The Republic of The Union of Myanmar

Ministry of Agriculture, Livestock and Irrigation

Department of Fisheries

Fishery Statistics 2021

THE REPUBLIC OF THE UNION OF MYANMAR

MINISTRY OF AGRICULTURE , LIVESTOCK AND IRRIGATION

FISHERY STATISTICS

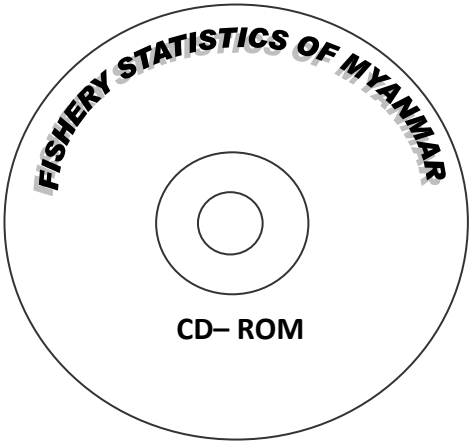
2021

Department of Fisheries

Myanmar

AVAILABLE NOW

MYANMAR FISHERY STATISTICS



The CDs are currently available in English only. Hence, for further information please contact the Department of Fisheries, The Republic of the Union of Myanmar, as address given below.

Department of Fisheries

Ministry of Agriculture, Livestock and Irrigation

Office's Building No. (36) Nay Pyi Taw, The Republic of the Union of Myanmar.

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FOREWORD

Myanmar Fisheries Statistics Publication is annually issued under the ownership of Department of Fisheries, Ministry of Agriculture, Livestock and Irrigation since 2001-2002, now it is coming to the said publication issuance for the fiscal year 2020-2021, thus it is saying that we are still keeping and continuing the good and valuable work to support as proper reference for the sector development in the country by the starting year. Main purpose of the issuance of this publication is to present the issuing fiscal year data and information for the fisheries related conditions as well as it includes presenting past ten year fisheries production data, so we can say that this small booklet can support to all users who are directly or indirectly working in the fisheries in order to receiving the current and previous production data for the sector in the country. Besides that this booklet can also support as reference in order to making the short/medium and long term plan to meet with the purpose of sustainable fisheries management together with is very linkage to the secure fishery production, income generation, fishery dependent livelihoods as well as linkage to the proper management and conservation for the fishery resources now and in the future.

On behalf of the Department of Fisheries, I would like to express my gratitude to the U Tin Htut Oo, Union Minister for the Ministry of Agriculture, Livestock and Irrigation for his valuable in direction and important guidance on the arrangement of this booklet. We also thank to Dr. Aung Gyi , Deputy Minister and U Kyaw Min Oo, Permanent Secretary for the Ministry of Agriculture, Livestock and Irrigation on their continuous support and guidance during this booklet preparation.

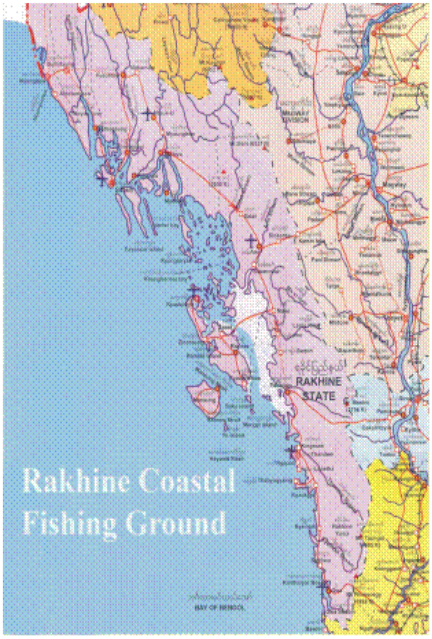
Moreover, Special thanks to U Myint Zin Htoo, Deputy Director-General and all of the Directors of the Department of Fisheries as well as all of relevant department staff and their contribution and hard working as completed and the success of this publication.

Wai Lin Maung
Director-General
Department of Fisheries

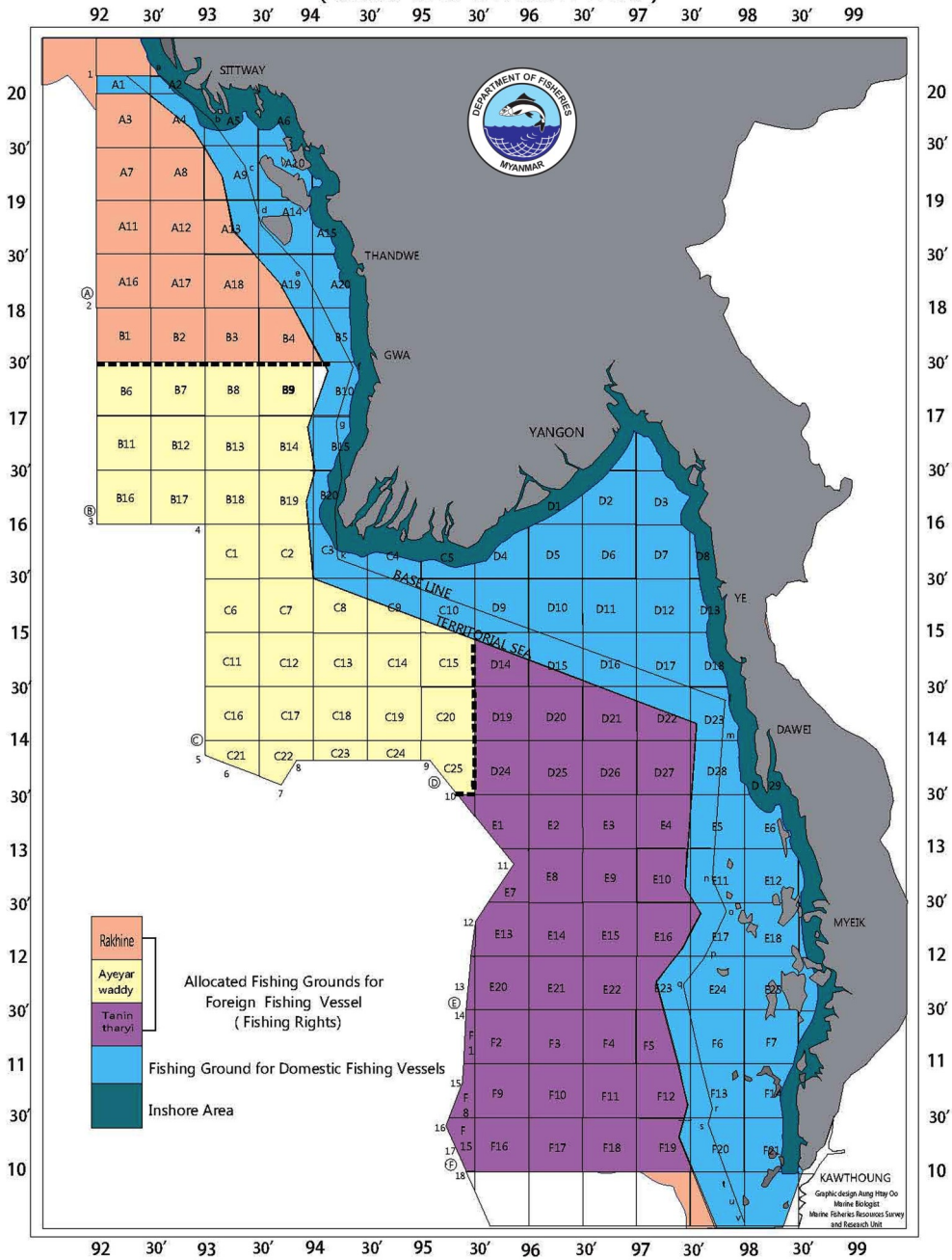
October 21, 2022

THE REPUBLIC OF THE UNION OF MYANMAR

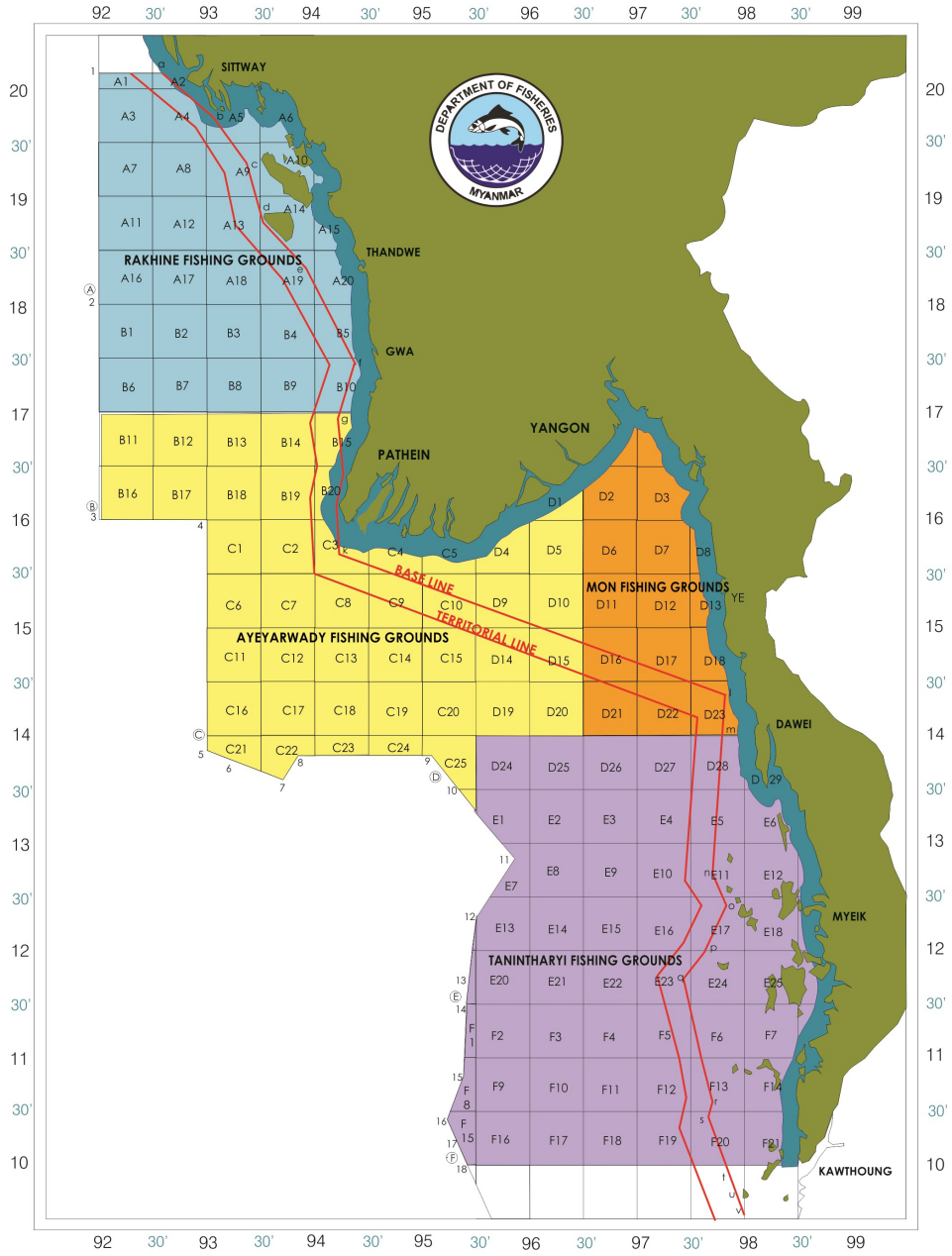
MAPS OF FISHING GROUNDS



Department of Fisheries
Fishing Grounds of Myanmar
(State and Division wise)



Department of Fisheries
Fishing Grounds of Myanmar



SHARE OF GROSS DOMESTIC PRODUCT (CURRENT PRICES)

Sectors	2018-2019 GDP(%)	2019-2020 GDP(%)	2020-2021 GDP(%)
Agriculture	13.7	13.2	14.0
Trade	20.6	21.0	21.3
Processing & Manufacturing	24.8	25.5	25.6
Livestock & Fishery	7.5	7.7	8.6
Transportation	11.2	10.7	9.9
Construction	6.4	6.6	6.1
Rentals and Others Service	3.2	3.2	3.1
Social and Administrative Service	3.3	3.2	3.3
Communications	2.0	2.0	2.2
Mining	1.0	1.0	0.8
Forestry	0.1	0.1	0.1
Energy	4.4	3.8	3.0
Financial Institutions	0.4	0.3	0.4
Electric Power	1.4	1.7	1.6

Source: Planning Department

FISHERY BRIEF IN MYANMAR

Background History of Department of Fisheries

Originally, Department of Fisheries is organized with the objectives of the conservation of fisheries resources, food security of sustainable fish consumption and contribution of aquaculture technology for the people.

As the fisheries project section, Department of Fisheries was established with 6 officers and 70 staffs under Land and Rural Development Cooperation since June, 1954. On the date of 24th March 1961, Department of Fisheries was extended as Fisheries Division under Land and Rural Development Cooperation leading by one director including 9 officers and 183 staffs.

After emerging of new administrative system, Fisheries Division was transformed as Department of Fisheries leading by Director General with 9 officers and 183 staffs since 15th March 1972. In November 1984, temporary task force for the plan of action on revenue of fishing gear licenses was temporarily organized with the number of 216 staffs within 1984-85 fiscal year and 1986-87 fiscal year. Since April, 1985, the total numbers of 89 staffs from aquarium staffs under People's Workforce Rehabilitation Association were transferred to Department of Fisheries under the Ministry of Agriculture and Forestry Affair.

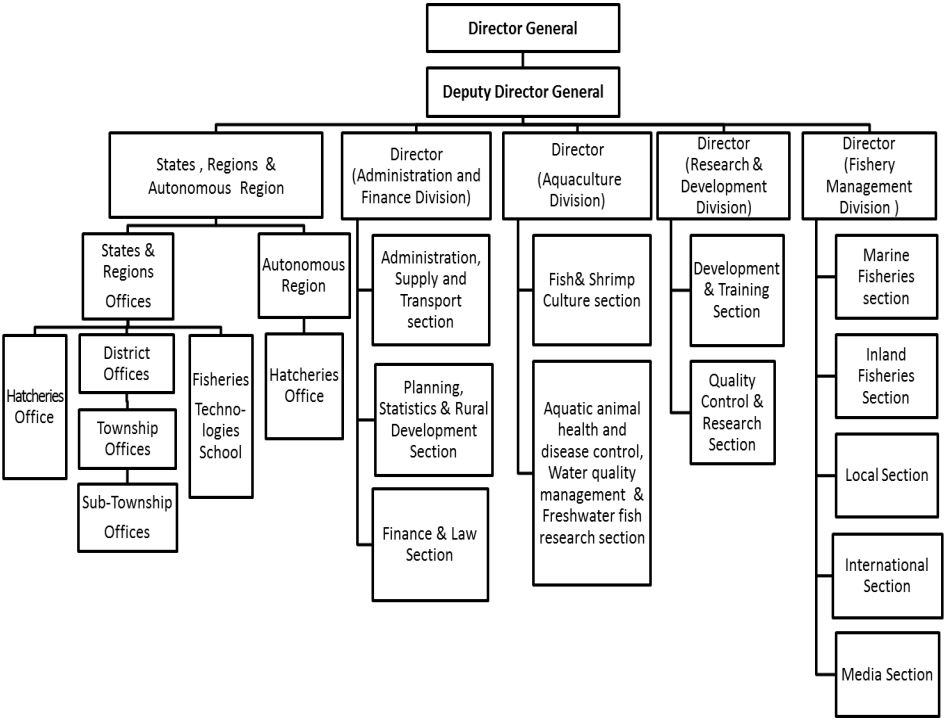
Under the State Law and Restoration Council, the Department of Fisheries was allowed to extend his organization structure with 103 officers and 1251 staffs in line with the increasing duties and responsibilities at 31st January 1990. Since April, 1990, total numbers of 129 employees from resources survey section, aquaculture research and production section and Institute of fishing technology from Myanmar Fisheries Enterprise were transferred to Department of Fisheries under the Ministry of Livestock and Fisheries.

Then, two officers and 82 staffs from Fisheries Institute of Agriculture Industry and Vocational Education Department under Ministry of Education were transferred into the workforces of Department of Fisheries under Ministry of Livestock and Fisheries on 1st January 1997.

The organization structure of the Department of Fisheries was again reorganized with 191 officers and 1638 staffs in April, 2002. In August 2012, the Department of Fisheries was extended with the 196 officers and 1704 staffs introduced with the new organization structure of Nay Pyi Taw Council Area (5 officers and 66 staffs). Since May, 2014, the recent organization structure of the Department of Fisheries was restructured again with 365 officers and 2104 staffs.

ORGANIZATIONAL STRUCTURE OF DEPARTMENT OF FISHERIES, MYANMAR

Officer	Other	Total
365	2104	2469



Vision, Objectives, Policy and Plans

The Vision, Objectives, Policies and Plans are as follows;

Vision

Sustainable development of fisheries sector for security, improvement of the socio-economic of rural people and contribution to the economic development of the nation based on fisheries industry.

Objectives

a. Promulgation of fisheries laws and implementation of action plans in line with the sustainable development goals.

b. Availability of qualified information and collection of statistical data related to fisheries sector in line with the standard indicators.

c. Systematic implementation of fisheries co-management and ecosystem approach to improve the fisheries management.

d. Development of aquaculture industry by implementation of advanced techniques including Good Aquaculture Practices.

e. The implementation of research and development, extension and awareness services, and human resources development oriented towards sustainable use of fisheries resources.

f. The compliance with quality standards of fishery products aligned with the market requirements.

Policy

Ensuring food security, food safety and sustainable development of fisheries sector by conservation of fisheries resources in accordance with the fisheries laws.

Plans

a. For fisheries development, collaboration with local, international

b. The compliance of the fisheries laws and rules and regulations amended, updated and aligned with international standards, best practice and provisions.

c. Processing of fisheries statistical data to meet the requirements of the standard indicators of related Ministries.

d. Obtaining technical assistance from local and international organizations for the development of a system for data collection, analysis and information dissemination system for fisheries management.

e. The establishment of accurate operational frame work for systematic improvement and implementation of fisheries co-management and ecosystem approach to fisheries management.

f. Implementation of the fisheries co-management and ecosystem approach to fisheries management, by promoting community fisheries organizations and their fisheries co-management committees, capacity building, gender promotion (women empowerment) and provision of technical assistance to fisheries sector.

g. Implementation of National Plan of Action Combating Illegal, Unreported and Unregulated (IUU) Fishing.

h. Promoting collaboration with related Ministries, Local, Regional and International Organizations for the implementation of the International, and Regional provisions, ASEAN declarations and commitments.

i. Promotion of conservation areas for marine and freshwater resources in critically important habitats.

j. Promotion of community fisheries organizations for improved fisheries resource management and rural development.

k. Allowing import of high quality fish/ shrimp seeds and brood-stock and producing genetically improved fish species.

l. Conservation of indigenous fish species and conducting research in breeding and culture of those species.

m. Cooperation with public, private and local/ international organizations for the promotion of sustainable fresh water and marine aquaculture

o. Cooperation with regional and international organizations for preventing and controlling of fish and shrimp diseases.

p. Encouraging the production and extensive application of qualified compound feed in aquaculture sub-sector.

q. Strengthening human resources development, by enhancement of fisheries related technical and vocational training (T-Vet), pre-employment training (PET), and on job training (OJT).

r. Conducting routine research on marine and freshwater habitats for fish species identification and stock assessment.

s. Enhancing research activities in support of fisheries management and development.

t. Conducting research in conservation and protection of enlisted endangered aquatic species and their habitats.

u. Strengthening development and research by promoting cooperation with international and regional scientific and best practice organizations.

v. Facilitating export of fishery products in accordance with the regional and international market requirements, and in compliance with Sanitary and Phyto-Sanitary (SPS) agreements and standards of the World Trade Organization.

w. Monitoring and controlling the production and processing of fishery products in line with the food safety standards of importing countries, and as documented in the official control manual of Department of Fisheries.

x. Providing technical assistance to Small and Medium Enterprises for the improvement of quantity and quality of fishery products.

y. Ensuring maintenance and enhancement of the capacities of Laboratories recognized by international ISO: 17025 certification for control and inspection of quality fishery products.

Fisheries in Myanmar

Type of Fisheries in Myanmar

Fisheries sector classified into three categories, there are namely fresh water inland fisheries, marine fisheries and aquaculture. Inland fisheries consist of leasable fisheries and open fisheries. Leasable fisheries are prominent and mainly produce the freshwater fish. Leasable fisheries can be conducted for the management of indigenous fish and fisheries habitat conservation, capture based system for sustainable fish production. Open fisheries can be permitted for small scale and subsistence fisher only.

Marine fisheries include in-shore fisheries and off-shore fisheries. In the inshore fisheries, the fishing boats operate within from shoreline to (10) nautical miles .In this area, the fishing boat which is built by traditional type with not more than 40 feet long or using less than a 50 HP engine power, operates for fishing. The fishing gears for using are driftnet, gillnet and long line. In offshore fisheries, the offshore fishing vessels operate beyond from outer limit of the inshore fishing zone to the Exclusive Economic Zone (EEZ). The fishing vessels are more than 50 feet long or using more than 50 HP engine operating in offshore area. In this area, the commercial fishing gears are trawl net, purse seine, and long line.

There are two major aquaculture systems practiced in Myanmar i. e freshwater pond and brackish water pond culture. Aquaculture especially freshwater finfish farming is mainly conducted with pond based culture system. In addition to pond based aquaculture, soft-shelled crab and seaweed farming operated coastal areas. There are over 27 government hatcheries managed by the Department of Fisheries and over 70 private hatcheries producing fish and shrimp/prawn post larvae operating in Myanmar. Marine cage fish farming initiate in Tanintharyi Division support by Norway Development Group.

Management of Fisheries

Department of Fisheries (DoF) is responsible for the management of fisheries, conservation of fishery resources, providing extension services, conduct research, compilation of fishery statistics and to upgrade the socio-economic status of fishery communities by Department itself as well as through collaboration/ corporation arrangement with fishery related agency/organization both local and abroad in order to meet with sustainable fishery development in the country.

Legal Affairs

There are four relevant fisheries laws promulgated by the Government of Myanmar to manage the fishery industry and to protect the fishery resources more efficiently.

After enacted these four fisheries laws, the Government of Myanmar promulgated the two amending laws. These are as follows:-

No.	Year enacted	Name of Fisheries Laws
1	1989	Law relating to the fishing rights of foreign fishing vessels
2	1989	Aquaculture Law
3	1990	Myanmar Marine Fisheries Law
4	1991	Freshwater Fisheries Law

No.	Year enacted	Name of Amending Laws
1.	1993	Law amending the Myanmar Marine Fisheries Law
2.	1993	Law amending the law relating to the fishing rights of foreign fishing vessels

Among four existing fishery laws, have empowered Freshwater Fishery Law to respective regions and states authorities and combined Law Relating to the Fishing Rights of Foreign Fishing Vessels and Myanmar Marine Fishery Law and amending to Union Fishery Law (Draft). Also, amending draft of Aquaculture Law for modernization.

The last situation of Marine Fisheries law (bill), sent the suggestion about the Ministry of Legal Affair. And also Aquaculture development law (bill) and then sent to the Ministry of Legal Affair.

FISHERIES MANAGEMENT DIVISION

Department of fisheries is responsible for the development of fisheries sectors including the conservation and rehabilitation of fisheries resources, promotion of fisheries resources survey, collection of fisheries statistics and information, supervision of fisheries sectors. Taking into account for these responsibilities, Fisheries Management Division has been conducting fisheries management measures for sustainable utilization of marine fisheries resources are as follows:

- Supervision on fishing vessel license and registration.
- Licensing by fishing gears and vessel records.
- Vessel marking by fishing ground
- Limit on issue of new fishing licence
- Limit on new construction of fishing vessel.
- Closed season and closed area.
- Fish protected area
- Prohibit fishing gear/ method/ species/ mesh size and fishing days.
- Issue on Catch Certificate for marine capture products.
- Monitoring on check in check out system, log book and sailing order
- Management of offshore fishing and carrier vessels by VMS system.
- Keeping record of research inn fisheries.

Conservation of Marine Fisheries Resources

Department of Fisheries conducted the close season and closed area for marine capture fisheries imposed annually to protect the spawning season of marine fish species spawned during these periods. In order to agree and impose close season, Department of Fisheries, Myanmar fisheries federation, members of parliament and other relevant stakeholders participated and inclusive workshop that conducted in August 2020. The workshop had agreed on to impose a close season three month of the year in which fishing is permitted offshore fisheries.

Prevent, deter and eliminate of IUU Fishing in Myanmar

Department of Fisheries collaborates with International and Regional organizations to manage the marine capture fisheries by applying the international law and existing Myanmar Marine Fisheries Law.

10 FISHERIES MANAGEMENT DIVISION

The Council of European Union established the regulations 1005/2008 and 1010/2009 a community system to prevent, deter and eliminate the IUU fishing. The European Commission started the program for catch certification scheme to export the fisheries products in 1-1-2010 and Myanmar included in the list of flag state notification since 31-3-2010. Followed by the EU regulations 1005/2008 and 1010/2009, Department of fisheries has implemented the catch certification scheme for combating IUU fishing in line with EU regulations assisted by EU consultant. Therefore Myanmar initiated to issue the catch certificate in May 2010. In total, 4170 catch certificate had been issued to export 16 nations by Department of Fisheries in 2021.

ASEAN Catch Documentation Scheme, eACDS pilot program has been initiated in 2018 at two landing sites of Ei Phyo Yadana Landing site and Ngwe Pinle Landing Site in Yangon. The SEAFDEC eACDS team visited to Myanmar three times during 2018 and 2019 to collect necessary information for the development of eACDS application. Myanmar supports to promote application of eACDS to combat IUU fishing and enhance intra-regional and international trade in fish and fishery product. In addition, it will develop the information sharing within the regional as well as international for combating IUU fishing and illegal trade.

Establishment of Vessels Monitoring System in the offshore fishery

VMS implementation plan under the MCS in Myanmar, Department of Fisheries has established VMS control system in order to sustain marine resources, maintain native species and protect threaten species, comply fishery regulation and take actions on IUU fishing vessels, sustainable fisheries resources, implement fisheries policy and achieve objectives.

On 23rd March 2018, DOF has started VMS implementation plan and notified about directive No.5/2018 regard to install and use of type-approved E-MTU/ Transponder on offshore fishing vessels, carrier vessels in 2018-2019 fishing season. All of offshore fishing and carriers vessel had licensed have to used the vessel monitory system. VMS main center in Nay Pyi Taw and 6 sub-center along the costal area were taking action on the location and information of all vessels operating in the offshore marine water.

International and Regional Cooperation on combating Illegal, Unreported and Unregulated fishing

Myanmar had been ratified the Port State Measure Agreement (PSMA, FAO 2009) and collaborate with FAO to combat IUU fishing in the region. PSMA is one of the tool for combating illegal, unreported an unregulated fishing for sustainable utilization of fisheries resources in international and regional water body. DoF also participatory the AN-IUU interactive platform together with ASEAN member countries and started the information of IUU fishing vessels list since 2020.

AQUACULTURE DIVISION

Aquaculture is important for contribution to food security and nutrition in Myanmar. Myanmar depends heavily on the aquaculture sub-sector, as a critical contributor to national and regional socio and economic development with contributions to the rural economy, foreign exchange.

The structure of Aquaculture Division comprises with Fish and Shrimp Culture Section, Aquatic Animal Health and Disease Control Section, Freshwater Fish Research Section and Crocodile Farm. The main responsibilities of Aquaculture Division are:-

- to produce good quality fish and prawn/shrimp seeds for fish farmers,
- to ensure replenishment of fish and prawn seeds into the natural water bodies such as rivers and lakes and men-made water bodies such as reservoirs and dams for enrichment of fisheries resources,
- to conduct researches of potential marine and fresh-water aquatic species for aquaculture development,
- to contribute and transfer of basic and applicable aquaculture technology to fish farmers and
- To conduct environment-friendly and sustainable aquaculture methods such as Good Aquaculture Practices (GAqP) to align with ASEAN Guidelines of Good Aquaculture Practices and international market requirement.

Duty and function of Aquaculture Division

a. Producing of good quality fish and shrimp seeds by DoF fisheries stations,
b. To ensure conservation of fisheries or aquatic resources not to be depleted by the releasing of hatchery produced fish and shrimp seeds to natural water body,
c. Formal services of analyzing water and soil quality for fish pond management and of diagnose the fish and shrimp diseases, giving guidance of disease control and prevention for fish farmers,
d. Monitoring, control and given good management and regulation on aquaculture industry,
e. Strengthening good management for the development of environment-friendly aquaculture system and the encourage of cultured based capture fisheries to increase of fish production,

f. Issuing the amendments of aquaculture laws, legislation and regulation as the requirements of current situation,
g. Supervision of expertise for the establishment of short-term and/or long-term aquaculture development programs,
h. Data collecting, recording and analyzing on aquaculture areas and fish and shrimp seeds production from DoF fisheries stations,
i. Applying the international and ASEAN guidelines (Good Aquaculture Practices- GAqP) of sustainable aquaculture development compliance with Myanmar weather and environmental conditions,
j. Support to conduct trainings of basic fish farming and fish breeding technology for local fish farmers and capacity building of skillful technology and techniques of aquaculture systems,
k. Seeking the improved technologies of aquaculture and providing extension and training for sustainable development and expanding of aquaculture industry as a whole,
l. Data collecting and managing to be able to fully imposing of revenue for aquaculture registration,
m. Regularly observing the aquaculture industry development as a whole and recording and reporting the extraordinary phenomenon of climate change impacts on aquaculture industry and emerging fish diseases to prevent and adapt from these impacts.

Freshwater Aquaculture

First attempts of fish culture were made in 1954 with the exotic species like common carp, tilapia and gouramy. Myanmar has high quality fishes like major carps such as rohu (*Labeo rohita*), catla (*Catla catla*), mrigal (*Cirrhinus mrigala*), butter catfish (*Silonia silondia*) etc, but biotechnology was not well established among the local farmers. Later, in 1968, induced breeding of indigenous major carps was successfully conducted. Currently over 20 species of freshwater fishes including common carp, Indian major carps, Chinese carps, Tilapia, Pangasius and walking catfishes and Pacu are being cultured. Rohu *(Labeo rohita)* withstands as the most common and commercial cultured species which is native to Myanmar. Actually the collection of fry and fingerlings has not been permitted

so as to conserve and enhance the natural fish stocks. This is as a measure of follow-up of the Law Relating to Aquaculture that was promulgated in 1990. However in order to develop aquaculture particularly in production and productivity of quality fish seeds, hatchery concerned farmers are allowed to collect the fry and fingerlings prior to permission of DoF. As a result, rohu aquacul-ture industry becomes more developed and promising. In order to promote and distribute the quality fish seed, DoF has tried to upgrade the broodstocks quality by proper management through its 27 fishery stations that are conducting seed production and providing technical assistance to farmers.

The potential important freshwater fishes such as *Heteropneustes fossilis* (Catfish), *Ompok bimaculatus* (Sheat fish), *Notopterus notopterus* (featherback), *Cyprinus intha* (Nga phane), *Trichogaster pectoralis* (Snake skin gouramy), *Pangasius bacourti* (Stripped catfish), *Prochilodus lineatus (Taung paw nga tha lott)*, *Leptobarbus hoevenii* (Sultan fish), *Anabas testudineus* (Climbing Perch) were successfully induced breeding by experimental scale.

In Myanmar, aquaculture areas have been increased from 30282 acre in 1990-1991 to 174293 acre in 2000-2001 and then to 443695 acre in 2010-2011 and 498935 acre in 2020-2021. Aquaculture production has also increased steady annually from 6397 MT in 1990-1991 to 128225 MT in 2000-2001 and 1145020 MT in 2019-2020. The production from aquaculture subsector increased to 1167350 MT in 2020-2021, which was an increase about 2 % compared to 2019-2020 production.

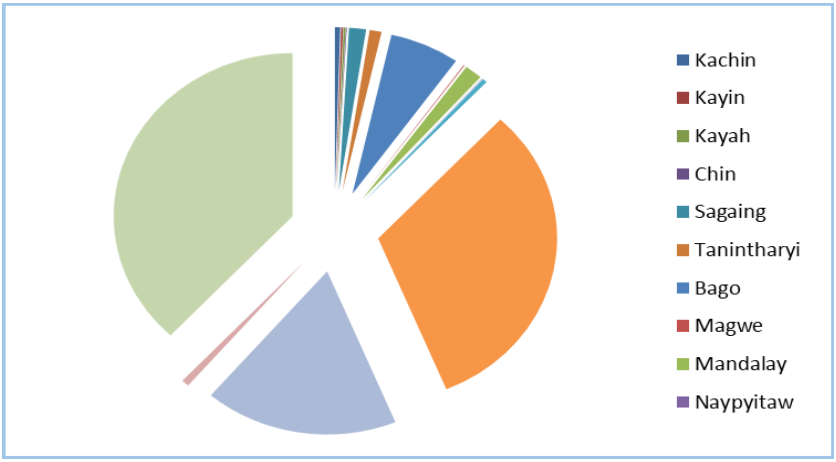


Fig: 1: Aquaculture Pond by State and Region

Workforce

In the field of aquaculture, a total of 33539 fish and shrimp farmers were involved in various aquaculture systems. Due to Myanmar's aquaculture is mainly based on pond cultured system, mostly men labours are working in fish/shrimp ponds. There are 60673 number of permanent men labours working in 2020-2021 fiscal year.

Fish Fry and Fingerling Production

At present 27 freshwater fishery stations under Department of Fisheries are established in all strategic areas, and conduct seed production and research works in order to enhance aquaculture industry. In 2020-2021 the DoF stations hatcheries produced 172 million 2 inches size of fish freshwater fish fry and fingerling whereas 56 private hatcheries around Myanmar had produced an impressive amount of 2253 million of fry and 237 million of fingerling size of fish species.

The Department of Fisheries has made a resource management strategy that is to conduct stock enhancement in the natural water body including men-made reservoirs. Thus the quality fish species may establish in these waters and may assist in the food security and improvement of livelihood of people in the rural areas. Data on production and stocking of seeds from 2015-2016 to 2020-2021 appears as a graph there under.

Freshwater prawn culture

The most common and prioritized species is commercially important giant freshwater prawn, *Macrobrachium rosenbergii.* Monoculture of *M. rosenbergii* was conducted on semi-intensive level by a few farmers and productivity was better

than polyculture system. Constraints of the availability of sufficient amount of fresh water prawn at local area, technical expertise of monoculture system, most of the prawn farmers are practiced the polyculture system stocked with fresh water prawn and fish to minimize the operational cost. There was total area of 244390.61 acre of prawn and fish polyculture farms in the whole country. Only few areas of prawn monoculture farms are registered. The hatchery operation and culture technique become well established in government and private sector. Recent year, many fish farmer's benefits from poly-culture of freshwater prawn and major carps due to reasonable price of freshwater prawn. Therefore, freshwater prawn seeds requirement is increasing in recent years. Many backyard hatcheries for freshwater prawn are being set up to fill up the gap of high demand freshwater prawn seeds but last year, most of the freshwater prawn hatcheries were encountered the low survival rate due to disease infection from the brood stock.

Shrimp Culture

Penaeus monodon has been initiated since early 1980 practicing trap and hold method particularly in western coastal area. Natural post-larvae of *Penaeus monodon* were trapped into the pond during the high tide period through sluice gates. There were no inputs in terms of pond preparation, eradication of predators, water fertilization, feeding etc. However 70 to 123 kilograms of large size of shrimp per hectare of culture area were harvested. As the ponds were usually as large as 123.55 acre to 247.11 acre, the shrimp production could make more than enough money for the shrimp farmers. Having no laws concerned with aquaculture, those shrimp ponds existed as illegal ponds up to 1990. In the year 2000, the Ministry of Livestock and Fisheries reinforced and encouraged many potential investors to be involved in the shrimp aquaculture development. At the same time, the Union of Myanmar formed a State Level Committee to promote a drastic development of shrimp aquaculture industry by formulating first three-year plan from 2000 to 2003 and second plan from 2003 to 2005. Since 2000, a number of semi-intensive and intensive shrimp farming emerged. Up to 2002, there was founded success and failure in semi-intensive and intensive shrimp culture. In the year 2002, a pilot demonstration on Mangrove Friendly Shrimp Culture was conducted as a measure of verification of semi-intensive shrimp culture technique through collaboration of Myanmar DoF and SEAFDEC-AQD. Demonstration pond with 3.5 acre and 1.8

totaling 5.3 acre could produce 11.1 metric ton of shrimp with average size of 50 pcs / kg. At the same time, private shrimp farms nearby the demonstration pond suffered failure due to severe occurrence of white spot disease. The private farmers were invited and disseminated the compre-hensive technology. But they were not so much interested in Mangrove Friendly Aquaculture technology. Similar demonstration was repeated in 2005 and also gained the success. A few private shrimp farms applied the MFA technology with success but later due to market and shrimp price constraints shrimp farming has been done only by a few farmers.

As of 2020-2021 Myanmar have the four types of shrimp farming: Intensive shrimp ponds 147.90 acre, Semi-intensive shrimp ponds 255.37 acre, extensive plus shrimp ponds 4110.56 acre and extensive or traditional shrimp ponds 67264.12 acre totaling 71777.95 acre. The total production of fresh water prawn and marine shrimp in 2020-2021 were 87651.93 MT. Recently, the Department of Fisheries encouraged to development of fish and shrimp culture in every states and regions for self-sufficient of local consumption and increasing for export market.

Status of Shrimp Hatcheries

In the year 2000, total numbers of shrimp hatcheries amounted to 13 only and in 2003 altogether 26 shrimp hatcheries (include in Backyard Hatcheries) were fully operating with capacity of 190 million shrimp post-larvae. Hatchery system is mainly based on clear water system. The breeders are available from Bay of Bengal and Andaman Sea. It is well famous that the brood stocks from Andaman Sea are supreme in terms of quality and size. However, recent years, many hatcheries including private and public are facing the difficulties of the availability of the sufficient amount of shrimp brood stocks when required. Therefore, local shrimp hatcheries could not produce sufficient amount of shrimp seeds for local demand and shrimp post larva had to import from Thailand. In 2020-2021, the total imported numbers of giant freshwater prawn and *Penaeus vannamei* were 124.02 million and the total amount of USD 0.552 million were imported from Thailand. Thus, brood-stock management for shrimp hatcheries is needed.

White shrimp culture

Penaeus vannamei has the many advantageous factors for culture but it may also cause the negative impact to other shrimp aquaculture industry. DOF has been aware that *P. vannamei* may carry and outbreak the Taura Syndrome Virus (TSV). After a regional workshop in 2005 at Manila, that assessed the culture of *P. vannamei* ASEAN countries agreed to culture at reasonable documen-tation. At present 3-4 private farms are culturing of experimental scale of *P. vannamei.* Only PCR negative the Pacific white shrimp SPF *P. vannamei* seeds has been permitted to import for culture in domestic water. In 2020-2021, the total numbers of 415 acre shrimp culture is in Tanintharyi Region at Pyi Phyo Tun Co. Ltd. The Pyi Phyo Tun Co., Ltd initiated the white shrimp farming in 2016 and increasingly invested for more production of white shrimp farming for more production and the company produced 2500 MT of white shrimp in 2020-2021.

Marine Finfish Culture

In terms of marine fin-fish farming, seabass, red snapper and grouper are the most common and commercial species in Myanmar. Stock fish or the fish seed are usual-ly collected from the wild. But the seed production technology of seabass has been succeeding since 2004 in both DoF and private sectors. First the broodstocks were

collected from the wild and later induced breed seabass are used as broodstocks. However the grow-out culture of seabass is done by only a few farmers. It is due to the fact that adequate supply of seabass seeds, trash fish and formulated feed is inconsistent. Induced breeding of Grouper spp., was also conducting at Marine Research Station of DoF, Tanintharyi region by experimental scale but survival rate is very low. Now, upgrade of Marine research station and technologies are requested for develop of marine aquaculture.

Others Mariculture

Others aquatic species such as oyster, clam, seaweed culture are initial stage in Myanmar. The farming of *Eucheuma* Seaweed has been started since 2003 through the collaboration of DoF, a Korean private company. The Korean company brought in the seaweed of *Eucheuma cottonii* and domesticated as the seed stock for other private farmers. Upon the whole, DoF Myanmar is carefully assessing in the promotion of proper new stock strains to produce better quality seed. Recently, Make Smart Company has already constructed a processing plant and storage building. The new endeavor will create employment opportunity for local people and also technology transfer to the local entrepreneurs and communities. The production of dried seaweed in 2018-2019 was 11.422 tons but there is no production of dried seaweed in 2020-2021.

Mud crab seed production

Mud crab fattening has become the booming industry as domestic consumption and export demand are growing rapidly. Soft shelled mud crab farming has become very popular as it commands high price. At the same time, supply of crab juveniles from nature is decreasing due to over exploitation, habitat deterioration

caused by man impact and world climate change. Adequate supply of mud crab seed for soft shell mud crab farming has become urgent need and included in the future plan. Myanmar DoF has initiated the mud crab hatchery since 2009. However hatchery operation performs very low survival rate. There needs to do more research and extension work for dissemination of mud crab culture techniques to local small scale farmers and conservation of mud crab resources as setting up the protected area of no crab fishing zone or conservation of mud crab habitats such as mangrove.

Cold Water Species Aquaculture

Some cold water aquatic species naturally exist in the northern most part of the country where temperature is very low. DoF is established a backyard hatchery for breeding of potentially important local indigenous fish species since 2012 and for dissemination of basic fish culture technology to the local ethnic group.

Ornamental fish

The ornamental fish industry is one of the main sectors to generate income through export. The production of ornamental fish was 1226413 pieces and US$ 0.188 million in 2020-2021.

Aquaculture for rural development

Promote aquaculture as an integrated rural development activity within multiple use of land and water resources available through inter-agency coordination in policy formulation, project plan-ning and implementation, stakeholder consultation, extension services and technology transfer. One of the national policy

is the poverty alleviation and to carry out rural development through agriculture and other sectors.

To improve the technology knowledge of aquaculture, the basic aquaculture and fish breeding trainings are providing annually to improve the livelihood of rural people and earn the regular income. Moreover, aiming to create job opportunities, increase fish production and decrease the fish prices, the department of fisheries is conducting the demonstrated cage culture system at water sources such as natural water bodies, reservoir, stream and lakes.

Fisheries sector of evergreen village development project supported 30 million kyats as revolving fund for each villages of 394 villages where have potential to develop in fisheries sector in 15 Regions and States in this fiscal year from the funding sources of government's capital budget and Department of Fisheries will try the best to achieve the objective of the development of fisheries sector for rural people.

Application of Good Aquaculture Practices (GAqP)

The GAqP are a series of considerations, procedures, and protocols designed to foster efficient and responsible aquaculture production and expansion, and to ensure final product quality, safety, social aspects and environmental sustainability. GAqP is regarded by the FAO as a necessary tool in the overall development of a sustainable aquaculture sector. For Myanmar the introduction of GAqP will lead to a paradigm change from traditional to modern sustainable production. The DoF is therefore striving to introduce GAqP for the whole aquaculture sector in Myanmar, especially in following up previous work which had concentrated on the food safety component of GAqP.

The Department of Fisheries established as National Task Force for implementation of GAqP application in Myanmar and considered to follow up and practices on ASEAN's Standard on GAqP for shrimp farming in compliance with the current status of shrimp farming practice in Myanmar. Myanmar learns and tries to follow the Strategies Plan on the Development and Implementation of ASEAN shrimp GAqP. Support to GAqP, DoF established the Directives and Regulation for prohibiting the use of chemical in aquaculture. The Department of Fisheries has issued GAqP certificates on 2355.23 acre for 10 farmers during in 2020-2021. The

Department of Fisheries also gave the awareness and training of GAqP (140) times to (2269) numbers of stakeholders in 2020-2021.



A GAqP Model Farm demonstration has been set up at the hatcheries owned by DoF in every region and state. The purpose is specified for the farmer to come and observe the aquaculture practice system and then follow it to increase the fish farming with GAqP System.

The National GAqP Standard is a fundamental tool in the intensification of a sustainable aquaculture sector and the setting up of such is a prominent activity in the National Aquaculture Development Plan (NADP) of Myanmar.

At first, DoF has presented the National GAqP Standard (draft) to the Livestock Standard and Technology Sub-committee, dated on (19-1-2021) and prepared on the draft in accordance with the Committee's suggestions and recommendations. The second step is submission to the Department of Research and Innovation after the approval of Livestock Standard and Technology Sub-committee. The third step is submission of final draft to the National Standards Development Council of Ministry of Education. The final step is the announcement of National GAqP Standard in Myanmar.

Aquaculture support services

In 2020-2021, the coordinating plan of Aquaculture Division, Regional and State of DOF and the fish hatcheries stations supported to fish farmers for providing breeders and technical advices to small-scale farmers for poverty reduction and rural development at the township level. Under supervision of aquaculture division, aquatic animal health and disease control section and Freshwater fish research section formed groups of Mobile Team giving on-site support services for fish farmers who want to check their ponds water/soil parameters and health condition of their cultured fish for preventing the fish disease and farm management.

In addition, Aquatic animal health and disease control section also provides PCR check on shrimp diseases of shrimp seeds for shrimp farmers. In 2020-2021, Freshwater fish research section gave services of water quality analysis on 368 cases and soil analyses on 5 cases including Twan tay Lab and Mandalay Regional Lab. Aquatic animal health and disease control section provided support services of on-site field analyses on 13 cases, lab disease analysis on 366 cases, PCR check for disease on 321 cases and Health Certificate issued on 1522 cases.

Freshwater Aquaculture Research and Extension Centre (FAREC)

The Collaboration between the Department of Fisheries, Ministry of Agriculture, Livestock and Irrigation and KOICA had established Freshwater Aquaculture Research and Extension Centre from 2014 to 2018 under the project of "Development of Inland Fish Farming Technology in Myanmar" and the Centre was opened on 19-1-2018. By implementing this Freshwater Aquaculture Research and Extension Center, from experience of Korea and Myanmar, human resources and technical support, it will improve modern technology in freshwater aquaculture sector and this Centre is the first research Centre in Myanmar. At present, FAREC is carrying on the conservation of native fish species, breeding, nursing, live food culture, the extension services and technology transfer to fish farmers and providing the technical assist to the students and authors of master thesis specialized on Zoology from the Universities.

Develop Activities for Aquaculture Sector

An Aquatic Education Centre (AEC) was established on the grounds of the DoF hatchery in Nyaung Shwe, utilizing a previous building on the hatchery premises. The Centre deals with the conservation of indigenous fish species of the

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UNESCO Biosphere Reserve Inle Lake, provides a platform for the display of the local culture, traditional fishing methods and, due to its wet lab, functions as a research facility. The AEC with its aquaria displays several Inle Lake species is open for national and international visitors as well as student researchers from national universities. In near future, the AEC will be supportive to small-scale fish farmers at the lake, for monitoring the status of indigenous fish species and for introducing innovative technology at the hatchery.

The National Aquaculture Development Plan (NADP) is officially launched in 2020, aiming to provide the policy and institutional framework for sustainable development of aquaculture sector in Myanmar. NADP relates in close alignment with the vision of MSDP, principles of ADS, strategies of NES and other national frameworks. NADP represents the determinations and aspirations of all stakeholders of the sector and the nation as a whole to support the long-term sustainable development goals of Myanmar while the agriculture policy states that, “by 2030, Myanmar achieves inclusive, competitive, food and nutrition secure, climate change resilient, and sustainable agricultural system contributing to the socio-economic well-being of farmers and rural people and further development of the national economy.

Implemented activities of Aquaculture Division within one year and way forwards

Aquaculture in fisheries sector is important for food security and nutrition. Aquaculture is also supporting in rural economy and income generation of foreign exchange through socio-economic development at the national and local level.

The Department of Fisheries has been implemented two inches in size of fish seed releasing plan for sustainable the fisheries resources by fish seed releasing in rivers, streams and lakes which was guided and encouraged by the Government. The plan aims to increase the fish stock, to replenish of fisheries resources, to im-

prove the survival rate of released fish seed and to ensure the sustainability of fisheries resources in natural water. In 2020-2021, the department has already replenished totally (107.77) million in two inches size of fish seeds in natural water. The main fish species stocked into rivers, streams and lakes are *Labeo rohita*, *Common carp* and *Tarpian*. The government is releasing millions of fish seed into natural water by a cost of million kyats, which is beneficial for the persons who are catching, selling and consuming those fish.

As technology transferred on fish farming and breeding techniques to rural people and fish farmers, the basic aquaculture and practically fish breeding trainings are being conducted annually to improve technical knowledge on fish breeding and farm techniques. From (1-2-2021) to (21-1-2022), there were conducted 82 times of the basic aquaculture and fish breeding trainings and totally 1678 trainees were participated.

The Government guided to encourage the development of local business or industries and create the job opportunity to reduce the scarcity of jobs for citizens in some regions where the citizens came back from abroad due to COVID-19 limitation. So, the department of fisheries provides the employment opportunity for the rural people, especially who are low income and landless, to create the job opportunities by conducting the small-scale cage culture system. That aims to increase family income and engage in nutrition through individual's activity. At present, the department of fisheries is demonstrating the fish farming by cage culture system at Chaung Ma Nge dam in Nay Pyi Taw and upper Paung Laung dam in Shan State.

Moreover, the department is trying to extend the aquaculture technology course in Livestock diploma for 15 Agriculture Science Schools around the country. The Director General and parties encouraged and supported the technical expertise to 3 Agriculture Science Schools, (Pyinmana, Patheingyi and Heho) whereas to be started the fish culture training course for 2021-2022 Academic year. The department focuses on practical of fish culture training course and technical supervision on construction of hatchery, fish pond and provides fish seeds after digging the fish pond. Recently, the department has already provided practical training course on the basic aquaculture and fish breeding to 18 no. of teachers from Agriculture Science Schools of Mandalay Region and Shan State, who teaches in Livestock Diploma training. The department has already provided 3000 pcs of *Rohu* fish species for Pyinmana Agriculture Science School, 1000 pcs of Grass carp and 1000 pcs of *Tarpian* and 1000 pcs of *Common carp* for Heho Agriculture Science School and 20000 pcs of *Common carp* for Patheingyi Agriculture Science School.

Way forwards

To be sustainable development of Myanmar's Aquaculture Sector, it is cooperating and implementing the guideline of international organizations such as FAO, OIE, SEAFDEC and NACA. Due to the National Aquaculture Development Plan (NADP), we will emphasize on production of good quality fish seed, importing, research and experimental for potential indigenous fish species and fish culture technology to adapt the climate change, prevention and control the fish disease outbreak, encouraging on fish culture by applying quality fish meal, promoting the implementation of Good Aquaculture Practices (GAqP) and then we will take the chemical residue management for aquaculture products due to National Residue Monitoring Plan (NRMP).

RESEARCH AND DEVELOPMENT DIVISION

Quality Control and Research Section

Department of Fisheries has been implementing to promote exported fish and fishery products according to Vision, Policy and Work Plans of the Department of Fisheries. Under the Research and Development Division, Department of Fisheries has already organized Quality Control and Research Section with two Units including Inspection and Certification Unit and Analytical Laboratory Unit.

Inspection and Certification Unit

Department of Fisheries is responsible Government Organization to seafood safety for consumers' health and to ensure the quality and safety of export and import of fish and fishery products. According to the responsibility for consumers' health, Inspection and Certification Unit, has been implementing the Monitoring, Control and Surveillance (MCS) activities to ensure the quality and safety of fish and fishery products. Inspection and Certification Unit has been enforcing to fish industries to comply with international food safety standard requirements including importing countries' requirements. At the present Inspection and Certification Unit has been formed inspection team to inspection with exerting in seafood safety activities and already formed Border Inspection team for border trade concerns with fishery products.

Food safety management system such as GMP/HACCP are implemented in fishery activities through the supply chain like that fishing vessels, landing sites, auction markets, aquaculture farms, ice plants used for fishery products, feed plants for farms and processing plants enforcing by Inspection and Certification Unit, under the Research and Development Division. Inspection and Certification Unit has monitored and controlled the fishery establishments according to ASEAN Regional Guideline such as ASEAN Common Food Control Requirements, ASEAN Common Principles and Guidelines for Food Control Systems, ASEAN Common Principles and Requirements for Food Labeling, ASEAN General Principles of Food Hygiene and FAO Codex Guidelines and compliance with Sanitary and Phyto-sanitary (SPS) Agreement of the World Trade Organization.

Otherwise, according to ASEAN Economic Blue Print, Inspection and Certification Unit has been implementing food safety issues related priority integrated sectors to harmonies in trading between ASEAN countries, Inspection and Certification Unit has been implementing the minimum requirement for seafood trade in ASEAN particularly the farming system requirement for seafood trade in ASEAN

particularly the farming system requirements, product standards, laboratory accreditation and health certification requirements.

Inspection and Certification Unit has carried out to improve quality wholesomeness and safety of fishery products for human consumption and minimized post-harvest loss to develop and apply quality and safety management systems that ensure food safety through the implementation, validation and verification of Hazard Analysis Critical Points (HACCP) based system, to improve inspection practices and harmonies with international inspection systems adopt quality and safety management systems as appropriate to the fishery industries to develop and implement GMP guidelines and compliance standards.

Otherwise, Inspection and Certification Unit, Research and Development Division under the Department of Fisheries has issued the factory license for (124) processing establishments in 2020-2021 fiscal year intend to monitor and control for the procedure of processing establishments as the requirements of international standard for food safety and quality assurance. Besides, Inspection and Certification Unit has already formed five inspection teams with (5) officers assign as team leader and (15) staffs assign as team members and to regular examination and implementation of food safety management system such as GMP, SSOP and HACCP due to official control manual.

Inspection and Certification Unit contacts the Competent Authorities from Importing Countries such as Directorate- General for Health and Food Safety of European Union, Bureau of Import and Export Food Safety, Department of Animal and Plant Quarantine of the General Administration of the People's Republic of China, Saudi Arabia Food and Drug Authority to promote the increased amount of exported fishery products due to international market requirements. Currently, (31) establishments have obtained approval from EU exported fishery products to EU member countries, (39) establishments have been approved by National Agro-Forestry- Fisheries Quality Assurance Department of Vietnam, (6) fish meal establishments and (94) establishments including dry warehouses for dried fishery products and wet warehouses for chilled products have been registered by China Authority and (25) establishments have been registered by Saudi Arabia Authority.

Inspection and Certification Unit has operated to get approval for export aquaculture products to EU member countries because of getting the approval for only wild caught fishery products export to EU. National Residue Monitoring Plan has been implemented since 2014-2015 assistance by EU Commission. Currently, seven fresh water aquaculture fishes like that Rohu, Mrigal, Pangash, Katla, Carfu, Puti and Tilapia, two sea water aquaculture shrimp like that Tiger shrimp, Vannamei shrimp and Soft shell crabs have been exported to EU member countries. Future plan for National Residue Monitoring Plan (2020-2021) and progress report for (2019-2020) have submitted to DG - SANTE. Both Good Aquaculture Practices and Good Aquaculture Practices-Compliance and Traceability Training Course have been conducted in these NRMP implemented aquaculture farms by the assistance of EU also.

Currently, Department of Fisheries has updated the "Technical Regulation for Export Import Fishery Products" based on WTO-SPS agreement issued by Directive-2/2015 and reissued by Directive- 8/2018 for fishery establishments to comply in food safety activities through the supply chain like that fishing, aquaculture, fishing vessels ,landing sites, auction markets ,feed plants, ice making plants for fishery products and processing establishments according to the international market requirements especially ASEAN, EU, China and Saudi Arabia.

Inspection and Certification Unit, Research and Development Division supported the training for employees of fishery establishments conducted on Food Safety Management Systems basic course especially Fish handling and Good Hygiene Practices from 24th August to 26th August 2021 and 1st September to 3rd September 2021.

ASEAN Rapid Alert System on food and feed (RASFF) is ongoing network for notification of direct or in-direct risks to human health deriving from food or feed between competent authorities. DOF has participated in pilot Rapid Alert System for food and feed since 2007 and contact with regional activities. Inspection and Certification Unit has conducted the training for ASEAN Rapid Alert System for Food and Feed by the supporting of Experts from Thailand. Inspection and Certification Unit has conducted to attending the National Contact Point Meeting and Steering Committee Meeting on ASEAN Rapid Alert System.

Ayeyarwady Dolphin Conservation Conducted by Department of Fisheries in Ayeyarwady River

Ayeyarwady (Irrawaddy) River is one of the biggest rivers in Southeast Asia, and it's the most dominant feature in Myanmar (Burma). This arises from Northern hill streams and through steep gorges upstream of Bhamo, and then flow the entire length of country, for approximately 2,200 km, before the reaches of Andaman Sea.

The 19th century naturalist John Anderson described Ayeyarwady (Irrawaddy) dolphin in the Ayeyarwady Rivers as morphologically distinct from *Orcaella brevirostris.*

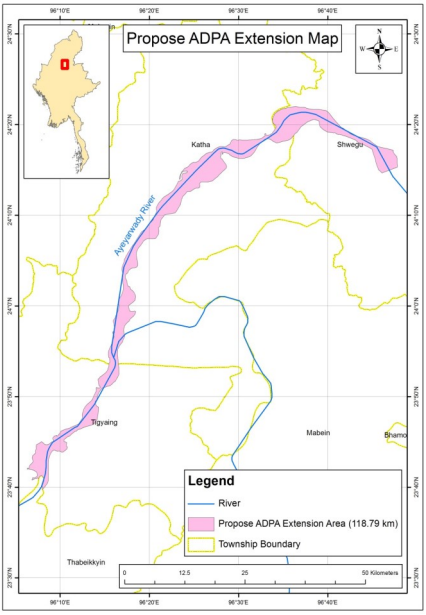
The Department of Fisheries (DoF) established and defined as protected area for Ayeyarwady dolphin (72 km) river segment between Nan-Taw-Kyun in Mandalay Region and Kyauk Myaung in Sagaing Region.The Ayeyarwady dolphin conservation team conducted patrolling within the protected area twice a month and also conduct educational program in the protected area to prevent illegal fishing techniques and fishing gears which can harm the dolphin and fishes along the river. During the survey, the team distributed produced posters and pamphlets for awareness and educational purposes regarding Ayeyarwady dolphin and conservation activities to the local communities who live along the both river side. The Conservation team provided souvenir things such as; Ayeyarwady Dolphin T - Shirt, pencil, Ball pen, note books, etc to the students from 60 villages of protected areas. In 2018, The Irrawaddy dolphin conservation to further improvement of the Irrawaddy dolphin species, the longest river of the pastures spread over the Irrawaddy dolphin, the maximum number of ayeyarwady dolphin. The Department of Fisheries (DoF), Ayeyarwady dolphin Protected Area stretches (118.79 km) is being tried to extend upstream of Ayeyarwady river segment between Htee-gyint Township, Katha District, Sagaing Region, and ShweGu Township, Bhamo District, Kachin State where is the most population of Ayeyarwady dolphin.

Dolphin community lodge has been opened on 15th May 2019, to develop Ayeyarwady dolphin based ecotourism and conservation process inaugurated at Sagaing region, Shwebo District, Wat Lat Township, Indoung village, Ayeyarwady Dolphin Conservation Area–I between Mandalay and Kyauk Myaung.

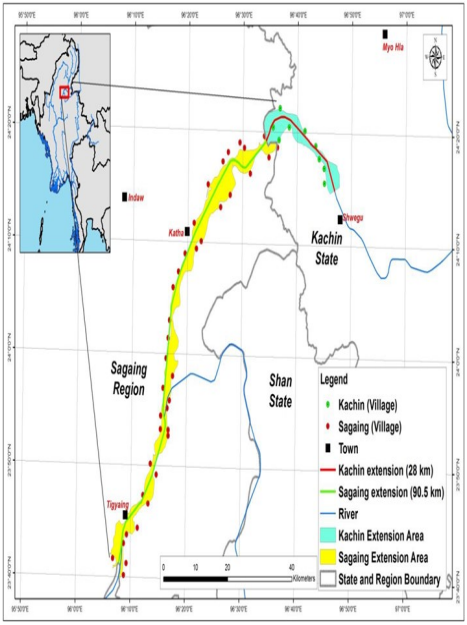
In 26th June,2019, The Ayeyarwady Dolphin research vessel-2 which will be used in Ayeyarwady Dolphin Protected Area-II between (Htee Chaint and Shwe Gu) Wildlife Conservation Society-WCS was hand over to the Department of Fisheries.

At present, Mandalay Region, Sagaing Region and Kachin State Fisheries Departments are conducting Ayeyarwady conservation awareness activities, and patrolling to illegal fishing in the Ayeyarwady Dolphin Protected Area-1 and 2 by the separate arrangement of their departments.

Ayeyawady Dolphin Protected Area 1



Ayeyawady Dolphin Protected Area 2



Collaborate with Fauna and Flora International-FFI

Freshwater and Marine Biodiversity Conservation Activities

Fauna & Flora International (FFI) signed a Letter of Agreement (LoA) in December 2014 and a Framework Agreement (FA) in February 20, 2020, with the Department of Fisheries and implemented biodiversity conservation projects in Kachin State, Ayeyarwaddy Region, and Tanintharyi Region based on the vision of the sustainable future for the planet, where biodiversity is effectively conserved by the people who live closest to it, supported by the global community. Through implementing biodiversity conservation projects, FFI is finding out opportunities for alternative livelihood development and new market opportunities for the products from the project villages through participatory market system development (PMSD) and village consultations based on the Free Prior Informed Consent (FPIC) processes together with the Department of Fisheries to reduce the poverty of local communities.

Biodiversity surveys

FFI undertook biodiversity surveys in the projects in collaboration with the Department of Fisheries. Biodiversity surveys were done to support the designation of fish conservation zones for the benefit of the communities and country. 88 fish species from Sittaung River (Table 1) and 123 fish species from Thanlwin River (Table 2) were recorded in 2021 surveys.

Table(1). Fish species recorded from Sittaung Riverin 2021(Follow Kottelat,2013*)

Sr.	Family	Genus	Species
1	Notopteridae	Notopterus	notopterus
2	Anguillidae	Anguilla	bengalensis
3	Megalopidae	Megalops	cyprinoides
4	Anguillidae	Anguilla	bengalensis
5	Engraulididae	Coilia	dusssumieri
6		Setipinna	wheeleri
7	Clupeidae	Corica	soborna
8		Gonialosa	modesta
9		Tenualosa	ilisha
10		Tenualosa	toli

Sr.	Family	Genus	Species
11	Cyprinidae	Amblypharyngodon	atkinsonii
12		Cirrhinus	cirrhosus
13		Esomus	altus
14		Gibeblion	catla
15		Labeo	gonius
16		Morulius	calbasu
17		Osteobrama	belangeri
18		Osteobrama	cunma
19		Osteochilus	rostellatus
20		Puntius	chola
21		Puntius	sophore
22		Roita	rohita
23		Systomus	sp.
24		Tor	sp.
25	Cobitidae	Lepidocephalichthys	berdmorei
26		Lepidocephalichthys	micropogon
27	Sisoridae	Bagarius	sp.
28		Gagata	dolichonema
29	Siluridae	Ompok	bimaculatus
30		Wallago	attu
31	Plotosidae	Plotosus	canius
32	Clariidae	Clarias	batrachus
33	Heteropneustidae	Heteropneustes	fossilis
34		Heteropneustes	kemratensis
35	Ariidae	Arius	arius
36	Schilbidae	Clupisoma	prateri
37		Pachypterus	acutirostris
38	Pangasiidae	Pangasius	myanmar
39		Pangasius	pangasius
40		Silonia	silondia

Sr.	Family	Genus	Species
41	Bagridae	Hemibagrus	microphthalmus
42		Hemibagrus	peguensis
43		Hemibagrus	spilopterus
44		Mystus	falcarius
45		Mystus	gulio
46		Mystus	leucophasis
47		Mystus	pulcher
48		Mystus	rufescens
49		Rita	sacerdotum
50		Sperata	acicularis
51	Mugilidae	Chelon	planiceps
52		Rhinomugil	corsula
53	Zenarchopteridae	Dermogenys	burmanica
54	Belonidae	Xenentodon	cancila
55	Aplocheilidae	Aplocheilus	panchax
56	Synbranchi dae	Monopterus	cuchia
57	Mastacembelidae	Macrognathus	dorsiocellatus
58		Macrognathus	zebrinus
59		Mastacembelus	armatus
60		Mastacembelus	tinwini
61	Ambassidae	Parambassis	lala
62		Parambassis	ranga
63	Latidae	Lates	calcarifer
64	Sillaginidae	Sillaginopsis	domina
65	Polynemidae	Eleuthronema	tetradactylum
66		Leptomelanosoma	indicum
67		Polynemus	cf. melanochir
68		Polynemus	paradiseus
69	Sciaenidae	Johnius	borneensis
70		Johnius	coitor
71		Otolithoides	pama
72		Panna	heterolepis
73	Badidae	Badis	ruber
74	Gobiidae	Glossogobius	giuris
75	Trichiuridae	Trichiurus	lepturus
76	Anabantidae	Anabas	testudineus

Sr.	Family	Genus	Species
77	Osphronemidae	Trichogaster	labiosa
78		Trichopsis	vittata
79	Channidae	Channa	gachua
80		Channa	marulius
81		Channa	panaw
82		Channa	striata
83	Tetraodontidae	Leiodon	cutcutia
84		Chonerhinos	naritus
	Invasive species		
85	Cyprinidae	Barbonymus	gonionotus
86		Hypophthalmichthys	sp.
87	Cichlidae	Oreochromis	niloticus
88	Loricariidae	Pterygoplichthys	disjunctivus

Table (2). Fish species lists of Thanlwin River and its tributary (Follows Kottelat, 2013*)

Sr.	Family	Genus	Species
1	Dasyatidae	Brevitrygon	imbricata
2	Notopteridae	Notopterus	notopterus
3	Anguillidae	Auguilla	bengalensis
4		Auguilla	bicolor
5	Engraulididae	Setipinna	taty
6			wheeleri
7		Thryssa	dussumieri
8	Clupeidae	Tenualosa	ilisha
9		Tenualosa	toli

Sr.	Family	Genus	Species
10	Cyprinidae	Akrokolioplax	bicornis
11		Amblypharyngodon	atkinsonii
12		Branchydanio	albolineatus
13		Cabdio	morar
14		Celestichthys	margarita
15		Cirrhinus	cirrhosus
16		Cyprinus	intha
17			carpio
18		Danio	sysphigmatus
19		Devario	annandalei
20			sp.
21		Esomus	danrica
22		Garra	salweenica
23		Hampala	salweenensis
24		Hypsibarbus	salweenensis
25		Inlecypris	auropurpurea
26		Labeo	dyocheilus
27			gonus
28		Microrasbora	erythromicron
29		Morulius	calbasu
30		Neolisochelius	nigrovittatus
31			stracheyi
32		Opsarius	infrafasciatus
33		Oreichthys	sp.
34		Osteobrama	belangeri
35			cunma
36		Osteochilus	sp.
37		Puntius	sophore
38		Poropuntius	schanicus
39			scapanognathus
40		Raiamas	guttatus
41		Rasbora	sp.
42		Rohita	rohita
43		Salmostoma	sardinell
44		Scaphiodonichthys	burmanicus
45		Systomus	rubripinnis
46		Tor	sp.

Sr.	Family	Genus	Species
47	Psilorhynchidae	Psilorhynchus	robustus
48	Botidae	Botia	histrionica
49			kubotai
50		Syncrossus	berdmorei
51	Cobitidae	Lepidocephalichthys	berdmorei
52	Balitolridae	Balitora	burmanica
53		Homaloptera	bilineata
54		Homalopteroides	rupicola
55	Namacheilidae	Acanthocobitis	pictilis
56			zonalternans
57		Nemacheilus	sp.
58		Neonomacheilus	labeosus
59		Petruichthys	brevis
60		Physoschistura	maepaiensis
61		Pteronemacheilus	sp.
62		Schistura	alticrista
63			cincticauda
64			mahnerti
65			moeiensis
66			reidi
67			similis
68	Amblycipitidae	Amblyceps	variegatum
69	Sisoridae	Bagarius	yarrelli
70		Glyptothorax	dorsalis
71			cf. ngapang
72			rugimentum
73		Hara	filamentosa
74	Siluridae	Ompork	sp.
75		Wallago	attu
76	Plotosidae	Plotosus	canius
77	Clariidae	Clarias	batrachus
78	Heteropneustidae	Heteropneustes	fossilis
79	Ariidae	Arius	acutirostris
80	Schilbeidae	Silonia	silondia
81	Pangasiidae	Pangasius	pangasius

Sr.	Family	Genus	Species
82	Bagridae	Batasio	ferruminatus
83		Caelatoglanis	zonatua
84		Gagata	dolichonema
85		Hemibagrus	imbrifer
86			microphthalmus
87		Mystus	falcarius
88			gulio
89		Rita	sacerdotum
90		Sperata	acicularis
91	Synodontidae	Harpadon	nehereus
92	Mugilidae	Rhinomugil	corsula
93	Hemiramphidae	Hyporhamphus	limbatus
94	Belonidae	Xenentodon	cancila
95	Aplocheilidae	Aplocheilus	panchax
96	Synbranchidae	Monopterus	cuchia
97	Mastacembelidae	Macrognathus	zebrinus
98		Mastacembelus	sp.
99	Ambassidae	Parambassis	pulcinella
100			ranga
101			vollmeri
102	Latidae	Lates	calcarifer
103	Polynemidae	Eleuthronema	tetradactylum
104		Leptomelanosaoma	sp.
105	Sciaenidae	Johnius	coitor
106		Otolithoides	pama
107	Gobiidae	Glossogobius	giuris
108		Periophthalmodon	septemradiatus
109	Scatophagidae	Scatophagus	argus
110	Anabantidae	Anabas	testudineus
111	Osphronemidae	Trichogaster	labiosa
112	Theraponidae	Therapon	jarbua
113	Channidae	Channa	aurolineata
114			gachua
115			striata
116	Tetraodontidae	Chonerhinos	naritus

Sr.	Family	Genus	Species
117	Invasive species		
118	Cyprinidae	Abbottina	rivularis
119		Hemiculter	leucisculus
120		Hypophthalmichthys	molitrix
121	Claiidae	Clarias	gariepinus
122	Cichlidae	Oreochromis	niloticus
123	Osphronemidae	Trichopodus	pectoralis

♦ Kottelat, M. (2013). The fishes of inland waters of Southeast Asia: a calalogue and core bibliography of the fishes known to occur in freshwater, mangroves and estuaries. Raffles Bulletin of Zoology, Supplement 27: 1-66 pp.

Marine biodiversity surveys, focusing on coral, mangrove, seagrass, fish, crustacean, and bivalve were being undertaken to get sound data to support the conservation area designation in the Myeik Archipelago.

Fish passage project

With the objective of the replenishment of the inland capture fisheries, FFI is implementing a fish passage project in collaboration with the Charles Sturt University along the Bago-Sittaung watershed in the Bago Region starting from 2018. The project is being implemented together with the Department of Fisheries and the Irrigation and Water Utilization Management Department. The project result will inform to develop how to mitigate the impact on the inland capture fisheries resources in the irrigation barrier construction policy.

Fish migration research

FFI is implementing research on the economically important migratory fish species, such as *Pangasius* sp., *Anguilla* sp., Hilsa shad and Toli shad along the river systems in Myanmar by means of otolith chemistry methodology started from 2017 to understand the migration pattern to inform the development of management plan in the fisheries sector.

Table (3). Migratory fish species recorded in Myanmar

Sr.	Family	Genus	Species
1	Anguillidae	Auguilla	bengalensis
2		Auguilla	bicolor
3	Clupeidae	Tenualosa	ilisha
4		Tenualosa	toli
5	Cyprinidae	Neolisochelius	blythii
6			nigrovittatus
7			stracheyi
8		Tor	tambroides
9			tor
10			sp.
11	Sisoridae	Bagarius	yarrelli
12	Schilbeidae	Silonia	silondia
13	Pangasiidae	Pangasius	pangasius
14			sp.
15			microphthalmus
16	Bagridae	Rita	sacerdotum
17	Latidae	Lates	calcarifer

Gender project

Because of the crucial role of gender equality, FFI is implementing research on gender roles and responsibilities in the fisheries sector to support the family wellbeing among the fisher families along the Bago-Sittaung watershed.

Community-based conservation areas establishment

FFI is implementing conservation projects in collaboration with the Department of Fisheries and is supported by the Tanintharyi Regional Government to establish Locally Managed Marine Areas (LMMAs) in the Myeik Archipelago. The Department officially notified 3 LMMAs of Fisheries in 2017. In addition, to the designation of more LMMAs, FFI is dialoguing with local communities in the Myeik Archipelago for the designation of collaborative LMMAs between the villages for the sustainability of fisheries resources for the dependent communi-

ties and the development of the region. In addition, crucial habitats and seasons along the river systems are being undertaken research for the designation of community-based conservation areas in the freshwater system.

Law enforcement in the conservation areas

For the sustainability of fisheries resources in the conservation areas, FFI is undertaking patrolling participation with local communities and staff from the Department of Fisheries in the conservation areas.

Livelihood intervention

For the sustainability of conservation areas, FFI is providing small grants in the projects for the sustainability of livelihoods for the sustainable extraction of natural resources. Potential markets for the products from the project villages were also looking for based on the participatory market system development (PMSD) in the project villages.

Marine turtle conservation

The crucial marine indicator of turtle species conservation project was started in 2016 in collaboration with the Department of Fisheries, concerned government departments, academic institutions, and international organizations. FFI is implemented together with the Department of Fisheries in turtle monitoring, threat assessments, socioeconomic surveys, awareness-raising among the public, international and national training to the concerned stakeholders.

Policy Development

FFI is implementing the Sharks and Rays National Plan of Action (NPOA) to protect crucial biodiversity indicator species in collaboration with the Department of Fisheries in participation with the concerned government departments and academic institutions since 2015. This NPOA will effectively support the management of marine fisheries' sustainability.

Publications

FFI is publishing biodiversity survey results in their projects. FFI published "Marine and Coastal Biodiversity of the Martin Coast: Survey results and conservation recommendations 2016-2020", the collective effort of a team of scientific researchers, international researchers, students, relevant government officers, and NGO staff.

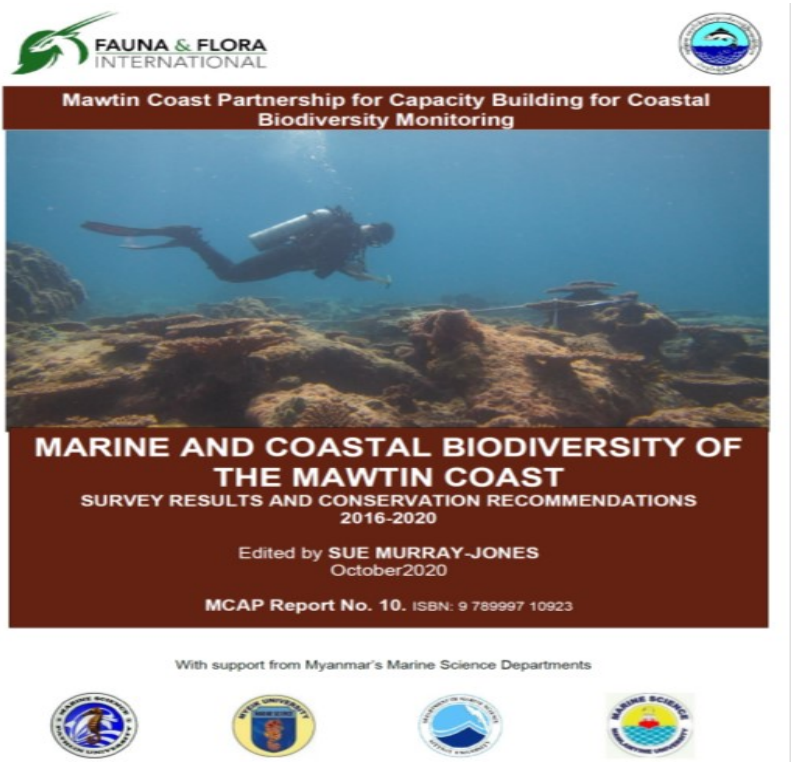


Fig. (1). Publication of Marine and Coastal Biodiversity in Mawtin Coast

Research and Training

Department of Fisheries (DoF) is responsible for the development of fisheries sector of the Union of Myanmar and the responsibilities of DoF for development and management in fisheries are as follow:

- Conservation and rehabilitation of fisheries resources
- Promotion of fisheries research and surveys
- Collection and compilation of fisheries statistic and information
- Extension services
- Supervision services
- Sustainability of fishery resources

In order to implement above responsibilities, DoF has established six fisheries training centers namely.

- Institute of Fisheries Technology, IFT (Gyogone, Yangon Region)
- Institute of Fisheries Technology, IFT (Twantay, Yangon Region)
- Fisheries Training Center (Sagaing, Sagaing Region)
- Fisheries Training Center (Pyapon , Ayeyarwady Region)
- Fisheries Training Center (Thahton, Mon State) and
- Fisheries Training Center (Bago, Bago Region)

Human resource development in fishery sector and capacity building are carried out through the fisheries training centers. In 2019-2020, In the year 2019-2020, Eighteen training courses have been successfully conducted associated the fields of Aquaculture, English Speaking, Ecosystem Approach to Aquaculture Management (EAAM), Ecosystem Approach to Fisheries Management (EAFM) , Fishery Inspector Training, Community Based Climate Change Adaption and Disaster Risk Management (CBCCA – CBDRM) Training, On-site Training on Energy Saving and Safety at

Sea for Small Fishing Vessels (TOT online Training), Training on Safety at Sea, Training on Fish Processing and Quality Control for Fishery Products, IUU & Responsible Fishing Techniques for Fishing Boat Skippers, Good Aquaculture Practice (GAqP) Training, Ecosystem, Fish Taxonomy and Fish Migration Training, Fishery Law inspection Study's Workshop Training, Training on Comprehensive Management, Training on Fishing Gear, Training on Fisheries Resources Conservation, Basic Mud Crab Growout Culture, Village Approach Fisheries Resources Management Training: totally 1290 trainees have been acquired knowledge of fisheries relevant fields. The various training for fishery taskforce skill

In 2020-2021, eight training courses have been successfully conducted associated the fields of Aquaculture, Training on Computer, Training on Ecosystem Approach to Fisheries Management (EAFM), Training on Basic On– job Skill for Fisherman, Marine Fishing Licence Application System (MFLAS-Software), Training on Fish Processing and Quality Control for Fishery Products, Training on Good Aquaculture Practice(GAqP), Training on Fisheries Conservation by Fishery's Laws, totally 633 trainees have been acquired knowledge of fisheries relevant fields. The various training for fishery taskforce skill development in 2021-2022,(from October to September) has been conducted with 24 training and 605 trainees in total.

Training Conducted in 2019-2020 Fiscal Year

No	Training Course	2019-2020		Remarks
		No of Course	No of Training	
1.	Training on Ecosystem approach to Fisheries Management (EAFM)	4	77	- Institute of Fisheries Technology, (Gyogon) - Fisheries Training Center(Bago)
2.	Training on Basic Fishing Gears Training	1	20	- Institute of Fisheries Technology, (Gyogon)
3.	Fisheries Inspector Training	1	21	Institute of Fisheries Technology, IFT(Gyogone)
4.	Community Based Climate Change Adaptation and Disaster Risk Management (CBCCA-CBDRM)	1	33	-Institute of Fisheries Technology, IFT(Gyogone)
5.	Training on Basic Freshwater Aquaculture and Induced Breeding Technology	5	110	Institute of Fisheries Technology –IFT (Gyogone) DoF Training Center (Thaton) Fisheries Training Center(Bago)
6.	Training on Basic On-job skill for Fishermen	7	134	Institute of Fisheries Technology –IFT (Gyogone) DoF Training Center (Thaton)
7.	Training on Fish Processing and Quality Control for Fishery Products	8	283	Institute of Fisheries Technology –IFT (Gyogone) DoF Training Center (Sagaing) DoF Training Center (Thaton) Fisheries Training Center(Bago)
8.	Basic English Training	1	17	DoF Training Center (Sagaing)
9.	Training on IUU Fishing and Responsibility Fisheries	4	120	Institute of Fisheries Technology –IFT (Gyogone)
10.	Training on Good Aquaculture Practices(GAqP)	5	172	DoF Training Center (Sagaing) DoF Training Center (Thaton) Fisheries Training Center(Bago)
11.	Training on Mobile GPS	1	18	Fisheries Training Center (Pyapon)

No	Training Course	2019-2020		Remarks
		No of Course	No of Training	
12.	Training on Fisheries Resources Conservation by Fisheries Laws	3	136	-Fisheries Training Center (Pyapon) - Fisheries Training Center (Thahton) - Fisheries Training Center (Bago)
13.	Freshwater and Marine Shrimp/Mud Crab Hatchery and Grow-out Training	1	36	Fisheries Training Center (Thahton)
14.	Fish Migration, Fish Identification and Ecology Training	7	72	- Fisheries Training Center (Bago)
15.	Training on Fishery Laws Inspection Study's Work Shop Training	1	41	- Fisheries Training Center (Bago)
	Total	44	1290	

Training Conducted in 2020-2021 Fiscal Year

No	Training Course	2020-2021		Remarks
		No of Course	No of Training	
1.	Training on Good Aquaculture Practice (GAqP)	10	216	- Institute of Fisheries Technology, IFT(Twantay) - Fisheries Training Center(Sagaing) - Fisheries Training Center(Pyapon) -Fisheries Training Center(Thahton) - Fisheries Training Center(Bago)
2.	Training on Basic Freshwater Aquaculture and Induced Breeding Technology	6	145	- Institute of Fisheries Technology, IFT(Twantay) -Fisheries Training Center(Thahton) - Fisheries Training Center(Bago)
3.	Training on On-Jop Skill for Fisherman	4	119	Institute of Fisheries Technology, IFT(Gyogone) - Fisheries Training Center (Pyapon)
4.	Training on Fish Processing and Quality Control for Fishery Products	1	30	-Fisheries Training Center (Bago)
5.	Training on Marine Fishing Licence Application System (MFLAS– Software)	1	22	Institute of Fisheries Technology –IFT (Gyogone)
6.	Basic Computer Training	1	12	DoF Training Center (Sagaing)
7.	Training on Ecosystem Approach to Fisheries Management (EAFM)	1	30	DoF Training Center (Thaton)
8.	Training on Fisheries Conservation by Fisheries Laws	1	29	Fisheries Training Center(Bago)
9.	Mekong-Lanchang Food Safety Training	1	30	Fisheries Training Center(Bago)
	Total	26	633	

Training Conducted in 2021-2022(October to March)

No	Training Course	2021 (Oct to March)		Remarks
		No of Course	No of Training	
1.	Training on Basic On-Job Skill for Fishermen	7	210	- Institute of Fisheries Technology, IFT(Gyogon) - Fisheries Training Center(Pyapon) - Thaninthayi, Rekhine, Yangon, Ayayarwady,Mon
2.	Training on Good Aquaculture Practices (GAqP)	7	163	Fisheries Institute(Twantay) - Fisheries Training Center (Sagaing) - Fisheries Training Center (Pyapon) - Fisheries Training Center (Thaton) - Fisheries Training Center (Bago)
3.	Training on Fish Processing and Quality Control for Fishery Products	1	17	- Fisheries Training Center (Sagaing)
4.	Fisheries Resources and Ayeyarwady Dolphin Conservation Training	1	20	- Fisheries Training Center (Sagaing)
5.	Training on Basic Freshwater Aquaculture and Induced Breeding Technology	4	100	- Fisheries Training Center (Pyapon) - Fisheries Training Center (Thaton) - Fisheries Training Center (Bago)
6.	Training on Capacity Building for DoF Staffs	1	30	- Fisheries Training Center (Bago)
7.	Training on Fisheries Resources Conservation by Fisheries Laws	1	30	- Fisheries Training Center (Bago)
8.	Training on Fisheries Law and regulation	2	30	- Fisheries Training Center (Bago)
	Total	**24**	**600**	

In Order to develop Fisheries Training Center and Fisheries Extension Officer, Development & Training Session is laid down the plan to conduct the following work plans during the fiscal year (2022-2023):

* Training on Fishing Gear Technology
* Training on Basic On-Job Skill for Fishermen
* Training on Fish Processing and Quality Control for Fishery Products
* Training on Good Aquaculture Practice (GAqP)
* Training on Basic English Speaking
* Training on Conservation of Ayeyarwady Dolphin
* Training on Basic Aquaculture and Induces Breeding
* Training on Water Quality Management and Fish / Shrimp Disease Control Management
* Training on Eel Culture
* Training on Capacity Building for DoF's Staff
* Training on Fisheries Conservation by Fisheries Laws
* Training on Resources Conservation
* Training on Fish Growth-out Culture

Ph.D Candidates of DOF at abroad

Qualified staffs of DOF have been studying in abroad for their capacity and after that whose will be performed in relative program.

No.	Name/Position	University	Duration	Graduation	Study Field
1.	U Myat Thiha Saw Assistant Fishery Officer	(Japan)	2.12.2020 to 31.8.2023	M.Sc (Fisheries Manage-ment)	Fisheries Management
2.	Dr, May Zon Phyo	(Japan)	1.10.2021 to 31.3.2024	M.Sc (Marine Science & Technology)	Marine Science & Technology
3.	Dr.Myint Than Soe	(Japan)	21.10.2021 to 23.10.2023	M.Sc (Fisheries Science)	Fisheries Science
4.	U Wana Zaw	(Japan)	13.4.2022 to 30.9.2024	M.Sc (Marine Science & Technology)	Marine Science & Technology
5.	U Chit Oo Lwin	(Norway)	1.9.2020 tp 31.8.2022	M.Sc (Fisheries Science Technology)	Fisheries Science Technology
6.	U Ye Pyae Naing	Korea	1.9.2020 to 31.8.2023	Ph.D (Fisheries Science)	Fisheries Biology
7.	U Akar Myo	China	2021 to 2024	Ph.D (Fisheries Biology)	Fisheries Biology

Projects cooperation with Development Partners

1. Collaborative Program to Support the Conservation of Marine and Freshwater Biodiversity in Myanmar) (Technical Assistant) support by Flora and Fauna International (FFI) from 2014 to 2019 in Kachin ,Tanintharyi Regions, Ayeyarwady Regions and Rakhine State.

2. Marine Shrimp Aquaculture development in Rakhine State (Ye Chan Pyin) (USD 1) funded by Thailand International Cooperation Agency (TICA) from 2018-2020, in Rakhine State (Ye Chan Pyin) .

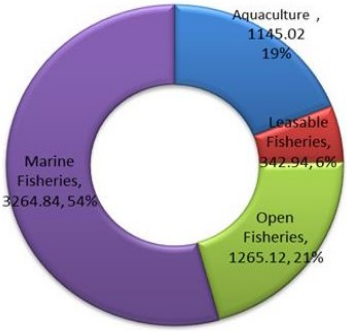
FISHERY STATISTICS

Table.1. FISHERY PRODUCTION

Thousand Metric Ton

No.	Year	Total	Aquaculture	Leasable Fisheries	Open Fisheries	Marine Fisheries
1.	2012-2013	4716.22	929.38	290.00	1012.97	2483.87
2.	2013-2014	5047.40	964.12	304.44	1076.59	2702.25
3.	2014-2015	5316.95	999.63	315.36	1147.76	2854.20
4.	2015-2016	5591.83	1014.42	338.69	1241.98	2996.74
5.	2016-2017	5675.47	1048.69	339.23	1251.13	3036.42
6.	2017-2018	5877.46	1130.35	341.02	1253.95	3152.14
7.	2018(April to Sep)	2581.45	495.49	122.74	513.42	1449.80
8.	2018-2019	5971.10	1121.35	339.36	1260.69	3249.70
9.	2019-2020	6017.92	1145.02	342.94	1265.12	3264.84
10.	2020-2021	6074.82	1167.35	343.99	1268.41	3295.07
11.	2021 Oct to 2022 March	3652.61	713.33	238.02	814.08	1887.18

2019-2020



2020-2021

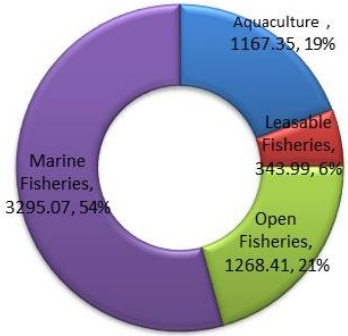


Fig 1: Fishery Production (2019-2020 & 2020-2021)

53 AQUACULTURE PONDS

Table.2. TOTAL AQUACULTURE PONDS AND PRODUCTION

No.	Year	Area of Aquaculture Ponds (Acre)	Production of Aquaculture Ponds (Thousand Metric Ton)
1.	2012-2013	449692	929.38
2.	2013-2014	450324	964.12
3.	2014-2015	469153	999.63
4.	2015-2016	478002	1014.42
5.	2016-2017	487525	1048.69
6.	2017-2018	491345	1130.35
7.	2018(A to Sep)	492206	495.49
8.	2018-2019	492295	1121.35
9.	2019-2020	498710	1142.02
10.	2020-2021	498936	1167.35
11.	2021 Oct to 2022	500857	713.33

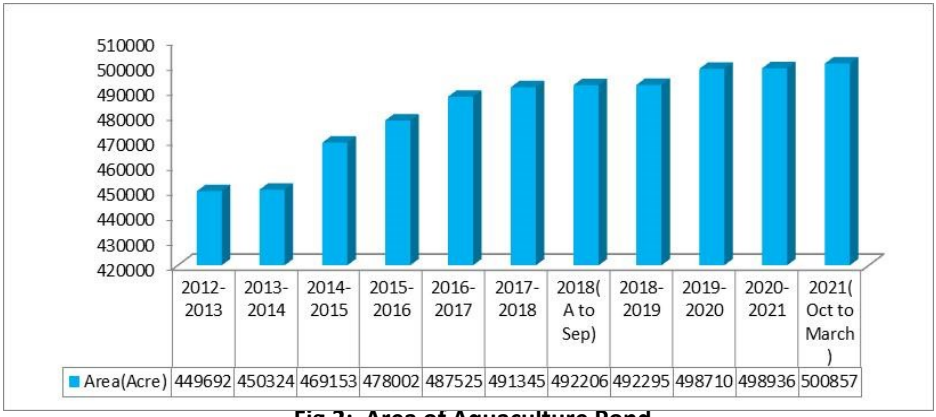


Fig.2: Area of Aquaculture Pond

Table. 3.TOTAL AREA OF AQUACULTURE PONDS

Unit - Acre

No.	Year	Area			
		Fish Pond	Shrimp Pond	Crab Pond	Total
1.	2012-2013	221395	228297	1841	451533
2.	2013-2014	222028	228296	1841	452165
3.	2014-2015	232515	236638	2025	471178
4.	2015-2016	239671	238331	1741	479743
5.	2016-2017	245807	241718	1857	489382
6.	2017-2018	247007	244338	2047	493392
7.	2018(April to Sep)	247818	244388	2047	494253
8.	2018-2019	247858	244437	2057	494352
9.	2019-2020	252220	244292	2198.	498710
10.	2020-2021	252415	244286	22334	498936
11.	2021 Oct to	253532	245085	2240	500857

55 AQUACULTURE PONDS

Table.4.AQUACULTURE FISH POND BY STATES AND REGIONS

No.	States/ Regions	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
1	Kachin	1990	2168	2313	2312	2312
2	Kayah	748	760	798	819	893
3	Kayin	464	464	589	675	711
4	Chin	296	296	296	296	296
5	Sagaing	5809	6023	6374	7128	7580
6	Taninthayi	922	923	1065	1120	1120
7	Bago	26009	26014	27158	28324	31121
8	Magway	425	425	425	425	425
9	Mandalay	7416	7624	7609	7970	7902
10	Mon	969	975	979	995	995
11	Rakhine	20	20	20	20	20
12	Yangon	59864	59864	65848	66015	67038
13	Shan	3409	3409	3408	3408	3408
14	Ayeyarwady	112892	112892	115462	119993	121811
15	NayPyi Taw	162	171	171	171	175
	Total	**221395**	**222028**	**232515**	**239671**	**245807**

Table.4. AQUACULTURE FISH POND BY STATES AND REGIONS Cont'd

No.	States/ Regions	2017-2018	2018(April to Sep)	2018-2019	2019-2020	2020-2021	2021Oct to 2022 March
1	KaChin	2344	2346	2355	2352	2236	2236
2	Kayah	893	893	894	949	951	951
3	Kayin	731	731	741	790	765	751
4	Chin	296	304	344	344	349	349
5	Sagaing	7580	7575	7544	7538	7597	7597
6	Taninthayi	1120	1120	1120	1120	1120	1120
7	Bago	31146	31151	31132	31116	31116	31198
8	Magway	425	424	424	425	425	425
9	Mandalay	7873	7860	7848	7852	7852	7852
10	Mon	1001	1001	1001	1001	1006	1006
11	Rakhine	20	20	20	248	421	421
12	Yangon	66444	67284	67328	68286	68413	69461
13	Shan	3408	3383	3383	3383	3385	3385
14	Ayeyarwady	123551	123551	123551	126643	126643	126643
15	NayPyi Taw	175	175	173	173	136	136
	Total	**247007**	**247818**	**247858**	**252220**	**252415**	**253531**

57 AQUACULTURE PONDS

Table.5.AQUACULTURE SHRIMP / PRAWN POND BY STATES AND REGIONS

Unit-Acre

No.	States/Regions	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
1.	KaChin				-	-
2	Kayah	-	-	-	-	-
3	Kayin	80	80	80	130	130
4	Chin	-	-	-	-	-
5	Sagaing	-	-	-	-	-
6	Taninthayi	4141	4140	4140	4138	4138
7	Bago	40	40	40	40	40
8	Magway	-	-	-	-	-
9	Mandalay	-	-	-	-	-
10	Mon	1125	1125	1125	1125	1125
11	Rakhine	155533	155533	155533	156488	156489
12	Yangon	10229	10229	17829	18442	18916
13	Shan	-	-	-	-	-
14	Ayeyarwady	57149	57149	57892	57968	60880
15	NayPyi Taw	-	-	-	-	-
	Total	**228297**	**228296**	**236638**	**238331**	**241718**

Table.5.AQUACULTURE SHRIMP / PRAWN POND BY STATES AND REGIONS Cont'd

Unit-Acre

No.	States/ Regions	2017-2018	2018 (April to Sep)	2018-2019	2019-2020	2020-2021	2021Oct to 2022 March
1	KaChin	-	-	-			
2	Kayah						
3	Kayin	130	130	130	130	130	130
4	Chin						
5	Sagaing						
6	Taninthayi	4138	4138	4138	4623	4623	5422
7	Bago	40	40	40	40	40	-
8	Magway						
9	Mandalay						
10	Mon	1125	1125	1124	1124	1118	1129
11	Rakhine	156488	156488	156488	156489	156489	156489
12	Yangon	18681	18731	18781	18150	18150	18180
13	Shan						
14	Ayeyarwady	63736	63736	63736	63736	63736	63735
15	NayPyi Taw	-					
	Total	**244338**	**244388**	**244437**	**244292**	**244286**	**245085**

Table.6.AQUACULTURE CRAB POND BY STATES AND REGIONS

Unit-Acre

No.	States/ Regions	2012-2013	2013-2014	2014-205	2015-2016	2016-2017
1.	Taninthayi	688.03	688.03	688.03	688.03	688.03
2.	Rakhine	30.00	30.00	30.00	30.00	30.00
3	Yangon	1099.58	1099.58	797.12	807.12	923.02
4.	Ayeyarwady	23.57	23.57	207.79	216.01	216.01
5.	Mon	-	-	-	-	-
	Total	**1841.18**	**1841.18**	**1722.94**	**1741.16**	**1857.06**

No.	States/ Regions	2017-2018	2018 (April to Sep)	2018-2019	2019-2020	2020-2021
1.	Taninthayi	688.03	688.03	688.03	693.78	693.78
2.	Rakhine	30.00	30.00	30.00	135.61	165.61
3	Yangon	923.02	923.02	923.02	923.02	928.51
4.	Ayeyarwady	405.93	405.93	405.93	435.54	435.54
5.	Mon	-	-	10.50	10.50	10.50
	Total	**2046.98**	**2046.98**	**2057.48**	**2198.48**	**2233.94**

No.	States/ Regions	2021 Oct to 2022 March
1.	Taninthayi	693.78
2.	Rakhine	167.51
3	Yangon	928.51
4.	Ayeyarwady	450.02
5.	Mon	-
	Total	**2239.82**

Table. 7. THE PRODUCTION OF LEASABLE FISHERIES AND OPEN FISHERIES

No.	Year	Total number of Leasable (Number)	Production of Leasable Fisheries (Thousand Metric Ton)	Production of Open Fisheries (Thousand Metric Ton)	Total Production of Inland Fisheries (Thousand Metric Ton)
1.	2012-2013	3409	290.00	1012.97	1302.97
2.	2013-2014	3290	304.44	1076.59	1381.03
3.	2014-2015	3304	315.36	1147.76	1463.12
4.	2015-2016	3312	338.69	1241.98	1580.67
5.	2016-2017	3299	339.23	1251.13	1590.36
6.	2017-2018	3243	341.02	1253.95	1594.97
7.	2018 (April to Sep)	3082	122.74	513.42	636.16
8.	2018-2019	3076	339.36	1260.69	1600.05
9.	2019-2020	3055	342.94	1265.12	1608.06
10.	2020-2021	3077	342.52	1268.41	1610.93
11.	2021Oct to 2022March	699	238.02	814.08	1052.10

- Inshore fishing boat which is built by traditional type with not more than 40 feet long or using less than a 50 HP engine power.

- Off-shore fishing vessel are more than 50 feet long and using more than 50 HP engine power

Table.8. FISHING VESSELS

Unit - Number

No.	Year	Small Fishing Boat		Off-shore Vessels		Total
		Powered Boat	Non-Powered Boat	National	Foreign	
1.	2011-2012	12288	15463	2598	264	30613
2.	2012-2013	12157	12757	2724	150	27788
3.	2013-2014	12490	13732	2736	153	29111
4.	2014-2015	12240	13391	2840	52	28523
5.	2015-2016	13831	12583	3030	11	29455
6.	2016-2017	16012	10704	3168	48	29932
7.	2017-2018	15084	6802	3219	5	25110
8.	2018-2019	14077	5122	3211	-	22410
9.	2019-2020	14854	4337	3216	-	22407
10.	2020-2021	11239	3216	3167	-	17622

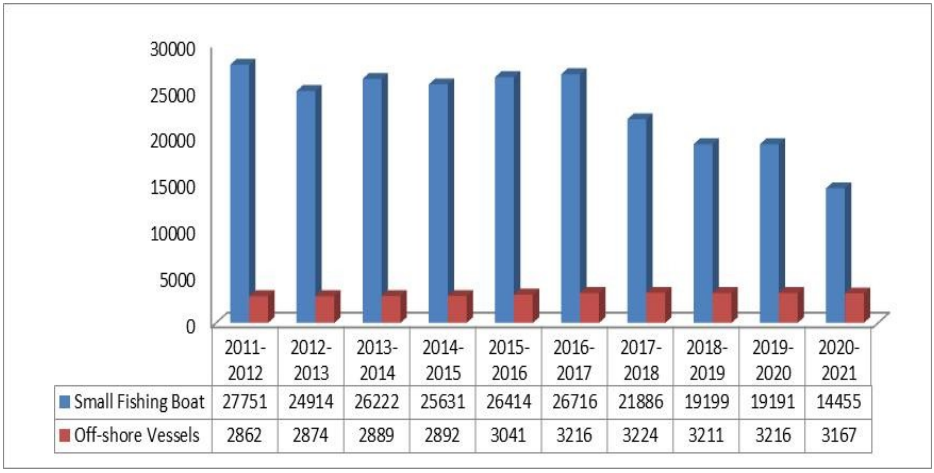


Fig 3: Number of Small Fishing Boats and Off –Shore Vessels

Table.9.TYPE OF FISHING GEAR IN STATES AND REGIONS

Unit:Number

No.	Year	States and Regions	Trawl	Purse Seine	Drift net	Stow net	Long line	Stick-held falling net	Trap	Total
1.	2011-2012	Head office	549	86	14	153	6	-	29	837
		Rakhine	9	-	-	-	-	-	1	10
		Taninthayi	542	187	-	-	15	302	60	1106
		Ayeyarwady	-	-	154	349	2	-	3	508
		Mon	-	-	92	45	-	-	-	137
		Yangon	-	-	-	-	-	-	-	-
	Total		**1100**	**273**	**260**	**547**	**23**	**302**	**93**	**2598**
2.	2012-2013	Head office	552	74	16	166	3	-	25	836
		Rakhine	7	3	-	-	-	-	1	11
		Taninthayi	564	201	-	-	32	356	64	1217
		Ayeyarwady	1	-	147	352	2	-	1	503
		Mon	-	-	103	45	-	-	-	148
		Yangon	1	-	2	5	1	-	-	9
	Total		**1125**	**278**	**268**	**568**	**38**	**356**	**91**	**2724**
3.	2013-2014	Head office	23	5	1	4	-	-	2	35
		Rakhine	50	3	-	-	-	-	1	54
		Taninthayi	565	217	8	-	27	347	115	1279
		Ayeyarwady	-	-	73	338	1	-	1	413
		Mon	-	-	110	56	-	-	-	166
		Yangon	506	62	16	182	3	-	20	789
	Total		**1144**	**287**	**208**	**580**	**31**	**347**	**139**	**2736**
4.	2014-2015	Head office	587	61	11	185	2	-	28	874
		Rakhine	2	3	-	-	-	-	3	8
		Taninthayi	578	219	1	-	25	327	104	1254
		Ayeyarwady	-	-	144	350	-	-	1	495
		Mon	-	-	150	59	-	-	-	209
		Yangon	-	-	-	-	-	-	-	-
	Total		1167	283	306	594	27	327	136	2840
5.	2015-2016	Head office	612	41	10	157	1	-	24	845
		Rakhine	-	2	-	-	-	-	4	6
		Taninthayi	628	241	3	-	33	351	99	1355
		Ayeyarwady	-	-	146	352	-	-	-	498
		Mon	-	-	228	98	-	-	-	326
		Yangon	-	-	-	-	-	-	-	-
	Total		1240	284	387	607	34	351	127	3030

Table.9.TYPE OF FISHING GEAR IN STATES AND REGIONS Cont'd

Unit:Number

No.	Year	States and Regions	Trawl	Purse Seine	Drift net	Stow net	Long line	Stick-held falling net	Trap	Total
6.	2016-2017	Head office	706	47	4	150	1	-	20	928
		Rakhine	-	5	-	-	-	-	4	9
		Taninthayi	637	270	4	-	30	395	96	1432
		Ayeyarwady	-	-	141	336	-	-	1	478
		Mon	-	-	232	89	-	-	-	321
		Yangon	-	-	-	-	-	-	-	-
	Total		**1343**	**322**	**381**	**575**	**31**	**395**	**121**	**3168**
7.	2017-2018	Head office	730	68	4	146	1	-	19	968
		Rakhine	-	5	-	-	-	-	4	9
		Taninthayi	671	257	4	-	22	391	90	1435
		Ayeyarwady	-	-	148	337		-	1	486
		Mon	-	-	231	90		-	-	321
		Yangon	-	-				-	-	-
	Total		**1401**	**330**	**387**	**573**	**23**	**391**	**114**	**3219**
8.	2018-2019	Head office	728	62	3	147	1	-	18	959
		Rakhine	-	3	-	-	-	-	3	6
		Taninthayi	698	275	2	-	19	381	88	1463
		Ayeyarwady	-	-	147	315	-		1	463
		Mon	-	-	214	106	-		-	320
		Yangon	-	-			-		-	-
	Total		**1426**	**340**	**366**	**568**	**20**	**381**	**110**	**3211**
9.	2019-2020	Head office	697	62	1	148	2	-	15	925
		Rakhine	-	3	-	-	-	-	3	6
		Taninthayi	743	263	11	-	14	368	85	1484
		Ayeyarwady	-	-	148	332	-	-	1	481
		Mon	-	-	199	121	-	-	-	320
		Yangon	-	-	-	-	-	-	-	
	Total		**1440**	**328**	**359**	**601**	**16**	**368**	**104**	**3216**
10.	2020-2021	Head office	659	78	1	143	2	-	8	901
		Rakhine	-	3	-	-	-	-	3	6
		Taninthayi	777	234	26	-	5	334	81	1457
		Ayeyarwady	-	-	147	336	-	-	-	483
		Mon	-	-	196	124	-	-	-	320
		Yangon		-	-			-	-	-
	Total		**1436**	**315**	**370**	**603**	**7**	**334**	**102**	**3167**

- Fishery Export
- Exported Ornamental Fish
- Imported Ornamental Fish
- Imported Aquatic Animal Feed

Table.10.FISHERY EXPORTS

Quantity - Metric Ton
Value - US $ in Million

No.	Year	Fish		Prawns		Others		Total	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1.	2012-2013	266464.97	378.05	17267.93	89.29	93112.79	185.50	376845.69	652.84
2.	2013-2014	237142.31	286.93	16508.97	61.98	91616.08	187.36	345267.36	536.27
3.	2014-2015	225974.93	258.61	17527.33	56.89	94788.33	166.75	338290.59	482.25
4.	2015-2016	246970.93	274.25	13673.49	49.64	108326.47	178.74	368970.89	502.63
5.	2016-2017	290580.04	319.04	13082.46	58.21	135044.01	228.57	438706.51	605.82
6.	2017-2018	394135.80	385.81	15905.44	60.78	158186.09	265.13	568227.33	711.72
7.	2018 (April to Sep)	147802.63	149.12	7206.920	30.38	66064.92	114.03	221074.47	293.53
8.	2018-2019	382135.95	367.44	13979.31	59.98	187561.09	300.84	583676.35	728.26
9.	2019-2020	427969.18	453.68	13965.22	57.40	227750.89	342.06	669685.29	853.14
10.	2020-2021	379993.08	418.20	11882.66	50.43	166350.39	317.87	558226.13	786.50
11.	2021Oct to 2022March	243529.66	258.40	7572.99	33.49	84965.87	188.77	336068.52	480.66

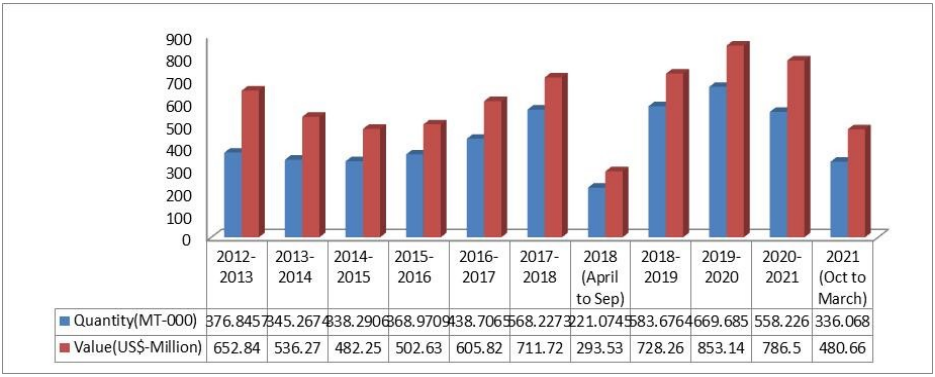


Fig 4: Fish and Fishery Product Exported in Myanmar (2012-2013 to 2021 Oct to March)

Table.11. TOP TEN SPECIES OF EXPORTED FISH AND FISHERIES PRODUCT OF MYANMAR

No.	Species (Common Name)	2019-2020	
		MT(Ordinary)	US$(Million)
1.	Rohu	58838.108	60.999
2.	Fish Meal	58694.005	56.155
3.	Squid	32753.958	56.042
4.	Ribbon Fish	30477.639	54.633
5.	Hilsa	13769.423	39.122
6.	Soft Shell Crab	2744.960	31.943
7.	Live Mud Crab	9620.560	29.537
8.	Trash Fish	78054..822	26.391
9.	Live Eel	6991.00	23.514
10.	White/Silver Pomfret	4405.585	23.284

No.	Species (Common Name)	2020-2021	
		MT(Ordinary)	US$(Million)
1.	Ribbon Fish	32448.647	54.993
2.	Fish Meal	53060.500	53.134
3.	Rohu	43990.359	46.384
4.	Live Mud Crab	10762.288	45.575
5.	Live Eel	9305.353	37.342
6.	Hilsa	10600.426	32.030
7.	Soft Shell Crab	3095.803	31.802
8.	Big Eye Croker	20974.099	28.147
9.	Squid	16513.195	27.693
10.	Black Pomfret	9658.567	20.804

No.	Species (Common Name)	2021October to 2022 March)	
		MT(Ordinary)	US$(Million)
1.	Fish Meal	39313.860	39.532
2.	Rohu	24732.358	30.250
3.	Live Mud Crab	5710.683	28.551
4.	Squid	9792.873	23.177
5.	Hilsa	5246.914	21.652
6.	Big Eye Croaker	14804.050	15.920
7.	Soft Shell Crab	1569.598	15.703
8.	Ribbon Fish	13632.968	14.701
9.	Platu/Indian Mackerel/ Short Body Mackerel	16773.968	12.979
10.	Live Eel	3062.213	12.248

Table.12.TOP TEN COUNTRIES EXPORTED FISHERY PRODUCTS

2012-2013		
Countries	**MT**	**US-Million**
China	90780.734	244.249
Thailand	137631.665	133.165
Singapore	26584.477	49.748
Kuwait	34515.926	49.153
Malaysia	19288.339	45.678
Japan	6895.203	34.971
Saudi	21738.835	31.806
U.A.E	15142.596	19.424
UK	6341.289	14.561
Bangladesh	9529.391	11.978

2013-2014		
Countries	**MT**	**US-Million**
China	82665.926	199.290
Thailand	126645.544	128.980
Malaysia	16459.550	35.285
Kuwait	26196.712	27.051
Singapore	20086.003	25.220
Saudi	19672.380	24.370
Japan	6490.001	23.511
U.A.E	16008.274	18.271
UK	7123.743	13.839
Bangladesh	8190.575	8.500

2014-2015		
Countries	**MT**	**US-Million**
China	75732.900	169.685
Thailand	127537.529	127.750
Malaysia	16769.467	31.400
Singapore	21453.699	22.959
Saudi	20689.382	22.353
Kuwait	23428.406	21.935
Japan	6750.174	18.846
U.A.E	13838.681	14.588
U. K	5654.002	10.189
Bangladesh	7602.536	9.013

2015-2016		
Countries	**MT**	**US-Million**
China	75732.900	169.685
Thailand	127537.529	127.750
Malaysia	16769.467	31.400
Singapore	21453.699	22.959
Saudi	20689.382	22.353
Kuwait	23428.406	21.935
Japan	6750.174	18.846
U.A.E	13838.681	14.588
U.K	5654.002	10.189
Bangladesh	7602.536	9.013

2016-2017		
Countries	**MT**	**US-Million**
Thailand	211097.950	198.709
China	100200.229	190.119
Malaysia	11629.971	35.349
Japan	6049.425	24.583
Saudi	21129.795	23.919
Singapore	15076.495	22.710
Bangladesh	11117.243	15.393
U.A.E	13884.501	14.897
U.K	6609.502	12.516
U.S.A	3525.811	12.146

2017-2018		
Countries	**MT**	**US-Million**
Thailand	301984.934	258.808
China	117797.366	197.963
Singapore	27407.662	36.637
Malaysia	12603.042	33.325
Saudi	25411.982	28.879
Japan	7132.693	27.672
U.S.A	5086.237	18.852
U.A.E	13815.933	15.425
U.K	7386.898	14.338
Bangladesh	11696.075	14.292

Table.12 .TOP TEN COUNTRIES EXPORTED FISHERY PRODUCTS Cont'd

2018(April to September)		
Countries	**MT**	**US-Million**
Thailand	106732.034	95.905
China	47758.97	82.114
Singapore	10537.044	13.814
Japan	3202.821	13.017
Malaysia	4038.170	11.843
U.S.A	2587.135	10.469
U.A.E	9084.691	9.964
Hong Kong	899.403	7.935
Bangladesh	7251.792	7.232
U.K	3089.032	6.124

2018-2019		
Countries	**MT**	**US-Million**
Thailand	305002.054	257.658
China	137259.572	204.818
Japan	6828.485	32.881
Singapore	19379.85	27.909
U.S.A	5665.153	25.606
Malaysia	10172.344	24.784
Saudi	9905.726	18.830
U.A.E	15954.761	17.356
Hong Kong	1711.751	17.335
U.K	7796.710	16.636

2019-2020		
Countries	**MT**	**US-Million**
Thailand	352917.857	318.034
China	173449.999	254.917
Japan	6452.947	37.099
Singapore	16415.092	27.459
U.S.A	6546.175	26.651
Saudi	12315.226	24.119
Bahrain	20831.959	22.710
U.A.E	17587.362	19.291
Malaysia	8495.928	18.246
U.K	8310.453	17.241

2020-2021		
Countries	**MT**	**US-Million**
Thailand	325353.215	306.963
China	111082.176	222.891
Saudi	23958.379	44.246
Japan	5785.200	29.448
U.S.A	5460.808	24.686
Malaysia	9980.642	21.472
Singapore	11648.599	21.091
U.K	7926.778	17.705
Bangladesh	12058.609	13.813
U.A.E	11349.026	12.834

2021 Oct to 2022 March		
Countries	**MT**	**US-Million**
Thailand	196791.121	206.374
China	50967.908	107.154
K.S.A	18784.852	22.825
Japan	3811.030	19.044
Singapore	13344.611	16.450
Malaysia	5744.828	16.067
Bangladesh	12437.812	14.901
U.S.A	3153.842	12.544
U.A.E	7868.721	9.512
India	1624.525	8.726

Table.13 .FISHERY PRODUCT EXPORTED BY TRADING COUNTRIES (2019-2020)

Qty– Metric Ton/Value– US$ in Million

No	Country	Fish		Prawn		Other		Total	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1	Thailand	271370.737	197.649	4254.356	10.894	77292.764	109.491	352917.857	318.034
2	China	38738.171	82.144	4679.050	13.997	130032.778	158.776	173449.999	254.917
3	Japan	347.552	3.296	3286.379	22.586	2819.016	11.217	6452.947	37.099
4	Singapore	15016.192	22.510	266.314	1.381	1132.586	3.568	16415.092	27.459
5	U.S.A	5191.291	9.319	112.280	0.908	1242.604	16.424	6546.175	26.651
6	K.S.A	11840.169	23.308	7.131	0.013	467.926	0.798	12315.226	24.119
7	Bahrain	20678.419	22.445	3.204	0.004	150.336	0.261	20831.959	22.710
8	U.A E	17367.053	18.462	25.941	0.081	194.368	0.748	17587.362	19.291
9	Malaysia	3679.465	7.219	78.427	0.231	4738.036	10.796	8495.928	18.246
10	U.K	8077.391	16.153	14.813	0.040	218.249	1.048	8310.453	17.241
11	India	3934.312	14.222			30.000	0.018	3964.312	14.240
12	Hong Kong	0.006	0.000	739.803	5.507	387.786	5.744	1127.595	11.251
13	Korea	306.081	0.457	8.805	0.059	2545.869	7.112	2860.755	7.628
14	Bangladesh	5805.044	5.455	5.000	0.027	2352.141	2.010	8162.185	7.492
15	Qatar	5913.690	6.705	2.622	0.007	112.002	0.199	6028.314	6.911
16	Taiwan	0.251	0.001	425.680	1.336	1043.234	4.592	1469.165	5.929
17	Oman	5245.173	5.623	5.513	0.010	73.021	0.140	5323.707	5.773
18	Australia	679.044	1.508	0.400	0.002	570.162	3.610	1249.606	5.120
19	Kuwait	4397.550	4.687	3.368	0.009	49.956	0.114	4450.874	4.810
20	Italy	2395.401	3.871	1.661	0.004	19.650	0.037	2416.712	3.912
21	Vietnam			10.800	0.022	1995.253	3.818	2006.053	3.840
22	Iraq	3352.283	3.462					3352.283	3.462
23	Canada	769.825	1.377	0.068	0.001	11.767	0.025	781.660	1.403
24	Belgium	443.836	0.721	27.368	0.272	15.186	0.106	486.390	1.099
25	Netherland	683.432	0.889			7.080	0.042	690.512	0.931
26	South Africa	545.257	0.611	6.233	0.008	19.190	0.034	570.680	0.653
27	France					81.682	0.634	81.682	0.634
28	Sweden	321.509	0.484					321.509	0.484
29	Spain					115.920	0.410	115.920	0.410
30	Brunei	216.984	0.243			4.668	0.007	221.652	0.250
31	Greece	191.078	0.222					191.078	0.222
32	Ireland	102.881	0.170					102.881	0.170
33	Macau					5.774	0.161	5.774	0.161
34	Newzealand					18.606	0.112	18.606	0.112
35	Turkey	110.000	0.109					110.000	0.109
36	Germany	66.638	0.107					66.638	0.107
37	Jordan	47.000	0.067					47.000	0.067
38	Lebanon	44.429	0.065			0.500	0.001	44.929	0.066
39	Cyprus	43.040	0.057			2.781	0.007	45.821	0.064
40	Denmark	48.000	0.059					48.000	0.059
	Total	**427969.184**	**453.677**	**13965.216**	**57.399**	**227750.891**	**342.060**	669685.291	853.136

Table.14.FISHERY PRODUCT EXPORTED BY TRADING COUNTRIES (2020-2021)

Qty– Metric Ton/Value– US$ in Million

No	Country	Fish		Prawn		Other		Total	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1	Korea	227.495	0.355	10.948	0.086	1289.973	4.479	1528.416	4.920
2	Oman	4950.101	5.392	6.815	0.014	85.206	0.163	5042.122	5.569
3	U.K	7660.625	16.455	17.083	0.056	249.070	1.194	7926.778	17.705
4	Kuwait	4187.892	4.554	0.400	0.001	61.663	0.114	4249.955	4.669
5	Germany	89.128	0.153					89.128	0.153
6	U.A.E	11267.018	12.509	10.471	0.015	71.767	0.310	11349.256	12.834
7	Australia	738.215	1.582			846.091	5.331	1584.306	6.913
8	Malaysia	4196.680	9.197	73.171	0.302	5710.791	11.973	9980.642	21.472
9	K.S.A	22573.755	41.876	1.572	0.002	1383.052	2.368	23958.379	44.246
10	Bahrain	2661.201	2.784	0.870	0.003	36.519	0.071	2698.590	2.858
11	China	27421.981	59.106	3007.471	12.710	80652.724	151.075	111082.176	222.891
12	Singapore	10511.900	17.510	277.403	0.973	859.296	2.608	11648.599	21.091
13	Bangladesh	9924.907	10.401	5.000	0.020	2128.702	3.392	12058.609	13.813
14	Japan	344.330	2.356	3131.913	18.140	2308.957	8.952	5785.200	29.448
15	Taiwan	1.783	0.015	451.447	1.119	873.927	3.531	1327.157	4.665
16	Greece	193.223	0.298	0.240	0.001	1.720	0.003	195.183	0.302
17	Spain					212.520	0.759	212.520	0.759
18	Qatar	5361.016	6.009	2.559	0.006	136.114	0.250	5499.689	6.265
19	U.S.A	3744.957	7.394	261.386	1.817	1454.465	15.475	5460.808	24.686
20	Belgium	632.856	1.114	71.744	0.822	17.365	0.138	721.965	2.074
21	France	396.813	0.688	1.987	0.004	135.784	0.879	534.584	1.571
22	Brunei	190.154	0.222			3.450	0.005	193.604	0.227
23	Hong Kong	14.043	0.070	773.418	4.367	621.441	5.397	1408.902	9.834
24	India	2820.756	10.769			38.000	0.124	2858.756	10.893
25	Italy	1986.295	3.340	4.696	0.010	66.038	0.155	2057.029	3.505
26	Netherland	485.968	0.650			15.060	0.255	501.028	0.905
27	Thailand	255181.109	200.113	3707.184	9.706	66464.922	97.144	325353.215	306.963
28	South Africa	499.359	0.560	8.547	0.010	8.950	0.015	516.856	0.585
29	Turkey	137.500	0.137					137.500	0.137
30	Canada	940.265	1.697	0.075	0.000	10.199	0.019	950.539	1.716
31	Iraq	165.000	0.161					165.000	0.161
32	Ireland	106.751	0.167					106.751	0.167
33	Newzealand					15.075	0.166	15.075	0.166
34	Lebanon	32.017	0.040			3.460	0.006	35.477	0.046
35	Vietnam			56.264	0.251	570.918	1.292	627.182	1.543
36	Denmark	48.000	0.065			12.000	0.213	60.000	0.278
37	Jordon	83.608	0.107			0.500	0.001	84.108	0.108
38	Indonesia					0.000	0.001	0.000	0.001
39	Sweden	198.073	0.332					198.073	0.332
40	Cyprus	18.305	0.026			4.675	0.007	22.980	0.033
	Total	379993.079	418.204	11882.664	50.435	166350.394	317.865	558226.137	786.504

Table.15.FISHERY PRODUCT EXPORTED BY TRADING COUNTRIES (2021 October to 2022 March)

Qty– Metric Ton/Value– US$ in Million

No	Country	Fish		Prawn		Other		Total	
		MT	US$	MT	US$	MT	US$	MT	US$
1	Thailand	154281.133	130.743	1766.731	7.594	40743.257	68.037	196791.121	206.374
2	China	17927.946	24.435	2515.700	9.981	30524.262	72.738	50967.908	107.154
3	K.S.A	18310.769	21.482			474.083	1.343	18784.852	22.825
4	Japan	444.894	4.473	1819.556	9.234	1546.580	5.337	3811.030	19.044
5	Singapore	12292.158	13.261	383.369	1.378	669.084	1.811	13344.611	16.450
6	Malaysia	2186.233	4.411	36.636	0.109	3521.959	11.547	5744.828	16.067
7	Bangladesh	10243.212	12.605			2194.600	2.296	12437.812	14.901
8	U.S.A	2263.777	5.009	264.441	1.368	625.624	6.167	3153.842	12.544
9	U.A.E	7822.800	9.153	3.763	0.008	42.158	0.351	7868.721	9.512
10	India	1624.525	8.726					1624.525	8.726
11	U.K	2698.886	5.883	10.910	0.032	217.685	1.616	2927.481	7.531
12	Hong Kong	2.168	0.002	473.647	2.782	411.618	3.987	887.433	6.771
13	Qatar	4449.118	5.212	4.866	0.013	92.575	0.286	4546.559	5.511
14	Korea	174.135	0.333	5.406	0.050	1068.144	3.136	1247.685	3.519
15	Taiwan	3.350	0.009	258.111	0.766	921.320	2.712	1182.781	3.487
16	Australia	305.512	0.740			427.453	2.497	732.965	3.237
17	Italy	1290.721	2.600	2.502	0.007	19.030	0.053	1312.253	2.660
18	Vietnam					1036.812	2.388	1036.812	2.388
19	Kuwait	1856.013	2.130	0.480	0.002	15.025	0.043	1871.518	2.175
20	Oman	1615.007	1.894	2.994	0.009	44.267	0.178	1662.268	2.081
21	France	305.860	0.473	0.156	0.000	129.320	0.796	435.336	1.269
22	Bahrain	964.847	1.126	1.800	0.003	9.106	0.027	975.753	1.156
23	Canada	603.839	1.084	0.924	0.006	3.961	0.014	608.724	1.104
24	Belgium	462.250	0.715	15.740	0.137	11.912	0.147	489.902	0.999
25	Netherland	304.359	0.462			26.500	0.423	330.859	0.885
26	Spain					135.240	0.490	135.240	0.490
27	South Africa	294.468	0.382	5.095	0.012	14.442	0.041	314.005	0.435
28	Iraq	275.000	0.328					275.000	0.328
29	Sweden	129.306	0.203					129.306	0.203
30	Brunei	178.779	0.185			3.500	0.011	182.279	0.196
31	Ireland	71.185	0.140	0.165	0.001	4.036	0.022	75.386	0.163
32	Denmark					7.400	0.122	7.400	0.122
33	Greece	50.610	0.065					50.610	0.065
34	Jordon	33.566	0.043			6.620	0.021	40.186	0.064
35	Philippine					7.500	0.062	7.500	0.062
36	New Zealand					6.500	0.056	6.500	0.056
37	Labenon	31.900	0.044			3.050	0.009	34.950	0.053
38	Germany	21.030	0.034					21.030	0.034
39	Cyprus	10.300	0.018			1.250	0.007	11.550	0.025
	Total	243529.656	258.403	7572.992	33.492	84965.873	188.771	336068.521	480.666

Table:16.Exported Ornamental Fish (2019-2020)

No.	Common Name	Scientific name	Quantity (PCS)	Value (US$)
1	Glow Light Danio	Danio choprae	269340	26964
2	Odessa Barb	Puntius spp/	213980	24180.5
3	Emerald Dwarfrasbora	Danio erythromicron/ Microrasbore erythromi-cron	175675	17597.5
4	Kyathit Danio/Orange Fin Danio/Myanmar leopad Danio	Danio kyathit	133225	15977.5
5	Rainbow Garra	Garra flavatra	71270	24676
6	Celestial Pearl Danio	Danio margritatus	59940	13431
7	Scarlet Danio/Red Flame	Danio hysginon/Danio sp	42450	4260
8	Clown Loach/Polka dot loach/ Checker Board Botia	Botia kubotai	26500	7310
9	Polka loach/Short Loach/Roay loach	Yannanius brevis	24700	3240
10	Sawbwa bard	Sawbwa resplendens	21800	2180
11	Grrass Snail	Capaea hotensis	14800	1480
12	Sumo Loach	Schitura balteata	13750	2402.5
13	Beautiful Fin Channa/Spotted Channa	Chama pulcher/Channa spp	10080	4030
14	Ho Pong devario	Devario sondhi	9450	945
15	Pink Microrasbora/Red line Rasbora	Microrasbora rubescens	8300	830
16	Badis Badis	Dwarf chamele on fish	7250	725
17	False barilius	Devario Auropcoeus/ Inlecypris Auropar pure-ous	5500	885
18	Pearl Daniio	Danio albollneatus	4200	420
19	Loach	Acantopis choirorhynchos	4025	446.25

Table: 16.Exported Ornamental Fish (2019-2020) Cont'd

No.	Common Name	Scientific name	Quantity (PCS)	Value (US$)
20	Inlay snails	Taia naticoides	4000	320
21	Badis/Red chameleon fish	Badis ruber	3000	600
22	Hill Trout	Barilius bakeri	2950	385
23	Yoma Danio	Danio Feegradei	2925	292.5
24	Spotted Danio	Danio nigrofasciatus	1800	108
25	Inle snakehead	Chama harcaurtbutleri	1640	820
26	Small scale Archer Fish	Danio microlepis/Taxotes microlopis	1502	428.4
27	Hikari Danio	Danio of kerrri	1500	150
28	Indawgyi stream cat fish	Akysis spp	1000	150
29	Puffer fish/ Common puffer fish / Green	Tetraodon cutcutia / Mono-treta	870	174
30	Galaxy	Celestichthys margaritatus	800	80
31	Lemon danio	Devario browni	750	75
32	Golden Botia	Botia historionica	680	820
33	Zebra Eel	Macrognatus zebrinus	600	120
34	River Catfish	Erethistes hara/Hara jerdoni	480	48
35	spiny eel	Macrognatus sp	416	200
36	Leopard Danio	Danio tinwini	300	40
37	Panaw snake head	Channa panaw/Channa punctatus	120	36
38	Rainbow Catfish	Gagata cenia	36	5.4
39	Goby	Glassgoblus gluris	3	40
		Total	1141607	156872.55

Table :17. Exported Ornamental Fish (2020–2021)

No.	Common Name	Scientific name	Quantity (PCS)	Value (US$)
1	Glow Light Danio	Danio choprae	264020	26572
2	Emerald Dwarfrasbora	Danio erythromicron/ Microrasbore erythromicron	190460	18846
3	Odessa Barb	Puntius spp/	167430	17624
4	Kyathit Danio/Orange Fin Danio/Myanmar leopad Danio	Danio kyathit	150565	15282.5
5	Rainbow Garra	Garra flavatra	114855	38006.5
6	Celestial Pearl Danio	Danio margritatus	69370	15149
7	Polka loach/Short Loach/ Rosy Loach/ Yanan Loach	Yannanius brevis/ Tuber-oschirturz Arakanensis	38355	4065.5
8	Clown Loach/Polka dot loach/Checker Board Botia	Botia kubotai	36150	11705
9	Sumo/Loach	Schitura balteata	31290	5959
10	Grrass Snail/ Piano snail	Capaea hotensis	28800	3880
11	Black Tiger/Danio hysginon/ Scarlet Danio	Danio hysginon	26400	3700
12	Golden Botia/Botia histori-onica	Botia historionica	15790	1563
13	Sawbwa bard	Sawbwa resplendens	10810	1061
14	Beautiful Fin Channa/ Spotted Channa/Channa Orna Tipinnis/Channa Pul-chra	Chama pulcher/Channa spp	8221	11648.4
15	Badis Badis	Dwarf chamele on fish	6990	699
16	Spotted Danio	Danio nigrofasciatus	5950	635
17	Minicatfish/Akysis	Akysis prashadi	5800	780
18	Pearl Daniio	Danio albollneatus	4800	480
19	Tiger Badis	Badis kyar	4700	526

Table :17.Exported Ornamental Fish (2020–2021) Cont'd

No.	Common Name	Scientific name	Quantity (PCS)	Value (US$)
20	Pink Microrasbora/Red Line Rasbora	Microrasbora rubescens	4500	450
21	Zebra Spiny Eel/Zebra Danio	Macrognatus zebrinus	4490	1361
22	Galaxy	Celestichthys margaritatus	4000	360
23	Badis	Badis ruber	3560	424
24	Inlay snails	Taia naticoides	3200	320
25	Black Tiger Danio	Danio spp	3150	275
26	Yoma Danio	Danio Feegradei	3000	300
27	Ho Pong devario	Devario Feegradee	2800	280
28	Inle snakehead	Chama harcaurtbutleri	2445	3522
29	Hill Trout	Barilius bakeri	2125	212.5
30	Inlecypris	Devario Auropcoeus	1950	330
31	Toxotes Chatareus	Toxotes Chatareus	1835	183.5
32	Red line Danio	Danio sondhi	1600	160
33	Microrasbora Galaxy	Microrasbora Galaxy	1575	236.25
34	spiny eel	Macrognatus sp	1280	700
35	Burmese Pink Loach	Burmese Pink Loach	1050	105
36	River Catfish	Hara jerdoni	900	90
37	Small scale Archer Fish	Danio microlepis/ Taxotes microlopis	700	140
38	Inlacypris	Inlacypris	695	71.75
39	Hampala barb	Hampala barb	450	90
40	Loach	Acantopis choirorhynchos	350	62
41	Pangasianodon Hypopthal-mus		2	34
	Total		1226413	187888.9

Table :18. Exported Ornamental Fish (2021 October to 2022 March)

No .	Scientific Name	Common Name	Quantity (PCS)	Value (US$)
1	Danio choprae	Glow Light Danio	143860	14991
2	Danio kyathit	Orange Fin Danio/ Kyathit Danio Myanmar Leopord Danio	67420	7482
3	Danio margaritatius	Celestial Pearl Danio	52650	13162.5
4	Danio erythromicron	Emeral Dwart Rasbora	96740	10094
5	Puntius sp	Odessa Barb	49950	5563
6	Schistura balteata	Sumo Loach	39365	6228.75
7	Botia kubotai	Checker Boaed Botia / Clown Loach/ Polka Dot Loach	23806	7649.8
8	Macrorasbora rubencen	Red Line Rasbora	9000	900
9	Yunnanilius brevis	Short Loach	7810	911
10	Garra flavatura	Rainbow Garra	60625	24136.25
11	Macrognathus zebrinus	Zebra Spine Eel	2220	1226
12	Channa pulcher/Channa sp	Beautiful Fin Channa/ Spotted Channa/		22970.4
13	Danio hysginon	Scarlet Danio	41800	6930
14	Sawbwa resplendens	Sawbwa Bard	7725	792.5
15	Badis ruber	Badis	2100	250
16	Microrasbora galaxy	Microrasbora Galaxy	4890	629.2
17	Piano snail	Piano Snail	700	70
18	Devario auropurpureus	Fales Barilius	1300	190
19	Monotreta cutcutin	Green Puffer Fish	420	84
20	Channa harcourtbuteri	Inly Snake Head	635	1065
21	Channa Sp	Fire & Ice	1465	15782.9
22	Toxotes microlopsis	Small Scale Archer Fish	665	413
23	Channa mine tic	Channa Mine Tic	70	7
24	Dario Sp	Tiger Dario /Dario fish	6260	2146
25	Cepaea hortensis	Grass snail	5500	650
26	Celestichthys margaritatus	Galaxy Rasbora	5680	628
27	Burmese pink loach	Burmes Pink Loach	750	75
28	Danio albolineatus	Pearl Danio	4800	480
29	Tubero schistura arakanesis	Rasy Loach	2600	250
30	Devario sondhi	Devario Sondhi/ HO Pond Devario	2500	250

Table :18. Exported Ornamental Fish (2021 October to March) Cont'd

No .	Scientific Name	Common Name	Quantity (PCS)	Value (US$)
31	Botia histrionica	Golden Botia	600	430
32	Akysis prashadi	Minicat	4250	598.75
33	Tiger badies	Tiger Badies	1750	175
34	Toxotes zebinus	Archer Fish	240	48
35	Tetrandon biocellatus	Figure eight Puffer	60	6
36	Danio roseas	shanensis	400	30
37	Acantopsis choirorhynchos	Horse Face Loach	50	20
	Total		**657452**	**147315.05**

Table :19.Imported Ornamental Fish (2020–2021)

No.	Common Name	Scientific Name	Quantity (PCS)	Value (US$)
1	Blue Star Fish	Linckia laevigata	10	33.20
2	Skunk/Cleaner Shrimp M / Orange Skunk Shrimp M	Lysmata amboinensis	50	226.85
3	Common Clown Fish/ / Percula Clown M Tomato Clown - M	Amphiprion ocellaris	170	191.00
4	Red Tomato Clown – M/	Amphiprion frenatus	24	42.44
5	Zebra Damsel	Dascyllus aruanus	10	8.30
6	Bicolor Angel – M/ Oriole Angel	Centropyge bicolor	50	141.00
7	Blue Face Angel	Pomacanthus xanthometopon	1	62.16
8	Yellow Regal Angel – XL/ Ragel Angel Adult - M	Pygoplites Diacanthus	3	113.68
9	Chelmon/ Copperband Butterfly	Chelmon rostratus	60	137.20
10	Blue Manarin - M	Synchiropus splendidus	10	63.35
11	Long Antenna Shrimp Goby/Yellow Frose Giby	Stonogobiops nema-todes	17	65.55
12	Purple Fire Goby - M	Nemateleotris decora	10	120.65
13	Okinawa Mini Coral Goby	Gobiodon okinawae	20	42.30
14	Pink spotted watchman Goby	Cryptocentrus lepto-cephalus	10	13.00
15	Yellow watchman Goby	Cryptocentrus cinctus	75	86.40
16	Orange Banded Shrimp Goby	Ambleyeleotris randalli	9	52.20
17	Spotted Mandarin	Synchiropus picturatus	19	69.22
18	Desjardinii Sailfin Tang- L	Zebrasoma desjardini	3	63.70
19	Kole Tang	Ctenochaetus strigosus	3	112.68
20	Black Fin Naso Tang -S/ Surgeon	Naso Lituratus	3	59.55
21	Powder Blue Tang - M	Acanthurus leucoster-non	24	202.87
22	Clown Tang - S	Acanthurus lineatus	8	85.12
23	Dispar Anthlas _ Male/ Smith Anthias	Pseudanthias dispar	10	35.2

Table:19. Imported Ornamental Fish (2020–2021)Cont'd

No.	Common Name	Scientific Name	Quantity (PCS)	Value (US$)
24	Purple Queen Anthias - Female	Pseudanthias Tuka	2	18.64
25	Red Anthias/ Spotfin Anthias/Orange Anthias Male/Blue Eye Red Bass-let/	Pseudanthias squamip-pinnis	75	207.9
26	Yellow foxface - L	Siganus vulpinus	28	179.34
27	Yellow Hogfish - JUV	Bodianus bimaculatus	2	7.26
28	Royal Dottyback	Pictichromis paccagnel-lae	25	63.55
29	Hifin Apogon(Cardinal)	Pterapogon kauderni	76	151.66
30	Yellow Foxface - L	Sigannus bimaculatus	10	66.4
31	Carpenter Flasher Wrasse	Paracheilinus carpenter	15	53.35
32	Six Line Wrasse	Pseudocheilinus hexa-taenia	70	149.35
33	Yellow Wrasse	Halichoeres chrysus	61	125.95
34	Lubbock Fairy Wrasse	Cirrhilabrus lubbocki	17	58.38
35	Red Wrasse (JUV)	Coris gaimard	32	83.22
36	Blue / Green Chromis	Chromis viridis	75	36.75
37	Red and Blue Wrasse/ Sailfii Fairy Wrasse	Cirrhilabrus sp;	36	90.90
38	Filamented Flasher Wrasse	Paracheillinus filamen-tosus	20	31.90
39	Blue Tang	Paracanthurus hepatus	29	290.72
40	Polkadot Cardinal Fin	Sphaeramia nematop-tera	10	8.30
41	Coloured Short Spine Urchin	Hemicentrotus pulcher-rimus	5	9.40
42	Tube Bidg Anemone Orange/Tubeworm -col-org	Cerianthus membra-naceus	30	88.10
43	Blue Leg Hermit Crab	Calcinus elegans	40	52.50
44	Bumble Bee Shell	Engina mendicaria	20	11.20
45	Reticulated damsel	Dascyllus reticulates	30	14.70

Table :19. Imported Ornamental Fish (2020–2021)Cont'd

No.	Common Name	Scientific Name	Quantity (PCS)	Value (US$)
46	Emperor Angel	Pomacanthus imperator	5	84.40
47	Red Tailed Tamarin	Anampses chrysocephalus	1	3.75
48	Solar Fairy Wrasse	Cirrhilabrus solorensis	20	67.60
49	Naoko Wrasse	Cirrhilabrus naokoae	1	11. 25
50	Yellow Fairy Basslet (Female)	Pseudanthlas luzonensis	21	47.25
51	Flame Basslet	Mirolabrychthys lgnitus	20	24.80
52	Two Spot Goby	Signigobius biocellatus	10	18.80
53	Yellow Rose Goby	Stonogobiops nematodes	15	29.25
54	Scooter Blenny	Synchiropus ocellatus	1	0.94
55	Magnificent Foxface	Siganus magnifica	28	192.04
56	Orange ShoulderTang (M)/Orange Epaulette Surgeon	Acanthurus olivaceus	7	30.75
57	Blonde Naso Tang	Naso elegans	21	196.98
58	Blue/ Red Tuxedo Urchin	Mespilla globulus	36	67.45
59	Maroon Clown	Premnas biaculeatus	10	15.00
60	Green Wrasse	Halichoeres chloropterus	5	3.00
61	Diso Blenny	Meiacanthus smithi	5	4.70
62	Gold-Rimmed Surgeon	Acanthurus nigricans	10	37.50
63	Vermiculated Angel	Chaetodontoplus mesoleucus	4	5.24
64	Majestic Angel	Pomacanthus navarchus	2	41.26
65	Flagtail Shrimp Gopy	Amblyelcotris yanoi	10	19.50
66	Mandarin Fish(Pasific Ocean)/Green Mandarin	Pterosynchiropus splendidus	23	63.76
67	Pacific / Sailfin Tang	Zebrasoma veliferum	8	31.80
68	Brown Sailfin Tang	Zebrasoma scopas	6	6.08
69	Camel Shrimp	Rhynchocinetes durbanansis	19	29.96
70	Scarlet Cleaner Shrimp	Lysmata rathbunae	19	32.11

Table :19. Imported Ornamental Fish (2020–2021)Cont'd

No.	Common Name	Scientific Name	Quantity (PCS)	Value (US$)
71	Zebra Serpent Starfish	Ophiolepis super ba	5	15.10
72	Boxing Shrimp	Stenopus hispidus	10	32.20
73	Harlequin Shrimp	Hymenocera elegans	5	53.65
74	Sexy Shrimp	Thor amboinesis	10	32.20
75	Purple reef Lobstar	Enoplomentopus species	10	32.20
76	Warty Slug	Phyllidia species	5	13.40
77	Algae Snail	Tectus niloticus	30	29.40
78	Nassa Sand Snail	Nassarius species	30	29.40
79	Black Saddle/Clown	Amphiprion polymnus	6	12.30
80	Golden Sergent Major	Amblyglyphidodon aure-us	5	12.20
81	Keyhole Angel	Centropyge tibicen	2	11.50
82	Bicolor Blenny	Ecsenius bicolor	20	54.60
83	Purple Trigger (M)	Odonus niger	5	24.40
84	Pixy Hawkfish	Cirrhitichthys oxycepha-lus	5	15.10
85	Purple Blotch Basslet (male)	Pseudanthias pleurotae-ria	6	10.14
86	Orange Spotted Apogon	Sphaeramia nematoptera	6	10.26
87	Blue Doctor	Labroides dimidiatus	10	17.10
88	Red Fairy Wrasse / Rainbow Fairy Wrasse (Zambales)	Cirrhilabrus solorensis	12	55.80
89	Coral Beauty Angel (M)	Centropyge bispinosa	10	9.10
90	Flagfinned Angel Adult (S)	Apolemicthys trimacula-tus	3	12.60
91	Yellow Angel (M)	Centropyge heraldi	10	9.10
92	Rangal Anthias (Male)	Pseudanthias randalli	6	10.50
93	Ruby Red Dragonet blen-ny	Synchiropus sycorax	10	32.20
94	Black Eel	Rhinomuraena quaesita	2	5.60
95	Diadema Grouper	Pictichromis diadema	10	10.50
96	Longnose Hawkfish (M)	Oxycirrhites typus	4	19.60
97	Powder Brown Tang (M)	Acanthurus japonicas	10	21.00

Table :19. Imported Ornamental Fish (2020–2021)Cont'd

No.	Common Name	Scientific Name	Quantity (PCS)	Value (US$)
98	Clown Trigger (T)	Balistoides conspicillum	6	79.80
99	Bumble bee snail	Pusiostoma mendicaria	10	2.80
100	Tiger Sand conch Snail/ (lesws)	Strombus species	15	4.20
101	Choc Starfish	Protereaster nodosus	17	5.95
102	Gold fish	Carassius auratus	1,000	500
103	Blood Red Parrot	Amphilophus cittinel-lus	400	320
104	Neon Tetra	Paracheirodon innesi	1,500	150
105	Koi Carp	Cyprinus carpio	662	1,324
106	Silver Shark	Balantiochellos mela-noplerus	1,000	100
	Total		**6471**	**7970.16**

Table :20.Imported Ornamental Fish (2021 October to March)

No	Common Name	Scientific Name	Quantity (PCS)	Value (US$)
1	Flagfinned Angel Adult	Apolemicthys trimaculatus	3	12.60
2	Oriole Angel -M	Certropyge bicolor	17	33.95
3	Queen Angel -M	Chaetodontoplus mesoleucus	5	4.20
4	Lyretail Anthias (Yellow Anthias /Blue Eye Red Basslet)	Pseudanthias squamippins	20	26.25
5	Randal Anthias Male	Pseudanthias randalli	10	17.50
6	Smith Anthias	Pseudanthias dispar	10	10.50
7	Chelmon/ Copperband Butterfly	Chelmon rostratus	19	37.98
8	Triangle Butterfly -M	Chaetodon baronessa	10	10.50
9	Yellow Longnose Butterfly -M	Forcipiger flavissimus	17	56.70
10	Tail Spot Blenny	Ecsenius stigmatura	10	21.00
11	Black Percula Clown 0M	Amphiprion latezonatus	10	14.00
12	Maron Clown -M	Premnas biaculeatus	10	10.64
13	Percula Clown -M	Amphiprion ocellaris	68	71.4
14	Green Mandarin/ Mandarin Fish	Pterosynchiropus splendidus	21	45.150
15	Two Spot Goby	Signigobius biocellatus	14	20.30
16	Yellow Watchman Goby	Cryptocentrus cinctus	29	27.13
17	Diadema Grouper	Pictichromis diadema	15	15.75
18	Blue Tang -M	Paracanthurus hepatus	15	183.75
19	Lipstick Tang -S	Naso lituratus	7	14.7
20	Orange Shoulder Tang / Orange Epaulette Surgeon	Acanthurus olivaceus	4	24.5
21	Power Brown Tang	Acanthurus japonicus	6	12.6
22	Yellow Tang -M	Acanthurus pyroterus	10	21.00
23	Six Line Wrasse	Pseudocheilinus hexataenia	44	38.5
24	Orange Skunk Shrimp -M	Lysmata amboinensis	20	48.65
25	Tiger Pistol Shrimp	Alpheus bellulus	10	10.5
26	Blue Green Chromis	Chromis viridis	35	12.25

Table :20.Imported Ornamental Fish (2021 October to March) Cont'd

No	Common Name	Scientific Name	Quantity (PCS)	Value (US$)
27	Majestic Angel	Pomacanthus navarchus	1	19.25
28	Lubbock's Fairy Wrasse	Cirrhilabrus labbocki	1	0.88
29	Red Labrid JUV	Coris gaimard	17	89.25
30	Carpenter Flisher Wrasse	Paracheillnus carpenteri	6	15.75
31	Wheeler's Prawngoby	Amblyeleotus wheeleri	6	10.92
32	Scooter Blenny	Synchiropus ocellatus	14	12.25
33	Royal Dottyback	Pictichromis paccagnella	20	35.000
34	Psychedelic Fish	Synchiropus picturatus	12	29.4
35	Foxface Fish	Siganus vulpinus	5	31.5
36	Magnificent Foxface	Siganus magnifica	4	35.000
37	Power Blue Tang -M	Acanthurus leucosternon	9	69.30
38	Black Spot Sugeon Fish	Acanthurus bariene	5	70.00
39	Blonde Naso Tang	Naso elegans	6	52.5
40	Pacific Sailfin Tang	Zebrasoma veliferum	15	105.00
41	Brown Sailfin Tang -M	Zebrasoma scopes	5	8.75
42	Harlequin Shrimp	Hymenocera picta	4	16.8
43	Fire (Maroon) Shrimp	Lysmata debelius	21	80.85
44	Blue /Red Tuxedo Urchin	Mespilla globulus	10	14.00
45	Blue Leg Hermit Crab	Calcinus elegans	30	42.00
46	Zoster Butterfly Fish	Hernitaurichthys zoster	6	32.55
47	Emperor Angel	Pomascanthus impetrator	2	31.5
48	Filamented Flasher Wrasse	Paracheilinus filamentous	2	3.15
49	Golden Rainbow Fish	Halichoeres chrysus	12	16.8
50	Dragon Wrasse	Novaculichthys taeniurus	5	10.5
51	Scissor tail	Ptereleotris evides	6	9.45
52	Warthead goby	Paragobiodon modestus	11	11.55
53	Tamini Bristle Tooth	Ctenochaetus tominiensis	3	15.75
54	Black Fin (Queen) Trigger	Melichtys indicus	2	3.99
55	Fire fish	Nemateleotris magndicus	7	11.03
56	Spotted Graden Eel	Heteroconger hassi	7	49.000
57	Pistol Shrimp	Alpheus glebar	10	12.25

Table :20. Imported Ornamental Fish (2021 October to March) Cont'd

No	Common Name	Scientific Name	Quantity (PCS)	Value (US$)
58	Gold Fish	Carassius auratus	800	400
59	Neon Tetra	Paracheirodon innei	200	20
60	Blood Parrot	Cichlassoma hybrid	200	160.0
61	Dwarf Gourami	Colisa lalia	200	20.0
62	Assorted Discus	Symphysodon aequifasciatus	233	405.0
63	Silver Shark	Balantiocheilos melanopterus	200	20
	Total		**2536**	**2772.92**

Table :21. Imported Feed for Fish, Shrimp and Ornamental Fish

No	Year	Fish Feed		Shrimp/Prawn Feed		Ornamental Fish Feed	
		Qty (Ton)	Value (Us-Million)	Qty (Ton)	Value (Us-Million)	Qty (Ton)	Value (Us-Million)
1.	2015-2016	11.00	-	2034.00	-	-	-
2.	2016-2017	39.40	-	700.00	-	3.03	-
3.	2017-2018	259.00	0.11	870.00	0.47	-	-
4.	2018(Mini)	99.32	0.12	310.95	0.22	-	-
5	201-2019	306.30	0.31	2113.75	2.68	11.12	0.03
6.	2019-2020	230.00	0.26	1437.50	2.22	-	-
7.	2020-2021	-	-	2834.50	2.92	19.24	0.05
8.	2021(Mini)	-	-	2053.00	2.78	20.46	0.05

Table :22. Imported Raw Materials for Aquatic Animal Feed

Q-Quantity– Tons

V-Value(US$)

Item		2017-2018	2018 (April to Sep)	2018-2019	2019-2020	2020-2021	2021 Oct to 2022 March
Soyabean	Q	14555.53	1540.73	5677.31	9194.72	1570.00	863.55
	V	3.13	0.48	1.47	3.34	0.68	0.48
Ground Nut Deoiled Cake	Q	1281.21	492.63	278.22	-	200.08	
	V	0.32	0.12	0.07	-	0.05	
Rapeseed Meal or Canola Meal	Q	2100.99	678.62	1760.19	1460.79	226.90	708.09
	V	0.38	0.16	0.45	0.38	0.06	0.29
Corn Gluten Meal	Q	-	-	21.00	1401.11	51.71	.-
	V	-	-	0.01	0.21	0.01	-
Flour	Q	504.74	735.00	490.00	-	-	-
	V	0.09	0.23	0.15	-	-	-
Distiller's Dried Grain with Soluble (DDGS)	Q	1124.54	-	-	1022.04	-	-
	V	0.11	-	-	0.25	-	-
Rice Bran	Q	-	-	1484.00	530.24	-	-
	V	-	-	0.33	0.10	-	-
Meat Borne	Q	-	-	-	511.53	-	-
	V	-	-	-	0.11	-	-
Aquatic Animal Feed Supplement	Q	2.06	-	-	140.08	268.31	
	V	0.01 (Euro)	-	-	0.12(Euro)	0.1 (Euro)	-

တီလားပီးယား, *Oreochromis nilotica*

ရေချိုငါးမုတ်, *Piractus brachypomus*

ငါးဖမ်းမ, *Puntius gonionotus*

ငါးမြစ်ချင်း, Labeo rohita

ရွှေဝါငါးကြင်း, *Cyprinus carpio*

ငါးကြင်းဖြူ, *Cirrhinus mrigala*

ငါးသိုင်းခေါင်ပွ, *Catla catla*

ခေါင်းကြီးငါးကြင်း, *Aristichthys nobilis*

ရောင်စုံငါးကြင်း, Cyprinus spp.

Fish and Prawn/shrimp Culture Species in Fish Hatchery Under DoF

မြက်စားငါးကြင်း
Ctenophryngodon idellus

ငွေရောင်ငါးကြင်း
Hypophthalmicthys molitrix

ငါးတန် , *Pangasius sutchi*

ငါးကျည်း, *Heteropneustes fossilis*

ငါးခူ ,*Clarias batrachus*

ရေငန်ကျားပုစွန်, *Penaeus monodon*

ရေချိုပုစွန်ဆုတ်ကြီး
Macrobrachium rosenbergii

Table:23. SEED PRODUCTION BY FISH HATCHERIES UNDER DOF

Unit - Million

No.	Myanmar Name	Common Name	Scientific Name	2019-2020	2020-2021 (Fingerling
1.	Nga Myit Chin	Rohu	*Labeo rohita*	490.054	93.893
2.	Shwe Wa Nga Gyin	Common Carp	*Cyprinus carpio*	51.128	18.291
3.	Myetsar Nga Gyin	Grass Carp	*Ctenopharyngodon idella*	5.893	0.130
4.	Nga Khaung Pwa	Catla	*Catla catla*	4.873	-
5.	Tilapia	Tilapia	*Tilapia spp:*	15.445	4.480
6.	Ngwe Yaung Nga Gyin	Silver Carp	*Hypophthalmichtys molitrix*	3.771	0.255
7.	Khaung Gyi Nga Gyin	Big Head	*Aristichthys nobilis*	2.842	0.020
8.	Nga Khu	Cat Fish	*Clarias batrachus*	-	-
9.	Nga Dan	Stripped Catfish	*Pangasius sutchi*	5.944	3.150
10.	Nga Phan Ma	Rohtee	*Rohtee alfrediana*	0.050	-
11.	Nga Gyin Phyu	Mrigal	*Cirrhina mrigala*	3.963	0.050
12.	Pa Cu (Ye Cho Nga Mote)	Fresh water pomfret	*Pirictus spp:*	3.377	0.050
13	Nga Khone Ma	Tarpian	*Barbodes goniono-tus*	127.950	48.098
14.	Nga Thyine	Minor Carp	*Leabo Fdolizkae*	-	-
15.	Be Lar	Snakeskin gourami	*Trichogester pecto-ralis*	-	-
16.	Nga Pyayma	Climbing perch	*Anabas testudine*	0.100	-
17.	Nga Kye	Sconpion catfish	*Heteropneustcs fossilis*	0.052	-
18.	Nga Phane	Nga Phane	*Cyprinus intha*	0.731	0.470
19.	Sultan	Sultan Fish	*Leptobanbus hoevenii*	0.100	-
20.	Nga Ohn Tone	Nandina	*Labeo nandina*	-	-
21.	Nga Dane	Kuria Labeo	*Labeo gonius*	0.100	-
22.	Taung Paw Nga Thar Lauk	Streaked prochilod	*Prochilodus lineatus*	0.640	0.050
	Total			**717.013**	**168.937**

Table.23. SEED PRODUCTION BY FISH HATCHERIES UNDER DOF Cont'd

Unit - Million

No.	Myanmar Name	Common Name	Scientific Name	2021 Oct to 2022 March (Fingerling Size)
1.	Nga Myit Chin	Rohu	*Labeo rohita*	24.148
2.	Shwe Wa Nga Gyin	Common Carp	*Cyprinus carpio*	2.880
3.	Nga Khone Ma	Tarpian	*Barbodes gonionotus*	14.239
4.	Nga Phane	Nga Phane	*Cyprinus intha*	0.150
	Total			**41.417**

Table.24. FISH HATCHERIES UNDER DOF (2019-2020)

Unit - Million

No.	Fish Hatcheries	Location	Production
	Yangon Region		**192.084**
1.	Hlaw Kar	Mingalardone Township	98.084
2.	Twante	Twante Township	45.330
3.	Laydaukkan	Dagon(east) Township	48.670
	Bago Region		**76.582**
4.	Bago (Kali)	Bago Township	24.205
5.	Thanappin	Thanappin Township	30.429
6.	Oakpho	Oakpho Township	21.948
	Mandalay Region		**193.375**
7.	Pathein Gyi	Pathein Gyi Township	83.590
8.	Myit Thar	Myit Thar Township	69.799
9.	Natyekan	A-ma-ya-pu-ya Township	15.250
10.	Matayar	Ma-ta-yar Township	24.736
	Nay Pyi Taw		**69.682**
11.	Pyinmanar	Pyin-ma-nar Township	69.682
	Ayeyarwady Region		**122.181**
12.	Pathein	Pathein Township	20.312
13.	Talotehla	Ma-u-bin Township	26.260
14.	Hinthada	Hin-tha-da Township	20.060
15.	Pantanaw	Pan-ta-naw Township	34.689
16.	Aung hate	Ma-u-bin Township	20.860
	Magway Region		**9.332**
17.	Taungdwingyi	Taungdwingyi Township	3.653
18.	Pwint Phyu	Pwint Phyu Township	5.679
	Kachin State		**10.680**
19.	Waing-maw	Waing-maw Township	6.912
20.	Bamaw	Bamaw Township	3.628
21.	PutaO	PutaO Township	0.140
	Sagaing Region		**30.165**
22.	Shwe Bo	Shwe Bo Township	8.851
23.	Yay Oo	Yay Oo Township	10.316
24.	Htee chaint	Htee chaint Township	10.998
	Mon State		**4.676**
25.	Thahtone	Thahtone Township	4.676
	Shan State		**5.521**
26.	Nyaung Shwe	Nyaung Shwe Township	5.521
	Kayin State		**3.729**
27.	Pha aan	Pha aan Township	3.729

Table.25. FISH HATCHERIES UNDER DOF (2020-2021)

Unit - Million

No.	Fish Hatcheries	Location	Production
	Yangon Region		**39.638**
1.	Hlaw Kar	Mingalardone Township	17.100
2.	Twante	Twante Township	8.938
3.	Laydaukkan	Dagon(east) Township	13.600
	Bago Region		**15.600**
4.	Bago (Kali)	Bago Township	5.750
5.	Thanappin	Thanappin Township	6.650
6.	Oakpho	Oakpho Township	3.200
	Mandalay Region		**25.730**
7.	Pathein Gyi	Pathein Gyi Township	7.200
8.	Myit Thar	Myit Thar Township	6.100
9.	Natyekan	A-ma-ya-pu-ya Township	8.330
10.	Matayar	Ma-ta-yar Township	4.100
	Nay Pyi Taw		**5.197**
11.	Pyinmanar	Pyin-ma-nar Township	5.197
	Ayeyarwady Region		**67.660**
12.	Pathein	Pathein Township	11.151
13.	Talotehla	Ma-u-bin Township	16.875
14.	Hinthada	Hin-tha-da Township	9.900
15.	Pantanaw	Pan-ta-naw Township	15.406
16.	Aung hate	Ma-u-bin Township	14.328
	Magway Region		**3.081**
17.	Taungdwingyi	Taungdwingyi Township	1.115
18.	Pwint Phyu	Pwint Phyu Township	1.966
	Kachin State		**2.259**
19.	Waing-maw	Waing-maw Township	1.280
20.	Bamaw	Bamaw Township	0.855
21.	PutaO	PutaO Township	0.124
	Sagaing Region		**4.850**
22.	Shwe Bo	Shwe Bo Township	1.350
23.	Yay Oo	Yay Oo Township	2.570
24.	Htee chaint	Htee chaint Township	0.930
	Mon State		**1.613**
25.	Thahtone	Thahtone Township	1.613
	Shan State		**2.403**
26.	Nyaung Shwe	Nyaung Shwe Township	2.403
	Kayin State		**0.905**
27.	Pha aan	Pha aan Township	0.905

Table.26. FISH HATCHERIES UNDER DOF (2021 Oct to March)

Unit - Million

No.	Fish Hatcheries	Location	Production
	Yangon Region		**10.200**
1.	Hlaw Kar	Mingalardone Township	4.200
2.	Twante	Twante Township	2.800
3.	Laydaukkan	Dagon(east) Township	3.200
	Bago Region		**6.030**
4.	Bago (Kali)	Bago Township	2.415
5.	Thanappin	Thanappin Township	2.475
6.	Oakpho	Oakpho Township	1.140
	Mandalay Region		**8.476**
7.	Pathein Gyi	Pathein Gyi Township	2.320
8.	Myit Thar	Myit Thar Township	2.300
9.	Natyekan	A-ma-ya-pu-ya Township	2.500
10.	Matayar	Ma-ta-yar Township	1.356
	Nay Pyi Taw		**1.425**
11.	Pyinmanar	Pyin-ma-nar Township	1.425
	Ayeyarwady Region		**8.365**
12.	Pathein	Pathein Township	1.125
13.	Talotehla	Ma-u-bin Township	2.400
14.	Hinthada	Hin-tha-da Township	2.100
15.	Pantanaw	Pan-ta-naw Township	0.540
16.	Aung hate	Ma-u-bin Township	2.200
	Magway Region		**1.000**
17.	Taungdwingyi	Taungdwingyi Township	0.350
18.	Pwint Phyu	Pwint Phyu Township	0.650
	Kachin State		**0.750**
19.	Waing-maw	Waing-maw Township	0.400
20.	Bamaw	Bamaw Township	0.350
21.	PutaO	PutaO Township	-
	Sagaing Region		**1.610**
22.	Shwe Bo	Shwe Bo Township	0.905
23.	Yay Oo	Yay Oo Township	0.495
24.	Htee chaint	Htee chaint Township	0.210
	Mon State		**0.900**
25.	Thahtone	Thahtone Township	0.900
	Shan State		**0.350**
26.	Nyaung Shwe	Nyaung Shwe Township	0.350
	Kayin State		**0.320**
27.	Pha aan	Pha aan Township	0.320

Table.27. SHRIMP/PRAWN HATCHERIES UNDER DOF

Unit - Million

No.	Shrimp/Prawn Hatcheries Shrimp (Penaeus monodon)	Location	2019-2020	2020-2021	2021 (Oct to March)
	Yangon		**1.14**	**0.06**	**-**
1.	Kyauk-tan(Freshwater)	Kyauk tan Township	1.14	0.06	-
	Thaninthayi		**1.70**	**1.20**	**-**
2.	Wa-maw (Long-lone)	Long lon Township	1.70	1.20	-
	Rakhine		**4.50**	**11.53**	**6.080**
3.	Kyauk-phyu	Kyauk phyu Township	2.00	3.500	2.500
4.	Ye-chan-pyin		1.00	1.000	2.360
5.	Soe-me-kyi		1.50	0.100	1.220

Table.28. FISH SUPPLY IN YANGON

Unit - Thousand Metric Ton

No.	Year	Fish Supply		
		Fresh Water	Marine	Total
1.	2012-2013	94.68	167.01	261.69
2.	2013-2014	135.04	166.42	301.46
3.	2014-2015	142.45	152.95	295.40
4.	2015-2016	127.56	159.46	287.02
5.	2016-2017	124.65	170.58	295.23
6.	2017-2018	114.45	153.44	267.89
7.	2018 (A to Sep)	50.67	49.01	99.68
8.	2018-2019	118.40	137.01	255.41
9.	2019-2020	104.82	143.70	248.51
10.	2020-2021	183.81	120.86	304.67
11.	2021 Oct to 2022March	115.02	72.61	187.63

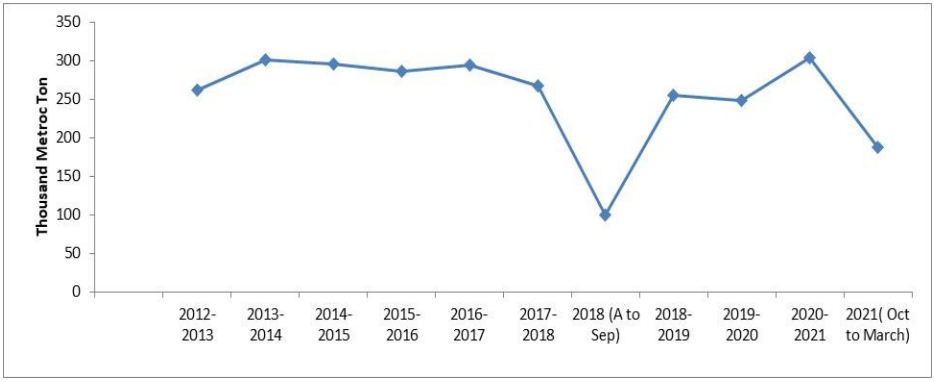


Fig 5: Fish Supply in Yangon

Table.29. ICE PLANTS

NO.	REGION AND STATE	NUMBER OF PLANTS	CAPACITY OF ICE PLANT (METRIC TON PER DAY)
1.	YANGON	106	2364.06
2.	TANINTHAYI	48	2535.60
3.	RAKHINE	39	456.00
4.	AYEYARWADY	70	869.00
5.	MON	29	528.00
6.	MANDALAY	7	30.00
7.	SHAN	2	3.20
	TOTAL	301	6785.86