

Inland Fisheries Habitat Management of Myanmar

Nilar Kywe, Thaw Tun OO, Aung Than OO

Department of Fisheries, Ministry of Livestock, Fisheries and Rural Development

Republic of the Union of Myanmar

email: nlkdof1325@gmail.com

Abstract

Leasable fisheries operate in fisheries waters in which fishing rights are granted under a lease by Department of Fisheries (DoF) of Myanmar, subject to stipulations relating to the area, species, fishing implement, period, and fishing methods. There are 3729 leasable fisheries in Myanmar, most of which operate in inland waters. Recently, inland fisheries habitats had been gradually depleted due to siltation, extension of agriculture, as well as construction of roads, bridges and dams. In order to conserve the fisheries habitats and fish stocks, DoF has been conducting many activities in collaboration with leasable fisheries stakeholders. One of the leasable fisheries is Myaung leasable fisheries (Inn) situated at Bamaw Township in Kachin State of northern Myanmar. It is a demonstration site for other leasable fisheries and the leasable fisheries owner (lessee) emphasizes on maintaining the waterways that connect with the Ayeyawady River as well as removal of aquatic plants, such as water hyacinth and lotus from the waterways. The lessee has also been conducting culture-based capture system and capture-based culture system in his leasable fisheries area. A 12-acre pen had been built to rear indigenous species and commercially-cultured species. The fish outside the pen had been fed with rice bran and ground nut cake to grow. The local people depend on this fish for consumption in closed season (May, June, July) since this leasable fisheries has been practicing selected fishing and managed to maintain the fish production.

Introduction

Myanmar is one of the largest mainland countries in Southeast Asia with a land area of 656,578 km² and population of about 51.5 million based on the 2014 Myanmar Census. The country is endowed with inland water resources composed of riverine and estuarine systems. Its extensive river system comprises the Ayeyarwady (formerly known as Irrawaddy) River is about

2,170 km long and its tributaries are the Chindwin which is about 960 km long, Sittaung (560 km), and Thanlwin (1,300 km). Ayeyarwady River which originates from Mainland China, traverses the entire length of the country from north to south, and drains into the Andaman Sea.

Management of Inland Fisheries in Myanmar

Inland fisheries has been practiced in Myanmar since 1864 during the British Rule of the country and managed in accordance with fisheries rules enforced since 1872. Since then, inland fisheries had been managed in accordance with the fisheries rules. Management of inland water fisheries has been promoted in Myanmar as means of developing the country's fisheries in a sustainable manner, preventing the extinction of fishery resources, and safeguarding the health of freshwater fishery resources and habitats. For management purposes, the country's inland fisheries had been divided into: leasable and open fisheries. In leasable fisheries (locally known as Inn leasable fisheries), the fishing rights are granted through a lease agreement with the Department of Fisheries (DoF) of Myanmar subject to stipulations relating to the area, species, fishing implements, fishing period, and methods used. Open fisheries are operated in all other inland areas and waters adopting all kinds of fishing operations, with the right to fish in such areas also licensed by DoF including the fishing gears used.

The leasable fisheries at Myaung in Bamaw Township, Kachin State which had been adopting sustainable management, serves as a demonstration site for other leasable fisheries in Myanmar. However, considering that the country's fisheries production had been decreasing, the government promoted leasable fisheries and enacted the Fisheries Act in 1905, which identified the boundaries of leasable fisheries, auction system and fishing period in the leasable fisheries. After a change of the country's administrative system in 1991, the country enacted the Freshwater Fisheries Law.

Leasable fisheries also serve as conservation areas and production promotion sites based on collaborative arrangements among the lease owners and the DoF. However, the short-term lease period of one-year created some concerns as this led to over-exploitation of resources as the lessees tended to maximize their catch without having thoughts on the sustainability of the fishery resources.

Thus in 1909, the long-term lease system was adopted as means of preventing the extinction of indigenous species and depletion of fisheries habitats, sustaining fish production of leasable fisheries, monitoring and controlling illegal fishing in the lease areas, and promoting responsible fisheries practices in the lease areas.

In 1988-1989, the long-term lease permission program was suspended but was restarted in 1992. Under this resumed program, lease owners granted the long-term permission have to undertake various activities such as repairing the water ways where fish migrates, enhancing the fish stocks in the lease areas, and promoting the conservation of fisheries habitats. Considering that such activities could not be completed in one year, DoF grants the lessees long-term permission from 3 to 9 years. Thus, the lessees do not have to bid again for the auction and pay high fees for their lease areas during the lease period. In order to promote the production and conservation of indigenous species, DoF has initiated culture-based system and capture-based system in leasable fisheries since 1997. At present, most of the lessees have been conducting these systems since these have provided them beneficial returns. Such practices in leasable fisheries have been promoted by the DoF as ways and means of obtaining sustainable fish production and at the same time promoting conservation measures. Since then, nearly 500 leasable fisheries have been permitted to operate long-term lease arrangements annually. Among the long-term leasable fisheries, Myaung leasable fisheries in Bamaw Township, Kachin State which adopted sustainable management, had served as demonstration site for other leasable fisheries in the country. As leasable fisheries

Model Leasable Fisheries in Myanmar

With the main objective of conserving the inland fisheries habitats and fish stocks, the DoF has been conducting many activities in collaboration with leasable fisheries stakeholders. One of the most successful long-term leasable fisheries is located in Myaung of Bhamo Township, Kachin State in the northern part of Myanmar. Recognize for its successful management that led to increase in fish production, the Myaung leasable fisheries had been used as model and demonstration site for other leasable fisheries to learn lessons from. Awarded during in auction in 2013-2014, the Myaung lease area consists of river channels connected to the Ayeyarwady River, where the main channel is managed by the lease holder while in the small channels, other fishers are allowed by the lessee.

progressed, some of the lease areas had been observed to be deteriorating due to siltation, agriculture operations, mining, and road and dam construction. The deteriorated habitats coupled with illegal fishing and overfishing resulted in the depletion of the fishery resources that eventually led to overall decreases in the country's fish production from inland capture fisheries. Thus, the DoF finally established guidelines for preventing further decline of habitats and fish stocks, especially in the lease areas based on long-term lease agreement of three years. The Guidelines detailing the responsibilities of lease holders (lessees) in the lease areas, include the following:

- Submit to DoF proposal for long-term operation of lease area including workplan;
- Upon issuance of lease agreement, implement the workplan under the supervision of DoF;
- Conduct regular repair of waterways where fish migrates, and promote stock enhancement and conservation of fisheries habitats based on culture-based and capture-based systems;
- Promote conservation of indigenous fishes by adopting capture-based system;
- Enhance fisheries production using culture-based system by stocking fish seeds during the transition, i.e. nursing fish seeds in net enclosures in pens or cages or earthen ponds prior to releasing them to lease areas; and
- Rehabilitate the habitats in order that wild fish would reach the spawning and nursing grounds in the lease areas, e.g. deepening of shallow water ways, removing fallen trees and small bushes as well as other aquatic growth, creating spawning and nursery grounds in some areas along the migration route.



Based on the proposal submitted to DoF for the operation of Myaung leasable fisheries, the lessee has been allowed to operate in the lease area for a period of three years from 2014 until 2017.

The stakeholders of Myaung leasable fisheries established that one of the most important factors that led to their success in managing the lease area is to regularly clean the waterways or canals as well as remove vegetations that grow in the waterways, to facilitate the migration of spawners. Furthermore, the activities that have been conducted in the lease area are in accordance with the work plan submitted to DoF and other relevant conditions. The lessee also adopts culture-based and capture-based culture

systems in the lease area, and a fishpen is constructed inside the area to rear indigenous fish species and culture some commercial species.

The fish outside the fishpen is also nurtured and fed to enable the fish to grow to marketable size. The concerned stakeholders depend on the fish harvested outside the fishpen for their consumption especially during the closed season (June-August). Selective harvesting has also been applied in the Myaung leasable fisheries in order to maintain its fish production.

Legal Framework Relevant to Inland Fisheries Management

The DoF of Myanmar formulated a new Freshwater Fisheries Law in 1991 to ensure that the changing conditions in the country's inland fisheries are taken into account, which the 1905 Burma Fisheries Act had inadequately covered. In addition, having been empowered by the Forest Law of 1992, the Government has declared that all mangrove forests are protected areas, and fishing within three hundred yards of such mangrove areas is strictly prohibited. Meanwhile, the most relevant regulations under the 1991 Freshwater Fisheries Law are shown below:

Closed fishing areas: 30 areas reserved for leasable fisheries had been identified for protection and management to ensure survival of juveniles of commercially important fish species, and these are located in Yangon, Pago, Sagaing, Mandalay, and Ayeyarwady Region.

Closed fishing season: for all freshwater fisheries, fishing is not allowed from May to July.

Protection of spawners, breeders and fingerlings of freshwater fishes. Species that should not be caught, exported, killed or kept in captivity

without permission from the Director General of DoF, especially during the closed season are identified.

Prohibited trading of spawners, breeders and fingerlings of the giant freshwater prawns *Macrobrachium rosenbergii* and *M. malcolmsonii*: catching, exporting, selling, killing or keeping in captivity of such species especially during the closed season is not allowed without permission from the Director General of DoF. In case of accidental catch, these should be released immediately to natural water bodies.

Prohibited trading of the African catfish *Clarias gariepinus*: import, export, culture, production, sale, propagation or possession of the African catfish (*Clarias gariepinus*) is not permitted.

Prohibited fishing gears: fishing gear that is destructive to the environment and fishery resources are banned, as well as electric fishing and fishing that uses poisons, chemicals and explosives, and other gears that obstruct the waterways such as those in dams and banks of rivers.

Issues and Concerns

Various approaches and related activities had been tried by the DoF of Myanmar for the sustainable management of leasable fisheries, e.g. giving back 1.0% of revenues to the inland fisheries sub-sector through a stocking program; return of 30% of revenues to long-term lease holders in the form of grants for improved management that includes: environmental rehabilitation, restoration and enhancement; clearing of floodplain channels to allow improved access of fish to the feeding and breeding grounds; and rearing of fish in pens within the lease area. Although the impacts of these factors are difficult to monitor and record, production and revenues are however reported to DoF, especially with respect to the trend of production from leasable fisheries. Nonetheless, one of the main concerns of the inland fisheries sub-sector of Myanmar is proper compilation of

production and other data for planning and policy-making purposes. For example, data from reservoir fisheries are not compiled by DoF because reservoirs are under the control of the Ministry of Agriculture and Irrigation. Even if fishing in reservoirs is officially not allowed as means of allowing fish stocks to recover, fish is still harvested from reservoirs since these water bodies are restocked regularly. As a consequence from such practice, the catch is not included in the country's statistical reports until 2000.

The Union of Myanmar is divided into States and Divisions, which are then divided into Districts then to Townships then lastly to Villages. All fisheries license holders are required to report their catch to DoF through designated local township officials.

Specifically for leasable fisheries, the lessees keep records of the fisheries, especially the catch records which are collected by designated local officers. In all cases, there is no sampling of the catch although reports are required especially for large gear, while some township officers were reported to have estimated the catch when these are not available from the lessees. After compiling the reports every two weeks, the township officers submit the reports to the central offices of DoF on a monthly basis. The officers are supposed to verify the catch records and other information through ocular inspection and field visits in the lease areas or fishing locations for open fisheries. However, such approach is not usually undertaken since many officers at township level only work part-time on fisheries statistics, as they have other duties in the township that include fisheries extension. In the case of leasable fisheries, the catch is reported in terms of value and quality (*i.e.* high and low quality), but information from open fisheries is reported by volume only and not by any category. Nevertheless, in both fisheries, there is very limited information on species composition.

Conclusion and Recommendations

For the sustainability of inland fisheries, habitat conservation should be promoted as this is important for the growth and propagation of fish. In leasable fisheries, selective fish harvesting should be enhanced to ensure sustainable fish production and resources conservation while leasable fisheries should be sustained as these have the potentials for resources and habitat conservation compared with open fisheries. Information collection and sharing of knowledge and experiences among stakeholders should be improved. Moreover, sufficient supply of quality seeds of indigenous species should be produced in hatcheries for stock enhancement of the species.

Based on the experience of Myaung leasable fisheries, similar approach should be promoted in other areas of the country for the sustainable production of fish which could supply the nutritional requirements of local people

It is in this aspect that collection and compilation of fisheries information should be improved, and could include: weight and species of fish caught, weight of feeds for fish outside and inside the fish pens, information on stock assessment of cultured species and wild species, and results of analysis of monitoring and evaluation of fish production. Nonetheless, it should also be considered that the Government has been giving more focus on agriculture extension, mining and industrial development.

Given the importance of fisheries, especially inland fisheries to food security of the country, the fisheries sector in general and inland fisheries in particular, should also be given equal attention as these other sectors. Specifically for leasable fisheries, support from the Government is needed in the reconstruction and/or maintenance of water ways considering the high labor and machinery costs. In addition, since the process of annual auctioning of leasable fisheries had been found to result in over-exploitation, such system should be reviewed and revised accordingly.

especially during the closed season. Since conservation of indigenous species is already developed, lessees should be encouraged to provide breeders to DoF-operated hatcheries as well as to backyard hatcheries operating near the lease areas. In general, there is a need for the Government to put more emphasis in the conservation of freshwater fishery habitats and resources as well as in the extension of long-term lease awarded to responsible lease holders.

On the part of the DoF of Myanmar, an analysis of the impact of cultured species on the wild species should be conducted based on regular surveys. There is also a need for DoF to conduct R&D on the rehabilitation of critical fisheries habitats and the results of which could be applied in leasable fisheries. Over-all it still remains a great challenge for Myanmar to manage its fisheries, more particularly its inland fishery resources.