# SPEECTRA
## (Special Area for Conservation and Fish Refugia)
## FOR SWAMP FISHERIES PATRA TANI

SEAFDEC/IFRDMD - BRPPUPP/KKP
Jl. Gub. H.A Bastari No.8, Jakabaring, Palembang 30252
South Sumatera - Indonesia
www.seafdec.id

# *DEVELOPMENT NEW MODEL OF CONSERVATION AREA*

**SPEECTRA (Special Area for Conservation and Fish Refugia)** is the artificial conservation area that can hold the fish from the river inside the system or introduce the broodstock. Still, they can not go out or back to the river cause the mouth of the system has been closed.

The System should be connected to the river or other natural water bodies by canal etc.

For IFRDMD, Speectra is one concept of conservation that can be implemented in critical areas, especially for the floodplain.

# DEVELOPMENT OF CONSERVATION AREA

**SPEECTRA**

*Special Area for Conservation and Fish Refugia*

Main purpose of SPEECTRA development:

1. Artificial conservation or protection area for native species
2. Source of genetic biology bank for fresh water fish especially for blackfish group
3. Prevent the land fire that usually happed in marginal land
4. The study area for developing conservation zone in inland water

# *Demo Plots of SPEECTRA by IFRDMD support by MMAF of Indonesia*

## *Historical*

**Sub-Institute for Swamp Fisheries Patra Tani**

### 1985:

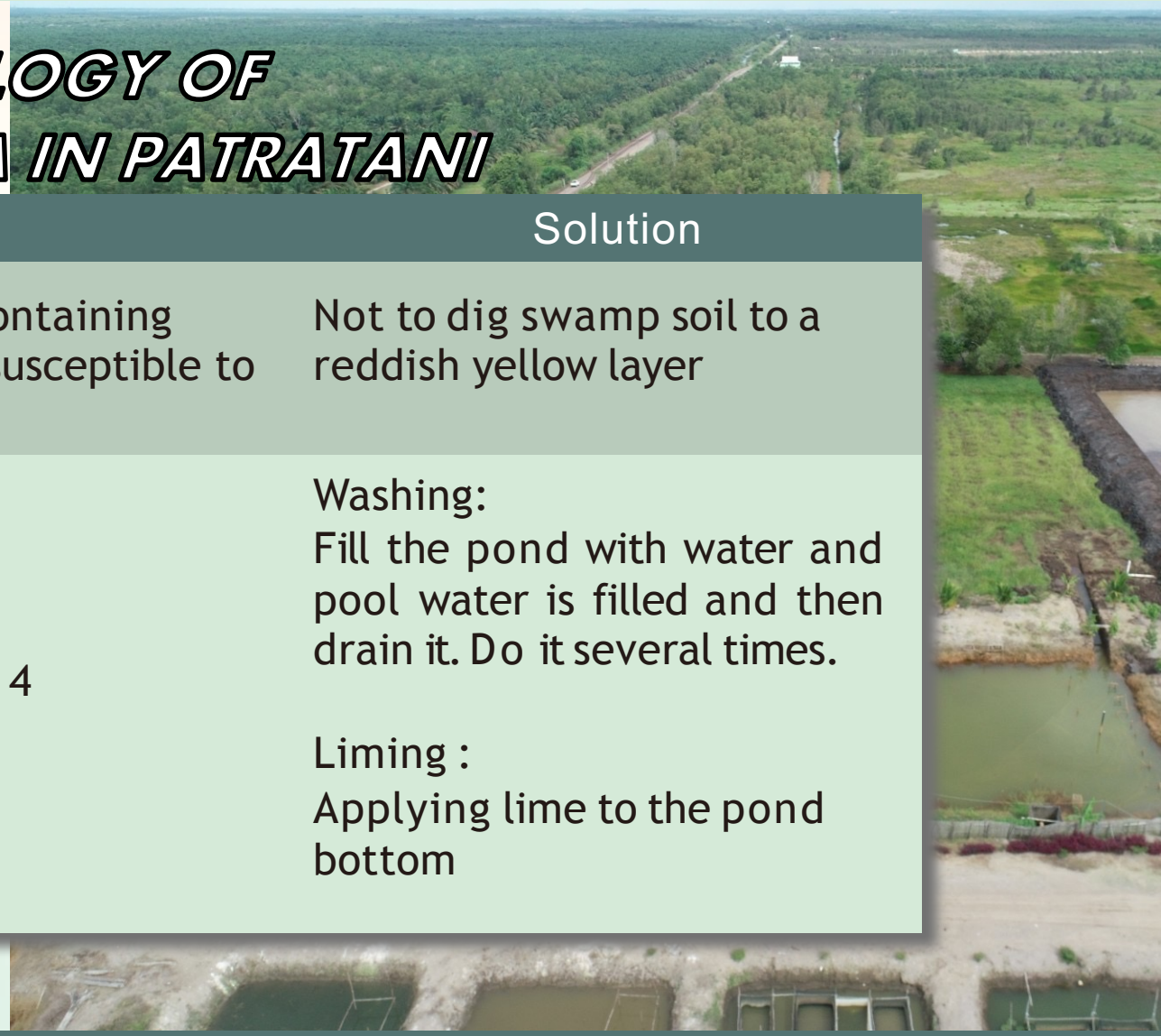
Land assets from PERTAMINA (*Big Petroleum Company in Indonesia*) were returned to the local government of Muara Enim regency, then granted for research on the SWAMP Project under the Sub-Institute of Research Institute for Inland Fisheries, Agency for Agricultural Research and Development, Department of Agriculture.

### 2019:

Research Institute for Inland Fisheries and Extension (RIIF) began pioneering a fisheries management model that aims to conserve and protect local fish in floodplain area, especially in South Sumatra.

# AREA THYPOLOGY OF SWAMP AREA IN PATRATANI

| Problem | Solution |
|---|---|
| Acid sulphate soils containing pyrite layers ($FeS_2$), susceptible to oxidation of oxygen | Not to dig swamp soil to a reddish yellow layer |
| Water with pH below 4 | Washing:<br>Fill the pond with water and pool water is filled and then drain it. Do it several times.<br><br>Liming :<br>Applying lime to the pond bottom |



# FISH SPECIES IN PATRA TANI

*Trichogaster pectoralis*

*Trichogaster trichopterus*

*Anabas testudineus*

*Clarias batrachus*

*Channa striata*

*Rasbora sp.*

*Chitala lopis*

*Channa micropeltes*

*Hemibagrus nemurus*

*Pristolepis grootii*

*Mystus spp.*

*Belontia hasselti*

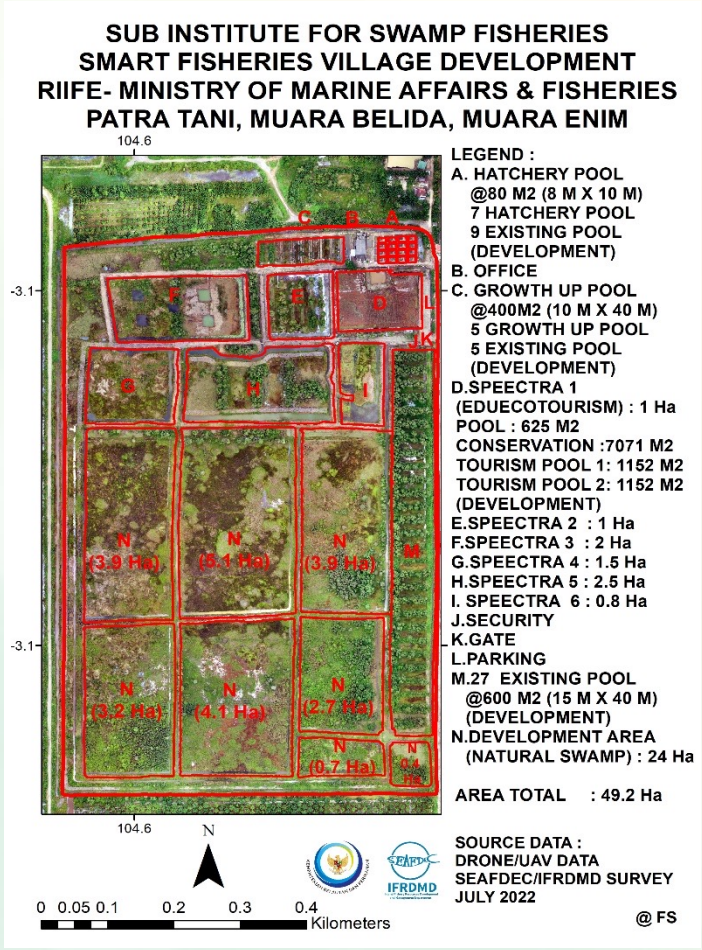
*Channa pleurophthalma*

*Puntius sp.*

*Helostoma temminckii*

*Notopterus notopterus*

# DEVELOPMENT PLAN OF SUB-INSTITUTE FOR SWAMP FISHERIES PATRA TANI

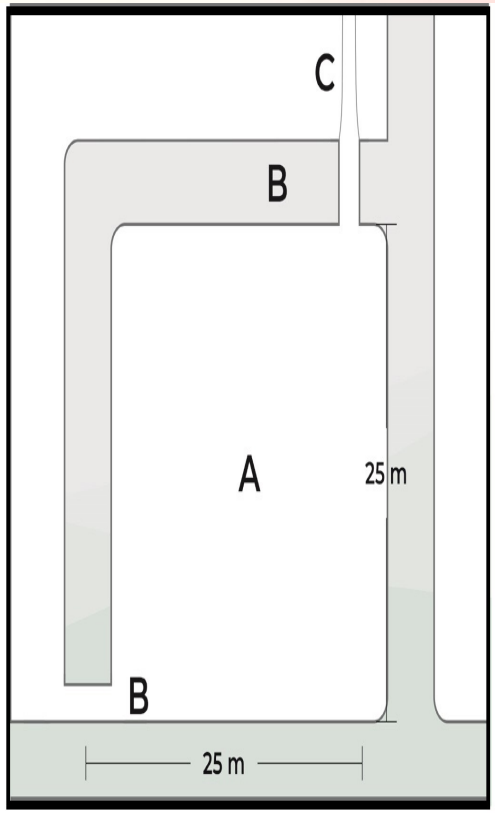



Refugee Area /
Broodstock Area
Local Fish

30 Ha

# FIVE DELOPMENT MODELS OF SPEECTRA

## SPEECTRA MODEL I




Model 1 uses a soil barrier to control the population movement. It was dug around 4 meters deep. The deep of the pool or pond to avoid the water drying. The fish will be trapped and grow in the system. It is expected to become a place of floodplain fish to live and breed.

A : Speectra I pond

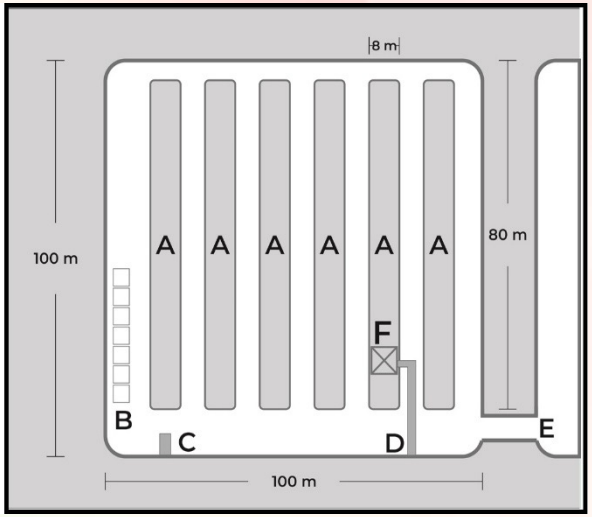
B : Outet

C : Caren

Fish:

*Helostoma temminckii, Anabas testudineus, Belontina hasselti, Trichogaster tricopterus, Channa striata ect*

# SPEECTRA MODEL II

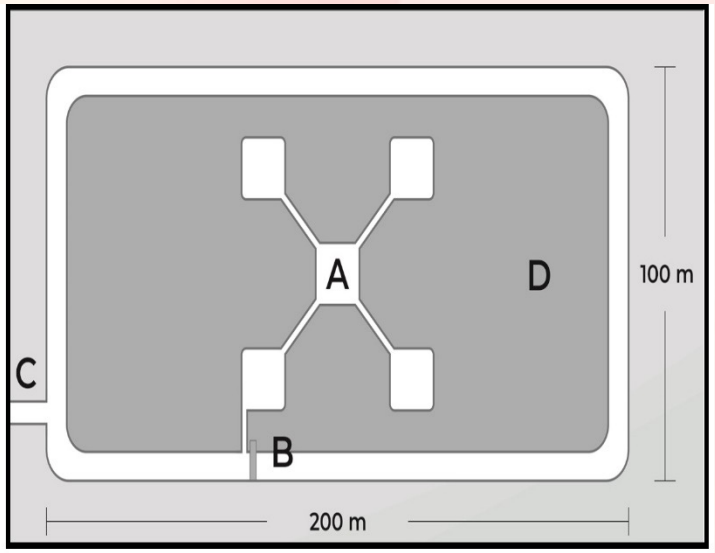



Description:
A: Green Area
B: Cage
C: Dock
D: Bridge
E: Inlet
F: Gazebo

Model 2 is pond of a fisheries conservation which was previously a fish farming system combined with agriculture, which is then used as a fish sanctuary model. Size about 1 hectare and approximately 4 m depth. Mutualism symbiosis between farming and fish can be implemented well.

Species:
*Trichogaster pectoralis, Helostoma temminckii, Puntius lineatus, Belontina hasselti, Channa striata, Anabas testudineus*

# SPEECTRA MODEL III




Description:
A: Pond
B: Bridge
C: Inlet
D: Green Area

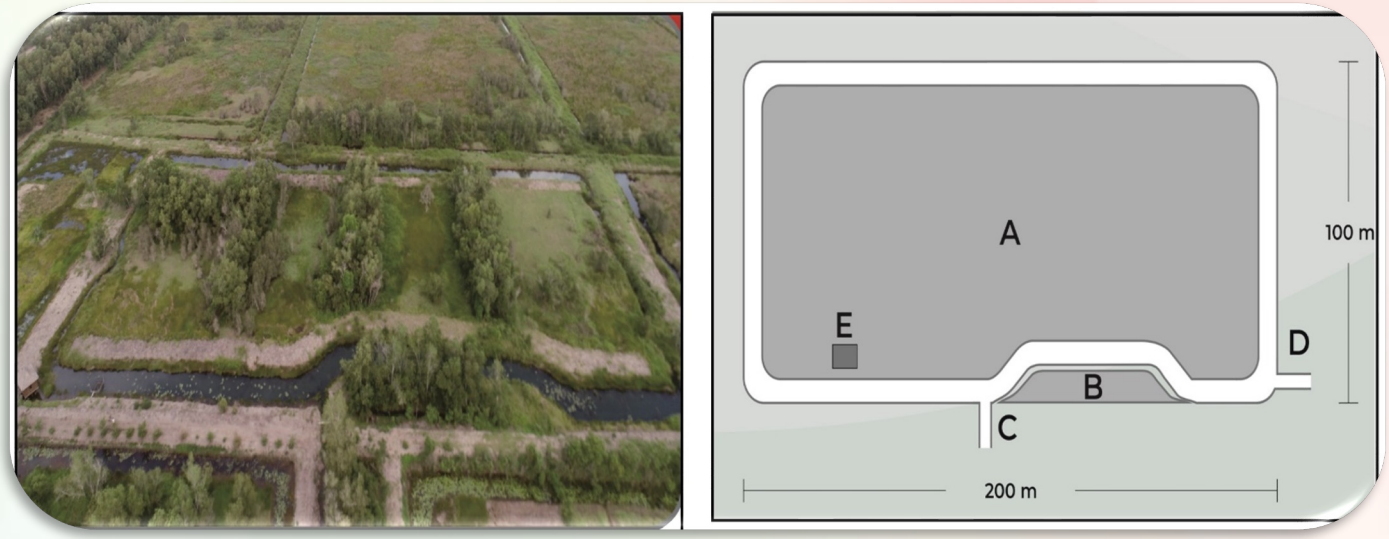
Model 3 is the pool with added connectivity pools in the center of the system. They are 4 plots connected to a circular pond with the size of 400 m2 and 4 m depth.

Total size is about 20,000 m2.

The connected ponds is important for shelter, and protected area for jouvenile

Species:
*Helostoma temminckii, Scleropages formus, Trichogaster tricopterus, Puntius lineatus, Channa striata, and Rasbora sp*

# SPEECTRA MODEL IV

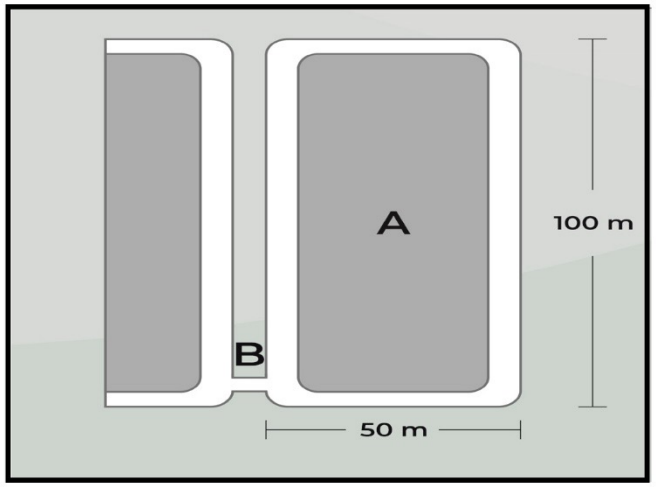



Description:
A: Green Area
B: Green Area
C: Waterways 1
D: Waterways 2
E: Net Cage

Model 4 is takes the concept of agroforestry which combine the forestry and fishery around the system. The nutrient can be produced by the tree and come to the water body. The nutrient can enrich the water for phytoplankton growth.

Species:
*Rasbora trilineata, Channa striata, Anabas testudineus, Helostoma temminckii, Belontina hasselti, Puntius lineatus, ad Scleropages sp.*

# SEECTRA MODEL V

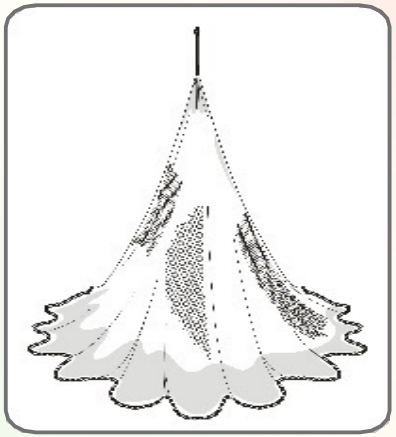



Description:
A: Green Area
B: Waterways

Model 5 is combination by water body with trees, and grasses. All of vegetation is the native species in swamp area. Model 5 has 5,000 m2 wide, and green area concept at the middle. This model has connecting canal direct to the large canal outside of the Speectra area.

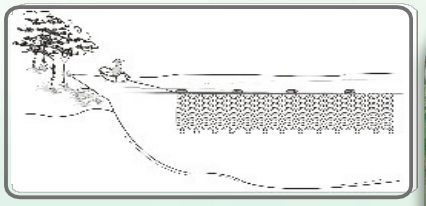
Species:
*Helostoma temminckii, Rasbora sp, Channa striata, Puntius lineatus, Belontina hasselti, and Trichogaster tricopterus*

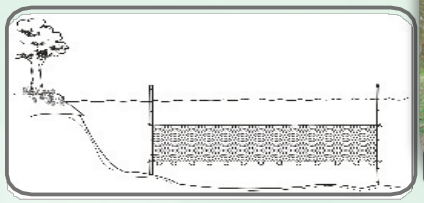
# TYPES OF FISHING GEARS IN SPEECTRA PATRATANI

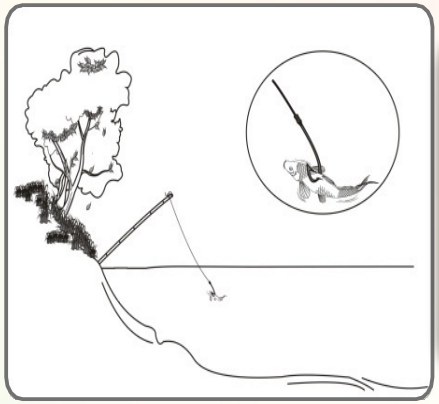
JALA/ CASTNETS

*SENGKIRAI/ TRAP*






GILLNET



*HOOK AND LINE*

# THE STUDY OF SEAFDEC/IFRDMD

The study by IFRDMD in the SPEECTRA system purposed to evaluate the artificial habitat change to support the carrying capacity of the fish population inside the system.

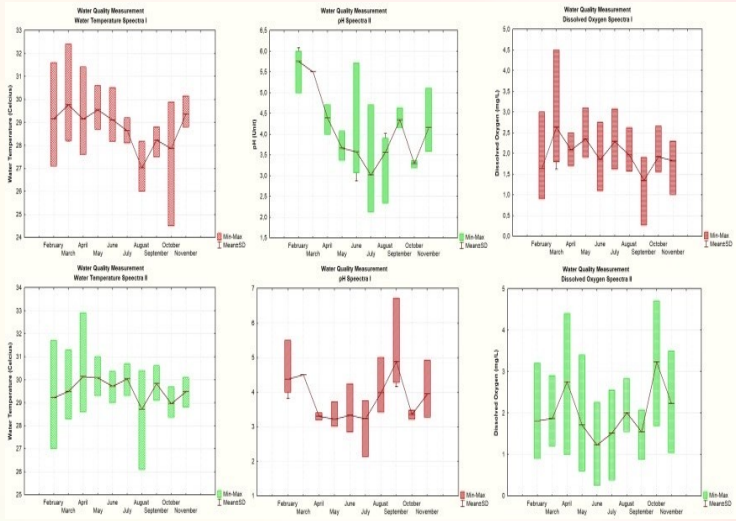
The activities are divided by:

1. Water quality monitoring, for measuring and observing the water condition inside the SPEECTRA to understand the fluctuations of water parameters which important for the population inside the system
2. Biological fish monitoring, for measuring the growth and adaptation of each population to the new system
3. Diversity and distribution of broodstock and juvenile, to observe the juvenile that passes the barrier and survive to grow outside SPEECTRA system.

# THE STUDY OF SEAFDEC/IFRDMD

1. Water Quality monitoring
   It is become important to monitor and understand the impact of the new artificial pond to the water condition and population inside the system.

   As the marginal/ peat land area, the water will be affected to the change of soil activity.
   The parameters that observed is Dissolved Oxygen, pH, Temperature, Water Depth, and nutrient parameters.

# THE STUDY OF SEAFDEC/IFRDMD

2. Biological fish monitoring

We measure the length, weight, sex composition, and gonad to ensure fish in the system grow well and adapt the system environment condition.

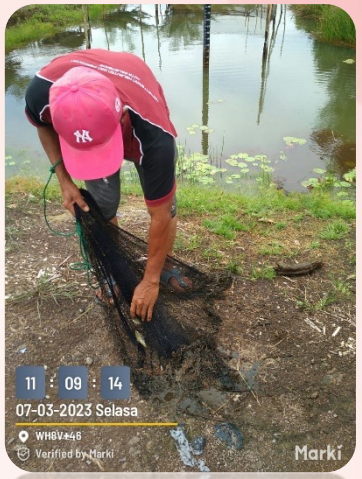
The growth of fish bodies was related to the environment to provide carrying capacity for survival.

# THE STUDY OF SEAFDEC/IFRDMD

3. Diversity and distribution of broodstock and juvenile

We observe the change of composition of fish inside the system. The broodstock that releases or introduce to the system should be growing and bred well inside.

The observation through the experiment fishing, and catching the juvenile in the mouth of Speectra canal.


# SWAMP AREA MANAGEMENT MODEL



## Aquaculture

*Local fish aquaculture activities in the swamp area*

## Edu-Tourism Development

*As a place for training activities and community outreach, field laboratories, student practice areas, unique objects of tourist destination, namely the swamp fisheries ecosystem.*

## Training and Lecture

Aquaculture and Postharvest Process

# LOCAL FISH CULTURE

- Seeds are obtained from swamp area. Raised in a pond.
- As adults, these fish are used as broodstock to produce seeds.
- Seeding is conducted in a controlled manner.
- The results of the hatchery are partly for restocking and partly

  used for fish culture

# CLOSING

- Management of fisheries in swamps based on the conservation of fishery resources requires commitment from all parties.
- Efforts to conserve local fish fisheries resources are a necessity for community as a way to prevent further degradation to fisheries ecosystems and restore fisheries habitats.
- Local communities are the main actors that determine the successful management of wetland ecosystem areas.




SEAFDEC / IFRDMD & BRPPUPP - KKP