



**SEAFDEC DEPARTMENTAL PROGRAMS OF ACTIVITY FOR THE YEAR 2019-2020:
INLAND FISHERY RESOURCES DEVELOPMENT AND MANAGEMENT DEPARTMENT**

Programs/Projects	Responsible Department
Project Activities Implemented in the year 2019	
1. Stock Assessment in Inland Fisheries	IFRDMD
2. Development of Capacity Building Plan to support Management of Inland Aquatic Resources, Development of EAFM/EAA Training Modules and Conducting Training of Trainers on EAFM/EAA	IFRDMD
3. Improve livelihoods from Responsible Fisheries and Capacity for Conservation, by Preserving Clown Knife Fish Habitats and Protecting their Occurrence	IFRDMD
4. Modernizing irrigated agriculture to protect and restore aquatic biodiversity and ecosystem services in South-East Asia	IFRDMD
Proposed Project Activities for the Year 2020	
1. Stock Assessment in Inland Fisheries	IFRDMD
2. Improve livelihoods from Responsible Fisheries and Capacity for Conservation, by Preserving Clown Knife Fish Habitats and Protecting their Occurrence	IFRDMD
3. Modernizing irrigated agriculture to protect and restore aquatic biodiversity and ecosystem services in South-East Asia	IFRDMD

**Overall Review
of the Departmental Program Implementation in the Year 2019**

**INLAND FISHERY RESOURCES DEVELOPMENT AND MANAGEMENT DEPARTMENT
(IFRDMD)**

1. Fish Stock Assessment and Production Potential of Inland Fisheries

Inland waters in Indonesia have enormous potential if viewed from the aspect of area and biodiversity, especially fish. If viewed from the aspect of area with the total catch, it is still underestimated, in other words, lack of statistical data. So, it is necessary to conduct stock studies using analytical methods (more detailed and more reliable data) and holistic methods (simpler data). Simple holistic methods do not use age or long structures and regard stock as a homogeneous biomass. The two types of simple methods are the 'swept area' method which is based on "catch per unit area" to estimate biomass and MSY. The "surplus production model" method uses catch per unit effort. Important information that can be used as a basis for rational management of fish resources, among others, is the knowledge of the magnitude of resources, distribution, and behavior according to place and time (spatial and temporal). Some important aspects of population dynamics include population/community structure, size composition (length, weight), growth rate, and mortality rate. The research activity used to issue overall stock figures from each province in Indonesia are something that is very important for the development of Indonesian public water fisheries. The results of the data and information can be references in the development and contribution of information regarding the potential and production of mainland public waters to national fisheries.

To find value of and fish production potential, maximum sustainable yield and total catch on inland fisheries are determined by these methods:

1. Measurement of the stocks uses bio sonic methods and swept area methods (Peterson methods). Measurement of the value of stocks in river, reservoir and lakes uses bio sonic method, and the flood plain area measurement uses swept area methods (mark-recapture methods).
2. Measurement of the fish potential production in lake, reservoir and flood plain uses chlorophyll-a methods meanwhile river area measurement uses Leger Huet's methods
3. Measurement of the maximum sustainable yield (MSY) on multi species uses surplus production, and the dominant species measurement uses analytical methods.

Measurement of the total catch determined by using Enumerator and direct interview with the fisherman. Every enumerator recorded six forms that must be filled in (length frequency form, biology form, total catch form, validation form, fishing gear form and daily catch form)

2. Development of Capacity Building Plan to support Management of Inland Aquatic Resources, Development of EAFM/EAA Training Modules and Conducting Training of Trainers on EAFM/EAA

This project start from 2019 to prepare development and/or improvement of Capacity Building Plan to support Management of Inland Aquatic Resources, Development of EAFM/EAA Training Modules, and Conducting Training of Trainers on EAFM/EAA at 5 location (Cilacap District, Sukabumi distric, Kampar distric, Kapuas distric and South Barito distric) IFISH Project. The Service provider will produce, achieve or deliver the following as output:

- a. Assessment report on capacity building needs for different target stakeholders at different levels to fully achieve the project objectives;

- b. Capacity building plan for sustainable management of inland aquatic resources, focusing on mainstreaming biodiversity, developed at national and district levels based on the need assessment; and
- c. Mechanisms for implementation of capacity building plan at both national and local government levels identified.
- d. EAFM/EAA training modules developed considering the most recent insights, current best practices and tailored to the intended target audiences to optimize uptake of fisheries management practices based on EAFM/EAA principles.
- e. Training capacity for conducting EAFM/EAA training for local level stakeholders developed at national and provincial levels.

3. Improve livelihoods from Responsible Fisheries and Capacity for Conservation, by Preserving Clown Knife Fish Habitats and Protecting their Occurrence

The project on "Mainstreaming Biodiversity Conservation and Sustainable Use into Inland Fisheries Practices in Freshwater Ecosystems of High Conservation Value" (GCP/INS/303/GFF-IFish) The project intends to combine mainstreaming of inland aquatic biodiversity into resource development and management policy, with demonstrations of conservation and sustainable use of inland aquatic biodiversity in critical habitats at four sites in Kalimantan, Java and Sumatra, and effective monitoring and assessment Clown knife fish (*Chitala lopis*) is one of the economically important fish in Indonesia. The Indonesian government has recognized the importance of the threats to clown knife fish by enacting regulation to protect clown knife fish populations and those of other *Chitala* species through a Ministerial Decree. Beside fisheries regulation, for sustainable utilization of the clown knife fish resources, management measures such as habitat rehabilitation and conservation, restocking and aquaculture development should be carried out. Successful experimental Clown knife fish breeding has been developed by several groups, including by the Freshwater Aquaculture Institute Mandiangin in South Kalimantan, but have so far not been implemented at commercial scale nor have they been successfully done with *Chitala* species found in Kampar. In close coordination with the project team, the Service Provider (SP) will implement activities in Kampar District, Riau Province, to demonstrate Clown knife fish breeding, operation of hatchery and nursery facilities for that there are output these project:

- 1. Clown Knife culture management plan, with practical approaches for implementing more sustainable and ecological aware (from environmental pollution)
- 2. Produce clown knife fish fry from hatchery for restocking in the lake/ Lubuk Larangan and for grow out in the net cages cultured by fish farmers in Koto Panjang reservoir (minimum 20,000 fry)
- 3. 1,000 persons (fish farmers, fishers, communities which is 30% women) trained, disseminate and extension on good aquaculture practices and EAFM/EAA

4. Modernizing irrigated agriculture to protect and restore aquatic biodiversity and ecosystem services in South-East Asia

The project will develop the tools, guidelines and in-country capacities required to more systematically include biodiversity and ecosystem service considerations in irrigation rehabilitation, extension and modernization programs. Irrigation investment programs, collectively worth billions of dollars in the region, coupled with increased awareness of the benefits of multi-functional ecosystems, provide the opportunity to apply considerable Australian expertise and technology to aquatic ecosystem management in the Southeast Asian region. The activity will be access and collation of existing expertise in Australia and across the South East Asian region, translated into detailed and context-specific technical guidelines and training materials. Extensive stakeholder consultation and buy-in, targeting champions and practitioners in Indonesia and Myanmar Capacity development and training program targeting local champions and decision-makers and utilizing approaches and techniques derived from the latest innovations in adult education and ICTs to achieve sustained

behavior change. Aligning with existing on-ground initiatives (funded by CSU and ACIAR) in Myanmar seeking to improve fisheries productivity at irrigation infrastructure using engineering solutions. Technological options need to be accompanied by the improvement of policy, regulation and management arrangements to enable integration of aquatic biodiversity, fisheries and ecosystem services in irrigated areas (which at present are typically managed separately). Capitalizing on this opportunity is essential if we are to maximize future productivity while also preventing further ecosystem decline, biodiversity loss and loss of freshwater fisheries. Finally, the project aim to:

- a. Developing materials for technical and policy guidance, and resource mobilization
- b. Stakeholder consultation and buy-in and Dissemination
- c. Improve capacity development at national and regional levels.

**SEAFDEC Departmental Programs of Activity
for the Year 2019-2020**

Inland Fishery Resources Development and Management Department (IFRDMD)

1. Overall Review

1. Fish Stock Assessment and Production Potential of Inland Fisheries

This project will be continue for data validation with minimum standard and it's necessary to conduct stock studies using analytical methods (more detailed and more reliable data) and holistic methods (simpler data). Simple holistic methods do not use age or long structures and regard stock as a homogeneous biomass. The two types of simple methods are the 'swept area' method which is based on "catch per unit area" to estimate biomass and MSY. The "surplus production model" method uses catch per unit effort. Important information that can be used as a basis for rational management of fish resources, among others, is the knowledge of the magnitude of resources, distribution, and behavior according to place and time (spatial and temporal). Some important aspects of population dynamics include population/community structure, size composition (length, weight), growth rate, and mortality rate. The research activity used to issue overall stock figures from each province in Indonesia are something that is very important for the development of Indonesian public water fisheries. The results of the data and information can be references in the development and contribution of information regarding the potential and production of mainland public waters to national fisheries.

To find value of and fish production potential, maximum sustainable yield and total catch on inland fisheries are determined by these methods:

1. Measurement of the stocks uses bio sonic methods and swept area methods (Peterson methods). Measurement of the value of stocks in river, reservoir and lakes uses bio sonic method, and the flood plain area measurement uses swept area methods (mark-recapture methods).
2. Measurement of the fish potential production in lake, reservoir and flood plain uses chlorophyll-a methods meanwhile river area measurement uses Leger Huet's methods
3. Measurement of the maximum sustainable yield (MSY) on multi species uses surplus production, and the dominant species measurement uses analytical methods.

Measurement of the total catch determined by using Enumerator and direct interview with the fisherman. Every enumerator recorded six forms that must be filled in (length frequency form, biology form, total catch form, validation form, fishing gear form and daily catch form)

2. Improve livelihoods from Responsible Fisheries and Capacity for Conservation, by Preserving Clown Knife Fish Habitats and Protecting their Occurrence

The project start from 2019 into 2020 and it's intends to combine mainstreaming of inland aquatic biodiversity into resource development and management policy, with demonstrations of conservation and sustainable use of inland aquatic biodiversity in critical habitats at four sites in Kalimantan, Java and Sumatra, and effective monitoring and assessment Clown knife fish (*Chitala lopis*) is one of the economically important fish in Indonesia. The Indonesian government has recognized the importance of the threats to clown knife fish by enacting regulation to protect clown knife fish populations and those of other *Chitala* species through a Ministerial Decree. Beside fisheries regulation, for sustainable utilization of the clown knife fish resources, management measures such as habitat rehabilitation and conservation, restocking and aquaculture development should be carried out. Successful experimental Clown knife fish breeding has been developed by several groups, including by the Freshwater Aquaculture Institute Mandiangin in South Kalimantan, but have so far not been implemented at commercial scale nor have they been successfully done with *Chitala* species found in Kampar. In close coordination with the project

team, the Service Provider (SP) will implement activities in Kampar District, Riau Province, to demonstrate Clown knife fish breeding, operation of hatchery and nursery facilities for that there are output these project:

1. Clown Knife culture management plan, with practical approaches for implementing more sustainable and ecological aware (from environmental pollution)
2. Produce clown knife fish fry from hatchery for restocking in the lake/ Lubuk Larangan and for grow out in the net cages cultured by fish farmers in Koto Panjang reservoir (minimum 20,000 fry)
3. 1,000 persons (fish farmers, fishers, communities which is 30% women) trained, disseminate and extension on good aquaculture practices and EAFM/EAA

3. Modernizing irrigated agriculture to protect and restore aquatic biodiversity and ecosystem services in South-East Asia

The project will develop the tools, guidelines and in-country capacities required to more systematically include biodiversity and ecosystem service considerations in irrigation rehabilitation, extension and modernization programs. Irrigation infrastructure (water storage, delivery and drainage systems) was designed with the sole purpose of achieving efficient water delivery for agricultural crops such as rice. This had wide ranging, and often negative, impacts on water resources and the aquatic ecosystems and fisheries that are dependent upon them. To avoid and reduce such negative impacts in new or rehabilitated irrigation schemes, irrigation managers need to find technological options (incorporating new design features, changing design) and policy solutions (*e.g.* by introducing new environmental policies, legislation and best-practice guidelines).

Technological options need to be accompanied by the improvement of policy, regulation and management arrangements to enable integration of aquatic biodiversity, fisheries and ecosystem services in irrigated areas (which at present are typically managed separately). Capitalizing on this opportunity is essential if we are to maximize future productivity while also preventing further ecosystem decline, biodiversity loss and loss of freshwater fisheries. Finally, the project aim to:

- a. Developing materials for technical and policy guidance, and resource mobilization
- b. Stakeholder consultation and buy-in and Dissemination
- c. Improve capacity development at national and regional levels.

2. List of Projects

1. Stock Assessment in Inland Fisheries
2. Improve livelihoods from Responsible Fisheries and Capacity for Conservation, by Preserving Clown Knife Fish Habitats and Protecting their Occurrence
3. Modernizing irrigated agriculture to protect and restore aquatic biodiversity and ecosystem services in South-East Asia.