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Fish catch and fishing practices in the Nam Theun 2 Reservoir and watershed (Lao PDR)

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Abstract

A fish catch and fishing practice monitoring survey were conducted from 2008 to 2014 in villages adjacent to the Nam Theun 2 Reservoir and its upstream tributaries. The reservoir fisheries exhibited – the three expected phases following impoundment (i.e. trophic upsurge, trophic depletion and stabilization, respectively). This study focused on assessing fish catches and fishing practices from communities living next to the reservoir, and those living upstream of the reservoir, over these phases, and to identify factors that could influence total fish catch. The fish catch appeared to be higher among communities located next to the reservoir, compared to communities living in upstream areas. Fish catches in the upstream tributaries remained relatively stable after impoundment, with a slight increase in the average catch. The reservoir exhibited a low fish yield, compared to similar reservoirs, which could be linked to its oligotrophic status. The majority of the total catch biomass of the reservoir was comprised primarily of two species (i.e. *Oreochromis niloticus*; *Hampala macrolepidota*) since a stabilization of the catches was observed. Reservoir fisheries appeared to be mainly driven by hydrological factors, specifically the influence of the rainy season peak. The results of this study indicated no over-exploitation of fisheries occurred overall, although the fishery resource is still fragile. Fishing activities are known to occur in protected zones (productive areas with large inundated habitat areas), with higher annual total catch being observed during periods of poor enforcement of these zones. As fisheries have become an important income source for villagers living along the NT2 Reservoir, regulation and adequate management of the reservoir are recommended to maintain the reservoir fisheries as a sustainable activity.

Key words

fish catch, fisheries management, hydropower reservoir, reservoir tributaries.

INTRODUCTION

The Lower Mekong Basin is known to support one of the largest inland fisheries in the world (Vidthayanon 2008), with an annual estimated catch of over 2.7 million tonnes of fish (Hortle 2007). Inland fisheries are of considerable importance for both food and income in South-East Asia. A minimum of 1200 fish species are known to inhabit the Mekong River Basin (Rainboth 1996), with an estimated inventory of about 520 species in Lao PDR (Kottelat 2015). Although numerous large indigenous species are commercially exploited, almost all the caught species, regardless of size, are of interest for consumption by households.

Lao PDR is a landlocked country located in South-East Asia, being bordered by Myanmar and China in the North, Thailand to the West, Vietnam to the East and Cambodia to the South. The freshwater fish production in Lao PDR is estimated to be about 29 200 t per year on average (data from 2000 to 2007 based on official FAO fisheries catch statistics; Baran 2010), although a consumption estimate puts this figure as high as 167 922 tonnes per year (Hortle 2007). Inland fisheries are practised in a wide range of different freshwater bodies, including the Mekong River and its tributaries, reservoirs (e.g. hydropower, irrigation), small waterbodies (e.g. shallow lakes, natural pools, swamps and wetlands), rice-fields, small streams and floodplains. Fish production is affected by seasonal climatic conditions, with some of fish habitats (e.g. rice-fields, small streams and floodplains) are known to be highly productive during the wet season (Phonvixay 2013).

Lao PDR, a developing country, is recognized as having a considerable potential for hydropower generation.

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