

Analysing biophysical and economic trade-offs in management decision-making between Ecosystem services, Biodiversity conservation, and Commodity production in Allpahuayo Mishana National Reserve under future land use scenarios

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Introduction

Ecosystem services constitute a crucial contribution to human wellbeing. Provisioning Services seem to be the master piece of ecosystem services provided by nature, and their contribution to human wellbeing is linked to their economic relevance. Nonetheless, final ecosystem services are supported by often overlooked intermediate ecosystem services, which do not have a structured market and yet hold an economic relevance. Similarly, cultural ecosystem services are often difficult to economically assess as it is very difficult to put a price on intrinsic values. In order to yield a better understanding of the importance of all ecosystem service categories, we propose a spatial-temporal limited study to pinpoint the trade-offs between Ecosystem services, Biodiversity conservation, and Commodity production in Allpahuayo-Mishana National Reserve.

Methods

We have applied the Delphi technique, which is based on the organisation of workshops with the local stakeholders, organised for identification, assessment, and scoring of ecosystem services from individual Land use and Land covers in Allpahuayo-Mishana National Reserve.

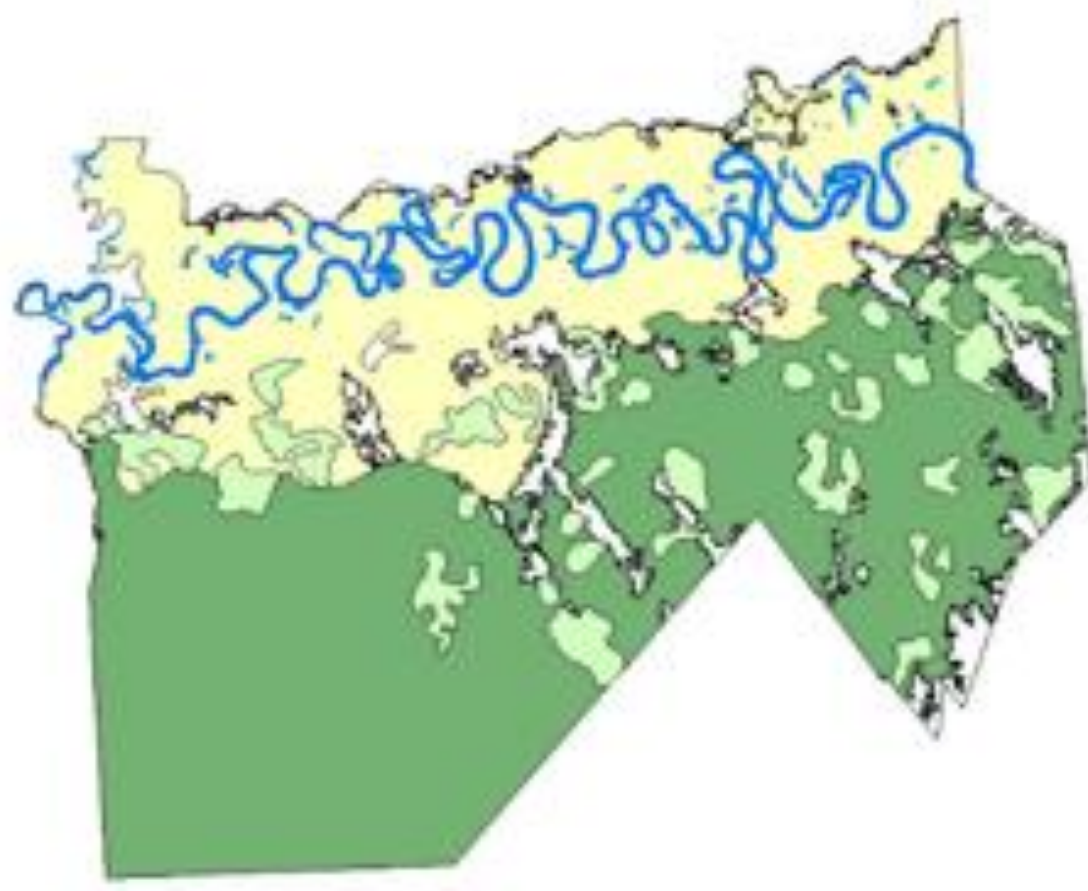
The assessment is based on four provisioning services (Aguaje, Ungurahui, Round wood, and White Sand), one regulating service (carbon sequestration), and two cultural services (Biodiversity, and recreational values).



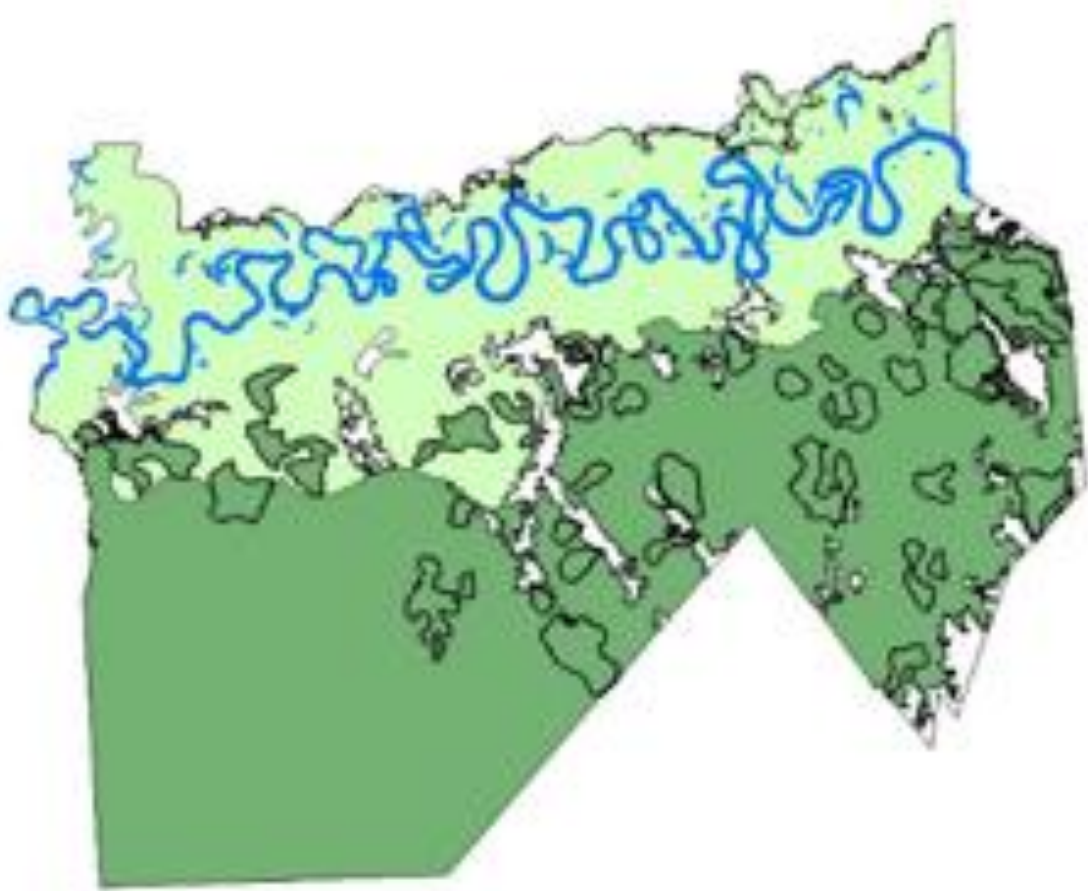
Allpahuayo-Mishana National Reserve – Buffer Zone
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Results

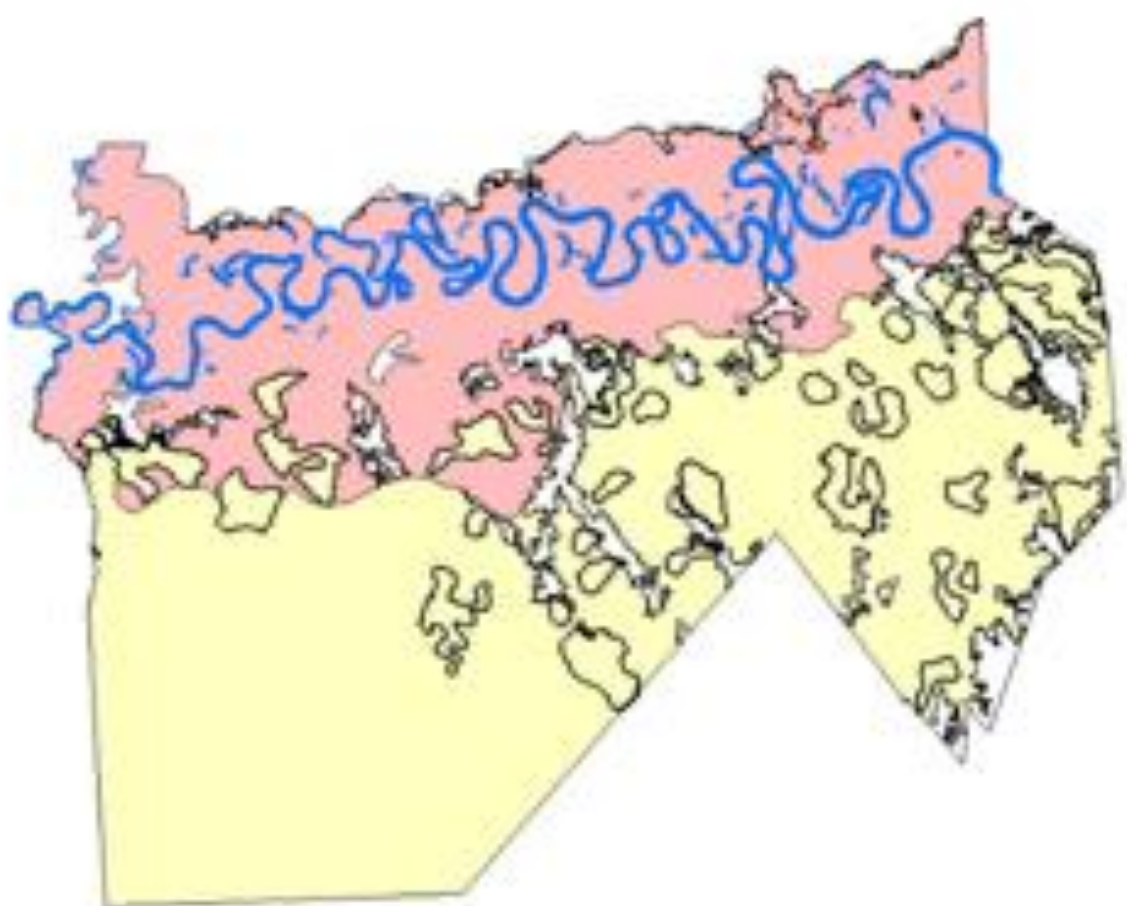
Land Cover	Provisioning Services	Aguaje	Ungurahui	Round Wood	White Sand	Regulating Services	Carbon sequestration	Cultural Services	Biodiversity	Recreational Values
Varillal forests	3.94	2.81	4.37	4.43	4.18	4.43	4.43	4.53	4.31	4.75
Tahuampas forests	2.54	3.87	1.25	3.81	1.25	3.75	3.75	4.43	4.25	4.62
Highland forests	3.59	2.87	4.25	4.18	3.06	4.56	4.56	4.75	4.75	4.75



Regulating Ecosystem Service potential



Cultural Ecosystem Service potential



Provisioning Ecosystem Service potential

0	No capacity
1	Low relevant capacity
2	Relevant capacity
3	Medium relevant capacity
4	High relevant capacity
5	Very high relevant capacity

Conclusions

- Conservation approaches applied to ecosystem management contribute to avoiding significant trade-offs between ecosystem services.
- Implementation of carbon offset projects within the National Reserve would generate better economic outcomes than current economic alternatives.
- Green economy alternatives produce better economic outcomes at the time that preserve biodiversity