CATEGORISATION OF SUSTAINABLE-USE PROTECTED AREAS FOR CONTEXT-SPECIFIC CONSERVATION INITIATIVES IN THE AMAZON

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ABSTRACT

Community conservation engages local actors and generates socio-economic gains that promote quality of life whilst protecting the territorial and biodiversity balance in protected areas. However, for conservation efforts of this nature to be effective, the territorial context in which they are situated must be understood and the management structure adequate. In this study, we analysed 134 protected areas that preserve biodiversity and cultural values in the Brazilian Amazon but vary in their management structures and are situated within different threat contexts. Here, we use a management-level indicator and a threat-based territorial context indicator (including deforestation, mining and fire) to classify areas and offer context-specific actions. Based on our classification, we recommend investing in protection and enforcement efforts in areas under greatest threat, as other initiatives will be at greater risk when carried out in these places. Protected areas with high management-level scores can foster innovative community conservation actions, whilst the most deficient ones require investment in basic instruments, such as management plans and the formalisation of management councils. We reinforce the need for comprehensive and up-to-date data on protected areas in the Amazon, especially regarding governance and local organisations, for more informed decision-making by funders, non-governmental organisations and public authorities.

Key words: community conservation, management effectiveness, sustainable use of resources, conservation planning.

INTRODUCTION

Community conservation strategies seek to combine the conservation of biodiversity with the well-being of local peoples (Esmail et al., 2023). This pairing can occur when sustainable activities, such as regulated fishing, ecological tourism and community forest management, are encouraged. Abundant evidence suggests that such practices contribute not only to environmental conservation, but also provide significant socio-economic benefits to communities (Campos-Silva et al., 2021b; Dawson et al., 2021; Oldekop et al., 2016; Zhang et al., 2023).

A systematic review showed that positive outcomes for conservation and socio-economic benefits were more likely when protected areas adopted co-management regimes, empowered local populations, reduced economic inequalities and promoted cultural benefits (Oldekop et al., 2016). Most conservation efforts also deliver positive well-being and conservation outcomes when Indigenous peoples and local communities play a central role in governance, influencing decision-making directly or through local institutions (Dawson et al., 2021). For example, tourism resources benefit communities surrounding protected areas and result in higher levels of wealth and a lower likelihood of poverty, according to Naidoo et al. (2019).

In addition to collaborating in management broadly, community members can be effective defenders of biodiversity when involved in specific conservation actions, as evidenced by the effectiveness of community-protected beaches for the conservation of bird populations (Campos-Silva et al., 2021a) and turtles (Campos-Silva et al., 2018). Despite these benefits, community conservation efforts also face challenges,

Chico Mendes Extractive Reserve in Acre, Brazil © Neluce

with success tending to be greater in countries with consolidated environmental and democratic governance, and those with greater political stability, transparency and social participation (Fariss et al., 2023). The absence of these criteria can limit the extent of positive and lasting results, which must be considered when planning and executing this type of initiative. In adverse scenarios, the influence of external factors can reduce the impact and effectiveness of these conservation efforts (Coppock et al., 2022) and systemic and advocacy initiatives may be more important in building the foundation on which community actions can thrive (Fariss et al., 2023).

Establishing an adequate management structure within protected areas can facilitate the implementation and/or promotion of socio-economic policies, particularly those benefiting communities in isolated regions (Campos-Silva et al., 2021b; Zhang et al., 2023). However, historically, they have often resulted in conflicts over land tenure and disregard for the rights of local communities and Indigenous peoples (Tauli-Corpuz et al., 2020; Zhang et al., 2023). Moreover, limited management resources in such areas are a world-wide reality (Coad et al., 2019) and when associated with an increase in threats to their conservation can exacerbate social challenges, threatening traditional and sustainable ways of life (Villén-Pérez et al., 2022). Therefore, coupling investment in management and social participation can lead to more effective protected areas both in ecological and social outcomes (Dawson et al., 2021).

Community conservation strategies have been a reality for many years in the Brazilian Amazon (Brondizio et al., 2021), where a large expanse of territory is contained within protected areas, including those aimed at the conservation of both biodiversity and cultural values and the sustainable uses of natural resources (equivalent to IUCN category VI). These areas are key to achieving the Kunming-Montreal Global Biodiversity Framework's Target 3 of protecting 30 per cent of the planet's land and sea for biodiversity (CBD, 2022; Dudley et al., 2022). In the Brazilian Amazon, there are 169 category VI protected areas, with a total area of 59 million hectares (MMA, 2024). However, threats to the conservation of these regions are growing and include roads, agricultural expansion, land grabbing, illegal mining and infrastructure works that generate habitat fragmentation, fires, and intensify climate change (Lapola et al., 2023). To address this, these territories must have adequate management structures, law enforcement policies and the joint engagement of the government and local communities (Assunção et al., 2019; Schönenberg et al., 2015). In addition, these communities need alternatives for income generation that are not associated with unsustainable economic activities (Naidoo et al., 2019; Terborgh & Peres, 2017). For these community-based efforts to be more effective, they need to be strategically focused, aligning actions within the regional context and conservation objectives of each protected area (Wells & McShane, 2004).

An essential tool for managing protected areas and strategising is the management plan, which serves as the primary planning instrument for Brazilian protected areas (West et al., 2022). National law mandates its creation within the first five years after the establishment of protected areas (Brazil, 2000). The presence of a management plan has been linked to a reduction in deforestation, likely because it requires the establishment of administrative structures and the identification of priority actions (West et al., 2022). However, nearly half of the protected areas in the Amazon lack this instrument, with the proportion rising to approximately 58 per cent within category VI, totalling 98 areas without a management plan (MMA, 2024). Furthermore, these plans are primarily tailored for local planning, with limited consideration given to broader regional influences. Currently, there is no comparable instrument at the area-system level, offering a comprehensive and comparative approach to action and area categorisation.

Herein, we propose a categorisation strategy for context-specific conservation initiatives in protected areas of the Brazilian Amazon, aiming at biodiversity conservation and defence of local communities' ways of life. To this end, we have compiled management and threat-based context indicators in protected areas equivalent to category VI that have communities that reside in them or depend on their resources for subsistence. We selected these areas because their objective is aligned with the combined promotion of conservation benefits and social development. Based on the analysis of these indicators, we classified the areas according to their requirements for carrying out conservation actions and propose guidelines for working in collaboration with local communities.

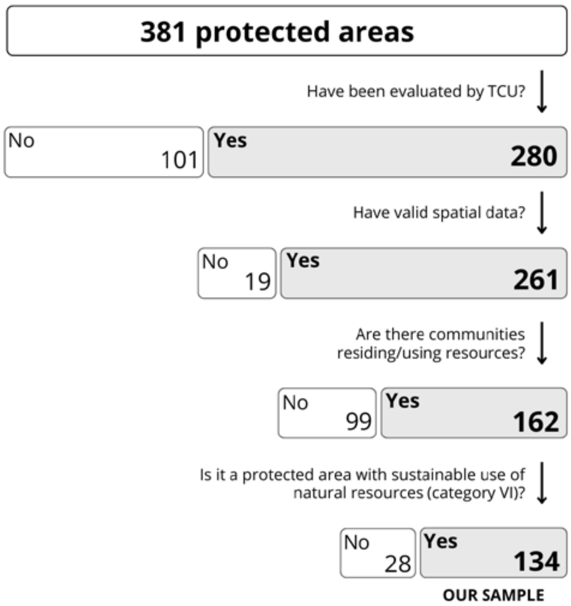

Figure 1. Flowchart of criteria used in the selection of protected areas in the Amazon that make up the present study

METHODS

Study region

According to the National Registry of Conservation Units (CNUC), the Amazon biome in Brazil contains 381 protected areas (updated March 2024; MMA, 2024). Of these, 169 belong to IUCN category VI, which in the Brazilian system consists of National, State and Municipal Forests (hereafter, just Forests), Sustainable Development Reserves (RDS) and Extractive Reserves (RESEX). For our analysis, we selected areas that: a) belong to the Amazon biome; b) are georeferenced in the CNUC; c) belong to IUCN Category VI; d) were evaluated by the Federal Court of Auditors (TCU) in the most recent available audit (2018 to 2019); and e) have communities residing in or using their resources, according to the TCU (Figure 1).

The TCU evaluated the levels of implementation and management of 280 protected areas in the Brazilian Amazon, of which 261 have their boundaries georeferenced in the CNUC and 162 have communities residing in or using their resources. Of these, 134 are category VI areas, which aim to conserve ecosystems and habitats along with cultural values and the use of sustainable natural resources. In addition, we consider the presence of communities in relation to the resources of the protected area as a necessary condition for the development of community efforts. Thus, 134 areas were further analysed, representing 79 per cent of the category VI areas in the Amazon. Among them, 42 are Forests, 70 are RESEXs and 22 are RDSs, according to Brazilian categories. More details of each area are presented in Table S2.

Indicators for Categorisation

To categorise areas, we cross-referenced information from two indicators: the level of management of protected areas and the territorial context. We selected these indicators because they reflect the results of conservation strategies in protected areas and, therefore, should be considered when proposing more effective actions (Dawson et al., 2021; Fariss et al., 2023).

Management level

The Index of Implementation and Management of Protected Areas (Indimapa), a continuous variable from 0 to 3, was used as a proxy for management level. Indimapa was developed by TCU to assess management effectiveness and is based on other methodologies, including RAPPAM (Rapid Assessment and Prioritisation of Protected Area Management) and the METT (Management Effectiveness Tracking Tool), which follows IUCN standards (TCU, 2021). The TCU, a public oversight body, evaluates the effectiveness of government spending in achieving public policies that benefit the population. To assess the impact of protected areas on the national conservation policy, TCU developed the Indimapa tool. Unlike previous methodologies, Indimapa incorporates indicators weighting the socio-environmental results of protected areas and the engagement of local communities in their management, including a specific indicator on community management of resources. Although based on managers' perception, TCU data offers some advantages over other tools as it is collected by an external body and has been applied to all existing protected areas in the Amazon biome, overcoming limitations of other management assessments (Geldmann et al., 2015; Pellin et al., 2022).

Indimapa was first used in the 2014 audit to assess protected areas in Latin America, the Caribbean and Iberia (TCU, 2021). Between 2018 and 2019, a subsequent audit evaluated 2,415 protected areas. Of these, 487 were in Brazil, including 280 in the Amazon (TCU, 2021). The values of the Indimapa index are estimated as the average of 13 indicators, with some not used when they do not apply (e.g. the public-use indicator is not considered in areas without potential for such activity). The indicators assessed are management plan, human resources, financial resources, administrative structure, territorial consolidation, protection, research, biodiversity monitoring, management council, management by traditional and/or local communities, public use, local articulation, and concessions. Each indicator's score is assessed from its classification criteria, either 0, 1, 2 or 3, from the lowest to the highest consolidation, measuring the extent of implementation state defined as ideal within that theme (the criteria are listed in Table S1). This classification is based largely on a questionnaire answered by area managers and by cross-referencing this information with other official data. Materials related to the TCU audit can be accessed at: https://portal.tcu.gov.br/biblioteca-digital/auditoria-coordenada-em-areas-protegidas-2-edicao.htm. See also Supplementary Online Material.

Territorial context

A Territorial Context indicator was developed by aggregating data on the main recognised threats to biodiversity conservation in the Amazon ecosystem. This indicator included: density of fire outbreaks, density of illegal mining sites, average distance from deforested areas greater than 10 hectares, average distance from roads, average distance from logging centres, risk of impact due to drought, proportion of area with mining, and proportion of deforested area. We selected our variables based on previous studies that identified their impact on forest degradation in the Amazon and their availability on a broad scale. Therefore, we included climate change (Silva et al., 2016), timber logging (Lapola et al., 2023), deforestation (Silva et al., 2016), the presence of roads (Pellin et al., 2022), mining (Villén-Pérez et al., 2022) and fire (Lapola et al., 2023). These variables encompass threats both within protected areas, such as fires and mining activities, and in their surrounding areas, considering proximity to threats like deforestation and roads. Additional information about the variables is provided in Tables 1 and S3.

To calculate densities, the number of occurrences of fire outbreaks and mining sites within the protected areas was calculated in units per km². The average distance was calculated by the average of Euclidean distances within the boundaries to deforested areas larger than 10 hectares, roads and logging centres. We omitted deforested areas smaller than 10 hectares, as these very small areas could bias the metric, overestimating the threat of deforestation in cases where there are many small areas dispersed across a region. The risk of impact due to drought was calculated based on the municipal indices that each protected area intersects, weighted by the proportion of the area contained in that municipality. The proportion of mining and deforested areas was given according to the area of the protected area overlapping with mining areas and non-forest areas according to the land use classification. In addition, the original 30-m resolution pixel has been resized to 100-m. For illegal mining, data that was in polygons was transformed into points (centroids). For areas of active mining or in prospection, areas with research authorisation and research request activities were disregarded.

Table 1. Data used in the calculation of the Territorial Context indicator (PC1). (Additional information is provided in Table S3)

Variable	Source	Range	Variable's contribution to PC1 (%)	Correlation (scores) of the variable with PC1
Density of fire hotspots	Instituto Nacional de Pesquisas Espaciais (INPE)	0 – 0.86	2.93	-0.28
Density of illegal mining sites	Rede Amazónica de Informação Socioambiental Georreferenciada	0 – 0.04	0.20	-0.07
Average distance from deforested areas	Projeto MapBiomas	2,328.78 –452,304.83	29.32	0.90
Proportion of protected area that has been deforested	Projeto MapBiomas	0 – 0.10	0.86	-0.15
Average road distance	Instituto Brasileiro de Geografia e Estatística (IBGE), complementadas com dados do Imazon	164.78 – 143,926.58	24.81	0.82
Average distance from logging centres	Imazon	1,297.82 – 827,501.57	26.93	0.86
Impact Risk Index for Drought	Ministério da Ciência, Tecnologia e Inovações	0.18 – 1	10.98	-0.55
Proportion of area with mining	Agência Nacional de Mineração (ANM)	0 – 100	3.97	-0.33

Table 2. Classes defined based on indicators of management level and territorial context, the range of indicator values within each class, and the interpretation of the class's meaning

Management level			Territorial context		
Class	**Range***	**Interpretation**	**Class**	**Range***	**Interpretation**
M1	[0.08, 0.83]	Insufficient	T1	[-3.73, -0.79]	Endangered
M2	(0.83, 1.45]	Limited	T2	(-0.79, 0.874]	Vulnerable
M3	(1.45, 2]	Moderate	T3	(0.874, 2.67]	Stable
M4	(2, 2.58]	Adequate	T4	(2.67, 5.22]	Conserved

*Ranges were defined using Jenks' natural breaks algorithm. A curved bracket '(' or ')' indicates that the value at that end of the interval is not included, while a square bracket '[' or ']' means that the value at that end is included.

We classified the two continuous indicators (management level and territorial context) using Jenks' natural breaks algorithm, that groups data into classes based on breaks in the data distribution, aiming to maximise the differences between classes while minimising the variation within each class (Jenks, 1967). We defined four classes within each indicator, the combination of which culminated in 16 classes named by the combination of two numbers (e.g. T1–M1 or T1–M2) in which the first represents the territorial context (T) and the second the level of management (M). Thus, class T1–M1 groups areas with lower values of context and management, while T1–M4 would be areas with low context values and high management scores (Table 2). Finally, we proposed conservation actions according to these classes, such as the strengthening of management and protection instruments, and the development of new businesses. All analyses were performed using the R software (R Core Team, 2023).

RESULTS

The 134 protected areas are classified according to their level of management and territorial context, represented by the quadrants and colour of the points in Figure 2. Some areas have values close to the thresholds of class definition, so we use classification to facilitate the interpretation of management and context, but we note that these scenarios are more akin to a gradient than exclusive categories.

According to our categorisation proposal, most areas with a conserved territorial context (i.e. classified in class T4) also exhibit an adequate management level; however,

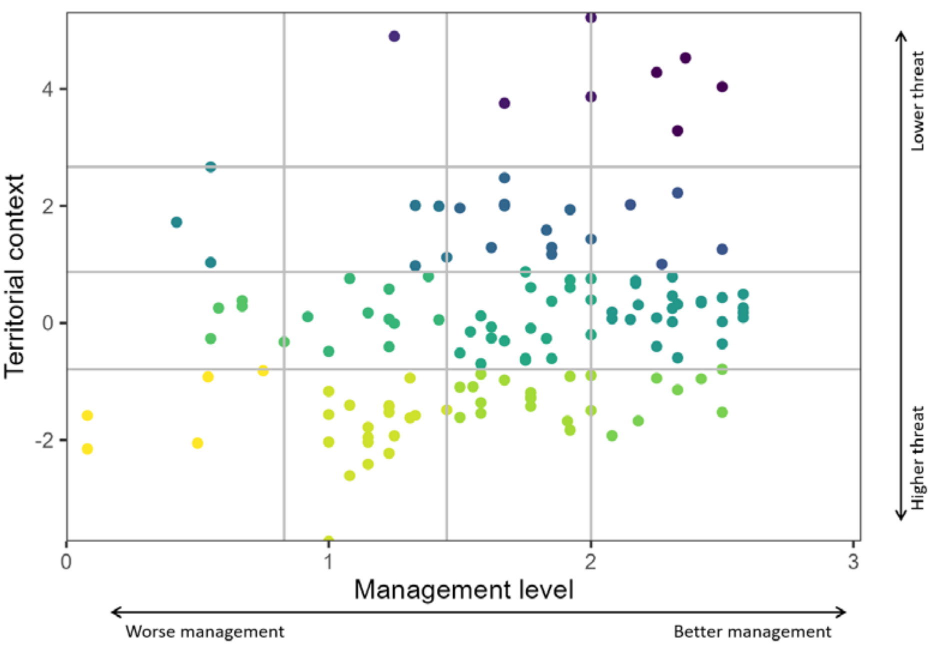

Figure 2. Categorisation matrix of sustainable-use protected areas in the Amazon. The quadrants were defined by the natural breaks in the indicators of management level and territorial context. The scoring gradient of the units according to these indicators indicates the need for conservation actions suggested by the arrows next to the axes.

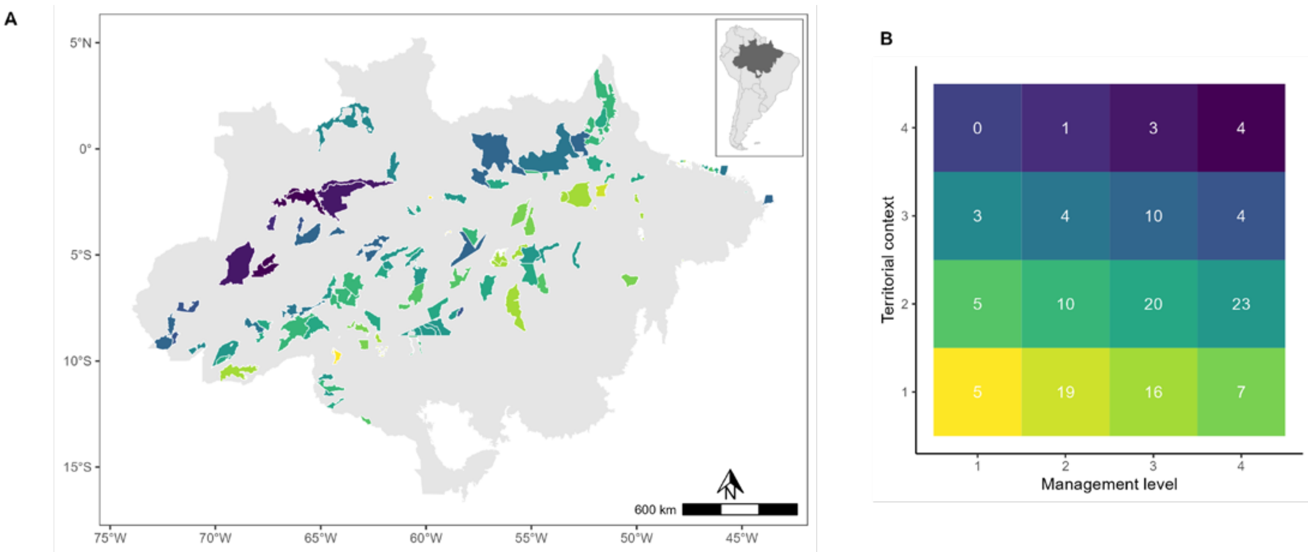

Figure 3. Bivariate map and graph with the frequency of protected areas in the Amazon in each class defined by the management level and territorial context. The classes are identified by the combination of two numbers, the first representing the territorial context and the second the management level. Thus, class T1–M1 groups areas with lower values of context and management, while T1–M4 would be areas with low value for context and the highest management scores, and so on.

this falls within a less frequent category range (top row in Figure 2). The majority of areas concentrate on a limited or moderate level of management, combined with vulnerable and endangered territorial context (Figure 2).

We identified that the protected areas located further south in the biome (in the region known as the 'arc of deforestation' due to its accelerated loss of native vegetation) have very low context scores and vary in their management values, thus forming a gradient of endangered and vulnerable areas (Figure 3). There were no cases of protected area with a conserved context having an insufficient management level (i.e. class T4–M1 is unpopulated, as shown in the frequency graph in Figure 3). Only four areas had both adequate management and conserved context (class T4–M4). Most of the areas fall into vulnerable context classes and adequate and moderate management classes (classes T2–M3 and T2–M4). The list of areas and their respective class and management and context scores are available in Table S2.

DISCUSSION

Our analysis integrates information on local management and threat levels based on the territorial context of protected areas to define actions for conservation and promotion of sustainable uses in these territories. Areas in classes of endangered context (T1–M1, T1–M2, T1–M3 and T1–M4) are more vulnerable to territorial threats and require greater protection and enforcement efforts. The greater environmental vulnerability hinders the implementation of more elaborate management initiatives, as efforts are focused on basic territorial maintenance. It also hinders the implementation of projects for the sustainable use of natural resources, as illegal and predatory uses compete with sustainable activities (Lapola et al., 2023; Terborgh & Peres, 2017). Therefore, these areas require priority action by the government to curb illegal practices by implementing command-and-control initiatives and stimulating sustainable activities through subsidies or payment for environmental services (Assunção & Gandour, 2018). Funders and civil society can support community-based protection efforts, but they will be at greater risk of seeing their projects undermined by predatory and often illegal activities (Tauli-Corpus et al., 2020; Terborgh & Peres, 2017). These areas can benefit from sustainable resource management actions that combine protection with local development, as local communities can improve biodiversity protection against threats, as shown by Campos-Silva et al. (2021a) and Anagnostou et al. (2020).

The relationship between management effectiveness and threat reduction is still poorly understood (Coad et al., 2015), with some cases showing a positive association (Powlen et al., 2021) and others where there is no association (Nolte & Agrawal, 2013; Pellin et al., 2022). In the Amazon, Pellin et al. (2022) highlighted that lower resistance to deforestation was more associated with the accessibility of areas, meaning that the external context was more determinant in their effectiveness as a barrier to threats than their management, as was also found regarding fire outbreaks by Nolte and Agrawal (2013). For instance, most threatened areas are in the deforestation arc, where there is severe pressure from the expansion of the agricultural frontier (Silva et al., 2016). Therefore, in addition to consolidating protected areas, the implementation of complementary public policies, such as satellite monitoring and surveillance, is essential (Assunção et al., 2019). On the other hand, an analysis of the impact of the Amazon Region Protected Areas programme (ARPA) revealed a significant increase in the capacity of supported areas to prevent deforestation, indicating that improving the management of areas may have a long-term effect on enhancing their effectiveness in this regard (Soares-Filho et al., 2023).

Chico Mendes Reserva plant nursery in Acre, Brazil © Neluce

Areas with insufficient management level (T1–M1, T2–M1, T3–M1 and T4–M1) need actions to support the implementation of basic instruments. The implementation of these instruments is a responsibility of the government, but it can benefit from local partnerships to enable processes in the absence of other sources of funding (Andonova & Piselli, 2022). Table S2 lists the Indimapa scores for each of the 13 indicators evaluated. These can be consulted to identify which specific management instrument or initiative to address. Where insufficient management is combined with an endangered context (T1–M1 class), encompassing five areas, there is an urgent need to improve both the implementation and management of these areas while seeking protection against threats. This is the scenario in which the continued maintenance of these areas is most difficult, and where conservation projects need to overcome major challenges to generate change and promote positive environmental and social impacts (Fariss et al., 2023). In these locations, government action is more urgent, both with command-and-control initiatives and investment in the public agencies that manage the areas. Improving both management and context scenario may also bring social and economic benefits to local communities, leading to improved well-being (Naidoo et al., 2019, Oldekop et al., 2016).

The areas where funders and civil society can act most effectively are those characterised by adequate management structure and stable or conserved context (classes T3–M4 and T4–M4). These areas have basic resources that allow leveraging more challenging community conservation strategies, such as entrepreneurship and innovation through socio-environmental businesses. The presence of well-implemented management instruments also allows for the development of more targeted actions, such as the formalisation of fishing agreements (Almeida et al., 2009) or partnerships for forest concessions, defining appropriate sustainability guidelines and monitoring resources use to ensure respect for regeneration limits (Moegenburg & Levey, 2002). Adequate management and a more conserved territorial context are conducive conditions for the adoption of actions that leverage the bioeconomy based on technologies and multisectoral partnerships (Nobre et al., 2016), since the basic priority management conditions have been met.

This study represents an effort to systematise information and present it to support decision-making in a broader territorial context. A specific look at each area is necessary to establish the specific needs to achieve progress. There are, for example, areas that fall into the T1–M3 class (threatened territorial context and good management), but that differ greatly in relation to social organisation. This is the case with the Verde para Sempre and Jamanxim Extractive Reserves, as well as the Chico Mendes Extractive Reserve. The first two possess a structure of grassroots institutions much less active than, for example, the Chico Mendes Extractive Reserve, which exemplifies social organisation, with strong and well-articulated institutions in the territory (pers. obs.). In this sense, we highlight that there is, unfortunately, no systematised information for the entire Amazon biome on aspects associated with governance and social organisation structures, which is a major bottleneck, especially when assessing community conservation actions. Thus, we emphasise the need to generate additional information and assessments on these to improve decision-making.

The management data used also have the limitation of being a snapshot of the evaluation period (2018 and 2019), which may have already changed for some locations. Furthermore, by averaging the 13 indicators, Indimapa assigns equal weight to each of them. However, certain management processes may have a greater impact on the conservation and socio-economic outcomes of the areas. For instance, having a management plan is associated with the ability to curb deforestation (West et al., 2022), while possessing technical and financial resources is linked to maintaining positive population trends (Geldmann et al., 2018). Meanwhile, concession activities or public use may be more associated with promoting socio-economic benefits (Oldekop et al., 2016). Interpreting the management index in an aggregated manner overlooks these differences and we deliberately did it to simplify and analyse the system comprehensively. Another interesting management evaluation methodology that is updated annually is the Management Analysis and Monitoring System (SAMGe), an initiative of the federal management agency of protected areas (ICMBIO, 2023). However, the SAMGe is not yet applied in all areas of the Amazon, so it was outside the scope of this study. Overcoming these bottlenecks are important steps in making more informed conservation decisions.

CONCLUSION

Combining conservation practices with the promotion of quality of life is a strategy that mutually benefits biodiversity and communities living in or near protected areas. For this type of practice to be effective, the definition of areas and actions must be carried out strategically, after understanding the areas' environmental and management context. In this study, we evaluated 134 protected areas in the Brazilian

Rubber Extraction at Chico Mendes Reserve © André

Amazon that have communities residing in or depending on their resources for subsistence and aim to conserve both biodiversity, cultural values, and sustainable use of resources. For these territories to be hubs of sustainable development, management gaps must be overcome. In addition, each of these areas is immersed in distinct territorial contexts that inform the need for inspection and protection initiatives and the investment risk to conservation projects.

In more vulnerable contexts, government must take the initiative for protection and inspection, as well as invest in management bodies when areas have low implementation. In this context, funders and civil society may find it more difficult to establish themselves and projects will be at a greater risk of not delivering lasting benefits. In areas with higher management levels and a more conserved context, we recommend supporting projects related to innovation in resource management and associated community businesses (e.g. forest product chains). These conditions are conducive to the success of these initiatives.

We note that the sample and the data used in our analysis were selected specifically to support decision-making in collaborative conservation projects of Amazonian protected areas. However, we also hope to contribute to more well-informed and locally grounded decisions, based on data and the realities of the region, such as increasing protection in areas at greater risk. To these ends, information generation must be expanded for the qualification of territories, including data on governance, existing community-based organisations and on management. Information must always be up to date and available at the scale of the biome.

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SUPPLEMENTARY ONLINE MATERIAL

Supplementary Online Material 1. Additional indicator tables and a figure.

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RESUMEN

La conservación comunitaria implica a los agentes locales y genera beneficios socioeconómicos que promueven la calidad de vida al tiempo que protegen el equilibrio territorial y de biodiversidad en las áreas protegidas. Sin embargo, para que los esfuerzos de conservación de esta naturaleza sean eficaces, es necesario comprender el contexto territorial en el que se sitúan y contar con una estructura de gestión adecuada. En este estudio, analizamos 134 áreas protegidas que preservan la biodiversidad y los valores culturales en la Amazonia brasileña, pero que varían en sus estructuras de gestión y se sitúan en diferentes contextos de amenaza. Aquí utilizamos un indicador a nivel de gestión y un indicador de contexto territorial basado en las amenazas (que incluye la deforestación, la minería y los incendios) para clasificar las áreas y ofrecer acciones específicas para cada contexto. Basándonos en nuestra clasificación, recomendamos invertir en esfuerzos de protección y aplicación de la ley en las zonas más amenazadas, ya que otras iniciativas correrán un mayor riesgo cuando se lleven a cabo en estos lugares. Las áreas protegidas con puntuaciones altas a nivel de gestión pueden fomentar acciones innovadoras de conservación comunitaria, mientras que las más deficientes requieren invertir en instrumentos básicos, como planes de gestión y la formalización de consejos de gestión. Reforzamos la necesidad de disponer de datos completos y actualizados sobre las áreas protegidas de la Amazonia, especialmente en lo que respecta a la gobernanza y las organizaciones locales, para que los financiadores, las organizaciones no gubernamentales y las autoridades públicas puedan tomar decisiones con mayor conocimiento de causa.

RÉSUMÉ

La conservation communautaire engage les acteurs locaux et génère des gains socio-économiques qui favorisent la qualité de vie tout en protégeant l'équilibre territorial et la biodiversité dans les zones protégées. Cependant, pour que les efforts de conservation de cette nature soient efficaces, le contexte territorial dans lequel ils sont situés doit être compris et la structure de gestion adéquate. Dans cette étude, nous avons analysé 134 zones protégées qui préservent la biodiversité et les valeurs culturelles en Amazonie brésilienne, mais dont les structures de gestion varient et qui sont situées dans des contextes de menace différents. Nous utilisons ici un indicateur de niveau de gestion et un indicateur de contexte territorial basé sur les menaces (y compris la déforestation, l'exploitation minière et les incendies) pour classer les zones et proposer des actions spécifiques au contexte. Sur la base de notre classification, nous recommandons d'investir dans des efforts de protection et d'application de la loi dans les zones les plus menacées, car d'autres initiatives seront plus risquées lorsqu'elles seront mises en œuvre dans ces endroits. Les zones protégées dont le niveau de gestion est élevé peuvent favoriser des actions de conservation communautaires innovantes, tandis que les zones les plus déficientes nécessitent des investissements dans des instruments de base, tels que des plans de gestion et la formalisation de conseils de gestion. Nous insistons sur la nécessité de disposer de données complètes et actualisées sur les zones protégées en Amazonie, notamment en ce qui concerne la gouvernance et les organisations locales, afin que les bailleurs de fonds, les organisations non gouvernementales et les pouvoirs publics puissent prendre des décisions plus éclairées.