transportation back to your hotel

Costs for Different Trips

Destination	Transportation	Travel Time to Destination	Cost
Kao Lak	Kayak	1 hr.	500 baht
Diamond Cave	Longtail & Kayak	30 min.	500 baht
Phi Phi Islands	Longtail & Kayak	2.5 hours	4500 baht
Koh Poo, Koh Jik	Longtail & Kayak	45 min.	2000 baht
Koh Si Bo Ya	Longtail & Kayak	20 min.	500 baht

APPENDIX B

PREAMBLE FOR INTERVIEWS AND SURVEYS

We are a group of students from Worcester Polytechnic Institute located in the state of Massachusetts (USA) and Chulalongkorn University in Bangkok. We are conducting research on the use of longtail boats in an effort to determine if there are any improvements, or alternatives, to the boat technology that better serve the region in terms of increased tourism and a cleaner environment. We strongly believe that for a new technology to be successful it will require the acceptance of the local community and those would be using it. For this reason we seek your input.

Your participation in this interview is completely voluntary and you may withdraw at any time. Please remember that your answers will remain anonymous. No names or identifying information will appear neither on the interview nor in any of the project reports or publications.

This is a collaborative project between the Population and Community Development Association and WPI, and your participation is greatly appreciated. If interested, a copy of our results can be provided at the conclusion of the study.

APPENDIX C

SURVEY TO VILLAGERS, PERCEPTIONS ON TOURISM AND RELEVANT ENVIRONMENTAL ISSUES

1. Do you think the income from the tourism industry is important to sustaining the village?
 - a. Yes
 - b. No
 - c. Why or why not? _____

2. Do you like having tourists visit your village?
 - a. Yes
 - b. No
 - c. Don't care
 - d. Why or why not? _____

3. Tourism has impacted which aspect of your village the most?
 - a. Economic
 - b. Ecological
 - c. Social
 - d. Political
 - e. Explain _____

4. How have the economic benefits from tourism supported the services to the village?
 - a. Improved infrastructure such as water, electricity or communications
 - b. Improved health care
 - c. Improved education
 - d. Other _____

5. Would you like to have more tourists visit?
 - a. Yes
 - b. No
 - c. Don't Care
 - d. Why or why not? _____

6. What types of tourists would you like to see?
 - a. Thai
 - b. European
 - c. Other _____
 - d. Explain _____

7. Would you support the use of village funds for expanding tourism?
 - a. Yes
 - b. No

- c. Only if other needs are met first
8. Do you think the village could improve in any of the following areas?
- a. Waste management
 - b. More eco-friendly tourist transportation
 - c. Advertising for home-stays and tours
 - d. Other suggestions_____
9. Have you ever received education or training with regard to safe environmental practices?
- a. Yes
 - b. No
 - c. Only informally
10. Would you be willing to involve tourists in your traditional cultural activities?
- a. Yes
 - b. No
 - c. Depends on the activity
 - d. Explain_____

APPENDIX D

SURVEY RESULTS, PERCEPTIONS ON TOURISM AND RELEVANT ENVIRONMENTAL ISSUES

Interviewee	Do you think the income from the tourism industry is important to sustaining the village?	Do you like having tourists visit your village?	Tourism has impacted which aspect of your village the most?
1	Yes	Yes	Economic
2	Yes	Yes	Economic
3	Yes	Yes	Economic
4	Yes	Yes	Economic
5	Yes	Yes	advertisement
6	Yes	Yes	social, ecological
7	Yes	Yes	social
8	Yes	Yes	Economic
9	Yes	Yes	Economic
10	Yes	Yes	Economic
Interviewee	How have the economic benefits from tourism supported the services to the village	Would you like to have more tourists visit?	What types of tourists would you like to see?
1	Improve tourism	Yes	everyone
2	Not enough to improve village	Yes	everyone
3	Improved infrastructure	Yes	everyone
4	Improved port facilities	Yes	everyone
5	Improved health care	Yes	everyone
6	Improved education	Yes	European
7	Improved health care	Yes	everyone
8	Improved infrastructure	Yes	everyone
9	Improved education	Yes	everyone
10	Improved health care	Yes	everyone
Interviewee	Would you support the use of village funds for expanding tourism?	Do you think the village could improve in any of the following areas	Have you ever received education or training with regard to safe environmental practices?
1	Yes	Waste management	No
2	Yes	Advertising	Yes
3	Yes	Other	Yes

4	Yes	Advertising	No
5	Yes	Advertising	Yes
6	Yes	Advertising	Yes
7	Yes	Waste management	only informally
8	No, wants to use fund for education first	Waste management	Yes
9	Yes	Waste management	No
10	Yes	Waste management	Yes
Interviewee	Would you be willing to involve tourists in your traditional cultural activities?		
1	yes		
2	yes		
3	yes		
4	yes		
5	depends on the activity		
6	yes		
7	yes		
8	yes		
9	yes		
10	yes		

APPENDIX E

TRANSCRIPT OF INTERVIEW WITH BOAT OPERATORS, WATER BASED TOURISM TRANSPORTATION

KAYAK INTERVIEW:

1. Describe the tour

Laem Khraut has tours to canals. They take tourists to Song Phee Nong Canal where they can observe the mangroves and crab farms. The canal is 5 minutes away by boat.

2. How much does the kayak cost?

The kayak cost 26,000 Baht

3. Would you like an alternative for kayaks? If so, why?

Yes, to attract more tourists.

4. Is there any budget to invest in new boats?

10,000-20,000 Baht

5. Do you think a pedal boat would be effective for this tour? Why/Why not?

For nearer distance then the pedal boat might work. However pedal boat might not be able be dragged by long tail boat

LONG TAIL BOAT INTERVIEW:

1. Describe the tour

The village has long tail boat tours to a cave and different islands:

Place	Price (Baht)	Time	Distance (km)
Diamond cave	1500	30 mins	5-6
Phi Phi Island	4000-5000	2 and a half hours	40
Poo Island	1500-2500	40-45 mins	13
Jum Island	1500-2500	40-45 mins	12
Seeboya Island	700	20 mins	2

2. How much do long tail bodies cost to build?

Size	Price
Small	5,000-10,000
Medium	20,000-30,000
Large	70,000-90,000

3. Do you think a pedal boat would be effective for this tour? Why/Why not?

For nearer distance then the pedal boat might work. However pedal boat might not be able be dragged by long tail boat

APPENDIX F

TRANSCRIPT OF INTERVIEW WITH LAEM KHRUAT OFFICIAL, WASTE MANAGEMENT SYSTEM

I. Pornpimol Limshoo, Female, Director of Village Women's group

7. Could you please describe the current garbage disposal system in your village?

Government provides garbage can and collects the garbage every week, sometimes two times per week. Each household pays 30 Baht per month

8. Do you believe the current garbage disposal system is effective? (Explain how)

No, because not all villagers throw garbage in the bin. Approximately twenty percent of the villagers still throw their trash in the sea

9. Do you believe that the village would benefit from a different garbage disposal system? If yes, do you have anything in mind?

Yes, Villagers should be educated about proper disposal of trash to prevent them to throw it in the sea.

10. Would you be willing to implement a new garbage disposal system in the village? If yes, what strategies do you think would be most effective? (example - community involvement, training, educational seminars)

Yes. Community involvement would be preferred as it is already practiced by two villages in the villages who collect garbage to sell.

11. Would you be willing to incorporate waste disposal education into the school curriculum.

The school already educates the children about waste.

12. Would the village be willing to pay for garbage collection? If so how much?

Already does

13. Do you think your village would be able to develop a successful garbage disposal system without outside aid (government, PDA)?

The youth community tried the trash bank system two years ago but it was not successful because many members of the youth group left the village to go work outside.

14. Do you have a youth group in your community? (for village officials)

Yes, the youth group started with twenty members. At present only few are left

15. What projects have they been actively involved in? (open ended)

They are involved in tourism, they become guides for tourists.

II. Surasuk Nguennuj, Male, Director of tourism group

1. Could you please describe the current garbage disposal system in your village?

Government provides garbage can and collects the garbage every week, sometimes two times per week. Each household pays 30 Baht per month

2. Do you believe the current garbage disposal system is effective? (Explain how)

No, because government burns the garbage that they collect which is not good for the environment

3. Do you believe that the village would benefit from a different garbage disposal system? If yes, do you have anything in mind?

Yes, the government should bury the trash instead of burning it.

4. Would you be willing to implement a new garbage disposal system in the village? If yes, what strategies do you think would be most effective? (example - community involvement, training, educational seminars)

Yes, Educations seminars would be preferred to help educate villagers the proper waste disposal system.

5. Would you be willing to incorporate waste disposal education into the school curriculum.

The school already educates the children about waste.

6. Would the village be willing to pay for garbage collection? If so how much?

Already does

7. Do you think your village would be able to develop a successful garbage disposal system without outside aid (government, PDA)?

It would be possible by starting a group or committee to take care but it would definitely take time.

8. Do you have a youth group in your community? (for village officials)

Yes, but there are only 3-4 members left at present

9. What projects have they been actively involved in? (open end)
They are involved in tree planting projects, sports, tourism and garbage collection

APPENDIX G

SURVEY TO VILLAGERS, WASTE MANAGEMENT SYSTEM

1. Please rank the following areas on how strongly you would like to see them happen
 - a. Paving the roads
 - b. Building houses of more durable materials
 - c. Improving school education system
 - d. Improving access to doctors, medicines, dentists
 - e. Cleaning up the garbage to improve village image to visitors and residents
 - f. Improving on communication technology (eg. internet access, telephone lines, better cell phone reception)
2. Have you been involved in any community projects?
 - a. Yes
 - b. No
3. If yes, please describe.
4. Also, if yes, what was your role in the project?
 - a. Leader
 - b. Volunteer
 - c. Paid participant
5. Are you aware of the standardized garbage disposal system within your village? If yes, please describe.
 - a. Yes
 - b. No
6. Do you separate your garbage into recyclables and non-recyclables?
 - a. Yes
 - b. No
7. Which of the following things would you be willing to do as a way to improve your garbage disposal system? Choose as many as applicable.
 - a. Pay a small fee in the range of 20-50 Baht per month to have the garbage collected
 - b. Use reusable bags and drinking bottles
 - c. Attend an educational seminar
 - d. Bring your weekly trash to a central spot for collection
 - e. Become actively involved in educating your fellow villagers on an improved system
 - f. Separate your garbage into recyclables and non-recyclables
8. Have you ever taken a class or attended a talk related to environmental concerns?
 - a. Yes
 - b. No
9. During the day, how do you usually dispose of garbage that you have?
 - a. Throw into garbage can
 - b. Throw in a pile
 - c. Throw into the sea
10. When you have a large amount of garbage, how do you most commonly dispose of it?
 - a. Throw into sea
 - b. Throw into any open space
 - c. Put into a specific area
 - d. Burn

- e. Bury
 - f. Government trash collection car
 - g. Sell it
11. How many plastic bags do you usually receive every day?
 - a. 0-2
 - b. 2-4
 - c. 4-6
 - d. 6-8
 - e. above 8
 12. Through what means do you usually obtain plastic bags?
 - a. Street food vendors (e.g. buy something for lunch)
 - b. Grocery buying
 - c. Other – describe
 13. Do you ever reuse your plastic bags?
 - a. Yes
 - b. No
 14. If yes, for what purpose?
 - a. Bin Liners
 - b. Food carriage
 - c. Food storage
 - d. Other object storage
 15. Which of the following areas are being negatively affected by the garbage in your village? Circle all that apply.
 - a. Health (e.g. diarrhea to children)
 - b. Environment (e.g. Is the fishing activity obstructed by plastic bags?)
 - c. Safety (e.g. children stepping on glass)
 - d. Aesthetics of village (e.g. Have visiting tourists mentioned anything about the trash problem in your village?, Do you think the trash problem may hurt the promotion of your village as eco-friendly?)
 - e. Other
 - f. None

APPENDIX H

SURVEY RESULTS, WASTE MANAGEMENT SYSTEM

Interviewee	Paving the roads	Building houses of more durable materials	Improving school education system	Improving access to doctors, medicines, dentists	Cleaning up the garbage	Improving on communication technology
1	3	6	4	2	1	5
2	5	4	2	3	1	6
3	6	5	1	3	2	4
4	4	5	6	3	2	1
5	4	6	2	3	1	5
6	6	4	2	1	3	5
7	5	6	1	3	4	2
8	4	5	2	3	1	5
9	5	3	1	4	2	6
10	5	6	1	3	2	4

Which of the following areas are being negatively affected by the garbage in your village?

Interviewee	Health	Environment	Safety	Aesthetics
1	Yes	Yes	Yes	Yes
2	Yes	Yes	Yes	Yes
3	Yes	Yes	Yes	Yes
4	yes	No	No	No
5	No	Yes	No	Yes
6	Yes	Yes	Yes	No
7	Yes	Yes	Yes	Yes
8	Yes	Yes	No	Yes
9	Yes	Yes	Yes	Yes
10	Yes	Yes	Yes	Yes

Which of the following things would you be willing to do as a way to improve your garbage disposal system?

Interviewee	Pay a small fee in the range of 20-50 Baht per month to have the garbage collected	Use reusable bags and drinking bottles	Attend an educational seminar	Bring your weekly trash to a central spot for collection	Become actively involved in educating your fellow villagers on an improved system	Separate your garbage into recyclables and non-recyclables
1	No	Yes	Yes	Yes	No	Yes
2	No	Yes	Yes	Yes	Yes	Yes
3	No	No	No	No	Yes	Yes
4	No	Yes	No	Yes	Yes	Yes
5	No	Yes	No	No	No	Yes

6	No	Yes	Yes	Yes	Yes	No
7	No	Yes	Yes	Yes	Yes	Yes
8	No	Yes	Yes	Yes	Yes	Yes
9	No	Yes	Yes	Yes	No	Yes
10	No	Yes	Yes	Yes	Yes	Yes
Interviewee	Have you been involved in any community projects?	If yes, please describe	Also, if yes, what was your role in the project	Are you aware of the standardized garbage disposal system within your village?	Do you separate your garbage into recyclables and non-recyclables?	Have you ever taken a class or attended a talk related to environmental concerns?
1	Yes	Fisherman projects, fish farming	Volunteer	No	Yes	No
2	Yes	environmental project, planting trees	Volunteer	Yes	Yes	Yes
3	Yes	community project, leaning and developing the village	Volunteer	No	Yes	Yes
4	No	N/A	N/A	Yes	No	No
5	Yes	tourism for environment	Volunteer	Yes	No	No
6	Yes	many improving their well being	Leader	Yes	No	Yes
7	Yes	envionment in the village	Leader	Yes	Yes	No
8	Yes	he is the village offical therefore attended a lot of projects	Leader	Yes	No	Yes
9	No	N/A	N/A	Yes	Yes	No
10	Yes	garbage project	Paid Participa nt	No	Yes	No
Interviewee	During the day, how do you usually dispose of garbage that you have?	When you have a large amount of garbage, how do you most commonly dispose of it?	How many plastic bags do you usually receive every day?	Through what means do you usually obtain plastic bags?	Do you ever reuse your plastic bags?	If yes, for what purpose
1	Throw into garbage can	Government trash collection car	0 to 2	Street food vendors	no	N/A
2	Throw into garbage can	Government trash collection car	0 to 2	Street food vendors	yes	Bin Liners; Food carriage; Food storage
3	Throw into garbage can	Government trash collection car	6 to 8	Street food vendors ; Grocery buying	yes	other

4	Throw into garbage can	Burn	4 to 6	Street food vendors	no	N/A
5	Throw into garbage can	Put into a specific area; Government trash collection car	2 to 4	Street food vendors	yes	to put fish in and then sell in the market
6	Throw into garbage can	Put into a specific area; Government trash collection car	4 to 6	Grocery buying	yes	everything
7	Throw into garbage can	Put into a specific area; Government trash collection car	2 to 4	Grocery buying	yes	other
8	Throw into garbage can	Put into a specific area; Government trash collection car	0 to 2	Street food vendors	yes	everything
9	Throw into garbage can	Put into a specific area; Government trash collection car	2 to 4	Street food vendors ; Grocery buying	no	N/A
10	Throw into garbage can	Put into a specific area; Government trash collection car	6 to 8	sell food	yes	put everyday things

APPENDIX I

TRANSCRIPT OF INTERVIEW OF LAEM KHRAUT VILLAGE OFFICIAL, TOURISM

1. What are your existing advertising methods?

The existing methods of advertisement of laem khraut village consist of business cards and brochure in one tourist agency.

2. What future plans do you have for advertisement?

In the future, the village is going to join in a Krabi tourism website and also would like to build their website.

3. What attractions does the the village has to offer?

The village has the following attractions: Homestays, Kayak and Long tail boat tours, Cultural shows such as traditional dances, and handicrafts by women's group of such as handicrafts by fish scales and embroidered muslim women head-dress

4. What is your budget for advertising?

20,000 baht

5. Would you be willing to join hand with other villages to set up a booth at tourist conventions in bangkok?

Yes

6. How many new sets of brochures are you willing to print out?

500

7. How does the tourism group of the village manage their profit?

1. Ten percent of the revenue goes to tourism group while the rest are expenses.

APPENDIX J

TRANSCRIPT OF INTERVIEWS ON TRASH BANK

Hin Lom Village (Waste disposal – Garbage Bank)

Interviewed: Mrs. Somchai, age 35, the leader of the village bank committee

“Before, the villagers did not have garbage cans. They used to throw all kinds of garbage into the sea. PDA trained the youth in the village and formed a youth committee to help solve problems about the garbage. At first, the youth provided the villagers with black garbage bags then after a while they changed them to garbage cans. They taught the villagers how to separate the garbage and tell them to put all the recyclable ones in the black garbage bags they provided. However, the youth committee just started the garbage bank system just a few months ago. I think this new system would help improve our village quality by a lot. Last year we only have garbage cans, but this year after the youth group taught us how to separate our garbage most of us started to try separating them. However, 20% of the villagers don’t support the youth committee because they still don’t understand how the youth committee can help improve the village. This includes the villagers who are currently doing the garbage business and think that the youth committee would reduce their customers, which leads to lower income. This is true, the villagers who usually separate their garbage (even before the youth committee started) changed from selling their recyclable garbage to the outsider or to the villagers doing garbage business to now selling them to the youth committee.

The school here educates the students about trash and garbage bank. They taught the students how to make handicrafts such as vase and lamp from plastic bottles and then send some of them to competitions. The children are very eager to participate in the program. The government collects garbage that has no value (non-recyclable). Every household has to pay them 30Baht per month. There are still burning of trash like leaves, wood sticks and sometime plastic bags, but lesser than before.

The youth committee used to have 20 members, but now there are only 10 members left because the older kids when to other places to study further.”

Nong Talay School (Waste disposal – Garbage Bank)

Interviewed: One of the teacher who is the supervisor of the school garbage bank committee

“The Nong Talay village has 800 houses and 3,000 people. The village earned a ‘clean house’ award last year. All of the students who are attending this school are from the Nong Talay village.

The school started the garbage bank program six years ago. They started by teaching all the students about garbage and global warming. The teachers use games and art to attract the student’s attention. Students were taught about how garbage can turn into money and how they can help bringing in more income for their family. However, the parents in the village didn’t help support the system as much as expected. This was when the PDA stepped in and helped improved the system

after the program started for one year. The PDA personnel went into the village and told every household that five empty cans can be exchanged into 2 eggs. This tactic brings the system up and running again.

Students would collect recyclable garbage and sell them to the school garbage bank committee. Where the school garbage bank committee members separate the garbage and then sell them to a private company. However, the school garbage bank doesn't buy plastic bags due to the fact that the private company doesn't buy them."

APPENDIX K

TRANSCRIPT OF INTERVIEW WITH KOK KRAI TOURISM OFFICIAL

8. What are your existing advertising methods?

The village existing advertising method consist of:

- Word of mouth
- Two brochures (English and thai)
- Co-website, they don't have their own website yet
- Blogs, their village background and tour information were posted on some blogs
- Newspapers, they were interviewed by 'Kom-chad-luek' (nationwide newspaper), 'Daily News' (nationwide newspaper), and 'Pak-Tai Today' (local newspaper)
- Hotels, they made agreements with 6 hotels which regularly brings their customers to the village
- Tour agencies, they distribute their brochures to three agencies and made an agreement with one agency (The Unseen tour agency, Phang-nga)
- Tourist conventions, they attended the 'Khao Lak' tourist convention centre twice. (Khao Lak convention centre have 3 days fair every year)

9. What future plans do you have for advertisement?

In the future, the village is going to join four other villages (Bang Pat, Koh Nok, Phu Nai, and Sam Chong) in Phang-nga to set up their own tour agency. They also want to have their own website.

10. What attractions do the village offers?

The village has the following attractions: Homestays, Kayak and Long tail boat tours, fish farms, oyster farms, and dried shrimp and dried fish products make by the women group.

11. What is your budget for advertising?

Last year was 80,000Baht

12. Would you be willing to join hand with other villages to set up a booth at tourist conventions in bangkok?

We join hands with other villages when we don't have enough money for the booth.

13. How many new sets of brochures are you willing to print out?

Last time we printed a set of 5,000 brochures. We did not plan on printing another set yet.

14. How does the tourism group of the village manage their profit?

It's still our first year and we spent a lot on advertising. Therefore, we haven't gained any profit yet.

APPENDIX L

BOAT BANK OVERVIEW

Email from Mrs. Shelia from the PDA

In the first phase of immediate disaster relief the supply of fishing equipment such as boats, nets and cages received top attention, since most were totally destroyed or badly damaged.

In contrast to many other donors PDA recommended that boats were not just given away free which led to oversupply and misuse but on a rental and/or buy-back base. A special 'boat bank' committee made sure that the community maintains ownership of the boats and set rules and regulations that really benefit the community and not individuals.

After the most urgent need of villagers with regard to the supply of new boats/engines and repair of damaged ones was satisfied, this activity is now merged with village development bank operations on a wider scale.

The provision of boats with engines also slowed down in view of rapidly rising fuel costs and the worrying trends observed by many experts and specialized institutions such as FAO which ascertain an oversupply of boats and fishing gear that endangers further the already dwindling fish, crustacean and mollusk populations in the Andaman Sea.

A total of 301 boats, 226 of them new, and 242 engines, 195 of them new, were provided under the program.

Extract from a case study in Ban Klong Kam, Mueang District Krabi.

One of the tangible improvements to livelihood has come as a result of the Boat bank established in July 2005. The Village bank hires people to build boats and share the costs of buying raw materials and pays the boat builders for their labour. Most of the boats are being leased for eventual ownership by individual fishermen while remaining boats will be kept under the ownership of the VDB for rental to the community (usually to take tourists on boat trips or when there is a short term need to transport goods to outside markets). The village Bank sub committee is responsible for the upkeep of the community rental boats and they set rules and regulations regarding rental agreements. The advantage of a boat bank (as opposed to free distribution of boats) is that it generates capital for the VDB and gives the community a true sense of ownership over the project.




A newly large built boat given to the village on behalf of the donors.

As fishery is the main source of income in Klong Kam, the villagers are very enthusiastic about the boats as they can earn a living independently.

APPENDIX M

HOBIE CAT QUOTE FOR KAYAKS

	Blue Seas Marine Asia Co. Ltd		QUOTATION		
	255/6 Moo 9, Na Jomtien, Sattahip, Chonburi 20250, Thailand				
	Tel: +66 (0)38 237 730 Fax: + 66 (0) 38 238 570		No. # :	BSMW10-0050	
	TAX ID. No. 3033564655		Date :	2/18/2010	
			Payment Term :	Before Delivery	
Bill To:		Ship To:			
		Mr. Robbie D' Angelo			
		Chulalongkorn University			
PART #	DESCRIPTION	Qty	UNIT PRICE	TOTAL THB	
Paddle Kayaks					
	Hobie Maui Deluxe (1 person)	1	24,950.00	24,950.00	
	Hobie Kona Deluxe (2 person)	1	36,950.00	36,950.00	
Mriage Drive Kayak					
	Hobie Outfitter (2 person)	1	85,950.00	85,950.00	
	Hobie Oasis (2 person)	1	85,950.00	85,950.00	
Inflatable Kayaks					
	Hobie i12s (1 person)	1	59,950.00	59,950.00	
	Hobie i14t (2 person)	1	84,950.00	84,950.00	
Notes:					
1 The above quotation is valid untill 28th March 2010					
2 Prices are EX-WORK Blue Seas Marine warehouse - Pattaya					
3 Prices are Excluding 7% VAT & Delivery Charge					
4 Before Delivery					
5 Delivery Schedules : TBA					
** Please fax orders to Attn: Blue Seas Marine Asia Co.,Ltd, Fax No. 038 238570**					
<i>Blue Seas Marine Asia Co.,Ltd.</i>					

APPENDIX N

PRICES OF SEPARATE MIRAGE DRIVE SYSTEM

These are two American business that sell the Mirage drive system separately from the body of the kayak. We feel that this information could be used in discussions with the Hobie dealer in Thailand to show that the drive system can be sold separate from the kayak body. This can also be used as a price point for bargaining with the Hobie dealer.

www.austinkayak.com/products/254/Hobie-Mirage-Drive.html

www.kayakfishingsupplies.com/servlet/the-995/Hobie-Mirage-Drive/Detail

APPENDIX O

INSTALLATION GUIDE FOR MIRAGE DRIVE SYSTEM

These are three separate guides for installing the Mirage drive system into kayaks.

Sculling without the Oar by Andy Brenner

<http://www.glen-l.com/weblettr/webletters-8/wl64-miragedrive.html>

It's All in the Legs by Kellan Hatch

<http://www.duckworksmagazine.com/03/r/projects/mirage/index.htm>

STOAPROA: A 16' outrigger canoe that stores in an 8' space, powered by pedals, paddles, or sail by Gary Lepak

<http://www.duckworksmagazine.com/05/projects/stoaproa/index.cfm>

APPENDIX P

REUSABLE PLASTIC BAG GUIDE



Laem Khruat Plastic Bag Bank
Manual for Constructing Reusable Plastic Bags

1. Collecting the Bags

There are two main types of single-use plastic bags found in Laem Khruat: LDPE and HDPE.



LDPE

Thin and flimsy single-use plastic bags commonly used for grocery shopping.

HDPE

Thicker bags which are usually used for higher-value goods.



Only LDPE bags are appropriate for fusing.



2. Preparing the Bags

Select a bag to prepare. Lay the bag flat and cut off the handles and bottom seam. This will allow you to open the bag into a larger rectangle.



If the bags are dirty, it is necessary to clean them before attempting the fusing process. It is effective to clean the bags in a bucket containing a mixture of water and solvent. Hang to dry.



After the bags are clean and dry, turn them inside out to prevent any ink on the bags from melting onto your ironing surface.



3. Fusing the Bags

Fusing 6-8 layers of plastic bag provides the best results. To achieve the desired number of layers, either fold a single plastic bag over twice, or lay three or more bags on top of each other.

Sandwich the layered plastic between two sheets of paper. Turn on the iron and allow it to heat to a low temperature. Begin ironing back and forth over the bag. Do not stop on one spot for too long. After a few minutes, raise the temperature and continue to iron for several more minutes. Lift up the corner of the paper to see if the bags have fused. If they have not yet fused, continue ironing for several more minutes.

The ironing process takes a while to get used to. Depending on the iron you are using, the temperature best suited to fusing may be higher or lower than with other irons. Be patient and keep trying if it does not work perfectly the first time.



Step 4. Creating the Reusable Bag

After fusing enough pieces of plastic together to create a bag, map out where all the pieces will be sewn together.

Using larger pieces of fused plastic, which allow for less sewing, is recommended.

Sew the body of the bag together either by hand or with a sewing machine if available. Create handles out of fused plastic or another appropriate material. Sew on the handles. Decorate the bag using recycled materials.



APPENDIX Q

IMPROVED BROCHURE

แผนที่ MAP

ท่าอากาศยานกระบี่
Krabi Airport
4 กม. 4 km

ธนาคารกรุงไทย
Krung Thai Bank PLC
23 กม. 23 km

ท่าเรือแหลมทราย
Laem Khruat Pier
200 ม. 200 m

บ้านแหลมทราย
Baan Laem Khruat

ที่อยู่: 92/2 ม.8 ต.คลองขนาน อ.พุนพิน ต.กระบี่
Address: 92/2 Moo8, Khlonguan, Luakhlong district, Krabi
ติดต่อ Contact: 075-024194, 081-893 1488
laemkhruat_man@hotmail.com

SOUTHERN THAILAND - KRABI

LAEM KHUAT VILLAGE

ยินดีต้อนรับสู่บ้านแหลมทราย
บ้านแหลมทราย อยู่ห่างจากตัวเมืองกระบี่ 36 กม. มีประชากรประมาณ 216 หลังจกรวม โดยส่วนใหญ่เป็นชาวมุสลิม ซึ่งคิดเป็น 90% ของประชากรทั้งหมด ส่วนที่เหลือเป็นเชื้อสายจีนและคนไทย อริชนที่อาศัยอยู่ของหมู่บ้านนี้คือชาวประมงทะเลจากสวน จึงมีขงขนานทะเลไปเล่นน้ำกันในปี พ.ศ.2547 ก็ได้มีนักท่องเที่ยวเข้ามาดูวิถีชีวิตของชาวบ้านในท้องถิ่นอย่างมากมาย ทำให้ชาวบ้านจำนวนมากตั้งตารอที่จะต้อนรับนักท่องเที่ยวที่เข้ามาชมวิถีชีวิต

Welcome to Baan Laem Khruat
The village is situated 36 km south of Krabi city. The village has approximately 216 families out of which 90% are Muslim and 10% are Buddhist. In Laem Khruat, the majority of the villagers are fishermen, while the rest works in rubber and palm oil farm. The Laem Khruat village suffered a loss of livelihoods from the 2004 tsunami, and was introduced to tourism as a way to sustain themselves. Laem Khruat is currently working towards ecotourism.

Kayak & Long-Tail Boat Tours, Homestay



Kayak & Long-Tail Boat Tour

ค่ายัค

กิจกรรมล่องเรือคายัคเพื่อชมธรรมชาติและร่วมปลูกป่าชายเลน โยธะมีเรือหัวโพงนั่งเที่ยวเกาะต่างๆ เช่นเกาะปู เกาะจ้ำ เกาะพิธิ เกาะสันตา เพื่อไปดำน้ำดูปลาและปะการังหลากหลายชนิด

Tourist activities include kayaking, planting trees around the mangroves, or snorkeling to see corals and their colorful surroundings along the island's coast and lagoon. The village offers long-tail boat tours to the islands of Koh Jum, Koh Phi Phi, and Koh Lanta.



Homestay Program

โฮมสเตย์

ก่อนโฮมสเตย์จึงอนุญาตให้นักท่องเที่ยวเข้าชมสวนผักปลอดสารพิษที่สวนเกษตรโรงเรียนชาวไทยมุสลิม นอกจากนี้นักท่องเที่ยวยังสามารถเรียนรู้วัฒนธรรมประเพณีของชาวบ้าน ได้เป็นอย่างดี อีกทั้งยังมีกิจกรรมที่น่าสนใจอีกมากมาย เช่น การเรียนทำอาหารไทย การตกปลา และการร่วมทำหัตถกรรมจากผลิตภัณฑ์กลุ่มแม่บ้าน

The Laem Khuat Homestay invites tourists to experience Muslim Thai culture. Tourists can observe the traditional life of the villagers. Go out with the fishermen in the early morning or take a Thai cooking lesson during your Homestay! The village also offers handicraft classes on making ornaments from fish scales.



Laem Khuat Ecotourism Service

ราคา

- ราคาเรือหางยาว ไปเกาะต่างๆ 700-4,000 บาท
- Long-tailed boat tour to islands 700-4,000 Baht
- ราคาเรือคายัค ไปเกาะต่างๆ 100-1,000 บาท
- Kayak tour to islands 100-1,000 Baht
- ราคาน้ำดื่มขวดพลาสติก 1,000-2,000 บาท
- Homestay service 1,000 -2,000 Baht /person

[ราคาขึ้นอยู่กับโปรแกรมที่นักท่องเที่ยวเลือก All prices depend on the type of tour you choose]



Sponsored by: Population and Community Development Association (PDA) [Krabi Center]
ติดต่อ: Contact: 075.694.301 to 7
pda_cbird_kb@yahoo.com

APPENDIX R

HOME-STAY WEBSITE POSTINGS

We posted information for the Laem Khruat Village on three websites ourselves, <http://www.homestayweb.com/index.html>, www.homestaybooking.com, and www.worldhomestay.com. We also called another website to get information posted there, <http://www.andamandiscoveries.com/>.

Info we posted:

My house is in the Laem Khruat Village which is 36 km south from Krabi city. It is a coastal village and my house is situated right next to the coast, therefore, you will get spectacular view of the sea and sunset during your time here. My village has approximately 200 families and 90% of the villagers are Muslims. I myself is of a muslim heritage and in our culture we do not encourage pork or alcohol as we find it offensive. There are five members in my family: me, my wife, my thirteen years old daughter, my ten years old son and my one year old daughters. We are very friendly and accommodating so you would enjoy your time here. You would enjoy your refreshing meals as my village is abundant with fish, crabs, prawns and other sea animals as most of the villagers here are fisher men and have floating fish farms on the sea. The meals would be home-cooked and deliciously healthy. My village also offers longtail boat tours to famous islands such as Koh Phi Phi, Koh Jum and Koh Phoo and Koh Lanta. We also have Kayak tours around the mangroves and near-by islands. My village is working towards being eco-friendly so we have tree-plantings programs. You would also experience our way of life where you can learn Thai cooking, go fishing and learn to make beautiful handicrafts from fish scales (you can make your own flowers and jewelries!) thought by the women group in the village. If you wish to go into town we can arrange transportation for you as well. I guarantee that you would enjoy the unique cultural experience, fresh seafood, spectacular view, beautiful islands and everything else that you will experience.

Meal prices:

Breakfast: \$1.5 , 50 Thai Baht

Lunch and Dinner: \$4.5, 150 Thai Baht (Fresh seafood)

The room price is: 400 Thai Baht/ night/person

2 days 1 night stays (This price includes: 3 meals, room, village tours where you can learn the villager's way of living, cooking and fishing): 2,000 Thai Baht/person [for 3 people or lesser] and only 1,000 Thai Baht/person [for more than 3 people]

APPENDIX S

GENERAL RECOMMENDATIONS FOR LAEM KHRUAT

In order to further its tourism expansion efforts, we recommend Laem Khruat Village research into the implementation the following suggestions:

- Planned tours with set prices. (For example one tour could include: three days and two nights in three different neighboring villages, homemade meals, cooking lessons, English recipe handouts and fishing trips with locals)
- Tourist education about Thai Muslim culture and traditions.
- Training on daily local activities such as: cooking, handicraft creation, rubber making, and palm oil processing
- Local signs with information in languages of the most popular tourist nationalities
- Mufflers for noise control on longtail boats
- English lesson trade for village accommodation
- Tourist volunteer work in village
- Food, clothes and souvenir market(s)
- Tourists fishing trips with local residents with an opportunity to eat what you catch
- Informative pictures in local businesses (e.g. of food)
- Improved toilet facilities
- The use of solar heating for water to comfort tourists
- Natural water filtration using plants or rocks to reduce plastic bottle use
- The use of biodegradable cardboard containers to ease plastic contamination

APPENDIX T

BLESSING OF CABBAGES AND CONDOMS

By Nicholas Vaccaro

While staying at the Krabi CBIRD center, it opened a Cabbages & Condoms restaurant. On the morning of the opening day, my group was invited to attend the blessing of the restaurant. When we arrived earlier in the morning for breakfast and the entire restaurant had been rearranged to clear the entire main room's tables and against the wall there were nine red pad seats placed for the monks. At the leftmost end of the seats there was an altar. After we had eaten breakfast we went back to the CBIRD center to get some work done. A little after 9:30 AM we returned to the restaurant. When we got there, the monks had already arrived and were seated. The highest ranking on the left and the monks got younger the farther right they were. The two rightmost monks were in their early to mid teens. Across all of the monk's laps was a string that never touched the floor. In front of the monks there were large mats where the employees were kneeling or sitting. Upon kneeling on the mats, our Thai partners bowed to the monks three times, touching their head to the ground each time. It was another ten minutes until the ritual began, but in that time, two of the monks checked their cell phones and another answered a call. The leftmost monk began the blessing. He instructed one of the restaurant employees to light the candles and incense. Once the candles and incense were lit, the head monk said something and passed a fan to the next monk, whom then did, and the third monk said something and then placed the fan against the wall. The lead monk then began a prayer and all of the monks joined in. All of the monks prayed continuously, only with short breaks when the head monk was the only one praying. During the blessing all of the employees came to the mats at least briefly. When the group prayer ended, everyone moved to the left side of the mats and the head monk recited a prayer while splashing water on everyone on the mats. Once that prayer was completed, the employees presented the monks with gift baskets and food.

This event surprised me in a few ways. I was surprised at the level of respect that the Thai people have for monks and the importance of ritual in Thailand. I noticed that all of the employees of the restaurant were present for at least part of the ceremony and felt that this showed the importance that they place on their religion. They also were very formal with the monks the entire time I was there and bowed to the monks whenever they entered the room. The restaurant operators felt that this ritual was very important for the restaurant and asked us to come.

I really enjoyed seeing the respect being paid to the monks. It was a little difficult to be there because I did not know the proper way to act in the presence of monks, or the correct way to bow to the monks. I also felt slightly out of place visiting a ritual of a group I was not a member of. I think that although the Thais understood and were not offended by my actions, they would become upset if tourists visited rituals more often. I also enjoyed being in a group of people whose beliefs were very important to them. I think that this might be taken for granted by the people in Thailand, and they would be surprised by the level of importance given to religion by some in the United States. Overall I think that the blessing was a positive experience for me, the experience of getting to see a traditional ritual outweighing the out of placeness felt at times.

APPENDIX U

SMOKIN' HOOKAHS

By Robbie D'Angelo

One late Friday night in Bangkok, a friend and I were floundering in the wake of the nightly exodus from Route 66, a popular outdoor dance club. Recent editorials in the States admonished about Thai crowd belligerence to the extreme of drunken trampling; thus, I eased my pace, and a current of seemingly overdressed locals guided me to the street. Now alone, my alertness sharpened. At the street I followed a familiar path away from the catatonic swarm. I sauntered down the dark road towards another stretch of civilization, and the booming club mix was slowly suppressed beneath the concrete by a train of eager taxis. The ambience of Bangkok enticed me, and I fell into it.

Further down the road I reminded myself that I came with a group. A reconnaissance was in order. As I reached for my cell phone, a modal melody from an airy saxophone dipped into the city's clamor. I glanced in the direction of the music and spotted my initial companion, two of her Thai project partners and two other WPI students ordering drinks in the front of a live music bar. I pulled up a chair and the normal questionnaire ensued: "Where have you been?" "What did you order?" "Where is everyone else?"

After a round and a few polite laughs, my friend and I decided that we wanted to find a place to smoke a hookah. I asked my new Thai friend if she knew of "a place we could find a hookah." Her face puckered, and she sneered,

"You want that? So gross!"

Taken back, I responded, "What? You don't do it?"

"Why would I do that? What kind of girl do you think I am?"

"Well you smoke cigarettes. What's the difference? Do you at least know where we can get one tonight?"

Her tone softened, and she reported, "I know a place, but I won't take you there."

I inquired, "Do they use good shisha or tobacco there?"

Her next comment, "What does that have to do with anything?" was like a cultural snake bite.

I smacked my forehead and replied: "You thought I wanted a 'hooker'? I want shisha. To smoke, not to fuck." In sync, we exploded from each other with a vivacious laugh.

After our second round of drinks, my friend and I left without a recommendation. Fortunately, it's not hard to find a hookah in Bangkok. The alternative is mere hearsay to me.

A couple of cultural divergences could have led to our miscommunication. In America, the majority of my acquaintances colloquially use "hookah" to refer to the water-filtering smoking device and "shisha" to describe the plant matter that is burned. In Bangkok, however, the locals that I have encountered use the word "shisha" to describe the device. I realized that I have not heard a single Thai use the word "hookah." At first, I thought the use was incorrect, but Thai. I have since learned that shisha is simply another name for the device, and it is my friends who are incorrect in their use of the word: anything to make tobacco seem cooler.

This misunderstanding may also embody the perception of white males in Thailand. While the word is less commonly used, this girl does know the word "hookah." She made the outright assumption that I was looking for the "dirty" side of Bangkok, to which many foreign men stereotypically flock. Although she was still willing to point me in the right direction, the girl seemed offended by this part of her city's culture. I hope that I opened her to the idea of men enjoying her country without abusing its women.

APPENDIX V

BEAUTY DOESN'T LIE

By Megan Van Welie

During our trip to Kanchanaburi, I had an interesting experience with one of the SSP students that allowed me to appreciate one of the unique differences between Thai and American culture. One night after we had finished all of our arranged activities we decided to play cards. After playing many rounds of Spoons, a fast-paced card game in which you attempt to collect four cards of the same value, the group decided to try a different game. Many suggestions were thrown out, but the one that was decided upon was a game called BS.

The purpose of BS is to be the first person to get rid of your pile of cards. The game begins with the deck of cards being dealt out evenly amongst the players. Once everyone has a pile of cards, starting with the player who is holding the ace of spades, the players go around the circle and place a card that is next in sequence face-down in a central pile. For example, if the person before you puts down a Queen, you must put down a King. If you do not have the appropriate card you must take the pile of cards that has accumulated. In order to avoid having to take the pile you have the option of putting down a different card and stating that it is the correct one needed; more simply put, you may lie.

The Thai friends we were playing with had never heard of the game so we described the game and demonstrated how to play. After a while they all seemed to understand except for one girl named Beauty. She seemed unsure of the game; I immediately assumed that she had not understood the description and proceeded to being clarifying the rules. She nodded her head indicating that she understood but continued to look uncomfortable. I felt confused and frustrated because it seemed that all of the other Thai students understood except for her. In my immediate interpretation of the situation I assumed that we were experiencing a language barrier.

Suddenly, I remembered one of the cultural lessons taught by Ajaan Sumalee: she mentioned the aversion to lying that is present within Thai culture. Upon realizing that this may be the cause of Beauty's discomfort, I turned to her and suggested that instead of saying the card value out-loud she could instead say nothing. This way she would not have to truly lie. She nodded her head again indicating that she understood, and I saw her relax and being to enjoy the game.

By taking a moment to look at the situation from a different perspective, I was able to make a different interpretation and act accordingly. I believe that this experience taught me the importance of staying aware of the influence of cultural differences on a situation. Before having this experience I had

only really given thought to issues that may arise due to cultural differences in a work environment such as during meetings and group work. This situation, however, made me realize that it is important to remain aware of possible differences in both casual and professional environments. It also made me realize that by being aware of a person's culture you will be able to have a better understanding of their reactions and reservations during a situation.

APPENDIX W

TRAVEL PHOTOGRAPHS: LIFE TIME MEMORIES OR CULTURE COMMERCIALIZATION?

During all of my time in Thailand I have been taking pictures of every little detail that a normal tourist would not be aware of. For example, when we went to the Grand Palace while everyone was taking pictures to the extraordinary hand painted walls, I was taking pictures of a Thai painter sitting on scaffolding renovating the paintings on the wall. He had a fan next to him and did not look very attractive; no one would normally take a picture of him. However, I thought that scene was very cool because it revealed a bit more about Thai culture by showing a daily activity of a local person. In general, I like taking pictures of local people such as: children from rural areas, workers, street vendors and boat owners.

So one day I was walking in Ton Say Village in Phi Phi Don Island on a Friday night, observing all the little shops organized in a maze-like-easy-to-get-lost way, and I came across a leather shop where they sold very unique shoes, belts, wallets and bags. Right there in the floor of the shop was the owner, hammering on a nail into a leather piece and next to him laid different types of leather and other working materials. So I thought: “ This scene is so culture-rich, I have to take a picture of it” and so I asked the guy in the floor what I always ask when I want to be polite before taking a picture to a local but always assuming the answers is going to be yes: “Tailup day may?” (Can I take a picture?) and the guy says right away: “May day, May day” (You can’t, You can’t) and I just thought I did not really understand what he said and just repeated his phrase with a question tone which does not even make any sense in Thai language: “May day???” and he said again “May day”. So I just thought: “Oh this grumpy guy, why would he mind me taking a picture of him... as if he were so special” and I just got kind of pissed at the situation and I thought I would leave the store, obviously a very immature way of solving things. So I was on my way out of the store, when I suddenly saw the most beautiful leather sandals on the floor and I just stopped completely and stared at the gorgeous shoes. Paradoxically, I ended up buying the shoes.

When I finally left the store, I kept on thinking about the situation...and my second interpretation on the situation was that maybe the guy did not want me to take a picture of his unique way of working with leather because I might go and steal his idea and become his competitor or maybe because he thought that taking a picture of it would take from its exclusiveness or something like that.

Later that day, I was still thinking about that same situation, and trying to remember all the other times I have taking pictures of locals and how they have reacted. I ended up interpreting the situation in yet a different way. I thought this guy might simply not like the fact of being treated as a tourist attraction in which people take pictures of him as if he were a golden temple or a utopian beach. This guy might not be as fond of all this tourism in his hometown in the first place, taking away from his authentic culture and traditional way of life. Therefore, having a white tourist take a picture of him would make him feel that even his own personal image while trying to make a living for his family is being commercialized. After thinking that, I felt kind of bad. I felt I was sort of invading his space and therefore making him feel almost as an attractive object from which you take a picture, instead of a human being with feelings and thoughts. If I were this guy, I would probably let tourists take pictures of me at first, but then I would probably be annoyed at them and I would feel like a museum object or as a strange, never-seen-before creature.

After this encounter, I am super cautious at who I take a pictures of and the way I go about asking permission for it. For example, I recommend that before taking a picture of a local, you start a conversation with them; ask them how they are doing, how do they like tourism in their living area and maybe even compliment their job. I think this is a more proper and polite way to handle a situation like this. This way, the person will not feel as an attractive object, but more like a human being that met a tourist and exchanged feelings or views with him/her.