



Lee Trap Fishery Monitoring in Southern Lao PDR Reveals Fishery Resources Degradation from 2008 to 2013

The *Lee Trap Fishery Monitoring Programme* is one of the four fisheries monitoring programmes having been implemented in Lao PDR at the Khone Falls (Khone District, Champasack Province) and been supported by the Mekong River Commission (MRC) since 2005. The purpose of this monitoring is to track the abundance and diversity of migratory white fish in the Lower Mekong River, and to provide valuable information on fisheries resources for fisheries management. The monitoring is undertaken every year by the Living Aquatic Resources Research Centre (LARReC) during the wet season from May to September at Hou Som Yai Channel in Southern Lao PDR at the Khone Falls.

The *Lee traps* or Bamboo—wing traps are one of the most popular fishing gears in Lao PDR, especially in the southern part, yet it has been recently banned since 2017 by a Lao fishery law. The trap is made by bamboo with eight to 10 meters long and around 1.5 meters wide. The trap is set in appropriate channels and placed in position to catch the nocturnal fish movement. Moreover, it places directly in the current with half of the bamboo in the water, and another half out of the water. This trap mainly catches fishes migrating upstream when they cannot pass through the strong current and flow down into the gear. The locations where this trap is set are always owned by certain fishers, and it is inherited from generation to generation. If one wants to use that location, he or she has to get permission from the owners through buying or renting.



Each year with financial support from the MRC, the LARReC selects about 20 fishers, who own the *Lee traps* at Hou Som Yai Channel, for data collection including gear information, number of individual fish caught and species, fish weight, and maximum length. Normally, the data are collected from about 20 *Lee traps* operated at Hou Som Yai Channel during each fishing season. Yet, the number of the *Lee traps* can be about 20 in certain years depending on fisher's ability to build it.

Due to insufficient budget, the *Lee trap Fishery Monitoring* was not implemented during 2014-2016, and in 2017 it was banned by the Lao fishery law. Hence, data of the *Lee trap Fishery Monitoring* are available for analysis only from 2008 to 2013.

The *Lee trap Fishery Monitoring* recorded about 89 fish species from 2008 to 2013 (Figure 1). Between this period, it was found that about 72 species under 17 families were caught in 2010, higher than the other years. This corresponds well to the increase in the total fishing effort (i.e. number of active *Lee traps* daily operated at the Channel) (Figure 1).

Out of 17, two families from (i) Pangasiidae (*Pangasius conchophilus*, *P. larnaudiei*, *P. pleurotaenia*, and *P. siamensis*) and (ii) Cyprinidae (*Henicorhynchus lobatus* and *Cirrhinus molitorella*) contributed the most to species abundance collected by the *Lee* traps.

In the same period, the total catch in figure 2 and 3 had a downward trend from 2008 to 2011. It is apparent that the catch of the first three years was higher than that of the last three years. Also, it is noticed that the peak catch was around June and July in each year while the minimum catch was in September because it is close to the end of the fishing season and some traps may be submerged or destroyed by rising flood waters. Although this fishery corresponds well to the wet season, Figure 2 and 3 indicated that the catch might not be correlated with the water level since the trend of the catch went down while that of water level slightly increased.

Like total catch, it was observed that the Catch Per Unit Effort (CPUE) or the catch rate sharply decreased from 4.3 to 2.2 kg per *Lee* trap per day between 2008 and 2013 (Figure 4). Obviously, the fishery resources were relatively good in 2008, yet this condition turned to be poor as the fishers could not catch fish as much as they used to.

Based on the above-mentioned results, it may be concluded that the fishery resources in southern Lao PDR was degraded in some extent and to prove this statement it is needed to conduct further study as well as a deep analysis using statistical tools to correlate the CPUE/fish abundance with environmental variables (e.g. water flow or water quality). Moreover, it is recommended to maintain the *Lee Trap Fishery Monitoring Programme* to detect the trend of the fishery resources at that area and importantly the programme may assist the government of Lao PDR in planning its fishery resources management in some ways.

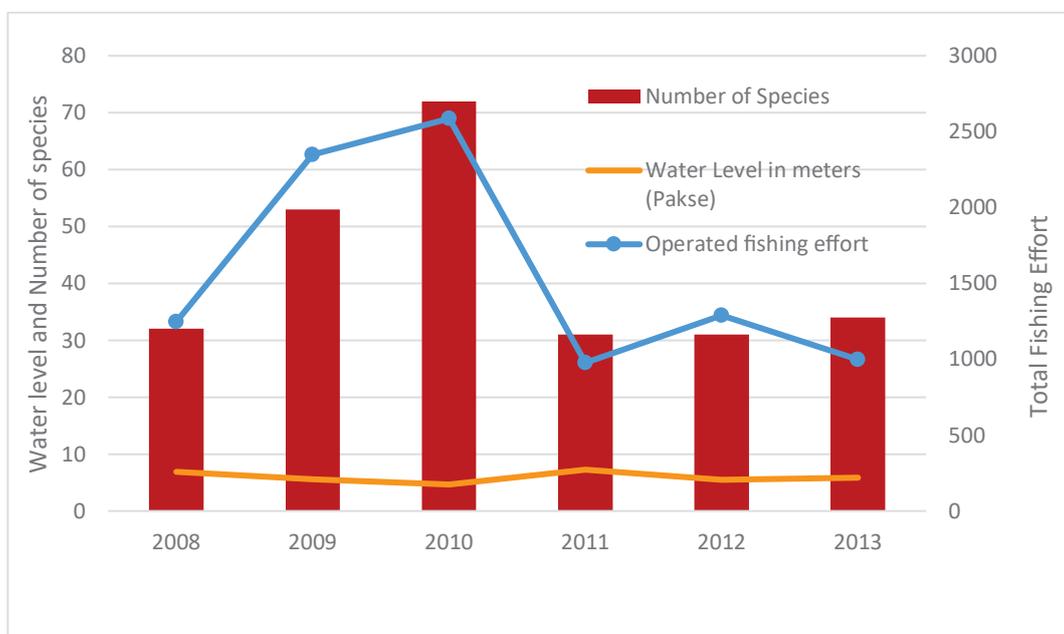


Figure 1. Annually variation in number of species collected by Lee Traps

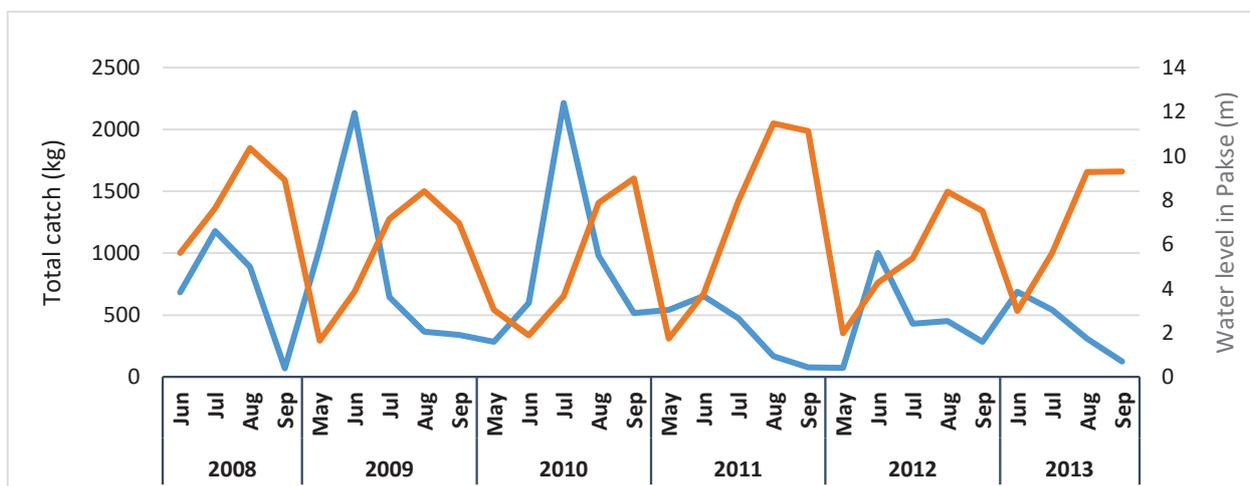


Figure 2. Seasonal variation of total fish catch (Blue line = Total catch; Orange line= Water level)

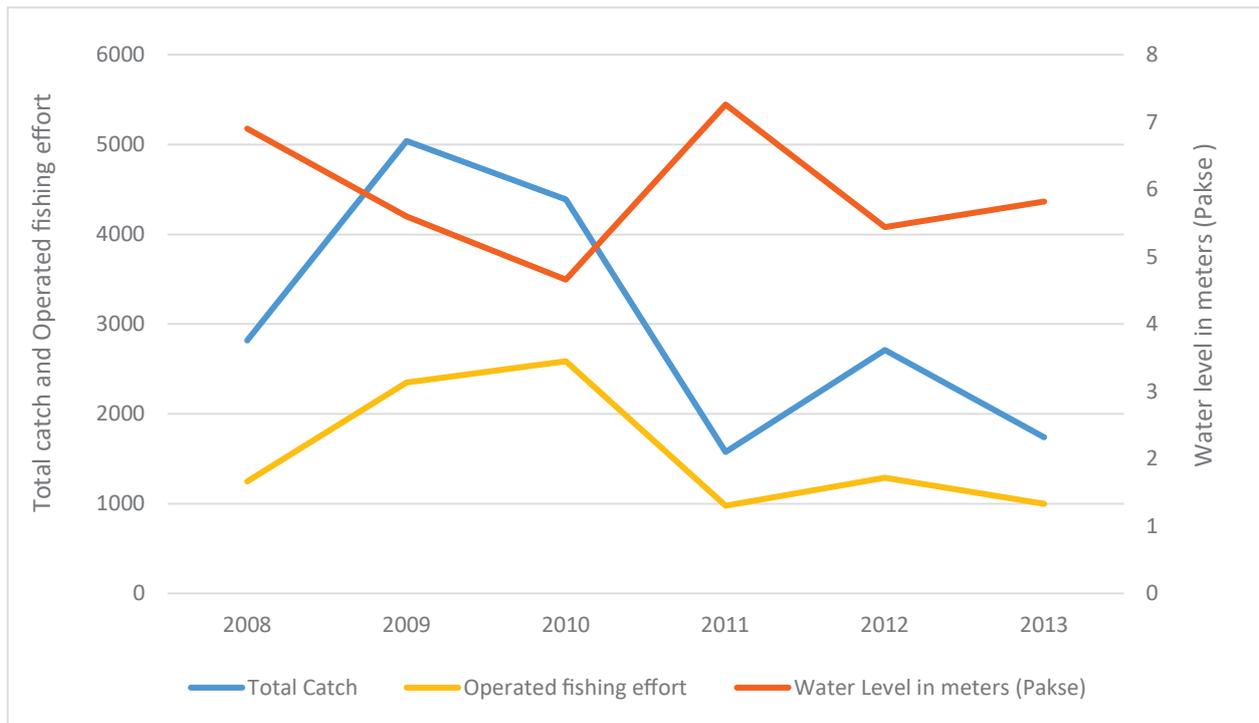


Figure 3. Annually variation of total fish catch, operated fishing effort and water level

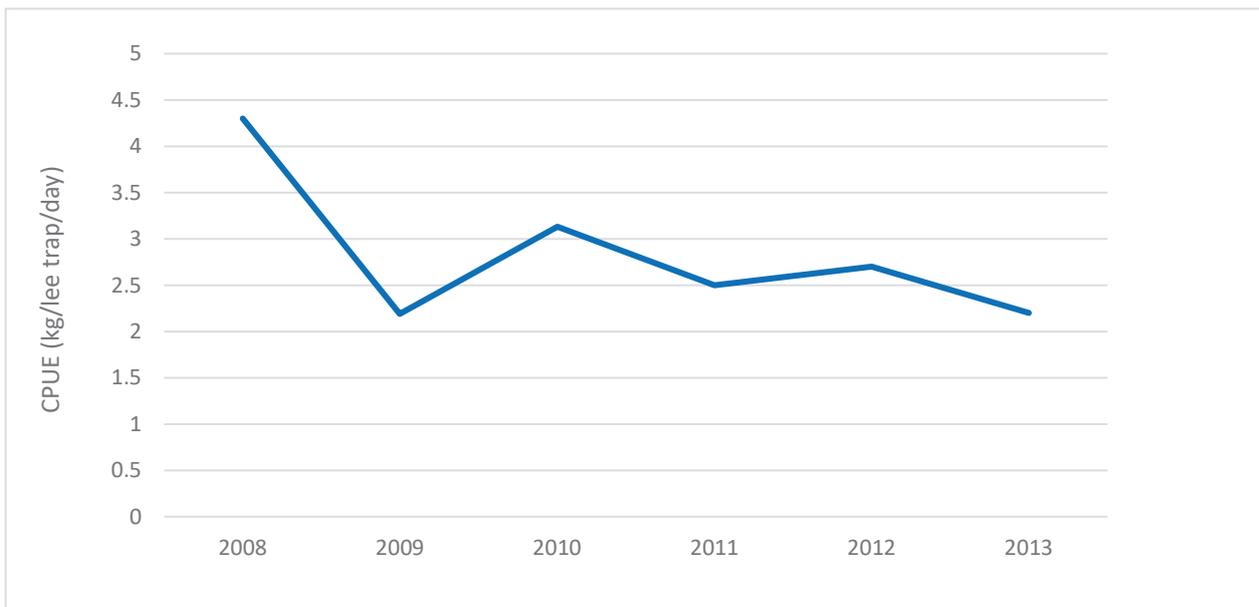


Figure 4. Annually Catch Per Unit Effort



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