Amazon fishery management provides rare 'win-win' for conservation and poverty alleviation

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A study into freshwater lake management along the Amazon's most meandering river has demonstrated astounding benefits to local livelihoods in replenishing vitally important fish stocks—a source of much-needed food and income.

Prof Carlos Peres from the University of East Anglia (UEA) and Dr João Campos-Silva of Federal University of Rio Grande do Norte in Brazil led the analysis into the population recovery of Arapaima gigas, the world's largest scaled freshwater fish, which had been previously depleted.

Eight years of data were used to measure how population sizes varied between managed, protected oxbow lakes and open-access lakes. The study demonstrated a dramatic rebound in arapaima populations that had been previously overfished in lakes under community-based management, concluding that these management programmes are a clear 'win-win' conservation solution, compatible with the socioeconomic reality of Amazonian countries.

The study compares protected freshwater lakes along the Juruá River, a 3350-km long tributary of the Amazon, to 'high-interest savings accounts', vital for local food security. But efforts to protect these freshwater ecosystems are often hampered by conflicts with commercial fishing interests.

Prof Peres said: "Our analysis showed that community-based management of freshwater lakes can have profound impacts on conservation and local engagement. Local stewardship, in situ surveillance, full-time enforcement of resource access rights, and management of high-value fish stocks were the most important factors in boosting arapaima populations across a wide range of lakes, especially in close proximity to communities. Boosting these fish populations offers not only much-needed animal protein for the local community but also an unprecedented source of income.

"Policy makers must focus greater attention on zoning resource use over entire river basins and include local communities in landscape-scale conservation planning, to ensure their continued success."

Patterns of community management explained 72% of the variation in arapaima population sizes across the 83 lakes studied along a 600-km section of the Jurua River.

Dr Campos-Silva, first author of the study, said: "Conservation

initiatives in Amazonian floodplains are often a huge challenge due to lack of governance, investments and human resources. We highlighted a powerful conservation tool that simultaneously brings social security for local livelihoods and biodiversity conservation at large spatial scales. The Brazilian government and others stakeholders should invest in incentives to solve market bottlenecks and consolidate this rare sustainable development opportunity."

Prof Peres said: "Even some of the world's most severely underfunded sustainable-use protected areas can be powerful instruments of tropical biodiversity conservation. However, existing protected areas are currently too focused on protecting only forest biodiversity, while equally-important freshwater ecosystems are being neglected.

"There is a need to rethink how best to protect these freshwater ecosystems but efforts are hindered by political resistance to creating new or expanding existing protected areas. In fact there are likely to be severe setbacks in the total numbers or area of protected areas in many tropical countries, therefore decentralising conservation policies to communities and local stakeholders can be powerful and effective.

"Undoubtedly, arapaima management is a rare window of opportunity to harmonise the often incompatible goals of sustainable resource management and poverty alleviation."

'Community-based management induces rapid recovery of a high-value tropical freshwater fishery' is published in the journal *Scientific Reports*.

More information: João Vitor Campos-Silva et al, Community-based management induces rapid recovery of a high-value tropical freshwater fishery, *Scientific Reports* (2016). DOI: 10.1038/srep34745

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