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Review

Research activities and accomplishments of the SEAFDEC inland fisheries

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Introduction

Inland fishery is one of the important components of the economies in the Southeast Asian region and its contributions in rural communities are particularly important in poverty alleviation, creating employment, food security, livelihoods, nutritional and societal well-being [1]. Considering the importance of inland fisheries, the SEAFDEC (consists of 10 ASEAN member states (AMS) and Japan) established a regional center for inland fisheries.

IFRDMD was established to serve as a centre for providing guidelines for the proper development and management of inland fishery resources of AMS, which could consist of freshwater, saline water and mixture of both, and distributed throughout the land such as rivers, lakes, floodplains, reservoirs, wetlands, estuaries, and inland saline systems. The role of the department includes contributing to sustainable management of important commercial species under international concerns within Southeast Asian region. The SEAFDEC/IFRDMD collaborated closely with the Indonesian research institute for inland fisheries (RIFF). The institute provides financial support for management and operations department, supplying human resources, access to a variety of multidisciplinary laboratory facilities and earmarking of corresponding research.

Under the support of the Japanese Government through the trust fund (JTF) thrust 1, developing and promoting responsible fisheries for poverty alleviation and food security, IFRDMD carries out research program on promotion of responsible utilization of inland fisheries in Southeast Asia for improved management of inland fisheries in the region. IFRDMD emphasized the need to undertake two areas of activities, which are improvement of data collection, and enhancement of governance through the application of ecosystem approach to fisheries and co-management.

Funded also by JTF thrust 4, providing policy and advisory services for planning and executing management of fisheries, IFRDMD performed research project on Enhancement of Sustainability of Catadromous Eel Resources in Southeast Asia with a view of enhancing the sustainability of catadromous eel resources in Southeast Asia. Due to the fast decline in their number, temperate anguillid eels such as Japanese eel (*A. japonica*), American eel (*A. rostrata*) have been listed as endangered, and European eel (*A. anguilla*) has been classified into "Critically Endangered [2-4]. To compensate the shortage of supply from these temperate eels, tropical eels represented by Shortfin eel (*A. bicolor*) become getting attention of East Asian eel market in recent years [5]. However, there are only limited data on the status of tropical anguillid eel resources [6]. It is needed that tropical anguillid eel resources should be properly conserved and managed to prevent the overexploitation and listing on CITES appendices in consequence.

Materials and methods

Implementing research activities on reviewing the activities and methodologies on inland fisheries, studies were performed at two viable approaches, field surveys in Indonesia, Lao PDR, Myanmar and Cambodia and hold the international workshop to review activities and methodologies for promotion on inland fishery. Investigations for research project on Enhancement of Sustainability of Catadromous Eel Resources were conducted at Indonesia (Pelabuhan Ratu and Bengkulu), Vietnam and Philippines. Simultaneously, we convened a workshop on Enhancement of Sustainability of Catadromous Eel Resources in South East Asia. Hearing investigations were established with the officers of the local governments, the fishermen and merchants/middle man to search official statistics of data on inland capture fisheries, unique characteristics and activities, catch and shipment on eels and understand the commodity chain of eel seeds.

Results

The results of promotion inland fisheries surveys showed that variety fishing activities are conducted on

the inland waters in Asean Member Countries, eg. the traditional pond trap called "Beje", Fig. 1 in Indonesia, development of ecotourism at specific ecosystem in Cambodia and sustainability of fisheries resources through fish passage design in Lao PDR. Myanmar introduced auction system for fisheries management. The reports and presentation on the workshop contained valuable information regarding present status and problems on inland fisheries in this region.

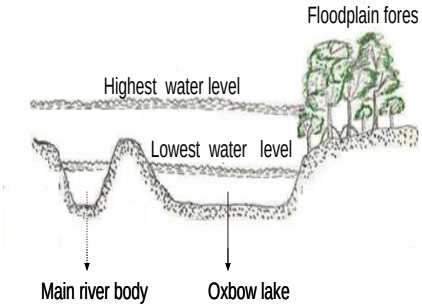

Fig. 1. This scheme shows the beje system in peatlands of Indonesia on cross section view [7].

Two different patterns of the commodity chains of eel seeds from both Sukabumi Regency and Bengkulu Province to the eel farms in Java Island were clarified. Although these official statistics seemed to be useful for the investigation of eel catch and seasonal migration of eels, these statistics were often fragmented and had any possibilities of containing errors. On the other hand, interviewing with the eel fishermen, eel collectors and eel farmers brought us the alternative data regarding eel fishery. The eel fishery for collecting seeds for eel farming has been existed in Viet Nam, with scoop net and brush bundle trap as the major fishing methods for collecting glass eel. Almost all individual of anguillid eels are *Anguilla marmorata*, *A. bicolour pacifica* also exists but the percentage is quite small.

Discussion

Fishery is not the only sector that has interest on the inland water ecosystems and there are many sub-sectors. However, fisheries are often considered marginal activities because the value of the resources is usually ill-defined and poorly represented from an economic and social perspective. Consequently, fisheries are given low priority in any consultation process [8]. We point out two important factors for better management of inland fisheries in the region, one is the improvement of data collection and another is enhancement of the governance through the application of ecosystem approach to fisheries, as well as co-management. This is a way to establish and strengthen the regional networking for improving the fisheries management and the conservation of fisheries resources/environment in inland waters of the region.

The limited data for sustainable usage will be regarded that the usage of tropical eels will not be appropriate from the perspective of sustainable use of eel resources, thus tropical eel species might be listed on CITES Appendix II or higher. If so, the international trade of tropical eels would also be restricted, same as temprate eel, then eel farmers in Indonesia and the other Southeastern Asia will lost the chance to export any eel products virtually. If Indonesia and the other Southeastern Asian countries desire to use tropical eel resources including international trade continuously, they have to express their principle and attitude for sustainable use on tropical eel resources, such as systems for observing the stock condition of tropical eel resources and effective measures for regulating the fishing activities appropriately. Considering these measures, catch statistics is the fundamental and indispensable information. National government of ASEAN Member countries should immediately develop the national statistics of eel fisheries which covers the major fishing grounds of eels and also establish the inventory system for the statistics on eel. It is the first step of eel resource management and the system for developing catch statistics that has used eel resources in Southeast Asia.

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References

1. World Bank (2012) Hidden Harvest: The Global Contribution of Capture Fisheries. Washington, DC. pp. 22–29. https://openknowledge.worldbank.org/handle/10986/11873
2. Jacoby D, Casselman J, DeLucia M, Hammerson GA, Gollock M (2014) *Anguilla rostrata*. The IUCN Red List of Threatened Species 2014: e.T191108A72965914. http://dx.doi.org/10.2305/IUCN.UK.2014-3.RLTS.T191108A72965914.en.
3. Jacoby D, Gollock M (2014) *Anguilla japonica*. The IUCN Red List of Threatened Species 2014: e.T166184A1117791. http://dx.doi.org/10.2305/IUCN.UK.2014-1.RLTS.T166184A1117791.en.
4. Jacoby D, Gollock M (2014) *Anguilla anguilla*. The IUCN Red List of Threatened Species 2014: e.T60344A45833138. http://dx.doi.org/10.2305/IUCN.UK.2014-1.RLTS.T60344A45833138.en.
5. Jacoby D, Harrison IJ, Gollock M (2014) *Anguilla bicolor*. The IUCN Red List of Threatened Species 2014: e.T166894A67015710. http://dx.doi.org/10.2305/IUCN.UK.2014-1.RLTS.T166894A67015710.en.
6. Honda S, Muthmainnah D, Suryati NK, Oktaviani D, Siriraksophon D, Amornpiyakrit T, Prisantoso BI (2016) Marine Research Indonesia 41: 1–14
7. Utomo A (2016) The function of floodplain fish reserve to fish production. The paper was presented in Inland Fisheries workshop, Palembang, pp. 20
8. Cowx I (2011) Guidelines for the Preparation of Fisheries Management Plans. Hull International Fisheries Institute University of Hull, UK, pp. 20–21