

Interactions between commercial and subsistence fisheries in the lower Amazon: a bio-economic analysis

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Abstract

River-floodplain fisheries in the lower Amazon are exploited by both commercial and subsistence-oriented fishers. We develop a simple bio-economic model to evaluate interactions between the sectors and effects of various policy measures and trends upon them. Due to market limitation, the bio-economic open access equilibrium of the commercial fishery has been reached at a relatively low level of biological exploitation. Expansion of the market for fisheries products may lead to a very considerable increase in fishing effort. Local communities increasingly adopt co-management agreements for floodplain lake fisheries. Such agreements often stipulate rules that effectively exclude commercial fishers while maintaining access for subsistence-oriented fishers. If such co-management agreements were to proliferate and effectively close all lakes to commercial fishermen, the model predicts only moderate change commercial effort by no more than 10%. The overall subsistence catch is unlikely to be affected significantly, because the effect on lake fisheries of removing commercial effort will be largely compensated by the opposite effect on river fisheries of concentrating commercial effort there. Each community entering a co-management agreement will gain from reducing commercial effort in their lake, but the displaced effort will be re-directed to the remaining un-regulated waters (river and non-managed lakes), i.e. the costs will be shared by all. Hence the benefit to the individual community becomes smaller as more lakes are managed. Effective effort management must take a regional perspective.

KEYWORDS: Amazon, bio-economic analysis, commercial fishing, subsistence fishing, floodplain lakes, co-management.