

PROVISIONAL PROSPECTUS

Experimental research and meeting workshop

On

Vertical slot fish passage design to facilitate migration of indigenous fish species in the
Southeast Asian Region

4-8 December 2017

1. BACKGROUND

Inland capture fisheries in the Southeast Asian region including Mekong River Basin deliver food security and income for rural households and also serve as a valuable source of protein and important micro-nutrients. However, inland fisheries are becoming increasingly threatened by riverine development projects. Construction of cross-river obstacles such as dams, weirs, roads, etc. as means for rapid development in response to increasing population and demand for agriculture products, hydropower generation or urbanization, are major threats to the long term sustainability of inland capture fisheries as any changes in migration, reproduction and biodiversity of aquatic populations has the potential to decrease capture fisheries productivity. Appropriate mitigation measures to alleviate possible impacts from such migration barrier are therefore necessary.

Fishways have been constructed worldwide and have proved to help mitigate many fisheries globally. Nevertheless, in order to assure the effectiveness of the fishways, it is important that fishway design criteria are established for local species and conditions of the specific region, and not adapted from studies conducted elsewhere.

SEAFDEC in collaboration with the Department of Fisheries of Thailand therefore implement the project on “Application of fish passage design principles to enhance sustainability of inland fishery resources in the Southeast Asian region” with funding support from the Australian Centre for International Agricultural Research (ACIAR). The project would be implemented starting from May 2015 to December 2017.

2. OBJECTIVES

The Experimental Research and Meeting Workshop on Vertical Slot Fish Passage Design to Facilitate Migration of Indigenous Fish Species in the Southeast Asian Region was undertaken with the aims to:

- 1) To study the appropriate slope design at 11 degree of vertical-slot fish passage that could facilitate swimming of indigenous fish species, with body thickness of 1.5 centimeters or less, across the passage;
- 2) To quantify the amount of water discharge (depth) through the passage that could enable migration of indigenous fish; and
- 3) To study on the discharge of water passing through the passage at different depths for identify the ability of indigenous fish species to swim upstream.

3. METHODOLOGY

This research simulates the condition of the vertical slot-type passage, which is equipped with dam/weir with 2.05-meter water head that creates obstacles for migration of indigenous fish from the lower to upper water bodies. The slope of the passage was set at 11 degree, with difference in water level between each pool (Δh) of 10 cm, and water was flows through at the velocity of 1.4 meters per second. The research will undertake for five (5) indigenous fish species, with the body thickness of 1.5 centimeters or less. Water level at the downstream pool (tail water) was maintained at 45-cm depth throughout the experiment; and for each experimental trial, fish were stock nearby entering channel of the downstream pool. Experimental trials will undertake using various discharge quantities, controlled by the height of water in the upstream pool at 15, 20, 25, 30, 35 and 40-cm depth (*i.e.* for 15-cm depth, the upstream level will be 2.20 meters). Data will collect on the species that can swim upstream through the passage, including the passing limit of each species.

4. EXPECTED OUTPUTS

It is expected that the Workshop would come up with:

- 1) Gather information on capability of fish migration biology at 11-degree design slope of the vertical fishway;
- 2) The appropriate discharge of water passing through the passage at proper depths to facilitate the migration of indigenous fish species to swim upstream.
- 3) Recommendations on way forward for further research and development for improving the migrate of fish across through the barrier in Thailand and Southeast Asian region

5. DATE AND VENUE

The research and Meeting Workshop will be organized on 4-8 December 2017 at the Experimental research model of SEAFDEC/TD

6. PAETICIPANTS

The Workshop would be attended by:

- 1) Concerned officers of the SEAFDEC Secretariat and TD.
- 2) Relevant officers and experts of the Department of Fisheries and the Royal Irrigation Department of Thailand; and
- 3) Invited experts

The indicative list of participants and experts appears as Annex 1.

6. PROGRAM

On 3 December 2017

- The indigenous fish species (sample of the experiments) will be arrived to SEAFDEC/TD. Providing by department fishery of Thailand with appropriate number for the research activities. The facilities e.g. pound, aerator/air pump, water supply and etc., for fish stocks will be provided at SEAFDEC/TD.

Experimental Session

4-6 December 2017

- Opening of the Workshop
SEAFDEC Secretary-General welcomes all experts to the Workshop and delivers his Opening Remarks.
- Introduction of the Experimental Research and Meeting Workshop.
Overviews of the Experimental Research and Meeting Workshop, The agenda and arrangements, as well as the expected results are also presented.
- Set up of the experimental method and facility at 11-degree slope design, and data record for the important parameter.
- Experimental and data collection of swimming capability of the indigenous fish species at different depth from 15, 20, 30, 40 and 45 centimeter depth. At day-night time migration.

Meeting workshop Session

7 December 2017

- Basic design of the vertical slots-type fishway
- Review of Related Works
- Discussion

8 December 2017

- Summary
- Closing

