



ICM Solutions

Community-based Crab Conservation Initiative in Chonburi, Thailand: Engaging Local Fishers and Communities in Marine Conservation Efforts through Practical and Innovative Measures that Address Local Needs

- The blue swimming crab is an important local and export product in Chonburi, and a key source of livelihood for local fishers.
- As part of the Province of Chonburi ICM program, a crab conservation initiative was implemented, which demonstrated an innovative approach in:
 - marine conservation with the local fishers and communities as main implementers;
 - protection of the gravid female crab (crabs with eggs) to enhance production (i.e., “protecting the mother,” as opposed to the conventional approach of protecting the young); and
 - educating fishers and the public, and engaging their participation in the protection and conservation of marine and coastal resources.
- The crab conservation method demonstrated in Sriracha Municipality has been successfully replicated in seven other municipalities in the province.
- Crab catch has increased across the province since the crab conservation program started in Chonburi, resulting in direct benefits to the fisher community.

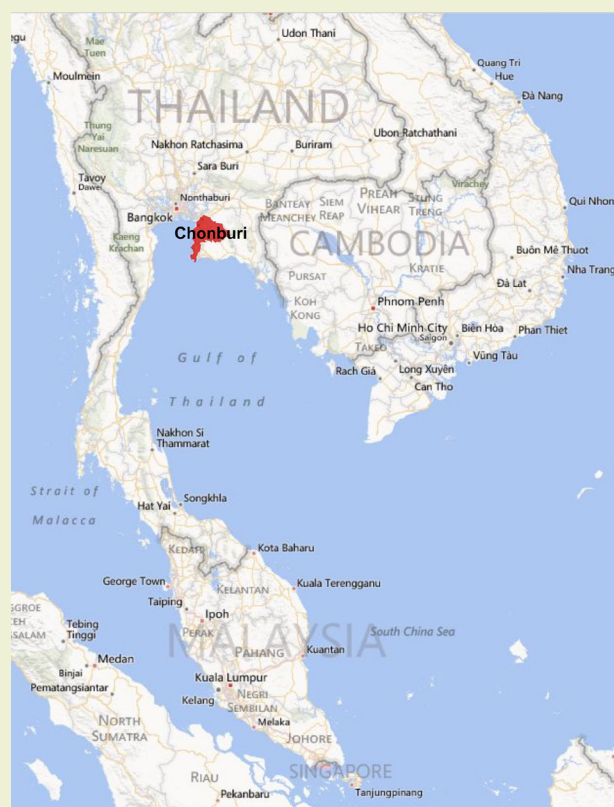


Chonburi Province is a popular destination for local and foreign tourists, for its scenic beaches and fresh seafood and proximity to Bangkok. Over the past 30 years, Chonburi transformed from an agricultural to an industrial economy as a result of a national program to develop the eastern region of the Gulf of Thailand.

In the late 1990s, the adverse impacts of rapid development of the Eastern Seaboard of the Gulf of Thailand, including Chonburi Province, were beginning to be recognized. About the same time, the national government's decentralization policy was adopted, providing local governments with the responsibility for environmental and natural resource management, as well as community involvement in decision-making, planning and implementation.

Integrated coastal management (ICM) was considered as an appropriate platform to develop local government capacity in natural resource management and the processes to implement the decentralization policy.

An ICM demonstration project was initiated in collaboration with the Provincial Government of Chonburi in 2001. The demonstration project was participated by five municipalities, including Sriracha, which hosted the ICM project office. A Coastal Strategy was adopted in 2004, with Sriracha Municipality subsequently adopting a medium-term implementation plan (ICM Action Plan), which included marine conservation and blue swimming crab conservation among the priority programs.



Context

The blue swimming crab (*Portunus pelagicus*) is among the important local and export commodities in Chonburi. It is a national delicacy that is in high demand among locals as well as tourists. In 1998, the harvest of blue swimming crabs from the Gulf of Thailand reached a peak of 37,281 tons, from 18,708 tons in 1985. Harvest of blue swimming crabs continuously declined after the late 1990s to 15,132 tons in 2009. The decline was associated with overharvesting, of both the gravid (pregnant) crabs and young crabs, as well as environmental degradation arising from the coastal developments. Local fishers and commercial operators, including those from Chonburi Province, were using collapsible bottom traps and floating seines, which captured the mature and gravid crabs, and the young ones as well. Some of the fishers relied primarily on the crab harvest as their source of livelihood. The significant decrease in the population of the blue swimming crabs affected the income of local fishers and threatened loss of their livelihood. In addition, the required quantity of blue swimming crabs for the local and international markets could not be reached, and the price of blue swimming crabs was going higher every year.

Solutions

Mr. Chatchai Thimkrajang, then mayor of Sriracha Municipality, who was also the head of the Chonburi Fisheries Association, understood the problems of local fishers as well as the impacts and consequences of unsustainable fisheries practices and other natural and man-induced factors on local food security and livelihood. He considered the local people's lack of awareness and understanding of the marine resources and environment and how these are adversely affected by their activities, and weak law enforcement at the local level, as among the root causes of problems that affect the sustainability of local fisheries.

Based on long management experience and being a fisher himself, Mr. Chatchai believed that providing a demonstration is the best strategy to capture the interest of local fishers and to educate them on environment-friendly fishing practices and marine conservation. As head of the Provincial Fisheries Association, he knew how local fishers learn from each other by sharing experiences and techniques, particularly those that have been proven to work.

Taking into account the local context and key issues, he developed a program that aimed to promote the conservation of marine species, increase public awareness, education and participation in conservation efforts, and demonstrate sharing of responsibilities in natural resource management among the local people, using an economically-important species of crab as an example, and involving local fisher's groups as main implementers with appropriate guidance from local government and technical partners.

The following solutions were developed and demonstrated as part of the project.

Demonstrate innovative measures that people understand and appreciate

Scientific studies have shown that one female crab can hatch up to a million eggs (depending on the size of the crab). Recognizing the unrealized potential if these crabs are captured and sold before they are able to hatch, a novel idea of “protecting the mother,” as opposed to the conventional approach in marine and coastal resource management of protecting the young, was applied in Chonburi.



The crab condo consists of stacked trays that are submerged underwater. Local fishers are responsible for maintaining the setup.

Inspired by the housing developments in Sriracha Municipality, a nursery for gravid crabs was designed as a stack of baskets constructed vertically in order to separate crabs for efficiency in feeding, maintenance and collection for sale after the eggs are released, and was called the “crab condominium” or more popularly, “crab condo.” The structure was designed to be submerged in the sea, near the coast, to facilitate regular maintenance. Cooperation and organizational arrangements among local fishers would be developed to “surrender” gravid female crabs for rearing and to protect and maintain the crab conservation set up.

Start Small ... and Build

The Chonburi Fisheries Association and Sriracha Municipality introduced the crab conservation program to local fishers in Sriracha Nakhon Village and enlisted their support in building the first crab condo. This pilot initiative served to test the initial crab condo model, which later required redesigning to improve durability, and to assess suitable approaches for management of the set up by the local fishers. Technical support was provided by Kasetsart University to monitor and evaluate changes associated with the crab conservation initiative, including monitoring of water quality and plankton population.



Mr. Chatchai Thimkrajang, former mayor of Sriracha Municipality and head of Chonburi Fisheries Association, shows a gravid female crab being placed in an enclosed tray for nurturing until the eggs are released. (2006)

A year later, Sriracha Nakhon Village received a grant from the national government’s SML (Small, Medium, and Large) Program, which aimed to develop the potential of villages and encourage villagers to take part in solving community problems by providing grants based on the size of the village. The villagers, with guidance from the fisheries association, local government, ICM program coordinator and technical advisers, and local universities used the additional budget to triple the crab condo holding capacity from 120 to 360 female crabs, and to strengthen the structure further using better materials.

Develop local capacity, ownership, and pride for the program

With increasing knowledge, confidence in, and ownership of the program, the Sriracha Nakhon villagers became speakers and educators to other interested villages. The adjoining village called Choom Chon Rim Talay, where some inhabitants are seafood restaurant owners, recognized the importance of crab conservation to sustaining their crab supplies, and joined the initiative. At that time, the crab condo operation in Sriracha Municipality was able to house 1,600 gravid female crabs, which can be translated to an estimated 1.6 billion eggs being released for hatching. Fishers also noted higher crab harvests compared to the same periods in previous years.

Utilize the program as a platform for public education and engagement in marine conservation

The crab conservation initiative, with its catchy name, attracted media attention and visitors to the crab condo facility, including schoolchildren, fishers, and officials from other local areas. These opportunities were taken by the local government and fishers in Sriracha Municipality to promote marine conservation in general including providing visitors with hands-on experience in releasing crabs and other marine species.

A partnership was also developed with Duang Manee School, a private elementary and junior high school in Sriracha, to develop an outdoor learning curriculum that emphasized the relationship between the marine environment, crabs and other marine resources, local livelihood, and the conservation programs. The curriculum included demonstration activities on marine and coastal resources management and interactions with municipal officers and experts.

Facilitate technical and financial assistance to other areas interested to replicate the program

From 2007 to 2008, the crab condominium concept was replicated in other coastal fishery villages in other local governments in Chonburi Province. Fishers from the Rim Talay Village in Sriracha Municipality worked together with fishers of Wat Luang Village of Bang Phra Municipality and Ban Laem Chabang Village of Laem Chabang Municipality to develop crab condos through project grants from the Global Environment Facility (GEF) – United Nations Development Programme (UNDP) Small Grants Programme (SGP) and the national government's SML program. The ICM Project Office in Sriracha Municipality provided assistance to community-based organizations in developing the project proposals submitted to SGP.

Integrate the program into local development plans and leverage support from various partners

Coastal fishery villagers from the municipalities of Bang Sarae and Sattahip, and from the municipalities of Saensuk and Banglamung, applied the crab condo model in 2009 and 2011, respectively, using funds from their local governments and private sector partners.

The crab conservation program has been incorporated in the local development plans and budget plans of eight local governments in Chonburi Province, including the municipalities of Sriracha, Saensuk, Sattahip, Laemchabang, Bang Phra, Banglamung and Bang Sarae, and Pattaya City.

Adapt the conservation approach based on local circumstances

In areas where the crab condo model demonstrated by Sriracha Municipality was difficult to maintain due to strong wave action, such as in some areas in Sattahip and Saensuk, the technique was modified with the construction of onshore nurseries to nurture the gravid crabs until their eggs could be released. In Sattahip, they used cement ponds filled with seawater which was periodically oxygenated. In Saensuk, they constructed an onshore nursery using plastic buckets containing seawater, which was continuously oxygenated using an air pump.



Onshore nursery for breeding crabs in Saensuk Municipality. Mr. Narongchai Khunpluem, Mayor of Saensuk Municipality, placing a crab in one of the tanks.

Employ complementary conservation approaches

To complement the conservation approach of protecting gravid female crabs, the Chonburi Fisheries Association provided fishers with crab traps with the appropriate/legal mesh size, in exchange for traps with illegal mesh sizes. The new traps were designed to protect young crabs from capture until they reached the standard size for consumption. Release of juvenile crabs and fish were also done by local governments to celebrate holidays and special occasions.

Other conservation/rehabilitation measures focusing on sea turtles, mangroves, seagrass, coral reefs, and beach areas, and environment-friendly aquaculture techniques were also implemented by local governments and used as opportunities for stakeholder education and participation.

Results

Increase in crab catch

Interviews with local fishers in Bang Phra Municipality in 2010 showed that crab catch using collapsible bottom trap and gill net in Sriracha Bay increased from 1-5 crabs/night before the crab conservation program started to 5-10 crabs/night in 2010 (N. Wiwekwin 2010, pers. comm., 6 November). A study conducted by the Sriracha Fishery Research Station of Kasetsart University for Saensuk Municipality using 60 collapsible bottom traps and 1.5 km long crab gill net showed increase in crab catch per deployment from 54 crabs in 2011 to 105 crabs in 2012 (a 94% increase), accompanied by an increase in average crab carapace size from 3.88 cm to 4.51 cm (Sriracha Fishery Research Station 2011, 2012). The increase in crab catch translated to more income for the local fishers.

Enhanced public awareness and participation in marine conservation

Through the crab conservation program, the local fishers and general public's understanding of the need for and benefits of marine conservation was enhanced. The important role provided to the fishers as main implementers of the program, with technical and financial support from the local government and other partners, also enhanced their leadership and social skills, appreciation of team work, and networking among fishers groups. The fishers also learned about the importance of working together with the local government, following regulations, and collaborating honestly with each other.

Interest in ICM generated among local governments in Chonburi

The crab conservation program also increased other local governments' appreciation of the ICM concept, process, and benefits. From 2006 to 2010, the number of local governments implementing ICM in Chonburi increased gradually from the initial five demonstration sites to all 26 coastal local governments, and later to non-coastal local governments as well, covering the entire province.

Lessons Learned

Be strategic, considering long-term as well as short-term actions that address priority needs and show immediate results

The Mayor of Sriracha Municipality had a clear vision for the sustainable development of his local area and an understanding of priorities and internal and external factors. He also had a good appreciation of the integrated approach to marine conservation through stakeholder participation, and wanted to promote this to address local concerns and needs. Considering how to demonstrate integrated approaches in a practical and simple manner, and in line with the government priorities and objectives, he conceptualized and developed a marine conservation program. The blue swimming crab, a popular seafood and an economically-important species with a declining population, was targeted in order to generate the interest of key stakeholders. The Mayor also gave importance to strengthening the capacity of the community to serve as implementers, with local government officers providing advisory and technical support.

Start small to test and demonstrate conservation measures, which should be practical and relatively easy to understand, implement, adapt, and replicate

The idea of protecting the gravid female crabs to allow them to release their eggs and improve future harvest is a practical concept that local fishers easily understood. The thought of a single gravid crab releasing close to a million eggs highlights the potential benefits that fishers can gain from the program, thus facilitating their voluntary participation and cooperation to give up the gravid crabs for nurturing in the crab condo, instead of selling them at a higher price.

The crab conservation structure and implementing arrangements were also designed considering the local context and practices and capacities of local fishers. The implementation of the program was piloted in one village, using a relatively small setup to demonstrate the method and test implementing arrangements. In addition to requiring a smaller amount of funding, it also enabled easier adjustments in design as needed.

Enlist local stakeholders as partners, and develop their capacity to implement, sustain, and promote the program

Marine conservation is an effort for everybody to make; it cannot be done by the government alone. Local stakeholders including fishers groups and communities can contribute to and lead marine conservation efforts if they are given opportunities to enhance their knowledge, capacity, and skills in practical measures that address local needs.

Support from various sectors is also not difficult to engage if the initiative is seen as practical, doable and promotes the common good.

Demonstrate government commitment and support

The initial allocation of local budget by Sriracha Municipality and other local governments was an important factor in developing the crab conservation program. Incorporation of the program in the local development plans for continuing implementation in collaboration with the fishers groups further attested to the local governments' commitment to the conservation efforts.

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Keywords

Integrated coastal management (ICM), Chonburi, blue swimming crabs, *Portunus pelagicus*, crab conservation, crab condominium/crab condo, Sriracha, Saensuk, Satthahip, Laemchabang, Bang Phra, Banglamung, Bang Sarae, Pattaya

For further reading

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