

Collaborative Conservation for Inclusive, Equitable, and Effective Systems of Protected and Conserved Areas—Insights from Brazil

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Supplementary Materials

These supplementary materials are **complementary data and information**, related to the main text of the article “Collaborative Conservation for Inclusive, Equitable, and Effective Systems of Protected and Conserved Areas—Insights from Brazil” (by Cláudio C. Maretti et al.)

It is important to highlight that the work presented in the article (main text) and these supplementary materials was developed in a **voluntary collaborative mode** (besides dealing with collaborative conservation, here related to the management and governance of protected and conserved areas (PCA M&G) since the early stages of location, planning, identification, design, etc., up until the monitoring and evaluation of both M&G. Despite being intentionally focused, the invitation was broad, and the (larger) study group was composed of volunteers who answered that relatively open invitation. Although coordinated in terms of the main general focus and achievements, the idea of this study also included a relative flexibility in the specific approaches, teams, cases, (sub)themes and study dynamics, through the specific (sub)groups. Therefore, the relative diversity in styles, records, and findings presented in the article’s main text and in these supplementary materials is an intrinsic part of the collaborative approach proposed and implemented.

These supplementary materials include the following sections: 1. The Brazilian PCA-related context, concepts, and practices; 2. Evolution of the international institutional context related to protected and conserved areas; and 3. The processes of the study group, as presented below, to enable a better understanding (of social, legal, and historical contexts, as well as study procedures) related to the main article’s text.

1. Brazilian PCA-related context, concepts, and practices

The current definitions of PAs considered here, such as those of the IUCN WCPA, CBD, and Brazilian law (Lei/Law 9985/2000, Brasil/Brazil;¹ [16,17]) are convergent in relation to their main characteristics: (i) objectives related to nature or biodiversity conservation; (ii) spatial delimitation; (iii) legal or effective mechanisms supporting their creation (or declaration) and management; and (iv) special and/or specific management. Internationally, the term “protected area” (with the corresponding translations) has been by far the one with the most widespread use, and the prevalent concept being that of the IUCN WCPA. In the national context, Brazil has legally adopted a different terminology (which would be literally translated as “conservation units”, although this literal translation would not be technically correct), leaving the expression “área protegida (AP)” (with the literal translation of “protected areas”) to denote a broader approach.

Since the early 20th century, there have been efforts to define or clarify types of protected areas (e.g., “London Convention”²). The IUCN and its World Commission on Protected Areas (WCPA, or previous names) have proposed different categories since the early 1970s. From around the World Parks Congress in Durban 2003, the so-called ‘governance types’ have been accepted. Since then, IUCN and the conservation community have expressed the combination of management categories into a matrix, including the six/seven international management categories (Ia–VI) and the four governance types (A—by governments; B—shared governance;

C—by private entities; and D—by Indigenous peoples and/or local communities) and the related subtypes [16,23,43,56].

1.1. Brazilian context in terms of protected and conserved areas

The establishment of protected and conserved areas was considered by the **1988 Brazilian Constitution** as a commitment for all three government levels (federal, state, and municipal). Most analyses of the arena of legal doctrine and some legal jurisprudence confirmed the “especially protected territorial spaces” (“espaços territoriais especialmente protegidos”—ETEPs), defined in the Constitution, with a broader concept than official protected areas (PAs; legally called “unidades de conservação”—UCs) (Lei/Law 9985/2000, Brasil/Brazil; [9,16]).³ It is also understood that the Brazilian Constitution defines the power and duty (or responsibility) of all three governmental levels to protect the ecologically healthy environment, a right of all persons. In fact, the major Brazilian law understands this as a joint responsibility of governments and of society (Lei/Law 9985/2000, Brasil/ Brazil; [9,23,30,31i]).

As a result of important social and legal discussion processes, the Brazilian National Law No. 9985, of 2000, defined the **National Protected Area System** (Sistema Nacional de Unidades de Conservação—SNUC; Lei/Law 9985/2000, Brasil/Brazil). The SNUC defines 12 management categories, which have components of conservation objectives, but also governance types, land tenure, governance definitions, and levels of restrictions on occupation and natural resource use. Those categories include governmentally managed PAs, governmental restrictions on private lands), private reserves, and PAs co-managed with local traditional communities (see Table 1.1.SM). In contrast with the international trend, these are organized into two groups (strict preservation areas or UCs de proteção integral, and sustainable use reserves or UCs de uso sustentável), which is misleading and results in several inconsistencies.⁴ On the positive side, Brazil also represents a relative exception on the global level due to the national organization of the PA system, with all management categories legally related to the three governmental levels which have the same legal powers (Lei/Law 9985/2000, Brasil/Brazil; [9,31i]).

Therefore, there is, legally, the possibility of up to several **thousands of PA (sub)systems**, potentially including:

- One federal level PA (sub)system, managed by the Chico Mendes Institute (Instituto Chico Mendes de Conservação da Biodiversidade—ICMBio, a federal public institution, indirect linked to direct governmental administration, through the Ministry of Environment and Climate Change);
- Twenty-seven state-level PA (sub)systems (either managed by a specific institutional instance of the respective state secretariats of environment or by a specific indirect administration public institution);
- A total of 5,568 municipal-level PA (sub)systems (potentially connected to one or more different decision-making institutional arrangements—with links to secretariats or departments responsible for environment, public works, urbanism, etc.—for the PAs not always under a specific and specialized governmental body and usually not under a specific indirect administration public institution).⁵

The coordination of the national system as a whole is the responsibility of the Ministry of Environment and Climate Change (Ministério do Meio Ambiente e Mudança Climática—MMA).

To illustrate the **dimension of the SNUC** in March (09-28) 2023, according to the official database (or registry; Cadastro Nacional de Unidades de Conservação—CNUC, at MMA) [68], some elements can be presented as follows:

- The total continental (terrestrial and inland waters) surface under the status of official protected areas reached 1600 thousand (K) square kilometers (km²), representing 18.80% of the Brazilian continental territory, and the total surface of marine PAs was 964 K km², which also represented 26.48% of the Brazilian marine territory.

- Among the 2659 PAs registered in the national database, 1004 were registered at the federal (fed.) level (38%), 1141 at the state (st.) level (43%), and 514 at the municipal (mun.) level (19%).
- In terms of total surface, the marine-protected surface is concentrated at the federal level (considering the national domain over the seas), constituting 96% of the total surface of marine PAs, although only comprising 36% individual PAs; and the total continental surface of PAs is distributed at the three levels as follows: 50% of the surface of PAs is under federal jurisdiction; 46% of the surface of PAs is under state jurisdiction; and 4% of the surface of PAs is under municipal jurisdiction.
- In terms of management categories, the natural heritage private reserve (reserva particular do patrimônio natural—RPPN) has the largest number (1066 PAs), followed by park (532 PAs), and environmental protection area (área de proteção ambiental—APA; 451 PAs). But in terms of their total surface protected, the APAs have 51% of the total surface of PAs, followed by parks (14% of the total surface of PAs). If the Brazilian PA categories related to the IUCN category VI are considered grouped, they represent 23% of the total surface of PAs.

(See more details in Table 1.2.SM.)

Some other specificities in the Brazilian SNUC should be emphasized, considering the PAs co-managed by **local traditional communities**, which are all related to the IUCN category (cat.) VI. Therefore, established by the demand of traditional extractive communities or related to them, there are, as follows:

- The 96 extractive reserves (reservas extrativistas—RESEX), constituting 149 K km² in total surface, which are mostly located in the Amazon domain (with 77 PAs, also clearly predominant in terms of total surface), followed by the number of PAs falling under the marine domain (24 PAs). Those 96 RESEX include 66 PAs at the federal level, with 135 K km² in total surface, 29 PAs at the state level constituting 21 K km², and only one PA at the municipal level, constituting 0.7 K km².
- The 39 sustainable development reserves (reservas de desenvolvimento sustentável—RDS) have 112 K km² in total surface, and are also concentrated in the Amazon (but with a relatively important number— but not large areas—in the Atlantic Forest). Those 39 RDS are divided into 2 PAs at the federal level, constituting 1 K km² in total surface; 32 PAs at the state level, constituting 111 K km² in total surface (and concentrated in a few Amazonian states); and 5 PAs at the municipal level, constituting 0.2 K km².
- For the traditional communities, the Brazilian management category called Forest (floresta; comprising 108 PAs and constituting 314 K km² in total surface) should also be mentioned. But the ones that particularly important are the national forests (called florestas nacionais—FLONAs; comprising 67 PAs and constituting 178 K km² in total surface), particularly those located in the Amazon, namely 34 federal PAs constituting 177 K km² in total surface. This focus is related to the fact that these FLONAs in the Amazon include more traditional communities and their management usually respects and supports their rights.

Besides the division between continental and marine environments (with some counting the overlap between them in some coastal areas), Brazil is divided in six continental **ecosystem domains** (called “biomas”, which could be considered geo-eco-legal domains, due to their design and use for policy purposes): Amazon (mostly rainforests); Atlantic Forest; Caatinga (mostly shrub-like ecosystems, semi-arid); Cerrado (mostly savannas, with two clear seasons in terms of humidity); Pampa (mostly grasslands); and Pantanal (mostly wetland grasslands). Among the continental domains, the Amazon has by far the largest surface in terms of protected areas (1205 K km²—reaching 28% of this domain), while the Atlantic Forest has the largest number of PAs (1589).

Only the marine realm and the Amazon continental domain reached the quantitative coverage of **Aichi Target 11** (as the other continental domains have between 3 and 10% of their respective domains under protected areas). This is considered to be the ecological representation

at the level of ecological domains (biomas), which are usually considered in the country, even if that should not be considered as sufficiently detailed for that purpose [68]. But none of the realms and domains reach the full target, considering the quality demands for those systems of protected areas and OEMCs (effectively and equitably managed and ecologically representative systems, with areas well connected and integrated within their regions) [11].

It also needs to be mentioned that, on the one hand, some gigantic marine PA mosaics bring the numbers of federal protected surfaces and environmental protection area total surfaces to higher levels.

On the other hand, there is a clear **sub-estimation** (under-notification) of private reserves at all levels and of municipal PAs of all categories:

- Private reserves: the number of RPPNs (1834) registered by the National Federation of Private Reserves (Confederação Nacional de Reservas Particulares do Patrimônio Natural—CNRPPN) is 72% higher when compared with CNUC, and their total protected surface (8.3 K km²) is 35% higher than those registered under the CNUC [68,69].
- PAs at the municipal level: Considering the data organized by Pinto et al. (2017, 2019), only for Atlantic Forest and Cerrado domains, the number of municipal-level PAs (1274) is 141% higher than that registered under CNUC, with a total protected surface (117.6 K km²) that is 66% larger[68-71].

(See more details in Table 1.2.SM.)

As mentioned above, the 12 **Brazilian management categories** have other defining elements in addition to the conservation objectives. But the connection with IUCN management categories (seven in total, considering Ia and Ib) is possible, as shown in Table 1.1.SM. The correspondence between Brazilian categories and IUCN categories is based on the Brazilian official PA registry (although some comments are presented therein). In the table, the relation between Brazilian PA management categories to the description of governance types considered by IUCN is also presented. This relation between Brazilian PA categories and governance types is based on what is defined in the legislation (through the interpretation of this work) (Lei/Law 9985/2000, Brasil/Brazil; [22,16,31i]).⁶

Table 1.2.SM presents the **numbers** (of PAs and their surface) **of the Brazilian PA system**, considering the Brazilian PA management categories, the continental and marine realms, and the governmental levels (of creation or recognition). The connection between Brazilian categories and the IUCN international PA management categories is also referred to in this table (but this is better presented in Table 1.1.SM). (As noted in the table, some adjustments have been made to the numbers due to the aggregation organized in this table.) (Lei/Law 9985/2000, Brasil/Brazil; [16,68,69-71].)

Table S1.1.SM. Brazilian National Protected Areas System—correspondence of governance types. *

IUCN categories	Brazilian management categories	Brazilian (legal) governance types	IUCN governance types
Cat. Ia	Biological reserve	Governmental (3 subtypes, considering the governmental levels, and possibly sharing in particular cases)	A – Governance by governments (Subtypes include national, subnational, and possibly delegation)
	Ecological station	Governmental (3 subtypes, considering the governmental levels, and possibly sharing in particular cases)	
Cat. Ib	No correspondence		
Cat. II	Park	Governmental (3 subtypes, considering the governmental levels, and possibly sharing in particular cases)	A – Governance by governments (Subtypes include national, subnational, and possibly delegation)
Cat. III	Natural monument	Governmental (3 subtypes, considering the governmental levels, and possibly sharing in particular cases), possibly over public or private ownership	
	Wildlife refuge	Governmental (3 subtypes, considering the governmental levels, and possibly sharing in particular cases), possibly over public or private ownership	
Cat. IV	Ecological relevant interest area	Governmental (3 subtypes, considering the governmental levels, and possibly sharing in particular cases), possibly over public or private ownership	
	Natural heritage private reserve	Private (possible subtypes, considering individuals, NGOs, companies, etc.)	C – Governance by private entities (Subtypes include individuals, non-for profit, and for-profit organizations)
Cat. V	Environmental protection area	Governmental (3 subtypes, considering the governmental levels, and possibly sharing in particular cases), possibly over public or private ownership	A – Governance by governments (Subtypes include national, subnational, and possibly delegation)
Cat. VI	Extractive reserve	Governmental (3 subtypes, considering the governmental levels, and possibly sharing in particular cases), shared with traditional communities	D – Governance by indigenous peoples or local (or traditional) communities (Subtype include traditional extractive communities)
	Sustainable development reserve	Governmental (3 subtypes, considering the governmental levels, and possibly sharing in particular cases), shared with traditional communities	B – Shared governance (Subtype include joint governance, mostly with traditional extractive communities)
	Forest	Governmental (3 subtypes, considering the governmental levels, and possibly sharing in particular cases), possibly sharing with traditional communities (mostly in federal cases)	A – Governance by governments , in general (Subtypes include national, subnational, and possibly delegation) (B – Shared governance , in several cases of national forests; the subtype is that of joint governance, with traditional extractive communities)
	Fauna reserve	Governmental (3 subtypes, considering the governmental levels, and possibly sharing in particular cases)	A – Governance by governments (Subtypes include national, subnational, and possibly delegation)

* Organization by this work, based on Brasil/Brazil (Lei/Law 9985/2000), Borrini-Feyerabend et al. (2013) [22], Dudley (2008) [16], and Marette et al. [31].

Abbreviation: cat.: management category.

Table S1.2.SM. Brazilian National Protected Areas System—correspondence of management categories and PA aggregated numbers. *

Govern. level		Federal					State					Municipal (1)					Total				
IUCN	Brazilian categories	Number (2)			Area (km²)		Number (2)			Area (km²)		Number (2)			Area (km²)		Number (2)			Area (km²)	
		Cont.	Mar.	Total	Cont.	Mar.	Cont.	Mar.	Total	Cont.	Mar.	Cont.	Mar.	Total	Cont.	Mar.	Cont.	Mar.	Total	Cont.	Mar.
Ia	Biological reserve	32	5	31	42,132.73	542.50	27	3	27	13,519.82	4.55	9	0	9	52.05	0.00	68	8	67	55,704.60	54.,05
	Ecological station	30	7	30	71,944.42	168.96	66	1	61	47,618.58	0.31	11	0	10	47.15	0.00	107	8	101	119,610.15	169.27
Ib	No correspondence	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
II	Park	79	11	74	264,757.08	3,321.95	231	24	226	94,357.32	1,361.58	222	12	220	876.76	26.27	532	47	520	359,991.16	4,709.80
III	Natural monument	5	3	5	446.11	114,868.02	36	2	36	1,101.14	0.40	32	5	32	265.08	1.08	73	10	73	1,812.33	114,869.50
	Wildlife refuge	8	5	9	2,130.31	853.95	60	1	59	3,636.68	4.71	21	3	22	365.31	0.58	89	9	90	6,132.30	859.24
IV	Ecological relevant interest area	13	2	13	340.63	0.25	32	3	32	622.30	3.92	38	3	38	280.14	3.60	83	8	83	1,243.07	7.77
	Natural heritage private reserve	670	0	670	4,885.45		394	0	394	1,243.17	0.00	2	0	2	0.46	0.00	1,066	0	1,066	6,129.08	0.00
V	Environmental protection area	42	14	37	100,380.33	796,795.39	222	46	204	306,070.80	37,952.07	187	17	175	68,143.54	882.00	450	77	416	474,594.67	835,629.46
VI	Extractive reserve	69	23	66	127,435.12	7,656.51	29	1	29	21,088.56	37.36	1	0	1	682.20	0.00	99	24	96	149,205.88	7,693.87
	Sustainable development reserve	2	0	2	1,026.18	0.00	32	4	32	111,196.85	53.03	5		5	170.71	0.00	39	4	39	112,393.74	53.03
	Forest	68		67	178,148.54	0.00	43	0	41	135,861.83	0.00						111	0	108	314,010.37	0.00
	Fauna reserve	0	0	0	0.00	0.00	0	0	0	0.00	0.00	0	0	0	0.00	0.00	0	0	0	0.00	0.00
Total CNUC [68]		1,018	70	1,004	793,626.90	924,207.53	1,171	85	1,141	736,317.05	39,417.93	528	40	514	70,883.40	913.53	2,717	195	2,659	1,600,827.35	964,538.99
Total CNRPPN [69]		1,103	70	1,089	793,994.43	924,207.53	1,763	85	1,733	738,13.,86	39,417.93	618	40	604	70,898.40	913.53	3,484	195	3,426	1,602,950.48	964,538.99
Total CNUC [68] + Pinto et al. [70,71]												1,274			117,620.36		2,717	195	2,659	1,600,827.35	964,538.99
Total 2**												1,277			117,679.17						
Total CNRPPN [69] + Pinto et al. [70,71]												1,331	40	604	117,609.25	913.53	3,486	195	3,427	1,60.,950.48	964,538.99
Total 2**												1,334			117,683.53						

* Organization by this work, based on Brasil/Brazil (s/d [68], Lei/Law 9985/2000), CNRPPN (s/d [69], Pinto et al. (2017, 2019) [70,71], Dudley (2008) [16], and Maretti et al. [31i].⁷

** Totals considering the higher number (due to the difference of counting dates)—in the cases of wildlife refuges and ecologically relevant interest areas at the municipal level.

Abbreviations: cont.: continental; mar.: marine; area in square kilometers (km²); n.a.: not applicable; n.d.: no data available. Management categories (IUCN international PA management categories [16], in relation to the Brazilian National PA System (Lei/Law 9985/2000, Brasil/Brazil), with acronyms in English format): biological reserve: reserva biológica—REBIO; Ecological station: estação ecológica—ESEC; park: parque (parque nacional—PARNA—and state and municipal correspondents); natural monument: monumento natural—MONA; wildlife refuge: refúgio de vida silvestre—REVIS; ecologically relevant interest area: área de relevante interesse ecológico—ARIE; natural heritage private reserve: reserva particular do patrimônio natural—RPPN; environmental protection area: área de proteção ambiental—APA; extractive reserve: reserva extrativista—RESEX; sustainable development reserve: reserva de desenvolvimento sustentável—RDS; forest: floresta (floresta nacional—FLONA—and state and municipal correspondents); and fauna reserve: reserva de fauna—REFAU.

As presented in the main text, Brazil also has **protected areas** (áreas protegidas—APs) in a **broad sense** by the Decreto/National Decree No. 5758 of 2006,⁸ including protected areas stricto sensu officially defined, and Indigenous and Quilombola territories. This decree also refers to the environmental connection by other kinds of spaces protected (not considered “áreas protegidas”) by other legislation (currently National Law No. 12,651, from 2012, protecting native vegetation, but evolved from previous Forest Codes), such as the permanent preservation areas (áreas de preservação permanente—APPs) protecting native vegetation along rivers, in steep slopes, etc., and the legal forests (reservas legais—RLs), defining a percentage of each property to be maintained with native vegetation (depending on the bioma). These were included in the Brazilian Aichi Targets, defined in 2013 (Resolução/Resolution CONABIO 6/2013, Brasil/Brazil),⁹ but did not follow all OECMs (other effective area-based conservation measures) criteria later defined by CDB [25,86]. Other policies also consider other traditional territories, besides those mentioned above ([23,76]; Decretos/Decrees 6040/2007; 9334/2018, Brasil/Brazil¹⁰). Other areas also have potential for being recognized as OECM [24,86]. But the expression “áreas protegidas” (protected areas) in Brazil is also used in the common sense of any area protected by any rule ([31i,66,85] + b.f.i)¹¹ (see more in the main article text.)

Therefore, besides the several thousands of PA (sub)systems, there are also the conserved areas, composed of the traditional territories and potentially several kinds of OECMs, including urban conservation areas and others (such as areas characterized by the sustainable use of natural resources by traditional or local communities, areas in which ecosystem services are conserved, such as water basin conservation, spaces for recreational purposes, historical and cultural landscapes, military areas, and reserves associated with university or research institutes, among other possibilities) ([23,31i,38,66,86] + b.f.i).

1.2. *Indigenous peoples and traditional communities and their territories*

As presented in the main text, in Brazil, **traditional territories** are considered to be a right for their peoples and communities, as well as constituting crucial conserved areas in national legislation and policies, and by social movements. This is not only in relation to indigenous peoples (who have the strongest legal and social recognition) and traditional black communities (comunidades quilombolas, related to enslaved descendant communities or maroons), both of which are mentioned in the current 1988 Brazilian Constitution. There are other social groups, which also self-identify as traditional, with rights recognized by complementary national legislation.

Collectively, these refer to themselves in Brazil mostly as “**Indigenous peoples and traditional communities**” (IPTCs; with some acceptable variations, such as “traditional peoples and communities”—TPCs; povos e comunidades tradicionais—PCTs in Portuguese). This goes beyond the “Indigenous peoples and local communities” (IPLCs) that are typically considered in international policies ([23,31i,vi-vii,72,96-98] + b.f.i,vi-vii). IPTCs are social groups with distinct rights as a result of historical-cultural and territorial particularities. Different fields of knowledge have recognized the interactions between the IPTCs and nature from the standpoints of socio-environmental, ethical, and economic sustainability ([23,31i,vi-vii,72, 96-98] + b.f.i,vi-vii). This is because they present “a track record of minimal environmental impact” (Cunha and Barbosa Almeida, 2009, p. 279 [100]).

They organize themselves nationally through several organizations by group, such as the national Articulation of Indigenous peoples (Articulação dos Povos Indígenas do Brasil—APIB), the Quilombola National Association (Coordenação Nacional de Articulação de Quilombos—CONAQ), the National Council of Extractive Communities (Conselho Nacional das Populações Extrativistas—CNS), the National Conference of Marine and Coastal Extractive Communities and Reserves (CONFREM—Conferência Nacional das Populações e Reservas Extrativistas Marinhas e Costeiras), among others, but also through the more general National Council of Traditional Peoples and Communities (Conselho Nacional dos Povos e Comunidades Tradicionais—CNPCT) [23].

For a long time, and as it is likely to remain for at least the near future, IPTCs in Brazil have been in a continuous **struggle** for the recognition of their territories (as indigenous lands, Quilombola territories, or other traditional communities' territories, following the national legislation and policies) ([23,28,31i,vi-vii,52,72-76,96-105,154-156]¹²; Decretos/Decrees 6040/2007; 9334/2018, Brasil/Brazil; + b.f.i,vi-vii). However, based on their own interests and conditions, these may undertake processes to achieve the international registration of their territories as ICCAs¹³ [23] and/or their national recognition as being cases of OECM [24], engage in international dialogues (particularly for those traditional communities that are not so well known, especially internationally, outside the Amazon, and that do not specifically have explicit rights), as well as pursue collaborations within the country in their struggle. Although it is not easy to understand, the same traditional territory might be an official protected area (in the case of traditional extractive communities in RESEX, for instance), be explicitly recognized under Brazilian regulations (such as Indigenous lands and Quilombola territories), seek an international ICCA registration, and/or look for national recognition as being cases of OECM, among other and cumulative possibilities, although not without conflicts [23,86].

Some indigenous territories were registered in Brazil as protected areas, in the World Database of Protected Areas (WDPA).¹⁴ This action followed the conception that Indigenous and community conserved areas (ICCAs) were considered governance types of protected areas [22,23].¹⁵ The Kalunga Quilombola Territory (officially recognized in Brazil as a Quilombola territory) is the only national case that obtained international ICCA registration¹⁶—and with this, it appears in the platform Protected Planet as IUCN category VI, although it is not an official protected area (unidade de conservação) in Brazil. With the definition of OECMs [24], this might need revision in Brazil towards considering the whole set of traditional territories as conserved areas (OECMs) [86].

1.2.1. Indigenous peoples and their territories

Among the Indigenous peoples and traditional communities (IPTCs), Indigenous peoples are the most recognized group, together with their territories, by legislation, policies, and society, particularly those in the Amazon. Indigenous peoples, their rights, and their territories are explicitly recognized in the Brazilian National Constitution (art. 231 and others)¹⁷, in addition to other legislations [23].

Before the Europeans arrived, in around 1500 of the common era, several million **indigenous inhabitants**, from about 1500 ethnic groups, lived in the area that then became Brazil. The evolution of their recognition consisted in a large and important historical phase, which had a major intention of their extermination; followed by a phase in which they were forced towards the integration into the mainstream society; and coming recently into a phase of growing recognition of their cultural differences and rights. There was a strong decline in their population for five centuries and there has now been a recent regrowth since around 1970. The 2010 census counted almost 900,000 Indigenous persons, 305 ethnic groups, and 274 languages. There are 82 references to Indigenous groups in isolation (or officially non-contacted or in voluntary isolation), 32 of which are recognized by FUNAI (the federal institution in charge of the Indigenous matters).

After a long period of no rights, in the early 20th century, they were confined in small reservations, which was the only condition for them for decades. Currently, such reservations are mostly located in the center–southern part of the country—as the part of the country that was the more densely occupied first. With Brazil's economic and colonial expansion in the north and west, from around the middle of last century, relatively larger areas were defined, but in several cases, the indigenous peoples were yet forced into such reservations, mostly in the central–west part of the country and in the Amazon (such as in the case of the infamous Xingu Indigenous Park). After a transitional period, since the 1988 Brazilian Constitution, their **territories** were recognized where they lived, considering larger areas, which are concentrated in the Amazon.

According to some of the last assessments, there are, in Brazil, some 622 recognized territories, with more than 100 others under evaluation, counting around 1180 K km² in total

surface, concentrated in the Amazon, corresponding to some 12%+ of the Brazilian terrestrial territory.

(Most of the data and information presented herein were mostly collected by Maretti and Simões, 2020 [23], from official and academic sources, such as FUNAI, IBGE, Carneiro da Cunha, etc.)

1.2.1.1. Conflicts and trends

The authors offer here some complementary information about conflicts with indigenous peoples and their territories, in complement to what was presented in the main text.

Associated with constant **threats**, a common characteristic presented by several indigenous peoples, as well as traditional communities in Brazil, is that they are in permanent tension related to the maintenance of their territory, their way of life, and their traditions [23]. Despite the Brazilian constitutional right to land, social organization, and cultural manifestations of indigenous peoples and Quilombola communities (or maroons), as well as the (under-constitutional) legislation that guarantees other IPTC rights, they are not always recognized. As such, there is a constant struggle by those peoples and communities in the search for their rights, through ethnic and ethno-territorial movements.

To name a few cases, there are ethnic emergency movements of the Puri and Araxá Indigenous peoples in the Brazilian state of Minas Gerais¹⁸; and ethno-territorial claims of the Payayá and Imboré Indigenous peoples in the Brazilian State of Bahia.

There are also limitations to the access to sacred sites, such as caves with Indigenous paintings or related to mythology or ancestral settlements, which were incorporated into PAs, as is the case of the Cavernas do Peruaçu National Park (fed. cat. II), where the Xakriabá Indigenous people fight to regain that territory due to the existence of paintings produced by their ancestors;¹⁹ and the painted walls in the Sete Salões State Park (st. MG cat. II), sacred to the Krenak Indigenous people, but which are not accessible, especially by the farmers who border the park and block their passage.

Despite the growing increase in participatory mechanisms and the integrated management of PCAs and their relationship with traditional territories, these are still threatened by unsustainable development processes. This is the case of illegal mining in the Yanomami Indigenous Land, which has seriously threatened its people.²⁰ There are also cases involving land grabbing for the purpose of cattle farms, as suffered by the Kayowá Indigenous people in Mato Grosso do Sul state;²¹ or for building large resorts and tourist developments, as suffered by the Pataxó and Tupinambá Indigenous peoples in the State of Bahia.²²

At the same time, as a result of the struggles of social movements, there is **growing recognition** of the IPTCs by several policies in Brazil to strengthen the management their territories ([28,76]; Decretos/Decrees 6040/2007; 9334/2018, Brasil/Brazil). Moreover, there is increasingly legal advice promoting the respect of IPTC rights and the harmonization of official conservation efforts with nature [75,154,155]. (Such definitions and processes were weakened by the recent previous national administration²³, but there were commitments to bring them back, strongly, from 2023 onwards [156]²⁴.)

1.2.2. Quilombola communities and their territories

The Quilombola communities are also explicitly mentioned in the Brazilian National Constitution (art. 68, of Constitutional Transitional Provisions, and others). These groups follow the indigenous peoples in terms of their level of recognition and inclusion by legislation, policies, and societal consideration.

The term “**Quilombola**” in Brazilian Portuguese originally refers to areas where fugitive slaves gathered (“Quilombos”, as the infamous Quilombo dos Palmares, with the wording coming from the region that became the country of Angola, which was one of the most important origin regions for slaves that came to Brazil). Therefore, they have similarities with the maroons (maroon communities) in the rest of the Americas and in the Caribbean. Currently, the concept associated with the expression mostly refers to communities of black people, former slaves, which

maintain some cultural collective characteristics and, in most cases, have a strong relationship with the ecosystems where they live (following self-definition and federal decree).

Probably more than 4 million slaves arrived in Brazil, which was one of the last countries to abolish slavery. Besides a growing understanding related to the majority of the Brazilian population descending from black people, there is not yet good census information of **Quilombola communities** themselves. Nevertheless, official sources estimate more than 3000 communities. Among these, currently more than 300 communities (with almost 17 thousand families) have had their **land rights** recognized or restored in 160 Quilombola territories with a total surface of around 10 K km².

(Most of the data and information presented herein were mostly collected by Maretti and Simões, 2020 [23], from official and academic sources, such as Fundação Cultural Palmares, INCRA, national legislation, IBGE, Anjos, etc., as well as the Quilombola National Association CONAQ.)

1.2.3. Traditional communities

As mentioned in the main text, other **social groups** also **self-identify as traditional** (or culturally distinct) in Brazil. There is a large number of self-identified traditional social groups (including, in Portuguese: indígenas, Quilombolas, seringueiros, extrativistas, ribeirinhos, pescadores artesanais, caiçaras, faxinalenses, jangadeiros, povos de terreiro e de matriz africana, ciganos, ilhéus, raizeiros, geraizeiros, catingueiros, vazanteiros, veredeiros, pantaneiros, morroquianos, pomeranos, retireiros, comunidades de fundos e fechos de pasto, cipozeiros, andirobeiros, quebradeiras de coco-babaçu, catadoras de mangabas, caboclos, etc.), which lists groups which are not identical, but without a need for a final, definitive assemblage (also considering the fact that these social groups are not necessarily historically constant) [23].

As a result of the struggle of social movements, also several **policies** in Brazil also see such communities as traditional. For instance, the Amazon rubber-tappers movement, led by Chico Mendes and others, to defend themselves and their forest harvests, led to the national (and, to a certain level, international) recognition of the traditional extractive communities [96-105]. Therefore, through their conquest, some of those traditional groups or communities are better recognized in policies, legislation, and in societal consideration (although policies that were subject to some instability or regression in recent years, between 2019 and 2022, seem to be coming back, as mentioned in the main text) ([76,72,110,156]; Decretos/Decrees 6040/2007; 9334/2018, Brasil/Brazil).

1.2.4. Traditional extractive communities

It is here necessary to contextualize the redefinition of the word “**extrativismo**” in Brazilian Portuguese, as a result of the historical process of identity construction by local Amazonian communities, which is different from similar wording in Spanish and English (“extractivism”), which mostly refers to the extractive industry. It also differs from some concepts, in which extrativismo refers to a retrograde economic development perspective. Here, the meanings associated follow what has been adopted in Brazil to designate the way of life of a series of traditional communities, with important contributions to conservation ([31vii,97,98,101-105] + b.f.vii).

The **origins** of this concept used here come from the history of rubber-tappers in the Amazon. This social group was formed by the immigration from northeast Brazil to the Amazonian region, intensifying the miscegenation. This was the result of a strategy adopted by the Brazilian government to extract rubber from the Amazon jungle, as a commodity, from the second half of the 19th century, and mostly in preparation and during the world wars in the 20th century. This mostly happened in lands under the domain of the federal or state governments through concessions to so-called businessmen in the main Amazonian capitals (such as Manaus and Belém). With the decline of the rubber market, the communities managed to survive in the Amazon jungle. From mid-20th century onwards, there was a predatory economic migration of agriculture and ranching towards the north, into the Amazon. As the remaining communities mentioned above did not have the property rights or titles for their lands, nor rights for the

exploitation of rubber and other ecosystem products, they were threatened with a lack of natural resources and economic activities, and displacement by force—sometimes even threatened with death in cases of resistance. Therefore, since the 1970s and 1980s, under the leadership of Wilson Pinheiro, Chico Mendes, and others, the rubber-tappers mobilized and organized themselves into a movement that claimed, cried, and fought against land-grabbing and deforestation (mostly by illegal farmers coming from southern Brazil)—a resistance in their defense as well as of the forests [23,101-105].

The **rubber-tapper movement** led to the organization of the CNS (Conselho Nacional das Populações Extrativistas, as the new Portuguese name for the Conselho Nacional dos Seringueiros or Rubber-tappers National Council). At some point, the original rubber-tapper movement divided into two main branches. One adopted the model of Indigenous territories in Brazil, with the land owned by the nation state, and asked to be collectively assigned rights to use natural resources. This branch proposed the model of extractive reserves (RESEX), which was accepted by the government. The other branch went down the path of agrarian reform (and so-called “settlement projects”), mostly asking for the recognition of the rights of communities already established on the land, as well as proposing an ecological perspective for those new settlements. This branch opened the possibility for agro-extractive settlements, or similar ones, in which there are particular plots for agro-extractive families, settlements which may or may not have a common forest area [23,101-105].

Therefore, through **extractive reserves**, protected areas were also introduced as strategies for land tenure regularization and the maintenance of a social structure based on community and environmental sustainability, and to access to public policies appropriate to the local reality. But the extractive reserves would first allow the creation of protected areas which would later undergo land-tenure regularization (which would include the clarification of the public domain or land acquisition, as well as the concession of land to the communities). With grassroots mobilization and international visibility, extractive reserves made their way to the National System of Protected Areas (Sistema Nacional de Unidades de Conservação—SNUC). This stage influenced the recognition of traditional extractive communities in other management categories, which are related to the IUCN Category VI, such as RDS and FLONAs. Besides the Amazon, as a first approach, the possibility for RESEX was adopted by traditional fishing communities, mostly through CONFREM, spreading the model, particularly to the Atlantic coast ([23,31i,vii,97,98,101-105] + b.f.i,vii).

As a result of the movement of the traditional extractive communities, as well as the policies, the recognition of their traditional territories in PAs is concentrated in the Amazon and on the Atlantic coast. Within official protected areas of the national system, according to one of the last assessments available, some 76,000 (76 K) families from traditional extractive communities lived in some 87 federal (fed.) protected areas related to the IUCN category (cat.) VI (Brazilian management categories extractive reserves, sustainable development reserves, and national forests). The last count shows 135 PAs related to the IUCN category VI at the federal level, with a total surface of 314 K km², and 61 PAs at the state (st.) level, with a total surface of 132 K km². (These consider the 41 state forests, with a total surface of 136 K km², which are not so important for traditional communities. The municipal cat. VI PAs are also not important in this regard. Therefore, they were not included.) But this does not consider protected area category V (Brazilian management category of environmental protection area), which could have at least some more 50,000 artisanal fishing families, only in federal PAs at the coast, with a total surface of around 340 K km². Also, it does not consider population in the subnational protected areas as well. (These numbers are based on ICMBio internal data, through [23], complemented and partially updated with data from [68].)

On the other hand, many of the **environmentally friendly settlements** also now have the possibility of being recognized as conserved areas, by means of other effective area-based conservation measures, under the CDB guidance (Decision 14/8 and Aichi and Kunming–Montreal Targets),²⁵ if Brazil accept this possibility within a national chapter [10,11,24,86]. More

than 120 thousand families live in national ecologically alternative settlements, with a total surface of more than 130 K km², mostly in the Amazon.

(Most of the data and part of the information presented herein were collected by Maretti and Simões, 2020 [23], from official, academic, and social movement sources, as well as directly by those sources, such as ICMBio, INCRA, Allegratti, Barbosa de Almeida, CNS, CONFREM, and Memorial Chico Mendes, among others.)

Therefore, the term **(traditional) extractive communities** has been used as an identity unifier of social groups that live upon or supplement their subsistence with the use of resources extracted from ecosystems, including, to a certain level, low-scale family agricultural and small animals. With the creation of extractive reserves, other processes have begun, influencing government bodies, universities, research centers, social and ecclesiastical movements, etc. It was clear in the process that the movement initiated by rubber-tappers and its related symbolism was an inspiration for the mobilization of other communities, initially other collector and fisher communities in the Amazon, than fisher communities on the Atlantic coast, and then spread to other communities and other parts of the country.

1.2.5. Other traditional communities

In that sense, following the relative successes of Indigenous peoples, Quilombola communities, and traditional extractive communities, **other communities** have also laid claims to being traditional. Therefore, other traditional communities also organized themselves and were better recognized in national policies, mostly since the 2000s. And these processes are also probably related to the national organization of traditional communities. Again, these policies have faced some instability or regression in recent years, between 2019 and 2022, and seem to be coming back, as mentioned in the main text. Besides their local organization, considering the diversity and relatively small numbers of each group, those other traditional communities (including, again, naming in Portuguese: ribeirinhos, caiçaras, faxinalenses, jangadeiros, povos de terreiro e de matriz africana, ciganos, ilhéus, raizeiros, geraizeiros, catingueiros, vazanteiros, veredeiros, pantaneiros, morroquianos, pomeranos, retireiros, comunidades de fundos e fechos de pasto, cipozeiros, andirobeiros, quebradeiras de coco-babaçu, catadoras de mangabas, caboclos, etc.) tend to organize themselves nationally mostly around their representation in the National Council of Traditional Peoples and Communities (Conselho Nacional dos Povos e Comunidades Tradicionais) ([23,31i,vi-vii,72,76,,96-98,110,156]²⁶; Decretos/Decrees 6040/2007; 9334/2018, Brasil/Brazil + b.f.i,vi-vii).

The last estimation indicates that more than 6 million **persons** could be part of the traditional communities altogether (including the social groups presented in the subsections above). One of these groups, the riverine communities (ribeirinhos), had already more than 58 thousand riverine and fishing families with their access to land and natural resources recognized in the Amazon. But for most of them, their traditional territories are not yet recognized, although there are processes under way.

(Most of the data and part of the information presented herein were collected by Maretti and Simões, 2020 [23], from official, academic, and social movement sources, as well as directly by those sources, such as MMA, MPF, and CNPCT, among others.)

2. Evolution of PCA-related policies and themes

As presented in the article's main text, most authors consider the modern concept of protected areas (classical PAs) to have started by the end of the 19th century. Despite the fact that the article referred to herein considers a longer history of protected and conserved areas, as well as considers important developments after the national park paradigm (mostly throughout the 20th century), it is important to recognize that some elements of classical PAs are generally well accepted guidelines for their management. Among these, there is the importance of planning, which is crucial for their good management. Management plans are usually composed of a zoning of allowed activities and protection efforts, and thematic management programs, such as enforcement, patrolling and emergencies, tourism and visitation, environmental education,

research, etc. ([16, 30]; Lei/Law 9985/2000, Brasil/Brazil). And, those classical guidelines tend to be more considered inwards to PAs and in terms of their management. Furthermore, when a broader spatial approach is adopted, the demand is usually about how to increase protection outside PAs (for instance, in buffer zones, ecological corridors, etc.)

Nevertheless, the objectives, models, and M&G guidelines and practices have always been evolving and understanding this is crucial for the analyses presented in the main article in terms of present and future needs, trends, and expectations. In fact, the work did not question the importance of the conservation of nature and its biodiversity, neither the role of protected areas to that end. On the contrary, the importance of PCAs for that was considered a basic assumption, based on extensive previous literature. However, going beyond that, the work of the study group (GECCAP) focused on the relations with social groups and their perceptions about the importance and problems of PCAs, dealing with a series of (sub)themes in which PCAs are important. Also, to achieve global and national goals related to the expected biodiversity conservation, sustainable development and quality of life, the PCA-related targets keep expanding, which brings an increased need to deal with human rights and social demands. Therefore, these supplementary materials presented below complement the evolution of PCA concepts and practices.

2.1. Evolution of the international institutional context related to protected and conserved areas

Complementing the evolution of concepts associated with protected and conserved areas presented in the article's main text ([9,18,19,31i,43-47] + b.f.i), the authors offer here some complementary elements of the evolution of the international institutional context, related to the theme. See also Tables 2.1.SM–2.5.SM, which show the evolution of the international models, policies, and institutional contexts of area-based conservation strategies (or protected and conserved areas).

Due to the recognition of the threats posed by the degradation of ecosystems, the loss of biodiversity, and the climate crisis, the recognition of the whole **environmental agenda** grew in importance, mostly in the 20th century, including agreements and diplomacy among countries, besides the progressive organization and engagement of civil society and Indigenous peoples and local and traditional communities—all now increasing in their importance in the 21st century.

Studies focusing on the **national parks model** tend to call attention to the importance of the Convention Relative to the Preservation of Fauna and Flora in their Natural State (London, 1933)²⁷, considered key in the beginning of the internationalization of the recognition of the importance of protected areas. The Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere sets categories for protected areas (Washington, 1940²⁸).

Frequently considered as an initiative by western countries with an interest in wildlife preservation in the colonized territories, the creation of the International Union for the Conservation of Nature (IUCN), in 1948, filled a gap in United Nations (UN) organizations, before the creation of United Nations Environment Programme (UNEP), which followed the famous United Nations Conference on the Human Environment, in Stockholm, 1972.²⁹ Nevertheless, it organized sui generis with a diversity of membership types, such as governments, governmental institutions and non-governmental organizations, and the IUCN evolved, as shown by the recent decisions to also consider Indigenous peoples' organizations (from 2016) and subnational governments (from 2021) as potential members. And, it has been a key organization in nature conservation in the last 7 decades, including in the proposal or preparation of key conventions related to protected areas, such as the Ramsar Convention on Wetlands (1971) and the World Heritage Convention (1972), besides the umbrella Convention on Biological Diversity (1992) [17].³⁰

With the IUCN **World Commission on Protected Areas**, created in 1958-1960 (before the Committee on National Parks, International Commission on National Parks and Commission on National Parks and Protected Areas), the history of organizing information and producing guidelines on protected areas went to a higher level, including the organization of the World

Database on Protected Areas (and later the Protected Planet web platform), based in the World Conservation Monitoring Centre (WCMC), associated with UNEP, as well as the establishment of IUCN international protected area management categories, the internationally accepted PA definition, and a series of other standards and guidelines—all making PAs one of the best strategies for monitoring global conservation [39,48].

Other essential processes related to nature conservation have been the **United Nations Conferences** on Environment and Sustainable Development, particularly those in Stockholm, 1972; Rio de Janeiro, 1992; Johannesburg, 2002; Rio+20, etc. In Rio, 1992, some of the most important conventions were launched, such as the Convention on Biological Diversity (CBD), which is considered the international umbrella arrangement for nature conservation [17]. CBD has the government-related global definition of protected areas and OECMs, while IUCN promoted the most instrumental definitions, standards, and classifications related to protected and conserved areas, including the processes to the recognition of ICCAs. To support global decisions on biodiversity, the Intergovernmental Science–Policy Platform on Biodiversity and Ecosystem Services (IPBES) was created in 2012 as an independent intergovernmental body.³¹ In parallel, two major international streams always need to be considered. The UN Framework Convention on Climate Change (UNFCCC) was also launched in Rio, 1992, and has had conferences every year, with important decisions, including the famous Paris Agreement, aiming to keep the temperature increase to below 2 degrees Celsius above pre-industrial levels, based on nationally determined contributions (NDCs).³² PCAs can contribute to climate change mitigation, and need to be considered to face its consequences. Sustainable Development Goals (SDGs) had the concept approved in Rio+20 and further developed later on. They succeeded the Millennium Development Goals, defined in 2000.³³ Among the SDGs, there are references to biodiversity conservation, but PCAs need to be contributing to most of the goals³⁴ [13-15].

2.2. Evolution of themes related to PCAs

Complementing the main perspective of the evolution of protected and conserved areas, as presented in the article's main text, as well as above in this section (2. Evolution of PCA related policies and themes"), here, below, more details on the basic information, perceptions, and findings about the evolution of concepts, models, and policies related to protected and conserved areas are presented, starting with the approach presented by this work (in Table 2.1.SM):

- Table 2.1.SM. Evolution of international models and policy contexts of protected and conserved areas.

It should be considered that this is one perspective of the evolution of PCA models, which is very consistent with strong practical experience and good research, and is strongly linked to the work of the (sub)theme (i.b) (see below, in Section 3).

Further below, some of the inputs and/or inspirations from the technical and scientific literature are presented, which are also related to the evolution of the themes linked to PCAs, as well as other perspectives, complementing or contrasting with the perspective proposed by the main article (and complemented herein), mostly through tables, adapted by this work, including:

- The evolution of the consideration of nature–people relations, in conservation and PCAs, modified from Jeanrenaud (2002) and Souza (2013) [19], complemented by this work (Table 2.2.SM);
- The evolution of considerations about PCAs, related to themes and decisions from IUCN events, in global and regional congresses, both with conservation and protected areas, and some key publications, as performed by this work (inspired by others) (Table 2.3.SM);
- The comparison between the classical and the New Paradigm of PAs ("contrasting paradigms"), based on Phillips (2003) [18], with comments by this work (Table 2.4.SM);
- The evolution of the protected-area concept, "from islands to networks to landscapes to the social–ecological approach", based on Palomo et al. (2014) [148], with comments by this work (Table 2.5.SM).

None of the basic information, milestones, or sources and the perceptions or findings presented in the mentioned tables (2.1.SM–2.5.SM) are complete or products of exhaustive

literature reviews or thorough historical analyses, but represent the research, practice, and lived experiences accumulated for decades and important literature reviews for the GECCAP processes and for this article's related analyses; therefore, they are consistent and tested, and do have some bias from their Brazilian and Latin American contexts and are more related to the official protected areas (PAs). However, obviously, they are subject to critique or further improvements.

Table S2.1.SM. Evolution of international models and policy contexts of protected and conserved areas. *1

Models	Phases*2	Some characteristics	Complements by this work	
			Some milestones or anticipatory events*3	Some sources*435
No clear pattern (conserved areas with no defined concept or a single pattern)	From ancient times*2	<ul style="list-style-type: none"> • Different types, dispersed, without unified concept or model. For instance: <ul style="list-style-type: none"> - Sacred sites (with some restrictions of uses); - Hunting areas (reserved for higher classes, such as nobility, restricting the “commoners’” access); - Traditional territories (TTs) of indigenous peoples and traditional communities (IPLTs); - Areas for resources protection (related, for instance, to water supply to the community of city); — among other possibilities. 	<ul style="list-style-type: none"> • Not enough or sufficiently systematic studies to this phase, but cases dispersed around the world (including examples to the left among other possibilities). 	Almeida (2002); Drummond et al. (2010); FF (2009) [51]; Franco et al. (2015) [49]; Jepson; Wittaker (2002); Lemos; Bizawu (s/d); Maciel (2011); MacKinnon et al. (1986) [46]; Maretti (2019, 2020a,b,c, 2021a,b) [9,31i.b+]; Medeiros (2006) [50]; Phillips (2004, 2008) [43+]; Vasco Ferreira (2018) [52]; Watson et al. (2014) [7]; WHC (UNESCO) (s/d); Wild; Mcleod (2008) [80]; Young; Horwich (2007) [47]; among others
National parks (model recognized as originated in the USA and having as early landmarks the Yellowstone and Yosemite National Parks)	Nineteenth and twentieth centuries*2	<ul style="list-style-type: none"> • The most well-known paradigm and a very important phase for the homogenization, diffusion, and dissemination of this very important model throughout the 20th century. • Governance centered in national governments. • Positive elements (mostly from the perspective of societies’ ruling or dominating social groups, increasingly urbanized): <ul style="list-style-type: none"> - Started focusing on scenic landscape and tourism, and evolved in terms of nature conservation (passing through species, ecosystems, ecosystem services, etc.); - Standardization, homogenization; - International policies (UN List, World Database of Protected Areas, natural World Heritage sites, Ramsar sites, Convention on Biological Diversity, etc.); — among other possibilities. • Negative aspects (including from the perspective of local and traditional social groups): <ul style="list-style-type: none"> - Cases of the disrespect of the traditional communities that existed in the areas; - Affirmation of the ‘new Europes’ (construction of countries in the Americas, Oceania, South Africa, 	<ul style="list-style-type: none"> • 1933—London Convention (Convention Relative to the Preservation of Fauna and Flora in their Natural State) • 1940—New York Convention (Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere) • 1948—IUCN (International Union for Conservation of Nature) • 1958–1960—IUCN World Commission on Protected Areas (WCPA) • 1960s onwards—United Nations Lists of Protected Areas • 1962—World Conference on National Parks (NPs) [1st], Seattle [18,19] • 1971—Ramsar Convention (Convention on Wetlands of International Importance especially as Waterfowl Habitat) • 1972—United Nations Environment Program (UNEP) • 1972—World Heritage Convention • 1972—World Conference on NPs (2nd), in Yellowstone [18,19] • 1972—Global Conference on Environment and Sustainable Development, in Stockholm • 1980s—World Conservation Monitoring Center (WCMC) and the World Database on Protected Areas (WDPA) [48] • 1992—Global Conference on Environment and Sustainable Development, in Rio de Janeiro • 1992—UN Framework Convention on Climate Change (UNFCCC) • 1997—Congreso Latinoamericano de Parques Nacionales y Otras Áreas Protegidas (1st), in Santa Marta 	Aguiar et al. (2013); Balmford et al. (2015); Barros et al. (2017); Bishop et al. (2004) [56]; Chape et al. (2003); Deguignet et al. (2014); Dinerstein et al. (2019); Drummond et al. (2010); Dudley (2008) [16]; Dudley; Stolton (2008); Edgar et al. (2014); Ferreira et al. (2015); Franco et al. (2015) [49]; IBAMA; WWF-Brasil (2007) [126]; Inchausty, s/d. [2008]; Jenkins; Joppa (2009) [27]; Locke, H.; Dearden (2005) [138]; Maciel (2011); Madeira et al. (2015) [28]; Phillips (2004, 2008) [43+]; Shafer (2015) [139]; Souza (2013) [19]; Thomas (1983); UNEP-WCMC, IUCN (2021) [26]; UNESCO (WHC) (1972)

Models	Phases* ²	Some characteristics	Complements by this work	
			Some milestones or anticipatory events* ³	Some sources* ⁴³⁵
		etc.) in processes of conquest and symbolic affirmation of new nations; - Simplification of or reduction in potential differentiations or potentially positive diversity, etc.	<ul style="list-style-type: none"> • 1992—World Congress on NPs and PAs (4th), in Caracas • 2000—Brazilian National System of Protected Areas (Lei/Law 9985/2000I) • 2002—Global Conference on Environment and Sustainable Development, in Johannesburg • 2004—World Conservation Congress (3rd)), in Bangkok 	
New Paradigm of PAs (recognized from Phillips, 2003 and World Parks Congress in Durban 2003, onwards)	From the last third of the twentieth century* ²	<ul style="list-style-type: none"> • Protected areas were no longer just the model of national parks, not only defined and managed by governments, much less only the national ones: - Considering the role of subnational governments (including the initial recognition of local and urban PAs), communities, and private entities; - Increased attention to the diversity of types (including management categories) of PAs, etc. • Protected areas with multiple objectives: - Nature conservation objectives (including increasing attention to ecosystem services); - Socio-economic objectives (including initial attention to well-being, yet mostly in relation to communities); - Sustainable use reserves for communities (recognition of the model of extractive reserves), among other elements. • Participation: managed for and sometimes with the local population and other social actors. • Respect for indigenous peoples and traditional communities' rights (although yet mostly proposing co-management by governments with them). • Greater attention to ecological processes, including to climate change. Consideration of PCA networks and connectivity, including ecological corridors and mosaics, and attention to the protection of the surrounding of PAs. 	<ul style="list-style-type: none"> • 1971—UNESCO Man and Biosphere Program (including biosphere reserves) • 1982—World Congress on National Parks (NPs) and Protected Areas (PAs) (3rd), in Bali • 1988—Brazilian National Constitutions • 1989—Convention No. 169 of the International Labor Organization (ILO) • 1991—Colombian National Constitutions • 1992—Convention on Biological Diversity (CBD) [17] • 2003—World Parks Congress (5th), in Durban [64] • 2004 onwards—CBD Program of Work on Protected Areas (PoWPA) • 2004—Brazilian National Plan on Protected Areas (PNAP) • 2007—UN Declaration on the Rights of Indigenous Peoples • 2007—Congreso Latinoamericano de Parques Nacionales y Otras Áreas Protegidas [2o], in Bariloche • 2007—Chico Mendes Brazilian Institute for Biodiversity Conservation (ICMBio) • 2008—World Conservation Congress (4th), in Barcelona • 2008—IUCN current PAs management categories [16] (lightly revised from 1992/1994, through [56] and [64]) • 2010–2020—Global Biodiversity Strategic Plans (Aichi Targets) (CBD CoP-10) [11] • 2010—Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) • 2014—World Parks Congress (6th), in Sydney • 2010–ca. 2020—RedParques' (Pan)-Amazon Vision (on PCAs) [92] • 2012—World Conservation Congress (5th), in Jeju • 2015—Latin American Declaration about Protected Areas and Climate Change (RedParques to the UNFCCC CoP-21) • 2015—UNFCCC's Paris Agreement (UNFCCC CoP-25) 	Barbosa de Almeida et al. (2018) [102]; Barnes et al. (2016) [3]; Borrini-Feyerabend (1996, 2008); Borrini-Feyerabend et al. (2002, 2013) [22+]; Brown et al. (2005) [78]; Cases (2012) [95]; CBD (2004); Coad et al. (2019) [33]; COMTEMA OLACEFS. (2021) [93]; Cunha; Barbosa de Almeida (2009) [100]; Diegues (1996/2008) [41]; Dudley et al. (2010) [12]; Dudley; Stolton (2003); Eagles (2009) [119]; Geldmann et al. (2015); Gill et al. (2017) [2]; Ghimire (1991) [40]; Graham et al. (2003) [20]; Guaitanale (2018); Guerrero; Sguerra; Rey (2007); Hamú et al. (2004) [131]; Heinen (2012) [21]; ICCA Consortium.(2003) [63]; ICMBio (2018) [87]; IUCN. WCPA (2004) [Jeanrenaud (2002); Leverington et al. (2010); Macedo et al. (2015); Maretti (2005) [105]; Maretti et al. (1998, 2003) [65+]; Maretti; Simões (2020) [23]; Mascia et al. (2014); Pack et al. (2016); Phillips (2003) [18]; Pinto et al. (2019) [137]; Qawabab et al. (2002); Ricketts et al. (2010); Sandwith et al. (2014); Sala; Giakoumi (2015) [150]; Soares-F. et al. (2010) [1]; Souza; Simões (2019); Stolton; Dudley (2010); Stolton et al. (2006); Thompson et al. (2014) [121]; Trzyna (2014); UNEP-WCMC (s/d); Watson et al. (2014) [7]; Worboys et al. (2015); Young; Medeiros (2018) [15]

Models	Phases* ²	Some characteristics	Complements by this work
			Some milestones or anticipatory events* ³
Recent developments, trends to the future times (increasing recognizing of multiple diversities and interacting processes—complexity, systems, etc.), and some pending needs	Twenty-first century* ²	<ul style="list-style-type: none"> • Recognition of multiple diversities, including: <ul style="list-style-type: none"> - PCA types, such as the diversity of governance types, management categories and others, such OECMs, ICCAs, urban green and blue areas, etc.; - Objectives, keeping focus on nature conservation, but also considering socio-cultural ones, including well-being, facing climate emergency, cultural landscapes, etc.; - Involved social groups and their interests; - Forms of partnership or collaboration (formal or informal). • Recognition of multiple interacting processes, relations with multiples themes and policies, complex systems, either each PCA or mostly the PCA systems. • Further recognition of indigenous peoples and traditional communities' rights. • Further recognition of the role of local governments. • Pending needs: <ul style="list-style-type: none"> - Full recognition of culturally diverse conservation objectives; - Full recognition of the complexity of PCAs and their systems and to manage and govern PCAs within their functioning systems; - Development of a full-on PCA-related science or discipline (focused on social, ecological, historic, and managerial issues); - Full recognition of PCAs managed by Indigenous peoples and traditional communities; —among other issues. 	<ul style="list-style-type: none"> • 1989—ILO Convention No. 169, on. Indigenous and Tribal Peoples • 2008—Brazilian National Policy for Sustainable Development of Traditional Peoples and Communities (PNPCT) (Decreto/Decree 6040/2007, Brasil/Brazil) • 2008—Ecuadorian National Constitutions • 2009—Bolivian National Constitutions • 2012—Brazilian Strategy of environmental Communication and Education [136] • 2016—Brazilian National Policy on Territorial and Environmental Management of Indigenous Lands (PNGATI) (Decreto/Decree 7747/2012, Brasil/Brazil) • 2016—Latin American Declaration about Protected Areas and Human Well-being (RedParques to the CBD CoP-13) • 2016—World Conservation Congress (5th), in Honolulu • 2016—Brazilian National Plan to Support and Strengthen Traditional Extractive and Riverine Communities (PLANAFE) [76] (Decreto/Decree 9334/2018, Brasil/Brazil) • 2018—CBD Decision on OMECs (CDB CoP-14) [24] • 2019—Brazilian workshop on cultural values of nature related to PAs M&G [90] • 2019—IPBES global report (1st general) • 2019—Congreso de Áreas Protegidas de Latinoamérica y el Caribe (3rd), in Lima [61,62] • 2021—Protected Planet LAC (Informe Planeta Protegido 2020: Latinoamérica y el Caribe) [6] • 2021—World Conservation Congress (6th), in Marseille • 2022—Failed proposed Chilean National Constitutions • 2022–2030(–2050)—Kunming–Montreal Global Biodiversity Framework (Strategic Plan) (CBD CoP-15) [10] • 2023—Brazilian manifesto on the interactions of health and nature conservation policies [77]
			Some sources* ⁴³⁵
			Allegretti (2008) [101]; Álvarez M. et al. (2021) [6]; Appleton et al. (2022) [32]; Belo (2021) [98]; Beltrán (2000); Berkes (2007) [60]; Bocarde (2021) [74]; Brasil, N. (2015) [91]; Brasil; CNPCT.(s/d) [72]; Calandino et al. (2018) [145]; Campos-Silva et al. (2021) [145]; Castro; Moura (2009) [166]; Charity et al. (2016) [84]; Charles (2021) [55]; CONAF (s/d, 2021) [127+]; Cranz; Boland (2004); Cumming (2016) [149]; Díaz et al. (2019); Santos (2021); Dudley et al. (2005, 2008,2017) [13,79+]; Elleason et al. (2021) [152]; Ervin et al. (2010) [151]; Fernandes Pinto; Irving (2015, 2017, 2018) [81+]; Fernandes-Pinto (2017); Franks et al. (2018, 2023) [159,161]; Funtowicz; Ravetz (1994); FVSA; APN (2019); Farvar et al. (2018) [54]; Fontoura et al. (2019) [114]; Garnett et al. (2018); GIZ (2022) [30]; Goriup (2006) [59]; Harmon; Putney (2003) [128]; Hesselink et al. (2007) [130]; Hoffmann (2022) [143]; ICLEI (2022; technical memory) [38]; ICMBio (s/d a, b, 2017, 2019b, 2021) [89,90,111,112]; ICMBio; IPÊ. (s/d, 2018) [115+]; Irving; Moraes (2019); Jacobi et al. (2006; 2019); Lecompte (2018, 2020); Lopoukhine et al. (2012) [142]; Maller et al. (2009) [83]; Maretti (2019, 2020a,b,c, 2021a,b, 2023) [9,31+]; Maretti et al. (2018b, 2019, 2022, 2023) [66,94+]; Maretti; Barros (2020); Marinelli (2011, 2014, 2016) [170+]; Marinelli et al. (2014); Maxwell et al. (2020) [8]; Mihm (2019); Moraes (2019); Moraes (2021) [96]; Morin (2006); Moro (2022) [164]; Naidoo et al. (2019) [147]; Neves Favacho (2021) [97]; Nicolescu (1996,1997); NSC; ISA (2015); Oldekop et al. (2016) [144]; Oliveira et al. (2018) [134]; OPAP (2020) [116]; Palomo et al. (2014) [148]; Parks Victoria (2020) [82]; Pellin et al. (2019); Pereira (2021) [67]; Ravetz (1999); Ribeiro (2019) [88]; Rios Paula (2022) [154]; Rodrigues; Abrucio (2019, 2020) [126,163]; Rodrigues; Anciães (2015) [138]; Rodrigues; Botelho (2022) [118]; Santos (2007, 2014); Schreckenberget al. (2016) [157]; TNC (2023) [86]; Torres et al. (2023); UICN-CMAP et al. (2020) [61]; Valverde et al. (2020) [62]; Vasco Ferreira (2018) [52]; Verschuuren et al. (2021) [53]; Vimal et al. (2021) [152]; Zafra-Calvo et al. (2017, 2019) [158,160]; Wild et al. (2008) [80]; WWF-Brasil (2021) [127]

*¹ Modified from Maretti (2019,2021) [9,31i.b], GIZ (2022) [30], and ICLEI (2022; technical memory) [38], among other sources, complemented by this work (including inputs from the GECCAP processes and by the article that these supplementary materials relate to).³⁶

^{*2} Although each phase, based on the predominant PCA model, would end at the beginning of the following one, it should be considered that there are anticipatory movements or characteristics that, in one phase, prepare the following one, as well as important remnants of previous phases still influencing processes in the following ones. As is clear from the milestones and sources considered (although not complete examples), there are elements of other times and historical phases. Therefore, in any phase, there are PCAs that are non-typical of this specific phase, differing from the dominant model, occurring in the period related to the phase considered. Also, all elements mentioned must be understood within historical contexts.

^{*3} Some milestones are also anticipatory transformational events or actions, occurring in one time but more related to other phases. Others, despite bringing elements of the following phase, do focus on the dominant PA concept of the respective phase.

^{*4} See also information about sources in the column of milestones (to the left). Without being a product of exhausting research, the sources are also not necessarily related to historical studies and phases, but, somehow, refer to the model considered in the phases presented herein. And, they are not necessarily defending the related model, but somehow referring to it.

Some conditions going beyond the simplicity of the phases are important and should be highlighted. Some kinds of conserved areas, particularly those related to traditional territories, always existed long before the others, coexisted with other dominant models, and are now coming strongly again. Because simple dichotomies are easier to understand (e.g., PAs without activities, and non-PAs for development), the NP model still tends to be considered as dominant by several non-experts, decision-makers, and even by scientists and managers. The real complexity of the PCAs, and even more that of their systems, must necessarily be considered, however, for successful systems of inclusive, equitable, and effective protected and conserved areas.

The following tables offer complementary or different evolutionary perspectives.

Table S2.2.SM. Evolution of the consideration of nature–people relations, in conservation and PCAs. **

Jeanrenaud (2002) ³⁷				Souza (2013) [19]	Complements by this work	
Theme	1960+	1980+	1990+	2000+	Approximately 2000–2020	Trends and/or expectations
Perception of nature	Wilderness	Ecosystems; biodiversity; ecoregions	Culture in nature and nature in culture	Conservation in broader development contexts	Tourism and leisure; ecosystem services (related to water supply, climate change mitigation, etc.); cultural values; (re)emergence of access to clean environment and nature as fundamental human right, also underpinning other human rights and the sustainable development; among others	Ecosystem functions and services (related to health; adaptation to climate change; etc.); human rights and equity fully considered; multiplicity of approaches (including culturally differentiated and social groups with diverse interests); interconnections among different natural values and with the socio-cultural ones; consolidation of the fundamental human right of access to a clean environment and natural benefits; rights of nature; among others
Environmental values*	Theocentric and anthropocentric*	Anthropocentric and cosmocentric*	Anthropocentric and cosmocentric*	Anthropocentric and cosmocentric	The gap or disconnection between society and nature and individualism remains for most of society; minority groups of ecocentrics, anthropocentrics, and those who value culturally differentiated cosmologies (Indigenous peoples, traditional communities); PCAs to fight the extinction of species (connectivity, regional integration, ecological integrity, etc.); rights of nature considered; among others	Search for a reconnection between society and nature; cultural and social values of nature and PCAs (including culturally differentiated and social groups diverse interests); ecosystem functions and services related to nature-based solutions; fight the ecosystem conversion and degradation; promotion of health and well-being; rights of nature growing; traditional territories; among others
Diagnosis of environmental problems	Overpopulation; exceeding the land's carrying capacity	Poverty; overpopulation	Power relations; North–South inequalities; what <i>counts</i> as a problem, and to <i>whom</i> ? Climate change ³⁸	Governance; globalization; co-management with several actors; and extreme poverty	Deforestation and ecosystem conversion and degradation climate change; pollution (of air and rivers); mass extinction of species; consumerism and continuity in the search for natural resources (minerals, oil, land for agriculture, etc.); lack of conscience regarding the importance of ecosystems; recognition of the gap or disconnection between society and nature; among others	Climate emergency and consequences; pollution (air, rivers, and seas, including plastic); reduction in ecosystem conversion and the extinction of species; land scarcity; soil degradation; excessive consumption of natural resources (minerals, oil, etc.); gap or disconnection between society and nature; among others
Representations of local people	People are the threat	People cannot be ignored; people are a resource	Align with rural people	Respect for rights and co-management with local communities	Greater understanding and defense of the rights of traditional peoples and communities (but there is still much to be done); a greater understanding of the importance of participation and the sharing of benefits with communities and local interests (but still insufficient); (re)emergence of the appreciation of cultural (including mystical) values of protected areas; strengthening the recognition of traditional territories (indigenous peoples	Rights of traditional peoples and communities; contribution of traditional territories to conservation; participation of all interested social actors; sharing benefits with local communities and interests; cultural (including mystical) values of protected areas; traditional territories; among others

Jeanrenaud (2002) ³⁷				Souza (2013) [19]	Complements by this work	
Theme	1960+	1980+	1990+	2000+	Approximately 2000–2020	Trends and/or expectations
Solutions and technologies	Exclusionary protected areas	Buffer zones; integrated conservation and development projects (ICDPs); sustainable use; community-based conservation	Alternative protected areas; participatory natural resource management; human rights	Incorporation of “antagonist” social actors—such as mining and petroleum; management effectiveness; governance	and traditional communities—IPTCs) (still insufficient); among others Participatory management, at least as a guideline; growth of adaptive management possibilities; PCA biodiversity monitoring (still initial); co-management with IPTCs and initial M&G by IPTCs; among others	Collaborative conservation; adaptive management; social learning; PCA systems management and governance (M&G) (including sets of protected areas) and indicators; monitoring biodiversity and socioeconomic conditions (associated with management priorities for protected areas and recovery plans for species and ecosystems); advancement in shared management with traditional extractive communities; traditional territories (TTs) and PCAs governed and managed by IPTCs; monitoring of biodiversity and social conditions of PCA systems; among others
Power relations	Alliances with elites	Technocratic alliances	Alliances with grass-roots (groups)	Alliances with sectors outside conservation	Support from international projects (intergovernmental and philanthropic support); technical support partnerships with civil society organizations; concessions of visitation support services; recognition of private conservation (private reserves and other mechanisms); IPTCs respected (still insufficient); among others	Collaborative conservation: democratic and participatory management; consideration of multiple interests, multiple interested social actors and the agreements of various formats; recognition of the contribution to nature conservation by traditional communities and other social actors; multiplicity of conservation priorities according to the cultural differentiation of respected social groups and IPTCs; TTs and PCAs governed and managed by IPTCs; among others
Key influences	Colonial conservation; elitist interests	Sustainable development debate; growing concern for livelihoods	Democracy/human rights movement; participatory development; post-modern influence on natural and social sciences	New generations (youth); governance diversity; associations; global changes; benefits for society	Protected areas are also an economic asset and support interests in the part of private sectors; strong action by traditional peoples and communities; growth in support from civil society organizations and volunteers; human rights; expansion of technical and economic contributions by different social actors; among others	Increased interest, participation, understanding, support, and action of organized civil society; IPTCs rights, among other fundamental human rights; nature rights; climate emergency; species extinctions; health and well-being; consolidation of visitation, with partnerships, community-based tourism, service concessions, volunteering, etc. among others

** Modified, based on Jeanrenaud (2002: all lines and 4 first columns) and the additions by Souza (2013: column “2000+”) [19], with the last two columns developed by this document, with attention to PCAs and Brazil as well (including with inputs from the GECCAP processes and from the article which these supplementary materials relate to).³⁹

* Jeanrenaud (2002) considers “theocentric” when the deities are at the center of ideas and, therefore, humanity and nature are defined through religion. She uses “cosmocentric/ecocentric” when nature is the center of thoughts and, from it, humanity and divinity are defined. Anthropocentrism relates to a culture that defines understandings of nature and deities.⁴⁰

Table S2.3.SM. Evolution of considerations about PCAs (related to IUCN, some publications, etc.) ^{*41}

Year	Milestones (events and publications)—some of them	ICCAs, Indigenous peoples, local communities or similar ⁴²	Climate change or similar	Cultural values or similar	Local or urban PCAs or similar	Health, well-being or similar
1982	World Parks Congress (WPC), (3rd), in Bali, Indonesia—recommendation [18]	9. Protected Areas and Traditional Societies				
1992	WPC (4 th), in Caracas, Venezuela—Recommendation [18]	6. People and Protected Areas.	2. Global Change and Protected Areas			
1994	IUCN General Assembly (GA) (19 th), in Buenos Aires, Argentina—Resolution	19.22 Indigenous People				
1996	World Conservation Congress (WCC) (1st), in Montreal, Canada	1.32 Ecotourism and Protected Areas Conservation 1.35 Protected Areas 1.53 Indigenous Peoples and Protected Areas	1.72 Climate Change, Biodiversity and the IUCN Programme			
	<i>Parks Journal</i> 6.2		Climate Change and Protected Areas			
1997	Congreso Latinoamericano de Parques Nacionales y Otras Áreas Protegidas (1st), in Santa Marta, Colombia—Declaración y Guía para la Acción	(Indigenous peoples' rights and territories mentioned several times ⁴³)		(Importance of cultural and spiritual values mentioned ⁴⁴)	(⁴⁵)	
2000	WCC (2nd), in Amman, Jordan		2.16 Climate change, biodiversity, and IUCN's overall program			
	Beltrán (2000)	Indigenous and traditional peoples and protected areas (Best Practice Protected Area Guidelines Series No. 04)				
	<i>Parks Journal</i> 10.2			Non-material values of protected areas		
2001	<i>Parks Journal</i> 11.3				Cities and protected areas	
2002	<i>Parks Journal</i> 12.2	Local communities and protected areas				
2003	Maretti et al. (2003) [65]	Brazil; lessons learned in the establishment and management of protected areas by Indigenous and local communities		Amazon jungle as a cultural landscape		

Year	Milestones (events and publications)—some of them	ICCAs, Indigenous peoples, local communities or similar ⁴²	Climate change or similar	Cultural values or similar	Local or urban PCAs or similar	Health, well-being or similar
	Phillips (2003) [18]	Turning ideas on their heads: a new paradigm for protected areas (with more attention to communities)				
	WPC (5th), in Durban, South Africa—themes [64]	Symposium: C Communities and Parks Workshop Stream: III Governance of Protected Areas—New Ways of Working Together Cross-cutting Theme: Communities and Equity				Symposium: A Benefit to People
	Idem—recommendations [64]	V.17 Recognising and Supporting a Diversity of Governance Types for Protected Areas V.24 Indigenous Peoples and Protected Areas V.25 Co-management of Protected Areas V.26 Community Conserved Areas V.27 Mobile Indigenous Peoples and Conservation	V.05 Climate Change and Protected Areas	V.13 Cultural and Spiritual Values of Protected Areas	V.14 Cities and Protected Areas	
	ICCA Consortium (s.d.) [63]	ICCAs in the Outcomes of the 5 th World Parks Congress (WPC), 2003 (with attention to CCAs)				
2004	WCC (3rd), in Bangkok, Thailand—resolution	3.049 Community Conserved Areas 3.055 Indigenous peoples, protected areas and the CBD Programme of Work	3.057 Adapting to climate change: a framework for conservation action			
2005	Brown; Mitchell; Beresford (2005) [78]			The protected landscape approach: linking nature, culture and community		
	Dudley; Higgins-Zogib; Mansourian (2005) [79]			Beyond belief: linking faiths and protected areas to support biodiversity conservation		
2006	Goriup (2006) [59] <i>Parks Journal</i> 16.1	Community-conserved areas Community-conserved Areas				
2007	De Santa Marta, 1997; a Bariloche 2007	(Yet, variable ⁴⁶)		(Integration of natural, social, cultural, and economic values ⁴⁷)	(Yet, variable ⁴⁸)	

Year	Milestones (events and publications)—some of them	ICCAs, Indigenous peoples, local communities or similar ⁴²	Climate change or similar	Cultural values or similar	Local or urban PCAs or similar	Health, well-being or similar
	II Latin American PA Congress, in Bariloche, Argentina—Bariloche Declaration	Consider the concept of indigenous territories of conservation as a valid governance model ⁴⁹				
2008	WCC (4th), in Barcelona, Spain—resolution	4.048 Indigenous peoples, protected areas and implementation of the Durban Accord 4.049 Supporting Indigenous Conservation Territories and other Indigenous Peoples' and Community Conserved Areas 4.050 Recognition of Indigenous Conservation Territories 4.127 Indigenous peoples' rights in the management of protected areas fully or partially in the territories of Indigenous peoples		4.038 Recognition and conservation of sacred natural sites in protected areas 4.099 Recognition of the diversity of concepts and values of nature	4.037 Municipal Conservation Areas 4.128 Setting up networks of protected urban and peri-urban natural areas	
	Dudley (2008) [16]	Guidelines for applying protected area management categories (includes the PA matrix with categories and governance types)		Guidelines for applying protected area management categories (includes cultural values in the PA definition)		
	Wild; McLeod (2008) [80]			Sacred natural sites; guidelines for protected area managers (Best Practice Protected Area Guidelines Series No. 16)		
2009	Berkes (2009) [60]	Community-based conservation in a globalized world				
	Maller; Townsend; St Leger; Henderson-Wilson; Pryor; Prosser; Moore (2009) [83]					Healthy parks, healthy people: the health benefits of contact with nature in a park context
2010	Stolton; Dudley (2010)					Vital sites: the contribution of protected areas to human health
	Dudley; Stolton; Belokurov; Krueger; Lopoukhine; MacKinnon; Sandwith; Sekhran (Eds.) (2010) [12]		Natural solutions—protected areas helping people cope with climate change			
2012	WCC (5th), in Jeju, Korea—resolution	047 Implementation of the United Nations Declaration on the Rights	086 Integrating protected areas into climate change	147 Sacred Natural Sites – Support for custodian protocols and	049 Redesigning future cities and related urban zones with	039 Healthy parks healthy people

Year	Milestones (events and publications)—some of them	ICCAs, Indigenous peoples, local communities or similar ⁴²	Climate change or similar	Cultural values or similar	Local or urban PCAs or similar	Health, well-being or similar
		of Indigenous Peoples in the context of the UNESCO World Heritage Convention 094 Respecting, recognizing and supporting Indigenous Peoples' and Community Conserved Territories and Areas	adaptation and mitigation strategies	customary laws in the face of global threats and challenges	protected areas: cities, return to nature 077 Promoting Locally Managed Marine Areas as a socially inclusive approach to meeting area-based conservation and Marine Protected Area targets 183 Dark skies and nature conservation	045 Broadening awareness of benefits and relevance of protected areas
2013	Borrini-Feyerabend et al. (2013) [22]	Governance of protected areas: from understanding to action (attention to governance types and communities and peoples)				
2014	From Durban, 2003, to Sydney, 2014	Achievement: greater recognition of indigenous conserved areas	Challenge: climate change—addressing a major challenge			
	WPC (6th), in Sydney, Australia—topics	Stream 6: Enhancing Diversity and Quality of Governance; and Stream 7: Respecting Indigenous and Traditional Knowledge and Culture				Stream 3: Improving Health and Well-being
	WPC (6th), in Sydney, Australia—Promise of Sydney	Acknowledge the increasing role of indigenous peoples and community-conserved areas ⁵⁰				Engage and engender a life-long association for physical, psychological, ecological, and spiritual well-being ⁵¹
	Trzyna (2014)				Urban protected areas: profiles and best practice guidelines (Best Practice Protected Area Guidelines Series No. 22)	
2016	WCC (6th), in Honolulu, USA – Resolution	030 Recognising and respecting the territories and areas conserved by Indigenous peoples and local communities (ICCAs) overlapped by protected areas 031 World Parks Congress 2014: The Promise of Sydney	031 World Parks Congress 2014: The Promise of Sydney 039 Protected areas as natural solutions to climate change	033 Recognising cultural and spiritual significance of nature in protected and conserved areas		031 World Parks Congress 2014: The Promise of Sydney 064 Strengthening cross-sector partnerships to recognize the contributions of nature to health, well-being and quality of life 085 Connecting people with nature globally
2017	Fernandes-Pinto (2017)			Natural sacred sites in Brazil: inspiration for re-enchantment of PAs ⁵²		

Year	Milestones (events and publications)—some of them	ICCAs, Indigenous peoples, local communities or similar ⁴²	Climate change or similar	Cultural values or similar	Local or urban PCAs or similar	Health, well-being or similar
	Fernandes-Pinto; Irving (2017) [81]			Natural sacred sites: ancestral values and new challenges for nature protection policies		
	ICMBio (2017) [89]; Samir Ribeiro (2017)					Nature, health and protected areas (forest bathing)
2019	From Bariloche to Lima (evolution in between II and III LAC PA Congresses)		(Incorporate climate change in the PCA management.)	Theme 4: Cultural, Social and Spiritual Values of PAs ⁵³		Theme 12: PAs and Human Well-being ⁵⁴
2019	ICMBio (2019) [90,91]			Cultural values of nature: new challenges for conservation policies; Cultural values and collaborative conservation		
	III Latin American PA Congress, in Lima, Peru—strategic lines and crosscutting themes [62]		B. Protected areas and climate changes ⁵⁵	1. Society and PAs: connections to the well-being: 1.3. Cultural values, ancestral and spiritual knowledge related to PAs ⁵⁶		1. Society and PAs: connections to well-being: 1.1. Human health, leisure, recreation, sports in relation to PAs A. Well-being and PAs and/or the relations with the Sustainable Development Objectives ⁵⁷
	III Latin American PA Congress, in Lima, Peru—Lima Declaration [61]	Territories and areas conserved by indigenous peoples and local communities ⁵⁸	PCAs in relation to climate change ⁵⁹	Recognition of cultural and spiritual values of nature and multicultural approaches to PAs management ⁶⁰	Clear reference about the role of local governments (and a self-declaration of local governments) ⁶¹	Value the economic and spiritual benefits from PAs; and monitor biodiversity and human well-being as critical to PAs ⁶²
2020	Maretti; Simões (2020) [23]			Legal and implementation contexts of potential ICCAs in Brazil		
	Parks Victoria (2020) [82]					Healthy parks, healthy people framework
	Maretti; Barros (2020)					
2021	WCC (6th), in Marseille, France—resolution	002 Strengthened institutional inclusion concerning Indigenous peoples 084 Global response to protected area downgrading, downsizing and degazettement (PADDD) 118 Recognising and supporting Indigenous peoples' and local				

Year	Milestones (events and publications)—some of them	ICCAs, Indigenous peoples, local communities or similar ⁴²	Climate change or similar	Cultural values or similar	Local or urban PCAs or similar	Health, well-being or similar
		communities' rights and roles in conservation				
2021	Verschuuren; Mallarach; Bernbaum; Spoon; Brown; Borde; Brown; Calamia; Mitchell; Infield; Lee (2021) [53]			Cultural and spiritual significance of nature: guidance for protected and conserved area governance and management (Best Practice Protected Area Guidelines Series No. 32)		
	WWF-Brasil (2021) [127]					Action strategy on health and PAs
	CONAF (2021) [128+]					Manual for design and implementation of nature bathing trails
2022	Smith; Young (2022)		Role of Protected Areas in Climate Change Mitigation and Biodiversity Conservation (Technical Note Series No. 8)			
2023	Brazilian Health and Nature Network (s/d) [2023] [77]			Importance of policies on health – nature interactions (manifesto)		

* Developed by this work, considering several sources mentioned in the table, among others (see note related to the title).⁶³

Table S2.4.SM. Contrasting paradigms. *

	<i>As it was: protected areas were...</i> [in 2003]	<i>As it is becoming: protected areas are...</i> [in 2003]	Comments by this work
Objectives	<ul style="list-style-type: none"> • Set aside for conservation • Mainly established for spectacular wildlife and scenic protection • Mainly managed for visitors and tourists • Valued as wilderness • About protection 	<ul style="list-style-type: none"> • Also run with social and economic objectives • Often set up for scientific, economic, and cultural reasons • Managed with local people more in mind • Valued for the cultural importance of so-called wilderness • Also about restoration and rehabilitation 	<p>The complementary objectives (beyond nature conservation) keep increasing, including social ones.</p> <p>Still needed the comprehension that creation, management and governance of PCAs, and their system is more related to society than to nature. (Similarly to the degradation, the nature conservation is a social process.)</p>
Governance	<ul style="list-style-type: none"> • Run by central government 	<ul style="list-style-type: none"> • Run by many partners 	<p>Increased role of local governments, besides private conservation.</p> <p>Main change is probably related to the more active and predominant role of Indigenous peoples and communities in their traditional territories.</p>
Local people	<ul style="list-style-type: none"> • Planned and managed against people • Managed without regard to local opinions 	<ul style="list-style-type: none"> • Run with, for, and in some cases by local people • Managed to meet the needs of local people 	<p>Significantly increased the recognition of human rights, particularly related to Indigenous peoples and traditional communities, but also about the vulnerable social groups and any other.</p>
Wider context	<ul style="list-style-type: none"> • Developed separately • Managed as “islands” 	<ul style="list-style-type: none"> • Planned as part of national, regional, and international systems • Developed as “networks” (strictly protected areas, buffered and linked by green corridors) 	<p>Increased attention to the diversity of types of PCAs, including OMECs, ICCAs, but also relating to the complementarity among them.</p> <p>Need to develop the concept and practice of management and governance of functional PCA systems.</p>
Perceptions	<ul style="list-style-type: none"> • Viewed primarily as a national asset • Viewed only as a national concern 	<ul style="list-style-type: none"> • Also viewed as a community asset • Also viewed as an international concern 	<p>Increased perception of social and cultural values related to the conserved nature and the PCAs themselves</p>
Management techniques	<ul style="list-style-type: none"> • Managed reactively within short timescale • Managed in a technocratic way 	<ul style="list-style-type: none"> • Managed adaptively in long-term perspective • Managed with political considerations 	<p>Increased attention to socio-ecological systems.</p> <p>Management and governance of complexity still needed.</p>
Finance	<ul style="list-style-type: none"> • Paid for by taxpayer 	<ul style="list-style-type: none"> • Paid for by many sources 	<p>Alternative sources significantly increased, including the payment for ecosystem services (particularly related to carbon), but also attention to the need for stable and sufficient governmental PA budgets</p>
Management skills	<ul style="list-style-type: none"> • Managed by scientists and natural resource experts • Expert-led 	<ul style="list-style-type: none"> • Managed by multi-skilled individuals • Drawing on local knowledge 	<p>PCA complexity keeps increasing and demanding more broader skilled managers.</p> <p>Significant capacity gap in relation to PCA systems management and governance and to the management of partnerships.</p>

* Based on Phillips (2003) [18], plus comments by this work.

Table 2.5.SM. Evolution of the protected-area concept: from islands to networks to landscapes to the social–ecological approach. *

Attributes	Approach to protected areas				Comments by this work
	Island approach (ca. 1872–1980s)	Network approach (1990s–mid-2000s)	Landscape approach (mid-2000s–today)	Social–ecological approach (today–?)	
Type of management	Static: seeks to maintain the status quo	Dynamic: some natural changes are considered necessary	Dynamic: some natural changes are considered necessary	Adaptive: natural and social changes should be incorporated into management	Most similar to the approach of this work, but missing the consideration of PCA systems
Conservation values considered	Intrinsic values of ecosystems, biodiversity and cultural values	Intrinsic values of ecosystems, biodiversity and cultural values	Intrinsic values of ecosystems, biodiversity, ecological processes (functions, ecological integrity), and cultural values	Intrinsic and instrumental values of ecosystems and biodiversity (ecosystem services)	Considerably different, for, although this work agrees with socio–cultural context as inherent to PCA, the recognition of cultural values has been increasing (not disappearing)—as can also be seen in Tables 2.1.SM and 2.2.SM
Knowledge involved	Scientific and technical	Scientific and technical	Scientific and technical	Scientific, technical, and local ecological knowledge	Most similar to the approach of this work
Resilience against perturbations	Reduction in variability	Moderate resilience	Moderate–high resilience	High resilience	Most similar to the approach of this work (even more if considering of PCA systems)
Competition against other land uses	Partly competitive because of low demand for the landscape	Competitive because of high demand for the landscape	Highly competitive because of the high demand for the landscape	Cooperative: multifunctional landscapes	From the perspective of Palomo et al. (2014), most similar to the approach of this work (even more if considering of PCA systems) There is a strong historical context component missing, for the competition over the land and resources related has only increased (even with the urbanization of society)
Local population involvement	Managed without the local population, which is seen as a threat; managed by researchers and environmental experts	The local population is included in some participatory management processes	The local population is included in participatory management processes	Truly managed with the local population	From the perspective of Palomo et al. (2014), most similar to the approach of this work Did not reach the most current points of considering traditional territories and, therefore, PCA governed and managed by communities
Landscape management	No integrated landscape management	No integrated landscape management	No integrated landscape management; the landscape is managed to avoid harming the protected area	Integrated landscape management; management of the landscape as a whole	Most similar to the approach of this work, but missing the consideration of PCA systems, mosaics, and other PCA assembles, as well as the traditional territories and PCAs governed and managed by communities

* Based on Palomo et al. (2014) [148], plus comments by this work.

3. The processes of the study group

The authors understand the importance of presenting herein some complementary and sometimes more detailed information about the work, the methodology, and the processes of the study group, as a complement to what is presented in the article, in order to allow for a better understanding of the processes and their results. (About this larger study group, see also the general introduction of these supplementary materials.)

3.1. *The general (larger) study group*

To better understand the current context and possibilities of protected and conserved areas in Brazil and the relationship with the diversity of interested stakeholders, an interdisciplinary and intersectoral study group was established in Brazil (Grupo de Estudos de Conservação Colaborativa e Áreas Protegidas—GECCAP) to evaluate the current research work, to exchange experiences, and to potentially identify innovative initiatives focusing on the management and governance PCAs. This group was established in mid-2020, under the leadership of the main author of the article (related to these supplementary materials), as the main activity of his post-doctorate program at the Department of Geography of the Faculty of Philosophy, Languages and Human Sciences of the University of São Paulo (Departamento de Geografia, da Faculdade de Filosofia, Letras e Ciências Humanas—FFLCH, da Universidade de São Paulo—USP), with support from two well-known professors from prestigious universities: Sueli Angelo Furlan, affiliated to Geography Department of FFLCH USP, and Marta de Azevedo Irving, affiliated to the Federal University of Rio de Janeiro (Universidade Federal do Rio de Janeiro—UFRJ).

In its first year, the general larger group had on average some 103 **participants** (without obligation to continue for the whole length of the work), counting among them some 36 practitioners related to the management of protected areas and 19 with other professions, 54 researchers (including professors and Ph.D. and M.Sc. candidates), 5 undergraduate students, and 3 representatives of local communities (among which some were undertaking postgraduate studies that overlapped with other activities). Their **research, professional, and/or living accumulated experiences** (previous and current) were important inputs to this work. Most of the experience of the participants and invitees are related to Brazilian (national and subnational) protected and conserved areas, including traditional territories and private reserves, although some of them have important international experience and have performed research within a broader thematic approach (although somehow related to the subject focused on this work). Those experts carried out bibliographical **studies**, document analyses, workshops, technical and academic reports, and collaborative papers, a process including dialogues with representatives of other social groups in order to better understand the reality of the governance and management of protected and conserved areas in Brazil, as well as to reflect upon recommendations to enable more inclusive governance, towards the more effective management of PCAs. Most of the professional, academic, or lived experiences of the involved participants and invitees are related to Brazilian protected and conserved areas, including traditional territories, although some of them have international experience and have performed research within a broader thematic approach. For these reasons, and considering the fact that the bibliographical studies and document analyses were not limited to Brazil, the focus mostly considered Brazilian PCAs, but the results and conclusions of this work could also be applied in the contexts of other countries.

Table 3.1.SM presents syntheses of the processes of information recollection and reflections promotion—of the study group and some further work related to the article referred to herein—, in order to possibly to both bring together and promote interactions among researchers, management practices, and lived experiences, and to go beyond the classical PCA management approaches and consider their de facto realities. Table 3.2.SM presents some of the cases of protected and conserved areas, PCA systems, conflicts, management and governance solutions, projects, activities, etc., which are also considered through documents, dialogues with members of the management team, members of the local committees or other approaches, either in their previous experiences, or as complement to the GECCAP studies.

Table S3.1.SM. Workflow of the GECCAP study group and analyses for this article.

Phases	Activities and methods	Results
Establishment	<ul style="list-style-type: none"> • Invitation of management practitioners, researchers, and community members (some 200–300) • Presentation and discussions of the study focus and processes (including preliminary ideas related to interaction with social actors) and subtheme suggestions (more than 40) 	<ul style="list-style-type: none"> • Study group establishment (100+ active participants) • Definition of subthemes and establishment of subgroups
Preparation	<ul style="list-style-type: none"> • Studies and preparation of workshops by subgroups, through: <ul style="list-style-type: none"> - Bibliographical studies (including papers and other documents) - Exchange of experiences (within the subgroups) - Dialogues with complementary social actors (including members of Indigenous peoples and traditional communities, after considering their underrepresentation in the subgroups) - Monthly guided interactions in the larger study group 	<ul style="list-style-type: none"> • Workshops preparation, including: <ul style="list-style-type: none"> - Recommended bibliography offered (including papers and other documents) - Presentations prepared
Workshops	<ul style="list-style-type: none"> • (i) Introduction + protected and conserved areas, including: (a) concepts and definitions of PAs, traditional territories, and other conserved areas, as well as their systems; and (b) evolution of governance and management models or paradigms (all in one workshop) • (ii) Conservation concepts and the relations to social actors—biodiversity, ecosystem function services, and natural resources • (iii) Inclusive and democratic local governance (participatory governance considering the local committees) • (iv) Strategic communication • (v) Cultural values of nature • (vi) Indigenous peoples and traditional communities (IPTCs), including: (a) cosmologies and territories; and (b) alliances and challenges in management and governance (in two workshops) • (vii) Traditional extractive communities and PAs related to the management category VI • (viii) Community-based tourism • (ix) Participatory processes for PAs related to the management category V • (x) Partnerships for PCA management, including: (a) tourism concessions to private sector; and (b) partnerships with civil society organizations (in two workshops) • (xi) PCAs and their systems related to local governments • (xii) Promotion of health and well-being • (xiii) Paths towards more inclusive and effective PCAs + participatory evaluation (in one workshop) 	<ul style="list-style-type: none"> • Guided workshops (15), including: <ul style="list-style-type: none"> - Presentations - Invited guests to present their research, management practices, or lived experiences and interact with the participants - Dialogues with a broader set of participants - Workshops recorded and available to the public - Synthetic written reports from each workshop
Complements	<ul style="list-style-type: none"> • Internal workshops evaluation • Complementary workshops and dialogues (depending on the subgroup dynamics) 	<ul style="list-style-type: none"> • Complementary technical and academic reports, and collaborative papers
Diffusion	<ul style="list-style-type: none"> • Social media • Complementary webinars 	<ul style="list-style-type: none"> • Broader dialogues with society

Phases	Activities and methods	Results
Analyses (1)	<ul style="list-style-type: none"> • Leaders of subgroups consider the results from the preparation and workshop phases (synthetic reports and other documents, recorded workshops, collaborative papers, exchanges of experiences, dialogues, etc.) • Coordinators of larger study group organized the book, adding introduction, context, conclusions, etc. <p>(Strong relations with the Section 3. Results of this article)</p>	<ul style="list-style-type: none"> • Book (forthcoming) with chapters related to the subthemes (plus introduction, context, conclusions, etc.) • Developed approach to collaborative conservation
(2)	<ul style="list-style-type: none"> • Concept of collaborative conservation proposed • Integrated analyses further developed, vis-à-vis the concept of collaborative conservation, to this article 	<ul style="list-style-type: none"> • Analyses and conclusions presented in this article • Collaborative conservation concept further developed in relation to PCA M&G recommendations

Table S3.2.SM. Some of PCA types, systems, and initiatives considered in the analyses. *

Some types and cases considered	Some characteristics considered	Some resulting analyses elements
PCA types considered		
<ul style="list-style-type: none"> • Official protected areas (PAs) 	<ul style="list-style-type: none"> • Defined by national (nat.) legislation, with 12 management categories, applied to national and subnational (subnat.) levels 	<ul style="list-style-type: none"> • Brazilian management (mgt.) categories (cats.) corresponding to 6 (of 7) international ones and elements of governance (gov.) types
<ul style="list-style-type: none"> • Indigenous territories (ITs) <p>- Overlaps with official protected areas, with or without possible understanding — such as: Monte Roraima NP (A fed.; cat. II; 1989; 116.8 K ha) with Raposa Serra do Sol IT (D/A fed.; non-PA, potential OECM; immemorial/1992; 1.8 M ha; Amaz.), Pico da Neblina NP (A fed.; cat. II; 1979; 2.2 M ha; Amaz./mountains) overlapping Yanomami IT (D/A fed.; non-PA, potential OECM; immemorial/1992; 9.7 M ha; Amaz.), Jaraguá SP (A st. SP; cat. II; 1961; 492 ha; Atl.), Serra do Mar SP (A st. SP; cat. II; 1977; 322 K ha; Atl.), Cavernas do Peruaçu NP (A fed.; cat. II; 1999; 56.5 K ha; Caa./Cer./caves), and Sete Salões SP (A st. MG; cat. II; 1973; 1.4 K ha; Atl./caves), among several other cases</p>	<ul style="list-style-type: none"> • Defined in the Brazilian (Braz.) National (Nat.) Constitution and federal (fed.) laws, recognized by fed. institutions <p>- Overlaps of PAs with de facto ITs or inclusion of areas of importance for IPs</p>	<ul style="list-style-type: none"> • Recognized as rights of the IPs, officially on nat. lands, and de facto managed by IPs; potential OECMs <p>- Cases of disrespect (yet) of IP rights and to their ITs, but increasingly respected, in the cases of overlap with PAs</p>
<ul style="list-style-type: none"> • Quilombola territories (QTs) <p>- Overlaps with official PAs, with or without possible understanding — such as the Alto Trombetas QTs and the mosaic of PAs: Rio Trombetas BR (A fed.; cat. Ia; 1979; 385 K ha; Amaz.) and Saracá-Taquera NF (A fed.; cat. VI; 1989; 441 K ha; Amaz.), among several other cases</p>	<ul style="list-style-type: none"> • Defined in the Braz. Nat. Constitution and fed. laws, recognized by fed. institutions <p>- Overlaps of PAs with de facto QTs</p>	<ul style="list-style-type: none"> • Recognized as rights of the Quilombola communities (QCs), on lands to be private, de facto managed by QCs; potential OECMs <p>- Cases of disrespect (yet) of QC rights and to their QTs, but increasingly respected, in the cases of overlap with PAs</p>
<ul style="list-style-type: none"> • Traditional territories of extractive communities <p>- PAs of management cat. VI; environmentally friendly settlements; among other cases</p>	<ul style="list-style-type: none"> • Defined in Braz. fed. laws, recognized by fed. or subnational institutions <p>- Possible consideration in the creation of PAs cat. VI — such as ER, SDR, and NF</p> <p>- Potential OECMs</p>	<ul style="list-style-type: none"> • Interesting cases of considering extractive traditional communities (TCs), either in PAs, or in areas potentially OECMs (to be still decided by Brazil); but not including all TCs (yet?)
<ul style="list-style-type: none"> • Territories of other traditional communities (TCs), including several cases of overlap with official PAs 	<ul style="list-style-type: none"> • General legal consideration of territorial rights of TCs 	<ul style="list-style-type: none"> • Without enough specific institutional responsibilities and policy processes (yet?) <p>- Cases of disrespect (yet) of TC rights and to their territories, with several conflicts within PAs, but TCs increasingly respected</p>
PCA systems and jurisdictions		
<ul style="list-style-type: none"> • PAs nat. and subnational systems of Brazil, Colombia, Peru, Chile, and Argentina, among other cases 	<ul style="list-style-type: none"> • Organized nationally, with powers at the national level or similar subnational responsibilities, complementary subnational systems • Similar or different cats. or governance types in nat. and subnational levels 	<ul style="list-style-type: none"> • Only in a few cases are there similar responsibilities between nat. and subnational levels (Brazil) • Some approaches to ecological representation, connectivity, and governance types are considered (all cases considered)

Some types and cases considered	Some characteristics considered	Some resulting analyses elements
	<ul style="list-style-type: none"> • One or more institutions responsible 	<ul style="list-style-type: none"> • Mostly, there is functional integration (e.g., personnel, tourism, research) when within the same institution, but usually not across institutions (all cases considered)
<ul style="list-style-type: none"> • Brazilian municipal legal PCA systems—such as Campinas, SP, Florianópolis, SC, Palmas, TO, João Pessoa, PB, and Recife, PE, among other cases 	<ul style="list-style-type: none"> • Supported by Braz. fed. legislation (leg.) • Cases municipal systems of more or less integrated, functional, etc. 	<ul style="list-style-type: none"> • Important Braz. example of local PCA systems within national legislation (not usually found elsewhere) • Important for human well-being; with potential to be more equitable systems
Local PCAs (and systems—see above)		
Local subsystems of officially recognized private PAs (C/A mun.; cat. IV)—Curitiba, PR, among other cases	<ul style="list-style-type: none"> • Supported by Braz. Fed. legislation (leg.); private reserves officially recognized by the local government • Officially considered to be equivalent to cat. IV, but similar to private and small cat. II 	<ul style="list-style-type: none"> • Interesting case of local complementary initiative: promotion and subsidies
<ul style="list-style-type: none"> • Such as: <ul style="list-style-type: none"> - Grota Funda NMP (A/B mun. Atibaia SP, cat. II; 1988/2017; 245 ha; Atl.) and Baleia Sahy EPA (A/B mun. São Sebastião, SP; cat. V; 2013/2016; 392 ha; Atl./Coast.); - Mata de Santa Genebra ERIA (A fed./mun. Campinas, SP; cat. IV, 1985; 252 ha; Atl.) and Tupi Experimental Station (A st./mun. SP/Piracicaba; non-PA, potential OECM; 1949; 198 ha; Atl.); - Niterói NMP (A mun. Niterói, RJ; cat. II; 2014; 1.6 K ha; Atl.), Serra do Guararu EPA (A mun. Guarujá, SP; cat. V; 2012; 2.6 K ha; Atl.), and Fazenda do Carmo NMP (A mun. São Paulo, SP, cat. II; 2003/2008; 450 ha; Atl.) 	<ul style="list-style-type: none"> • Cases of partnership with civil society for co-managing local PCAs • Cases of partnership by local governments for comanaging PCAs related to other levels • Other local PCA cases 	<ul style="list-style-type: none"> • Smaller PAs • Potential solutions to be closer to people (interested social actors) • Important for human well-being; with potential to be more equitable PCAs • Braz. Mun. PAs are underreported to the national registry (CNUC)
PCAs cased and themes considered		
<ul style="list-style-type: none"> • To understand the effectiveness of the local governance committees, such as Costa dos Corais EPA (A fed.; cat. V; 1997; 414 K ha; Mar.-Coast.), Chico Mendes ER (A/D fed.; cat. VI; 1990; 971 K ha; Amaz.), and the Baía do Iguape Marine ER (A/D fed.; cat. VI; 2000/2009; 10 K ha; Mar.-Coast.), plus the previous evaluation of Amazonian PA local committees, among other cases 	<ul style="list-style-type: none"> • Concrete experiences of local governance committee members • Importance for local communities 	<ul style="list-style-type: none"> • Local PA governance committees are very important to the local participation, especially communities • Important effectiveness gaps, including within the committees, but mostly as considered by the management teams and PAs institutions
<ul style="list-style-type: none"> • To understand the reality of community-based tourism, such as Guapi-Mirim EPA (A fed., cat. V; 1984; 14 K ha; Mar.-Coast.), Cairuçu EPA (A fed.; cat. V; 1983; 35 K ha; Atl.), Tapajós-Arapiuns ER (A/D fed.; cat. VI; 1998; 648 K ha; Amaz.), and Prainha do Canto Verde ER (A/D fed.; cat. VI; 2009; 30 K ha; Mar.-Coast.), among other cases 	<ul style="list-style-type: none"> • Cases of official PAs related to categories of sustainable use reserves, such as cats. VI and V • Perspectives of representatives of the communities involved 	<ul style="list-style-type: none"> • Most cases yet not well matured, although some have been successful to date • More important support from PCA institutions and stronger marketing/commerce networks of community-based initiatives would be welcome

Some types and cases considered	Some characteristics considered	Some resulting analyses elements
<ul style="list-style-type: none"> To understand possibilities of partnerships, such as: Baleia Sahy EPA (A/B mun. São Sebastião, SP; cat. V; 2013/2016; 392 ha; Atl./Coast.), Cavernas do Peruaçu NP (A fed.; cat. II; 1999; 56.5 K ha; Caa./Cer./caves), Serra do Tabuleiro State Park (A st. SC; cat. II; 1975; 84.1 K ha; Atl.), among others 	<ul style="list-style-type: none"> Cases of official partnerships with civil society organizations, at different governmental levels There are examples of partnerships with civil society, but there is an important role of local communities through their history 	<ul style="list-style-type: none"> Many other cases are not officially registered as collaboration with other governmental institutions, other governmental levels, civil society, communities, companies, etc. Partnerships with civil society organizations tend to be more balanced than the ones with companies and communities
<ul style="list-style-type: none"> Cases already under concessions, such as Iguaçu NP (A fed.; cat. II; 1939/1981; 185.3 K ha), Serra dos Órgãos NP (A. Fed.; cat. II; 1939; 20 K ha; Atl.), Fernando de Noronha Marine NP (A fed.; cat. II; 1988; 10.9 ha; Mar.), Tijuca NP (A fed.; cat. II; 1961/1967/1972/2004; 4 K ha; Atl.), Itatiaia NP (A fed.; cat. II; 1937; 12 K ha; Atl./mountain rupestrian savanna), Pau Brasil NP (A fed.; cat. II; 1999; 19 K ha; Atl.), Chapada dos Veadeiros NP (A fed.; cat. II; 1961/1972/1981/2017; 240 K ha; Cer.), Aparados da Serra + Serra Geral (combined) NPs (A fed.; cat. II; 1959/1972 + 1992; 10 + 13 K ha; Atl.), Jericoacoara NP (A fed.; cat. II; 2002; 9 K ha; Coast.), Canela NF (A fed.; cat. VI; 1968; 518 ha; Atl.), Campos do Jordão SP (A st. SP; cat. II; 1941; 8.3 K ha; Atl.), Cantareira SP (A st. SP; cat. II; 1963; 7.9 K ha; Atl.), Albert Löfgren SP (A st. SP; cat. II; 1986; 187 K ha; Atl.), Vila Velha (A st. PR; cat. II; 1953/1966; 3.8 K ha; Atl./sandstones), Ibitipoca (A st. MG; cat. II; 1973; 1.5 K ha; Atl.), and Itacolomi (A st. MG; cat. II; 1973; 1.5 K ha; Atl.), feeding to the analyses, but not all were necessarily studied in detail by the GECCAP processes 	<ul style="list-style-type: none"> Cases of concessions for tourism-related services are growing steeply in Brazil in recent years (from a few federal cases until some 10 years ago) There are learning processes improving the cases, but not all of them 	<ul style="list-style-type: none"> Several administrations (governmental executive mandates) of the levels consider concessions as a means of reducing expenses or overcoming funding and staff shortages There is a need to develop the better capacities of PCA institutions to have productive partnerships and concessions
<ul style="list-style-type: none"> Cases for cultural values, such as Serra da Piedade St. NM (A st. MG; cat. III; 2004/2006; 1.9 k ha; Cer.), Pedra de Xangô Park (A/D mun. Salvador, BA; non-PA – cultural heritage site, historic/2017; urban park 2022, 6.7 ha), Pico da Neblina NP (A fed.; cat. II; 1979; 2.2 M ha; Amaz./mountains) overlapping Yanomami IT (D/A fed.; non-PA, potential OECM; 5memorial/1992; 9.7 M ha; Amaz.), Fazenda Lagoa do Nado Municipal Park (A mun. Belo Horizonte; non-PA, urban green and blue area, potential OMEC?, 1995; 31 ha; Atl.), and Iguaçu NP (A fed.; cat. II; 1939; 185 K ha; Atl.) 	<ul style="list-style-type: none"> One example of themes incorporated into the expectations of PCA in recent times Considered very important for IPs and TCs 	<ul style="list-style-type: none"> Initial considerations for PCA institutions to incorporate in their management and governance Increasingly considered for mainstream society In some cases, cultural and social values recognized not only in terms of the nature conserved, but also the PCAs themselves
<ul style="list-style-type: none"> Cases for strategic communications, such as Costa dos Corais EPA (A fed.; cat. V; 1997; 414 K ha; Mar.-Coast.), Cavernas do Peruaçu NP (A fed.; cat. II; 1999; 57 K ha; Caa./Cer./caves), Corumbau ER (A/D fed.; cat. VI; 2000; 89.9 K ha; Mar.-Coast.), Serra do Conduru SP (A st. BA; cat. II; 1997/2003; 9.2 K ha; Atl.), Lagoa Encantada e Rio Almada EPA (A st. BA; cat. V; 1993/2003; 157.8 K ha; Atl.), and Itacaré/Serra Grande EPA (A st. BA; cat. V; 1993/2003; 63 K ha) 	<ul style="list-style-type: none"> Usually theme not considered de facto (even when considered in the planning) in the PCA M&G 	<ul style="list-style-type: none"> Fundamental for mainstreaming PCA and their roles in society; indispensable for good PCA governance and participatory management
Initiatives, projects, or institutions considered		
For health and well-being promotion		
<ul style="list-style-type: none"> Cases in other countries, such as Japanese forest bathing, Australian Health Park, Health People, among policies in other countries, but initial initiatives in Brazil, such as ICMBio, 	<ul style="list-style-type: none"> Another example of themes incorporated into the expectations to PCA in recent times 	<ul style="list-style-type: none"> Theme in initial development, not yet incorporated by PCA institutions

Some types and cases considered	Some characteristics considered	Some resulting analyses elements
Network Health and Nature Brazil, WWF-Brazil, Albert Einstein Research Institute, Brazilian Institute of Ecopsychology and Fiocruz, among others		<ul style="list-style-type: none"> • Particularly important in urban and peri-urban areas • Important potential to mobilize and engage mainstream society

* Some sources for the information in the table: Lei/Law 9985/2000, Brasil/Brazil; [23,28,30,31,38,61,62,66,68,92-95].⁶⁴ See also information about sources in the text below.

Abbreviations and information: IPs: Indigenous peoples, QCs: Quilombola communities, TCs: traditional communities; A–D: PCA governance types; fed.: federal, st.: state, mun.: municipal—government levels; BR: biological reserve, EPA: environmental protection area (APA), ER: extractive reserve (RESEX), ERIA: ecologically relevant interest area (ARIE), NF/SF/MF: national/state/municipal forest, NM: natural monument, NP/SP/NMP: national/state/natural municipal park, SDR: sustainable development reserve—among other Brazilian PA categories; cat. Ia–VI: international PA management category equivalent; BA: Bahia, MG: Minas Gerais, PB: Paraíba, PE: Pernambuco, PR: Paraná, RJ: Rio de Janeiro, SC: Santa Catarina, SP: São Paulo, TO: Tocantins—among other Brazilian states; year of establishment (est.); size in hectares (ha) or thousand (K) or million (M) ha; Amaz: Amazon, Atl: Atlantic Forests, Caa.: Caatinga, Cer.: Cerrado, Mar. or Mar.-Coast.: marine or coastal-marine—among other predominant Brazilian “biomes”. See the abbreviations in the table or text.

In the Supplementary Materials’ text and tables, there is more detailed information on the characteristics and numbers of Brazilian PCAs and the relation between Brazilian management categories and internationally accepted classifications of management categories and governance types, as well as definitions and some numbers (the possible ones) of Indigenous peoples and other traditional territories in Brazil.

3.1.1. (Sub)Themes

As mentioned, those experts carried out bibliographical studies, dialogues, workshops, and writings, including dialogues with representatives of other social groups, in order to better understand the reality of protected and conserved areas management in Brazil, as well as to reflect upon what to recommend to enable more inclusive governance and management, towards more effective PCAs.

Although with some variations along the study time, the main (sub)themes, always related to PCAs, were: (i) protected and conserved areas: (a) concepts and definitions of PAs, traditional territories, and other conserved areas, as well as their systems; and (b) evolution of governance and management models or paradigms; (ii) conservation concepts and the relations to social actors—biodiversity, ecosystem function services, and natural resources; (iii) inclusive and democratic local governance (participatory governance considering the local committees); (iv) strategic communication; (v) cultural values of nature; (vi) Indigenous peoples and traditional communities (IPTCs): (a) cosmologies and territories; and (b) alliances and challenges in management and governance; (vii) traditional extractive communities and PAs related to the management category VI; (viii) community-based tourism; (ix) participatory processes for PAs related to the management category V; (x) partnerships for PCA management, including: (a) tourism concessions to private sector; and (b) partnerships with civil society organizations; (xi) PCAs and their systems related to local governments; (xii) promotion of health and well-being; and (xiii) paths towards more inclusive and effective PCAs.

3.1.2. The workshops and other dialogues

After considering the general group objectives, as a first task, the larger study group defined (sub)themes and associated (sub)groups, to go deeper, through bibliographical studies, dialogues, and other means. Based upon that, the formed (sub)groups worked on those (sub)themes for several months, and in mid-2021, they organized 15 **workshops** (almost one per thematic group), with invitees, with a total around 45 hours of presentations, dialogues, and other activities, organized in three separated weeks: 24-28 of May, 07-11 of June, and 21-25 of June (all 2021). Those workshops were organized as an extension course (related to the University of São Paulo). Some 52 colleagues from the larger study group participated in the organization of those 15 workshops, which also counted with 27 invitees presenting their knowledge. The course triggered strong interest, resulting in 211 officially registered attendants—among which 150 were randomly drawn among a much larger group of interested people (more than 600), and 61 were directly invited by the organizers. Additionally, the workshops had live transmission through YouTube, with between 170 and 1700 attendants directly following the same performing evening (and from circa 300 to 2200 total visualizations about 1,5 years after, in January 2023⁶⁵) [31i,ii,iii,iv,v,vi,vii,viii,ix,x.a,x.b,xi,xii,xiii].⁶⁶

The elaboration, conduct, and follow-up of the subthemes in 15 workshops were guided and mediated by the group coordinators. Following Table 3.1.SM, the workshops/subthemes (i) and (ii) set the basis for the approach proposed, from (iii) to (xii), wherein different themes related to PCAs were considered (by the subgroups), and in the (xiii), the coordinators of the larger study group brought up the proposed concluding ideas, in addition to the opportunity for the collective evaluation of the series of events. All workshops were recorded and are available, together with the recommended and complementary bibliography, presentations, written synthesis, and other documents. In the processes, the previous experiences of the participants and the results from the studies and dialogues were systematized by the subgroups and evaluated by the thematic teams and coordinators and the larger study group coordination. The collective reflections compiled in the efforts of the study group involve the complexity, not only of the mentioned (sub)themes and the diverse social interests, but also of the interactions among them and with external society. The prepared content was systematized and discussed through virtual meetings with the researchers and practitioners in each subgroup and then shared with the others, bringing context and real complexity to the overall theme and building collective reflections and insights.

Related to the general extension course [31], specific workshops are available separately (related to the main (sub)themes above): (i) “Áreas protegidas e gestão de seus sistemas”, by Cláudio C. Maretti; workshop–class, 24 May 2021, and follow-up; specific video-class and documents available online: <https://youtu.be/SJYprh-lyJc>, after 50 min., and <https://bit.ly/387hCqq> (last accessed on 14 February 2023); (ii) “Biodiversidade, ecossistemas e recursos naturais: percepção de atores sociais em Aps”, by M. Giully Silva, Sarah de Freitas, Marco Antonio Martins, Ariana Souza, and Castro, Daniel (Orgs.); workshop–class, 25 May 2021, and follow-up; specific video-class and documents available online: <https://www.youtube.com/live/VOVzWumr44U> and <https://bit.ly/42i9M55> (last accessed on 15 March 2023); (iii) “Conselhos de gestão de UCs: ideal, realidade e caminhos em busca de efetividade”, by Carlos Eduardo Marinelli, Bruna L. Ferreira, Carolina C. Moro, and Marina M. de Paiva (Orgs.); workshop–class, 26 May 2021, and follow-up; specific video-class and documents available online: <https://www.youtube.com/live/1Kml-A2qp5A> and <https://bit.ly/3ZNBdSz> (last accessed on 15 March 2023); (iv) “A comunicação como parte estratégica da gestão das áreas protegidas”, by Ana Celina Tiburcio, Juliana C. Fukuda, Elizabeth Oliveira, Cláudio C. Maretti, Raiane Viana, Leonardo Rodrigues, and Maria Eduarda Menegassi (Orgs.); workshop–class, 27 May 2021, and follow-up; specific video-class and documents available online: <https://www.youtube.com/live/kNIExrRYv4A> and <http://bit.ly/3YSm4yC> (last accessed on 14 February 2023); (v) “Valores culturais da natureza nas áreas protegidas”, by Érika Fernandes-Pinto (Org.); workshop–class, 28 May 2021, and follow-up; specific video-class and related documents available online: <https://youtu.be/Nc0G3QCaTv4> and <https://bit.ly/3ybNN2O> (last accessed on 14 February 2023); (vi) “Povos e comunidades tradicionais: visão de mundo e direitos” & “Povos e comunidades tradicionais; gestão ambiental-territorial: alianças e conflitos”, by Rodrigo M. dos Santos, Yasmin X.G. Nasri, M. Isabel F.P.O. Martins, Luciano R. Cardoso, Carolina C. Moro, and Gabriel N. Fenerich (Orgs.); workshop–classes, 07-08 June 2021, and follow-up; specific video-class and related documents available online: <https://www.youtube.com/watch?v=mqrqqMIGPI4>, https://www.youtube.com/watch?v=uf4MD_6vSv0 and <https://bit.ly/3YH53qs> (last accessed on 14 March 2023); (vii) “Populações tradicionais extrativistas e áreas protegidas”, by Cláudio C. Maretti (Org.); workshop–class, 09 June 2021, and follow-up; specific video-class and related documents available online: https://www.youtube.com/live/6B_caA9k1d4 and <http://bit.ly/3kWSKIJ> (last accessed on 08 March 2023); (viii) “Turismo de base comunitária em unidades de conservação de uso sustentável”, by Edilaine A. de Moraes, Marília F. Guerra, Teresa C. M. Mendonça, Gabriel N. Fenerich, Gabriela Ferreira, and Daniella Marcondes (Orgs.); workshop–class, 10 June 2021, and follow-up; specific video-class and documents available online: <https://www.youtube.com/live/-NngXBeK-Dk> and <https://bit.ly/3S9uZcD> (last accessed on 15 Feb. 2023); (ix) “APAs: territórios de conflitos, cooperação e ecocidadania”, by Maurício Marinho, Luccas Longo (Orgs.); workshop–class, 11 June 2021, and follow-up; specific video-class and documents available online: <https://www.youtube.com/live/Nt1mt5HvObY> and <https://bit.ly/3iXMWgl> (last accessed on 15 March, 2023); (x.a) “Parcerias na gestão áreas protegidas, módulo I (ênfase em concessões de serviços de apoio ao turismo)”, Fernando Pieroni, Tamires Fornazari, Camila G. de O. Rodrigues, and Carolina C. Moro; workshop–class, 21 June 2021, and follow-up; specific video-class and documents available online: <https://www.youtube.com/live/xKM0u39LU40> and <https://bit.ly/3ZHoiBL> (last accessed on 08 March 2023); (x.b) “Parcerias na gestão de áreas protegidas; módulo II (ênfase em parcerias com organizações da sociedade civil)”, by Beatriz Barros Aydos, Carolina C. Moro, Camila G. de O. Rodrigues, Adriane da S. Formigosa, and Pâmella A. Nogueira Paes (Orgs.); workshop–class, 22 June 2021, and follow-up; specific video-class and documents available online: <https://www.youtube.com/watch?v=UFs7mS5PYLI> and <https://bit.ly/3ZHoiBL> (last accessed on 04 March 2023); (xi) “Sistemas e áreas protegidas locais”, by Ângela C. Guirao, Gabriel N. Fenerich, Cristiano Krepsky, Alethea B. Peraro, Helen E. Souza, Sueli A. Thomaziello, Beatriz Barros Aydos (Orgs.); workshop–class, 23 June 2021, and follow-up; specific video-class and documents available online: https://youtu.be/S_EdSXFu9iE and <https://bit.ly/3lIXZuy> (last accessed on 14 February 2023); (xii) “Gestão de áreas protegidas para promoção da saúde e do bem-estar”, by Erika Guimarães, Patrícia F. Elias, and Juliana Gatti-Rodrigues (Orgs.); workshop–class, 24 June 2021, and follow-up; specific video-class and documents available online:

<https://www.youtube.com/watch?v=fag0UTr77eE> and <https://bit.ly/3YxKfBH> (last accessed on 08 March 2023); and (xiii). “Desafios para áreas protegidas mais abertas e inclusivas”, by Gabriela Ferreira, Cristiano Krepsky, Helen E. Souza, Patrícia F. Elias, Sueli Angelo Furlan, Marta de A. Irving, and Cláudio C. Maretti; workshop–class, 25 June 2021, and follow-up; specific video-class and documents available online: <https://www.youtube.com/live/GS-MSofOxYQ> and <https://bit.ly/3yCTLci> (last accessed on 15 March 2023).

Participants in the extension course (composed by the mentioned workshops) have focused their careers on protected areas, in terms of management or support (24% + 29%), research (33%), and teaching (16%), besides tourism, the sustainable use of natural resources, and communications—with possibilities of some overlap. Some 4% of them had post-doctorate level or were in ongoing programs, 5% of them had Ph.D. degrees, and 14% were candidates, 22% of them had M.Sc. degree, and 16% were candidates, 11% of them had MBA studies, or similar, 19% of them had undergraduate degree, 4% of them were undergraduate students, and 5% of them had lower education level.

Almost all participants are from Brazil, mostly original from the Southeast (66%) and Northeast (16%), in addition to the South (8%), Center–West (7%), and North (4%), mostly working in the Southeast (54%) and Northeast (20%), besides the North (9%), Center–West (8%), and South (6%). Shares were not so far from the population distributions in those regions, and the USP location and the higher education level in some regions were also considered, such as in the Southeast. (Preliminary information on the most recent census accounted for 42% of the national population in the Southeast, 27% in the Northeast, 15% in the South, 9% in the North and 8% in the Center–West.⁶⁷)

A variety of complementary activities were developed, depending on the subgroup dynamics. The study group has also engaged in the diffusion of the results, including the development of a book, with peer-reviewed chapters, on the basis of the experiences, studies, and dialogues, presenting thematic conclusions by most subgroups.

3.1.3. Papers and communications

The second and third years were dedicated to **consolidating and communicating** the achievements. Following the workshops, almost all thematic (sub)groups were invited to prepare a chapter, all of which underwent a peer-review, to compose a book on collaborative conservation and protected and conserved areas in Brazil (book forthcoming—b.f.). Most of the chapters are well advanced and the book is almost in the final edition phase. This writing efforts allow the concepts, findings, and proposals to be better established (see b.f.i,iii,iv,v,vi,vii,viii,x.a,x.b,xi,xii, besides [38,66,77], among others forthcoming).⁶⁸

Within the book being prepared (b.f.), several chapters have already been peer-reviewed (partially related to the main (sub)themes above): (i) “Áreas protegidas e seus sistemas; importância, governança e tipos”, by Cláudio C. Maretti; (iii) “Conselhos Gestores de Unidades de Conservação: descaminhos, lutas e recomendações para revitalização da governança e gestão local inclusivas”, by Carlos Eduardo Marinelli; Lílian Lindoso, Claudia Cunha, Isaura Bredariol, Bruna L. Ferreira, Gabriella Scelza, Carolina C. Moro, and Marina Mujica de Paiva; (iv) “Comunicação Colaborativa em prol de Áreas Protegidas: uma discussão de caminhos inter-relacionais entre sociedade e conservação”; by Ana Celina Tiburcio, Juliana C. Fukuda, Elizabeth Oliveira, and Leonardo da S. Rodrigues; (v) “Valores culturais e espirituais da natureza: perspectivas inovadoras para a gestão de áreas protegidas”, by Érika Fernandes-Pinto; (vi) “Povos e comunidades tradicionais: visões de mundo, direitos e gestão”, by Rodrigo M. dos Santos, Eliane Simões, Yasmin X.G. Nasri, Gabriel N. Fenerich; M. Isabel F. P. O. Martins, Marina V. Dale; (vii) “Árvores que flutuam, práticas que emergem: bricolagem institucional no estabelecimento do manejo florestal comunitário nas várzeas da Reserva de Desenvolvimento Sustentável Mamirauá”, by Luciano R. Cardoso, M. Isabel F. P. O. Martins, Elenice A. do Nascimento, Emanuelle R. Pinto, Jezenias G. Nogueira, Humberto P. Batalha, Dávila S.S. Corrêa, Claudio R. Anholetto-Jr; (viii) “Turismo de base comunitária em unidades de conservação de uso sustentável: elementos para reflexão sobre conservação colaborativa”, by Edilaine A. de Moraes, Marília F. Guerra, Teresa C. M. Mendonça, and Gabriel N. Fenerich; (x.a) “O papel das concessões de serviços

em apoio à visitação na promoção do desenvolvimento local", by Fernando Pieroni, Rodrigo Goes, Mariana Haddad, Barbara Matos, Adriano Sundfeld, Joice Tolentino; (x.b) "*Parcerias com a sociedade civil para gestão de áreas protegidas*", by Beatriz Barros Aydos, Carolina C. Moro, Rodrigues, C.G.O.; Adriane da S. Formigosa, and Pâmella A. Nogueira Paes; (xi) "*Áreas verdes locais e sua organização em sistemas: desafios e parcerias*", by Ângela C. Guirao, Gabriel N. Fenerich; Beatriz Barros Aydos, Alethea B. Peraro, Helen E. Souza, and (xii) "*Áreas protegidas para a promoção da saúde e do bem-estar*", by Erika Guimarães, Patrícia F. Elias, Juliana Gatti-Rodrigues, and Cláudio C. Maretti.

In parallel, depending on the thematic (sub)group, some activities continued, including other dialogues, workshops, and writings, sometimes only indirectly linked to the post-doctorate program and GECCAP (for instance [31iv,38,66] + b.f.iv). Some specific working groups were also dedicated to social media communication⁶⁹ and the continuation of Internet events including presentations and dialogues⁷⁰, among other activities, some of them are yet to happen, which will go deeper in some (sub)themes.

What is presented in Section 3 is largely related to the study group, including dialogues reflections, discussions, learnings, and recommendations from the thematic studies (previous to the article). Table 3.1.SM is mostly related to that including the establishment, preparation, workshops, complements, diffusion, and analyses of phases: 1. The preparation and production of the article is more strongly represented in Sections 4 and 5 (and the analyses in Table 3.1.SM). As mentioned, the themes considered by the GECCAP were based on the accumulated experiences by the (sub)groups, members and other participants, on biographical analyses, and mostly on the dialogues developed. The approaches of the (sub)groups considered the knowledge accumulated by the members and other participants, but also some extra studies and cases, through documents, dialogues with members of the management team, members of the local committees or other means. Those approaches are presented in Table 3.2.SM. (The workflow is also presented in Figure 1 of the main text, which also considers the understanding processes mentioned in Figure 2.)

Due to the interaction among (sub)groups, general meetings, and dialogues, the multiple participation of some experts, etc., the studies, cases, dialogues, and results of the (sub)themes and (sub)groups contributed to one another (although more in some cases than others—as sometimes mentioned below).

3.2. *The specific (sub)themes considered and related activities*

3.2.1. **Protected and conserved areas:** (a) concepts and definitions of PAs, traditional territories, and other conserved areas, as well as their systems; and (b) the evolution of governance and management models or paradigms.

The (sub)theme (i) related to protected and conserved areas focused on: (a) concepts and definitions of protected areas, traditional territories, and other conserved areas, as well as their systems; and (b) the evolution of governance and management models or paradigms ([31i] + b.f.i). The information offered here is complementary to what is presented in the article's main text. Also see the information presented in **Section 1**. "Brazilian PCA-related context, concepts, and practices", of these supplementary materials. This (sub)theme was led by the **leader** of the general study group and the main author of the article referred to herein.⁷¹ The results related to this (sub)theme were based on a team with accumulated professional and research experiences, dialogues with other experts, and technical and scientific literature.⁷²

To set the basis for the work of this (sub)theme, the protected area and other spatial (or area-based) conservation strategies were defined based on the most considered national and international **standards**, considering the national legislation and international policy (through IUCN, CDB, etc.)—see PCA key definition elements in the article. Also, a bibliographical approach to the history of protected and conserved areas was considered. This (sub)theme promoted a workshop (with information available online [31i]), with many participants, as part of the series (extension course) promoted by this work (b.f.). In the workshop, after the introduction to the whole series or course (in the first part of the same day), a presentation by the

leading author introduced the definitions of protected and conserved areas, including traditional territories, their systems, and the evolution of governance and management models or paradigms. This presentation was followed by a broad group discussion.

As mentioned in the article, the **evolution of PCAs** can be broken down into at least three different phases: (i) a first long period, which is not always recognized, where there was no defined pattern for conserved areas; (ii) the national parks era, starting from the end of the 19th century with their insertion into international policies, and the related homogenization tendencies; and (iii) the New Paradigm, which was recognized surrounding the 2003 Durban World Parks Congress, which considers a recognition of the multiplicity of protected areas and the diversity of governance types, among other elements ([9,23,31i,39-47] + b.f.i). The main text focused on current trends and was organized around the proposed concept of collaborative conservation and, based on that, proposes to discuss whether this constitutes the beginning of a revision of the current PCA paradigm (the so-called New Paradigm), or whether it might be necessary to construct a new, revised paradigm of PCAs.⁷³ (See other historical elements of PCAs in the article and in **Section 2**. “Evolution of the international institutional context related to protected and conserved areas”, of these supplementary materials.)

There are streams of study and conceptualization that argue that the history of protected and conserved areas began **many centuries ago**. For a long time, there have been special efforts to conserve nature in certain spaces or territories. The best-known examples are sacred sites (mostly, but not only, related to Indigenous peoples) and game reserves, possibly through millennia, as well as resource reserves in the last centuries ([9,23,31i,43-47,50,51,79-81] + b.f.i). There is some controversy concerning those ancient and diverse conservation measures in the evolution of protected areas (or in the beginning of PAs), but some experts understand that this long period of spatial actions (and conceptual dispersion), with results in nature conservation, deserves greater attention, as it influenced what exists today (and potentially the future). This is particularly important in relation to PCAs with relatively smaller governmental interference ([9,23,31i,59,60,65,105] + b.f.i). Even if they could not be considered protected areas per se, in their modern conception (according to the national parks paradigm), they were certainly precursors to efforts to conserve nature through area-based measures. Therefore, their experiences and learnings are very relevant to the general theme of the study presented herein. This is especially true as the ICCAs become more largely recognized and there is the new approach of the broader perspective of area-based conservation efforts (including PAs, ICCAs, OECMs, etc.) ([9,23,31i,59,60,65,86,105] + b.f.i).

Other study streams understand that protected areas themselves began with **national parks** (NPs), especially in the USA. Therefore, the modern concept is considered born out of the Yellowstone National Park, if not together with Yosemite National Park and other protected areas, all of which are mostly state-led definitions [41,49]. (It is possible that, in other places, there were similar models being developed, including considering how far initial concepts may have spread before being quickly incorporated within the NP paradigm [21,43,44,49,50,51].) Once established, the paradigm of national parks boosted the homogenization and internationalization of concepts—this being one of its most positive contributions (Lei/Law 9985/2000, Brasil/Brazil; [6,23,16,26,39,48,49])⁷⁴. (See also Section 2, above.) The initiative of parks was widely adopted by countries and their subnational governments in advocating the safeguarding of scenic landscapes and their use for recreation and tourism purposes, as well as their symbolism as heritage that shapes national identities and their respective territories [9,23,31i].

Critics say that this paradigm disregarded national and local social diversities and the rights of Indigenous peoples and traditional and local communities. This mostly happened because, for quite some time, several experts considered this territorial management model as a demand for the protection of “untouched” nature, sometimes even advocating the displacement of human settlements of communities which have lived in and depended on the resources of these areas, often for centuries. The social groups most negatively affected by the establishment of these policies have historically been local and traditional communities, as well as Indigenous peoples,

when their cultural organization was not respected and their territorial rights were not recognized ([9,23,31i,40-42] + b.f.i).

In the World Parks Congress, in Durban 2003, more emphasis was given to the need for good governance and the recognition of community conservation areas. This congress influenced the definition of the CBD Programme of Work on Protected Areas (PoWPA), in the Seventh Conference of Parties (CoP-7) to the CBD, in Kuala Lumpur, 2004. Around that Congress, the “**New Paradigm**” of protected areas claimed a new PA model that was already in practice, including the better consideration of the sustainable use of natural resources, the multiple benefits from protected areas, the participatory management processes, and better understanding PAs within ecological networks and landscapes. These processes progressively led to the recognition of PA governance types and the improvement of PCAs’ good governance guidance [18-20,22,23,63-65].

The approach to **systems of PCAs** related to this work considers the important accumulated experience of the members of the larger study group (including professional experience in federal, state, and municipal systems and responsible institutions, including at decision-making levels in some cases, as well as some cases of international experience). Specifically, it could be mentioned that experiences of protecting areas in all the Amazonian countries contribute to the building and implementation of the (Pan)-Amazon Conservation Vision, by REDPARQUES and the WWF Living Amazon Initiative [84,92,95]. In Brazil, this was led by the Brazilian federal PA system ([31i,89,91,94]⁷⁵ + b.f.i,viii), and in Latin America this was led by participating in and leading dialogues, including through the preparation and management of the Third Congress on Protected Areas of Latin America and the Caribbean (III CAPLAC, in Spanish), REDPARQUES, and OLACEFS [6,61,62,92,93]. The mentioned experience also included contributions to building the PCA system in Guinea-Bissau and to studies and dialogues about the PCA system in Brazil and other countries, including decades of intensive participation in the World Commission on Protected Areas, among others ([31i,38,61,62,92,93] + b.f.i).

Besides the experience and studies of the (sub)theme leader,⁷⁶ the workshops and dialogues related to this work brought in some other experiences. The understanding of the system of protected areas (which has not been the subject of many studies and publications) counted **dialogues** with 12 other experts, including: (i) A researcher on protected areas from a Brazilian federal teaching and researching institute; (ii) The leader of protected areas from the Chilean Ministry of Environment; (iii) The director of a faculty for protected areas in Latin America and the Caribbean (LAC); (iv) The former Brazilian secretary of biodiversity and the São Paulo secretary of environment at the subnational level, also researcher on University of São Paulo; (v) The leader of the Peruvian protected areas institution; (vi) The leader of the local Florianópolis protected areas system at the subnational Brazilian level; (vii) The responsible for marine protected areas from the Chilean Ministry of Environment, also a doctor; (viii) A doctor of ecology, with large experience in conservation and researching civil society organizations; (ix) A former leader of an international institution and of national Argentinian institutions, in addition to a long career as a consultant; (x) Two leaders of the subnational Brazilian Pará secretariat of environment and institution of protected areas (in the Amazon); (xi) A biodiversity expert of UICN for LAC—in addition to the personal experience of this (sub)theme’s leader [31i].

Some of the cases were directly considered in this study in dialogues with experts from Brazil and other countries for this (sub)theme ([31i] + b.f.i). The inputs from processes of discussions and recommendations to subnational and local PCAs systems were also contributed to this work in addition to other (sub)themes (such as in [28,31x.b-xi,38,66,86] + b.f.x.b-xi, among others). The bibliography did not help, since studies of PCAs systems (also considering institutions and legislation associated) are rare, with some exceptions. Therefore, among the cases of PCA systems, institutions, and laws and regulations, those of Brazil, Ecuador, Colombia, Peru, Guinea-Bissau, Chile, Argentina, Costa Rica, France, Spain, etc., were considered, among others, as were cases at the subnational level, including those for the states of São Paulo, Rio de Janeiro, Amazonas, Acre, Pará, etc. (including the municipalities of Campinas, São Paulo, Florianópolis, Palmas, etc.). (See the main elements of PCA systems in the main text of the article.)

The article argues that the **interaction, complementarity, and integration** among types, management categories, governance types, management programs, and several other PCA elements and characteristics are not well considered in the practices and in the literature. Here, only some complementary considerations are presented (based on this work—professional and research accumulated experience, studies and dialogues promoted, etc.; see further information in the main text).

Although there could be differences in the biodiversity conservation and ecosystem services and maintenance of cultural values, some perspectives and guidelines have tended to bring different mechanisms and types of spatial conservation strategies towards singular and simplified models (of categories, governance types and arrangements, mechanisms, partnership arrangements, etc.), not fully considering that such different kinds have their contexts and possibilities.

For some time, there was a struggle not to recognize all PA categories as valid ones, on the assumption that “weaker” PAs would damage the whole concept and the results of biodiversity conservation. This was based on a comprehension of the need to defend nature against humans and focus on strict preservation as the true protection. Although never gone, this debate became less important with the years of the current IUCN system of PA management categories and the stronger recognition of the diverse roles of PCA governance types. The demand for new marine protected areas, focusing on achieving the coverage of the quantitative part of the Aichi Target 11, brought a problem back, due to the creation of enormous new marine protected areas with a very low protection level. Sometimes, eagerness to achieve targets, particularly when not concerned with achieving the entirety of targets (with the qualitative elements of Aichi Target 11 and Kunming–Montreal Target 3, but only the coverage percentage), could deviate from best practice guidelines. With the definition of OECMs and their important role in Kunming–Montreal Target 3, some experts think that the focus on OECMs runs the new risk of weakening official protection afforded to certain areas [10,11,23,25,150].

Unfortunately, the perception of the opportunities of diversity seems not to apply for some streams of conservation efforts (in contrast to the consideration that such experts give for biological diversity). And, there is a clear lack of understanding, use, and research on the whole combination of PCA characteristics within integrated and **functioning PCA systems**. Therefore, this flawed approach does not achieve a good comprehension regarding the conditions for effective biodiversity conservation and the delivery of social benefits, from the extremely variable maintenance of ecosystem services and cultural values. For example, several technical and scientific documents show that the declaration of PA and Indigenous territories (ITs; previously considered ICCA PAs, but now probably going towards ICCA OECMs) are effective in reducing deforestation in the Amazon. In fact, several papers argue that IT can be more effective than official PAs in such terms. But, the relation with the conditions and interests of land grabbing are seldom clarified. Some documents or experts disregard certain PA categories (as V and VI) assuming that the supposed weakness of enforcement would undermine the conservation, but several of those studies do not go deep enough into other elements, such as the land tenure domain, size, staff, budgets, projects, and others, as well as the role of local communities in resisting their replacement by more degrading activities by other social actors.

3.2.2. **Conservation concepts** and the relations to social actors—biodiversity, ecosystem function services, and natural resources

In (sub)theme (ii), the conservation concepts (mostly biodiversity, ecosystem function services, and natural resources) were considered. It also assessed some of their considerations by social actors. It was led by M. Giully Silva, Sarah de Freitas, Marco Antonio Martins, Ariana Souza, and Daniel Castro. Together with (sub)theme (i), the main reason for this one was to set the basis for further work in the extension course, as well as alignment in the general study group. The recording and documents of the workshop are available as indicated in [31ii].

3.2.3. **Inclusive and democratic local governance** (participatory governance considering the local committees)

The local governance of protected areas in Brazil, considering **local committees**, still presents many challenges in order to implement the inclusive and democratic guidelines according to the national and federal regulations. Although there are instances or spaces for institutional articulation and social negotiation, those committees are limited in instruments and have insufficient support, besides not always following concrete evidence, that are effective in participatory decision making. Although analyses regarding the functionality of local committees of protected areas as spaces for local governance are still uncommon, the conditions mentioned seem not so different in the international scene. Considering the regression of conditions of social inclusion mechanisms in public management in Brazil in recent years (as mentioned in the article), this also affected the local committees of PAs. In that sense, it is important to review their current conditions, considering their roles and historical evolution, so as to enable proposals for pathways for improving their conditions and functioning.

With that in mind, the study presented here organized this specific **(sub)group** (3) on inclusive and democratic local governance or participatory governance considering the local PA committees. This (sub)group was more active for about a year and half, between mid-2020 and 2022. Its activities involved the participation of researchers, graduate and undergraduate students, staff from public institutions, including PA regional centers coordinators, heads and technicians of protected area staff, as well as representatives of grassroots associations, which have been active in local governance and management. Most of the members of the (sub)group (Carlos Eduardo Marinelli; Lílían Lindoso; Claudia Cunha; Isaura Bredariol; Bruna Lima Ferreira; Gabriella Scelza; Carolina Corrêa Moro; and Marina Mujica de Paiva) were women, aged between 30 and 40 years, who are or have been members of local PA committees or have studied them. (Besides the participants in the general workshops, presented in the Subsection “3.1.2. The workshops and other dialogues”, of these supplementary materials.)

The **(sub)group dynamics** were based on individual activities interspersed with weekly or biweekly integration meetings, each lasting 2 hours. These meetings included thematic debates, the presentations of ideas, texts, and seminars, dialogues with invitees, document preparation, and task planning and supervision. These activities, in addition to updates of national technical and international academic literature, ongoing research, and the accumulated experiences (research, professional, and/or lived experiences) all participants, were important inputs to the organization of the specific workshop, with the associated materials, and the production of papers besides this article (for instance [31iii,170]⁷⁷ + b.f.iii, among others).

Specific cases considered in this work included:

- The Costa dos Corais Environmental Protection Area, a federal level protected area (fed.) related to the IUCN management category V (cat. V), created in 1997, with 4 K km², on the Atlantic coast of the northeastern part of the country. This Brazilian PA management category allows several economic activities to occur and human settlements to exist inside its limits—representing one of the most difficult categories to govern and manage. This PA is a good example of a local committee, the functioning of which was also affected by the pandemic. Nevertheless, it was the specific external financial and technical support that collaborated with the establishment of the local committee in 2011 and enabled some activities to keep happening during difficult times, including the discussion of the management plan.
- The Chico Mendes Extractive Reserve, a protected area at the federal level, related to the IUCN management category VI, created in 1990, constituting 9.7 K km², in the Amazon. This Brazilian PA management category was created by the demands of traditional extractive communities and includes the sustainable use of natural resources by them as one of its priority objectives. In the Amazon, they tend to be very large, but do not include too many families. This PA was part of the first group of extractive reserves and maybe the most iconic remnants among them (also see the section “1.2.4. Traditional extractive communities”). The local committee was only established in 2003, the participatory planning and monitoring methodology (led by this (sub)group coordinator)⁷⁸ was considered helpful for the committee functioning, but it has nonetheless suffered several obstacles, including due to

the difficulties related to transportation, communication, outside “development” pressures in parts of the PA, and a lack of support.

- The Baía do Iguape Marine Extractive Reserve is a federal level protected area related to the IUCN management category VI, created in 2000, constituting 10 K km², and located on the Atlantic coast of the northeastern part of the country. When on the Atlantic coast, this Brazilian PA management category tends to include many traditional extractive communities. This PA includes 5000 traditional extractive families. The local committee was created in 2009. External “development” pressures promoted the mobilization of the communities and demonstrated the possibilities based on their grassroots organization and using the local committee institutional instance.
(More on the cases in [31iii] + b.f.iii.)

Negative points have been also framed in the technical and scientific literature regarding local PA committees, which have been considered harmful to the social and ecological contexts and demands. Therefore, complementing the results, discussion, and conclusions in the article, it is possible to confirm here that the (sub)group’s **findings** ([31iii] (+ b.f.iii)) point to the importance of modernizing the instrumentation and structuring of the processes to support inclusion and equity in the local governance of protected areas based on socio–ecological system principles [148]. In this sense, there is a set of strategic, operational, and practical challenges to be faced so that the local PA committees contribute to making the collaborative conservation become a national reality, as well as a series of issues to be debated about the current paradigms that guide the management of protected and conserved areas in Brazil.

3.2.4. Strategic communication

This specific (sub)theme (iv) on strategic communications related to PCAs was not proposed initially, but followed as a reaction considering the importance of the subject and the fact that it is usually overlooked. The **(sub)group** was constituted of experts on environmental communications and on protected areas: Ana Celina Tiburcio (environmental communications, Organa); Juliana Cristina Fukuda (protected areas manager, ICMBio); and Maria Elizabeth de Oliveira (environmental communications and researcher), with support and collaboration from Cláudio C. Maretti (expert on protected and conserved areas, Geography USP).

Globally, and also in Brazil, communication should be recognized as a fundamental **strategic element** for raising society’s awareness of the importance of biodiversity for ecological balance and human existence itself, as considered in the context of the Convention on Biological Diversity), the National Biodiversity Policy, and the National Biodiversity Strategy and Action Plan, in addition to the National Strategy for Environmental Communication and Education (ENCEA) [11,16,130-136].⁷⁹

It is based on this inspiration that the experience reported in the article was developed, based on the following guiding **question**: How can a communication strategy be created that is capable of encompassing society’s adherence to the biodiversity conservation agenda and could go beyond territorial boundaries, strengthening spaces and governance mechanisms in protected and conserved areas?

Besides bibliographic studies, internal dialogues, and the participants’ own accumulated experience (research, professional, and/or lived experiences), some **specific cases** were considered, such as: (i) Costa dos Corais Environmental Protection Area (fed. cat. V); (ii) Cavernas do Peruaçu National Park (fed. cat. II); (iii) Corumbau Extractive Reserve (fed., cat. VI); (iv) Serra do Conduru State Park (st. cat. II, Bahia); and (v) Lagoa Encantada e Rio Almada and Itacaré–Serra Grande Environmental Protection Areas (st. cat. V, Bahia)—in addition to knowledge on the case of Ilha Grande State Park (st. cat. II, Rio de Janeiro). Furthermore, **experiences** on environmental e-media, participatory and empowerment capacity building, particularly with traditional extractives youngsters, and PAs’ environmental interpretation were also considered to receive especial attention. As presented in the main text, the selection considered different strategies for communication: (i) communication by the management institutions of protected and conserved areas (i.a) with local communities, (i.b) with visitors, or (i.c) with society in

general; (ii) by partner institutions (ii.a) with local communities, (ii.b) with visitors, or (ii.c) with society in general; and (iii) by specialized media with society in general. The participants in the dialogues were experts from civil society organizations, federal- and state-level protected-area institutions, education institutions, environmental e-media, academia, etc. ([31iv] + b.f.iv).

Following the view that language plays a central role in the perception of the natural world, an experience developed by ICMBio in the Cavernas do Peruaçu National Park, in Minas Gerais, was presented in the workshop, based on the premise of environmental interpretation [137]. This tool, considered a promising alternative as a collaborative communication strategy, seeks to strengthen collective ideals and values, and the results were largely achieved in the reported case. Another initiative presented during the event was an excerpt from the Young Protagonists Project [138], an initiative developed by ICMBio and partner organizations with the purpose of encouraging the potential of youth to act in favor of nature conservation in their communities. To this end, elements of art and culture are used in educational practices strongly based on the dialogue of knowledge, another strategy considered promising as a communication tool for strengthening social participation in the management of protected areas. The role of journalism in favor of protected areas was the third perspective presented in the workshop, highlighting some experiences developed by the website O Eco,⁸⁰ a reference media in independent environmental journalism in Brazil with 18 years of existence and free access to all its contents. As reported, the theme of protected areas is permanently highlighted in its publications, being a key theme in reports, web series, and other productions aimed at raising public awareness, without losing sight of the management processes and environmental policies targeting this agenda.

Based on that, a second workshop was organized and **other colleagues**, related to the approaches mentioned above, were invited to join the (sub)group: Raiane Viana (environmental interpretation, ICMBio); Leonardo Rodrigues (environmental education, Verdeperto and Jovens Protagonistas); and Duda (M. Eduarda) Menegassi (journalist, O Eco Jornalismo Ambiental). The result was the sharing of an inspiring debate, connecting in this context numerous issues involved with the networks that have already experienced the search for innovative ways to sensitize and mobilize subjects in favor of nature conservation in different territories through numerous practices and tools of communication ([31iv] + b.f.iv).

3.2.5. Cultural values

This (sub)theme (v) was focused on the cultural values of nature, mostly considering the nature in protected and conserved areas. This was mostly based on the **leadership** of Érika Fernandes-Pinto and her accumulated research, professional, and lived experiences, including her bibliographical studies (for instance [31v,81,90], among others)⁸¹, but also considering the specific cases for this work [31v,74], as well as some complements.⁸²

At the **international level**, this (sub)theme started to receive attention from the end of 1990s, when global alliances started to promote events with this approach and the first reference works were published. In this context, as also mentioned in the main text, there were also some precedent inputs to this evolution [78-81]; however, the book called “The Full Values of Parks: from economics to the intangible” [129] was considered to pioneer the introduction of a broad perspective of cultural values linked to protected areas, including material and immaterial elements. The organization of the Specialist Group on Cultural and Spiritual Values of Protected Areas (CSVPA) in the IUCN WCPA brought together experts from several countries. Recognizing the importance of the cultural values of nature in all PA management categories, this group was responsible for formulating theoretical-conceptual approaches on the subject, organizing collections of information and publications, carrying out case studies, and proposing guidelines and recommendations for their integration into the conservation strategies.

More recently, the publication “Cultural and Spiritual Significance of Nature in Protected and Conserved Areas” [53] presented six overarching principles that are constitute the basis for 41 guidelines illustrated with examples of application in various contexts. According to the authors, the reasons why people value parks and other PA categories come from an incredibly

diverse, complex, and sometimes conflicting range of aspects. This brings numerous challenges to the managers of these areas, who must seek to accommodate different interests and points of view in the management of territories.

Again, as mentioned in the article, in **Brazil**, there were several isolated statements, but the consistent work, particularly with reference to PCAs, started with the research of Fernandes-Pinto in the 2010s and the discussions and actions occurring in the context of ICMBio from the mid-2010s [81,90,91]. In this institution, since 2019, actions have been developed to structure a program for the integration of the cultural values of nature into the management of PAs. Among them, the Seminar “Cultural Values of Nature: New Challenges for Public Conservation Policies” was held in July 2019 [90], and distance learning courses on the subject have been promoting studies of the historical and cultural values among PCA managers as well as broader interests in society, which started in the form of priority and emblematic PAs, such as Iguaçu National Park (fed. cat. II).⁸³

In addition to the accumulated experiences and research of the authors, in this work, some **cases**, with the inspiring experiences of integrating cultural and spiritual values in the management of PCAs, were presented at the workshop [31v]. The case of Pico da Neblina National Park (fed. cat. II) and Yanomami Indigenous Territory (potential OECM)—which overlapped—was presented based on the relationship of the NP with the Indigenous people considering the formation of a committee that enabled the proposal of ethno-tourism led by the Indigenous communities within the national park in the highest mountain of the country. In another case, the Pedra de Xangô Park (non-PA, official mun. cultural heritage site, potential OECM, Salvador), in the state of Bahia, is a sacred place protected by the peoples of Afro-Brazilian origin and by the deities of the African pantheon themselves, in what can be considered to be “spiritual governance”. In another, the Serra da Piedade State Natural Monument (st. cat. III), includes a Catholic sanctuary and is the object of pilgrimages and intense religiosity that help to pressure government agencies against environmental impacts in the region. An invitee also brought the case of Lagoa do Nado green and blue area (non-PA, urban park, Belo Horizonte), as an example of neighborhood mobilization to protect an urban green area [31v].

Despite the growing visibility of the (sub)theme in global environmental debates and some inspiring examples, the promotion of these values in national public policies is still incipient—either considering the cultural or mystic values of nature or other elements conserved by the PCAs, or considering the social or cultural values of the PCA themselves and their M&G. Taking into account the socio-environmental complexity and richness of Brazil and the sectorization of policies, there are some challenges that need to be overcome in order to properly integrate these values into conservation strategies. Among them is the need to train public managers in the environmental sector to work in this field. In addition, in loco surveys should be promoted in territories that are of interest for conservation, in order to be able to adapt international guidelines to different biocultural contexts ([31v,81,90,91] + b.f.v).

3.2.6. **Indigenous peoples and traditional communities (IPTCs):** (a) Cosmologies and territories; and (b) Conflicts and alliances with official protected areas

Regarding the (sub)theme dedicated to Indigenous peoples and traditional communities (IPTCs) (vi), in the context of collaborative conservation, there were several dialogues and two **workshops**, each focusing on the following aspects: (a) cosmologies and territories; and (b) conflicts and alliances with official protected areas. The workshops seminars were enriched by accounts collected during **dialogues** with representatives of these social groups, selected based on their life stories in the defense of the rights of their communities and in the management of their territories. The first workshop was led by Rodrigo M. dos Santos, Luciano R. Cardoso, M. Isabel F. P. O. Martins, and Carolina C. Moro. This first one also had, as an invitee: (i) Edel N. S. de Moraes, a member of the traditional extractive community of Rio Pagão, in the community of Boa Esperança (non-PA, potentially OECM), in Curralinho, Marajó Archipelago, Pará, and part of the national leadership of traditional extractives communities at CNS and Memorial Chico Mendes, also her completed and undergoing postgraduate studies [31vi,96]. The second workshop was led by Yasmin X. G. Nasri, Elizabeth Oliveira, Gabriel N. F. Fenerich, Anderson

Amaral, and Juliana C. Fukuda. This first one also had, as an invitee: (ii) Flávio Lontro, an artisanal fisherman, from Guanabara Bay, Rio de Janeiro, who collaborated with the Guapi-Mirim Environmental Protection Area (fed. cat. V) in that region, and was part of the national leadership of CONFREM (b.f.vi). The preparation work also had **dialogues** with: (iii) A young woman, representative of the Quilombola community of the Quilombo Campinho da Independência (non-PA, potentially OECM), also part of the local grassroots association; (iv) A man representative of the Macuxi Indigenous people, from the Indigenous Land Raposa-Serra do Sol, in the state of Roraima, as well as state public employee; and (v) A man representative of the Quilombola community of Quilombo Kalunga (non-PA, potentially OECM, internationally registered as ICCA), in Cavalcante, state of Goiás, and as part of the local grassroots association. Reflections on those activities are also registered by Dos Santos et al. (b.f.vi).

Besides the authors' accumulated experiences (research, professional, and/or lived experiences, such as in [23] and others⁸⁴), this (sub)theme also benefited from the workshop of the (sub)theme vii [31vii,96]. The information presented in the **section "1. Brazilian PCA-related context, concepts, and practices"**, of these supplementary materials should also be considered here. Rodrigo Martins dos Santos, Eliane Simões, Yasmin Xavier Guimarães Nasri, Gabriel Nogueira Fenerich, Maria Isabel Figueiredo Pereira de Oliveira Martins, and Marina Vieitas Dale also organized the findings in the thematic chapter of the book (related to this work), which also considered other PCA **cases**, such as Terra Grande-Pracuúba Extractive Reserve (fed. cat. VI), Serra do Mar State Park (st. cat. II), Cairuçu Environmental Protection Area (fed. cat. II), and the state level PA mosaics of Juréia-Itatins (composed of: two state parks, st. cat. II; two sustainable development reserves, st. cat. VI; one ecological station, st. cat. Ia; and one wildlife refuge, st. cat. III) and Jacupiranga (composed of: five sustainable development reserves, st. cat. VI; four environmental protection areas, st. cat. V; three state parks, st. cat. II; and two extractive reserves, st. cat. VI) (b.f.vi).

3.2.7. Traditional extractive communities and PAs related to the management category VI

Most of the important information for this (sub)theme (vii) was presented in the section "1. Brazilian PCA-related context, concepts, and practices", specifically in **Subsection "1.2.4. Traditional extractive communities"**, related to the importance of the rubber-tapper movement and other traditional extractive communities in the Amazon, which later spread to the Atlantic coast and other parts of the country, and the creation of the PA model of extractive reserves. But, specifically, the (sub)theme of traditional extractive communities considered dialogues and accounts from the **invitees**, representatives from the Amazon and from the coast and the associations of two major national extractive communities: (i) Célia R. N. das Neves Favacho, a member of the traditional extractive community of Umarizal community, in the Mãe Grande Curuçá Extractive Reserve (fed. cat. VI), in Curuçá, Pará, and a member of the national leader of artisanal fishers and gatherers at CONFREM; and (ii) Joaquim C. de S. Belo, member of the traditional extractive community in the Foz do Mazagão Velho Extractive Settlement (fed. non-PA, potentially OECM), in Mazagão, Amapá, and of the national leadership of traditional extractive communities at CNS. Those accounts reflected not only their traditions and social organizations, but also how their struggles for visibility and recognition have shaped their culture and social organization, including by fighting for their demands for the creation of management category VI protected areas or other types of conserved areas and their engagement in the governance of those PCAs and the management of natural resources [31vii,101-105].

In preparation, other **dialogues** were developed, also with: (iii) A woman, from coastal mangrove resources gatherer communities, mostly extractive reserves, and state-level leader of CONFREM in Pará; (iv) A man, artisanal fisherman, national leader of CONFREM; (v) A man, artisanal fisherman, from the Prainha do Canto Verde Extractive Reserve (fed. cat. VI); and (vi) A man, teacher at the same Prainha do Canto Verde Extractive Reserve. Those dialogues consider their definitions of what are the traditional extractive communities and what is the importance of extractive reserves, as well as the differences in their conditions considering other PA

management categories. It also included the main problems and improvements demanded for this management category and for the traditional extractive communities [31vii].

The accumulated **experiences** of the authors on these subjects were also considered.⁸⁵ On top of that, Cardoso et al. (b.f.vii) considered the iconic case of the Mamirauá Sustainable Development Reserve (st. cat. VI). The work developed in the (sub)theme (vi), presented above (b.f.vii), was also important to this one (vii).

3.2.8. Community-based tourism

The (sub)theme (viii) focusing on community-based tourism (CbT) was led by the **(sub)group** with colleagues from universities and PCA institutions (as a (sub)group of the general study group), with: Edilaine Albertino de Moraes (from UFJF); Marília Falcone Guerra (ICMBio); Teresa Cristina M. Mendonça (UFRRJ—Federal Rural University of Rio de Janeiro); Gabriel Fenerich (USP); Gabriela Ferreira (SESC-SP—Commerce Sector Supporting Service, São Paulo); and Daniella Marcondes (USP).

Besides bibliographical work and the accumulated **experience** of the authors on this subject (research, professional, and/or lived experiences, such as in [31i,114] + b.f.i, among others), several **dialogues** were promoted with five community leaders and two PA managers of four select **cases**: (i) A young woman, from a traditional community in the Tapajós–Arapuins Extractive Reserve (fed. cat. VI, in the state of Pará), a leader of the local grassroots Forest Tourism and Handcraft Cooperative (Cooperativa de Turismo e Artesanato da Floresta—Turiarte), also having completed postgraduate studies; (ii) A young woman, from a traditional community in Prainha do Canto Verde Extractive Reserve (fed. cat. VI, in the state of Ceará), also a student, working in tourism communication, and the leader of the local grassroots RESEX association; (iii) A woman of the Quilombola community of Quilombo do Feital (non-PA, potentially OECM), within Guapi-Mirim Environmental Protection Area (fed. cat. V, in the state of Rio de Janeiro), the leader of the grassroots association; (iv) A fisherman, leader of the grassroots Guanabara Mangroves Cooperative (Cooperativa Manguezais da Guanabara), also related to the Guapi-Mirim Environmental Protection Area; (v) A woman, staff of the same Guapi-Mirim Environmental Protection Area, ICMBio, responsible for environmental education, also having completed postgraduate studies; (vi) A woman, leader of the grassroots CbT Nhandereko Network (Rede Nhandereko de Turismo de Base Comunitária), organized by Quilombola and Caiçara communities, working in the Cairuçu Environmental Protection Area (fed. cat. V, in the state of Rio de Janeiro); and (vii) A man, staff of the same Cairuçu Environmental Protection Area, ICMBio, responsible for the relations with traditional communities, also having completed postgraduate studies. (The Caiçara traditional communities live on the Atlantic coast, mostly in southeastern Brazil, mostly from the local economic activities of fisheries and family farming, in addition to some ecosystem products gathering.) The cases only considered official protected areas those that are in the group of categories called “sustainable use” (“UCs do grupo de uso sustentável”; Lei/Law 9985/2000, Brazil)—as mentioned above, extractive reserves and environmental protection areas. Those dialogues focused on the emergence of the activity and its current business, as well as the relations with the management staff of the protected area and other partnerships (b.f.viii).

For the workshop led by the group of experts (presented above), three representatives of cases of community-based tourism were **invited**: Beatriz Goes, from the case in the Prainha do Canto Verde Extractive Reserve; Reginalda Godinho, from the case in the Tapajós–Arapuins Extractive Reserve; and Cláudio Mendonça, from the case in the Guapi-Mirim Environmental Protection Area, besides the poem presented by the youth of Prainha do Canto Verde Extractive Reserve ([31viii] + b.f.viii).

Also, following other initiatives, several empirical CbT experiences in federal PAs were supported and had their informed organized by **ICMBio** to build principles and guidelines, giving visibility to trends, possible paths, and collective challenges for the appreciation, and conservation of Brazilian socio–biodiversity, aiming to promote and strengthen this practice [114].

3.2.9. Participatory processes for PAs related to management category V

The Brazilian PA management category **environmental protection area (APA)** is related to the IUCN international PA management category V. Mostly based on European PA models, this IUCN category has already been debated internationally. The environmental leader Paulo Nogueira-Neto, whom we fondly remember, had declared a few times that he was influenced by the Portuguese natural parks to present the proposal for the legal model of the Brazilian APA, later incorporated in the law establishing the national PA system (although some experts relate it more to French regional parks). In Brazil, this category is also polemic, disregarded by several managers, technicians, and researchers. Nevertheless, it is possible that they do not understand this PA management category well, or, at the same time, do not know how to manage it, for it can probably be considered the most difficult category to manage, demanding strong stakeholder participation. The demand and interest in strong participation was one of the most important reasons for choosing the APAs in this work (considering, for instance, Lei/Law 9985/2000, Brasil/Brazil; [16,31ix,66] among others).

This (sub)theme (ix) was led by Maurício A. Marinho and Luccas G. R. Longo, managers of environmental protected areas in the Municipality of São Paulo, the (sub)group which also had the participation of other managers of São Paulo state and São Paulo municipal APAs. For the workshop, they invited several other colleagues from the academy and practices, with accumulated experiences (research, professional, and/or lived experiences) in this category, whom, together with the **(sub)group** leaders, presented some **cases** (or multiple cases) in two blocks, the first one being mostly presented by staff managers: (i) Capivari–Monos and Bororé–Colônia Environmental Protection Areas (min. cat. V, São Paulo), by Luccas G. R. Longo and Maurício A. Marinho; (ii) Corumbatai–Botucatu–Tejupá and Piracicaba/Juqueri–Mirim Environmental Protection Areas (st. cat. V, São Paulo), by Luiz Sertório Teixeira; and (iii) Litoral Sul Environmental Protection Area (st. cat. V, São Paulo), by Leticia Quito; and the second block of members of local PA committees, with another kind collaboration with the APAs (such as research or social grassroots organization): (iv) Jocemar T. Mendonça Litoral Sul Environmental Protection Area; (v) Maria Ines Pagani (Corumbatai–Botucatu–Tejupá and Piracicaba/Juqueri–Mirim Environmental Protection Areas); (vi) Ciléia da Silva Biaggioli (Capivari–Monos and Bororé–Colônia Environmental Protection Areas); and (vii) Marcio Henrique G. dos Santos (Rio Batalha Environmental Protection Area, st. cat. V, São Paulo) [31ix].

This category was also considered in other (sub)themes. See some elements about APAs also mentioned in **Section 1**. “Brazilian PCA-related context, concepts, and practices”, particularly its lack of consideration for traditional communities.

3.2.10. Partnerships for PCA management, including: (a) With civil society organizations; and (b) Tourism concessions to the private sector

In the case of PAs in Brazil, the work on this (sub)theme (x) related to this paper highlighted the following modalities: (a) Partnerships with civil society organizations; and (b) Concessions with the participation of private companies. In addition to these two modalities, other ones, such as permission and authorization, are used to enable the provision of visitation support services and were also presented. Initially, the (sub)group addressed the concepts of partnerships in the context of protected areas, but in the second moment, it was divided into the two (sub)groups with the two aforementioned (sub)themes.

The **first subgroup** (a) of this (sub)theme (x) had the participation of professionals that worked for universities and civil society organizations: Beatriz Barros Aydos (biologist, M.Sc.); Carolina Corrêa Moro (lawyer and Ph.D. candidate); Camila Gonçalves de Oliveira Rodrigues (Ph.D., professor at UFRJ); Adriane da Silva Formigosa (M.Sc., NGO leader); and Pâmella Alves Nogueira Paes (environmental scientist, from young members of IUCN WCPA). This GECCAP thematic (sub)group also established important collaboration with the Observatory on Protected Areas Partnerships (Observatório de Parcerias em Áreas Protegidas—OPAP).

The study **process** of the subgroup started with the different concepts related to shared governance and the co-management of protected and conserved areas, considering the spectrum

of possibilities for partnerships and the different levels of collaboration between the public and private spheres in supporting the creation and management of PCAs. Also, some principles for partnerships were considered in terms of both public and private values, such as accountability, transparency, and social control. Then, based on the experience of the members of the subgroup, some partnership initiatives with civil society organizations were mapped and dialogues were promoted to the (sub)group. Thus, with the objective of understanding the lessons learned and the challenges of ongoing experiences in PCAs, three **cases** were selected: (i) The partnership between the state institution of Santa Catarina responsible for protected areas (Instituto de Meio Ambiente de Santa Catarina—IMA) and the Çarakura Institute (Instituto Çarakura), related to the Serra do Tabuleiro State Park (st. cat II, Santa Catarina), in order to offer service to tourists at the visitors center, promote environmental education activities, support visiting, and develop rural capacity building initiatives in the state park, with the participation of local universities; (ii) The partnership between ICMBio and Ekos Brazil Institute (Instituto Ekos Brasil), related to the Cavernas do Peruaçu National Park (fed. cat. II), in order to support tourism and carry out activities to raise awareness and engage the local communities; and (iii) The partnership of the São Sebastião Municipal Government and the Coastal Conservation Institute (Instituto Conservação Costeira—ICC), related to the Baleia Sahy Environmental Protection Area (mun. cat. V, São Sebastião) in order to promote or support initiatives to generate income for the Caiçara communities and improve their quality of life. Those cases were presented in the workshop, respectively, by Andrea de Oliveira (Instituto Çarakura), Maria Cecília Wey de Brito (Instituto Ekos Brasil), and Fernanda Carbonelli and Edson Lobato (Instituto Conservação Costeira) [31x.b].

Together with the bibliographic studies and the accumulated experiences of the experts (research, professional, and/or lived experiences), those cases brought **lessons learned and challenges** experienced with regard to the (sub)theme, from which the following ones stand out: (i) The need to improve administrative flows and procedures to make partnerships between the public and private spheres viable; (ii) Strengthening the technical capacity of civil society organizations to participate in the planning, implementation, and monitoring of partnerships; and (iii) Dissemination of good practices and the results of existing partnerships in protected areas as a way of inspiring new initiatives—among others. In addition to these aspects, those kinds of collaborative partnerships enable a greater understanding of the function of protected and conserved areas in the management of the area and provision of ecosystem services. Those efforts and results are related to the whole process, including the preparation and realization of the workshop and the documents produced (considering, for instance [31x.b,117,118,126,163,164] + b.f.x.b, among others).

The **second subgroup** (b) of this (sub)theme (x) had the participation of the following professionals: Fernando Pieroni (Instituto Semeia); Camila Gonçalves de Oliveira Rodrigues (Ph.D. degree, professor at UFRJ); Carolina Corrêa Moro (lawyer, Ph.D. candidate); and Tamires Fornazari (geographer and M.Sc. student).

The study **process** of this subgroup considered cases of PCA concessions in Brazil and in other countries, as well as tourism management, different models of PCA access and use, improving the infrastructure and services to support visits, and balance financial resources for PCA management, among other topics. The main kinds of partnership arrangement were considered, focusing on tourism-related ones such as concessions, permissions, authorizations, etc. Considering the possibilities of the positive and negative elements of tourism concessions in PCAs, as well as the polemics around the subject, instead of going through several cases, the subgroup decided to present **different perspectives** from the PA institution, the concessionary company, a local civil society organization, etc., on one ongoing partnership, the Chapada dos Veadeiros National Park (fed. cat. II, in the state of Goiás). With this, the subgroup sought to extrapolate the lessons learned and the challenges that could inspire the development of other initiatives in the country. In this sense, in the workshop, the following colleagues presented their points of view: (i) Luís Neves (ICMBio); (ii) Plínio Ribeiro (Parquetur, concessionary company); (iii) Júlio Itacaramby (Association of the Friends of the Chapada dos Veadeiros NP; Associação

Amigos do Parque Nacional Chapada dos Veadeiros—AVE); and (iv) Rafael Teixeira, tourism guide to the Chapada dos Veadeiros NP) [31x.a].

For its contribution (chapter) to the preparation of a book about this whole work (presented here), the subgroup decided to go with a complementary approach, presenting an evaluation of the theme of PCA concessions in the country (b.f.x.a). The case considered, the bibliographic studies, and the accumulated experiences of the experts (in terms of research, professional, and/or lived experiences) were important to the **results** of this subgroup (considering, for instance [31x.a,113,117,118,126,163,164] + b.f.x.a, among others).

3.2.11. PCAs and their systems related to local governments

The (sub)group which studied this (sub)theme (xi) aimed to discuss and demonstrate the importance of both the classical protected areas under municipal public management, as well as other typologies such as urban parks, linear parks, green areas, open spaces, and ecological corridors ([38,66,86] + b.f.xi). This (sub)group has seven participants: Alethea Borsari Peraro; Ângela Cruz Guirao; Beatriz Barros; Cristiano Krespsky; Gabriel Nogueira Fenerich; Helen E. Souza; and Sueli A. Thomaziello. It was led by Ângela C. Guirao, director of Green and Sustainable Development at the Secretariat of Green, Environment and Sustainable Development at the Municipality of Campinas (Departamento do Verde e do Desenvolvimento Sustentável da Secretaria do Verde, Meio Ambiente e Desenvolvimento Sustentável da Prefeitura de Campinas).

The **process** of the study presented herein was developed through dialogues, bibliographic studies, case studies, and workshops, besides the authors' accumulated experiences (research, professional and/or lived experiences, considering, for instance [30,31x.b-xi,38,66,67,70,71]⁸⁶ + b.f.x.b-xi, among others). See also the information for PAs at municipal level presented in **Section 1**. "Brazilian PCA-related context, concepts, and practices", of these supplementary materials.

With a view to covering the different aspects of the management of local protected areas, the selection of dialogues considered three groups: (i) Municipal public officers who work in the management of PCAs; (ii) Municipal officers focused on the management of municipal systems of PCAs; and (iii) Representatives of civil society organizations that collaborate with PCA management. It considered some **cases** of Brazilian municipal legal systems of protected and conserved areas (such as Campinas, Florianópolis, Palmas, João Pessoa, and Recife, among others), local subsystems of officially recognized private PAs (mun. cat. IV, Curitiba), specific municipal PCAs (such as Niterói Natural Municipal Park, Niterói, cat. II mun., and Serra do Guararu Environmental Protection Area, cat. V mun., Guarujá), partnerships to co-manage local PCAs (such as Grota Funda Natural Municipal Park, Atibaia, cat. II mun., and Baleia-Sahy Environmental Protection Area, cat. V mun., São Sebastião), local government partnerships to co-manage PCAs from other levels (such as Mata de Santa Genebra Ecological Relevant Interest Area, fed. cat. IV, with Campinas, and Tupi Experimental Station, non-PA, potentially OECM, with Piracicaba), and visions from local communities concerning local PCAs (such as Fazenda do Carmo Natural Municipal Park, São Paulo, cat. II mun.) Therefore, there were dialogues with persons from seven Brazilian states, which covered the management experiences of four categories of PCAs (park—cat. II; ecologically relevant area of interest—cat. IV, environmental protection area—cat. V; and natural heritage private reserve—cat. IV⁸⁷), all at the municipal level, with one potential OECM (st. non-PA) in partnership with a local government, and three legally established municipal PCA systems [31xi,x.b,38,66].

As **products** of the aforementioned (sub)group, there is: (i) Participation in the extension course offered by the Department of Geography of the Faculty of Philosophy, Literature and Human Sciences (FFLCH) of the University of São Paulo (USP) in 2021 (b.f.) with the workshop—class on local protected areas and systems [31xi]; (ii) The co-realization, with ICLEI and WRI-Brasil, of technical workshops and a technical document containing guidelines [38] (supported by the Local Protected Areas Project, implemented by GIZ in partnership with ICLEI and IUCN); (iii) The publication of a book chapter [66]; and (iv) The preparation of another one (b.f.xi).

The framework of studies and production of materials allowed the identification of some of the main **challenges** at the municipal level: (i) The multiple uses of protected, conserved, and green areas at the municipal level, especially in urban areas; (ii) The proximity between natural resources and the population; (iii) The different interests in land use; (iv) The absence of housing policies compatible with environmental ones, real estate speculation; and (v) The expansion of the urban area. These challenges are further aggravated by the deficiencies of staff and financial resources, among others, at the municipal level, to effectively govern and manage the protected and conserved areas. The whole (sub)group study process also made it possible to identify **other issues** with an interest in going deeper in reflections and promoting further thoughts: (i) There are still relatively few studies referring to local protected areas; (ii) It is necessary to make information available and shared among municipal managers themselves and with other interested experts and groups; (iii) Possibilities for developing community-based tourism in partnership with the municipal government in local protected and conserved areas; (iv) The possibility for communities to play a leading role in the participatory evaluation, planning, and implementation of PCA management improvements; and (v) The involvement and awareness of local communities for raising the value of the areas, increasing conservation, and improving their own quality of life ([31xi,38,66] + b.f.xi).

Furthermore, in the local context, territorially, the establishment of ecological corridors or connectivity areas between protected, conserved, and green areas proved to be important, as well as the interactions among neighboring municipalities and with regional planning. The integration of protected, conserved, and green areas, as nature-based solutions, into urban and land use planning, is an excellent way to increase both the surface and the quality of those areas (as in the case with the municipality of Campinas with the RECONNECTA RMC program) [107,108]⁸⁸.

Also, in order to improve the research and promote effective PCAs at the local level, the (sub)group proposes recommendations for further study efforts, such as: (i) Further high-quality propositions of specifications of the possibilities of partnerships and shared management within the municipal scope, including contractual and administrative arrangements; (ii) A better impact evaluation of the sub-notification of municipal protected areas in the national registry (CNUC) on strategies and access to resources related to environmental licensing (and the related environmental compensation); (iii) A better integration of environmental components into urban planning; (iv) Improvement of municipal governance with further interdepartmental alignment, the higher qualification of technicians, and the better sharing of information and concepts; (v) Solidarity-based economic models for the communities surrounding the local protected and conserved areas (LPCAs); and, finally, (vi) LPCAs as a tool for democratizing access to nature, mainly for vulnerable populations (b.f.xi).

3.2.12. Promotion of health and well-being

The members of the (sub)group that worked on this (sub)theme (xii) are active in the Health and Nature Brazil Network (Rede Saúde e Natureza Brasil), which brings together researchers from different areas related to health and nature, seeking to promote dialogue, the exchange of experiences, and the sensitization public and private agents about the importance of nature and, therefore, of protected and conserved areas, for human health and well-being [77]. This is mentioned here because of the interaction between this exchange network and the study (sub)group on this (sub)theme. They are Erika Guimarães (biologist, M.Sc., with accumulated experience in protected and conserved areas); Juliana Gatti-Rodrigues (Ph.D. candidate with accumulated experiences in promoting well-being based on nature); and Patrícia F. Elias (sociologist and journalist, working on cultural projects and nature-based therapy)—with some collaboration from Cláudio C. Maretti (leader of the larger study group). The first tree led the workshop and the four prepared a contribution to the forthcoming book related to this study ([31xii] + b.f.xii).

The workshop also counted two **invitees**: Alex Gesse (Forest Service Hub); and Marco Aurélio Bilibio Carvalho (Ecopsychology Brazilian Institute; Instituto Brasileiro de

Ecopsicologia—IBE). Besides the bibliographical analyses, workshop, and the authors' accumulated experiences (research, professional, and/or lived experiences), the (sub)group promoted several lines of dialogue specific to this work. In that sense, besides the dialogues within the larger study group and throughout the workshops, in order to broaden the understanding of the relationship between health and nature, nineteen **dialogues** were promoted to better understand the perception of the contribution of natural areas to the promotion of health and wellness, including managers of protected and conserved areas, health professionals, therapists, and the facilitators of health practice interventions. These professionals have between one and four decades of experience in their areas of expertise, and are from different regions of Brazil, including the states of São Paulo, Rio de Janeiro, and Goiás, as well as the Federal District. The dialogues also reached professionals working in other countries, such as Argentina, Spain, and Portugal. The dialogues started from the verification of the existence of a multiplicity of practices, experiences, and activities that seek health, well-being, and personal development in contact with nature. In addition to physical activities and the practice of various sports, ecotourism, and environmental education, there are numerous other kinds of initiatives, such as: (i) processes of self-knowledge, learning, and the development of socio-emotional skills; (ii) corporate training; and (iii) experiences known as forest bathing, nature bathing, forest therapy, and forest medicine.

Although with diverse motivations, the participants identified a primordial motivation for contact with nature: reconnection—integration with nature, with oneself and with the social collective, thereby nurturing bonds. A portion of them reported multisensory experiences (a diversity of sounds, images, textures, flavors, aromas, and sensations), while others referred to the “ecological experience”, in which an individual is able to perceive the web of life and feel a sense of belonging to it. Among the participants, there was a perception that this reconnection was a significant component of the integral health of the human being. Another aspect highlighted by those that took part in the dialogues related to this work was the depth of the experience that individuals could achieve and its contribution to the development of the aforementioned reconnections. In this context, two levels were reported: information and emotion. At the information level, studies are important allies in the generation of evidence for the effectiveness and benefits of interacting with nature. These are essential for attracting the interest of health, education, environment, and ecotourism professionals, as well as in motivating opinion makers to influence public policies in this direction. Another, deeper level of connection described, however, is that of emotion, especially when directly associated with experience. It is the field of feeling and experiencing that makes the practice more effective. Abstract elements, such as the beauty expressed by nature which touches all human senses, become significant instruments of connection. This experience contributes to well-being and raises the awareness of nature conservation, care, and the defense of life on Earth.

The bibliographic analyses and the interaction with experiences emerging in Brazil and the interactions with the aforementioned exchange network, including the global Healthy Parks, Healthy People movement and a related Brazilian strategy, besides other national initiatives ([31xii,66,77,89,127]⁸⁹ + b.f.xii), also contributed to the **results** of this (sub)group. It is known that, besides their importance for the conservation of biodiversity, as well as sociodiversity (or integrated in the sociobiodiversity, as used in Brazil), the visitation of PCAs possesses multiple benefits, such as the promotion of opportunities for leisure and recreation, environmental education, and learning and experience. Nevertheless, the importance of PCAs and their recognition have grown beyond their classical objectives and associated management programs. Therefore, and in consideration of one of the more recent understandings, PCAs are also fundamental in promoting health and well-being, including, with particular importance, some types of urban PCA. A review carried out by the Parks Victoria Foundation in partnership with Deakin University pointed out that the evidence linking national parks, among other types of PCAs, with health is substantial and sufficient to justify investment in parks as a tool for promoting health and social welfare, as well as “reconstructing” the connection between urban societies and nature. This approach promoted an important change in the way that the relevance of PCAs is understood for the health of the body, mind, and soul, implying the necessity of a

transformation in the way PCAs and nature are seen and managed by governments and society [82,83,127].

However, despite some good examples in other countries, such as Japan (mostly from the 1980s) and Australia (from the early 2000s), which have since spread around the world, the connection between health and PCAs is still marginal in Brazil. Despite many social groups benefitting from visiting PCAs for their well-being, including children, young people, the elderly, persons with disabilities, and people recovering from illness, among others, this interest has not yet been sufficiently considered in the management and governance and visitation programs of PCAs [30]. On the other hand, in contrast to other countries (such as the United Kingdom, Australia, Japan, and Canada, among others), the health sector in Brazil has yet to pay attention to the benefits of nature (i.e., there are pockets of initiatives in the country, but not yet enough attention to generate important national policies) and has not yet incorporated non-pharmaceutical recommendations. Nevertheless, this theme is progressively gaining more attention, including through several initiatives within Brazil, which were identified by the work of the study group (such as the first discussion on health and well-being in the management of protected areas held by ICMBio in 2017; the creation of the Brazilian Health and Nature Network in 2020; the healthy parks strategy led by WWF-Brazil in 2021; a study led by researchers from the Albert Einstein Research Institute, which aimed to assess the effects of contact with nature in peri-urban protected areas in the city of São Paulo; and a partnership between the Brazilian Institute of Ecopsychology and Fiocruz aiming to define guidelines and protocols for carrying out forest bathing), as well as a series of small-scale activities offered by professionals and organizations, some of which were considered in this work ([83,89,127,128]⁹⁰ + b.f.xii).

The dialogues, discussions, and reflections, together with information from the literature, raised some insights related to the integration of this theme into PCA management. It is currently imperative to recognize society's right of access to nature and its benefits. Therefore, it is important to make PCAs more accessible and closer to society (including in relation to the openness of the management team to interactions with social actors, the kind of activities offered, public transportation, opening hours, etc.). Also, PCA M&G should further consider the access provided to persons of different ages, with disabilities, and who are recovering from illnesses, including in the case of possible emergencies. And, practices in PCA management should aim to promote health and well-being, as well as organize space and programs to create quiet spaces for meditation and other activities, including in partnership with the health sector for guidance and research ([31xii,83,89,127,128]⁹¹ + b.f.xii).

These processes, however, must be accompanied by the performance of PCA governance and management in a more inclusive and equitable way, promoting better experiences and services and, consequently, improving society's engagement in the conservation and defense of nature. PCAs should be considered as a fundamental instrument for the promotion of health and well-being in public and private health systems ([31xii] + b.f.xii). In urban and peri-urban regions, the existence of natural areas is essential, in addition to their equitable distribution throughout cities, to allow for better interaction between society and these areas [30,31xi,38,66] + b.f.xi). (Also see elements of the evolution of themes related to PAs and PCAs, including in relation to health, well-being, and urban and peri-urban areas.)

3.2.13. **Paths towards more inclusive and effective PCAs.**

This (sub)theme (xiii) was in fact more a reflection of the results of the whole larger group work, as a concluding workshop for the extension course. The content was led by the larger group **coordinators** (Cláudio C. Maretti, Sueli Angelo Furlan, and Marta de A. Irving), with support from colleagues to make the workshop dynamics: Cristiano Krepsky; Gabriela Graça; Helen E. Souza; and Patrícia F. Elias. Therefore, it reflects the whole GECCAP, including the series of 15 workshops, but also considers the accumulated experience (research, professional, and/or lived experiences) of the members of the larger group coordination.⁹²

Specifically, the last **workshop** had inputs from the coordinators and the colleagues leading its dynamics, but also from the larger audience (also see the Subsection 3.1.2. "The workshops

and other dialogues”). This last workshop and the evaluation of the whole extension course raised some **important and concluding topics**, as well as elements for further **reflections or actions and directions for further research**, including the following:

- Society needs to take care of its natural heritage. The greater valuation of natural areas is crucial for the effective conservation and adequate engagement of local communities. The sense of belonging depends on society’s reconnection with nature. Society acts better in terms of conservation when there are those links promoting the sense of being a part of the whole. Natural areas shall be instruments for rethinking daily practices and promote changes in habits.
- But, the fact that past and present PCAs benefit some selected segments of society guides the needs towards more inclusive, equitable, and effective governance and management.
- The roles of education, in general, and environmental education, in particular, are important in promoting the transformation towards a society focused on conservation and reconnection with nature.
- The collaborative conservation shall recognize the needs for social justice and the values of scientific, technical, and traditional knowledge. It shall be dialogic, performed thorough partnerships, and based on important concepts such as: Nature and culture and a non-hierarchical rationality; Active listening and empathy; Complementary relationships among biodiversity and sociodiversity; Recognition of broad and diverse sacred values; Importance of focusing on improving equitable and inclusive governance and management; etc.—elements that shall be considered or revised in the equity, inclusion, and effectiveness directions.
- The collaborative conservation shall also promote and defend the rights of Indigenous peoples and traditional communities. Their cosmovisions, together with their elements of territoriality, culture, and way of expressing, shall be accepted and incorporated. Efforts shall be developed to implement and/or improve the management of traditional territories, particularly when overlapping official protected areas (unidades de conservação).
- An important challenge of collaborative conservation—to move forward in methodological and ethical terms—is to reconcile different worldviews and different kinds of knowledge, including technical-scientific, empirical, and traditional knowledge.
- The collaborative conservation approach shall also support more inclusive urban policies. Local urban communities also are important social groups that need attention in terms of inclusive, equitable, and effective PCA governance and management, particularly for those not benefiting from ecosystem services and PCA opportunities, including for their health and well-being, the more economically vulnerable, and the ones facing the consequences of the climate emergency.
- Another challenge for collaborative conservation is to continue attempts to strengthen socio-environmental pacts and alliances—a priority goal for protected and conserved areas—going beyond the usual division among environmental, social, natural, and cultural foci , (but rather considering that their causes and reasons are intertwined). Dialogues and alliances with civil society and traditional peoples and communities also need to be a fundamental element of the new PCA governance and paradigm.
- Nevertheless, most PCA management institutions tend to stick to classical approaches. Therefore, the participatory identification of the main needs for promoting the updating of staff capacity building is recommended for them. For that, it is very important that those institutions open up to society’s participation, accepting social dynamics and dialoguing with social actors.
- Cases of partnerships and collaborations related to PCAs, particularly with local conservation and benefit sharing, must be continuously searched, studied, and publicized.
- And, there are already experiences and staff considering and using elements of collaborative conservation in their daily work, which should be better recognized.

- If the responsibility for implementing the PCA collaborative conservation is shared among society, governments, and academia, this work (reported in the article and supplementary materials) is already a good example, considering its proposed origin, the dialogues promoted, and the workshop (extension course) attendance and dynamics. Therefore, these efforts need to be replicated and amplified.
- There are questions regarding whether academia is acting in proactive, participatory, and collaborative ways towards more equitable, inclusive, and effective protected and conserved areas. The role of researchers and related institutions is to produce knowledge and promote critical reflection. However, they need to overcome the abyss between academia and society (due to the specificities of language, concepts, etc.). In that sense, there is a need for better methodological reflections as well as to build tools and mechanisms that promote better integration among academia, civil society, traditional peoples and communities, and governments.
- Adequate communication is very important to mediate relationships (including in the connection between the appropriated science and society). In this context, this movement of the collaborative conservation approach to PCAs presented herein has already been breaking barriers. However, there is a permanent allegation that the communication is relevant, but, facing the staff and budget gaps, it is almost never in fact a priority. The communication flaws in public management contribute to the fact that policy successes are not well known and that existing problems are not solved. Nowadays, due to the overload of information and communication means, this condition is not minimized but it is aggravated, without adequate strategic communication whilst the disinformation takes over and promotes further societal division.
- Due to the complexity of the subjects along the whole extension course, the final workshop allowed a good opportunity for further dialogues (besides the spaces offered in each workshop) to the attendants to express their considerations, criticisms, and compliments, and promoted the opportunity for further dialogues. The extension course was an opportunity to share knowledge and some level of access by society to academia. This initiative, even in dark times, demonstrated that Brazilian society remains active, with collective intelligence that needs to be recognized and better used.
- In amplifying and replicating this kind of initiative, regional differences and approaches should be considered, youth could be better incorporated, and transboundary dialogues (for instance, considering Latin America and the pan-Amazon) could be promoted. A better representation of the diversity of social groups needs to be searched (further considering the traditional peoples and communities, as well as urban and other local communities and social groups which are not usually recognized). However, the concrete cases of local experiences presented and the dialogues with a diversity of stakeholders and rights-holders were very important elements of this work. Language diversity and the beauty of cases can raise the interest in participating and engaging in the changes needed.
- It would also be interesting and important to implement cases and produce examples of dialogues, conflict management, agreements, and alliances, particularly as radiating poles for the PCA collaborative conservation new governance and management paradigm.

3.3. Conclusion

The article referred to herein considers the results of the GECCAP and further analyzes the potential for collaborative conservation to contribute to the inclusive, equitable, and effective systems of protected and conserved areas, updating understandings, conceptions and practices related to PCAs. In the article's conclusion, the proposed concept of collaborative conservation is presented, summarizing the discussions related to the (sub)themes considered. But, it also articulates the need to combine the proposed definition of this concept with a revised and deeper notion of protected areas and PCA systems. As a complement to the text and figures in the article, here, in these supplementary materials, Figure 1.SM articulates the relations among a renewed approach to the concept of protected areas (summarizing the results and discussions above), the

need for the PCA system approach, and the elements of an evolving concept of collaborative conservation for PCA systems, as presented below, considering the comprehension and perceptions by social groups through the potential benefits of PCAs and nature conservation.

Policies must consider sustainable development options in light of the maintenance of ecosystem services and cultural values. This should include the direct needs and demands of local social groups, in terms of the sustainable use of natural resources. Considering the broader picture, this could lead to a better understanding of contexts and processes, such as fishing villages caring for the mangroves; Amazon nut gatherers resisting the pressures of deforestation; traditional wetland communities making claims for the maintenance of river flows; sustainable community-based tourism offering an economic income; the appreciation of culture and nature conservation to the locals, while also making it possible for visitors to reconnect with nature and cultural and social values; facing the consequences of climate change, especially considering the most vulnerable social groups; among other elements. All the aspects are even more important when considering that Brazil potentially has several thousand PCA subsystems, at three levels of government, in addition to the TTs and other potential CAs.

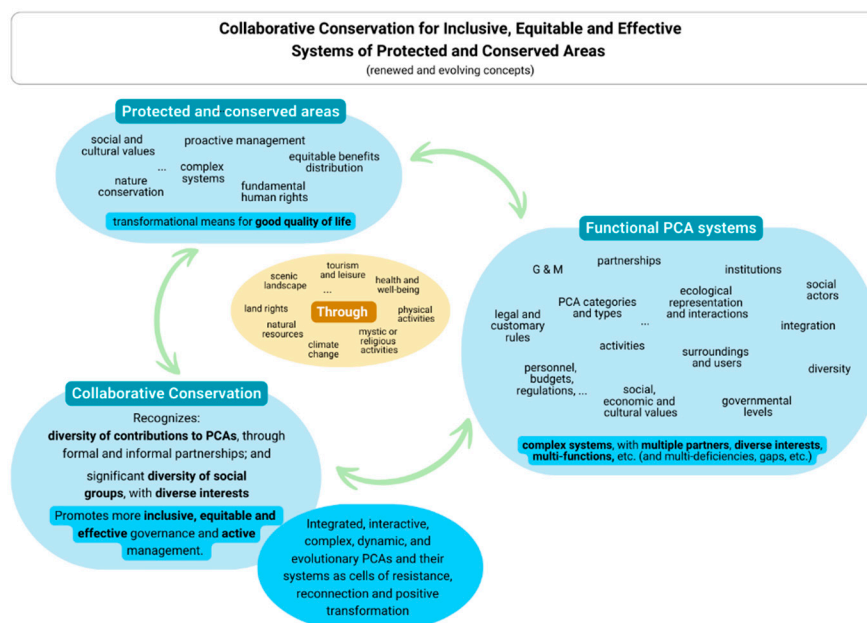


Figure S1.SM. Collaborative conservation—evolving concept.

End notes

¹ Brasil. Lei nº 9.985, de 18 de julho de 2000, que regulamenta o art. 225, § 1o, incisos I, II, III, e VII da Constituição Federal, institui o Sistema Nacional de Unidades de Conservação da Natureza e dá outras providências. Brasil, Presidência da República: Brasília, Brazil. Available online: https://www.planalto.gov.br/ccivil_03/leis/19985.htm (last accessed 06 March 2023).

² Convention Relative to the Preservation of Fauna and Flora in their Natural State (Adopted at London on 8 November 1933). Available online: <http://www2.ecolex.org/server2neu.php/libcat/docs/TRE/Full/En/TRE-000069.txt> (last accessed on 25 February 2023).

³ “Unidades de conservação”, or literally (but technically wrong) “conservation units” is the terminology used in Brazilian law and is correspondent to protected areas as used internationally and defined by IUCN and CBD, also correspondent to most IUCN PA management categories (Lei/Law 9985/2000, Brasil/Brazil; [9,16]). See other details in the article’s main text.

⁴ Important problems associated with those two groups of categories; it must be considered that the groups define the main difference among the categories, as well as that there are only minor differences among the

categories within each group. Both are essentially not true, except for one characteristic, bringing misleading conclusions. Those two assumptions are mostly based on allowing the direct sustainable use of natural resources or not (reproducing the outdated debate among “preservationism” and “socio-environmentalism”). The main problem is not to consider other important elements that define the Brazilian PA categories, such as conservation objectives, governance types, land tenure, governance definitions, besides the levels of restrictions to land occupation and natural resource use. For instance, although visitation is possible in all management categories (considering the focus on research in ecological stations and environmental education in biological reserves), the management of tourism in strict preservation areas in PAs (UCs de proteção integral—UCs PI) is completely different to situations where the land ownership is governmental (as supposedly in the cases of national, state, and municipal parks, ecological stations, and biological reserves) or potentially private (as in natural monuments and wildlife refuges). Also, even if belonging the same group, conservation objectives differ, such as tourism in parks and research in ecological stations, or land-use organization in environmental protection areas and sustainable use of natural resources in sustainable development reserves. Another example is the strong differences of activities allowed in sustainable use reserves (UCs de uso sustentável—UCs US) in the cases of national, state, and municipal forests when compared to environmental protection areas. Furthermore, the natural heritage private reserve is the only category created under initiative of the landowner, regardless of the group. And, extractive reserves depend on demand from traditional extractive communities (usually with territorial rights but not legal ownership) and define governance powers for such a PA category, different from all the others. It needs also to be considered that some categories demand governmental land ownership, while others allow private (*lato sensu*) ownership, regardless of the group—and so on. Therefore, there is many more differences among the categories, considering their Brazilian definition elements, than the supposed differences between the groups (Lei/Law 9985/2000, Brasil/Brazil; [9,31i,86] + b.f.i.).

⁵ Number of states and municipalities, among other data, according to the information of the Brazilian Geography and Statistics Institute (Instituto Brasileiro de Geografia e Estatística—IBGE).

⁶ The correspondence presented is based on the Brazilian official PA registry [68], although Maretti [31i] would advise making some adjustments, such as correlating the wildlife refuge (*refúgio de vida silvestre*) to IUCN category IV and the natural heritage private reserve (*área particular do patrimônio natural*) to the IUCN category II, considering the objectives, although smaller in size.

It is also important to note that, in several cases (not all), the environmental protection areas (APAs) have urban areas, possible mining, etc., clearly not following the IUCN recommendation on industrial level activities in protected areas [141]. Also, in several cases (not all), the forests, mostly at the national level (FLONAs), make commercial forest management concessions to the private sector, provably not following the mentioned recommendation.

Some other sources have a similar understanding of Brazilian and international categories:

- Maretti, C. C. *Áreas protegidas e conservação da natureza – estado (razões, conceitos...) e tendências (dificuldades, avanços...) na criação e na gestão*. Lecture / mini-course to the “III Congresso Paulista de Ciências Biológicas”, 2017, São José do Rio Preto, Brazil, 27–31 May 2017; Institute of Biosciences, Languages and Exact Sciences (IBILCE), São Paulo State University (UNESP). (Presentation, 83 slides.)
- Maretti, C. C. *Sistemas de áreas protegidas e conservação colaborativa*. Lecture at the Leisure, Tourism and Protected Areas Post-Graduation Course, School of Arts, Sciences and Humanities (EACH), University of São Paulo (USP), 20 Sept. 2021b. (Invitation by prof. Sidnei Raimundo.) (Presentation, 72 slides.)

Among others.

(Publications, reports, lectures, classes, presentations, etc. by Cláudio C. Maretti are available at the ResearchGate account: <https://www.researchgate.net/profile/Claudio-Maretti/research>.)

⁷ Data sources:

- Except when informed otherwise, all data are from the National PA Registry (Cadastro Nacional de Unidades de Conservação—CNUC), as available on 09-28 March 2023 [68], considering that (2) total numbers can be different due to the possibility of some PAs being in both kinds of environment (continental and marine; counted more than once);
- [69]: data according to the National Association of Private Reserves (Confederação Nacional de Reservas Particulares do Patrimônio Natural—CNRPPN), as available on 09-28 March 2023;
- [70]: data from Pinto et al. (2017), considering (1) 20 coastal marine PAs, with 1,323.5489 km², within Atlantic Forest domain; and a mistake of 0.2779 in the original data;
- [71]: data from Pinto et al. (2019).

⁸ Brasil. Decreto nº 5.758, de 13 de abril de 2006, que institui o Plano Estratégico Nacional de Áreas Protegidas (PNAP), seus princípios, diretrizes, objetivos e estratégias, e dá outras providências. Brasil, Presidência da

República: Brasília, Brazil. Available online: https://www.planalto.gov.br/ccivil_03/_Ato2004-2006/2006/Decreto/D5758.htm (last accessed 06 March 2023).

⁹ Brasil. Resolução CONABIO nº 06, de 3 de setembro de 2013, que dispõe sobre as Metas Nacionais de Biodiversidade 2011-2020. Brasil, Ministério do Meio Ambiente (MMA), Comissão Nacional da Biodiversidade (CONABIO): Brasília, Brazil 2013. 7 p. Available online: https://bibliotecadigital.economia.gov.br/bitstream/123456789/371/1/Resolu%c3%a7%c3%a3o_06_03set2013.pdf (last accessed on 04 March 2023).

“Target 11: By 2020, at least 17 per cent of terrestrial and inland water areas, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.” (CBD, 2010, p. 9 [11].)

¹⁰ Brasil. Decreto nº 6.040, de 07 de fevereiro de 2007, que institui a Política Nacional de Desenvolvimento Sustentável dos Povos e Comunidades Tradicionais. Brasil, Presidência da República: Brasília, Brazil. Available online: http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2007/decreto/d6040.htm (last accessed 05 March 2023).

Brasil. Decreto nº 9.334, de 05 de abril de 2018, que institui o Plano Nacional de Fortalecimento das Comunidades Extrativistas e Ribeirinhas - Planafe. Brasil, Presidência da República: Brasília, Brazil. Available online: http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2018/decreto/D9334.htm (last accessed 05 March 2023).

¹¹ Book forthcoming — b.f.

¹² Also:

- Brasil. MPF busca convergência entre garantia de direitos das populações tradicionais e unidades de conservação; Seminário reuniu membros e servidores que atuam nas áreas de meio ambiente e populações tradicionais. (26 Oct. 2015.) Brasil, Ministério Público Federal (MPF), Procuradoria Geral da República (PGR): Brasília, Brazil. Available online: <http://www.mpf.mp.br/pgr/noticias-pgr/mpf-busca-convergencia-entre-garantia-de-diretos-das-populacoes-tradicionais-e-unidades-de-conservacao> (last accessed 25 September 2019).
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¹³ Information available online: <https://www.iccaregistry.org/>.

¹⁴ Information available online: <https://www.protectedplanet.net/country/BRA>.

¹⁵ Initially called community conserved areas (CCAs). See specific column in the Table 2.3.SM.

¹⁶ Information available online: <https://redecerrado.org.br/territorio-kalunga-e-reconhecido-pelo-programa-ambiental-da-onu-como-primeiro-ticca-do-brasil/> and <https://www.iccaconsortium.org/pt/2021/04/26/quilombo-kalunga-primeira-comunidade-brasil-registrada-ticca/>.

¹⁷ Available online: http://www.planalto.gov.br/ccivil_03/constituicao/constituicao.htm.

¹⁸ Including:

- Centro de Memória do Povo Puri. O povo Puri. Available online: <https://povopuri.wixsite.com/memoriapuri/a-etnia-indigena-puri> (last accessed on 27 February 2023).
- Adolfo, E. A associação indígena Andaiá luta pelo reconhecimento do povo indígena “Catú-awá-arachas”. Instituto Socioambiental (ISA): São Paulo, Brazil. Available online: <https://acervo.socioambiental.org/acervo/noticias/associacao-indigena-andaia-luta-pelo-reconhecimento-do-povo-indigena-catu-awa> (last accessed on 27 February 2023).

¹⁹ Including:

- Xakriabá, F. Bloqueio do acesso ao território de origem às margens do rio São Francisco. Um Outro Céu Project, University of Sussex, Federal University of Bahia (UFBA) and others: Brighton, UK; Salvador, Brazil and others. Available online: <https://umoutroceu.ufba.br/conflitos/bloqueio-do-acesso-ao-territorio-de-origem-as-margens-do-rio-sao-francisco/> (last accessed on 27 February 2023).

²⁰ Including:

- Barbiéri, L.F. Massacre de Haximu: relembre condenação de garimpeiros por genocídio de indígenas Yanomami. Globo, G1: Brasília, Brazil; 04. Feb. 2023. Available online:

<https://g1.globo.com/politica/noticia/2023/02/04/massacre-de-haximu-relembre-condenacao-de-garimpeiros-por-genocidio-de-indigenas-yanomami.ghtml> (last accessed on 27 February 2023).

²¹ Including:

- Sanson, C. Indígenas retomam fazenda onde Kaiowá de 15 anos foi assassinado. Instituto Humanitas Unisinos: São Leopoldo, Brazil; 19 Feb. 2013. Available online: <https://www.ihu.unisinos.br/noticias/517742-indigenas-retomam-fazenda-onde-kaiowa-de-15-anos-foi-assassinado> (last accessed on 27 February 2023).

²² Including:

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²³ Including:

- Brasil. Decreto nº 9.759, de 11 de abril de 2019, que extingue e estabelece diretrizes, regras e limitações para colegiados da administração pública federal. Brasil, Presidência da República: Brasília, Brazil. Available online: https://www.planalto.gov.br/ccivil_03/_ato2019-2022/2019/decreto/d9759.htm (last accessed 07 March 2023). [Decree revoked by: Brasil. Decreto nº 11.371, de 01 de janeiro de 2023, que revoga o Decreto nº 9.759, de 11 de abril de 2019, que extingue e estabelece diretrizes, regras e limitações para colegiados da administração pública federal. Brasil, Presidência da República: Brasília, Brazil. Available online: https://www.planalto.gov.br/ccivil_03/_Ato2023-2026/2023/Decreto/D11371.htm#art1 (last accessed 07 March 2023).]

²⁴ Also: Pinto (2022, op. cit.)

²⁵ “Target 3: Ensure and enable that by 2030 at least 30 per cent of terrestrial and inland water areas, and of marine and coastal areas, especially areas of particular importance for biodiversity and ecosystem functions and services, are effectively conserved and managed through ecologically representative, well-connected and equitably governed systems of protected areas and other effective area-based conservation measures, recognizing indigenous and traditional territories, where applicable, and integrated into wider landscapes, seascapes and the ocean, while ensuring that any sustainable use, where appropriate in such areas, is fully consistent with conservation outcomes, recognizing and respecting the rights of indigenous peoples and local communities, including over their traditional territories.” (CBD, 2022, p. 9 [10].)

²⁶ Also: Pinto (2022, op. cit.)

²⁷ “London Convention”, 1933, op. cit.

²⁸ Convention on Nature Protected and Wild Life Preservation in the Western Hemisphere (adopted at Washington on 12 October 1940). Available online: <http://www2.ecolex.org/server2neu.php/libcat/docs/TRE/Full/En/TRE-000085.txt> (last accessed on 25 February 2023).

²⁹ Including:

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³⁰ Including:

- IUCN. IUCN: Gland, Switzerland. (Institutional portal.) Available online: <https://www.iucn.org/> (last accessed on 25 February. 2023).

³¹ Information available online: <https://www.ipbes.net/history-establishment>.

³² Information available online: <https://unfccc.int/process-and-meetings/the-paris-agreement>.

³³ Information available online: <https://www.un.org/millenniumgoals/bkgd.shtml>.

³⁴ Information available online: <https://www.undp.org/sustainable-development-goals>.

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³⁶ Some other sources to this approach:

- Maretti, C. C. *Unidades de conservação e territórios tradicionais no Brasil no contexto da conservação colaborativa (novíssimo paradigma de áreas protegidas?)*. Lecture at the Environment Management Undergraduate Course, School of Arts, Sciences and Humanities (EACH), University of São Paulo (USP), 12 May 2020a. (Invitation by prof. Cristina Adams.)
- Maretti, C. C. *Conservação colaborativa em áreas protegidas; projeto para Pós-Doutorado no Departamento de Geografia, FFLCH USP*. Geography Dept., University of São Paulo (USP), 2020b jun.; 117 p. (Supervision by prof. dr. Sueli Angelo Furlan.) (Post-doctorate program proposal, not publish.)
- Maretti, C. C. *Áreas protegidas: definições, evolução e paradigmas e participação*. (Lecture / magna class at the Planning and Management of Natural Protected Areas post-graduation course, in the South-East MG Federal Institute (Instituto Federal Sudeste de MG), Barbacena, MG, Brazil, 23 Oct. 2020c. (Invitation by prof. Geraldo Majela M. Savio.)
- Maretti (2021b, op. cit.)

Among others.

(Publications, reports, lectures, classes, presentations, etc. by Cláudio C. Maretti are available at ResearchGate account: <https://www.researchgate.net/profile/Claudio-Maretti/research>.)

³⁷ Jeanrenaud (2002, op. cit.)

³⁸ "Climate change" added by Souza (2013).

³⁹ Modified, based on Jeanrenaud (2002, p. 21, Table 1. Summary of People–Nature Problematics in International Conservation, 1960–1999: all lines and columns "theme" ("variable" in the original); "1960+", "1980+" and "1990+" and the additions by Souza (2013, p. 206, Quadro 13: Resumo da problemática "pessoas-natureza" na conservação internacional (1960-2003) (adaptado de Jeanrenaud, 2002: column "2000+"; translation by this document), and the last two columns ("approximately 2010-20" and "trends and expectations/proposals") with attention to PCAs, considering international knowledge, but focusing more on Brazil, modified from Maretti (2020b, op. cit.), GIZ (2022) [30] and ICLEI (2022; technical memory) [38], with inputs presented herein.

⁴⁰ * Considering "Nature, People and God in Different Worldviews", Jeanrenaud (2002, p. 7, Box 1) considers to be "theocentric" the deities that are the center of ideas and, therefore, humanity and nature are defined through religion. ("The view that nature and humanity are contained in God ... spiritual consciousness that mediates culture and nature... value nature as an expression of God, and see problems in terms of our spiritual transgressions, and solutions in terms of a spiritual challenge...") She calls it "cosmocentric/ecocentric" when nature is the center of thoughts and, from it, humanity and divinity ("God") are defined ("The view that humanity and God are contained in nature... assume the sovereignty of nature, asserting its objective and ontological reality. Humanity is seen as a part of the natural

ecosystem...”) She calls it anthropocentrism when culture (lato sensu) defines understandings of nature and deities (“The view that nature and God are contained in humanity... consider to be ‘nature’ or ‘natural’ varies across cultures.... ascribe meanings to nature and interact with it on the basis of those meanings...”)

⁴¹ This is not a completely balanced approach. (For instance, even in relation to the WPC in Durban, 2003, the major milestone in overcoming the NP paradigm, there were yet evaluations that regretted the supposedly excessive consideration of local communities.) The themes were chosen as some of the indicators of the evolution of roles of or demands for PCAs (not through a complete analysis of all the possible topics). Focusing on recent evolution and diversification, starting in 1981, with the resolutions of IUCN General Assemblies or World Conservation Congresses, we mostly considered the respective searching platform (below), based on what was recorded as keywords. The keywords considered were: “protected areas” plus those related to themes, for instance, “human wellbeing”, “climate change”, “indigenous peoples/local communities”, etc. In some cases, a quick check of the content was necessary, mostly focusing on the operative part of the motions. “Sustainable use” alone (without “indigenous peoples/local communities”) was not considered. “Human well-being/development” was too general and was checked against the title and, if needed, some content consideration. When possible, motions that were not global or general (i.e., related to specific areas, regions, or countries) were not considered here. Also were not considered cases in which the focus was excessively thematic-oriented (e.g., consequences from mining to PAs and IPLCs). See also information about sources in the table.

IUCN resolutions include the following sources:

- IUCN. IUCN Resolutions and Recommendations Search by criteria. (Web platform.) IUCN: Gland, Switzerland, s.d. (a). Available online: <<https://portals.iucn.org/library/resrec/search>> (last access 18 August 2023).
- IUCN. Resolutions and recommendations: World Conservation Congress, 3rd, Bangkok, Thailand, 17-25 Nov. 2004. IUCN (International Union for Conservation of Nature): Gland, Switzerland; 148 p.
- IUCN. Resolutions and recommendations: World Conservation Congress, 4th, Barcelona, Spain, 05-14 Oct. 2008. IUCN (International Union for Conservation of Nature): Gland, Switzerland; 168 p.
- IUCN. Resolutions and recommendations: World Conservation Congress, 5th, Jeju, Korea, 06-15 Sept. 2012. IUCN (International Union for Conservation of Nature): Gland, Switzerland; 261 p.
- IUCN. Resolutions and recommendations: World Conservation Congress, 6th, Honolulu, Hawai’i, United States of America, 06-10 Sept. 2016. IUCN (International Union for Conservation of Nature): Gland, Switzerland; 300 p.
- IUCN. Resolutions and recommendations: World Conservation Congress, [7th], Marseille, France, 03-10 Sept. 2021. IUCN (International Union for Conservation of Nature): Gland, Switzerland; 232 p.

Related to the IUCN WCPA World PAs Conferences/Congresses, starting in 1962, Seattle, USA, the mentions were mostly based on the literature available [18,19], complemented by direct checking more recent PA congresses, including global and LAC regional ones. See also information about sources in the table. Publications related to WCPA IUCN were also considered, e.g., Best Practice Series, Parks (journal), etc., including through:

- *Parks*: The International Journal of Protected Areas and Conservation (IUCN World Commission on Protected Areas); all numbers available from: <https://parksjournal.com/> (last accessed 14 September 2023).
- WCPA Publications, most available from: <https://www.iucn.org/our-union/commissions/world-commission-protected-areas/our-work/wcpa-publications> (last accessed 14 September 2023).

Besides the information about sources identified in this Table 2.3.SM, see also the complementary sources related to the Table 2.1.SM.

⁴² In Brazil, indigenous peoples and traditional communities (IPTCs) are considered.

⁴³ Examples: Declaración: “... se requiere adoptar, en la medida de lo posible, categorías de manejo aceptadas internacionalmente, tomando en cuenta la necesidad de hacer compatibles la presencia humana y la protección de la diversidad biológica, haciendo especial referencia a los derechos e intereses de los pueblos indígenas.” (p. 94) Guía para la Acción: “18. Garantizar los derechos indígenas y los objetivos de conservación, por medio del establecimiento de acuerdos que permitan la consolidación de los territorios indígenas y de las áreas protegidas como escenarios de paz.” (p. 98) (In Guerrero, Sguerra, Rey, 2007.)

⁴⁴ Example: Declaración: “Las dimensiones espirituales y estéticas, el potencial de la naturaleza para estimular la fuerza creadora e innovadora de nuestros pueblos, así como su contribución al desarrollo del individuo, deben constituirse en valores más apreciados en el futuro.” (In Guerrero, Sguerra, Rey, 2007, p. 92.)

⁴⁵ Example: Declaración: “... Se reconoce, además, la creciente capacidad administrativa de los gobiernos regionales y locales, de las comunidades, de las ONG y del sector privado, que permite a los gobiernos nacionales disponer de opciones para compartir ciertas responsabilidades en la gerencia de las áreas

protegidas, después de una cuidadosa planificación y una adecuada definición de ámbitos, roles y competencias.” (In Guerrero, Sguerra, Rey, 2007, p. 94.)

⁴⁶ Example: “1. El papel que desempeñan los pueblos indígenas y la población local en la conservación de las áreas protegidas: Aunque la mayoría de los consultados reconocieron los grandes avances que se han dado frente a la vinculación de pueblos indígenas y población local en la gestión de las áreas protegidas, un buen número de ellos, de varios países suramericanos, señaló que existe poca objetividad frente a la consideración del buen manejo indígena y de comunidades locales que habitan las áreas protegidas, evidenciado, en numerosos casos, en manejos poco efectivos para la conservación. Se plantea una delicada polémica pues algunos consideran que el reconocimiento de derechos de uso y propiedad “tradicionales” ha sido desproporcionado y va en detrimento de la conservación efectiva de la biodiversidad y de los recursos ecológicos naturales.” (Guerrero, Sguerra, Rey, 2007, p. 21.)

⁴⁷ Example: “Lecciones Aprendidas”: “Una de las lecciones fundamentales planteadas en la consulta aconseja considerar a las áreas protegidas desde una visión holística que ubique en pie de igualdad a los componentes naturales, sociales, culturales y económicos.” (p. 55) “Es necesario considerar a las áreas protegidas desde una visión que integre los componentes naturales, sociales, culturales y económicos. El enfoque ecosistémico propone un marco de actuación claro e integrador para este propósito.” (p. 89) (Guerrero, Sguerra, Rey, 2007.)

⁴⁸ Example: “Se ha logrado una mayor vinculación de actores gubernamentales y no gubernamentales, del orden nacional e internacional, de carácter público y privado, en la gestión de las áreas protegidas, para lo cual se han implementado diversos mecanismos y tipos de alianzas. Se destacan los siguientes: ... Construcción de Sistemas Subnacionales de Áreas Protegidas. A través de procesos en los que se generan alianzas con énfasis en lo público, a escalas nacional y regional, y con mayor participación de la sociedad civil a nivel local.” (p. 28-29) (Oportunidades) “El interés de los pueblos indígenas en proteger sus territorios y el ascenso político del movimiento indígena ofrecen oportunidades para la conservación de ecosistemas y culturas muy valiosas, bajo esquemas que concilien la cosmovisión indígena con los objetivos de las áreas protegidas.” (p. 41) (Guerrero, Sguerra, Rey, 2007.)

⁴⁹ “17. Solicitar a la UICN que considere la integración del concepto de Territorios Indígenas de Conservación como un modelo legítimo de gobernanza de áreas protegidas establecidas en territorios ancestrales de pueblos indígenas, independientemente de la categoría de manejo, reconociendo en dicho modelo la integración de cultura y naturaleza, el papel del derecho consuetudinario, la institucionalidad tradicional y el ejercicio de la autoridad indígena en tales territorios” (p. 11; Inchausti, s/d. [2008], op. cit.).

⁵⁰ “We acknowledge the increasing role of Indigenous Peoples’, community, and privately-conserved areas and territories in reaching biodiversity conservation and societal goals, and the opportunities presented by new communication and other technologies to better understand and engage new constituencies, including young people in the world’s rapidly expanding cities. ... Promise to Invigorate... ... We will enhance diversity, quality and vitality in governance and management, including the appropriate recognition and support of areas conserved by Indigenous Peoples, local communities, and private entities. Promise to Inspire... ... Further, by working in partnership with and recognizing the long traditions and knowledge, collective rights and responsibilities of Indigenous Peoples and local communities to land, water, natural resource and culture, we will seek to redress and remedy past and continuing injustices in accord with international agreements.” (IUCN World Parks Congress, Sydney 2014, web pages).

⁵¹ “Promise to Inspire... all people, across generations, geography and cultures to experience the wonder of nature through protected areas, to engage their hearts and minds and engender a life-long association for physical, psychological, ecological, and spiritual well-being.” (IUCN World Parks Congress, Sydney 2014, web pages).

⁵² “Sítios naturais sagrados do Brasil: inspirações para o reencantamento das áreas protegidas”.

⁵³ Example: “Tema 4: Valores Culturales, Sociales y Espirituales de las Áreas Protegidas: 12) Implementar normativas específicas para la conservación de los valores culturales, sociales y espirituales de las áreas protegidas con la participación de pueblos originarios y otros actores relacionados. 13) Fortalecer e implementar espacios de valor especial, categorías de manejo o zonificación de los sistemas de áreas protegidas nacionales, cuya importancia y objetivos sean identificados a partir de aspectos culturales, sociales y espirituales” (p. 32). In: “Capítulo 3 ¿Hubo avances en la gestión de áreas protegidas entre los congresos de Bariloche y Lima? La información se agrupa en 13 temas que siguen la lógica de la encuesta preparada. Los diez primeros se asocian a las directrices del Congreso de Bariloche (presentadas en cursiva debajo de cada tema). ... Para los últimos tres (Gobernanza, Áreas Protegidas y bienestar humano y Gestión a escala de paisaje o visión de conservación de grandes paisajes) no surgieron directrices en el último

congreso, pero fueron agregados a partir de otros eventos de relevancia para la región.” (p. 29; FVSA; APN, 2019, op. cit.).

⁵⁴ Example: “Tema 12: Áreas Protegidas y Bienestar Humano: En el último tiempo, la relación entre los servicios provistos por la naturaleza y la función de las áreas protegidas se hicieron más evidentes. Esta asociación incluye provisión de alimentos, oferta de escenarios para la recreación y el bienestar, recursos para el desarrollo humano y económico, preservación de valores culturales e históricos, entre otros.” (p. 40; FVSA; APN, 2019, op. cit.).

⁵⁵ “Ejes Transversales: B. Áreas protegidas y los cambios climáticos” [61].

⁵⁶ Áreas Estratégicas, Líneas Temáticas y Ejes Transversales: 1. Sociedad y áreas protegidas: conexiones para el bienestar: 1.3. Valores culturales, saberes ancestrales y espirituales en relación a las Áreas Protegidas” [61].

⁵⁷ “Áreas Estratégicas, Líneas Temáticas y Ejes Transversales: 1. Sociedad y áreas protegidas: conexiones para el bienestar: 1.1. Salud humana, ocio, recreación, deportes en relación a las áreas protegidas”; and “Ejes Transversales: A. Bienestar y áreas protegidas y/o relaciones con los Objetivos de Desarrollo Sostenible” [61].

⁵⁸ Example: “Respecto de los Territorios y áreas conservados por Pueblos Indígenas y comunidades locales: Se hace necesaria la creación de mecanismos a nivel regional y nacional que permita monitorear la implementación de los estándares internacionales sobre obligaciones en materia de derechos de Pueblos Indígenas y comunidades locales, conservación y cambio climático, incluyendo resoluciones del Congreso de la Naturaleza y las directrices sobre derechos de los defensores y las defensoras de la naturaleza (UICN, CIDH, ONU), con la participación de los TICCA, y promover la construcción conjunta de marcos normativos y políticas públicas de conservación de la naturaleza basada en derechos, respetando el derecho al consentimiento libre, previo e informado de los pueblos indígenas y las comunidades locales, considerando el financiamiento necesario para el reconocimiento, protección efectiva y apoyo a los TICCA y la garantía de los derechos indígenas” (In: Recomendaciones para la acción, bajo enfoques innovadores., p. 27.) “... del Tercer Congreso de Áreas Protegidas de Latinoamérica y el Caribe, impulsaremos soluciones para el cambio transformador a partir de los siguientes compromisos: ... d. Nosotros representantes de las organizaciones de la sociedad civil y miembros de la Coalizão Pro-UC, nos proponemos a seguir buscando actuar de manera coordinada en la protección de las áreas y territorios que promueven la conservación de la biodiversidad y la garantía de los territorios y derechos de los pueblos indígenas y las comunidades tradicionales, y el bienestar de la población.” (In: Soluciones y compromisos para el bienestar y el desarrollo sostenible, p. 35.) [62]

The Lima Declaration also includes appendixes of indigenous groups: “Comunicado Conjunto de los Pueblos Indígenas de Abya Yala (Las Américas)” by Foro Indígena del Abya Yala (FIAY); Global Alliance of Territorial Communities; Coica (Coordinación de la Organizaciones Indígenas de la Cuenca Amazónica); TICCA (Territorios y Áreas Conservadas por Pueblos indígenas y Comunidades Locales) Latinoamérica et al.; e “Declaración de la RED TICCA Latinoamérica para el III Congreso de Áreas Protegidas de América Latina y el Caribe”, by TICCA Latinoamérica. [62]

⁵⁹ Examples: “Impulsaremos como región, metas ambiciosas e integrales bajo el marco del Convenio sobre Diversidad Biológica y el proceso de revisión de la contribución nacional determinada, y además compromisos relacionados con la Convención Marco de Cambio Climático” (In: “Consideraciones y Perspectiva”, p. 6) “Avanzar en la incorporación de la variable de cambio climático en la gestión de las AP, particularmente en la planificación con enfoque adaptativo y en el diseño e implementación de estrategias de adaptación basadas en ecosistemas.” (In: “Recomendaciones desde la perspectiva histórica: de Bariloche a Lima”, p. 14) “14. En un contexto de vulnerabilidad a cambios climáticos y la evidencia científica demostrada, los grandes biomas de la región deben ser protegidos en suficiente extensión (mayor al 50% en algunos casos), priorizando áreas de corredores y considerando los efectos del cambio climático.” (In: “Recomendaciones temáticas: acción desde la innovación”, p. 17-18.) [62]

⁶⁰ Example: “1. Se debe reconocer que hay significados culturales y espirituales asociados a la naturaleza. Para ello, es preciso integrar esos valores en las estrategias de manejo y gestión de las áreas protegidas, en estrecho diálogo con los grupos sociales relacionados a aquellas, y reconociendo la significancia de situaciones dogmáticas, cosmovisiones y elementos espirituales, como el diálogo interreligioso. 2. Lo anterior es posible mediante la protección de los sitios de valor para y por comunidades originarias, divulgando las directrices y recomendaciones internacionales sobre buenas prácticas para manejo y gestión de sitios naturales sagrados en áreas protegidas. 3. Se requiere fomentar enfoques multiculturales en la gestión de áreas protegidas y construir capacidades sobre esta temática dirigida a los actores responsables de la gestión y manejo de las áreas protegidas, en respeto de los derechos de los pueblos tradicionales e

indígenas, preservando su autenticidad sociocultural y sus valores tradicionales, materiales e inmateriales” (In: Recomendaciones para la acción, bajo enfoques innovadores, p. 15.) [62]

⁶¹ “Respecto al rol de los gobiernos locales: Se considera fundamental promover el diálogo sobre la importancia de las áreas protegidas y conservadas a nivel de los gobiernos locales en foros técnicos de incidencia, realizar discusiones y análisis a nivel regional, promover la gobernanza y la cooperación multinivel para acciones más integradas de la gestión efectiva, fomentar la creación y la gestión efectiva de áreas protegidas y otras medidas de conservación a nivel local incluso a través de ajustes en los marcos normativos e institucionales, e involucrar a los gobiernos locales en la definición e implementación de planes y programas nacionales de sistemas de áreas protegidas.” (p. 27)

The Lima Declaration also includes one appendix of self-declaration from local governments: “Un Llamado al Reconocimiento del Rol de los Gobiernos Locales para la Conservación de la Biodiversidad”. [62]

⁶² “Realizar esfuerzos más efectivos, para poner en valor los beneficios que otorgan las áreas protegidas y el impacto económico y espiritual que estos tienen en el bienestar humano.” (p. 13) “22. Cada vez se reconoce más la urgencia del monitoreo de la diversidad biológica y del bienestar humano como un aspecto crítico para una gestión de las áreas protegidas adaptativa y basada en resultados. En ese sentido, se debe contar con una participación de activa de las comunidades en las acciones de monitoreo, como una oportunidad de aprendizaje compartido que permite avanzar hacia la reducción de desigualdades locales, entre otras, las desigualdades de género, valorar las diversas formas de conocimiento, un mayor reconocimiento a la importancia de la conservación de la biodiversidad, genera oportunidades para la gestión de conflictos y proporciona información apropiada para la toma de decisiones para la gestión. Deben capitalizarse y fomentarse las experiencias y oportunidades para integrar el monitoreo científico (ecológico, social y económico) con el conocimiento tradicional y el uso de nuevas tecnologías para la gestión de áreas protegidas y la gestión de paisajes de conservación.” (In: Recomendaciones para la acción, bajo enfoques innovadores, p. 19-20.) [62]

⁶³ Complementary information about sources (see also mentioned above):

- IUCN. WCPA. Parks; 2003 Durban World Parks Congress 2004, 14, 2; 68. (IUCN (International Union for Conservation of Nature), World Commission on Protected Areas (WCPA): Gland, Switzerland.)
- Samir Ribeiro, A. Diálogos ICMBio: saúde, parques e reservas – banho de floresta. (26 and 30 Nov. 2017, report.) Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio): Brasília, Brazil, 2017; 36 p.

⁶⁴ It also considered complementary or checking information in:

- ICMBio. Instituto Chico Mendes de Conservação da Biodiversidade; and ICMBio em números. (Website and web data platform, s.d.) Available online: <https://www.gov.br/icmbio/>; and <https://www.gov.br/icmbio/pt-br/assuntos/noticias/ultimas-noticias/conheca-o-icmbio-em-numeros-1> (last accessed on 07 September 2023).
- ISA. Unidades de conservação no Brasil; Terras indígenas no Brasil; Povos indígenas no Brasil; and Mapa Socioambiental. (Web information platforms, s.d.) Instituto Socioambiental (ISA): Brasília, DF, Brazil. Available online: <https://uc.socioambiental.org/>; <https://terrasindigenas.org.br/>; <https://pib.socioambiental.org/>; and <https://mapa.socioambiental.org/> (last accessed on 07 September 2023).
- O Eco. Wikiparques. (Web information platform, s.d.) O Eco: Rio de Janeiro, RJ, Brazil. Available online: <https://www.wikiparques.org/> (last accessed on 07 September 2023).

⁶⁵ Information available online: https://www.youtube.com/playlist?list=PLldVwmawP_TO672S5SxjOb3X_bc09h76a.

⁶⁶ Important parts of the information presented about the participants, activities, invitees, etc. are available in Maretti’s post-doctorate annual reports delivered to the Department of Geography of the Faculty of Philosophy, Languages and Human Sciences of the University of São Paulo (Departamento de Geografia da Faculdade de Filosofia, Letras e Ciências Humanas—FFLCH da Universidade de São Paulo—USP), under the supervision of Professor Sueli Angelo Furlan, as well as in the documentation related to the course, workshops, book preparation, and other activities.

⁶⁷ IBGE. Censo Demográfico: prévia da população dos municípios com base nos dados do Censo Demográfico 2022 (dados coletados até 25/12/2022; tabelas). Rio de Janeiro, Brasil: Instituto Brasileiro de Geografia e Estatística (IBGE). Available online: <https://www.ibge.gov.br/estatisticas/sociais/trabalho/22827-censo-demografico-2022.html?=&t=resultados> (last accessed on: 21 January 2023).

⁶⁸ Some new publications which were somewhat related to the GECCAP have recently emerged, such as:

- Maretti, C. C. *Construir pontes entre unidades de conservação e saúde; áreas protegidas e a promoção do bem-estar*. (Lecture.) 7º Fórum Latino-Americano de Qualidade e Segurança na Saúde - Muito Além do ESG, 12-15 Sept. 2022, São Paulo, SP, Brazil, Albert Einstein & Institute for Healthcare Improvement. (With collaboration from the work of Érika Guimarães, Juliana Gatti-Rodrigues and Patrícia F. Elias.)
- Tibúrcio, A. C.; Fukuda, J. C.; Oliveira, M. E.; Maretti, C. C. Comunicação e afeto em prol das áreas protegidas. *RCD (Revista de Comunicação Dialógica)*, UERJ, **2023**, 5, 9; 9 p.; <https://doi.org/10.12957/rcd.2023.74815>.
- Maretti, C. C.; Irving, M. de A.; Metzger, J. P.; Dale, P.; Garcia, E.; Estupiñán, G.; Carvalho, J. C.; Teixeira, I.; Minc, C.; Totto, N. et al. *CoP-15 de Biodiversidade (clima e biodiversidade; avanços nas últimas décadas; e decisões necessárias na CoP-15)*. O Eco: Rio de Janeiro, RJ, Brazil, series of 3 articles in webpages (28, 29 and 30 Nov. 2022a). Available online in: <https://oeco.org.br/analises/da-cop-27-a-cop-15-a-biodiversidade-em-foco/>; <https://oeco.org.br/analises/avancos-na-agenda-de-biodiversidade-nas-ultimas-decadas-e-o-papel-importante-do-brasil/>; and <https://oeco.org.br/analises/vem-ai-a-mais-importante-conferencia-global-de-biodiversidade-da-decada/> (last accessed on 05 December 2022).
- Maretti et al. (2022b, op. cit.)
- Maretti (2023, op. cit.)
- Rede Saúde e Natureza Brasil. *Health and Nature Brazilian Network – Relationship between health and nature: Policies, research, and actions*. (Presentation on 12 Sept. 2023.) In: SHIFT Summit 2023 – Integrating Nature and Preventive Health for Humans and the Environment, GP RED, 10-14 September 2023, Bend, Oregon, United States.

⁶⁹ Information available online: <https://www.instagram.com/conservacaocolaborativa/>.

⁷⁰ For instance: “Conversa sobre Turismo de Base Comunitária”, with Edilaine de Moraes (https://youtu.be/NYq_XiSnODY); and “Diálogos Colaborativos: Sítios Naturais Sagrados e Valores Culturais da Natureza”, with Érika Fernandes-Pinto (<https://www.youtube.com/live/l7LJOGnI9ZA>).

⁷¹ Considering that the article analyzed the GECCAP’s work, which was also strongly based on the participants experiences, in this Supplementary Materials the information about the GECCAP participants is part of the sources considered.

⁷² The publications, lectures, and other technical-scientific literature considered in this (sub)theme included [1,6,9,23,30,31i,61,62,65,66,77,84,86,89,91,93,105]; Samir Ribeiro (2017, p. cit.) + b.f.i, among others. And, the production directly and indirectly related to this work includes [31i,66,105] + b.f.i, among others.

This (sub)theme was basically developed by the larger group leader, Cláudio C. Maretti, considering the dialogues promoted by him. His contributions were based on some 40+ years of experience at the national (Brazil) and international levels (related to Latin America, West Africa, global policies, etc.), mostly on protected areas and related issues (traditional and local communities, spatial planning, sustainable development projects, etc.), including in the Brazilian national and subnational systems of protected areas, as the technician and management authority, long-term IUCN expert in West Africa, helping the establishment of the national system of PAs, the head of WWF’s support for the program Amazon Region Protected Areas (ARPA), the leader of the WWF global Living Amazon Initiative, including the relation to the protected area systems of the nine Amazon countries, and decades of dedication to the IUCN World Commission on Protected Areas, among other roles and activities. Among the previous research, his Ph.D. thesis could also be mentioned.

⁷³ Some other sources used the term “collaborative conservation” or something similar (usually not directly related to protected and conserved areas, from before the movement presented in the main article, complemented herein):

- Conley, A.; Moote, A. *Collaborative conservation in theory and practice: A literature review*. Tucson, Udall Center for Studies in Public Policy, 2001; 34 p.
- Lauber, T. B.; Stedman, R. C.; Decker, D. J.; Knuth, B. A. Linking knowledge to action in collaborative conservation. *Conservation Biology* **2011**, 25, 6, p. 1186-1194; doi: 10.1111/j.1523-1739.2011.01742.x.
- Augusto, E. Diretor do ICMBio propõe ‘conservação colaborativa’. (News in webpage, 27 May 2017.) Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio): Brasília, DF, Brazil. Available online in: <http://www.icmbio.gov.br/portal/ultimas-noticias/20-geral/8937-diretor-do-icmbio-propoe-conservacao-colaborativa> (last accessed 07 June 2020). (Encontro internacional Constituição, Ambiente e Direitos Humanos, Senado Federal, Brasil.)
- Maretti et al. (2018b, op. cit.)

⁷⁴ Also:

- “London Convention” (1933, op. cit.).
- “Washington Convention” (1940, op. cit.).

⁷⁵ Also:

- Maretti et al. (2018b, op. cit.).
- ICMBio; IPÊ (s/d, op. cit.).

⁷⁶ Experience and studies of the (sub)theme leader, for instance, in national and subnational PCA systems in Brazil, Amazonian countries, Guinea-Bissau, among others—including [6,23,61,62,66,84,92-95,86,89,90], among others.

⁷⁷ Also:

- NSC; ISA (2015, op. cit.).

⁷⁸ Including:

- Marinelli (2011, op. cit.).
- Marinelli et al. (2014, op. cit.).
- NSC; ISA (2015, op. cit.).
- Marinelli (2016, op. cit.).

⁷⁹ Also based on:

- Brasil. Decreto nº 4.339, de 22 de agosto de 2002, que institui princípios e diretrizes para a implementação da Política Nacional da Biodiversidade. Brasil, Presidência da República: Brasília, Brazil. Available online: https://www.planalto.gov.br/ccivil_03/decreto/2002/d4339.htm (last accessed on 15 March 2023).

⁸⁰ Including:

- O Eco. ((o)) eco. Available online: <https://oeco.org.br/> (last accessed on 26 March 2021).

⁸¹ Including:

- Fernandes-Pinto; Irving (2015, op. cit.).
- Fernandes-Pinto (2017, op. cit.).
- Fernandes-Pinto; Irving (2018, op. cit.).

⁸² Some complements by Cláudio C. Maretti, particularly regarding the cultural importance of the creation, governance, and management of protected and conserved areas (for instance, [9,23,31i,66,67,91,97-98,105] + b.f.i, among others).

⁸³ A synthesis of this work on Iguaçu National Park, and the historical and cultural values associated, is available online: <https://www.youtube.com/watch?v=CjEP3PNvPSM>.

⁸⁴ Santos (2021, op. cit.)

⁸⁵ Experiences of the authors on these subjects (research, professional, and/or lived experiences), particularly Cláudio C. Maretti, such as in [23,31i,61,62,65,66,92-95,105] + b.f.i, and others.

⁸⁶ Also:

- Campinas et al. Reconecta RMC. Available online: <https://portal.campinas.sp.gov.br/secretaria/verde-meio-ambiente-e-desenvolvimento-sustentavel/pagina/reconecta-rmc> (last accessed on 05 April 2023). Prefeitura de Campinas: Campinas, Brazil.

⁸⁷ Although the Brazilian management category of RPPN is considered officially correspondent to the IUCN international category IV, it could be described as small and private category II.

⁸⁸ Also:

- Campinas et al. (s/d, op. cit.).

⁸⁹ Also:

- Samir Ribeiro (2017, op. cit.).
- Fiocruz (2021, op. cit.).
- e-Natureza (s/d, op. cit.).

⁹⁰ Also:

- Samir Ribeiro (2017, op. cit.).
- CONAF (s/d, op. cit.).
- Fiocruz (2021, op. cit.).
- e-Natureza (s/d, op. cit.).

⁹¹ Also:

- Samir Ribeiro (2017, op. cit.).
- CONAF (s/d, op. cit.).
- Fiocruz (2021, op. cit.).

-
- e-Natureza (s/d, op. cit.).

⁹² Accumulated experience (research, professional, and/or lived experiences) of the members of the larger group coordination (considering, for instance [23,30,31i,xiii,66,89,91], among others.