
Faculty of Social Sciences

Faculty Publications

Assessing the effectiveness and justice of protected areas governance: Issues and situated pathways to environmental policies in Río Negro National Park, Paraguay

Bonatti, M., Bayer, S., Pope, K., Eufemia, L., Turetta, A. P. D., Tremblay, C., & Sieber, S.

2023

© 2023 Michelle Bonatti et al. This is an open access article distributed under the terms of the Creative Commons Attribution License.
<http://creativecommons.org/licenses/by/4.0/>

This article was originally published at:
<https://doi.org/10.3390/socsci12020071>

Citation for this paper:

Bonatti, M., Bayer, S., Pope, K., Eufemia, L., Turetta, A. P. D., Tremblay, C., & Sieber, S. (2023). "Assessing the effectiveness and justice of protected areas governance: Issues and situated pathways to environmental policies in Río Negro National Park, Paraguay." *Social Sciences*, 12(2), 71.
<https://doi.org/10.3390/socsci12020071>



Article

Assessing the Effectiveness and Justice of Protected Areas Governance: Issues and Situated Pathways to Environmental Policies in Río Negro National Park, Paraguay

Michelle Bonatti ^{1,2,*}, Sabeth Bayer ¹, Kamila Pope ¹, Luca Eufemia ^{1,2}, Ana Paula Dias Turetta ³, Crystal Tremblay ⁴ and Stefan Sieber ^{1,2}

¹ Leibniz Centre for Agricultural Landscape Research (ZALF), Eberswalder Straße 84, 15374 Müncheberg, Germany

² Department of Agricultural Economics, Faculty of Life Sciences Thae-Institute, Humboldt-Universität zu Berlin, Unter den Linden 6, 10099 Berlin, Germany

³ Brazilian Agricultural Research Corporation (EMBRAPA Soils), Rio de Janeiro 22460-000, Brazil

⁴ Department of Geography, University of Victoria, Victoria, BC V8W 2Y2, Canada

* Correspondence: michelle.bonatti@zalf.de

Citation: Bonatti, Michelle, Sabeth Bayer, Kamila Pope, Luca Eufemia, Ana Turetta, Crystal Tremblay, and Stefan Sieber. 2023. Assessing the Effectiveness and Justice of Protected Areas Governance: Issues and Situated Pathways to Environmental Policies in Río Negro National Park, Paraguay. *Social Sciences* 12: 71. <https://doi.org/10.3390/socsci12020071>

Academic Editor: Nigel Parton

Received: 3 November 2022

Revised: 20 January 2023

Accepted: 23 January 2023

Published: 29 January 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Abstract: Protected areas are a fundamental element for the protection of ecological integrity and, in some cases, the livelihood of local communities worldwide. They are also embedded in socio-ecological systems, and their management is subject to various political, economic, and social influences. Good governance of protected areas is recognized as a decisive aspect of ecological conservation, which is at risk in institutional contexts where there is a weak scope of action alongside issues with misrecognition of key actors and their representation in procedures. In this context, the present study case aims to assess the performance of the Río Negro National Park governance system in terms of effectiveness and justice to enable the identification of strategies to improve this protected area governance system for the achievement of its desired outcomes. Using the socio-ecological systems approach, this paper proposes an analytical framework for the performance assessment, including both the effectiveness and justice of the governance of socio-ecological systems, stemming from the socio-ecological justice framework. It uses mixed methods based on semi-structured in-depth interviews supplemented by a focus group discussion, participant observation, and secondary data analysis. Results show that the governance of Río Negro National Park is negatively impacted by low-capacity, a lack of human, financial, and technical resources, as well as the lack of recognition of the indigenous community of the Yshiro and the rural community as key actors, leading to a lack of representation of their interests, values, and knowledge in norm-making and decision-making processes. The findings unveil some windows for improvement through better-designed environmental policies specifically based on collective action and social learning. The results demonstrate that effectiveness and justice influence each other and, therefore, are deeply intertwined. From the assessment conducted, the paper highlights the components of the governance system that should be improved to achieve good governance of the protected area as a socio-ecological system, promoting the ecological integrity and the dignity of life (socio-ecological justice) of the individuals and communities that are part of this system.

Keywords: socio-ecological justice; social learning; inclusive decision-making; community participation; social capital; collective action

1. Introduction

Protected areas (PA) are considered a key instrument for the survival of genetic resources and species as well as the health of ecosystems around the world (CBD 2004; Mulongoy and Gidda 2008; Ervin et al. 2010; Rands et al. 2010; Balasinorwala 2014; Cumming and Allen 2017; Pacifici et al. 2020). Worldwide, their coverage has increased in number and scope since 2010, with over 22 million km² of land and 28 million km² of ocean protected or conserved. Remarkably, 42% of the total coverage in 2021 had been added since 2011 (Bingham et al. 2021). However, species remain threatened, environmental degradation continues, and biodiversity is still declining (Butchart et al. 2010; Rands et al. 2010; Bingham et al. 2021).

PAs provide livelihoods for almost 1.1 billion people and are an important factor in ensuring global food security and ecosystem services (CBD 2004; Butchart et al. 2010; Ervin et al. 2010), thus requiring PA management to be effective and fair (CBD 2010; Zafra-Calvo and Geldmann 2020). Armitage et al. (2012) state that a detailed understanding of how governance influences a protected area can enhance intervention strategies to achieve desired outcomes. For these reasons, concerns regarding PA governance are receiving increasing attention from researchers and international organizations (Steiner et al. 2003; Graham et al. 2003; Armitage et al. 2012; Borrini-Feyerabend et al. 2013; Borrini-Feyerabend and Hill 2015; Arthur 2021), as well as the extent to which PA management protects the values and objectives for which each PA was established (Borrini-Feyerabend et al. 2013; Stanciu and Ioniță 2014; de Castro-Pardo and Urios Moliner 2016).

Aiming to identify and evaluate how well protected areas are being managed, international initiatives have set standards and carried out assessments of PA management effectiveness (Leverington et al. 2010) and existing operating governance schemes (Eklund and Cabeza 2017). According to Biermann and Kim (2020), although the performance of environmental governance systems can be measured in multiple ways, it can generally be divided into two focuses in terms of problem-solving and democratic and transparent procedures, both deeply connected. Similarly, Zafra-Calvo and Geldmann (2020) argue that the assessment of the performance, or what they call the efficacy of PAs should show if their management is producing measurable “outputs” in terms of effectiveness and equity, as well as if these are delivering the desired “outcomes” for the protected area. In these terms, effectiveness is related to what is done within the governance system to achieve the overall objectives, including responsibilities and accountabilities regarding capacity, resources, enforcement, and decisions. On the other hand, Zafra-Calvo and Geldmann (2020) define the notion of equity as fairness, arguing that it is generally understood as a multi-layered notion, embracing questions of distributional, procedural, and recognition justice. Whilst Zafra-Calvo and Geldmann (2020) interchangeably use the notions of equity, fairness, and justice, in this paper, for the sake of conceptual clarity, we adopt the term justice since it embraces the notions of equity/fairness alongside other social demands that go beyond questions of equity.

Although there is a growing body of literature conducting PA management performance assessments, little attention is given to PA governance issues in the Latin American context (Leverington et al. 2010), and even less in Paraguay. For instance, the Paraguayan Pantanal receives little attention in the scientific world, with most existing scientific studies limited primarily to biological and anthropological studies of this unique ecoregion. For instance, at the beginning of this research, the diminished number of scientific publications regarding this area posed an enormous challenge (Carrón 2003; Mereles 2000; Blaser et al. 2004; Blaser 2009; Salas-Dueñas et al. 2004; Horton 2010; Eufemia et al. 2018; Bayer 2018).

Furthermore, understanding justice in PA management is an emerging focus of research, although it is rarely integrated into PA assessment efforts (Zafra-Calvo and Geldmann 2020; Moreaux et al. 2018; Franks et al. 2018; Friedman et al. 2018; Biermann and Gupta 2011). Seeking to contribute to filling these research gaps, in this paper, we aim to

assess the performance of the Río Negro National Park (RNNP) and its buffer zone in the Paraguayan part of the Pantanal (Figure 1) in terms of effectiveness and justice.

The overall research questions focus on understanding: who are the actors in fact involved in the PA governance system as opposed to the actors institutionally recognized by the governance system (due recognition of the actors, Figure 2); what are the capacities and limitations those actors bring to managing the protected area (scope of action of the governance system, Figure 2); and to what extent do the actors participate in norm-making and decision-making processes concerning the protected area (due representation procedures of Figure 2).

Considering the profound interconnections of the performance elements related to effectiveness and justice, we look at the “outputs” in two ways: on the one hand, in terms of the effectiveness of this PA governance, focusing mainly on capacity and human resources; and, on the other hand, in terms of its justice in terms of distribution, recognition, and representation, to deliver the PA desired “outcomes” for the protection of the RNNP ecological integrity and the dignity of life of the individuals and communities subjected to this governance system.

The presented case of Río Negro National Park contributes to increasing knowledge about PA governance by providing insights into the portfolio of PA governance in a Paraguayan real-life scenario and a baseline that can be transferred to similar contexts, like other PAs in Paraguay or other Latin American countries facing similar frameworks and challenges. Moreover, the governance performance analysis combining effectiveness and justice is a new perspective that will not just contribute to the limited scientific research in Paraguay but also provide valuable insights into the prerequisites for improving PA governance and mechanisms to ensure effective and just PA governance systems that promote ecological integrity and the dignity of life.

The Governance of Socio-Ecological Systems: Assessing Effectiveness and Justice

Human–environment interactions are complex as they take place in different ecological and human-made systems (Ostrom and Cox 2010). To understand the complexity of human–environmental systems and to find ways to govern and manage these systems sustainably, Elinor Ostrom developed the socio-ecological systems (SES) approach by combining potentially relevant variables contributing to sustainable or unsustainable outcomes of these systems (Cleveland et al. 1996; Ostrom 2009; Ostrom and Cox 2010). According to the SES approach, protected area performance depends on the social, economic, and political settings as well as the conditions under which it is operated, determined by components that affect each other, such as the natural resources and systems of the area, the governance system through which the PA is managed, and the actors subject to the PA’s governance. Interactions, like interventions implemented at the PA, are influenced by these components and are transformed into outcomes.

In this paper, the governance of PAs is understood as a system that emerged to achieve desired goals within a defined socio-ecological system (protected area), in which rights and stakeholders, from inside and outside the PA, with differing interests and perceptions, interact to drive decisions that influence the performance of the PA management, based on formal (i.e., laws and regulations) and informal rules (i.e., local, indigenous, and community traditions and behaviors). Therefore, considering that the objective of this paper is to assess PA performance in terms of effectiveness and justice of the RNNP governance system, we adopt the SES approach (Ostrom 2009; Ostrom and Cox 2010), proposing an analytical framework based on the socio-ecological justice model (Pope 2020; Pope et al. 2021).

The socio-ecological justice framework first emerged (Pope 2020; Pope et al. 2021) as a non-definitive model from the engagement of distinct justice and environmental justice theories, both from the Global North and Global South (such as Schlosberg 2009, 2013; Fraser 1996, 2001, 2005, 2008; Nussbaum 2004, 2006, 2011; Sen 2010; Bosselmann 2017). The first generation of environmental justice studies as a field of research was originally

concerned with racial injustices, focusing on the unfair distribution of socio-ecological burdens and benefits (Coolsaet 2021). The criticism over, among others, the focus on the distributive dimension of justice (Peña 2005; Schlosberg 2009, 2013; Rodriguez 2021; Gerber et al. 2021) drove the emergence of new perspectives on the field, known as critical environmental justice studies (Pellow 2018, 2021), which included other dimensions of justice into the concept (Figueroa 2004; Schlosberg 2009, 2013; Suiseeya 2021; Holland 2008, 2017, 2021). Alongside the critical environmental justice from the Global North, studies from the Global South are also contributing to the new wave of this scholarship, highlighting specific issues and perspectives of the Global South through, among others, decolonial thought (Leff 2006, 2017; Grosfoguel 2010; de Santos 2010; Rodriguez 2021).

Part of the new wave of critical environmental justice of the Global South the socio-ecological justice model is a Latin American overarching theoretical architecture that brings together multiple and intersected justice dimensions with a multi-scalar approach and a multiplicity of subjects in a unified, but not uniform, normative scheme (Pope 2020; Pope et al. 2021). This model defines that fair distribution, due recognition, and representation are the minimum dimensions of justice for the promotion of ecological integrity and the dignity of life (Figure 1). Therefore, injustice will happen whenever basic capabilities are limited, impeding the full functioning of an individual, community, or system. These limitations can occur through one or more dimensions of justice, such as maldistribution, non-recognition, and/or misrepresentation.

The socio-ecological justice model defends that the intersections between the distinct dimensions of justice shall be recognized, mainly when marginalized groups of the Global South are at stake. Following Fraser's (2008) perspective, the dimension of (re)distribution represents the economic aspect, whereas the dimensions of recognition and representation represent the socio-cultural and political aspects of social contestations. Regarding the recognition dimension, the socio-ecological justice model adopts Fraser's (1996) status approach. Instead of focusing on valuing individual or group identity, or on the individual psychological aspect, it aims at an objective and institutional recognition of the members of the justice community to enable the creation of institutional paths for these subjects to overcome any subordination to unjust oppression systems.

Furthermore, stemming from ecocentric ethics that include humans, the socio-ecological justice model provides a spatial, temporal, and subjective expansion of the subjects of justice, adopting Fraser's "all-subjected" principle (Fraser 2008) but including current and future generations of humans and non-human entities (Figure 1).

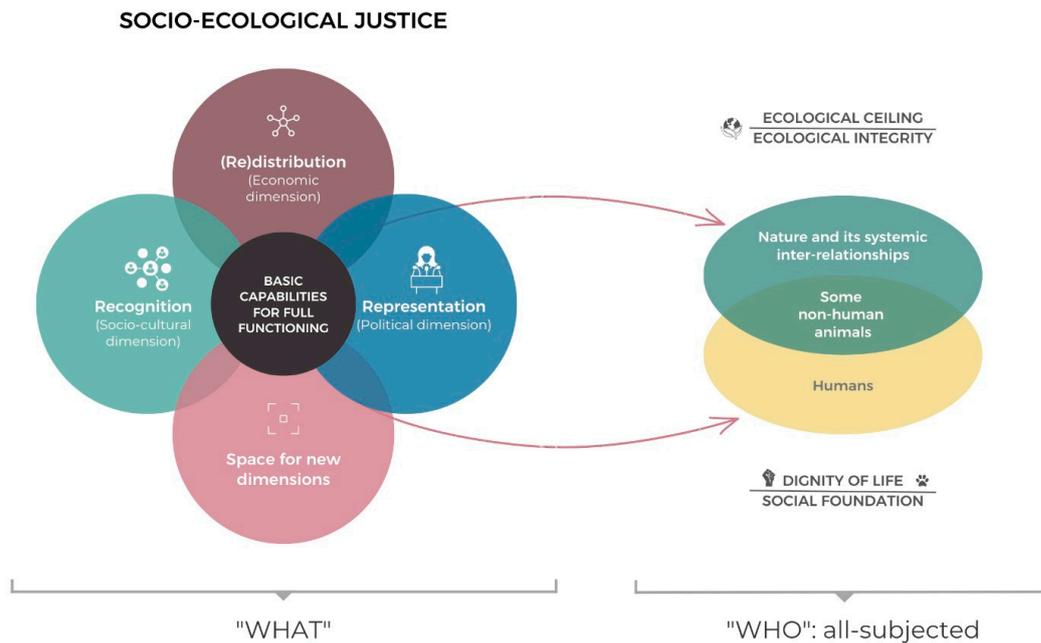


Figure 1. The “what” and “who” of socio-ecological justice (Pope et al. 2021).

Previous works have argued for the use of the socio-ecological justice model to guide the proposition of new environmental policies and governance systems (Pope 2020), the assessment of existing ones (Pope et al. 2021; and Polaine et al. 2022), and the analysis of grassroots movements to inform new public policies (Pope et al., under review). According to this analytical framework, a given governance system will achieve socio-ecological justice by promoting the situated ecological integrity (the ecological ceiling) and culturally defined dignity of life (the social foundation) of all individuals and communities subject to the governance system. Therefore, with socio-ecological justice as the overarching goal, three components can be defined for the performance assessment of the governance of socio-ecological systems: (1) its scope of action; (2) its actors; and (3) its procedures (Figure 2).

In terms of the scope of action, it means a well-defined object with clear and binding desired outcomes and the needed outputs in terms of effectiveness to achieve those outcomes, encompassing capacity and resources alongside monitoring, enforcement, and conflict resolution mechanisms for the management of the governed object. The benefits and burdens of those responsibilities shall be fairly distributed among the subjects of the governance system (distributional dimension of justice, Figure 1). Regarding the actors, they should be defined using the “all-subjected” principle, so all individuals and communities that are subjected to the governance system have their interests, views, and knowledge duly recognized for a just system (the recognition dimension of justice, Figure 1). Finally, concerning the procedures, legitimacy shall be assessed through participation, transparency, and accountability so that all recognized actors, including their interests, views, and knowledge, are duly represented in norm-making and decision-making processes (the representation dimension of justice, Figure 1).

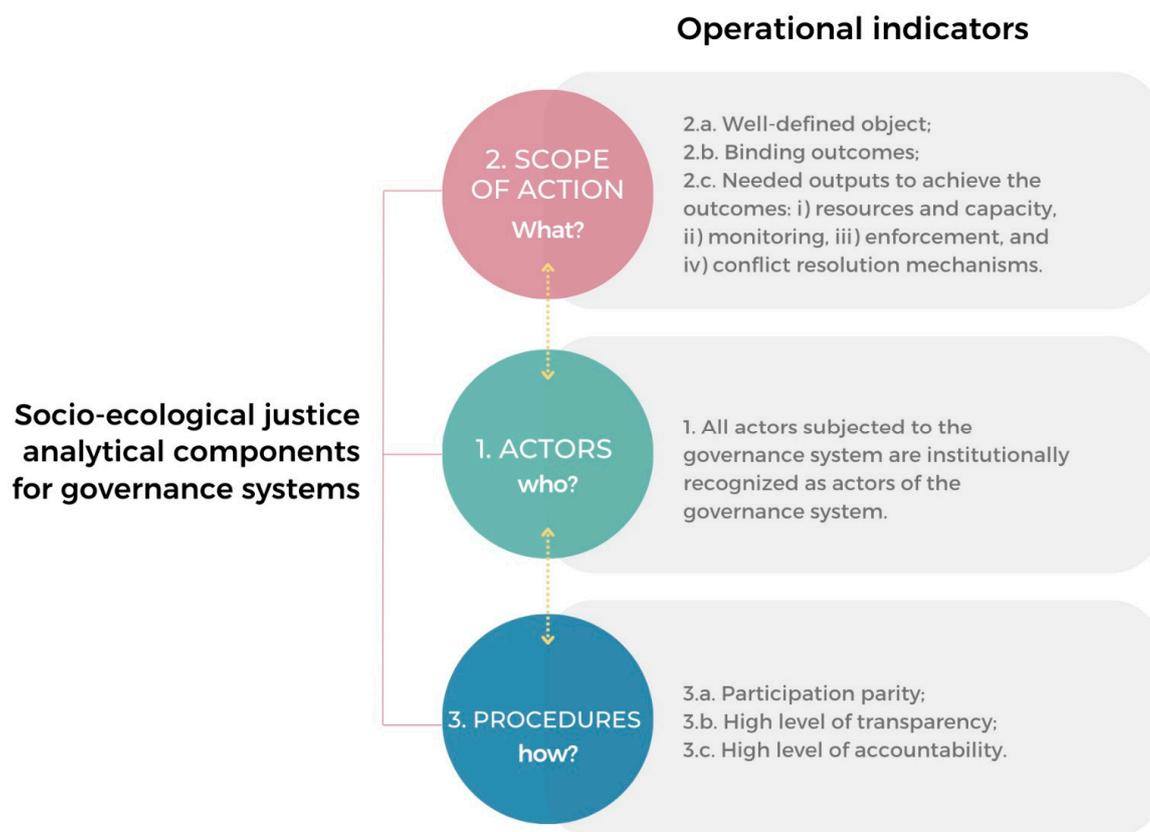


Figure 2. The three analytical components of the governance of socio-ecological systems and its operational indicators that guided the research.

All three components are deeply connected and influence each other. Therefore, the performance of any socio-ecological governance system can only be fully assessed by considering all three components and their interconnections. After the delimitation of the object governed by the scope of action, the next critical step is to define the actors. It is only after this definition that the justice of the governance system can be assessed by looking at the distribution, recognition, and representation dimensions.

The actors in a governance system can vary (Balasinorwala 2014; Borrini-Feyerabend et al. 2013) and may involve governmental and non-governmental entities, which are guided by different interests and motivations (Balasinorwala 2014; Borrini-Feyerabend and Hill 2015). Therefore, a critical point of departure for assessing the governance of protected areas is the understanding of the key actors, their interactions, and structures in decision-making processes (Borrini-Feyerabend and Hill 2015). Such analysis can reveal the relations, interests, and actions within the current governance system, as well as the potential and needs of social capital development.

Next, in Section 2, the methodology is reviewed, including detailed information about the case study. Subsequently, the results section systematizes the empirical data collected in the research process using the analytical framework presented in Figure 2, looking at the governance “outputs” of the PA assessed here in terms of: (i) effectiveness: what capacities and limitations the actors bring in order to manage the area (scope of action of the governance system, Figure 2); and (ii) justice: (a) who are the actors recognized by the governance system (due recognition of actors, Figure 2); as well as (b) to what extent do the actors participate in decision-making processes concerning the protected area

(due representation, procedures of Figure 2). The discussion section also proposes pathways to improve the governance system assessed. Finally, conclusions are presented.

2. Methodology

The methodological path to conduct this study is shown in the following Figure 3.

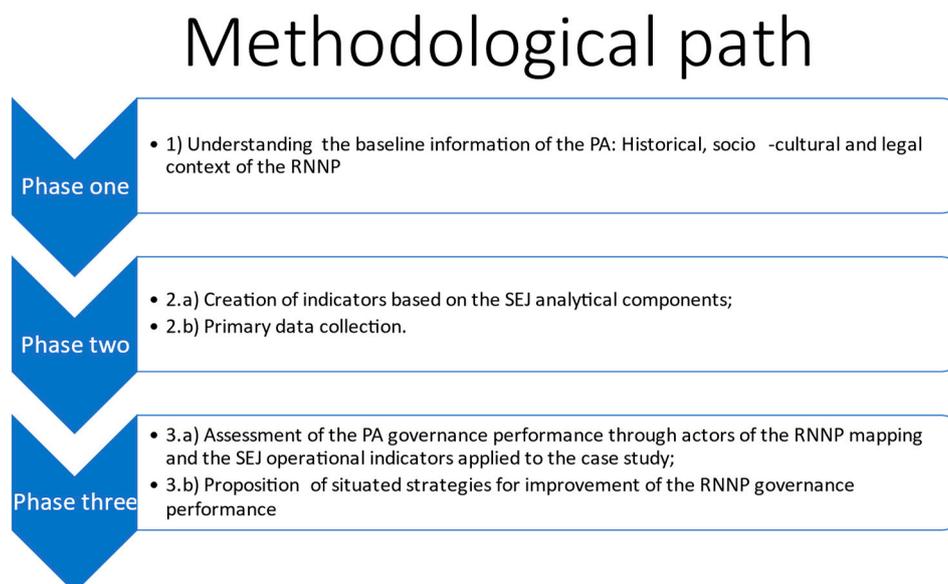


Figure 3. The methodological path to conduct this study.

2.1. Case Study Description

Located at the center of the South American subcontinent (Figure 4), the Pantanal is often referred to as one of the world's largest seasonally-flooded freshwater wetland systems, covering over 160,000 square kilometers. Most of its surface lies within the Brazilian border (140,000 square kilometers), with smaller portions belonging to Bolivia (15,000 square kilometers) and Paraguay (5000 square kilometers) (Wantzen et al. 2008; Junk 2013). The Pantanal is fed by a complex system of interconnected rivers and is surrounded by highland plateaus on the Brazilian and Bolivian sides, which form the Upper Paraguay River Basin (Wantzen et al. 2008). This globally outstanding ecoregion represents a mosaic of flooded grasslands and savannas combined with gallery forests and dryforests. The key driver for its ecological processes and its patterns of biodiversity is the flood pulse, caused by seasonal rainfall patterns in the catchment of the Upper Paraguay River (Junk and Wantzen 2004). During the wet season, 80% of the area is flooded, but in the drier seasons, large areas become completely dry and are colonized by terrestrial plant and animal species (Dinerstein et al. 1995; Junk et al. 2006; Wantzen et al. 2008).

The Pantanal is internationally recognized for its high biodiversity, including rare or threatened species of amphibians, birds, fish, reptiles, mammals, and plants (Swarts 2000; Salas-Dueñas et al. 2004; Horton 2010). Furthermore, it provides numerous ecosystem services, including hydrological services like water purification, groundwater recharge, provision of water, and flood alleviation (Junk et al. 2006; Junk and Nunes de Cunha 2005; Junk 2013; Wantzen et al. 2008).

Like other tropical freshwater wetlands, it has the ability to store carbon and, thus, plays a key role in climate regulation and the mitigation of global climate change. In addition to its ecological significance, the Pantanal has a high aesthetic and cultural value,

being home to various indigenous communities (Junk and Nunes de Cunha 2005; Junk 2013; Chiaravalloti et al. 2017).

The Río Negro National Park (RNNP) (Figure 4) is located in a remote area in the northeast of the country that is difficult to access. It consists of a core zone, two expansion zones (A&B), which include private properties, and a buffer zone where the municipality of Bahía Negra is located (SEAM 2011). Due to its geographical isolation, the core zone is exposed to relatively few external pressures, such as industry or major infrastructure projects. The RNNP lies within the department of Alto Paraguay, which is the second largest in the country, with an area of 82,349 square kilometers. However, it is sparsely populated, with an estimated population of about 16,000 inhabitants in 2015. The population tends to concentrate in the riparian zones of the Paraguay River, where the proximity to the river ensures communication between the villages and small towns. The four main districts are Bahía Negra, Carmelo Peralta, Fuerte Olimpo, and Puerto Casado. Bahía Negra is the largest in size, covers almost half of the entire territory of the state, and is one of the newest municipalities in Paraguay, created in 2005 (Government of Alto Paraguay 2016).

The approximate population in 2017 is 2500, based on 2015 census data (DGEEC 2015), of which the majority are indigenous people. Since the 19th century, the banks of the Paraguay River have been the ancestral territory of the Yshiro indigenous group. Approximately 54,300 hectares of land are registered as their property (FAPI 2018). The Yshiro are the largest human community in the area, and most of their population lives in colonies around the municipality of Bahía Negra. They are part of the “Yshiro Nation.” The population’s livelihoods and economic models in the Bahía Negra district vary widely, from agricultural subsistence practices to activities in the export-oriented livestock sector (Salas-Dueñas et al. 2004; Swarts 2000). The cultural diversity found in Bahía Negra shapes its governance patterns, including the nearby RNNP (Eufemia et al. 2019; Zanardini and Biedermann 2001).

For millennia, this part of the Chaco region was inhabited exclusively by indigenous peoples. In 2022, the indigenous communities of the Ayoreo and Yshiro make up most of the population, with the latter being deeply culturally related to the protected area region (Government of Alto Paraguay 2016). Traditionally, the subsistence strategy of the Yshiro community was linked to what the nature of the Pantanal offered, such as the collection of carob pods (*Ceratonia siliqua*), palm hearts, fruits, and the hearts of several palm species, the palmettos of the caranda (*Copernicia australis*), and the bases of the leaves of the caraguata (*Bromelia balansae*). In addition to gathering activities, they engaged in fishing and certain agricultural practices, such as the cultivation of maize, beans, squash, cassava, and peanuts. Currently, they live in different communities in the south of the municipality of Bahía Negra and their means of livelihood has shifted toward a combination of fishing, hunting, small-scale agriculture, cattle breeding, and employment on cattle ranches or in the logging industry (Carrón 2003; Mereles 2000; SEAM 2011).

The rural community also comprises another important population group, which includes the descendants of immigrants or former day laborers who, in the 20th century, came from other parts of the Paraguayan Chaco to work in the tannin industry. However, with the end of the tannin industry in the late 1980s, many of them remained, despite the lack of further employment opportunities. At present, they earn their livelihood from fishing and small agricultural production, including the raising of goats and, on a smaller scale, cattle and poultry. Further, some work as guides for Brazilians who travel the Paraguay River for sport fishing (Carrón 2003; Mereles 2000; Swarts 2000). Additional employment opportunities for the rural community exist at the port of Bahía Negra as well as within public institutions and the private sector, mostly on neighboring cattle ranches.

Its geographical isolation from major consumption centers and its difficult access conditions have long inhibited the economic development of this region. Historically, the Pantanal was sparsely populated, with economic activity limited to low-density cattle ranching (Junk 2013). While still in a relatively good ecological state, this has changed because of new economic and political demands in the region. Further, climate change

has increased pressure on the Pantanal and its catchment area in recent decades. In each occupying country, the Pantanal has been moving into the focus of nationaleconomic development efforts in recent years. As a result, this unique ecoregion, with its high biodiversity and ecosystem services, is under threat. The livelihood of rural and indigenous communities is also threatened by misguided and poorly developed land-use change, including large-scale deforestation for intensified agricultural production, like cattle ranching, periodic burnings, uncontrolled fires, pollution, and large infrastructure projects, such as dams and hydropower schemes (Junk and Nunes de Cunha 2005; Alho and Sabino 2011; Bergier 2013; Calheiros et al. 2012). These activities have caused a wetland loss of approximately 12% of its area since 1980 (Rice et al. 2018).

As a biodiversity hotspot and a unique site for wildlife conservation in Paraguay, the ecological importance of the national park lies in its location, which makes it representative of the large ecological transition area between the Amazon region and the Chaco region. Due to the convergence of the different natural systems, the diversity of flora and fauna in the national park is remarkable, and some of the animal species classified as threatened by the International Union for Conservation of Nature (IUCN) can only be found in this region of the country (Asociación Guyra Paraguay 2003; 2018; Salas-Dueñas et al. 2004; SEAM 2011).

Due to its ecological importance, the Rio Negro National Park was officially founded in 1998 within the borders of the Ramsar site of the Paraguayan Pantanal with an original surface area of 30,341 hectares (Resolution n. 427/IBR). Three years later, in 2001, the Gran Chaco Biosphere Reserve (4,707,240 hectares) was established in the region, with the now “Reserve Area for the Rio Negro National Park” as a buffer zone of 281,630 hectares (Decree SEAM No 13,202) (Government of Paraguay 2000; SEAM 2011). Subsequently, in 2004, the area was divided into two geographically separate conservation units (the northern and southern expansion zones), and the reserve area of Rio Negro National Park was reduced to 123,786 hectares (Decree SEAM n. 14,218). Thus, as of 2022, the RNNP is a PA, last created by Decree n. 14.218/2004 from the Paraguayan executive power, with the objective to protect this unique ecosystem and favor the sustainable development of the communities surrounding this socio-ecological system. The formal governance of this PA is a government-led governance model.

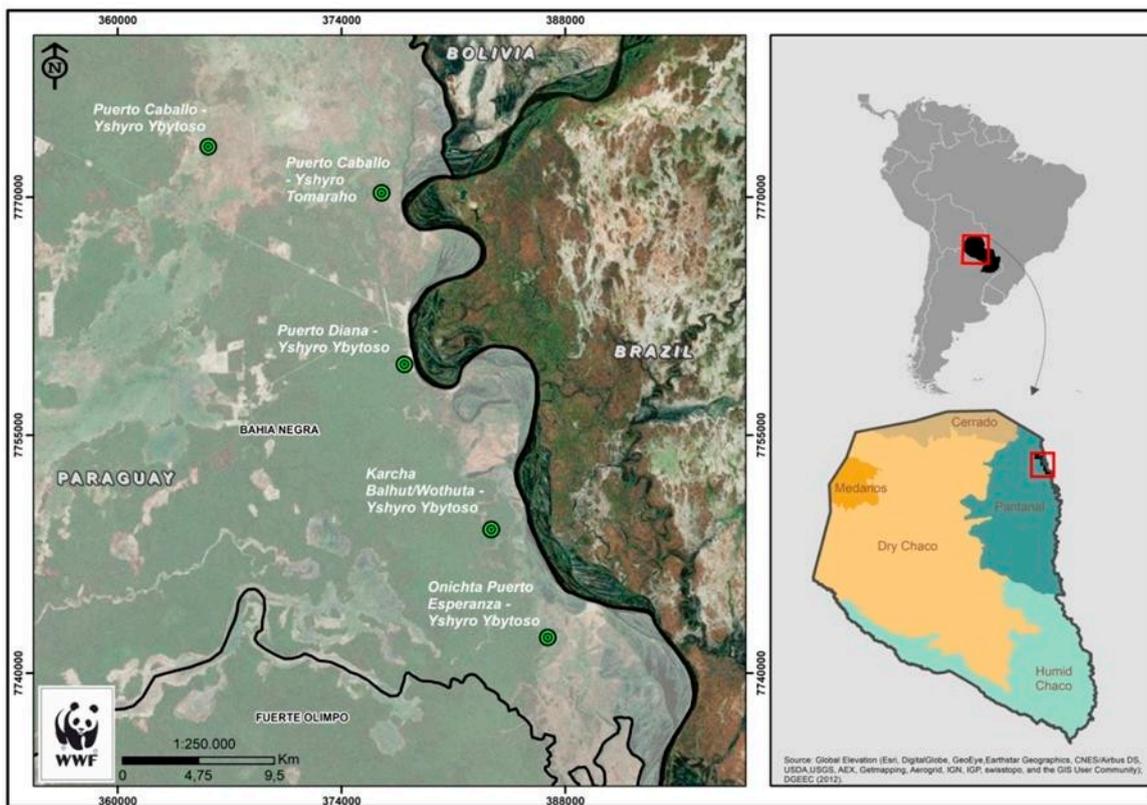


Figure 4. The Paraguayan Pantanal. Source: Global Elevation (Esri, DigitalGlobe, GeoEye, Earthstar Geographics, the French Space Agency (CNES)/Airbus Defense and Space, the U.S. Geological Survey (USGS), Adapter Engine Extended (AEX), Getmapping, Aerogrid, Institut Geographique National (IGN), Zonificación Sísmica–Geotécnica (IGP), swisstopo, and the Geographic Information Systems (GIS) User Community); Dirección General de Estadística, Encuestas y Censos (DGEEC) (2015).

2.2. Methods

Designed as a qualitative case study analysis, this work assesses the situation at the case study site based on empirical evidence as of 2022. This format is chosen because it is a feasible technique that facilitates a sustained exploration of the PA governance system in the specific case of the Río Negro National Park and provides an in-depth analysis from below of its performance in terms of effectiveness and justice to deliver the desired “outcomes” for the protection of the RNNP. These outcomes include ecological integrity and the dignity of life of those individuals and communities subjected to this governance system, in other words, the promotion of socio-ecological justice.

In order to gain insights into otherwise inaccessible dimensions of human life in the rural and indigenous community in the district of Bahía Negra, primary data was collected through participant observation. This methodological approach, in which the researcher interacts with people in their everyday lives, is well suited for exploring processes and relationships between different people and events, understanding continuities over time, and acquiring knowledge about the immediate socio-cultural contexts in which human existence develops (Jorgensen 2015). The primary forms in which the information was recorded in Bahía Negra and the indigenous community of the Yshiro in Puerto Diana, located in the southern part of the municipality of Bahía Negra, were the keeping of a field diary alongside the use of photographic and audio equipment.

Additionally, a focus group discussion (FGD) was carried out in the community of Puerto Diana with community representatives, leaders from the indigenous community of Yshiro, and members of the Union of Indigenous Communities of the Yshiro Nation

(UCINY). This method is proven to be a good way to gather people with similar backgrounds or experiences to discuss a specific topic of interest. The strength of FGDs is that they rely on allowing the participants to articulate agreements or contradictions during the discussion (Krueger 1988). This methodological approach allows the researcher to gain insights into a group's way of thinking, as well as the spectrum of opinions and ideas, including inconsistencies and differences that may exist in a particular community in terms of beliefs, experiences, and practices (Start and Hovland 2004). Our FGD focuses on land conflicts in the research area and indigenous cosmovision.

From the primary data collected in these two first stages of the research process, different actors and groups of actors (Appendix A) were identified and contacted during the research stay in Paraguay, including representatives from the public sector, civil society, and private sector, thus enabling a first draft of actor mapping for the PA governance. Groups of actors refer to people belonging to the same institution (e.g., one interview with different representatives from the ministry). This scope ensures a diversity of the actors' perspectives. The actor mapping was then further developed after conducting a total of 27 semi-structured interviews with key informants from the public sector, civil society, and private sector. In qualitative research, a semi-structured interview is a frequently used and validated method (Mason 1994; Johnson 2001). Following the analytical framework adopted (Figure 2), an actor mapping was made applying the "all-subjected" principle. A clear definition of who is subjected to the governance system (its actors) enables assessing not only the justice of the system but also its effectiveness.

From the public sector, interviews were conducted with representatives of the Environmental Secretariat, which is the PA's managing authority. Individuals include administrative officials in Asunción as well as the park guard, who directly works in the protected area. In addition, interviews were conducted with representatives of the Tourism Secretariat as well as with regional and local officials from various authorities and from the military. Civil society is represented by members of national and international environmental and human rights non-governmental organizations (NGOs), experts from academia, rural and indigenous community members, as well as the local media.

All interviews were formulated to address the following topics: general information regarding the PA (e.g., what are the threats and challenges to and for the PA?) and its management (e.g., how is the PA managed? By who?); local participation in PA management (e.g., are there existing forms of participatory management of the PA?); power relations (e.g., what sector holds the stronger power/influence?); influences and cooperation among different actors and sectors (e.g., with regard to the PA, how are institutions, civil society groups, and the private sector interconnected and related?); and the socio-economic context of the PA and its surroundings (e.g., what is the socio-economics of the region?) (see Appendix A).

The interview protocol (see Appendix A) is partially based on the Management Effectiveness Tracking Tool (METT), which is the world's most frequently used PA management effectiveness evaluation tool. It was developed to report progress in improving management effectiveness in individual PAs by applying a simple, questionnaire-type approach with two sections (Leverington et al. 2010). First, threats to the PA are identified and ranked. Next, it comprises an assessment form, which provides valuable information about the PA, such as its legal status, PA regulations, PA objectives, planning processes, staff, budget, participation of local communities and indigenous peoples, and economic benefits (Stolton and Dudley 2016). It was considered useful to structure the interviews on the basis of METT in order to identify the main threats and their impact on the PA, even though the identification of threats and their impact was not the main focus of this research. Understanding these provides important data that better contextualizes the study area. Applying the METT questions enabled a better delimitation of the PA governance actors and the relationships between them, their territory, and the governance system (as proposed by the socio-ecological approach).

A pre-test of the interview guideline was carried out with WWF employees, which enabled the adaptation of the survey to the local context. The interviews were recorded with the formal authorization of the interviewees. The primary data collected through the aforementioned methods was then augmented with secondary data through an analysis of documentary evidence. The study (including data collection and treatment) took place from May 2018 to June 2019.

3. Results

The results (Figure 5) are presented in two subsections: (a) scope of action and actors, and (b) actors' participation. Both subsections provide the current scenario and the information needed for the PA governance performance assessment in terms of effectiveness and justice. Seeking to avoid the top-down "one-solution-fits-all" approach, Section 3 aims to identify specific issues in the current RNNP governance system using a bottom-up approach that will, in Section 4, result in proposals for improving the PA governance system.

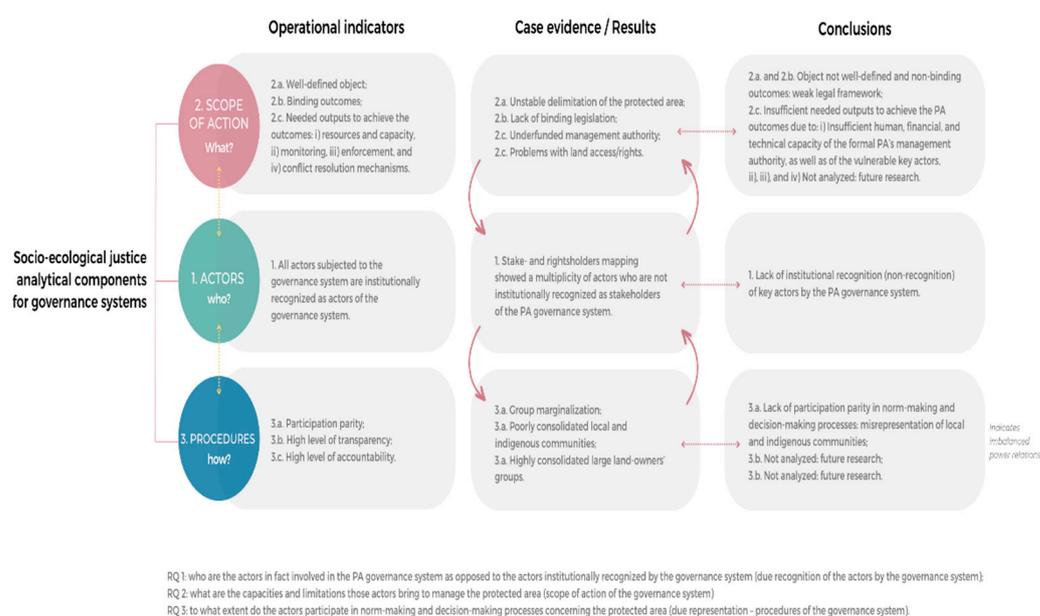


Figure 5. Summary of results connecting operational indicators to case evidences.

3.1. Scope of Action and Actors

Without denying the importance of the official creation of the RNNP by the Paraguayan Government, the data collected for baseline information show that the complicated processes throughout the years, alongside the many and frequent legal changes using non-binding regulations, have created a weak legal framework, severely restricting the performance of the governance of this PA. Furthermore, the fragmentation of the area has distorted the objectives of the PA, creating considerable legal, technical, and management challenges for the implementation of measures on site, constituting a threat to the effectiveness of the governance of this PA (SEAM 2011). This situation is aggravated by the fact that only the core zone of the RNNP is state-owned (30,000 hectares), while the two expansion zones comprise private properties where productive activities take place and cause considerable land-use changes. In some parts of the buffer zone, extensive agriculture is practiced, which is accompanied by severe deforestation, though some civil society actors in other parts of the buffer zone have acquired land for conservation measures (SEAM 2011).

In addition, the protected area authority is the Ministry of the Environment (SEAM), which until June 2018 had the status of a secretariat and was affiliated with the Ministry of Agriculture, only recently becoming an independent ministry. However, SEAM has neither infrastructure nor staff within the protected area, and the department for protected areas within SEAM has no budget responsibility of its own, meaning its expenditures are within the limits of the funds allocated to the Directorate General for the Protection and Conservation of Biodiversity (Asociación Guyra Paraguay 2003; 2018). These features related to the scope of action of the RNNP governance system lead to issues in terms of effectiveness in achieving its desired outcomes.

In terms of its actors, the confrontation between the data collected for baseline information of the RNNP and the data collected for the actor-mapping is summarized in Figure 6. These results show that some key rightholders and stakeholders who are, in fact, actors within the PA governance system are neither legally nor institutionally recognized as such. Furthermore, as shown in the next sub-section, the legal provision for the political participation of some actors, i.e., the legal protection of their rights to participate, is not implemented in the RNNP governance system.

Actors: the ‘who’ of the governance system



Figure 6. The actors (the “who”) of the RNNP governance system.

“The entire region is characterized by the absence of the state” (PS3).

This statement reflects the challenging baseline in the whole district of Bahía Negra. It is deplored and lamented by the majority of the actors interviewed, including from the civil society and public sector representatives. The state’s absence in this remote area is evident in many respects, such as the lack of infrastructure, disrupted electricity supply, poor public transport connections to larger cities, a lack of medical services and hospitals, and no existing higher education institutions. The public sector is strongly influenced by the prevailing two-party system, either liberal or Colorado.

At the national level, the government provides political guidelines for environmental policy and establishes the legal basis for the declaration and safeguarding of land tenure rights for protected areas in Paraguay. However, according to experts from national NGOs and academia, the lack of political will to develop and support a national environmental agenda has been and still is evident in the fact that the central government primarily pursues economic goals, focusing mainly on the private sector.

“The economic incentive to take and implement environmental measures is part of the weakness of the whole system” (CS4).

Although this sole fixation on economic interests, decoupled from national measures to improve socio-ecological protection, is severely criticized, ultimately it is reflected in the national budget distribution. In 2018, only 0.08% of the national budget (Government of Paraguay 2018) was allocated to the environmental authority, the Ministry of the Environment (SEAM), which disposes of the mandate for implementing the national environmental policy alongside environmental and nature conservation concerns (Government of Paraguay 2000). Up to and including June 2018, SEAM had only the status of a secretariat and was affiliated with the Ministry of Agriculture, only later becoming an independent ministry. In the logic of Borrini-Feyerabend et al. (2013), SEAM has the role of a rightsholder, as it disposes of the *de jure* management authority over the national protected areas and is the main institution for carrying out activities in this context (PS1). Experts stress that the current institutional development of the Secretariat has been underpinned by a general “disempowerment of the institutionalism of the SEAM” (CS3). Its *de jure* management responsibility is not reflected in its *de facto* management implementation for several reasons. Various experts recognize and emphasize the scarce personnel situation, both in the capital and on site within the RNNP, including a lack of a permanent park ranger or other park personnel as well as a lack of financial security. This is reflected in the following statement:

“The national system of protected areas is quite weak, starting with the institution that manages these areas.” (CS4)

Even if the employees are highly committed to conservation, the dependency on the national government impedes the implementation of measures that serve to ensure the conservation of its protected areas, thus limiting its scope for action. In addition to the Ministry of the Environment, the Secretariat for Tourism (SENATUR) is a rather new actor in the region, which is gaining in importance within the context of the UNESCO application to declare the Paraguayan Pantanal to be a world natural heritage site. Due to the lack of infrastructure and the difficult access to the region, tourism has not yet played a major role. The interviews show that the declaration establishes a remarkable potential to improve the visibility and network of this neglected territory:

“The project of the UNESCO declaration has a chance to move forward in term of building and strengthen a network among the different actors.” (CS5).

Their interest is both economic and ecological, as SENATUR aims to increase the number of tourists in the region, thereby creating new income opportunities for the local population while maintaining the protection of the Paraguayan Pantanal (PS3). As in the case of SEAM, the national budget for the tourism sector is small, severely restricting SENATUR’s scope for action (Government of Paraguay 2018). At a national level, one further actor is the military, whose presence in the region is based on national sovereignty and border protection purposes along the river. Although it has military bases in the immediate vicinity of the protected area in the buffer zone, there is no direct overlap between the protected area authority and the military. The fact that the military has been active in the region for many decades has a positive effect on the relationship between the military and the rural population, especially as the national government seems to be absent from the region. However, this does not apply to the relationship between the indigenous population of the Yshiro community and the military, which is burdened by past territorial conflicts (SEAM 2011).

At a regional level, the government of the department of Alto Paraguay is responsible for regional development planning and assumes an important strategic role. Development planning is an essential activity of the government, which precedes action and guides the efforts of the Departmental Government Administration, facilitating the achievement of objectives and, consequently, the fulfillment of its objectives. Currently, the focus of the

government of Alto Paraguay is primarily on the economic development of the region. Although the regional development plan of Alto Paraguay considers environmental issues, Rio Negro National Park is not included in the plan (Government of Alto Paraguay 2016).

Regarding the local level, the interest in environmental issues and knowledge of the importance of the national park for the protection of the Pantanal were not widely perceived in the interviews with administrative representatives of the municipality. Their main interest is economically driven, focusing mainly on livestock production, which promises higher incomes and tax revenues. The local administration does not seem to have high intentions to enhance environmental protection, and although an environmental council within the municipality is supposed to exist, it was not perceived as active.

In summary, for the key public sector actors, the limited budget, the limited human resource capacity, and the often politically motivated change of staff due to the two-party system have weakened the institutions concerned. The need for a more consolidated civil society as a social actor that can complement public institutions in the field of environment and nature conservation is highlighted in interviews with various experts.

“The complement comes from the civil society organizations, which, in my opinion, must cooperate with the state institutions, which are really very weak in terms of environmental aspects, in the form that state measures to protect the environment are supported by the environmental civil society” (A1)

Three key actors in civil society have been identified as working closely with other actors at a further level (the indigenous community of the Yshiro, the rural community in Bahía Negra, and the locally active NGO Guyra Paraguay). In addition to consolidated groups, there are other actors working in the field of nature conservation, which are also briefly presented.

In the Bahía Negra district, the indigenous community of the Yshiro and the rural community are the most important population groups and rightsholders, whose relationship is marked by conflict and mistrust. The indigenous community of the Yshiro has been identified as a key actor and rights holder in the region, which is closely linked to the Pantanal and its natural resources. As they have been using and living in this territory for several centuries, the Yshiro community possess a profound knowledge of the flora and fauna of the region, as well as their ecological connections. The Paraguayan Pantanal is of great cultural significance for this group, and they pursue cultural and subsistence-oriented interests. In 2001, leaders and community members of the Yshiro founded the Union of Indigenous Communities of the Yshiro Nation (UCINY), aiming to promote the land tenure rights of the indigenous population and increase the participation of indigenous people in decision-making processes. This self-institutionalized group receives support and legal assistance from the national NGO Tierraviva, which is committed to promoting and defending the human rights of indigenous peoples in Paraguay with a focus on the territorial restitution of ancestral territories (Eufemia et al. 2018). The Yshiro have land tenure rights in the immediate vicinity of the core area of the national park, as well as in the buffer and expansion zones. However, many conflicts over land access and rights exist in the region and their access to culturally important ceremonial sites is often denied by the current landowners. The community of the Yshiro lives in different communities along the Pantanal, the largest being Puerto Diana, about two kilometers south of the municipality of Bahía Negra. Furthermore, land grabbing and group marginalization are pressing problems revealed in the interviews. Both are motivated by the economic interests of a minority of large-scale landowners (e.g., landlords, etc.). In the context of Paraguay, the high dependence on extractivist models based on exploiting natural resources on a large scale is an engine of inequality that has led to a high concentration of land and wealth (Eufemia et al. 2018).

“There is little knowledge and interest of natural resource management and administration among the rural population” (PS 5)

Additionally, major projects by international donors in the region were classified as a negative experience: “Many government and NGO projects in the past have failed and

had no impact on the community and its wellbeing, and thus did not benefit the community. This creates a great lack of trust on the part of the community.” (PS5)

The rural community in Bahía Negra is also another important key stakeholder in the National Park area. Due to the remoteness and distance of the national park, the connection of this population to the protected area remains low. Nature conservation measures are not a priority for them. As they often live in precarious situations, the interviewees highlighted the state’s obligation to take measures to create new income opportunities, thus sustainably improving their living conditions. The commitment of this population group can be classified as low; only a few institutionalized groups exist, such as some producer groups, which usually only serve as a platform for selling products and are less concerned with political participation or exertion of influence. However, the Asociación Eco Pantanal must be mentioned, which comprises young rural community members who are committed to the protection of the Paraguayan Pantanal. Nevertheless, the organizational strength of this group cannot be further analyzed because their interest in cooperating within the research was very low. For this reason, a more in-depth analysis of this actor cannot be carried out.

At the national level, two environmental NGOs in particular, Association Guyra Paraguay and the World Wide Fund for Nature (WWF) Paraguay, play a significant role. Both organizations have very well-trained personnel with diverse knowledge of the region, and they cooperate closely with each other.

The national NGO Guyra Paraguay has been present in the region for a long time and maintains an ecological research station with an associated ecotourism project in the buffer zone of the RNNP. The protection of natural resources and scientific research in the region are the NGO’s main objectives. As part of its ecotourism project, Guyra Paraguay is, as of 2022, the only actor in the region able to receive national and international tourists. The organization is in constant dialogue with the various actors from the civil and public sectors.

The international environmental organization WWF plays one of the most important roles at the macro level and is committed to the protection of the Paraguayan Pantanal. Within the framework of its Chaco-Pantanal Program, WWF Paraguay, in collaboration with the Technical Secretariat for Economic and Social Planning (STP) of Paraguay, has drawn up a plan for joint actions for the development of programs in various fields, including cooperation for sustainable development and technical cooperation. In this context, both institutions are striving to strengthen the strategic planning of the municipality of Bahia Negra, for which Urban and Territorial Planning (POUT) of the municipality is currently under development. The aim is to initiate an inter-institutional participatory planning process involving all actors living in the municipality.

Private sector actors in the region around the National Park are mostly large landowners, who mainly operate export-oriented extensive livestock farming and, thus, primarily pursue economic interests in the use of the natural resources in the region. They possess partly secured land rights in the expansion and buffer zone of the national park, which are often directly linked to non-transparent and corrupt related land acquisition processes. Land-use change due to extensive livestock farming poses a concrete threat to protection, as the ecosystem is severely disturbed by large-scale, partially illegal deforestation, which often takes place without permission from SEAM, the competent authority. In addition, land rights conflicts with the indigenous population of the Yshiro community are increasing as the cattle breeders further clear forests to secure access to their farms, often illegally.

“This is one of the many violations that a cattle rancher with his class power and economic power can do, he opens a path without communicating to any Paraguayan institution and without consulting the people” (CS6)

The claim to the same territories is the main cause of conflicts between local indigenous groups and large-scale cattle breeders, in which two contradictory concepts of land law predominate: the collective customary law of the indigenous peoples and the private

property law of the agricultural lobby. The private sector actors have a very well-established representation of their interests in the capital, institutionalized in the form of the Rural Association of Paraguay (ARP), and, thereby, can directly influence decisions concerning the use of the expansion zones of the protected area, which is strongly criticized by many civil society actors.

“The power of agribusiness in Paraguay is incredibly high..., they are the ones who rule, establish public policies and economic infrastructure, these people are very influential in all institutions” (CS6)

These unequal power constellations between private sector actors and the local communities represent a challenge not only in the Pantanal but apply throughout Paraguay. “The rural association of Paraguay, representing large-scale soybean producers in the western part of Paraguay, and cattle farmers in eastern Paraguay, are the ones who influence and command the politic all over Paraguay” (CS3).

On the other hand, the Urban and Territorial Planning process has been identified as an important opportunity to increase bridging social capital in the research area and to create trust and improve cooperation mechanisms among the local communities. Therefore, it constitutes a potential tool to empower these groups.

“Communities are strengthened as they learn from other communities. Socialization mechanisms are what matter.” (CS5)

3.2. Actors Participation

The baseline information on the RNNP governance system gathered during the research process shows a weak legal framework (the “what” of the governance system, Figure 2), with the absence of a law approved by the Parliament for the secured protection and continuation of the PA and of a management plan approved by all right holders and stakeholders. It can be argued that such weakness contributes to the disempowerment of the already vulnerable actors, strengthening the actors with better organization and economic power.

In the current governance system, an imbalance of power and interest between the various actors in the public sector, civil society, and private sector that directly or indirectly influence the protection and use of natural resources prevails throughout the study area. The three sectors count platforms, groups, or institutions of varying degrees of consolidation, which positively or negatively influence their participation in decision-making processes. Additionally, inter- and cross-sectoral collaboration between the different groups and institutions varies significantly. In this sense, both initiatives of inter- and cross-sectoral collaboration and profound conflicts between actors have been identified.

Although the civil society sector counts with a few well-equipped NGOs, the local and indigenous communities are marginalized and only partially consolidated into groups, thus severely impairing the recognition of these individuals and groups (their views, knowledge, and interests) as well as their representation in decision-making processes. Intersectoral conflicts further weaken the sector. They are diametrically opposed to the large private sector with its powerful agribusiness lobby, which exerts a strong influence on public institutions and public policy-making, linking purely economic interests with the region and posing a concrete threat to ecological protection, especially in the course of large-scale deforestation for extensive livestock farming. Even though SEAM is the formal management authority for the PA, with the mandate for its ecological protection, it has insufficient human, financial, and technical capacity to counteract the strong agricultural lobby and to develop and effectively implement conservation measures, thereby securing a sustainable environmental agenda and promoting socio-ecological justice. The national and international civil society organizations active in the region are perceived as important components of the public institutions.

In the context of the interviews, the lack of political interest on the part of the national government in a national environmental agenda is highlighted.

“The disempowerment of SEAM is a direct consequence of the government’s understanding of the country’s future, which is not based on sustainability, but on the commodification and financialization of public goods and nature.” (CS3)

Civil society actors are critical of the national government’s clear focus on the country’s economic development, which is completely decoupled from the environmental agenda. Consequently, the economic sector and the environmental sector are polarized, while bridging mechanisms between these institutions do not exist in this context.

“We want the Paraguayan state to understand that its constitution defines Paraguay as a pluri-ethnic and multicultural state. We indigenous people, we Yshiro, are part of this nation. We are part of this region.” (Community member FGD)

This quote clearly reflects the lack of recognition and, consequently, representation of indigenous culture in Paraguay in general. The recognition of people with different identities, cultures, and values that live in the socio-ecological system of the protected area is fundamental not only for the justice but also for the effectiveness of the RNNP management so it can achieve its desired outcomes. To this end, mechanisms that guarantee the recognition followed by proper representation of the various populations and interest groups among different sectors should be fostered by the PA authority. However, “SEAM has no policy or vision for the indigenous people, and it does not have a minimum focus on the knowledge of indigenous people” (CS6).

This lack of recognition and representation of indigenous cultures is not seen as an isolated case of the institution SEAM, but instead is criticized as inter-institutional, which is deeply rooted in society and reinforced by the media and public education.

“There is a disconnection and disinformation in Paraguayan society that comes from the structure and from the system itself and how the press and the media touch on the issue of the indigenous.... Talking about indigenous people is talking of assistance, how to do it to equal them to us, as when we are looking to respect differences and diversity because we are different. This is what would enrich Paraguay, to have a community that has a cosmovision, a community that protects the forests that we need to live.” (CS3)

The protection of the environment and the right of the population to a healthy environment are guaranteed in the first part of the Paraguayan Constitution (Government of Paraguay 1992) and it is mandated to SEAM (Law No. 1561/00). However, the safeguarding of environmental protection in the Constitution is facing great difficulties in Paraguay. “Conservation and environmental protection guaranteed in the Constitution does not work as long the actual implementation is not in favor of nature” (A1).

In this context, the institutional fragility of SEAM constitutes a major challenge. Additionally, land tenure rights and a binding legal status of the PA are essential for safeguarding the integral ecological protection of the protected area. While the RNNP core zone is state-owned, land tenure rights for the two expansion areas that contain private properties of various owners, including large national and foreign landowners, are not secured. On the other hand, the legal status of the PA is not legally binding, as its establishment is based exclusively on a presidential decree and not on a law approved by the parliament. Therefore, the decree can be revoked or amended without a parliamentary decision.

4. Discussion

Good governance of protected areas can be ensured in countries with well-equipped and well-funded public environmental institutions (effective scope of action), a consolidated civil society (strong actors), and protected areas that are governed on the basis of common and transparent decision-making processes based on a secure legal framework (fair procedures). However, ecological conservation is threatened by challenging institutional settings in many countries, where land ownership and resource tenure may be unclear, environmental government agencies have poor capacity and limited political support, members of local communities are poorly consolidated, and powerful individuals seeking economic benefits through unsustainable natural resource exploitation often act

with impunity (Barret et al. 2001; Clements et al. 2010). In such contexts, the lack of capacity, cooperation, and structure impede the full recognition and effective representation of all relevant actors, which is a critical element of good governance for protected areas (CBD 2004; Balasinorwala 2014).

Regarding the case study of this paper, the aforementioned results indicate that the insufficient human, financial, and technical capacity of the formal PA's management authority constitutes the main barrier to the fulfillment of its tasks and responsibilities to protect the ecological integrity and local communities of the RNNP, further endangering the Pantanal ecosystem. Furthermore, uncertain land use rights and a lack of binding laws embedded in a political context that favors economic interests lead to severe land-use changes within private properties, including extensive deforestation and the progress of the agricultural frontier, exacerbating social conflicts in the area. These issues within the scope of action (Figure 5) of the RNNP governance system lead to low levels of effectiveness to achieve its desired outcomes.

This is compounded by a lack of recognition of the poorly consolidated local communities as key actors within the RNNP governance system (Figure 6). These are marginalized communities with limited access to, among other things, education institutions and health care. This misrecognition, in turn, leads to a limited, if not a complete lack, of representation of these communities, their views, knowledge, and interests in rule-making and decision-making processes within the RNNP governance system. These issues within the actors and procedures (Figure 5) of the RNNP governance system lead to low levels of justice, hence limiting the basic capabilities of the local communities to thrive within their environment. However, the issues of misrecognition and misrepresentation also impact the effectiveness of the system, contributing to significant conflicts of interest between the local communities and the agricultural lobby, ultimately signaling a lack of cooperation between the various actors to find common strategies for coordinated protection of the PA. Effectiveness and justice are, therefore, deeply intertwined.

In such a context, it is justified to question how the current performance of the PA governance system can be improved to better achieve its desired outcomes, promoting ecological integrity and dignity of life (socio-ecological justice) for the individuals and communities comprising the socio-ecological system of the PA.

PA experts emphasize that there is no "best PA governance model" (Borrini-Feyerabend et al. 2013). However, due to the complexity of conservation problems, many authors doubt that exclusively government-led approaches to govern protected areas can succeed (Armitage et al. 2012; Borrini-Feyerabend et al. 2013; Stanciu and Ioniță 2014; Worboys et al. 2015). Therefore, the current government governance model in Paraguay, in which the sole responsibility for PA currently lies with SEAM, the national ministry of the environment, must be questioned.

Especially in the context of developing countries that lack sound, stable, and supportive legal and political frames (Stoll-Kleemann et al. 2006), the implementation of consistent protected area policies is threatened (Barret et al. 2001). Such a statement applies to the Paraguayan context, since environmental concerns are not cross-cutting aspects anchoring the national political agenda in all sectors. On the contrary, the national government's strong focus on the country's economic development, decoupled from environmental aspects, is the baseline for the institutional weakness of the RNNP managing authority. These contradictions and the lack of cross-sectoral cooperation in the public sector are common in Latin American countries (Rivas Toledo 2006).

4.1. Finding Pathways: Inclusive and Empowering Governance System

Unequal power constellations among public, civil, and private actors, alongside insufficient exchange and cooperation between these sectors, further exacerbate the difficulties in promoting the protection of the RNNP and its expansion zone. In this regard, the well-consolidated agribusiness lobby groups have a strong influence on the national legislature, increasing pressure on the PA. In a context in which the environmental authority is

unable to ensure that national PAs are effectively and fairly managed, multiple studies highlight the importance of strong actors in civil society that play a key role in building institutional capacity (Horowitz 1998; Bowles and Gintis 2002; Adger 2003; Pretty 2003; Andrade and Rhodes 2012; De Koning et al. 2017).

To avoid ineffective and unfair top-down management, environmental policies that foster community participation are required as part of a successful SEIS system (Ostrom 2010, 2015). One key component for improving PAG performance is an inclusive governance system that guarantees the involvement and empowerment of all individuals and communities subjected to the governance system in PA planning and management (Pretty 2003; Andrade and Rhodes 2012). Yet, the current Paraguayan top-down governance approach severely restricts opportunities for the local communities to be active in decision-making processes and limits incentives for cooperation in pursuit of protecting the PA. To ensure that democratic rights and responsibilities are practiced, as well as that all individuals and communities subjected to this PA governance system are recognized and empowered to be duly represented in policy-making and decision-making processes, the RNNP governance system must shift to a participatory approach.

The financial and human resources deficiencies of the PA's management authority can be complemented by enhanced inclusion of the local communities, not only in decision-making processes but also in creating forms of cooperation (Horowitz 1998; Aswani and Weiant 2004; Pretty and Smith 2004), where "local people can act as law enforcers on a voluntary basis, inhibiting and reducing outsiders' illegal activity in and around PAs" (Andrade and Rhodes 2012).

Including local actors in decision-making processes can potentially create a sense of stewardship and ownership in which residents collaborate with PA managers and act jointly to facilitate ecological protection in PAs (Horowitz 1998). In doing so, the effectiveness and justice of environmental policies for the protection of areas with high biodiversity value will be greatly enhanced (Jones 2012). An inclusive decision-making process has further potential, as discussed by Andrade and Rhodes (2012). They show that community participation in PA management is one of the most important general strategies for developing local community acceptance of PAs and, therefore, can foster their willingness to comply with PA policies and rules.

4.2. Finding Ways 2: Social Capital, Collective Action, and Social Learning

An essential pillar of a participatory approach is the creation of a cooperative relationship with all actors, thus enabling the creation and formation of consolidated groups and new networks (Lane 2001; Mascia 2003). However, the emergence of cooperative arrangements is threatened in a society that is pervaded by distrust and conflict (Wade 2008), which constitutes one central problem in the territory of the RNNP. In this context, social capital is related to "features of social organizations such as networks, norms and trust that facilitate coordination and cooperation for mutual benefit" (Putnam 1993). This is paramount, as social capital will create trust and foster the construction of networks and cooperation within, between, and beyond communities, as "people have the confidence investing in collective activities, knowing that others will also do so" (Pretty and Smith 2004).

Three different types of social capital are identified as important for constructing and maintaining networks: bonding, bridging, and linking (Woolcock 2001). Bonding social capital, the existence of links between people with similar objectives and manifested in local groups (Pretty 2003), can only be partially identified in the study area; it varies widely within the local communities in the Bahía Negra district. The actors' analysis shows that, in the regional context, bonding social capital within the indigenous community can be identified in the form of UCINY. However, it could not be identified for the majority of the rural community, which has only limited organizational strength and is usually represented by a lightly connected group without much commitment.

In terms of bridging social capital, understood as the capacity of those groups to establish links with others that may have different views (Pretty 2003), no exchange mechanisms could be identified across the local communities. As shown in the results section, the lack of trust plays a critical role, not only between the two communities but also in the relationship between the community and consolidated civil society actors, like large NGOs and public international institutions, since the local communities consider the impact of international initiatives to be positive and have had their confidence in these institutions severely impaired.

Lastly, regarding linking social capital, the ability of groups to engage with external agencies, either to influence their policies or to draw on useful resources (Pretty and Smith 2004), the results demonstrate that cooperation mechanisms are limited between the communities and SEAM, the protected area managing authority.

Weak bonding, bridging, and linking of social capital reveals a fragile social fabric, which imposes a great challenge to the implementation of a participatory mechanism. This is the case with the local communities around the RNNP due to, mainly: insufficient community cohesion, a lack of organizational capacity among community members, and distrust among rural and indigenous community members. In this context, strategies must be developed to enhance the social capital in the RNNP and, ultimately, to improve collective action by creating and fostering the cooperation of networks in the region.

Drawing on the findings of Tompkins et al. (2002), a first strategy is the development of participatory government-initiated processes to increase cooperation with community actors and enhance their commitment to participate in ecological conservation, create social trust, and reinforce reciprocity among community members.

Further, in the context of this case study, two other strategies were identified with the potential to enhance social capital in the RNNP. The first is network creation through participatory territorial and land-use planning (United Nations 2015), since this planning process has the potential to develop bridging and linking social capital, strengthen dialogue among the actors from all sectors, and provide scope for network creation and cross-sectoral cooperation in the future. In order to ensure its sustainability in the future, an institutionalization of this process must be fostered, for instance, within the framework of an inclusive and cross-sectoral council in the local administration. In this sense, social learning processes should be encouraged. Social learning is an important component in the development of collective action, as it not just facilitates the exchange of ideas, knowledge, and skills among individuals and groups but also helps to coordinate their efforts toward natural resource management (Bonatti et al. 2022).

Social learning can play a critical role in the success of collective action by, first, facilitating the exchange of information and ideas. It allows individuals to share their knowledge, experiences, and perspectives with one another, which can help to build a shared understanding of the issues at hand and generate new ideas for action. Secondly, it strengthens social ties and builds trust, thus enhancing coordination and cooperation (Rodela 2013). Social learning can facilitate the coordination of efforts among individuals and groups as it allows for the sharing of resources, skills, and expertise, which can help increase the effectiveness of collective action.

Social learning can be a valuable tool in the management of natural resources in the RNNP, as it can facilitate the sharing of knowledge and best practices, build trust and collaboration among stakeholders, enhance communication and coordination, and promote public engagement in these efforts (Rodela 2013).

The second strategy identified in this case study is empowerment through alternative income sources. The empowerment of local communities is critical in the sense that they have the capacity and support they need to play an active role in decision-making (Springer et al. 2021). In this sense, it is of particular importance that mechanisms exist or are created to sustainably ensure livelihoods for those marginalized groups that are to participate in these processes and networks. This implies that alternative income sources

are guaranteed, which ensure the sustainable use of natural resources, thus providing livelihood security (DeFries et al. 2007) and enabling the immediate participation of these actors in political processes. In this sense, social learning has the potential to boost the identification of alternative income sources, such as community-based tourism. Participation in tourism means the active involvement of a person or group of people (purposefully) to freely contribute to tourism programs, from decision-making, planning, and implementation to subsequent evaluation and problem-solving (Gunawijaya and Pratiwi 2018). Additionally, it can also help to avoid the main concern about local tourism, which is damage to local traditions and social relations between the various regions (Gunawijaya and Pratiwi 2018).

5. Conclusions

Considering the research objective and research questions, the results of this study indicate low levels of effectiveness and justice in the RNNP governance performance due to deficiencies within the PA scope of action and the misrecognition of the local communities as key actors, leading to representation problems because these actors fail to participate in the procedures of the governance system. The results demonstrate that effectiveness and justice influence each other and, thus, are deeply intertwined. The mapping of the actors who are subjected to the RNNP governance system shows the existence of a multiplicity of actors who are not institutionally recognized as such by this PA governance system (non-recognition). This, added to a weak legal framework and the low capacity and resources of the local communities (indigenous and small farmers), contribute to a lack of representation of these vulnerable actors, who do not participate in parity with other actors in the norm-making and decision-making processes of the RNNP governance system (misrepresentation). On the other hand, the insufficient capacity and resources of the PA formal management authority (SEAM) undermine the effectiveness of the governance system performance in achieving its desired outcomes. Additionally, the low capacity and resources of key vulnerable actors, enhanced by the weak legal framework and strong influence of other actors (such as large landowners), exacerbate the low effectiveness of the governance system.

From the assessment conducted, this study highlights the components of the governance system that should be improved to achieve the good governance of the PA as a socio-ecological system, promoting the ecological integrity and the dignity of life (socio-ecological justice) of the individuals and communities comprising this system. Proposing strategies for the improvement of this PA governance system, the paper focuses mainly on inclusion and cooperation among the public and civil society sectors as one key component for improving PA governance performance through a process of social learning, as highlighted by several authors and studies (Steiner et al. 2003; CBD 2004; Borrini-Feyerabend et al. 2013; Metcalf et al. 2014; de Castro-Pardo and Urios Moliner 2016).

However, private sector actors play an important role in the study area. As their extensive livestock production increases the pressure on the PA, the possibilities for involvement and dialogue with these actors must be considered in the development of environmental policies. In this sense, further studies are needed to explore the role of private sector actors in PA governance in more detail and to provide a baseline for an inclusive approach that not only considers the local communities and civil society actors in the region, but also seeks dialogue with private sector actors. At the same time, this analysis does not include strategies and market mechanisms that could support the process of sustainable land use and better conversation in the expansion and buffer zone through sustainable extraction patterns. Therefore, further studies with a focus on market mechanisms are necessary.

From the results, it is possible to conclude that, in areas where there is a complex set related to the influence of several actors, a 'governance by government' approach is shown to be ineffective at ensuring the effectiveness and justice of the PA governance

system. An opportunity to meet this challenge could be inclusive and participatory decision-making processes, which enable cooperation among all actors and across sectors directly or indirectly affected by a protected area. To secure the future of the national park, opportunities must be sought to facilitate communication between all rightsholders and stakeholders, as well as to build partnerships and cooperation. Currently, a lack of collective action mechanisms hinder the active participation of the poorly consolidated, marginalized local community in decision-making processes in the region in general, and even more so in the protected area.

In this sense, social capital is identified as playing a decisive role, such that increased participation by the local community in decision-making processes can build trust and awareness across the community, enabling them to take responsibility and facilitate networking between them. Interactive processes among all actors are of vital importance as these strengthen trust and foster bonding, bridging, and linking social capital between local community groups as well as with public and private actors.

On this basis, the existing governance performance can be improved by institutionalizing these platforms to create mechanisms for the implementation of co-planning and co-management agreements between the local community and the environmental authority to promote the functioning and protection of the park in the future. Consequently, a shared or hybrid governance model can be understood as a response to the current 'governance by government' model, in which an empowered local community complements the environmental authority, creating a cooperative approach that better reflects the diverse socio-economic and environmental context in which the protected area is embedded.

Finally, as a research limitation, this study did not analyze structural power relations constructs. It is indicated as important further research development.

Author Contributions: Conceptualization, M.B., K.P. and L.E.; methodology, L.E., S.B.; validation, A.P.D.T.; formal analysis, M.B., K.P., L.E. and S.B.; resources, S.S.; writing—original draft preparation, M.B., K.P., and S.B., L.E. and A.P.D.T.; writing—review and editing, C.T.; supervision, S.S. and C.T.; funding acquisition, S.S. All authors have read and agreed to the published version of the manuscript.

Funding: The publication of this article was funded by the Open Access Fund of the Leibniz Association.

Data Availability Statement: The data used in this research is not publicly available.

Acknowledgments: We thank all interviewed local actors for their essential contribution to this research.

Conflicts of Interest: The authors declare that they have no conflict of interest.

Appendix A. Example of Interview Guide and Interview Key Information Collected

Level	Institution	Interview partner(s) and position	Key Informant
Public Sector			
National	Ministry of the Environment (SEAM)	<ul style="list-style-type: none"> ✦ Director General, Directorate for the Protection and Conservation of Biodiversity ✦ Director, Sub-Directorate of Protected Wildlife Areas ✦ Secretary employee, Sub-Directorate of Protected Area 	PS 1
		<ul style="list-style-type: none"> ✦ Park Ranger, NP Defensores del Chaco and NP Rio Negro 	PS 2
	Secretary of Tourism (SENATUR)	<ul style="list-style-type: none"> ✦ Coordinator Jesuit Missions Heritage ✦ External Consultant 	PS 3
	Military	<ul style="list-style-type: none"> ✦ Officer 	PS 4
Regional	Government of the department of Alto Paraguay	<ul style="list-style-type: none"> ✦ Environmental Director 	PS 5
Local	Municipality of Bahía Negra	<ul style="list-style-type: none"> ✦ Secretary of the Mayor of Bahía Negra 	PS 6
Civil Society Sector			
National	World Wide Fund for Nature (WWF) Paraguay	<ul style="list-style-type: none"> ✦ Executive Director ✦ Operations Director ✦ GIS Analyst ✦ Coordinator Sustainable Land Use 	CS 1
	Association Guyra Paraguay	<ul style="list-style-type: none"> ✦ Executive Director ✦ Program Coordinator ✦ Habitat and Landscape Coordinator 	CS 2
	Sobrevivencia (Friends of the Earth Paraguay)	<ul style="list-style-type: none"> ✦ Director General ✦ General Coordinator 	CS 3
	Tropical Forest Conservation Fund	<ul style="list-style-type: none"> ✦ Executive Director 	CS 4
	Foundation Moises Bertoni	<ul style="list-style-type: none"> ✦ Research and Conservation Department Manager 	CS 5
	Tierra Viva	<ul style="list-style-type: none"> ✦ Lawyer 	CS 6
	Federation for the Self-Determination of Indigenous Peoples (FAPI)	<ul style="list-style-type: none"> ✦ Lawyer 	CS 7
	Volunteer Support Program in Protected Areas (PAVAP)	<ul style="list-style-type: none"> ✦ Member and Volunteer 	CS 8
Local	Union of Indigenous Communities of the Yshir Nation (UCINY)	<ul style="list-style-type: none"> ✦ Member ✦ Focus Group Discussion with community leaders and members of UCINY 	CS 9 FGD
	Rural population	<ul style="list-style-type: none"> ✦ Local Resident 	CS 9
Academia	National Council for Science and Technology, (CONACYT)	<ul style="list-style-type: none"> ✦ Professor and Biologist 	A 1
Media	ABC	<ul style="list-style-type: none"> ✦ Journalist 	Press 1
Private Sector			
International	Foundation for Sustainable Development in the North and South Americas	<ul style="list-style-type: none"> ✦ Vice President ✦ Director 	PrS 1

References

Adger, W. Neil. 2003. Social Capital, Collective Action, and Adaptation to Climate Change. *Economic Geography* 79: 387–404. <https://doi.org/10.1111/j.1944-8287.2003.tb00220.x>.

Alho, C. J. R., and J. Sabino. 2011. A conservation agenda for the Pantanal’s biodiversity. *Brazilian Journal of Biology* 71: 327–35. <https://doi.org/10.1590/S1519-69842011000200012>.

Andrade, Gustavo S. M., and Jonathan R. Rhodes. 2012. Protected Areas and Local Communities: an Inevitable Partnership toward Successful Conservation Strategies? *Ecology and Society* 17: 14. <https://doi.org/10.5751/ES-05216-170414>.

- Armitage, Derek, Rob De Loë, and Ryan Plummer. 2012. Environmental governance and its implications for conservation practice. *Conservation Letters* 5: 245–55. <https://doi.org/10.1111/j.1755-263X.2012.00238.x>.
- Arthur, Jones Lewis. 2021. Can PA Governance Improve PA Outcomes: A Review of the Debates. *Open Journal of Social Sciences* 9: 557–85.
- Asociación Guyra Paraguay. 2003. *Evaluación ecológica rápida: Parque Nacional Río Negro*. Secretaría del Ambiente (SEAM). Asunción: Programa de las Naciones Unidas para el Desarrollo, Global Environment Facility (GEF).
- Asociación Guyra Paraguay. 2018. Informe de deforestación 2018 Asunción, Paraguay. Available online: <https://guyra.org.py/informe-de-deforestacion-2018/> (accessed on 3 November 2022).
- Aswani, Shankar, and Pam Weiant. 2004. Scientific Evaluation in Women's Participatory Management: Monitoring Marine Invertebrate Refugia in the Solomon Islands. *Human Organization* 63: 301–19. <https://doi.org/10.17730/humo.63.3.r7kgd4thktnyf7k1>.
- Balasinorwala, Tasneem. 2014. Doing the right thing: a decade of progress on protected area governance, 2003 to 2014. 6th IUCN World Parks Congress. Sydney, Australia. Available online: https://www.researchgate.net/publication/273120241_DOING_THE_RIGHT_THING_a_decade_of_progress_on_protected_area_governance_2003_to_2014_AN_OVERVIEW_OF_PROGRESS_AND_PRIORITIES_FOR_PROTECTED_AREA_GOVERNANCE_SINCE_2003 (accessed on 3 November 2022).
- Barret, Christopher B., Katrina Brandon, Clark Gibson, Heidi Gjertsen. 2001. Conserving Tropical Biodiversity amid Weak Institutions. *BioScience* 51: 497–502.
- Bayer, S. 2018. Assessing Protected Area Governance in a challenging institutional setting. The case of the Río Negro National Park, Paraguay. Master Thesis in the Study Program Agricultural Economics, Faculty of Life Sciences, Humboldt University of Berlin.
- Bergier, Ivan. 2013. Effects of highland land-use over lowlands of the Brazilian Pantanal. *The Science of the Total Environment* 463–64: 1060–66. <https://doi.org/10.1016/j.scitotenv.2013.06.036>.
- Biermann, Frank, and Aarti Gupta. 2011. Accountability and legitimacy in earth system governance: a research framework. *Ecological Economics* 70: 1856–64.
- Biermann, Frank, and Rakhyn E. Kim. 2020. *Architectures of Earth System Governance: Institutional Complexity and Structural Transformation*. Cambridge: Cambridge University Press.
- Bingham, Heather, Edward Lewis, Elise Belle, Jessica Stewart, Helen Klimmek, Sylvia Wicander, Nina Bhola, Lucy Bastin. 2021. Protected Planet Report 2020: Tracking progress towards global targets for protected and conserved areas. Available online: <https://research.aston.ac.uk/en/publications/protected-planet-report-2020-tracking-progress-towards-global-targets> (accessed on 20 January 2023).
- Blaser, Mario. 2009. The Threat of the Yrmo: The Political Ontology of a Sustainable Hunting Program. *American Anthropologist* 111: 10–20. <https://doi.org/10.1111/j.1548-1433.2009.01073.x>.
- Blaser, Mario, Harvey A. Feit, and Glenn McRae. 2004. *In the Way of Development. Indigenous Peoples, Life Projects and Globalization*. London: Zed Books in association with International Development Research Centre.
- Bonatti, Michelle, Carla Erismann, Ayna Askhabalieva, Juliano Borba, Kamila Pope, Renata Reynaldo, Luca Eufemia, Ana Paula Turetta, and Stefan Sieber. 2022. Social learning as an underlying mechanism for sustainability in neglected communities: The Brazilian case of the Bucket Revolution project. *Environment, Development and Sustainability* 1–19.
- Borrini-Feyerabend, Grazia, and Rosemary Hill. 2015. Governance for the conservation of nature. *Protected Area Governance and Management* 7: 169–206.
- Borrini-Feyerabend, Grazia, Nigel Dudley, Tilman Jaeger, Barbara Lassen, Neema Pathak Broome, Adrian Phillips, and Trevor Sandwith. 2013. Governance of Protected Areas. From understanding to action. *Best practice protected Area Guidelines Series* 20.
- Bosselmann, Klaus. 2017. *The Principle of Sustainability: Transforming Law and Governance*. New York: Routledge.
- Bowles, Samuel, and Herbert Gintis. 2002. Social Capital And Community Governance. *Economic Journal* 112: F419–F436. <https://doi.org/10.1111/1468-0297.00077>.
- Butchart, Stuart H. M., Matt Walpole, Ben Collen, Arco van Strien, Jörn P. W. Scharlemann, Rosamunde E. A. Almond, Jonathan E. M. Baillie, Bastian Bomhard, Claire Brown, John Bruno, and et al. 2010. Global biodiversity: indicators of recent declines. *Science* 328: 1164–68. <https://doi.org/10.1126/science.1187512>.
- Calheiros, Débora F., M. D. Oliveira, and Carlos R. Padovani. 2012. Hydro-ecological Processes and Anthropogenic Impacts on the Ecosystem Services of the Pantanal Wetland. *Tropical Wetland Management: The South-American Pantanal and the International Experience*. Edited by Antonio A R Ioris. Burlington: AshgatePub. Co.
- Carrón, Juan María. 2003. Gran Pantanal en el Paraguay. *Población y Desarrollo* 24: 77–88.
- Chiaravalloti, Rafael Morais, Katherine Homewood, and Kirsten Erikson. 2017. Sustainability and Land tenure: Who owns the floodplain in the Pantanal, Brazil? *Land Use Policy* 64: 511–24. <https://doi.org/10.1016/j.landusepol.2017.03.005>.
- Clements, Tom, Ashish John, Karen Nielsen, Dara An, Setha Tan and E. J. Milner-Gulland. 2010. Payments for biodiversity conservation in the context of weak institutions: Comparison of three programs from Cambodia. *Ecological Economics* 69: 1283–91. <https://doi.org/10.1016/j.ecolecon.2009.11.010>.
- Cleveland, Cutler, Robert Costanza, Thráinn Eggertsson, Louise Fortmann, Bobbi S. Low, Margaret A. McKean, Elinor Ostrom, James Wilson, and Oran R. Young. 1996. *A Framework for Modelling the Linkages between Ecosystems and Human Systems*. Beijer Discussion Paper Series No. 76. Stockholm: Beijer International Institute of Ecological Economics.

- Convention on Biological Diversity (CBD). 2004. *Programme of Work on Protected Areas (CBD Programmes of Work)*. Montreal: Secretariat of the Convention on Biological Diversity. Available online: <https://www.cbd.int/doc/publications/pa-text-en.pdf> (accessed on 20 January 2023).
- Convention on Biological Diversity (CBD). 2010. Strategic Plan for Biodiversity 2011–2020—COP 10 decision X/2.
- Coolsaet, B. 2021. Introduction. In *Environmental justice: key issues*. Edited by Coolsaet, Brendan. New York: Routledge.
- Cumming, Graeme S., and Craig R. Allen. 2017. Protected areas as social-ecological systems: perspectives from resilience and social-ecological systems theory. *Ecological Applications* 27: 1709–17.
- de Castro-Pardo, Mónica, and Vicente Urios Moliner. 2016. A Management Model for Improve the Governance of Protected Areas since an Institutional Perspective and an Empirical Case in a Spanish Natural Park. *International Journal of Engineering Technology, Management and Applied Sciences* 4.
- De Koning, Mirjam, Tin Nguyen, Michael Lockwood, Sinnasone Sengchanthavong, Souvanhpheng Phommasane. 2017. Collaborative Governance of Protected Areas: Success Factors and Prospects for Hin Nam No National Protected Area, Central Laos. *Conservation and Society* 15: 87. <https://doi.org/10.4103/0972-4923.201396>.
- de Sousa, Boaventura. 2010. Para além do pensamento abissal: das linhas globais a uma ecologia de saberes. In *Epistemologias do Sul*. Edited by Santos, Boaventura de Sousa, and Maria Paula Meneses. São Paulo: Cortez.
- DeFries, Ruth S., Jonathan A. Foley, and Gregory P. Asner. 2007. Land use change around protected areas: Management to balance human needs and ecological function. *Ecological Applications: A Publication of the Ecological Society of America* 17: 1031–38. <https://doi.org/10.1890/05-1111>.
- Dinerstein, Eric, David M. Olson, Douglas J. Graham, Avis Webster, Steven A. Primm, Marnie P. Bookbinder, and George Ledec. 1995. *A Conservation Assessment of the Terrestrial Ecoregions of Latin America and the Caribbean*. Washington, DC: Worldbank. Available online: <https://documents1.worldbank.org/curated/en/957541468270313045/pdf/multi-page.pdf> (accessed on 3 November 2022).
- Dirección General de Estadísticas Encuestas y Censo (DGEEC). 2015 *Paraguay: Proyección de la Población por Sexo y Edad, Según Distrito, 2000–2025*. Asunción: Gobierno del Paraguay.
- Eklund, Johanna, and Mar Cabeza. 2017. Quality of governance and effectiveness of protected areas: crucial concepts for conservation planning. *Annals of the New York Academy of Sciences* 1399: 27–41.
- Ervin, J., K. J. Mulongoy, K. Lawrence, E. Game, D. Sheppard, P. Bridgewater, G. Bennett, S.B. Gidda and P. Bos. 2010. *Making Protected Areas Relevant: A Guide to Integrating Protected Areas into Wider Landscapes, Seascapes and Sectoral Plans and Strategies*. CBD Technical Series No. 44: 1–94. Montreal: Convention on Biological Diversity.
- Eufemia, Luca, Izabela Schlindwein, Michelle Bonatti, Sabeth Tara Bayer, and Stefan Sieber. 2019. Community-Based Governance and Sustainability in the Paraguayan Pantanal. *Sustainability* 11: 5158.
- Eufemia, Luca, Michelle Bonatti, and Stefan Sieber. 2018. Synthesis of Environmental Research Knowledge: The Case of Paraguayan Pantanal Tropical Wetlands. *Sustainable Agriculture Research* 7: 125–33. <https://doi.org/10.5539/sar.v7n4p125>.
- Federación por la Autodeterminación de los Pueblos Indígenas (FAPI). 2018. *Tierras Indígenas: Compilación de los Datos de Tierras Indígenas en Paraguay*. Asunción: FAPI
- Figuroa, Robert Melchior. 2004. Bivalent environmental justice and the culture of poverty. *Rutgers Journal of Law and Urban Policy* 1: 1.
- Franks, Phil, Francesca Booker, and Dilys Roe. 2018. Understanding and assessing equity in protected area conservation. A matter of governance, rights, social impacts and human wellbeing. London: IIED. Available online: <http://pubs.iied.org/14671IIED> (assessed on 3 November 2022).
- Fraser, Nancy. 1996. *Social Justice in the Age of Identity Politics: Redistribution, Recognition, and Participation. The Tanner Lectures on Human Values*. Stanford: Stanford University.
- Fraser, Nancy. 2001. Recognition without ethics?. *Theory Culture & Society* 18: 21–42.
- Fraser, Nancy. 2005. Reframing justice in a globalizing world. *New Left Review* 36: 69–88.
- Fraser, Nancy. 2008. Abnormal justice. *Critical Inquiry* 34: 393–422.
- Friedman, Rachel S., Elizabeth A. Law, Nathan J. Bennett, Christopher D. Ives, Jessica P. R. Thorn, and Kerrie A Wilson. 2018. How just and just how? A systematic review of social equity in conservation research. *Environmental Research Letters* 13: 053001 <https://doi.org/10.1088/1748-9326/aabcde>.
- Gerber, Julien-François, Bengi Akbulut, Federico Demaria, and Joan Martínez-Alier. 2021. Degrowth and environmental justice: an alliance between two movements? In *Environmental Justice: Key Issues*. Edited by Brendan Coolsaet. New York: Routledge.
- Government of Alto Paraguay. 2016. *Plan de Desarrollo Departamental 2016–2030*. Gobierno Asunción: Nacional de Paraguay.
- Government of Paraguay. 1992. *Constitución de la República del Paraguay*. Available online: https://www.oas.org/juridico/spanish/mesicic2_pry_anexo3.pdf. (assessed on 3 November 2022).
- Government of Paraguay. 2000. *LEY No. 1561/00 que crea el sistema Nacional del ambiente*. Asunción: el consejo nacional del ambiente y la secretaria del ambiente.
- Government of Paraguay. 2018. *Ley No. 6026*. Asunción: Presupuesto General de la Nación para el ejercicio fiscal.
- Graham, John, Bruce Amos, and Timothy Wynne Plumptre. 2003. *Governance Principles for Protected Areas in the 21st Century*. Ottawa: Institute on Governance, Governance Principles for Protected Areas.

- Grosfoguel, Ramón. 2010. Para descolonizar os estudos de economia política e os estudos pós-coloniais: transmodernidade, pensamento de fronteira e colonialidade global. In *Epistemologias do Sul*. Edited by Boaventura de Sousa Santos and Maria Paula Meneses. São Paulo: Cortez.
- Gunawijaya, Jajang, and Annisa Pratiwi. 2018. How Local Community Could Contribute to the Tourism Development in Rural Area? Paper presented at the 2nd International Conference on Vocational Higher Education (ICVHE), Depok, Indonesia, July 27–29. Available online: <https://knepublishing.com/index.php/Kne-Social/article/view/2809> (assessed on 22 December 2022).
- Holland, Breena. 2008. Justice and the environment in Nussbaum's "capabilities approach": Why sustainable ecological capacity is a meta-capability. *Political Research Quarterly* 61: 319–32.
- Holland, Breena. 2017. Procedural justice in local climate adaptation: political capabilities and transformational change. *Environmental Politics* 26: 391–412.
- Holland, Breena. 2021. Capabilities, well-being, and justice. In *Environmental justice: key issues*. Edited by Brendan Coolsaet. New York: Routledge.
- Horowitz, Leah Sophie. 1998. Integrating indigenous resource management with wildlife conservation: a case study of Batang Ai National Park, Sarawak, Malaysia. *Human Ecology* 26: 371–403.
- Horton, Emily Y. 2010. *Gran Pantanal Paraguay*. Asunción: Asociación GuyraParaguay.
- Johnson, John M. 2001. In-depth Interviewing. In *Handbook of Interview Research: Context and Method*. Edited by Jaber F. Gubrium and James A. Holstein. Thousand Oaks: Sage, pp. 103–19.
- Jones, Peter J. S. 2012. Governing protected areas to fulfil biodiversity conservation obligations: from Habermasian ideals to a more instrumental reality. *Environment, Development and Sustainability* 15: 39–50. <https://doi.org/10.1007/s10668-012-9375-3>.
- Jorgensen, Danny L. 2015. Participant Observation. In *Emerging trends in the social and behavioral sciences. An interdisciplinary, searchable, and linkable resource*. Edited by Robert A. Scott, Stephen Michael Kosslyn and Marlis Buchmann. New York: Wiley, pp 1–15.
- Junk, Wolfgang J. 2013. Current state of knowledge regarding South America wetlands and their future under global climate change. *Aquatic Sciences* 75: 113–31. <https://doi.org/10.1007/s00027-012-0253-8>.
- Junk, Wolfgang J., and Catia Nunes de Cunha. 2005. Pantanal. A large South American wetland at a crossroads. *Ecological Engineering* 24: 391–401. <https://doi.org/10.1016/j.ecoleng.2004.11.012>.
- Junk, Wolfgang J., and Karl M. Wantzen. 2004. The flood pulse concept: new aspects, approaches and applications—an update. In *Proceedings of the Second International Symposium on the Management of Large Rivers for Fisheries*, Edited by Welcomme, Robin L. and T Petr. Bangkok: Food and Agriculture Organization and Mekong River Commission, FAO Regional Office for Asia and the Pacific, pp. 117–49.
- Junk, Wolfgang J., Catia Nunes da Cunha, Karl Matthias Wantzen, Peter Petermann, Christine Strüßmann, Marinêz Isaac Marques, and Joachim Adis. 2006. Biodiversity and its conservation in the Pantanal of Mato Grosso, Brazil. *Aquatic Sciences* 68: 278–309. <https://doi.org/10.1007/s00027-006-0851-4>.
- Krueger, Richard A. 1988. *Focus Groups: A Practical Guide for Applied Research*. Thousand Oaks: Sage.
- Lane, Marcus B. 2001. Affirming New Directions in Planning Theory: Comanagement of Protected Areas. *Society & Natural Resources* 14: 657–71. <https://doi.org/10.1080/08941920118212>.
- Leff, Enrique. 2006. Racionalidade Ambiental: A Reapropriação Social da Natureza. *Racionalidade Ambiental: A Reapropriação Social da Natureza* 555.
- Leff, Enrique. 2017. Las relaciones de poder del conocimiento en el campo de la Ecología Política: una mirada desde el Suro. In *Ecología Política Latinoamericana. Pensamiento crítico, diferencia latino-americana y rearticulación epistémica*. Edited by Héctor Alimonda, Catalina Toro Pérez and Facundo Martín. Mexico: Universidad Autónoma de Buenos Aires.
- Leverington, Fiona, Marc Hockings, and Katia Lemos Costa. 2010. *Management Effectiveness Evaluation in Protected Areas—Aglobal Study*. University of Brisbane, Australia: World Commission on Protected Areas.
- Mascia, Michael B. 2003. The Human Dimension of Coral Reef Marine Protected Areas: Recent Social Science Research and Its Policy Implications. *Conservation Biology* 17: 630–32. <https://doi.org/10.1046/j.1523-1739.2003.01454.x>.
- Mason, Jennifer. 1994. Linking qualitative and quantitative data analysis. In *Analyzing Qualitative Data*. Edited by Alan Bryman and Robert G. Burgess. London: Routledge, pp. 89–110.
- Mereles, F. 2000. *Iniciativas transfronterizas para el Pantanal (Paraguay)*. With assistance of Aída Luz Aquino, Roberto Owen, Rob Clay, Juan Palmieri, Marcos Sanjurjo, Fernando González, María José López. Fundación Para el Desarrollo Sustentable del Chaco. Nature Conservancy: Agencia de Cooperación Técnica de los Estados Unidos.
- Metcalf, S. J., J. M. Dambacher, P. Rogers, N. Loneragan, and D. J. Gaughan. 2014. Identifying key dynamics and ideal governance structures for successful ecological management. *Environmental Science & Policy* 37: 34–49. <https://doi.org/10.1016/j.envsci.2013.07.005>.
- Moreaux, Celine, Noelia Zafra-Calvo, Nanna G. Vansteelant, Sylvia Wicander, and Neil D Burgess. 2018. Can we track equitable management in Protected Areas (PAs) under Aichi Target 11 using existing PA assessment tools? *Biological Conservation* 224: 242–47. <https://doi.org/10.1016/j.biocon.2018.06.005>.
- Mulongo, Kalemuni J., and Sarat Babu Gidda. 2008. The value of nature: ecological, economic, cultural and social benefits of protected areas. *Secretariat of the Convention on Biological Diversity*. Montreal. Available online: <https://www.cbd.int/doc/publications/cbd-value-nature-en.pdf>. (accessed on 3 November 2022).

- Nussbaum, Martha C. 2004. Beyond 'compassion and humanity': justice for non-human animals. In *Animal Rights: Current Debates and New Directions*. Edited by Cass R. Sunstein and Martha C. Nussbaum. Oxford: Oxford University Press.
- Nussbaum, Martha C. 2006. The Moral Status of Animals, *Chronicle of Higher Education*, February 3. Available online: <https://www.chronicle.com/article/The-Moral-Status-of-Animals/25792> (accessed on 9 October 2019)
- Nussbaum, Martha C. 2011. *Creating Capabilities: the Human Development Approach*. Cambridge: The Belknap Press of Harvard University Press.
- Ostrom, Elinor. 2009. A General Framework for Analyzing Sustainability of Social-Ecological Systems. *Science* 325: 419–22. <https://doi.org/10.1126/science.1170749>.
- Ostrom, Elinor. 2010. Beyond Markets and States: Polycentric Governance of Complex Economic Systems. *American Economic Review* 100: 641–72. <https://doi.org/10.1257/aer.100.3.641>.
- Ostrom, Elinor. 2015. *Governing the Commons. The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press
- Ostrom, Elinor, and Michael Cox. 2010. Moving beyond panaceas. A multi-tiered diagnostic approach for social-ecological analysis. *Environmental conservation* 37: 451–63. <https://doi.org/10.1017/S0376892910000834>.
- Pacifici, Michela, Moreno Di Marco, and James EM Watson. 2020. Protected areas are now the last strongholds for many imperiled mammal species. *Conservation Letters* 13: e12748.
- Pellow, David Naguib. 2018. *What Is critical Environmental Justice?* Cambridge: Polity Press.
- Pellow, David Naguib. 2021. Critical environmental justice studies. In *Environmental justice: key issues*. Edited by Brendan Coolsaet. New York: Routledge
- Peña, Devon G. 2005. Autonomy, equity, and environmental justice. In *Power, Justice, and the Environment: A Critical Appraisal of the Environmental Justice Movement*. Edited by David N. Pellow and Robert J. Brulle. Cambridge: MIT Press.
- Polaine, Xanthe K., Dawson Richard, Walsh Clarie L., Amezaga Jaime, Peña-Varón Miguel, Lee Cindy, and Rao Sandhya. 2022. Systems thinking for water security. *Civil Engineering and Environmental Systems* 39: 205–23. <https://doi.org/10.1080/10286608.2022.2108806>
- Pope, Kamila. 2020. *Global Waste Management: Models for Tackling the International Waste Crisis*. London: Kogan Page.
- Pope, Kamila, Michelle Bonatti, and Stefan Sieber. 2021. The what, who and how of socio-ecological justice: tailoring a new justice model for earth system law. *Earth System Governance* 10: 100124. <https://doi.org/10.1016/j.esg.2021.100124>
- Pretty, Jules. 2003. Social capital and the collective management of resources. *Science* 302:1912–14. <https://doi.org/10.1126/science.1090847>.
- Pretty, Jules, and David Smith. 2004. Social Capital in Biodiversity Conservation and Management. *Conservation Biology* 18: 631–38. <https://doi.org/10.1111/j.1523-1739.2004.00126.x>.
- Putnam, Robert D. 1993. What makes democracy work? *National Civic Review* 82: 101–7. <https://doi.org/10.1002/ncr.4100820204>.
- Rands, Michael R. W., William M. Adams, Leon Bennun, Stuart H. M. Butchart, Andrew Clements, David Coomes, Abigail Entwistle, Ian Hodge, Valerie Kapos, Jörn P. W. Scharlemann, and et al. 2010. Biodiversity conservation: challenges beyond 2010. *Science* 329: 1298–1303. <https://doi.org/10.1126/science.1189138>.
- Rice, Jake, Cristiana Simão Seixas, María Elena Zaccagnini, Mauricio BedoyaGaitán, Natalia Valderrama, Christopher B. Anderson, Mary T. K. Arroyo, Mercedes Bustamante, Jeannine Cavender-Bares, Antonio Diaz-de-Leon, and et al. 2018. *Summary for Policymakers of the Regional Assessment on Biodiversity and Ecosystem Services for the Americas of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. Bonn: IPBES Secretariat.
- Rivas Toledo, Alex. 2006. *Gobernanza de los Sistemas Nacionales de Áreas Protegidas en los Andes Tropicales: Diagnóstico regional y análisis comparativo*. Quito: International Union for Conservation of Nature (IUCN). Available online: <https://portals.iucn.org/library/sites/library/files/documents/2006-065.pdf> (accessed on 3 November 2022)
- Rodela, Romina. 2013. The social learning discourse: Trends, themes and interdisciplinary influences in current research. *Environmental Science & Policy* 25: 157–66.
- Rodriguez, Iokiñe. 2021. Latin American decolonial environmental justice. In *Environmental Justice: Key Issues*. Edited by Brendan Coolsaet. New York: Routledge
- Salas-Dueñas, Danilo A., Fátima Mereles, and Alberto Yanosky. 2004. *Los humedales de Paraguay*. Asunción: Comité Nacional de Humedales.
- Schlosberg, David. 2009. *Defining Environmental Justice: Theories, Movements, and Nature*. New York: Oxford University Press.
- Schlosberg, David. 2013. Theorizing environmental justice: the expanding sphere of a discourse. *Environmental Politics* 22: 37–55.
- Secretaría del Ambiente (SEAM). 2011. Plan de Manejo Parque Nacional Río Negro. With assistance of Guyra (Asociación Guyra Paraguay). Asunción: Secretaría del Ambiente (SEAM). Available online: <https://apps.mades.gov.py/siam/portal/area-protegida/23> (accessed on 3 November 2022).
- Sen, Amartya. 2010. *The Idea of Justice*. London: Penguin Books.
- Springer, J., J. Campese, and B. Nakangu. 2021. *The Natural Citation: Resource Governance Framework—Improving Governance for Equitable and Effective Conservation*. Gland: IUCN. Available online: <https://portals.iucn.org/library/sites/library/files/documents/2021-031-En.pdf> (accessed on 3 November 2022).
- Stanciu, Erika, and Alina Ioniță. 2014. *Governance of Protected Areas in Eastern Europe. Overview on Different Governance Types, Casestudies and Lessons Learned*. Putbus: Deutschland/Bundesamt für Naturschutz.
- Start, Daniel, and Ingie Hovland. 2004. *Tools for Policy Impact. A Handbook for Researchers*. London: Overseas Development Institute.

- Steiner, Achim, Lee A. Kimball, and John Scanlon. 2003. Global governance for the environment and the role of Multilateral Environmental Agreements in conservation. *ORX* 37: 227–37. <https://doi.org/10.1017/S0030605303000401>.
- Stoll-Kleemann, Susanne, Svane Bender, Augustin Berghöfer, Monika Bertzky, Nadine Fritz-Vietta, Rainer Schliep, and Barbara Thierfelder. 2006. *Linking Governance and Management Perspectives with Conservation Success in Protected Areas and Biosphere Reserves*. Discussion Paper 1 of the GoBi Research Group. Berlin: Humboldt—Universität zu Berlin. Available online: https://geo.uni-greifswald.de/storages/uni-greifswald/fakultaet/mnf/geowissenschaften/Arbeitsbereiche_Geographie/Nachhaltigkeitswissenschaften/Seite_Mitarbeiter/Publikationen/Fritz-Vietta/Linking_Governance_and_Management_GoBi_Paper1.pdf (accessed on 3 November 2022).
- Stolton, Sue, and Nigel Dudley. 2016. METT Handbook: A guide to using the Management Effectiveness Tracking Tool (METT). Working: WWF-UK. Available online: https://biopama.org/wp-content/uploads/2021/01/WWF_METT_Handbook_2016_FINAL_0.pdf (accessed on 3 November 2022).
- Suiseeya, Kimberly R. Marion. 2021. Procedural justice matters: power, representation, and participation in environmental governance. In *Environmental Justice: Key Issues*. Edited by Brendan Coolsaet. New York: Routledge.
- Swarts, Frederick A. 2000. The Pantanal. Understanding and preserving the world's largest wetland. *World Conference on Preservation and Sustainable Development in the Pantanal*. St. Paul: Paragon House.
- Tompkins, Emma, W. Neil Adger, and Katrina Brown. 2002. Institutional Networks for Inclusive Coastal Management in Trinidad and Tobago. *Environment and Planning* 34: 1095–111. <https://doi.org/10.1068/a34213>.
- United Nations. 2015. *International Guidelines on Urban and Territorial Planning*. Nairobi: United Nations Human Settlements Programme. Available online: <https://unhabitat.org/books/international-guidelines-on-urban-and-territorial-planning/> (accessed on 3 November 2022).
- Wade, Robert. 2008. *Village Republics. Economic Conditions for Collective action in South India*. Cambridge: Cambridge University Press.
- Wantzen, Karl M., Cátia Nunes da Cunha, Wolfgang J. Junk, Pierre Girard, Onélia Carmen Rossetto, Jerry M. Penha, Eduardo G. Couto, Michael Becker, Gabriela Priante, Walfrido M. Tomas, and et al. 2008. Towards a sustainable management concept for ecosystem services of the Pantanal wetland. *Ecology & Hydrobiology* 8: 115–38. <https://doi.org/10.2478/v10104-009-0009-9>.
- Woolcock, Michael. 2001. The Place of Social Capital in Understanding Social and Economic Outcome. *Canadian Journal of Policy Research* 11: 65–88.
- Worboys, Graeme L., Michael Lockwood, Ashish Kothari, Sue Feary, and Ian Pulsford. 2015. *Protected Area Governance and Management*. Canberra: ANU Press.
- Zafra-Calvo, Noelia, and Jonas Geldmann. 2020. Protected areas to deliver biodiversity need management effectiveness and equity. *Global Ecology and Conservation* 22: e01026. <https://doi.org/10.1016/j.gecco.2020.e01026>
- Zanardini, Jose, and Biedermann, Walter. 2001. *Los Indígenas del Paraguay*. Asunción: Editorial Palo Santo: 29–77.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.