

POTENTIAL OF LOCAL ICTHYOPHAGIC FISH SPECIES IN THE OPTIMIZATION OF MULTITROPHIC FISH FARMING SYSTEM IN MADAGASCAR

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From 1914 to 1975 many exotic fish species have been introduced in Madagascar, with the purpose of promoting the intensification of continental fish farming. Nowadays, the two main continental fish species reared in Madagascar are the common carp (*Cyprinus carpio*) and the Nile tilapia (*Oreochromis niloticus*), in monoculture or polyculture. This strategy was motivated by the broad amount of information on the biological bases for the aquaculture of these exotic species, in contrast to the limited knowledge on Malagasy species. However, following these serial introductions and the destruction or modification of habitats caused by anthropic activities and environment degradation, Malagasy indigenous ichthyofauna declined. Such decline has raised serious concerns from scientists and decision-makers, who are increasingly interested in the possibility of using local species for fish farming.

Agro-ecological intensification of fish farming constitutes a real stake for development and food security in rural areas of Madagascar. For tilapia in particular, production systems suffer from uncontrolled fry production, which leads to overpopulation and slow growth due to limited trophic resources. Controlling the proliferation of tilapia fry by an indigenous piscivorous fish can be advantageous, also for promoting biodiversity conservation, however knowledge about Malagasy fish is scarce.

A first work on species inventory and characteristics has been proposed by Kiener (1963), and then complemented (among others) by Reinthal & Stiassny (1991) and De Rham (1996). These works permitted to establish a list of known species present in Madagascar. The aim of the present study was therefore to identify among this list some local, and ideally endemic, piscivorous species to be associated with tilapia in polyculture, in order to control its reproduction. To achieve this aim, the following components were evaluated (Fig. 1):

- Multicriterial evaluation of fish species to be reared in polyculture with tilapia in Madagascar
- Study of the biology and ethology of the selected species in microcosm and mesocosm for their domestication
- Evaluation of the predation capacity of selected species

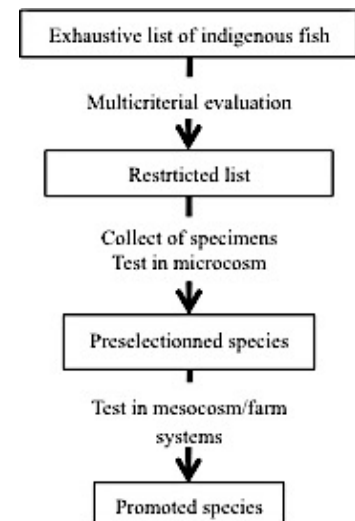


Fig. 1: Stepwork for indigenous fish selection