

## AN APPROACH FOR IMPROVEMENT OF SMALLHOLDER FISH FARMING SYSTEMS IN SIEM REAP PROVINCE (CAMBODIA)

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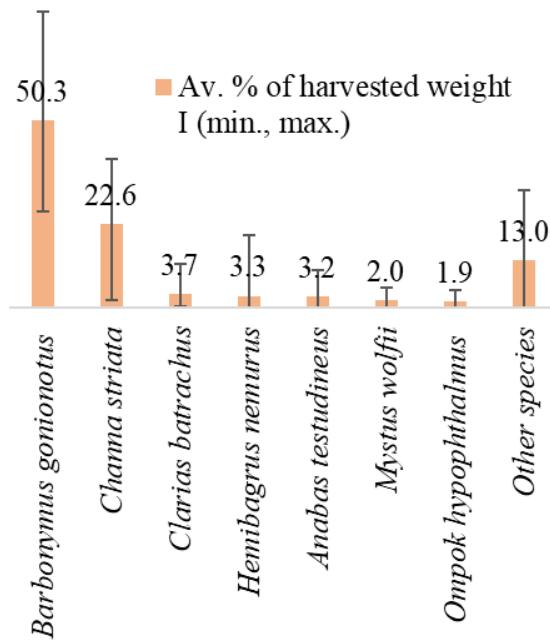
APDRA, an NGO promoting fish farming, works with farmers located in Siem Reap watershed. Aquaculture is a secondary activity taking place in small ponds ( $< 700 \text{ m}^2$ ) filled by rains (av. 1300 mm/year). At first sight, the context seems favourable to its development: traditional knowledge, developed feeds and fingerlings' markets. However, small-scale fish farming still appears inefficient. The projects<sup>1</sup> initiated a participative action-research process towards sustainable systems. Experimentation, farmers' networking, and follow up are key elements in this dynamic.

In September 2021, 17 farmers stocked silver barb *Barbonymus gonionotus* (3/m<sup>2</sup>) in ponds connected to rice fields by canals, surrounded by dikes. To date, 9 of them fully harvested, after a 6 to 8 months cycle. The fish yield (av. 3.2 t/ha of pond) was appreciable. The survival rate (av. 60.5%) was quite low, and the relatively small size of silver barb (av. 87 gr) was deplored. Surprisingly, wild species (av. 19 s./pond) accounted for half of the total biomass (cf. chart) and 49 species were counted, including 43 fishes, 3 crustaceans, 2 molluscs and 1 frog. The income was low (av. 45 USD/ha of pond).

The high biodiversity in ponds is due to periodic floods bringing wild species, which may compete with or prey on the stocked species. Fish species known as potential predators were overrepresented (av. 70.4% of wild species weight). Moreover, floods tend to be less predictable in intensity and time, making them more difficult to manage.

As floods and biodiversity management are seen as the main challenges, the projects accompany farmers in developing solutions. Elevating bunds is an expensive investment. Putting up nets around is affordable but little effective. Selective regular fishing with traps and nets, to optimise populations' structures, appears more promising. Cage farming within the pond might be used to separate the stocked species from the wild ones. It's expected that the participatory action-research approach will lead to integrated solutions, for sustainable systems.

CHART - Harvested species



<sup>1</sup>DeFiP (AFD funds), AquaCAM (led by IRD, funded by France)