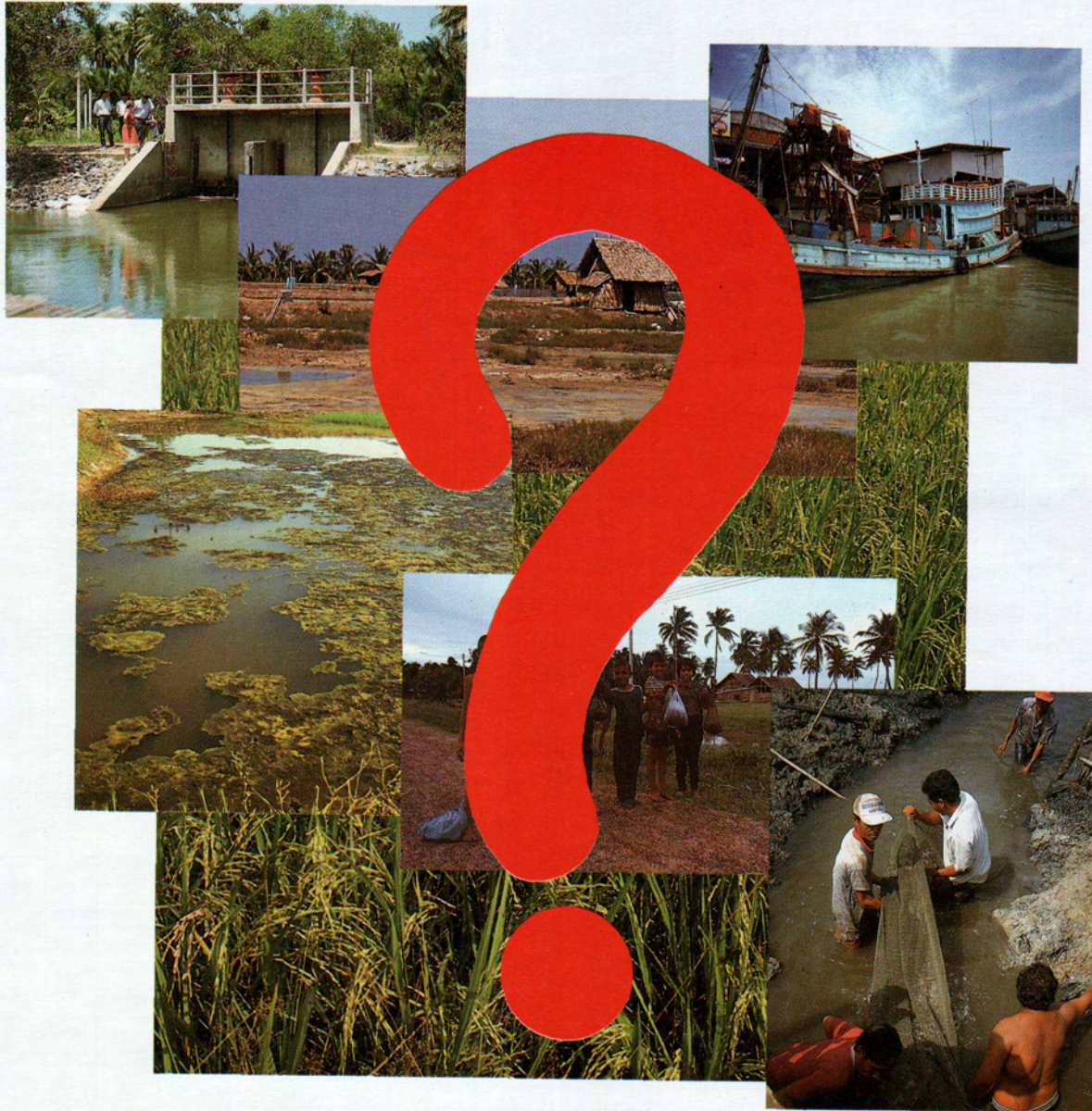


CHAPTER ONE

INTRODUCTION



"Development must be in compliance with each specific area, both geographically and sociologically. In the sociological context, the traditions and habits of the people should be considered. We cannot enforce the thoughts of others. We must suggest. We get in to help, not by bending the people to fit us, but to listen to what the people want, and then to create understanding of the real needs. This approach to development will be of great benefit."

King Rama IX's Speech

Boromthanarat, S. , Cobb, S., Lee, V. (1991). Chapter 1. Introduction. Coastal Management in Pak Phanang: A Historical Perspective of the Resources and Issues. Hat Yai, Thailand: Coastal Resources Institute, Prince of Songkla University

NOTE TO READER
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Citation:

Boromthanarat, S., Cobb, S., Lee, V. (1991). Coastal Management in Pak Phanang:
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PakPhanang_Chapter9.pdf	Putting the Pieces Together
PakPhanang_Chapter10.pdf	Appendices and References

OVERVIEW

Southern Thailand is known as a fertile and scenic area which has traditionally been rich in natural resources such as fish, tin, timber and rice. The shape of southern Thailand, a narrow isthmus, features a 1,800 km long coastline bordering the Andaman and the Gulf of Thailand. Although Southern Thailand makes up only about 14% of the total land area of Thailand, it has more than 70% of the total coastline in the country (Figure 1.1). The coastal zone here is a traditional source of prosperity for its people.

Approximately 13% of Thailand's population lives in the fourteen southern provinces, where the average population density is 80 people per square kilometer. Economic growth and natural disasters in recent years have focussed attention on the southern provinces. The world-wide boom in shrimp farming brought major changes to coastal areas throughout Thailand starting in 1987, with southern Thailand becoming the major center by 1989. Unprecedented rains in November of 1988 caused thousands of landslides in the mountains that had been deforested for rubber plantations and severe flooding in the eastern lowlands, resulting in the loss of more than 400 lives and property loss in excess of US\$300 millions. These two recent events, along with the destruction of mangroves, loss of fishery resources and the pollution accompanying rapidly increasing human population have led to repeated suggestions that environmental issues cannot be ignored in the economic growth of the area.

In a recent report from The Thailand Natural Resources Profile (1989) quoted an inscription from a stone pillar dating from the Sukothai Period of King Ramkhamhaeng the Great:



Figure 1.1.
Southern Thailand. Pak Phanang is to the east of Nakhon Si Thammarat.

"This Sukothai is good. In the water there are fish, in the field there is rice. The King does not levy a tax on his people... Whoever wants to trade ... can do so; people are contented."

The report went on to argue that the people no longer are contented because of ever increasing problems, and asked if there has been success in marrying the twin objectives of conservation and development. What needs to be done, it asked, if Thailand is to achieve sustainable development?



Power generating plant at
Nakhon Si Thammarat.



It was in the spirit of promoting sustainable development that the Coastal Resources Institute (CORIN) at Prince of Songkla University began working with the people of the area to understand coastal issues and opportunities of the Pak Phanang area, in Nakhon Si Thammarat province. Throughout the South there has been a rapid increase in the loss of coastal resources as a consequence of growth in tourism, fisheries, port development and shrimp farming. Shrimp ponds have displaced rice paddies and mangrove forests. A new fishing port has just been built in Pak Phanang. People complain about the lack of freshwater, and the poor quality of water that is available. It is clear that the multiple uses and demands on the natural resources requires the development of an integrated plan for resource management. Such planning has been suggested for Thailand in general, and for Pak Phanang specifically by the 1989 NESDB report *"Safeguarding the Future."*

Amphoe Pak Phanang historically has been an important agricultural area. Now, however, Pak Phanang is characterized by slow population growth, partly due to out-migration, and a decreased economic base. Most residents have noted major environmental degradation within their lifetimes. The Pak Phanang Bay no longer produces *"thigh-sized"* fishes; mangroves have been cut down for charcoal or shrimp farms; the Pak Phanang River no longer is clear and pollution free; the bay is much shallower than it once was. These comments and others were heard repeatedly in our conversations with the residents of Pak Phanang. In addition, Typhoon Harriett in 1962 and the flood in 1988 were natural disasters that brought great hardship to the area.

WHAT IS AN ECOLOGICAL HISTORY?

Understanding the cause of a problem is the first step towards solving it. Environmental and social issues often have a long history, and a better understanding often can be gained by an examination of the past as well as the present. We have called this an *"Ecological History,"* by which we mean a history of the way people and nature have interacted over time.

Pak Phanang Town in early
twentieth Century.



The "Ecological History" is an initial identification and assessment of key environmental problems of the Pak Phanang region. It was prepared with the participation and support of the people of Pak Phanang. We made a major effort to the people what they think has been happening to the place they live and work, and how that has affected their lives. We spent a great deal of time talking with individuals in their homes and at community meetings. This approach is based on the belief that ultimately it will be actions by local people, supported by the government, that will safeguard, and if necessary, restore, local ecosystems.

One goal of this Ecological History is to discover what the problems are for example, water pollution in the river and understand which of them are important issues to the residents of the area. A second goal is to involve the residents of Pak Phanang in defining the issues and developing the Ecological History, so that ownership of the conclusions will be shared.

APPROACH

Resource management at an ecosystem level requires an integrated approach to resource management. It is this approach that CORIN intends to bring to the Pak Phanang region. This document represents the first step. It is the result of the compilation of published reports, available data, interviews with many local residents and government officials, and observations of the CORIN team.

Scientific and government records are often incomplete, inconsistent or non-existent, so additional information must be used in the preparation of an Ecological History. We used a method of interviewing local



Interviewing the local people.



A field survey by the Study Team.

people, Participatory Rural Appraisal (PRA), to get this information. It is a simple methodology to obtain resource-based information that brings a village focus to rural development and enables communities to participate in preparing and implementing resource management plans. Plans such as these support locally based projects designed to promote sustainable resource development. The PRA team from CORIN consisted of faculty members from CORIN, Prince of Songkla University, and The University of Rhode Island Coastal Resources Center. They formed a multi-disciplinary group representing many fields including biology, oceanography, chemistry, sociology, economics, planning and public health.



Participatory Rural Appraisal is a process of investigation with several steps: 1) site selection, 2) preliminary visits to the site, 3) data collection, 4) data synthesis and analysis, and 5) identification and ranking of issues.

Data were collected from a variety of sources including:

- published reports, books, newspapers, magazines;
- maps, satellite images, photos and paintings;
- government records;
- interviews with residents and government officials;
- community meetings.

We also developed a timeline of key events in the history of the community. This timeline helps to identify past trends and to put a perspective on current issues. Most of the interviews and data collection took place in 1990. After data analysis, a local workshop was held in August 1991 to obtain feedback from community leaders and government officials. This document was written shortly after the workshop.

Figure 1.2.
Management area,
including Pak Phanang
Bay, the town and
coastal lands.



THE MANAGEMENT AREA

Boundaries

Ecological boundaries often do not fall neatly within political boundaries. In deciding how to define the area to work in, the CORIN team used the following criteria:

- A. All of the bay and its associated coast should be included;
- B. The urban area of Pak Phanang should be included;
- C. The estuarine part of the Pak Phanang River should be included;
- D. The drainage basin of the Pak Phanang River should be included.
- E. Natural boundaries to the south and west were not available, thus man-made ones would be used.

Some of these criteria could not be met. The drainage basin of the Pak Phanang River is large and the irrigation system is so extensive that water occasionally is diverted in from other areas. Thus, the watershed was not considered to be an effective management area. We therefore made compromises in selecting the boundaries, shown in Figure 1.2:

- To the east: the sea-land boundary along the eastern shore of Laem Talumpuk;
- To the north: the northernmost tip of Laem Talumpuk;
- To the west: the mangrove-rice paddy field ecotone (100°00' E longitude);
- To the south: Highway #4013, which runs along Khlong Sukhum.



Geography

The management area incorporates approximately 300 km sq of the coastal plain east of the Nakhon Si Thammarat mountain range. The Gulf coast is predominantly sand beach, while Pak Phanang Bay is bordered with mangrove forest. The morphology of Pak Phanang Bay is dominated by an elongated hook, Laem Talumpuk, which is continually extending as sand is carried by the predominant northward longshore drift interacting with the outflow of the river. Fine sediments accumulate behind the elongating shoreline, creating shallows that are colonized by mangrove. The processes that create the geomorphology of this part of the coast are large scale and have a long history, as suggested in Figure 1.3, which shows the hypothetical geological development of the coastline and Laem Talumpuk. The name of the town was formerly called "Bia Sad," being named after the bringing ashore (Sad) of shells (Bia). The name was changed to Pak Phanang giving a clue to the geomorphological change, Pak means "mouth" and Phanang means "shelter," provided shelter to seafarers. Thus, this town was at a sheltered river mouth. This has been true for more than 300 years, since the earliest record of the name Pak Phanang is dated 1655.

Pak Phanang Bay now is a shallow, elongated basin, approximately 14 km long and widening from 3 km at the mouth of the Pak Phanang river to nearly 10 km at the entrance to the bay. Extensive tidal flats and mangrove forests are found along the shoreline except on the northwestern side where they have been replaced by shrimp ponds.

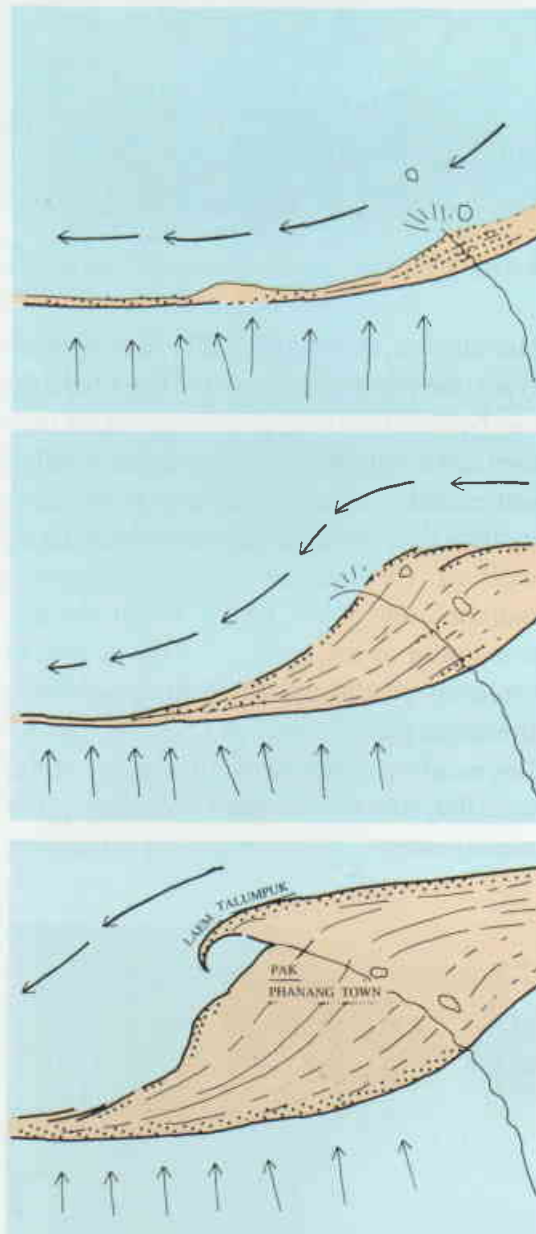


Figure 1.3.
Hypothetical geological development of Pak Phanang Bay and the spit of Laem Talumpuk.



Satellite image (1989).

Land Use

Human use of the land falls into several types: the municipal district of Pak Phanang can be characterized as urban; outside this area are a number of villages and smaller settlements. Agricultural uses of the land include rice, fruit and vegetable farming as well as shrimp culture. Mangroves, marshes and sand beach comprise the remainder of the land. The study area is crisscrossed with canals. Khlong Sukhum, the major canal in the Pak Phanang district lies nearly parallel to and just south of the road defining the southern boundary of the management area. Figure 1.4 depicts

Khlong Sukhum.



changes in land use between 1974 and 1989. The conversion of mangrove to shrimp ponds occurred first on the northwest coast of the bay and is still continuing in the southeast. Table 1.1 shows the land use changes from 1966 to 1989. The conversion of mangrove and rice paddy lands to shrimp ponds dominates land use changes in the area.

Table 1.1. The Amount of Land (km²) in Each Category of Use Over Time.

Land Use	1966	1974	1989
Beach	2.8	1.6	1.6
Settlement	19.1	20.2	23.1
Orchard	2.1	3.5	11.9
Mangrove	155.5	145.6	92.2
Shrimp	0	5.1	61.8
Rice	117.8	117.3	101.3
Marsh	4.4	11.2	4.5

Source: Aerial photos made in 1966, 1974 and 1989; landsat image in 1989.

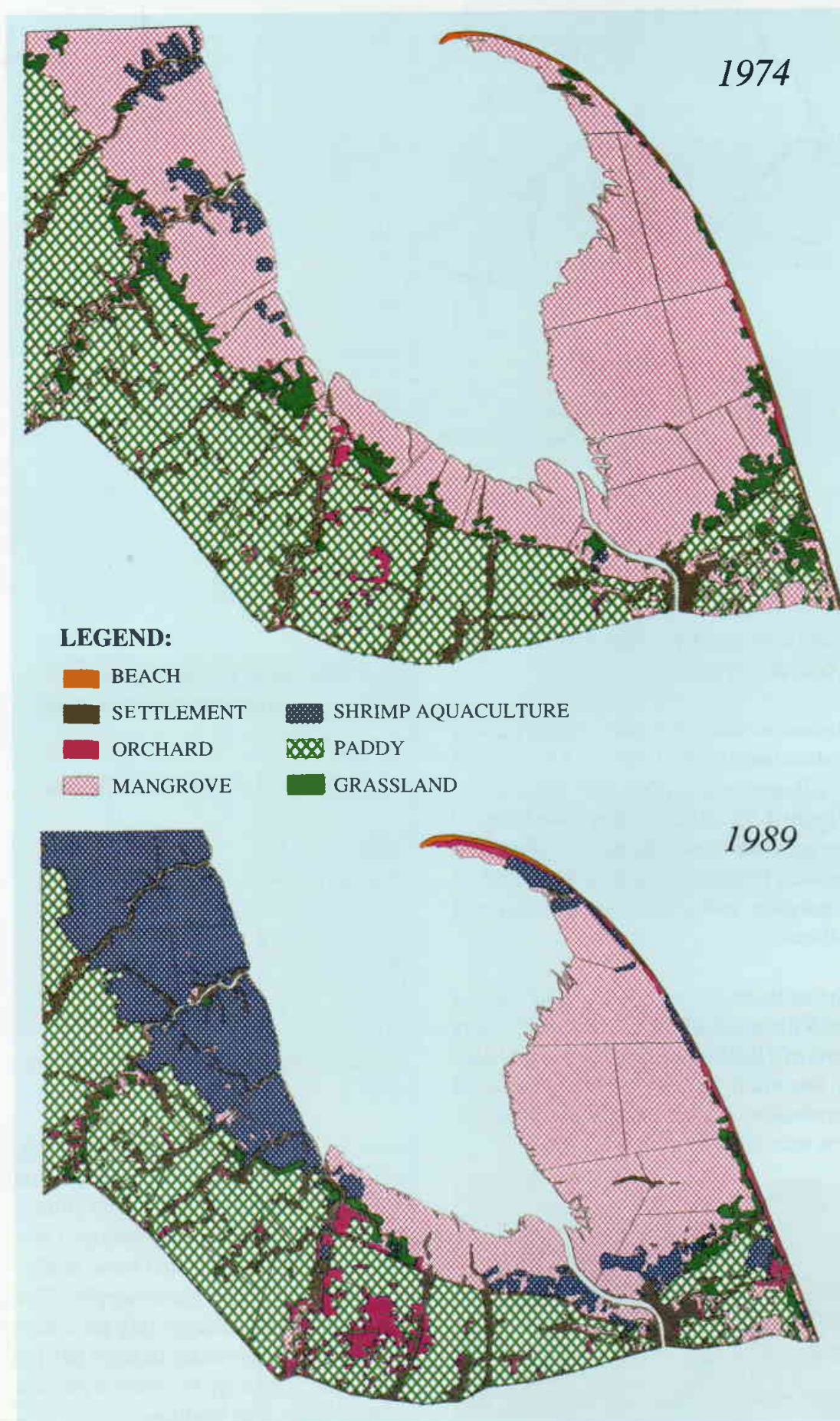


Figure 1.4.
Change in land use
from 1974 to 1989 of
management area
particularly for
shrimp farming.



Figure 1.5.
*Political boundary
of Pak Phanang.*

Political and Economic Characteristics

The area is made up of parts of Pak Phanang District and Muang District. All or part of 7 villages are within the boundaries (Figure 1.5). Because the boundaries of the area we chose do not coincide with political boundaries, getting good data on population and social issues often was difficult.

The estimated population size of each of the Villages is listed in Table 1.2. Only parts of Tha Rua and Tha Rai are included in the study area. In 1989, the total population of the management area was less than 80,000 people.

Table 1.2. Population Size and Number of Houses in Village in the Study Area (1989)

Village	Population	Houses
Laem Talumpuk	2067	669
West Pak Phanang	6732	1217
Pak Phanang Municipality	16456	3080
East Pak Phanang	6048	1223
Khlung Noi	12628	2223
Tha Rai	9768	1543
Tha Rua	25439	4016

Social services for the population in Pak Phanang District include 113 schools, one 30 bed hospital and 20 rural health clinics. Almost all villages have electricity. Only municipal Pak Phanang and some nearby villages have a piped water supply. The residents of most villages rely on canals and storage of rainwater in large jars for freshwater. There are no waste treatment facilities other than cesspools.

*Freshwater storage
in large jar since
the old days.*





Horticulture at Bang Chak.

Most of the people in the area are either rice farmers or fishermen; more recently shrimp farming also has become an important occupation. In 1989, approximately 101 km sq (130,500 rais) were under cultivation in rice, 62 km sq in shrimp, and 12 km sq in orchards. We do not have estimates of the number of people involved in each of the occupations, although the Department of Fisheries enumerated 2,844 part and full time fishermen in Pak Phanang District in 1989.

The Pak Phanang District Office reports that in 1989, there were 23 small businesses, 209 shops, 2 hotels and cinemas, 5 boatyards, 6 banks, 7 fish meal plants, and 180 small to medium sized rice mills.

Economic data for Nakhon Si Thammarat Province indicates that there has been a steady decline in prosperity in what was once the most prosperous province in the south. In 1987, gross per capita income in Nakhon Si Thammarat Province was only one-half of that for Thailand as a whole.

Table 1.3. Timeline for Pak Phanang Region

1896	Pra Ya Sukhum Naiyavinit nominated as a Governor of Nakhon Si Thammarat Province. Amphoe Bia Sad founded.
1897	Khleng Sukhum was built providing freshwater to Pak Phanang.
1902	Name of Amphoe Bia Sad changed to Amphoe Pak Phanang.
1907-1910	First big rice mill in Pak Phanang. Rice productivity high. Ship rice to southern Thailand, China, Malaysia and Singapore from Pak Phanang.
1929	Mangrove lumbering continues until 1962 typhoon.
1940	China trade ends.
1947	Pak Phanang established as a municipal authority. Period of nationalism. "Modernization" starts.
1950	Deforestation of upper watershed starts.
1952	Road asphalted from Pak Phanang to Nakhon Si Thammarat.
1955	Shift to small rice mills starts.
1962	Typhoon "Harriet" occurred October 24-25. Climate change starts about this time and becomes unpredictable. First government regulation of lift net placement. Beginning of 50 percent decline in regional agricultural population.
1964	River dredging. Rice farmers first displaced to fishing.
1965	Start of small rice mills.
1968	End of rice transportation by water.
1970	Decline of big rice mills. Start of government irrigation project, extensive construction of irrigation canals, mechanization (hand tractor), use of chemical fertilizers and pesticides. Loss of soil fertility, beginning of salt intrusion. Population of Pak Phanang starts to decline, so does agricultural population. Start of extensive shrimp farms.
1972	River dredging. Modernized rice mills stopped.
1975-1978	Fisheries Expands.

The results of interviews with residents and government officials as well as reviews of the history of Pak Phanang area provided a sense of the history of the last 100 years, which is presented in timelines in several of the following chapters. Significant events in the history of the area were an era of prosperity based on rice trade and an active port, the disruption of World War II, the era of fisheries and fish port, the devastation of the 1962 typhoon "*Harriet*," the 1988 flood and the droughts of 1989 and 1990.

An Integrated Management Plan for Pak Phanang: The Next Step

As we said earlier, the preparation of an Ecological History is only the first step in a longer process of preparing an integrated management plan for the Pak Phanang area. Through the process of gathering data, reviewing literature, interviewing local residents and writing this document, we have developed a clearer idea of the issues that face the people of Pak Phanang. Confirming the nature of the issues and extent of agreement about them were goals of the community workshop, "*Let's tell stories about Pak Phanang*" organized by CORIN in August 1991. Over 50 people attended this workshop, including rice farmers, shrimp farmers, teachers, businessmen, government officials, and members of voluntary, non-governmental organizations. The participants spent a day and a half, some working well into the night. There was general agreement that the issues of water supply, fishery decline and shrimp farming were most important at the time. Many people expressed optimism about the future of Pak Phanang, and suggested that further workshops of this nature could help bridge the gap between local people and government officials. Issues identified by CORIN

and local residents must be further investigated, and will be addressed by a Special Area Management plan. Key issues include:

- Conservation and Allocation of Freshwater.
- Environmental Degradation of Pak Phanang Bay.
- Balancing Coastal Land Uses.
- Breaking the Boom and Bust Cycle.

Other issues that are emerging but are yet unexplored include protecting public health from waterborne diseases and degrading water quality, management of mangroves, sand mining and flood control.

The CORIN team can help develop a Management Plan to address the above issues. Management objectives need to be defined in close collaboration with Pak Phanang residents and the Provincial and Central Governments. Some of the issues will require further research. For example, the balance of fresh and salt water is not well understood, and how the change to shrimp farming affects that balance must be determined. A more complete understanding of the complexities of the interrelationships among local and national governmental agencies, and the sometimes conflicting laws, regulations and policies must be developed. Local support for the concept of sustainable development and for specific objectives must be built. This requires a program to build public awareness of the issues, and support for the planning process. Finally, the development and implementation of a Special Area Management plan will complete the process. These are some of the tasks that the CORIN team will address in the near future. The following chapters of this Ecological History attempt to set out the background and to identify some of the issues that confront the people and the ecosystems of the Pak Phanang area.