

Thermal tolerance and performance of key species and climate change adaptation options for inland aquaculture in Northern Thailand

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ARTICLE INFO

History:

Draft: 5 Aug 2015

Draft. *Internal review only*

Keywords:

climate change,
aquaculture,
thermal tolerance
thermal preference

ABSTRACT

Historically, many fish species have adapted to long-term changes in temperature; however, it is unclear to what extent they can continue to do so, given the high rates of change in projected temperatures under anthropogenic climate change. In this article, we first review the literature on thermal tolerance, preferences, and performance, and then apply this understanding to explore possible adaptation strategies for the most popular tilapia, carp and catfish species cultured in Northern Thailand. All three groups of freshwater fish species cultured have wide thermal tolerance, acclimatize successfully, and may also show heritable variation for thermal optimal given findings for other locations and closely related species. This implies significant scope for adapting to warmer climate conditions in the future, especially in the upper parts of northern Thailand, whereas further south in the region extreme high temperature episodes may become a more significant constraint on production in the future.

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