

DOES SIZE MATTER? REASSESSING THE RELATIONSHIP BETWEEN ‘SMALL-SCALE’ AQUACULTURE AND POVERTY

Ben Belton
Institute of Aquaculture, University of Stirling
Stirling, UK

Introduction

‘Small-scale aquaculture’ (SSA) has long been championed by development institutions based on its perceived potential to alleviate poverty, enhance food security and promote economic development. Research and promotional efforts have spawned a substantial literature, but this remains largely dislocated from the much larger body of work on ‘smallholder’ agriculture. This paper applies key themes in the literature on agricultural growth to aquaculture with reference to a case study of two contrasting forms of aquaculture in Mymensingh district, Bangladesh (See Ellis, 1998; Irz et al, 2001; Hazell et al, 2007; Wiggins, 2009 for a comprehensive reviews of this literature). It is argued that viewing aquaculture in terms of its ability to stimulate ‘rural growth linkages’ offers a more appropriate means of understanding its capacity to mitigate poverty, enhance food security and bring about growth at the aggregate national level than explanations which emphasise scale alone.

Small-scale aquaculture and smallholder agriculture

‘Small-scale’ aquaculture has been widely promoted as part of development interventions in the Global South. ‘Commercial’ forms of aquaculture usually require substantial investment which makes them inaccessible to the poor as producers. In contrast, it is assumed that many poor farming households do have the capacity to add ‘small-scale’ low investment forms of aquaculture as a new activity, or to increase the productivity of existing ‘traditional’ forms of fish culture. It is assumed that doing so will increase household incomes and fish consumption, thereby reducing poverty and food insecurity. Most development oriented donor support to aquaculture is justified on the basis of this narrative. However, unlike the large body of work on agricultural growth which demonstrates the superior efficiency of ‘smallholder agriculture’ and its high potential to stimulate growth in other areas of the rural economy, the SSA narrative lacks a clear theoretical or empirical basis which would explain precisely why ‘small-scale’ forms of aquaculture should offer developmental outcomes exceeding those of the ‘large-scale’, ‘commercial’ or ‘industrial’ aquaculture against which they are implicitly opposed.

Aquaculture and rural growth linkages in Mymensingh

Mymensingh is among the major freshwater fish producing districts in Bangladesh. Aquaculture in Mymensingh is dominated by production of carp in small homestead ponds for semi-subsistence purposes (peasant aquaculture) and commercial *Pangasius* catfish farming (capitalist aquaculture).

Homestead carp culture deploys only unwaged household labour and is poorly integrated into the wider economy since it utilises few manufactured inputs. Cash outlays are limited to the

purchase of juvenile fish (seed) and, depending on the inclination of the pond owner, possibly also small quantities of feeds and/or fertilizers. However, wellbeing analysis reveals that, as a result of extremely polarised distribution of land, pond ownership is heavily weighted toward better-off households (Figure 1). Furthermore, even the relatively minor operating costs involved in this form of fish culture can prevent poorer pond owners from utilizing their resources productively however, since for those reliant largely on intermittent agricultural day labour, mustering even \$10 or less for the purpose of purchasing seed may prove prohibitively difficult. Limited and inconsistent incomes also prevent regular outlay on even small quantities of low cost inputs.

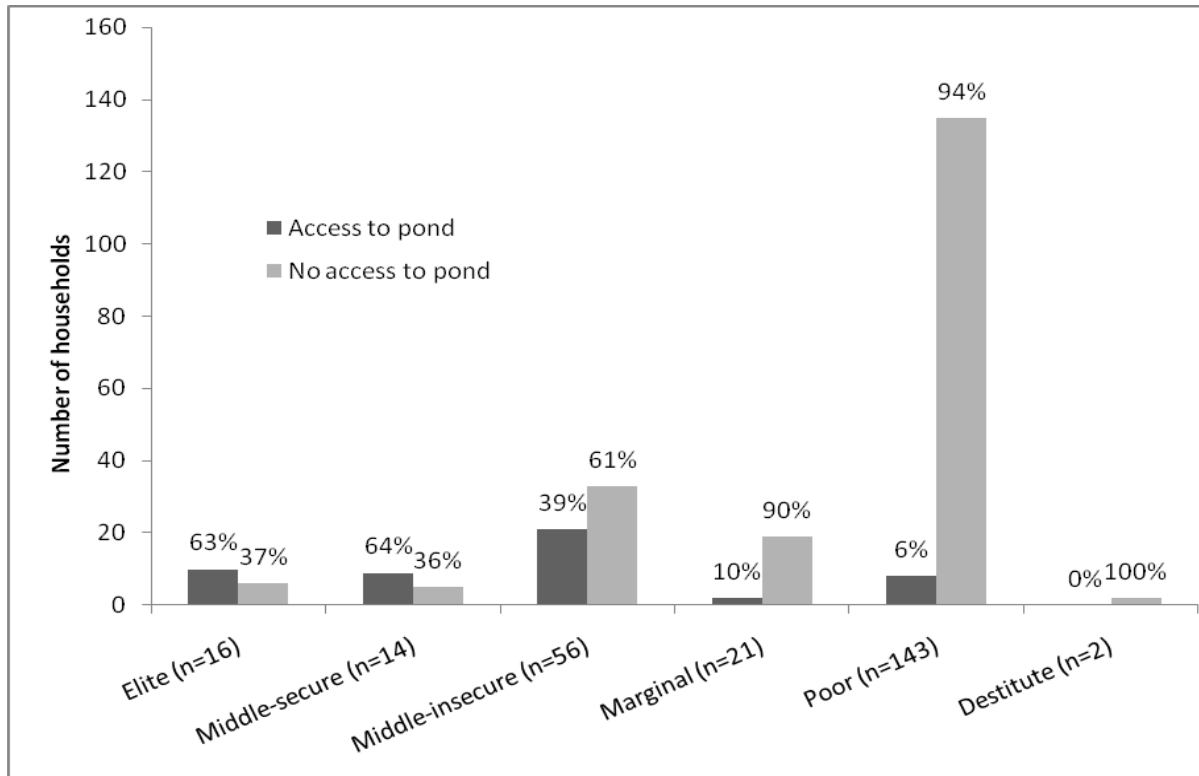


Figure 1 Class distribution of households with access to a pond in a village where homestead carp culture is the dominant form of aquaculture (n=252)

Pangasius aquaculture is a far more capital intensive than homestead carp culture, with operating costs approximately \$23,000/ha/yr⁻¹. This excludes the poor from direct participation as producers. The activity is comprehensively integrated into labour, input, and markets and creates diverse forward, backward and horizontal linkages in the rural economy however. A huge range of ancillary services are present in areas with large concentrations of Pangasius farms. Some of these are held in common with carp culture (e.g. nursery operations and certain aspects of marketing), but as there is also additional demand created for farm labour and services including for feed production, sale and distribution, pond excavation, mechanical services, and the harvesting and transportation of fish to market. Figure 2 indicates the extent to which clusters of Pangasius farms can impact on the local economy. Three categories of employment (fish culture, aquaculture employee, and aquaculture ancillary services) are almost absent as primary occupations in areas where

homestead carp culture is the predominant form of aquaculture but, combined, represent one third of all primary occupations in a village located in a sub-district with high concentrations of *Pangasius* farms.

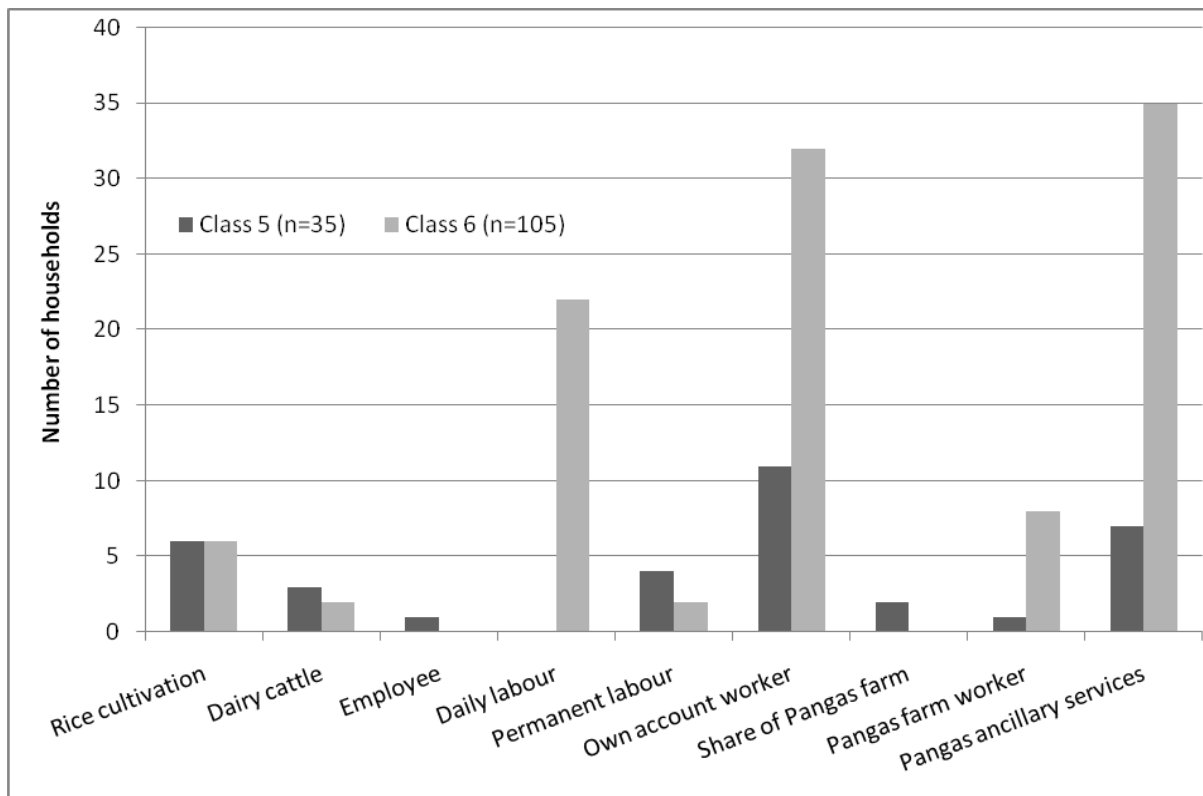


Figure 2 Primary and secondary occupations of Class 5 and Class 6 household heads in a village located within a cluster of *Pangasius* farms

The significance of this effect is especially pronounced for members of two poorest, and most populous, of the social classes in the village (Class 5 and 6 in Figure 2), for whom activities associated with *Pangasius* aquaculture contribute 29% and 40% of employment respectively. This is particularly significant given the greater temporal consistency, predictability and financial remuneration associated with work directly and indirect associated with *Pangasius* farming as compared to the highly seasonal agricultural labour and petty trading which the main other employment options for these classes. Anecdotal evidence from a number of sources suggested that local wage rates for daily labour had risen significantly, and that the welfare of those engaged in a variety of activities associated with *Pangasius* culture had also improved as a result.

Conclusion

Direct engagement in aquaculture as producers remains beyond the capacity of large sections of the rural poor due either to lack of land or lack of capital. For these landless wage labourers (who account for more than 50% of the population in Bangladesh), employment in a range of activities associated with resource intensive capitalist forms aquaculture possess considerably greater potential to mitigate the poverty. Increasing demand for labour and associated rises in wage rates also has spillover effects into the rural non-farm economy,

stimulating demand for local labour intensive goods and services, thereby creating additional growth linkages. Because peasant forms of aquaculture like homestead carp culture are on partly integrated into the wider economy and created very little employment they have a far lower capacity to leverage multiplier effects of this kind. The potential of capitalist forms of aquaculture to contribute to development goals has hitherto been largely overlooked by policy makers however. The analysis presented here suggests the need for substantial reevaluation of the relationship between aquaculture and development which challenges conventional wisdom

References

Ellis, F. 1998. Household Strategies and Rural Livelihood Diversification. *The Journal of Development Studies*. 35(1): 1-38

Ellis, F. and Biggs, S. 2001. Evolving Themes in Rural Development 1950s- 2000s. *Development Policy Review*. 19(4): 437-448

Hazell, P., Poulton, C., Wiggins, S., Dorward, A. 2007. *The Future of Small Farms for Poverty Reduction and Growth*. 2020 Discussion Paper No. 42. Washington, D.C.: International Food Policy Research Institute.

Irz, X., Lin, L., Thirtle, C., Wiggins, S. 2001. Agricultural Productivity Growth and Poverty Alleviation. *Development Policy Review*. 19(4):449-466

Wiggins, S. 2009. *Can the Smallholder Model Deliver Poverty Reduction and Food Security for a Rapidly Growing Population in Africa?*. Expert Meeting on How to Feed the World in 2050. 24-26 June 2009. Food and Agriculture Organization of the United Nations