Newsletter

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GULF OF MOTTAMA PROJECT

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Co-Management is the Way to Sustain the Gulf of Mottama Natural Resources

Gulf of Mottama Project Newsletter Vol.4, 15th October, 2020

Contents

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Mangrove Friendly Mud-crab Cultivation

Background

Fishermen who catch mud crabs are catching crabs in a variety of ways mainly using crab traps or crab hook. In comparison to data collected four decades ago, mud crab production has sharply declined according to data collected by fishermen from the Gulf of Mottama (Figure 1).Due to the declining capture rate of mud crab, it is necessary for the fishermen to know and follow the mud crab catching method and the freshwater fishery law for sustainable development in order to prevent the extinction of the mud crab species. In addition, deforestation has damaged the mud crab environment. Fishermen need to be aware the threats to mud crabs such as capture of larvae, capture of juvenile crab, capture of females with eggs.

Figure 1: Fishery Histories of the Gulf of Mottama from 1990 to 2018

Objective

To be able to sustainably cultivate mud crabs in the mangrove forest without harming the environment and to increase income.

The reason for the decline of mud crabs

1. Development of more efficient crab trapping equipment and techniques.
2. Use of illegal mud crabbing nets.
3. Population growth.
4. Deforestation.
5. Catching under size mud crab and female with eggs.
6. Limited awareness raising activities on mud crab production and mud crab cultivation.

About Mud crab in Gulf of Mottama

There are four species Mud crab in South-East Asia but Myanmar has only two species. They are the black mud crab *Scylla olivacea* and the white mud crab *Scylla paramosain*

(Figure 2); Mud crab fishers in Gulf of Mottama capture only *Scylla olivaea*. *(Figure 3)*

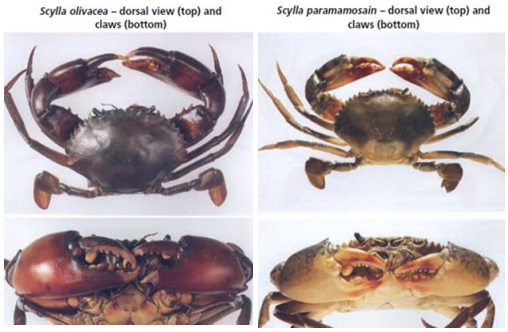


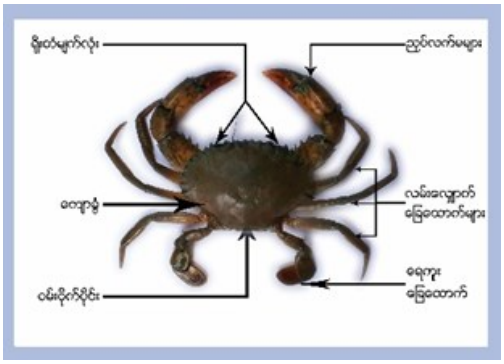
Figure 2: Mud crab species of Myanmar

Figure 3: Mud crab from Kartae (Mon State) and Aung Naing Gyi (Bago Region)

Features of Mud crab

The shape of the mud crab is round. It is wide at the top and narrow at the bottom. The back and abdomen are covered with hard shells; the back is smooth and has sharp slopes from the eye-stalk to the second leg. The carapace's color is green or black or reddish. It has a pair of eyes with stalks. Mud crabs have three pairs of walking legs and a pair of swimming legs (Figure 4).

Mud crabs go through many molts in their life time. Mud crabs have to molt in order to grow and compete with other crabs for resources. During the molting process, the crabs remove their shell making them vulnerable predators. But it is the only way they can grow and survive. The time it takes for a crab to complete a molt varies. As a general rule, the larger the crab, the longer the whole process will take. It is not unusual for an average-sized crab to spend **about four to eight weeks** going through the whole process, during which time it may stay completely buried in the sand.



Message from the Chief Technical Advisor

Photo © Min Nyan Seik/ KMCO

Dear Readers,

Warm greetings from the Gulf of Mottama Project. It has been a very hectic last few months because of the COVID 19 pandemic, which seriously affected our communities as well as our work. The Gulf of Mottama Project has been supporting the most vulnerable families with a special cash injection to cope with the challenges they encounter.

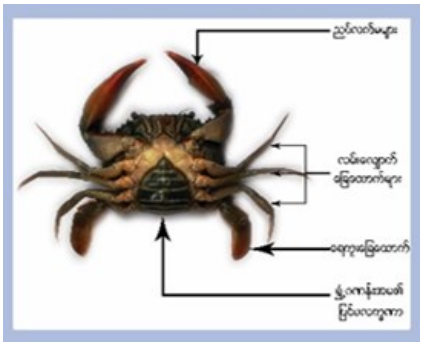
In this issue we will discuss and present different activities of the Gulf of Mottama Project (GoMP). The first article is on mud-crab fisheries and the experiments we are conducting at the moment on the use of mud-crab friendly aquaculture in mangrove areas. By introducing this on an experimental scale, we do hope to gain more knowledge on specific sites and if successful we can extend to other areas.

To improve the rice production GoMP has promoting the use of new rice varieties. We do this by setting up seed banks, operated by local farmers who produce quality seed varieties, which grow well in the Gulf of Mottama. Once we produce enough seeds for our own farmers we do hope to produce for other farmers as well.

The conservation of the ecosystem in the Gulf of Mottama is one of the main pillars of the project. We set-up and strengthen local conservation groups within the existing fisheries development associations who patrol and conserve the Gulf area to ensure that shorebird, fishes and other animals are protected and can thrive well.

Once the funding of the Gulf of Mottama project by the Swiss Agency for Development and Cooperation is finished we anticipate that the Coastal Resource Management Committees of Bago Region and Mon State will be further in the lead to manage the natural resources of the Gulf of Mottama. Therefore, we are working closely with them to prepare them for this very important task.

On the last page we show a picture of the cash dispersal activity we implemented to support the most vulnerable families in our target villages. We do hope you enjoy reading the newsletter and we are looking forward to your comments. ■



(https://www.thesprucepets.com/duration-of-hermit-crab-molting-1239079)

Living Habit of Mud crab

The Mud crabs mainly live in streams, canals and marshes which receive salt water though regular tidal flooding. Mud crabs live by digging holes in the marshes on the shore. Although Mud crabs find food on the shore at the night time; they stay in the deep water during the day time. Mud crabs dig holes on the marshes on the shore. Mangrove and marshes are most suitable living areas for Mud crabs.

Cultivation System

There are three Mud crab cultivation system. 1). Earth pond mud crab cultivation system, 2). Cage mud crab cultivation system and 3). Mangrove friendly mud crab cultivation system. The GoMP promotes Mud crab fishers to cultivate mangrove friendly mud crab production-

Figure 5 Mud crab fencing to protect from crab getting outside the pond

system to develop their long-term sustainable harvest of mud crabs.

Mangrove friendly mud crab cultivation system

Site selection: Site selection is important for healthy mud crab cultivation. The selected land must be even at neap (lowest) tide. The site should exist among the mangrove.

Mud crab pond construction: Various steps in mud crab cultivation are illustrated in Figures 5-7. Mud crab farmers should dig a trench 50 meters from edge of the river. The mud crab pond should be covered with bamboo

Figure 6 Feeding Bridge and feeding tray

screen or nylon screen to prevent mud crabs escape form pond. Mud crab farmer should do only 2000 m² to 4000 m² for small scale mud crab cultivation. A feeding trench of ten feet width and two feet depth should be dug on the edge of the pond. To install the blue net screen and bamboo slat screen, the bamboo poles should be 5 feet apart and tied in three rows with long bamboo row. The blue net screen and bamboo slat screen should be raised one and half feet above the maximum high tide level. Blue screen and bamboo slat screen should be put in the ground 1.5 feet depth to prevent mud crab from penetrating the ground. The trench should be dug about 2 feet deep to allow water to low tide. Mangroves should not be cut down unnecessarily.

This is important so the mud crabs will be able to hide in the water during low tide. The feeding bridge and feeding tray must be installed on the side of the pond depending on the pond size. Feeding trays can be used not only for feeding but also for collecting data samples. Mud crab farmers should install a three feet width sluice gate at the lowest water level of the pond. There must be inflow and outflow of water in the mud crab pond depending on low tide and high tide. The sluice gate can control pond water level. Mud crabs can hide in the middle of pond among the mangrove during molting period.

Pond preparing

Mud crab farmer should prepare pond like a fish pond preparation method such as applying lime, and monitoring the water quality or managing.

Stocking mud crablet (baby crab)

There are two types of mud crablet stocking into the pond. The first type mud crab farmers can stock directly from natural water resources during high tide. The mud crablet and various fish species will enter the pond by the high tide. And farmers can add mud crablet from mud crab finder. It is not able to count for number of mud crab, number of various fish. Farmers could not choose the desired size of mud crab. The second type mud crab farmers stock mud crablets after they prepare the pond and perform water quality management. Farmers can get mud crablets from individual mud crab finder. They can select size of the mud crab and the number of mud crabs for stocking into their pond. Farmers should stock not more than 2 pc/m mud crablet in their pond for low stocking rate system.

Figure 7 Sluice gate

Feeding

Mud crabs are omnivores who will eat just about anything they encounter, including bivalves, worms, fish, plant material and smaller crabs. Mud crabs use many senses to locate their food. Shellfish and mollusks are the mud crab's favorite foods. (https://www.ras-aquaculture.com/post/what-to-feed-mud-crabs) Therefore, mud crab farmers can get trash fish from fishermen who used stow net and bag net. Mud crabs can get natural food from pond water depending on natural water which entered by tide. Mud crab farmers should feed mud crab once or twice per day depending on stocking rate and feed consumption. Farmers must use feeding tray and feeding bridge.

Sampling for growth rate and feeding rate (Monitoring)

Farmers should collect sampling data for growth rate and feeding rate twice per month. Only by knowing the estimated growth rate, we calculated the feeding rate. Farmers must use weight scale, ruler and recording book for sampling data collection.

Harvesting

Farmers should harvest partially after three month of cultivation period. Farmers have to use mud crab trap for partial harvest. After farmers have already harvested partially 75% of stocking, they should restock mud crablets. Farmers must sell mud crabs who weigh above 150g when they partially harvest. ■

Banking on seeds for the future

The Gulf of Mottama Project has supported a seed bank system in the project villages to improve crop yields and product quality and increase family income.

25 seed banks in 25 project villages from Chaungzon, Paung, Thaton, Bilin and Kyaikto Townships, in Mon State and 17 seed banks in 17 project villages in Waw, Thanatpin and Kawa Townships in Bago Region have been set up since 2017. The seed bank committee store high-quality paddy seed and green-pea seed in the seed banks to distribute during monsoon and winter cultivation.

This year, the seed bank committee provided around 53 tons of seeds to 573 farmers in the form of loans.

To improve sustainable rice production, about 107 model-farm from 22 villages were provided 40 Kg of paddy certified seed (CS) per acre to Gulf of Mottama Project Villages through the Coastal Farmer Development Associations - CFDA. These include a set of input supplies such as different types of fertilizer for 285 acres in these villages.

Additionally, The Gulf of Mottama Project organizes farmers education forums in collaboration with CFDA to transfer farming techniques. Furthermore, CFDA also assists local farmers to access market linkages with traders and brokers to have reliable prices for their products.

The GoMP provides backstopping and technical monitoring to make sure that CFDA applies the farming technologies to achieve high yields and sustainable rice production systems to combat climate change.

This monsoon crop season, CFDAs are trying to produce high-quality seeds from Registered seeds to certified seeds (RS to CS) and aim to distribute them to local farmers during the following cropping season. Fertilizers and planting costs are provided by the project to enable farmers to produce these seeds.

Previously, farmers did not have a seed bank systems and the building to store seeds in the villages. Traditionally farmers use their best grain to grow for the following year. But now seed bank systems have been installed and farmers have access to quality seed.

There were no seed growers in the villages in the past, but now nearly every project villages have two seed growers per-village to produce high-quality seeds which is to be distributed the following year during monsoon season.

Because of the establishment of the seed bank system and the creation of farmer education forums, it has ultimately changed the practice of local farmers on their farming methods and increased crop yields through access to high-quality seed. ■

Installing signboard for SRP farming by Coastal Farmer Development Association—Photo © Tun Zaw Htay

Strengthening Local Conservation Efforts is a Key to Protect Critical Species and Sustain Fishery Resource in the Gulf of Mottama

In the past according to U Mg Taung, current chairman of Local Conservation Group – LCG, there is no conservation group to protect critical species and monitor illegal fishing along the coastline of Gulf of Mottama. The bird hunters used old-fishing-nets to catch the birds and sold it at the local markets for family income. The bird haunting didn't happen only in the villages in Paung Township but also in many townships along the coastal areas.

Shore birds patrolling—Photo © BANCA

These incidents occurred for many years due to a lack of awareness-raising on biodiversity conservation, law enforcement, and community participation in protecting key species.

Establish Local Conservation Group

Biodiversity and Nature Conservation Association – BANCA established a Local Conservation Group - LCG in village level in 2013, these groups included bird hunters and other communities participants according to U Mg Taung.

Following the establishment of LCG, BANCA started to raise awareness about critical endangers of key species and the importance of conserving biodiversity and natural resources. At the same time, it provided livelihood options to bird hunters to change their practices through supporting fishing materials including boats to start their new livelihood in doing fisheries.

Through local arrangements by LCG, BANCA was able to conduct regular patrolling and shorebirds' surveys and provided training on birds watching and biodiversity conservation. Current chairman U Mg Taung said that LCG was very active since it had been formed 6 years ago. Many cases had been reported to local authorities for further actions. With financial support from BANCA, it conducted public awareness and education in schools. However, LCG had no proper financial support and source of income to continue except 5000 Kyat monthly member-fee. As a result, many committee members had resigned and become less strong.

In 2018, after having contact with the Gulf of Mottama Project, LCG started to reform and expand its committee members. Following the reform process, it was registered by the Mon State Government under organization registration law and became a legal association on biodiversity conservation.

Biodiversity Law

On 21st May 2018, Union Government of Myanmar issued Biodiversity and Conservation of Protective Area Law which substituted The Protection of Wildlife and Protected Area Law 1994. The law includes 13 sections with a total of 53 articles. In section 3, article 4.a states that the management committee is formed by Minister of Natural Resource and Environment Conservation as chairman including line departments and academia. However, it does not state the role of the State and Regional Governments in this management committee. At the same time, the role of communities and local conservation groups is missing in current law and perhaps it might exclude the grassroots community participation on biodiversity protection and conservation.

According to 2008 constitution, Section (15), Schedule (2) Region or State Legislative List (Refer to Section 188), it does not specify the role of State and Regional Governments have authorized to create Biodiversity and Conservation or Protective Area Law except sector (4.e) Recreation centers, zoological garden and botanical garden.

By looking at all these aspects, the roles, responsibilities, and procedures of the State and Regional Government on the management of biodiversity and conservation of protected areas are questionable. Although the state government has the Ministry of Natural Resource and Environment Conservation and line departments such as forest department and environment conservation department, it does not have formal authorization on managing the protection of biodiversity and conservation. It might be difficult for NGOs, INGO and Civil Society Organization which working on biodiversity and conservation to deal with and develop local level policy on this sector.

Role of Coastal Natural Resource Management Committee

May 24th, 2018 with notification no. 56/2018 of the Union Government,

Shore birds patrolling—Photo © BANCA

the State Level of Coastal Resource Management Committee, which is chaired by Vice Presidents U Myint Swe was formed. The committee was established with 20 representatives from line ministries including chief ministers from Mon state and Bago regional along the coastal area.

Notification letter listed 10 action points for this committee to implement. Among these, action point No.3 stated that this committee is expected to develop the Integrated Coastal Resource Management Program which is acting as guidance documents for further development on policy and strategic planning at Mon state and Bago regional levels.

Action point No.9 described that to support the central committee performance, supporting committee in State/Region and District Level and also establish technical supporting committee need to be formed. Action Point 9 gives decentralized power to state and regional government on the authorization of the establishment of the multi-levels supporting committee. For this aspect, State and Regional Level CRMC should consider including the private sector, communities, and civil society organizations as part of the committee list.

CRMC is the only window for NGOs, INGO and Civil Society Organization to engage with when it comes to the protection of biodiversity and the creation of conservation areas such as marine parks, management zone, and protected areas including the designation of fishery co-management and RAMSAR Site. With the recommendation of CRMC, the proposed agenda will reach to union level for further processing. At the same time, due to Chief Minister is the chairperson for the State and Regional level of CRMC, he/she has the power to make decisions on some area.

What does the Gulf of Mottama Project do to conserve biodiversity and critical species

Outcome 3 of the Gulf of Mottama Project states that “coastal natural resource governance is coordinated and effective, and awareness of the value of the GoMP is raised”. Under this outcome, GoMP set up different targets and objectives. Establishing Local Conservation Group integrated into the Fisheries Development Associations and developing local conservation plans in project villages are key components during the second phase of the Gulf of Mottama Project.

So far, the project has trained focal people from project villages in A Lat Village and provided equipment, technical and financial support for the group to conduct patrolling activities. Fishery co-management and crab conservation zones were created in the Thaton area with permission from Mon State Government in 2017. Along with establishing fishery co-management, the project facilitated to formation Fisher Development Association which is community-based organizations in township level. This association focuses on fishery management and conservation. With support from the project, the team members of the association do regular patrolling within the co-management area to tackle illegal fishing and conserve nature.

Illegal fishing is a major threat to fisheries in the Gulf of Mottama. Because of this, within 10 years fisheries resource has been decline from 50% to 90% according to research from the International Union of Conservation of Nature. However, due to the effort of FDA and Gulf of Mottama Project, in the current condition, the scale of illegal fishing has declined and the fishery resources are improving.

Likewise, because of regular patrolling in close cooperation with the local conservation group, the coastal communities are aware of biodiversity conservation and the case of bird hunting has dramatically decreased compared to 5 years ago. ■

By: Min Nyan Seik, KMCO-GoMP

Reference

—2008 constitution, Chapter XV, General Provisions, Schedule 2, Region or State Legislative List, 4 (d)
—2018, Biodiversity and Conservation of Protective Area Law, Chapter III, formation of the Committee and Functions and Duties Thereof, article 4 (a)
—Notification no. 56/2018 of the union government, Action Point No.3,9
—Field visit and interview to local conservation group in Halat Village

Coastal Resource Management Committees and Beyond 2020

Myanmar has a rich and diverse coastline, a fertile coastal plain, productive offshore waters and a tropical climate which provides a strong basis for integrated sustainable development that will support both society and healthy ecosystems and biodiversity. One third of Myanmar's total parameter of 1930 Kilometers forms an uninterrupted coastline along the Bay of Bengal and the Andaman Sea. Myanmar's coastline can be divided into 3 major coastal regions and portions of the 3 division; Yangon, Bago and Mon also fall under the coastal regions;

- The Rakhine coastline is about 740 Kms long and extends from the Naff River to Mawtin Point. It is shallow and deltaic in the northern section and rocky in the southern part.
- The Deltaic coastal region extends about 460 Kms from Mawtin Point to the Gulf of Mottama (Martaban) and consists of the entire river-mouth areas of three major rivers, the Ayeyarwaddy, Sittaung and Thanlwin. The southeastern portion of the central deltaic area comprises the coast of Mon State and the Thanlwin River opens into the Gulf of Mottama and Balu-Kyune (Giant Island) lies at its mouth.
- The 900 Kms long Tanintharyi coastline extends from the Gulf of Mottama south to the mouth of the Pakchan River. It is fringed in the southern part by the Myeik (Mergui) Archipelago island chain. There are many estuaries and islands along these coastal regions.

There are valuable natural resources in those regions such as mangroves, coral reefs, sea-grass beds, sandy beaches, intertidal mudflats, mountains, terrestrial and wetland forests; fishery and various minerals. Unsustainable development in Myanmar has been damaging the coastal ecosystems (particularly mangroves forests and overfishing), which exacerbate rural poverty in coastal areas.

Exploitation of coastal resources has increased to such an alarming rate that is now time for their improved management and sustainable utilization of coastal resources. Coastal resources management includes a wide array of management practices such as land use planning, institutional execution, inspection and control of adherence to decisions, wood and non-wood forest products, fishery resources, hunting, peat and the rights of different interest groups and so on. Similarly, its management is too complex to be handled by a sectorial planning and management. To be effective, planning for integrated coastal area management (ICAM) must be coordinated between sectoral implementing agencies.

Therefore, to solve this situation in Myanmar, Union level Coastal Natural Resource Management Central Committee includes different Ministries and Departments and is lead by Vice President and was formed on 30th November 2016 by the Republic of the Union of Myanmar. After which, similar committees in State & Regional of coastal region in Yangon, Rakhine, Tanintharyi, Ayerwaddy, Mon and Bago were designated respectively.

Gulf of Mottama Project (GoMP) has been implementing with the 3 major objectives (Livelihood, Natural resources conservation and Governance) especially at 37 villages of 5 townships in Mon State and 23 villages of 3 townships in Bago Region. One of the major priority of GoMP among other activities which is to support and facilitate the "Sittaung River Mouth Natural Resource Management Committee in Bago Region and "Coastal Resource Management Committee" in Mon State. The aim for those committees is to implement the sustainable Gulf of Mottama Management Plan to benefit communities and their livelihood. This is not an easy task because there are many requirements and issues in these two committees which were identified throughout the project working with them. These issues are entirely based on how committees were formed because there are various departments and Ministries like in National level. In each committee, Chief Minister is the Chair Person and Forest -, Fishery - and Environmental Conservation Departments are as Secretary and joint Secretary respectively. The GoMP has been gradually trying to get their collaboration and cooperation since early 2019. That is why, in 2020, The coordination channels between the two CRMCs and GoMP are improved but still they are facing many challenges. They still need further support and strengthening measures. The project's target for both committees in

Handing over certificate for 5th RAMSAR Site by Union Government to Mon State Chief Minister—Photo © BANCA

Planting mangrove at Kar Tae Village, Paung Township—Photo © Min Nyan Seik

2020, is to establish separate focal offices to form township working groups, to build capacity related with natural resource conservation and finally to sign a Memorandum of Understanding (MoU) between the two CRMCs of both governments and GoMP. The GoMP is assisting the two CRMCs to complete the targets as outlined in the annual work plan cost estimate for 2020. The 2CRMC to finish mentioned targets. If the mentioned target are completed in 2020, the committees will be well on the way to complete other coastal resources activities in accordance with their ToRs in coming years after developing an action plan for the period 2022-2024.

On the other hand, community participation is of the utmost importance in the successful management and protection of coastal resources. Natural resource conservation is impossible to be done by only government departments and it should involve active participation and full support of the communities and other stakeholders sectors in planning and observing appropriate use of coastal resources. As a result, The CRMCs agreed to include representation from Fisheries Development Associations (FDA) and Coastal Farmers Development Associations (CFDA), village authorities and private sector into these township working group. Although our objectives are geared towards integrated coastal management, incouding the the coastal areas and its surrounding environment. Moreover, the physical environment is not the only consideration in natural resource conservation; but also includes cultural, political and socio-economical factors which effect coastal residents. After all these aspects are included The two CRMCs can become truly inclusve governing bodes which will function well beyond 2020. ■

By: Soe Min Oo, MPC-GoMP

GoMP Provided Cash to Vulnerable Families in Respond to COVID 19

Supporting cash for livelihood to vulnerable families who are effected by COVID 19—Photo © Min Nyan Seik

In response to the effects of the global pandemic COVID19, the Gulf of Mottama Project supported cash for livelihood program to the most vulnerable families with 70,000 MMK donation per family. This activity is supported by the Swiss Agency for Development and Cooperation - SDC and benefited over 1800 families in eight townships in Mon State and Bago Region. The Gulf of Mottama Project supported personal protective supplies such as face masks, gloves, and other materials for 47 community based quarantine camps strategically located in project villages with a total number of over 1000 migrants. ■