

The Adaptation of Fishing Instruments by a Farmers' Community in the Thung Kula Area, in North Eastern Thailand

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Abstract: Problem statement: In a historical study of the ancient communities in the area of Thung Kula, it was revealed that there are important resources including rice, fish, salt and iron. Salt is used in making fermented fish (known locally as Pla Daek), a culinary culture which has been prevalent in the ethnic groups of Laos and Khmer. The availability of rice and fish in Thung Kula has continued to this day. Thung Kula farmers have extended their fishing sources from the government-owned places to their own fields or ponds. **Approach:** They use fishing instruments that had been developed out of folk wisdom in combination with the new technology in order to increase the fishing yields adequate for their own consumption and for commerce. The present research aimed to study the adaptation of fishing instruments of the farmers at Ban Ta Yuak, Thung Luang sub-district, Suwannaphum district, Roi-Et province. The studied area was Thung Kula in the North East of Thailand. The research method was qualitative. Data were collected from relevant documents and from field studies with 25 informants. Structured and unstructured interviews were conducted with local tradesmen, consumers, fishing-instrument shop owners. **Results:** The results were presented descriptively below. The adaptation of fishing instruments of Ban Ta Yuak farmers began with the increased population, the changing ecological systems as a result of the government's construction of reservoirs, canals, public ponds and the market-oriented economy which had attracted the local fishing markets across the Thung Kula area. Ban Ta Yuak farmers have then adapted their fishing instruments to fit the available kinds of fish and the ecological systems of the local water sources. With assistance from the government, the farmers have their own fishing ponds. It was found that prior to the application of the national economic and social plan of 1962 these farmers created simple fishing instruments such as Sai (a bamboo fish trap), Sawing (a hand net), Hae (a cast net), Sum (a coop-like cover-trap) out of locally available materials like bamboos, vines, jute or cotton threads. In 1963, the Ban Ta Yuak farmers started using fishing instruments that combined natural materials with technological devices available in the markets. Presently, there are 9 kinds of them: A fish-trapping hole (replacing Hai or a earthen jar) made with a plastic bucket or pip (a tin container) the opening of which was covered with a nylon knitted net, sum (a coop-like cover-trap) made in a large size from bamboo strips and nylon strings with a wide opening and a frame of steel wires (instead of bamboo strips) covered with nylon nets, Yor (a dip net), Sawing (a hand net) with a metal hoop and nylon meshes (instead of jute or cotton ones), Hae (a cast net), Uan (a seine), Mong or a small seine-like fishing net traditionally made with knitted cotton threads, but presently made with synthetic fibers, fishing spears whose handles were made with Plaslon or PVC pipes, Lorb (a fish trap) and Sai (a fish trap), presently made with bamboo and nylon strings. Other fishing equipment included Khong (a fish container), Krasang (a floating fish basket), Takra (a fish basket) which were made wholly from synthetic fibers instead of bamboo or from a bamboo framework covered with knitted nylons. **Conclusion/Recommendations:** Adaptation of fishing instruments (by integrating synthetic materials) is appropriate and useful in that it saved the time in searching for usable natural materials and the community's natural resources were preserved. Moreover, smaller fish were allowed to live and reproduce since the fishing instruments were designed for larger fish to be sold in local markets. It enabled the farmers to earn extra income by catching and selling fish.

Key words: Adaptation of fishing instruments, farmers' communities in the Thung Kula area, North Eastern Thailand

INTRODUCTION

Ban Ta Yuak Farmers' Community is located in Thung Luang Sub-District, Suwannaphum District,

Roi-Et province. Ancestors of a portion of the community population were Khmers who migrated from Tha Tum District in Surin province. Originally, Thai-Lao people have settled down in this community.

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The part of the community called “Ban Sarai-Ta Yuak” is most abundant with fish. Fishing instruments such as Sai (a fish trap), Lorb (a fish trap) and Sum (a coop-like cover-trap) are made from locally and naturally available materials such as bamboos, jute or cotton threads. In 1962, the government had developed a large number of new reservoirs, canals and ponds in the Thung Kula area which encouraged the Ban Ta Yuak farmers to modify their fishing instruments in order to catch more fish so as to satisfy the increasing population’s consumption and commercial needs. The increase of markets in the Thung Kula area also motivated the fishing instrument adjustment^[2].

In modifying their fishing instruments, it was found that the farmers in the community used synthetic materials available in the markets in conjunction with naturally available materials such as bamboos. This manner of adjustment has been made too many kinds of fishing instruments. For example, Lorb and Sai (fish traps) are now made with bamboo frameworks held together with nylons and Hai (a fish-trapping earthen jar) has been replaced by Pip (a tin container). Synthetic fibers are bought from the markets and used instead of natural or cotton threads because of their tougher quality and the decrease of natural materials (caused by the increasing population). The adaptation of fishing instruments reflects the human’s way of thinking in their dependence upon the water resources by catching, consuming and selling fish caught in various ecological systems. Fish have become commercial animals in the Thung Kula community. The farmers have earned incomes from both rice-farming and fishing. They also have preserved the local forests more effectively due to the decreased use of bamboos in making fishing instruments.

MATERIALS AND METHODS

Area of the study: In studying the analyzed area of Ban Ta Yuak Farmers’ Community which is located in Thung Luang Sub-District, Suwannaphum District, Roi-Et province, a qualitative approach was adopted. Data were obtained from relevant documents and field work which included 25 informants consisting of 10 farmers, 5 tradesmen, 5 fishing-instrument shop owners and 5 consumers. The interviews were conducted in both structured and unstructured manners. The results will be presented descriptively.

RESULTS

The changes of the Ban Ta Yuak Farmers’ Community and the adaptation of their fishing instruments in the changing ecological systems: During the years 1962-1963, the government had

ordered the construction of the new roads from Suwannaphum to Tha Tum Districts and the connection of all the main and rural roads. This has made possible and convenient the transportation, commute and relationship between different communities. The government had also improved the irrigation system which enabled the population in the area to grow plants, raise animals and catch fish. Life quality of Ta Yuak community residents have improved since then. There are a lot of fishing places within the Ban Ta Yuak community and the neighboring areas. This community is famous for its fishing capacity and resources, especially in the watery season between August and October. A lot of people thus flock into the area to catch fish. It has been said that “There is no place with more fish than in Ban Sarai-Ta Yuak” The visiting fishermen usually stay camping in the area for months while fish traders will also come to the place to buy fish from them at fair prices^[3].

The economic and social changes took place. The government had developed an equal amount of public facilities such as roads, electricity, water supply, public health service, schools in every community in the Thung Kula area. At the same time, modern or new technological appliances which have been introduced to the community residents have become necessary household items. Family leaders feel compelled to work harder for higher income to pay for expenses and for savings. Social groups of families and neighbors in the Thung Kula area have also become loosened with less social activities for community benefits. The interdependent way of life has changed into a materialistic one for the survival of farmers’ families and the community.

The adaptation of fishing instruments of Ban Ta Yuak farmers: Before the application of the National Economic and Social Plans of 1962, Ban Ta Yuak farmers had done their fishing in natural water sources such as rice fields, public ponds with the fishing instruments made from locally available materials like bamboos, rattans, vines, cottons and Mai Ruak (a species of bamboo). The instruments were designed to fit the behavior of animals in different water sources without damaging the ecological systems. Local ecological systems had then been developed to include many different systems such as reservoirs, streams, marshes, ponds, paddy fields and other flooded areas. Development of new water sources by the government has encouraged the farmers to adjust their fishing instruments by combining traditional and modern materials. Materials sold in the markets are applied because of their availability, durability, strength, light

weight, cleaning convenience and thinness. Some fishing instruments such as Sua (a luring fish trap), plastic jars, Sum (a cover-trap), Sawing (a hand net), Lorb (a fish trap) and Phong-phang (a fish trap) are ready-made with synthetic materials. These synthetic materials include transparent cords or meshes with strong, durable, light-weighted, easy-to-maintain fibers. Newly developed fishing instruments made from these materials are effective and worth the investment. Clear or transparent meshes, for example, are good for luring fish and their transparency blends well with the water; fish cannot distinguish between the meshes and the water resulting in more fishing yields. Nowadays, Ban Ta Yuak villagers catch fish in both government-owned properties and in their own water sources. The fishing instruments include the following 9 categories:

Group 1: Hole-trapping instruments: Traditionally, earthen jars were used. Nowadays, plastic buckets or tin containers whose openings were covered with knitted nylons are used instead.

Group 2: Cover-trapping instruments: Bamboos are used in combination with nylon threads. Openings of the newly developed cover-traps are wider and the body is larger.

Group 3: Luring instruments: Sua (a luring fish trap) is made with a steel or metal framework covered with knitted nylons instead of cotton threads.

Group 4: Hand-netting instruments: Yor (a dip net), Chon (a scoop net), Sawing (a hand net) are made with metal hoops and nylon nets (replacing cottons meshes).

Group 5: Cast-netting instruments: Hae (a cast net) is now made with transparent synthetic materials instead of knitted threads; its edges are weighted with lead balls instead of steel rings.

Group 6: Spearing instruments: Eel spears are presently replaced by Tum Plalai (eel traps) to avoid spearing the eels. Also, fishing guns or Pha made from woods and plastic pipes with arrow-tipped steel bullets attached to nylon strings. They are about 8-10 m long.

Group 7: Sai or lorb trapping instruments: They are nowadays made with bamboos and nylon strings. Sai is still used by some fishermen but it is now made with blue plastic meshes (similar to another kind of

instrument called "Li"). It is used to trap fish in the draining channels near rice fields or ponds.

Group 8: Seine-type instruments: These include Khai, Mong and Uan. Traditionally the nets are made with knitted threads, but they are presently replaced by transparent nylons or ready-made synthetic fibers.

Group 9: Other fishing equipment: These are such as Khong (a fish container), Krasang (a floating fish basket) and Takra (a fish basket). They are now made from synthetic materials instead of bamboo strips. If bamboo strips are used at all, they would be held together with nylons instead of organic threads^[4].

The adjustment of Ban Ta Yuak farmers and the adaptation of their fishing instruments: The adjustment of Ban Ta Yuak farmers by adapting their 9 kinds of fishing instruments as described earlier has enabled them to catch enough fish for both daily and seasonal consumption and trade. Dynamic ways of thinking have made it possible for them to invent fishing instruments that integrate folk wisdom by combining locally available and market-available materials. The farmers thus preserve the community's bamboo forests which remain quite pristine until now. They are also able to do farming and fishing all year round because water sources provided by the government such as reservoirs and canals and those in their own properties are sufficient. The farmers have enough incomes. Since the ancient times, the farmers' community in Thung Kula, has evolved from a fish-catching culture to a fish-fermenting ("Pla Daek") culture and to a fish-marketing culture which is prevalent in Suwannaphum District and in the areas surrounding Thung Kula^[3].

The adaptation of fishing instruments has strengthened the social ties between the government and the farmers. Continuous and large distribution of incomes has been possible because of the development of water sources in Thung Kula since the year 1963 until now. The relationship among the farmers has become inter-dependent. They are not taken advantage of by middle-men because they determine the prices of their fish by themselves which is a different story from selling rice.

DISCUSSION

The study of the adaptation of fishing instruments of Ban Ta Yuak farmers has raised certain issues that satisfy the objectives set earlier and that concern the development of fishing instruments in Thung Kula communities.

The Ban Ta Yuak community in Thung Kula area has learned to catch fish preserves it for future use and sells it from their ancestors. This agrees with the findings of the study by^[2] which stated that: Human beings need food, shelter and have the social needs to distribute food and service; they, therefore, find ways to produce enough food by inventing various instruments with bamboos, materials made from cottons and jutes. Fishing instruments are likewise invented by trial and error before they are finally accepted and used regularly. The predecessors have passed on to their offspring the wisdom about what locally available materials can be used and how to catch fish with different instruments in different water sources. The folk wisdom found in this area of Thung Kula supported the findings of Wichian Meebun *et al.*^[4] which described the fishing instruments used in the old days. Naturally and locally available materials such as rattans, bamboos, vines were used in the earlier days. Likewise, Ban Ta Yuak community's farmers used Khrua Soot (a type of vines) to make "lorb" (a fishing trap). They have then developed better fishing instruments with better and more modern techniques. Many are already available in the markets such as "pip" (a tin container) used for hole-trapping fish and larger coop-like "Sum" for cover-trapping fish.

The changes in ecological systems and in the economy and society have influenced the adaptation of fishing instruments by Ban Ta Yuak farmers. These have encouraged people who make their living by fishing to learn how to develop fishing instruments as well as how to manage aquatic animal resources on the basis of folk wisdom and local convention. Important issues include how to deal with the effects of fishery on the environments and the fishing resources, proposals, policies and laws that engage the local fishermen in sustainable management of aquatic animal resources. At present, the aquatic animal resources in various areas in the country have been used for the commercial

benefits of a small group of people and this manner of use has quickly corrupted the conditions of water sources and has negative effects on the survival of farmers. After all, it is most fishermen in the country who have lived their lives by constantly using and protecting the water resources. What else has been learned or realized by the present study?

On one hand, the farmers have become encouraged to revive their self-dependent ways of life and communicate to the wider world about their ways of life, their problems, their efforts and the historical importance of the folk wisdom for people in the community. On the other hand, this has been an attempt to construct a body of knowledge regarding the adaptation of fishing instruments of the farmers in the Thung Kula area in the present days.

CONCLUSION

In the study of how the fishing instruments have been adapted by Ban Ta Yuak farmers (Table 1), it was discovered that, previously, the instruments such as Sum (a coop-like cover trap) and Sai (a fish trap) were made from bamboos, rattans, Mai Ruak (a species of bamboo) and vines. The traditional materials have been replaced by harder plastic materials, wires or nylons which are stronger, more durable and readily available in the markets. Presently, people in the Thung Kula communities have taken a materialistic approach to fishery; that means catching fish for their own consumption, for preservation in forms of fermented or dried fish as well as for commercialization with application of the recently adapted fishing instruments.

The advantages of the adaptation of fishing instruments by Ban Ta Yuak farmers are as follows: There has been development of knowledge regarding fishing instruments that are suitable to different types of fish and the ecological systems in the community.

Table 1: Fishing Instruments used by Ban Ta Yuak farmers

Instruments	Kinds of fish	Water Resource	Status	Note
Hae (a cast net)	Snake-headed fish, catfish	Creeks, ponds	Still in use	
Sawing (a hand net)	Glass fish, small shrimps	Creeks, ponds	Still in use	
Khai (a fish net)	Striped and two-spot catfish	Creeks, ponds	Still in use	
Sua (a luring fish trap)	All kinds of fish	Creeks, ponds	Still in use	
Chan (a fish trap)	Snake-headed fish, catfish	Creeks, ponds	Still in use	
Echu (a fish trap)	Eels	Creeks, ponds	Still in use	
Lorb-lor (a fish trap)	Snake-headed fish, goby fish	Swamps, ponds	Still in use	
Sai (a fish trap)	All kinds of fish, shrimps	Rice fields	Still in use	Flooded areas
Bet-khan (a fishing rod)	Snake-headed fish, climbing perch	Creeks, swamps	Out of use	
Meet-fan-pla (a fishing knife)	Snake-headed fish	Rice fields	Out of use	Fish are scare
Harpoons	snake-headed fish, climbing perch	Creeks, swamps, rice fields	Out of use	Fish are scare
Eel spears	Eels	Creeks, swamps	Out of use	Eels are scare
Seines for fresh water fish	All kinds of fish	Creeks, swamps	Still in use	Adapted from floating Khai (a fish net)
Bet-rok (a casting rod)	Yellow-tailed catfish, snake-	Creeks, swamps	Still in use	Adapted from Bet-rao (a fishing hook)

Fishing has become commercial and a way of earning more incomes. The fishing farmers determine the prices of fish in the markets by themselves. The community has become self-dependent as a result of the water source development by the government. This indicates a helpful relationship between the farmers and the government^[1].

Suggestion and recommendation: Regarding the fishing technique development of the farmers, it is suggested that:

- All the relevant organizations and agencies can make use of the findings as for how changes in the ecological systems, the economy and the society can have effects on the adaptation of fishing instruments by people in the Thung Kula community. The findings suggest how to help the community members adjust themselves to the changing ecological systems, economy and the society both in the present and in the future and help them learn how to appropriately adapt their fishing instruments to suit different water sources all over the country without damaging the ecological systems of the water and the fish resources while integrating the folk wisdom and the new ways of thinking
- The government should establish a museum that displays the history and development of fishing instruments in various communities in Thailand from the ancient times to the present. This is a way to preserve a source of wisdom from every part of the country. The museum displays can employ modern technology and be presented in multiple languages such as Thai, English, Chinese and Japanese to accommodate as many visitors as possible. The government should provide enough budgets for the directly responsible departments and encourage schools to open programs in this field. This is a way to show serious support for the local communities' fishery management

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