

## *Chapter 33*



### *Science Panel for the Amazon (SPA)*

#### *Working Group 12*

#### **POWER OF AMAZON PEOPLES**

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#### **CHAPTER 33. CONNECTING AND SHARING DIVERSE KNOWLEDGES TOWARDS SUSTAINABLE PATHWAYS OF THE AMAZON**

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## **Chapter 33**

### **CONNECTING AND SHARING DIVERSE KNOWLEDGES TOWARDS SUSTAINABLE PATHWAYS OF THE AMAZON**

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### **1 KEY MESSAGES**

- 2        • Although indigenous, and local knowledge has always been important for  
3              conservation and sustainable development efforts, there has been lack of appropriate  
4              recognition or internalization of the lessons offered, hindering just knowledge  
5              production and informed decision-making at national and international scales.
- 6        • Many inspiring solutions to the problem of unequal knowledge production, sharing,  
7              and articulation in decision-making exist at a local scale and must be scaled up  
8              while combined with policy recommendations and guidelines stemming from global  
9              experiences.
- 10       • In order to address these inequities in knowledge production, sharing, and informed  
11              decision-making, we recommend interventions at various scales, including:  
12              investment in the infrastructure that makes knowledge dialogues and public  
13              participation possible; the collaborative creation of normative frameworks,  
14              agreements or protocols for open and collaborative knowledge; strengthening and  
15              scaling of intercultural knowledge dialogue platforms; and promoting structural  
16              change and training in the institutions that currently make decisions in order to  
17              make participation transparent and welcome.

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### **1 ABSTRACT**

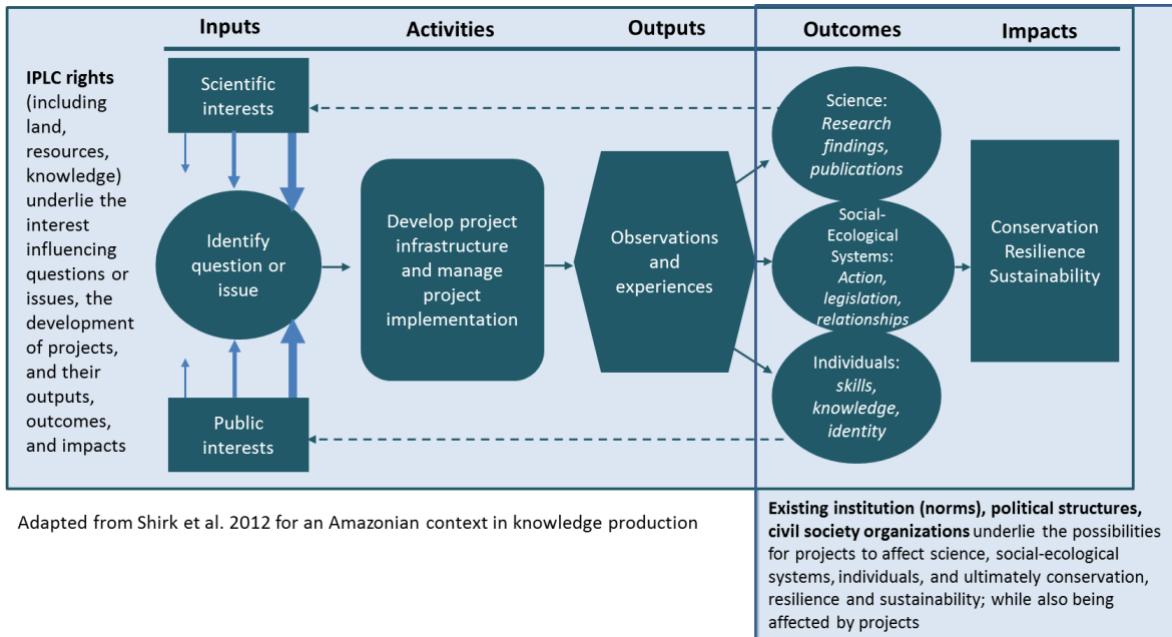
2 Although Indigenous and Local Knowledge (ILK) held by Indigenous peoples and local  
3 communities has been critical in conservation and sustainable development efforts across  
4 the Amazon, there is lack of appropriate recognition and/or internalization of lessons  
5 offered, hindering just and inclusive knowledge production, and participatory and effective  
6 decision-making at local, national, and international scales. Many inspiring solutions to the  
7 problem of inequitable knowledge production, sharing, and inclusion in decision-making  
8 exist at the local scale and scaling up or mainstreaming them will significantly contribute to  
9 Amazon sustainable development. In this chapter, we use an appreciative inquiry approach  
10 to review and synthesize illustrative knowledge co-production initiatives in the Amazon  
11 which articulate mainstream scientific (academic), technical, and Indigenous and local  
12 knowledge in conservation and development initiatives. At the same time, local and global  
13 professional associations and organizations are producing critical policy recommendations  
14 and guidelines that can inform the pathways forward, which we will also consider.

15 In order to address inequities and most effectively articulate different right- and stake-  
16 holders in knowledge production, sharing, and informed decision-making, we recommend  
17 interventions at various scales, including: (1) investment in infrastructure that makes  
18 knowledge dialogues and public participation possible; (2) the collaborative creation of  
19 normative frameworks for agreements or protocols for open and collaborative knowledge;  
20 (3) strengthening and scaling intercultural knowledge dialogue platforms; and (4) structural  
21 change and training in the institutions that currently make decisions in order to enable  
22 peoples' engagement and participation in decision-making, and ensuring transparency and  
23 accountability of the process. Addressing this problem assures that Amazonian sustainable  
24 development can be achieved based on the knowledge and on the needs of the peoples that  
25 live in the Amazon.

26 Keywords: dialogues between knowledge systems, knowledge dialogues, intercultural  
27 platforms, public engagement in science, public participation in scientific research, situated  
28 open access, collaboration networks, epistemic justice.

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### 1 GRAPHICAL ABSTRACT



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### **1. INTRODUCTION**

2 Different worldviews and knowledge systems co-exist in the Amazon, in often contrasting  
3 views of what well-being and sustainable development might mean (Arruda and Arruda  
4 2015; Inoue and Moreira 2016; Jacobi *et al.* 2017). Despite the existence of this enormous  
5 diversity of knowledge systems connected to the Amazon cultural and biological diversity  
6 (Chapter 10), there are still few investigations into how these knowledges work, and, above  
7 all, how they might be better integrated to decision making processes at different scales to  
8 facilitate sustainability (Bradshaw and Borchers 2000; Cash *et al.* 2003; Lahsen and Nobre  
9 2007; Jacobi *et al.* 2017; Lahsen and Nobre, 2007) highlight that this research gap is  
10 particularly important in less developed countries, which contain a great part of the world's  
11 cultural and biological diversity. Strengthening knowledge systems, the dialogue among  
12 different knowledge systems, and public participation in knowledge production and use is  
13 thus of prime importance to improve ecosystems conservation and sustainable  
14 development, but these approaches have not yet become a priority (Congretel and Pinton  
15 2020).

16 Over the past 30 years, different stakeholders, from civil society to government agencies,  
17 have increasingly acknowledged the contribution of Indigenous and Local Knowledge  
18 (ILK) to Amazon conservation and sustainable development. It seems to the authors that  
19 the number of documented contributions of ILK to decision making in Amazon countries  
20 increases year to year. A search in the Web of Science full collection ((TOPIC: knowledge\*  
21 AND dialogue\*) OR (TOPIC: dialogo\* de saberes) AND (TOPIC: amazon\*)) resulted in  
22 over 14,000 peer reviewed articles between 1951 and March 2021, in a clearly increasing  
23 trend with over 1,400 articles published in 2020. See also McElwee *et al.* 2020 for an  
24 extensive global review of ILK in large-scale ecological assessments. However, an  
25 Amazon-specific review on this topic is still necessary. For example, less than 15 papers of  
26 the 214 papers since 2018 under the Web of Science category “Environmental Sciences and  
27 Ecology” in our search actually pertained to the Amazon, despite the addition of the  
28 “Topic” term “amazon\*”.

29 ILK is sophisticated and has capacity to dialogue with academia and government, and to  
30 contribute to Amazon sustainable development. Similarly, and under multiple designations,

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1 there is a vast experience of participatory science and monitoring in Latin America and  
2 specifically in Amazon countries, applied in natural resource and territorial management, in  
3 the defense of rights, and in advancing scientific research (Conrad and Hilchey 2011; Lopes  
4 *et al.* 2021, Piland *et al.* 2020). Also, the importance of increased public engagement in  
5 science, and of collaborative knowledge generation and sharing has received global  
6 recognition and attention, not only for their value for science, but also for their contribution  
7 to democratizing knowledge and societies, and for fostering faster implementation of  
8 effective solutions to socio-environmental, economic and health problems, climate change,  
9 and contributing to the UN Sustainable Development Goals (Shirk *et al.* 2012; McKinley *et*  
10 *al.* 2017; Fritz *et al.* 2019; Benyei *et al.* 2020; Fraisl *et al.* 2020; Cooper *et al.* 2017; Philips  
11 *et al.* 2012).

12 However, except for a few successful experiences, there is much need for improving  
13 knowledge generation and sharing among multiple stakeholders with diverse interests and  
14 levels of power, in order to inform solution pathways towards SD in the Amazon –i.e.,  
15 inform and engage in management and policy decisions at multiple scales. Many times,  
16 knowledge exists in silos, failing to be effectively articulated or connected across the  
17 region, across disciplines, and across stakeholders (Pretty *et al.* 2009; Nobre *et al.* 2016).  
18 On the one hand, knowledge seems to be insufficient, or sufficient but not readily  
19 accessible for decision makers (from community managers to government agencies). On  
20 the other hand, ILK and participatory science and monitoring (under many names) have a  
21 long tradition in producing valuable knowledge, but this knowledge has not been  
22 sufficiently acknowledged, learned from and internalized by others in power -including  
23 academia, government, and civil society organizations (see for instance Cooper *et al.* 2014;  
24 and DuBay *et al.* 2020 in Box 1). Therefore, in part because of this lack of  
25 acknowledgment, and also because of colonial legacies and epistemic violence tied to  
26 institutions, policies and politics (see Chapter 31, David-Chavez and Gavin 2018; Liboiron  
27 2021), valuable knowledge to inform just and sustainable pathways for the Amazon  
28 remains mostly local in reach and poorly integrated in decision-making across Amazonian  
29 countries (Jacobi *et al.* 2017; Doria *et al.* 2018; Athayde *et al.* 2019; Matuk *et al.* 2020;  
30 McElwee *et al.* 2020). Moreover, in some instances, Indigenous and local communities'  
31 knowledge is being lost due to transculturalization, inefficient inter-generational

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1 transmission and other external pressures, while changes in climate phenomena and land  
2 use have exposed many communities to situations that are new or for which their  
3 knowledge may seem not applicable (Benyei *et al.* 2020; see also Chapter 31 for a case  
4 study in which Indigenous peoples informed climate change policies).

5 The Amazon Basin also presents a context of inequalities in terms of communication and  
6 power relations among diverse stakeholders (Newig and Moss 2017) and a history in which  
7 science and research policies and investments in the Amazon have been insufficient and  
8 inadequate (Lahsen and Nobre 2007; Nobre *et al.* 2016; Athayde *et al.* 2019 among others)  
9 to address the challenges of a dynamic system threatened by several drivers and processes  
10 (See Parts I and II for further detail on historical processes and the state of the Amazon;  
11 Chapter 31 for a discussion on the impacts on education; Dorninger *et al.* 2021 for an  
12 analysis of resource inequity). As a result, public engagement in decision and policy  
13 making, and especially engagement of Indigenous and local people in policy making, is still  
14 limited and inequitable in the Amazon. Although important progress has been made in this  
15 regard in various Indigenous territories and community lands (see Chapter 29), barriers of  
16 participation in decision and policy making are common, especially outside these  
17 jurisdictions and at larger scales. The larger the scale, the greater the inequalities in terms  
18 of the possibility of citizens, communities and grassroots organizations areas to effectively  
19 engage in knowledge generation, sharing and use for decision and policy making (for a  
20 review on size and political participation, see McDonnell 2020). At the root of the problem  
21 in scaling up successful approaches for knowledge dialogues and public participation in  
22 knowledge generation and sharing, and in decision making, lie power relations rooted in  
23 formal institutions and regulations that determine whose knowledge is more valid or  
24 valuable, who is the expert and who is not (Agrawal 2002; Arruda and Arruda 2015;  
25 Barthel and Banzhaf 2016; Jacobi *et al.* 2017; Athayde *et al.* 2017; Chambers 1995).

26 To further promote the sharing and articulation of diverse knowledges for SD, McElwee *et*  
27 *al.* 2020's extensive review recommends the following:

28 "The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services  
29 (IPBES) Global Assessment (GA) demonstrated the importance of Indigenous peoples and  
30 local communities (IPLC) to global biodiversity conservation and ecosystem management.

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1            (...) Successfully bringing ILK into assessment processes and policy arenas requires a  
2        deliberate framework and approach from the start that facilitates recognition of different  
3        knowledge systems, identifies questions relevant at various scales, mobilizes funding and  
4        recognizes time required and engages networks of stakeholders with diverse worldviews.”  
5        (p. 1667)

6        In addition, we propose that stakeholders involved in this process ask critical questions,  
7        such as: For whom, by who, and for what purpose should science investments and policies  
8        be promoted in the Amazon? What conditions are needed for a thriving science and  
9        knowledge sharing environment in the Amazon? How can barriers be broken for genuine  
10      knowledge dialogue that recognize, credit and legitimize ILK knowledge and other non-  
11      academic contributions (Tess et al. 2005) for informing decisions and policies? What  
12      conditions are needed for effective and equitable knowledge sharing among multiple  
13      stakeholders and across multiple scales in the Amazon? What can be done to ensure that  
14      knowledge about the Amazon is effectively accessible and disseminated in the region and  
15      among Amazon peoples, rather than remaining accessible only to those who can afford  
16      access to peer-reviewed journals, or publications in English, or university libraries?  
17      Answers to these questions are context-based and product of a negotiation among involved  
18      stakeholders; ideally through a transparent, just and equitable process.

19     Specific challenges in this process involve, for instance, ensuring appropriate credit to  
20     IPLCs and non-academic contributions to knowledge generation and sharing, and avoiding  
21     co-opting, technifying or de-contextualizing ILK (Athayde *et al.* 2017; 2016) in research,  
22     conservation and development initiatives. Also, although there is global consensus that  
23     science is a common good (UNESCO 2017), the principle of ‘situated open access’ needs  
24     to be carefully implemented in contexts such as the Amazon’s, where Indigenous Peoples,  
25     and, in many instances, local communities, are right holders, rather than stakeholders. This  
26     concept applies Donna Haraway’s notion of “situated knowledge” to the practices of open  
27     access—understanding the context, power relations, and structures that relate the humans  
28     and institutions that would produce and/or use knowledge would allow open access to be  
29     implemented in a just way (Haraway 1988; OCSDNet 2015). As with open access, public  
30     participation by other stakeholders (e.g., students, volunteers, activists, urban grassroots  
31     organizations, professional associations) in knowledge generation, sharing, and use still has

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1 a long way to go in this process. The negotiation process to determine what knowledge is  
2 ‘better’ than others needs to take place in more equal terms than what currently is in place.  
3 The [UNESCO-led process](#) to build a global consensus and adoption of a UNESCO  
4 Recommendation on Open Science, scheduled for September 2021, discusses several of  
5 these challenges (UNESCO 2020, Wehn et al. 2020) and the comments received by civil  
6 society organizations (especially by the Global Citizen Science Partnership and the Open  
7 Science Community of Practice) may provide interesting guidance on how to address these  
8 challenges.

9 It is important to emphasize that, as described above, at the community and local scales,  
10 important progress has been made in addressing these problems, and we pose that solution  
11 pathways to generating and sharing knowledge for informing decisions and policies  
12 towards sustainable development in the Amazon should build on these experiences, as well  
13 as on global professional associations best practices and policy recommendations (see  
14 Bowser *et al.* 2020; Carroll *et al.* 2021; Liboiron 2021). There is still much to do to  
15 systematize and disseminate this growing body of knowledge and experience, to harvest  
16 lessons and best practices, and to foster their application and adoption in multiple contexts  
17 and at larger scales. Platforms for knowledge dialogue between academia and government  
18 agencies are also still missing or incipient (McElwee *et al.* 2020). Legal frameworks in  
19 Amazonian countries continue to present weaknesses in terms of recognizing intellectual  
20 property rights tied to Indigenous and local contexts, which increases barriers to  
21 establishing inclusive, ethical and transparent dialogue platforms between them, academia  
22 and government agencies. Similarly, legislation on open science and public engagement in  
23 science is still not adequate in several countries of the region. Third, private and public  
24 investments in science, research and technology in the Amazon are still limited and  
25 insufficient, more so if these are to be for and by Amazon peoples (Nobre *et al.* 2016).

26 The authors use an appreciative inquire approach (Preskill and Catsambas 2006) to build  
27 from success stories, best practices and lessons learned, acknowledging and expanding  
28 them, with an Amazon constituency that fosters a knowledge-based sustainable  
29 development paradigm for the Amazon. This vision was already discussed in SPA WG9.  
30 Also, a recently completed stakeholder engagement process to discuss a vision for the

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1 future of the Amazon (Annex 1) identified the following core elements, which are built on  
2 two foundational pillars: (1) acknowledgement and respect of fundamental human rights  
3 and rights of nature, specifically the right to land, and (2) acknowledgment and  
4 incorporation of ILK in decision making about the future of the Amazon (Preskill and  
5 Catsambas 2006, p.1). Based on these pillars, the other four core elements of a vision for  
6 the Amazon include somewhat sequentially the incorporation of ILK in natural resource  
7 management public policies and planning; strengthening territorial governance of  
8 Indigenous Peoples and local communities; the conservation of the Amazon forests and  
9 ecosystem services, such as climate regulation, rainfall regimes and biodiversity  
10 maintenance; and addressing forest and aquatic ecosystems destruction and degradation,  
11 and other threats to biodiversity. Thus, we propose a path forward that starts by reviewing,  
12 systematizing and disseminating lessons learned and best practices, and then applying these  
13 learnings to create relevant, just and effective platforms, ethical procedures, policies and  
14 legal frameworks, and to creatively address the lack of financial and technical resources for  
15 connecting diverse ways of knowledge generation and sharing in the Amazon, while still  
16 calling on greater investments in these initiatives.

17 Specifically, this chapter takes a first step forward in this process by presenting a set of  
18 illustrative experiences of collaborative research that provide concrete examples of  
19 knowledge dialogues, public engagement in science, and knowledge sharing for decision-  
20 making (Section 2). These experiences showcase how knowledge dialogues and public  
21 engagement in science have worked, and how ILK has contributed to sustainability, and  
22 provide lessons and guidance for solution pathways in both dialogue and decision-making.  
23 These cases are compiled from those that we were able to reach as part of the Science Panel  
24 for the Amazon; they are not meant to be exhaustive, and, in fact, we believe that a first  
25 recommendation should be a comprehensive review of ILK and public (non-academic)  
26 contributions in the Amazon.

27 Building on these experiences we then provide a set of recommendations on pathways to  
28 move forward (Section 3). The recommendations set forth in this chapter focus on the  
29 creation of conditions that promote just and inclusive dialogue between knowledge  
30 systems, including: investment in infrastructure (research and technological); creation of

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1 normative frameworks for data sharing and ownership, participation, and collaboration;  
2 strengthening and expanding intercultural platforms with a long-term commitment;  
3 structural change that allows for transparency and effective public participation in decision-  
4 making at various spatial scales; and intercultural training for decision-makers in various  
5 institutions.

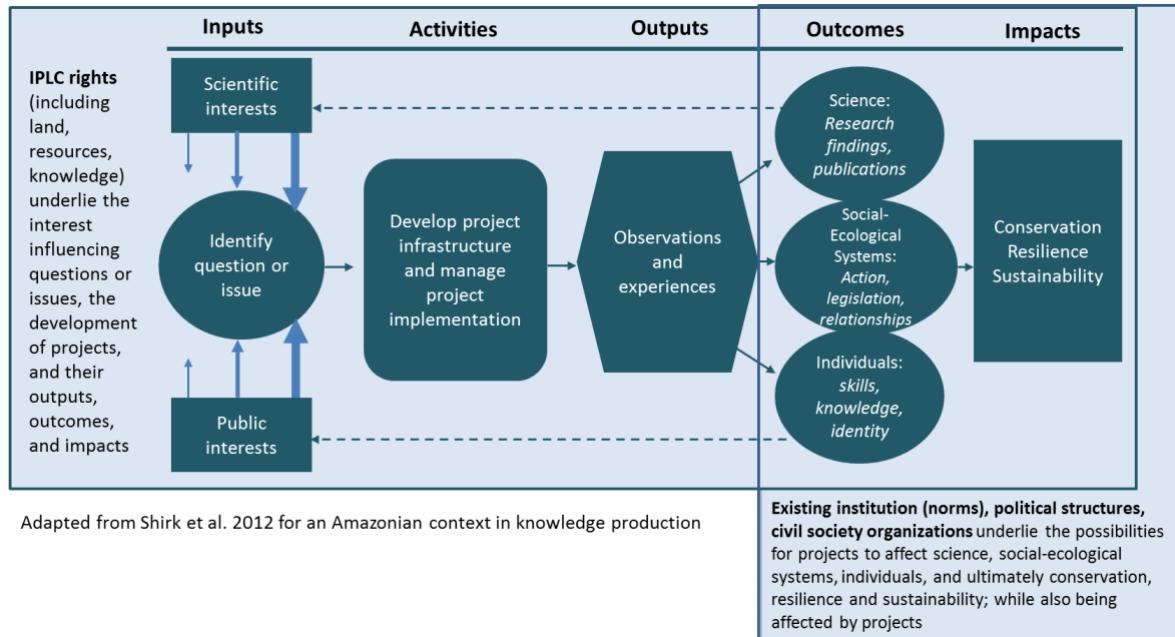
### **6 2. INSPIRING EXPERIENCES AND PATHWAYS**

7 This section maps out success stories and learning from existing experiences in terms of  
8 generating, connecting and sharing knowledge to inform and guide decisions and policies  
9 for sustainable development in the Amazon. We strove to give information about process,  
10 context, and actors, so that the specific of the case are easily identifiable, as well as insights  
11 to consider when creating other experiences.

12 We propose here a framework to reflect on public participation (including Indigenous  
13 peoples and local communities, civil society organizations and individuals) in knowledge  
14 generation and sharing. This framework builds on Shirk *et al.* (2012, p. 29), which poses:  
15 “Projects must balance inputs from scientific interests and public interests, but each project  
16 negotiates that balance differently (as represented by input arrows of different sizes).  
17 Projects also exhibit different outcomes for science, individuals (researchers or volunteers),  
18 and social–ecological systems, which may relate to the particular balance of inputs. Note  
19 feedback arrows: certain outcomes may reinforce certain interests—and therefore particular  
20 design emphases—as initiatives evolve over time. Quality public participation depends  
21 upon sufficient attention to public interests in the input stage, to identify questions and  
22 structure activities most likely to yield outcomes relevant to those interests.” (see also  
23 Figure 1). Then, to adapt Shirk *et al.* (2012) framework to the context of the Amazon, we  
24 propose to incorporate, first, the level of acknowledgement and respect of rights of  
25 Indigenous and local peoples over land, resources and knowledge, which shapes the  
26 negotiation between scientific interests and public interests (and rights) to design and  
27 implement research projects/initiatives, and ultimately influence the resulting observations  
28 and experiences, and outcomes in terms of science, socio-ecological systems, and  
29 communities and individuals (see David-Chavez and Gavin 2018; Liboiron *et al.* 2018;  
30 Carroll *et al.* 2021; Liboiron 2021). Second, existing institutions (norms), political

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1 structures, and strength and agency of civil society (the organized public) also influence the  
2 ability of knowledge to inform decisions and, thus, the final outcomes and impact.



3

4 *Figure 1. Graphical Summary. Adapted from Shirk et al. (2012) for an Amazonian context*  
5 *in knowledge production. IPLC rights and existing institutional, political and*  
6 *organizational context influence how knowledge is generated and shared, and the resulting*  
7 *outcomes from this process.*

8

9 This framework becomes useful to analyze experiences of public participation in  
10 knowledge generation and sharing, but also to design said projects, helping to explicitly  
11 question and make decisions about citizen engagement or dialogue between diverse  
12 knowledges in each step of the process. Core decisions are ultimately about who  
13 participates and who makes the decisions in the different steps of the process, i.e., who has  
14 primary authority over the process.

15 To organize the illustrative experiences shared in this chapter, we use the classification  
16 proposed by Shirk et al. (2012), which describes forms of public participation in scientific  
17 research, without differentiating whether the public are IPLC, other civil society  
18 organizations, or individual citizens. For authors that focus on Indigenous Peoples, see

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1 David-Chavez and Gavin (2018), who propose a scale for assessing levels of participation  
2 or Indigenous communities in research, and Liboiron *et al.* (2018), who propose protocols  
3 and methods to reach agreements between researchers and Indigenous communities. Also,  
4 Liboiron (2021) proposes specific methods to carry out science in Indigenous Lands  
5 without reproducing colonial (extractive) relationships between mainstream scientists and  
6 Indigenous peoples:

7 “As director of CLEAR, I identify our space as an anticolonial lab, where anticolonial  
8 methods in science are characterized by how they do not reproduce settler and colonial  
9 entitlement to Land and Indigenous cultures, concepts, knowledges (including Traditional  
10 Knowledge), and lifeworlds. An anticolonial lab does not foreground settler and colonial  
11 goals. (...) *Anticolonial* here is meant to describe the diversity of work, positionalities, and  
12 obligations that let us “stand with” one another as we pursue good land relations, broadly  
13 defined.” (Liboiron 2021, p. 27)

14 Back to our illustrative cases, Table 1 organizes the illustrative experiences included in this  
15 chapter using Shirk et al. classification (Shirk *et al.* 2012, Table 1). Given the focus of this  
16 chapter, all illustrative experiences reflect the most intense forms of public participation in  
17 scientific research or monitoring, i.e., collaborative, co-created and collegiate projects  
18 (contractual and contributory types of experiences were left out of this analysis).

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1 Table 1. Illustrative case studies organized by model of ppsr projec, based on degree of public participation in scientific research

Models of public participation in scientific research (PPSR), as per Shirk et al. 2012 Table 1					
	Contractual projects, where communities ask professional researchers to conduct a specific scientific investigation and report on the results	Contributory projects, which are generally designed by scientists and for which members of the public primarily contribute data	Collaborative projects, which are generally designed by scientists and for which members of the public contribute data but also help to refine project design, analyze data, and/or disseminate findings	Co-created projects, which are designed by scientists and members of the public working together and for which at least some of the public participants are actively involved in most or all aspects of the research process	Collegial contributions, where non-credentialed individuals conduct research independently with varying degrees of expected recognition by institutionalized science and/or professionals.
The History of the Matapi: The documentation of local knowledge by their own experts (Colombia)				X	
Peasant knowledge for territorial planning in a context of conflict (Colombia)				X	
Chiribiquete: Natural and Cultural Heritage of Humanity (Colombia)				X	
Kukama Indigenous Peoples' Underwater World (Peru)				X	
The Territory of the Yurupari Jaguars (Colombia)			X		
Piraiba local knowledge: The fishermen's knowledge (Colombia)			X		
Biodiversity as a Form of Sexual education (Colombia)			X		
Training Indigenous Environmental Agents in the Southern Brazilian Amazon		X			

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Citizen science as a tool for fisheries monitoring using the Ictio App in the Madeira River Basin (Brazil)	X
The Citizen Science for the Amazon Network: and Amazon-wide collaboration to understand large-scale fish migrations (Bolivia, Brazil, Colombia, Ecuador and Peru)	X
Collaborative Knowledge Production and Coalition Building for Conservation Action through Rapid Biological and Social Inventories (Colombia, Peru)	X

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1 In addition, the illustrative experiences included in this chapter reflect the different types of  
2 outcomes that may result from public participation in knowledge generation and sharing.  
3 First, in all cases an increase of capacities of participating citizens (individuals,  
4 communities, associations) could be observed, as well as improved terms of engagement  
5 with government or scientific stakeholders. For instance, the Matapi History, Visions of  
6 Chiribiquete, Kukama Indigenous peoples' Underwater World, the Jaguars of Yuruparí and  
7 Biodiversity as a Form of Sexual Education qualitatively increased the understanding and  
8 recognition of ILK of Amazon ecosystems and Indigenous territories by mainstream  
9 science and key government agencies. Also, Training Indigenous Environmental Agents in  
10 the Southern Brazilian Amazon, Citizen Science as a Tool for Fisheries Monitoring Using  
11 the Ictio App in the Madeira River Basin, and Collaborative Knowledge Production and  
12 Coalition Building for Conservation Action through Rapid Biological and Social  
13 Inventories tell stories of how community based monitoring and citizen science are  
14 contributing to strengthen negotiation capacities of Indigenous peoples and fishermen  
15 associations with government agencies and private stakeholders. ILK contribution to  
16 territorial and natural resource management and conservation is recognized, and common  
17 or negotiated visions for the territory are attained or under construction.

18 Second, in all cases important outcomes were attained in terms of science or knowledge  
19 generation and sharing. Noteworthy, Piraiba Local Knowledge tells the story of how local  
20 knowledge increased the number of prey species of giant Piraiba catfish five-fold, and the  
21 Citizen Science for the Amazon Network is building a shared fisheries database across the  
22 entire Amazon Basin.

23 Third, some illustrative experiences reflect impacts on socio-ecological systems. For  
24 instance, the Matapi History was critical to inform governance n the Colombian Amazon  
25 through the incorporation of the legal figure of macro-territories. Also, Peasant Knowledge  
26 for Territorial Planning in a Context of Conflict tells a story of how, when peasant  
27 knowledge informed territorial and land use planning, conflicts between agricultural land  
28 uses and protected areas receded. Finally, the Kukama Indigenous Peoples' Underwater  
29 World story turned visible cultural river values before government agencies and civil  
30 society organizations and informed a public review of the environmental impact assessment  
31 for a waterway project.

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1 Next, summary headlines of the illustrative experiences included in this chapter organized  
2 by type of public participation in scientific research (Shirk *et al.* 2012); see also Annex 2  
3 for further detail:

4       **2.1. Collegial contributions**

- 5       ● *The Matapi History (Colombia)*. Uldarico Matapí, a traditional knowledge holder,  
6       and his son Uldarico Matapí, collaborated to transcribe the Indigenous Matapí (also  
7       known as Upichía) historic knowledge and draw maps describing the ancestral  
8       Matapí territorial occupation. This work was published in 1997 (Matapí and Matapí  
9       1997) and contributed to visibilize and understand the concept and context of  
10      indigenous macro-territories and to use this concept to inform governance in the  
11      Colombian Amazon.
- 12      ● *Peasant Knowledge for Territorial Planning in a Context of Conflict (Colombia)*.  
13      “Colono” settlers arrived in the Amazon piedmont in Caquetá, Colombia, towards  
14      the turn of the 20th century. After conflict arose between them and their agricultural  
15      land use, and the establishment of protected areas in the region, peasant knowledge  
16      informed reviews of these land use planning and conservation policies, overcoming  
17      conflict and securing forest conservation.
- 18      ● *Visions of Chiribiquete from the Shamanic World (Colombia)*. With a research grant  
19      from Tropenbos-Colombia, traditional knowledge holder Uldarico Matapí  
20      documented the indigenous vision of the Chiribiquete National Park (Yucuna 2017).  
21      He described how the famous pictographs depict the origin and rules of the world:  
22      how territories, animals, water, plants, and shamanic knowledge were distributed to  
23      maintain the order of the rainforest. This IL knowledge is critical to inform the  
24      national park management.
- 25      ● *Kukama Indigenous Peoples’ underwater world (Peru)*. Leonardo Tello and the  
26      Radio Ucamara Civil Society Organization led a 5-year participatory process with  
27      Kukama Kukamiria Indigenous communities in the Lower Marañon River, Loreto -  
28      Peru, to map out and document their ancestral knowledge and vision about sacred  
29      places, their history, their culture. With support of WCS and FIU landscape

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1 ecologists, this knowledge was compiled into a story map: [Parana Marañún tsawa: The Soul of the Marañón River. Submerged stories of the Kukama People](#). The  
2 Kukama and civil society organizations are using this unprecedented publication to  
3 inform government agencies about the potential impacts of ill-planned infrastructure  
4 on the Kukama People.

5

### **2.2. Co-Created Projects**

- 6
- 7     ● *The Territory of the Jaguars of Yuruparí (Colombia)*. This publication (dos Santos  
8       et al. 2014) is a compilation of IL knowledge by dozens of traditional knowledge  
9       holder from five Indigenous peoples in the Pirá Paraná River, Vaupés (Colombia).  
10      The book is a product of the collaboration between the ACAIPI indigenous  
11       organization and the civil society organization Fundación Gaia Amazonas, and of an  
12       intergenerational and intercultural collaboration between Indigenous wisemen  
13       (sabedores) and youth, and western researchers. It describes the origins and  
14       livelihoods, and territorial environmental management vision of these five  
15       Indigenous peoples, and aims to make visible all this knowledge both to Indigenous  
16       peoples in the Pirá Paraná River (with a sense of pride) and to foreigners (so they  
17       can understand each other better).
  
  - 18     ● *Piraiba Local Knowledge: the Fishermen's Knowledge (Colombia)*. The contribution  
19       of Luis Angel Trujillo, a local fisherman, to the knowledge on Piraiba, the giant  
20       catfish of the Amazon, Colombia. Carlos Rodríguez and other researchers led a  
21       collaborative research process to compile and document IL knowledge about  
22       Amazon giant catfishes in the Lower Caquetá River (Colombia). Fisherman Luis  
23       Angel Trujillo described his knowledge on catfish and their natural history,  
24       combining storytelling, co-designed survey forms and other tools. He identified 93  
25       prey species for the Piraíba giant catfish (*Brachyplatystoma capapretum*), whereas  
26       prior scientific research had identified only 17. Then, Trujillo and Rodríguez  
27       collaborated with Confucio Hernández, a Uitoto Indigenous expert illustrator to  
28       depict the ecological relationships in the rivers, lakes and flooded forests. As a  
29       result, the book “Piraiba: Illustrated ecology of the great Amazon catfish” was

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1 published in 2018 (Trujillo *et al.* 2018) and was awarded the highest Colombian  
2 National Research Award.

3 • *Biodiversity as Sexual Education (Colombia)*. Elder Indigenous nipodimaki Oscar  
4 Romualdo Román-Jitdutjaaño and anthropologist Juan Alvaro Echeverri  
5 collaborated in an intercultural study (Jitdutjaaño *et al.* 2020) of the human  
6 condition through researching plant species that are used to extract alkaloid  
7 vegetable salts. The understanding of these plant species and the services they  
8 provide to a common objective (e.g., food, tobacco, money, tools) provide in turn  
9 guidelines of behavior and to develop a human body that is healthy, sociable and  
10 fertile.

### **11 2.3. Collaborative Projects**

12 • *Training Indigenous Environmental Agents in the Southern Brazilian Amazon*  
13 (*Brazil*). In 2020, 73 Indigenous Environmental Agents (AAIs) participated in a  
14 training program led by the Institute of Education of Brazil (IEB) and the  
15 Parintintin, Jiahui, Tenharim and Apurinã Indigenous Peoples. The program seeks  
16 to reflect on concepts, practices, techniques and technologies to support sustainable  
17 development and environmental security. Ultimately, the training program aims to  
18 increase Indigenous participants technical and political capabilities in facing a range  
19 of socio-environmental challenges that affect their territories. As a result of this  
20 process, AAIs are contributed to shift perceptions, where Indigenous Peoples are no  
21 longer attributed the role of victims or obstacles to national development, but rather  
22 collectivities whose actions are essential for the environmental protection and an  
23 authentic sustainable development.

24 • *Citizen Science as a Tool for Fisheries Monitoring Using the Ictio App in the*  
25 *Madeira River Basin (Brazil)*. This experience describes how scientists and  
26 fishermen agreed to test citizen science approaches and the Ictio App to generate  
27 and access fisheries data by both state decision-makers and fishers in Rondonia.  
28 Before this project, the only fish monitoring data was held by a hydroelectric dam  
29 concession holder that limited access to these stakeholders. Community members  
30 were empowered to monitor and co-manage fisheries, uniting formal and traditional

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governance. This is particularly important in the Madeira Basin, given the recent implementation of two hydroelectric plants in the system, and the numerous problems caused by fishermen lack of access to fisheries data collected by hydroelectric companies, inhibiting in turn their participation in decision making.

- *The Citizen Science for the Amazon Network* (by Mariana Varese) describes the collaboration among over 25 partners from different backgrounds, countries and interests to increase the understanding of Amazon migratory fish and foster sustainable fisheries management across the entire Amazon Basin. Using low cost, user friendly digital tools and transparent knowledge sharing agreements, partners and over 70 citizen scientist groups (fishermen, IPLC, students, etc.) have generated and shared over 38,000 observations of priority migratory and food fish species across the Basin (see [Ictio.org](http://Ictio.org)).
- *Collaborative Knowledge Production and Coalition Building for Conservation Action through Rapid Biological and Social Inventories* (by Chris Jarrett and Diana Alvira Reyes) describes over 20 years of work in rapid inventories by the Field Museum of Natural History, which are used to create conservation recommendations in the region where the rapid inventories are carried out. In this work, the recommendations are co-created with local people and decision-makers on the basis of inventory results, which are in turn syntheses that are done in fieldwork with local people.

### 3. DISCUSSION AND RECOMENDATIONS

Based on the discussions and illustrative experiences of previous sections, and on our combined knowledge, we propose the following recommendations that contribute to address inequities in knowledge generation and sharing for informed decision-making in the Amazon. The proposed recommendations below are not exhaustive, but rather a starting point to build a sustainable Amazon that values and recognizes the contribution of diverse knowledges and of public engagement in knowledge generation and sharing to inform decisions and policies.

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- 1        1) To address inequities in terms of knowledge generation, sharing and access to  
2            inform decisions, it is urgent to strengthen the design and enactment of open and  
3            collaborative knowledge principles, through specific and targeted policies,  
4            agreements and/or protocols appropriate to the Amazon context. These should have  
5            as a departure point the recognition and respect of fundamental human rights,  
6            including and foremost Indigenous rights to Land (see Liboiron 2021, Annex 1).
- 7        2) In addition, open and collaborative knowledge policies, agreements and protocols  
8            are necessary not in general terms, but in specific ones, appropriate for each step of  
9            the knowledge generation, sharing and informing processes. These should include,  
10            for instance,
  - 11            a. Free prior informed consent and participation agreements clearly outlining  
12              risks and benefits of participation, and where the decision-making authority  
13              lies (see David-Chavez and Gavin 2018; Liboiron *et al.* 2018; Liboiron  
14              2021);
  - 15            b. Agreements terms of data management, including data quality assessment,  
16              interoperability and aggregation of data across scales and countries (see  
17              Bowser *et al.* 2020; Research Data Alliance);
  - 18            c. Intellectual property rights and licensing agreements;
  - 19            d. Transparent and effective instruments for equitable and just distribution of  
20              risks and benefits associated with knowledge sharing, including crediting  
21              contributions (see Liboiron *et al.* 2017);
  - 22            e. Investing in and access to innovative technologies that are low-cost, user-  
23              friendly and effective to facilitate public participation, transparency and  
24              scaling-up.

25        In many cases, these considerations are subject of rapidly evolving fields of study and  
26            very dynamic. However, key guidelines and sources of information on how to design  
27            and implement them can be found in the Principles of Open and Collaborative Science  
28            (OCSDNet 2015) UNESCO'S recommendation on Open Science (UNESCO 2020),

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- 1      Research Data Alliance, Citizen Science Association and European Citizen Science  
2      Association.
- 3      3) The contribution of ILK, knowledge dialogues and public engagement in science to  
4      devising and implementing solution pathways towards a sustainable Amazon is still  
5      not well understood or visible among decision makers in Amazon countries and at a  
6      global scale. To address this challenge, IPLC, practitioners and academics should  
7      collaborate to lead compilation and dissemination efforts, with clear research  
8      agreements or contracts.
- 9      4) To address imbalances of power with respect to knowledge, we propose to open up  
10     academia to ILK and to build bridges for equitable and just collaboration with IPLC  
11     and non-academic knowledge. Similarly, we propose to open up government  
12     agencies to acknowledging and supporting ILK contributions to solution pathways  
13     towards Amazon sustainable development. This includes, among others, training  
14     courses for academics and government agency staff on intercultural contexts and  
15     knowledge dialogues; expanding the practice of allowing students to defend their  
16     theses or researchers to present their findings in IL languages, as well as increased  
17     education in IL languages; creating dialogue and exchange settings (see 5); and  
18     ensuring that the Amazon is prioritized in national and international science and  
19     technology agendas and investments.
- 20     5) Build and strengthen multiple intercultural platforms for knowledge dialogue  
21     among, general, technical and scientific knowledges; arts; and ILK. This process  
22     could start by strengthening partnerships with IPBES and with science and  
23     technology national agencies and councils and building effective national and  
24     regional platforms for exchanging experiences on ILK. Then, initial knowledge  
25     dialogue platforms may start at universities and research centers with the inclusion  
26     of ILK holders and local experts in their faculty. *Cátedra Amazonas* offers a model  
27     for multiple disciplines including natural sciences, social sciences, humanities, arts,  
28     engineering, and business management. Also, intercultural working groups with  
29     participation of scientists, practitioners and ILK holders (*conocedores locales*)  
30     could lead thematic seminars to address an agenda of previously agreed upon

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1 priority issues. A specific priority is to maintain a permanent Amazon-wide  
2 knowledge dialogue platform involving COICA and other IPLC organizations,  
3 academia, civil society organizations and government institutions.

- 4 6) With COICA, OTCA, or other Amazon multilateral agreement organization, and  
5 with national-level indigenous organizations, ministries or councils of science and  
6 technology, as well as other civil society organizations, organize every two years an  
7 Amazon Congress on ILK. It is critical to secure continuity over time of this  
8 initiative to create and strengthen intercultural networks that involve stakeholders  
9 from IPLCs, academia, civil society organizations and government to devise  
10 joint/collaborative solutions for Amazon sustainable development.
- 11 7) Ensure that knowledge and evidence are effectively used in decision-making  
12 towards Amazon sustainable development. Public engagement in knowledge  
13 generation and sharing is critical but not enough; it needs to be complemented with  
14 public engagement in management and policy decisions. Representativeness,  
15 transparency and accountability need to be critical elements of knowledge-based  
16 organizations and solutions.
- 17 8) Although this recommendation steps outside the scope of this chapter, it is critical to  
18 highlight that the COVID-19 pandemic surfaced weak and unequal access to  
19 information and communication technologies, connectivity, and basic/core research  
20 infrastructure capacities (e.g., laboratories, research facilities, training). It is thus  
21 urgent to address these gaps in ways that are appropriate to the Amazon context  
22 (diverse, multicultural, urbanized, and with vast rural areas with low population  
23 densities).

## **24 4. CONCLUSIONS**

25 Although indigenous, and local knowledge has always been important for conservation and  
26 sustainable development efforts, there has been lack of appropriate recognition or  
27 internalization of the lessons offered, hindering just knowledge production and informed  
28 decision-making at national and international scales. Many inspiring solutions to the  
29 problem of unequal knowledge production, sharing, and articulation in decision-making

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1 exist at a local scale and must be scaled up. At the same time, local and global professional  
2 associations and organizations are producing critical policy recommendations and  
3 guidelines that can inform the pathways forward. In order to address these inequities in  
4 knowledge production, sharing, and informed decision-making, we recommend  
5 interventions at various scales, including: investment in the infrastructure that makes  
6 knowledge dialogues and public participation possible; the collaborative creation of  
7 normative frameworks for just science; strengthening and scaling of intercultural platforms  
8 and connections; and promoting structural change and training in the institutions that  
9 currently make decisions in order to make participation transparent and welcome.

### **10 5. RECOMENDATIONS**

- 11     • To address inequities in terms of knowledge generation, sharing and access to  
12     inform decisions, it is urgent to strengthen the design and enactment of open and  
13     collaborative knowledge principles, through specific and targeted policies,  
14     agreements and/or protocols appropriate to the Amazon context. These should have  
15     as a departure point the recognition and respect of fundamental human rights,  
16     including and foremost Indigenous rights to Land.
- 17     • Open and collaborative knowledge policies, agreements and protocols are necessary  
18     in specific terms, appropriate for each step of the knowledge generation, sharing and  
19     informing processes, and adapted to specific contexts and rights- and stakeholders.
- 20     • IPLC, practitioners and academics should collaborate to lead compilation and  
21     dissemination efforts, with clear research agreements or contracts, in order to  
22     increase our collective understanding of the contribution of ILK, knowledge  
23     dialogues and public engagement in science to devising and implemetning solution  
24     pathways towards a sustainable Amazon.
- 25     • Build and strengthen multiple intercultural platforms for knowledge dialogue  
26     among, general, technical and scientific knowledges; arts; and ILK is a critical step  
27     forward. This process should benefit from progress made by IPBES partnerships,  
28     emblematic platforms such as *Cátedra Amazonas* and others, and should involve the

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1           leaderhsip of COICA and other IPLC, academic and civil society organizations, as  
2           well as national science councils or ministries.

3

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### 7. BOXES

#### Box 1. Who Gets to Name Species? – Summary by Natalia Piland

The Amazon basin is home to 10-30% of the world's species (Yale 2020, Mongabay 2020) - from a Western scientific perspective, we are able to provide this statistic, used in various calls to action and conservation (for example, WWF 2013, Rusu 2019), thanks to the process of species description. Thus, species descriptions "elevate" the observation of an individual bird to the abstraction of a species (DuBay, Palmer, and Piland 2020), and the statistics resulting from information on species are used to justify decisions made regarding conservation action/inaction (for some methodologies, Guisan et al. 2013, Nicholson et al. 2013). At the same time, these species descriptions have broader implications: they confer authority and professional opportunities on the authors of these species descriptions (for an example in inequity in citation practices, see Meneghini et al. 2008), and honor Western individuals by using their given and/or family names as honorifics in the Linnean taxonomy. While seemingly innocuous, strict authorship practices mean that the individuals that reap the benefits of the species descriptions may not be the original holders of knowledge or cohabitants of the area the species is from, and honoring Western individuals may actively exclude or signify the exclusion of racialized, gendered, or ethnicized groups.

In a recent paper, we found that despite the fact that 95% of bird species described in the last 70 years were from the global South (with three countries in the Amazon basin: Perú, Brazil, and Colombia), names of birds disproportionately honored individuals from the global North (DuBay, Palmer, and Piland 2020). Additionally, the majority of primary authors of these eponyms were from the global North. The implications of local author inclusion were clear-- if there was at least one local author (that is an author that was from the country the bird was from), it was 62% more likely that the bird would be named after someone local. This research, however, did not capture that which we anecdotally know, that while these species descriptions are often written by researchers based outside of the country, they would not be possible without the indigenous and local knowledge that those authors obtained through conversation or hiring of local labor. Species descriptions and the surrounding research practice, therefore, have tangibly been implicated in the erasure of indigenous and local knowledge, while becoming by-lines in researchers' *curriculum vitae*s and further honoring non-local scientists.

In the United States, we have seen a movement, led primarily by younger birders, to change birds' names, at least the common names. For example, McCown's Longspur was named after John P. McCown, who shot the type specimen and sent it to an ornithologist friend to describe and ten years later joined the Confederate army during the United States Civil War, which fought to defend slavery (Elbein 2020). The group Bird Names for Birds organized a successful formal petition with 180 signatories to deliver to the American Ornithological Society's North American Classification Committee to change the common name to one that is descriptive of the species (Roach 2020). The naming of a bird after a Confederate general signifies the long history of exclusion and violence of the birdwatching and environmental communities in the United States, and changing the name signifies commitment to addressing and repairing the harm done by these communities. It is worth noting that this change came after the widespread protests against police brutality following

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the murder of George Floyd-- As recently as 2018, the AOS's NACC had denied a request to change the name (Roach 2020, Elbein 2020).

Beyond changing the names of species that honor racist individuals, initiatives to address the epistemic inequalities in our fields should go hand-in-hand with a reflection of power dynamics and dialogues that facilitate a respectful exchange of ideas and knowledge. Considerations in these initiatives can include questions such as: Is authorship a valuable signifier of authority, and, if so, are all the people who hold and create knowledge, even when not in the form of writing, acknowledged (whether this is through citation or authorship)? Is collective authorship an option in the places where you publish? Is participation informed, voluntary, and consensual? Who leads the research and what power dynamics are implicated? Are there differential expectations for different groups (for example, the expectation of English gives an implicit advantage to those who are from English-speaking countries, countries who invest in wide-range English education, or from socio-economic backgrounds that allowed access to English education from an early age)? Can those expectations be changed (for example, scholarship and degree-granting programs to be offered in local and indigenous languages)? Is the indigenous and local knowledge being valued as is or is such knowledge valued only when it conforms to Western values? Who is the research and the species descriptor for?

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### **Português**

#### ***Resumo propositivo do mapa conceitual de visão do futuro da Amazônia***

*(Versão para comentários e revisão pelos participantes do Primeiro Encontro Virtual “Em busca de um futuro mais sustentável e justo pela Amazônia,” 2/sept/2020 – GT12)*

Este é um resumo propositivo do mapa de visão do futuro da Amazônia elaborado participativamente durante o Encontro Virtual realizado pelo WG12 em 2 de setembro de 2020, “Em busca de um futuro mais sustentável e justo pela Amazônia”.<sup>1</sup> O conteúdo deste texto ainda carece de revisão e validação por parte dos participantes do Encontro. Uma tabela com o resumo da visão e valores encontra-se anexa.

#### ***Qual é a sua visão para o futuro da Amazônia?***

##### **1. Reconhecimento e respeito aos direitos e aos conhecimentos indígenas, tradicionais e locais<sup>2</sup>.**

O encontro virtual com representantes de povos e organizações amazônicas em 2 de setembro de 2020, realizada no âmbito do Grupo de Trabalho 12 (GT12) do Panel Científico pela Amazônia (SPA)<sup>3</sup> coletou inúmeras contribuições sobre a visão de futuro para a Amazônia. Do conjunto de visões que conseguimos compilar entre os participantes (veja lista na Memória do Encontro Virtual 1), nos parece que há uma visão coletiva abalizada por dois pilares fundamentais: (1) a necessidade de reconhecimento e respeito aos direitos capitais, entre eles e, em especial, o direito a terra e (2) o reconhecimento e inclusão do conhecimento indígena, tradicional e local na tomada de decisões sobre o futuro da região. O grupo, no geral, parece convergir para a opinião de que estes dois pilares são os alicerces para a manutenção da integridade socioambiental da região e o bem-estar humano na região, bem como fora dela. Se

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<sup>1</sup> Veja a [Memoria de Encuentro Virtual: En busca de un futuro más sostenible y justo para la Amazonía. 2 de septiembre de 2020.](#)

<sup>2</sup> Considera-se aqui conhecimentos tradicionais aqueles ofertados por comunidades tradicionais (ribeirinhos, quilombolas etc.), povos indígenas, pequenos agricultores e extrativistas.

<sup>3</sup> <https://www.laamazoniaquequeremos.org/>

<sup>4</sup> O modo com um indivíduo se identifica na sociedade, tomando-se como base a identificação desse indivíduo com determinado gênero (masculino, feminino ou ambos), independente da orientação sexual.

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alcançado o reconhecimento e o pleno respeito a direitos e aos conhecimentos indígenas, tradicionais e locais, o resultado deverá ser uma efetiva incorporação destes conhecimentos nas políticas públicas.

### **2. Incorporação dos conhecimentos indígenas, tradicionais e locais em políticas públicas e nas planificações para manejar os recursos naturais**

Assumindo-se como válidos os dois pilares mencionados acima, a incorporação dos conhecimentos indígenas, tradicionais e locais em decisões e políticas públicas de ser efetiva e influentes. Caso contrário na haverá possibilidade de se trilhar um novo caminho para uma Amazônia sustentável para todos e todas. Neste sentido, esta incorporação deve ser realizada respeitando-se a espiritualidade diversa presente na região e sob os preceitos da identidade de gênero<sup>4</sup>, das questões geracionais e da inclusão de valores ancestrais. Só assim, o enfoque será efetivamente intercultural, permitindo um tratamento justo destes conhecimentos indígenas, tradicionais e locais em processos de construção ou melhorias das políticas pública para a Amazônia, rompendo com a noção colonialista historicamente presente na região.

### **3. Fortalecimento da governança territorial pelos povos indígenas e das comunidades tradicionais.**

O respeito aos direitos e a inclusão de conhecimentos indígenas, tradicionais e locais na tomada de decisões é um dos caminhos mais efeitos para que se tenha a plena governança territorial por povos amazônicos, independentes das suas nacionalidades. O resultado será uma Amazônia mais sustentável e uma maior segurança jurídica quanto a proteção de direitos dos territórios destes povos. Como já citado, esta governança só será plena com a gestão autônoma do território, com a devida participação das mulheres e dos jovens.

### **4. Conservar a Floresta Amazônica e seus serviços ecossistêmicos essenciais, como de regulação climática, regime de chuvas, e na manutenção da biodiversidade**

Sem efetiva governança dos territórios, a conservação na Amazônia não estará assegurada. Bosques no interior de terras indígenas, por exemplo, apresentam inexpressiva taxa de destruição florestal (<1%) se comparada àquela (>30%) ao redor destas terras. Algo que justifica atribuir aos indígenas o título de “guardiões da floresta”. Mas, tal título só será genuíno se forem assegurados a gestão autônoma do território, assim como o reconhecimento e respeito às suas culturas e direitos, incluindo em especial, daqueles povos indígenas em isolamento voluntário e contato inicial.

### **5. Atenção à destruição e degradação da floresta e de ecossistemas aquáticos, e as ameaças à biodiversidade (fauna, flora)**

O reconhecimento e respeito aos direitos só será conquistado se as comunidades tradicionais e locais, e povos indígenas continuarem conservando os territórios herdados de seus ancestrais. Este parece ser o principal caminho para o combate às ameaças sofridas. É necessário ainda que cada povo indígena ou comunidade autodetermine seu modo de viver e se desenvolver e, mesmo que decidam viver ou se desenvolverem à maneira urbana/ocidental, que possam fazê-lo sem perder seus costumes. Assim, será possível continuar com os benefícios da conservação dos

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territórios e dos benefícios ambientais que prestam, além de garantir segurança alimentar e de saúde, sempre levando-se em conta os valores e saberes ancestrais. Será o meio de se tornar visível, de divulgar a importância da Amazônia para o mundo e de conquistar mercados justos e solidários que estejam pautados pela sustentabilidade e por fomento a uma bioeconomia baseada na biodiversidade, conhecimentos e valores/aspirações dos povos da região.

### ***Quais são os seus valores pessoais ou os valores da sua comunidade quais são as chaves para construir o futuro da Amazônia?***

Os valores são importantes porque definem os comportamentos esperados pela sociedade, sejam eles universais ou específicos para alguns grupos. Nesse caso, os participantes do webinar de 2 de setembro identificaram os valores necessários a seguir para um futuro sustentável para a Amazônia. Esses valores foram identificados por escrito na comunicaçãoantes da reunião ou durante a reunião, e são resumidos da seguinte forma:

#### **1. Respeito**

Especificamente, a sustentabilidade e o futuro da Amazônia dependem do respeito aos direitos individuais, coletivos e territoriais, especialmente os direitos das populações indígenas. As populações indígenas têm suas próprias visões e concepções sobre a integridade de seus territórios e devem ser respeitadas.

#### **2. Honestidade e transparência**

Para um trabalho justo em direção ao futuro da Amazônia, é preciso honestidade e transparência, criando colaboração e coletividade. Os processos devem ser claros e, ao se comprometer com a honestidade e a transparência, você também se compromete com a luta contra a corrupção.

#### **3. Colaboração e coletividade**

Ao tomar decisões, você deve pensar nos valores coletivos e no que afeta o bem comum. Ao longo do processo, os principais atores também devem ser envolvidos e facilitados, e a reflexão deve ser valorizada.

#### **4. Solidariedade**

Valorizar a solidariedade também significa criar e gerar uma sensibilidade onde se valorize o amor e a paixão pelo que se faz pelo futuro da Amazônia e se entende que o povo amazônico pode avançar quando se comprehende, se valoriza e se respeita, criando condições de equidade.

#### **5. Interculturalidade**

O valor da interculturalidade significa que não só o conhecimento científico, mas também o indígena, tradicional e local é reconhecido - evidenciando que o saber e o modo de vida dos povos amazônicos são válidos, promovendo assim uma escuta direta e genuína do território, dos

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povos e de seus povos. comunidades. Essa abordagem intercultural também significa defesa e governança onde diferentes vozes e opiniões são consideradas, promove a democracia participativa e está ciente das diferentes culturas, identidades y espiritualidades presentes, e como os processos podem impactá-los de diferentes maneiras. Significa também promover um diálogo de saberes e saberes compartilhados, onde as soluções locais são vistas como modelos e, assim, se cria uma mudança epistemológica.

### **6. Fortalecimento da cidadania amazônica**

O fortalecimento da cidadania amazônica é necessário para a manutenção da integridade do ecossistema e do bem-estar das pessoas. Isso significa uma formação política onde a história das pessoas e do território é conhecida e, assim, melhores cuidados podem ser tomados, evitando ações predatórias sobre os territórios e recursos da região. Isso também significa autonomia para os povos da Amazônia, para que eles próprios tomem as decisões que impactam seu futuro e possam se comunicar para ver a Amazônia como um ecossistema conectado. Além disso, a voz da cidadania amazônica deve ser projetada para que ela tenha seu lugar nas instâncias nacionais e internacionais.

**Tabela 1. Resumo de Visão e Valores compartilhados no Encontro Virtual 02/09/20**

VISÃO		VALORES
Reconhecimento e respeito aos direitos e aos conhecimentos indígenas, tradicionais e locais		Conhecimento histórico Formação política Advocacy Preservação e ampliação de leis e princípios que protegem direitos
Incorporação dos conhecimentos indígenas, tradicionais e locais em políticas públicas e nas planificações para manejear os recursos naturais		Enfoque de gênero, intercultural e intergeracional Ênfase em soluções locais Respeito a espiritualidade diversa Diálogos de saberes e compartilhamento de conhecimentos
Fortalecimento da governança territorial pelos povos indígenas e das comunidades tradicionais.		Honestidade e Transparência Considerar tecnologias locais de proteção e conservação Ética coletiva com guia para as comunidades Respeito ao patrimônio comum Colaboração e coletividade

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Conservar a Amazônia e seus serviços ecossistêmicos essenciais, como de regulação climática, regime de chuvas, e manutenção da biodiversidade	Considerar e conectar diversos conhecimentos: científico, indígena, tradicional e local Salvaguardas socioambientais para Programas de Desenvolvimento Impedir o desmatamento, a destruição e degradação de ecossistemas e a exploração predatória Mapear as vulnerabilidades dos territórios e os ecossistemas amazônicos às ameaças climáticas e de ocupação da região.
Cidadania Amazônica	Reconhecimento e respeito aos direitos capitais, em especial ao direito à terra. Inclusão dos conhecimentos indígenas, tradicionais e locais na tomada de decisões. Construção coletiva do futuro, baseada na troca e o compartilhamento de diversos saberes e conhecimentos (científicos, indígenas, tradicionais e locais).

### **Castellano**

#### ***Resumen de la propuesta conceptual de visión de futuro de la Amazonía***

*(Versión para comentarios y revisión de los participantes del Primer Encuentro Virtual  
“En Busca de un Futuro Más Sostenible y Justo para la Amazonía,” 2/sep/2020 )*

Esta es una propuesta de resumen de la visión hacia el futuro de la Amazonía elaborada de manera participativa durante el Encuentro Virtual realizado por el GT12 el 2 de septiembre de 2020, titulado “En busca de un futuro más sostenible y justo para la Amazonía”<sup>5</sup>. El contenido de este texto aún necesita ser revisado y validado por las y los participantes del Encuentro. Se incluye la Tabla 1, con el resumen de la visión y valores compartidos en dicho encuentro.

#### ***¿Cuál es su visión para el futuro de la Amazonía?***

#### **1. Reconocimiento y respeto de los derechos y conocimientos indígenas, tradicionales y locales<sup>6</sup>.**

El Encuentro Virtual con representantes de pueblos y organizaciones amazónicas realizado el 2 de septiembre de 2020, en el ámbito del Grupo de Trabajo 12 (GT12) del Panel Científico por la Amazonía<sup>7</sup> (SPA por sus siglas en inglés), recogió numerosos aportes sobre la visión de futuro de la Amazonía. Del conjunto de visiones que logramos recopilar entre las y los participantes (para una lista de participantes ver Memoria del Encuentro Virtual), nos parece que existe una visión colectiva sustentada en dos pilares fundamentales: (1) la necesidad del reconocimiento y respeto de los derechos fundamentales humanos y de la naturaleza entre ellos y, en particular, el derecho a la tierra y (2) el reconocimiento e inclusión de conocimientos indígenas, tradicionales y locales en la toma de decisiones sobre el futuro de la región. En general, el grupo parece converger alrededor de la opinión de que estos dos pilares son la base para mantener la integridad socioambiental y el bienestar humano, no solo en la región pero también fuera de ella. Si se logra el reconocimiento y pleno respeto de los derechos y conocimientos indígenas, tradicionales y locales, el resultado debe ser una incorporación efectiva de estos conocimientos en las políticas públicas.

<sup>5</sup> Ver [Memoria de Encuentro Virtual: En busca de un futuro más sostenible y justo para la Amazonía. 2 de septiembre de 2020.](#)

<sup>6</sup> Se considera conocimiento indígena, tradicional y local el ofrecido por comunidades tradicionales (ribereñas, quilombolas, etc.), pueblos indígenas, pequeños agricultores y extractivistas.

<sup>7</sup> <https://www.laamazoniaquequeremos.org/>

<sup>8</sup> La forma en que un individuo se identifica en la sociedad, a partir de la identificación de ese individuo con un determinado género (masculino, femenino o ambos), independientemente de su orientación sexual.

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### **2. Incorporación de los conocimientos indígenas, tradicionales y locales en las políticas públicas y planificación para la gestión de los recursos naturales.**

Suponiendo que los dos pilares mencionados anteriormente sean válidos, la incorporación de los conocimientos indígenas, tradicionales y locales en decisiones y políticas públicas debe ser efectiva e influyente. De lo contrario, no habrá posibilidad de emprender un nuevo camino hacia una Amazonía sostenible para todos. En este sentido, esta incorporación debe realizarse respetando la diversidad presente en la región en términos de espiritualidad, identidad de género<sup>8</sup>, generaciones y promoviendo la inclusión de los valores ancestrales. Solo así el enfoque será efectivamente intercultural, permitiendo un tratamiento justo de los conocimientos indígenas, tradicionales y locales en los procesos de construcción o mejoramiento de políticas públicas para la Amazonía, y rompiendo con la noción colonialista históricamente presente en la región.

### **3. Fortalecimiento de la gobernanza territorial de los pueblos indígenas y comunidades tradicionales.**

El respeto a los derechos y la inclusión de los conocimientos indígenas, tradicionales y locales en la toma de decisiones es una de las formas más efectivas para lograr la plena gobernanza territorial de los pueblos amazónicos, independientemente de sus nacionalidades. El resultado será una Amazonía más sostenible y una mayor seguridad jurídica en términos de protección de los derechos a los territorios de estos pueblos. Como ya se mencionó, esta gobernanza sólo será plena con la gestión autónoma del territorio, con efectiva participación de mujeres y jóvenes.

### **4. Conservación de la selva amazónica y sus servicios ecosistémicos esenciales, como la regulación del clima, el régimen de lluvias y el mantenimiento de la biodiversidad.**

Sin una gobernanza eficaz de los territorios, no se garantizará la conservación en la Amazonía. Los bosques en el interior de las tierras indígenas, por ejemplo, tienen una tasa ínfima de destrucción forestal (<1%) en comparación con la tasa de deforestación alrededor de estas tierras (> 30%). Esto justifica atribuir a los indígenas el título de “guardianes del bosque”. Sin embargo, tal título solo será genuino si se garantiza la gestión autónoma del territorio, así como el reconocimiento y respeto por sus culturas y derechos, incluyendo especialmente los de los pueblos indígenas en aislamiento voluntario o contacto inicial.

### **5. Atención a la destrucción y degradación del bosque y ecosistemas acuáticos, y a amenazas a la biodiversidad (fauna, flora)**

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El reconocimiento y respeto de los derechos solo se logrará si las comunidades tradicionales y locales, y los pueblos indígenas continúan conservando los territorios heredados de sus ancestros. Esta parece ser la principal vía para combatir las amenazas sufridas. También es necesario que cada pueblo o comunidad indígena autodetermine su forma de vivir y

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desarrollarse y, aunque decida vivir o desarrollarse de manera urbana / occidental, puede hacerlo sin perder sus costumbres. Así, será posible continuar con los beneficios de la conservación de los territorios y los beneficios ambientales que brindan, además de garantizar la seguridad alimentaria y sanitaria, siempre teniendo en cuenta los valores y conocimientos ancestrales. Será el medio para hacerse visible, para difundir la importancia de la Amazonía al mundo y para conquistar mercados justos y solidarios que se guíen por la sustentabilidad y por promover una bioeconomía basada en la biodiversidad, en los conocimientos y en los valores/aspiraciones de los pueblos de la región.

### ***¿Cuáles son sus valores personales o los valores de su colectividad que son claves para construir el futuro de la Amazonía?***

Los valores son importantes ya que definen los comportamientos que se esperan por la sociedad, sean universales o específicos a algunos grupos. En este caso, los participantes del webinar del 2 de septiembre identificaron valores necesarios a seguir para un futuro sostenible para la Amazonía. Estos valores se identificaron o por escrito en comunicación previa a la reunión o durante la reunión, y aquí proponemos un resumen:

#### **1. Respeto**

Específicamente, la sostenibilidad y el futuro de la Amazonía dependen del respeto a los derechos individuales, colectivos y territoriales, en especial a los derechos de las poblaciones indígenas. Las poblaciones indígenas tienen sus propias visiones y concepción de integridad de sus territorios y estos se tienen que respetar.

#### **2. Honestidad y transparencia**

Para un trabajo justo hacia el futuro de la Amazonía, se requiere honestidad y transparencia, así creando colaboración y colectividad. Los procesos deben ser claros, y al comprometerse con la honestidad y transparencia, uno/a también se compromete a la lucha contra la corrupción.

#### **3. Colaboración y colectividad**

Al tomar decisiones, se tiene que pensar en los valores colectivos y en lo que afecte al bien común. A través del proceso, también se tiene que involucrar y facilitar la participación de los actores claves, y se tiene que valorar la reflexión.

#### **4. Solidaridad**

Valorar la solidaridad significa también crear y generar una sensibilidad donde se aprecia el amor y la pasión por lo que se hace para el futuro de la Amazonía y que se entiende que el pueblo Amazónico puede seguir adelante cuando se entiende, valora, y respeta entre ellos, creando condiciones de equidad.

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### **1      5. Interculturalidad**

2  
3      El valor de interculturalidad significa que se reconoce el conocimiento no solo  
4      científico, pero también indígena, tradicional o local -- evidenciando que el  
5      conocimiento y el modo de vida de los pueblos amazónicos es válido, y así  
6      promover una escucha directa y genuina al territorio, los pueblos y sus  
7      comunidades. Este enfoque intercultural también significa defensa y  
8      gobernanza donde se considera diferentes voces y opiniones, se promueve una  
9      democracia participativa, y se respeta e incorpora diversas culturas, identidades  
10     y espiritualidades, considerando cómo pueden ser afectados por distintos  
11     procesos. El valor de interculturalidad significa también promover un diálogo  
12     de saberes y un conocimiento compartido, donde las soluciones locales son  
13     vistas como modelos sobre los cuales se puede ir creando un cambio  
14     epistemológico en toda la región.

### **15     6. Fortalecimiento de una ciudadanía Amazónica**

16  
17     El fortalecimiento de una ciudadanía amazónica es necesario para poder  
18     mantener la integridad del ecosistema y bienestar de las personas. Esto significa  
19     una formación política donde se conoce y reconoce la historia de las personas y  
20     del territorio, se promueve su cuidado y se impide acciones predactorias sobre los  
21     territorios, recursos y pueblos de la región. Esto también significa autonomía  
22     para los pueblos de la Amazonía para que ellos mismos puedan tomar las  
23     decisiones que impacten sus futuros, y se puedan comunicar entre ellos para ver  
24     la Amazonía como un ecosistema conectado. Además, se tiene que proyectar la  
25     voz de la ciudadanía Amazónica para que tengan su lugar en las instancias  
26     nacionales e internacionales.  
27

29     **Tabla 1. Resumen de Visión y Valores compartidos en el Encuentro Virtual**  
30     **(2/sept/2020).**

VISÃO		VALORES
Reconocimiento y respeto de los derechos y conocimientos indígenas, tradicionales y locales		Conocimiento histórico Formación política Defensa de derechos e intereses propios Preservación y expansión de leyes y principios que protegen los derechos.

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Incorporación de conocimientos indígenas, tradicionales y locales en políticas públicas y en la planificación del territorio y el manejo de los recursos naturales		Enfoque intercultural, de género e intergeneracional Énfasis en soluciones locales Respeto por la espiritualidad diversa Diálogos de saberes y conocimientos compartidos
Fortalecimiento de la gobernanza territorial de los pueblos indígenas y comunidades tradicionales y locales.		Honestidad y transparencia Considerar las tecnologías locales de protección y conservación. Ética colectiva con guía para comunidades Respeto por el patrimonio común Colaboración y colectividad
Conservar la Amazonia y sus servicios ecosistémicos esenciales, como la regulación del clima, el régimen de lluvias y el mantenimiento de la biodiversidad.		Considerar y conectar diversos tipos de conocimiento: científico, indígena, tradicional y local Salvaguardas socioambientales para programas de desarrollo Impedir la deforestación, a destrucción y degradación de ecosistemas, y la explotación depredadora Mapear las vulnerabilidades de los territorios y ecosistemas amazónicos a las amenazas climáticas y de ocupación en la región.
Ciudadanía Amazónica		Reconocimiento y respeto por los derechos fundamentales de las personas y de la naturaleza, especialmente los derechos sobre la tierra. Inclusión de conocimientos indígenas, tradicionales y locales en la toma de decisiones y el diseño de políticas públicas Construcción colectiva del futuro, sobre la base de intercambiar y

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	compartir diversos saberes y conocimientos (científicos, indígenas, tradicionales y locales)
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### **1 SPA WG12 – CHAPTER 32. CONNECTING AND SHARING DIVERSE KNOWLEDGES 2 TOWARDS SUSTAINABLE PATHWAYS OF THE AMAZON 3**

#### **4 ANNEX 2. ILLUSTRATIVE EXPERIENCES 5**

##### **6 The History of the Matapí: The documentation of local knowledge by their own 7 experts**

**8 Summary Author: Carlos Rodríguez**

**9 Country: Colombia**

**10 (Original in Spanish, translated to English)**

**11 493 words**

**13** The bibliography on indigenous peoples is dominated by authorship of social scientists,  
**14** especially anthropologists, who in one way or another recognize local knowledge and  
**15** express it in their works, and even mention local experts and highlight their texts under the  
**16** figure of informants. This process of recognition of local knowledge has led to the  
**17** increasing involvement of indigenous people themselves as compilers of their own  
**18** knowledge and authors of publications of all kinds, from a short history, through primers  
**19** and articles to complete books, including book series.

**21** The process of documenting their own knowledge, as the indigenous people themselves  
**22** refer to their body of knowledge, has occurred in different ways, since the communities  
**23** approach the process of telling, writing and sharing their knowledge from scenarios that  
**24** range from their own cultural strengthening and their concerns that knowledge is being lost  
**25** or eroded, and the challenge they have to share their knowledge with the outside world,  
**26** with academia and institutions, so that it can be recognized and taken into account in public  
**27** policy decision-making.

**29** In the Colombian Amazon there are very good contributions from the authorship of  
**30** traditional knowledge holders, who have compiled their own texts for more than 20 years.  
**31** One of the pioneering cases was the publication of the book The History of the Upichia,  
**32** authored by traditional knowledge holder Carlos Matapi and his son Uldarico Matapi,  
**33** which was published in a scientific series with an international editorial committee (Matapi  
**34** 1997). This recognition of indigenous knowledge was important because it contributed to  
**35** make visible the knowledge accumulated by the elders and, in this case, to recognize in a  
**36** broad way that indigenous peoples have a historical depth of more than 13 generations in  
**37** their memory. Also, that they tell this history orally following specific codes, languages and  
**38** rituals and that, even more, the history is also written in the forest and consolidates the  
**39** notion of ancestral territory.

**41** The indigenous authors prepared this publication over several months, transcribing their  
**42** historical knowledge and drawing maps of the sites of occupation of their ancestors in an  
**43** exercise of their own cartography. This process allowed them to contribute to territorial  
**44** planning, the designation of indigenous territories (*Resguardos*) and the clarification of

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1 relations between the various indigenous groups with whom the territory is shared. The  
2 process and the publication were in fact was a great contribution to understanding the  
3 cultural contexts within the notion of macro-territory, an area shared by 30 different  
4 Indigenous peoples and a fundamental concept for the new Indigenous governance in the  
5 Colombian Amazon.

6  
7 The published History of the Upichia became a reference material for academics and for  
8 local schools, since the Upichia could include their own views of history and also disprove  
9 those who considered that the indigenous people did not have history. The publication also  
10 encouraged other indigenous groups to compile their own knowledge and in fact other  
11 neighboring Indigenous Peoples carried out similar writing exercises, so much so that  
12 currently there are several dozens of publications with local indigenous authorship.  
13

14 References:

15

16 Matapí, Carlos, and Uldarico Matapí. 1997. *Historia de los Upichia*. Santafé de Bogotá:  
17 Tropenbos-Colombia.

18

19

20 **Peasant knowledge for territorial planning in a context of conflict**

21 **Summary Author: Visnu Posada**

22 **Country: Colombia**

23 **(Original in Spanish, translated to English)**

24 **840 words**

25

26 The El Pato-Balsillas region is located in the northwestern part of the Department of  
27 Caquetá in what is known as the Amazon piedmont. It is crossed by the national road that  
28 connects the city of Neiva (Department of Huila) with San Vicente del Caguán  
29 (Department of Caquetá), one of the epicenters of peasant colonization in the Colombian  
30 Amazon.

31

32 Settlement of this region took place between the end of the 19th century and the beginning  
33 of the 20th century, and was based on two processes: first, the displacement produced by  
34 land distribution conflicts, mainly in the Magdalena River valley, and second, the bonanza  
35 economies, which cyclically attracted population according to the boom of quina, timber,  
36 furs, rubber and coca.

37

38 The government supported some colonization processes, and agricultural and livestock  
39 planning also explicitly promoted them. However, these were not coordinated with  
40 environmental agencies, at least to avoid locating them in areas unsuitable for production  
41 and designated as conservation units (mainly National Natural Parks and Forest Reserves).

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1 Another important source of conflict were the figures that were declared after colonization  
2 and did not foresee the necessary actions to manage peasant settlements.  
3

4 As a result, several conflicts arose in the region between settlements and conservation units.  
5 These conflicts were aggravated by the weak governance of the conservation units, which  
6 were in turn associated with (a) weak capacities of the National Natural Parks agency and  
7 (b) the dynamics of armed conflict present in these frontier areas.  
8

9 In the midst of this situation, the peasant settlements reached high levels of awareness and  
10 organization that involved diverse policies and programs for managing their territory,  
11 including: minimum and maximum land sizes, intervention percentages, permits for the use  
12 of natural elements, soil, water, wildlife and forest management, community infrastructure,  
13 conflict resolution and non-intervention sites. These achievements were condensed into  
14 Community Action Boards and grassroots organizations with clear territorial jurisdictions  
15 but varied levels of organizational strength. These local grassroots organizations negotiated  
16 with government agencies about multiple rural development aspects, but conflict with  
17 conservation units and other environmental planning policies was the main contention  
18 point.  
19

20 The Pato-Balsillas Region provides a relevant case study for these conflicting territorial  
21 dynamics: although conflicts were initially associated with easements for communication  
22 infrastructure and lack of governmental support for rural development, land use conflicts  
23 quickly surfaced, since conservation units limited agricultural and livestock services.  
24

25 Settlements economy was mainly based on extractive activities (timber) and illicit crops,  
26 which increased tension with local and environmental authorities. In the early 1980s, the  
27 Pato-Balsillas settlers organization -Asociación Municipal de Colonos del Pato (Amcop)  
28 began to negotiate an agreement with local and environmental authorities a change in the  
29 productive model through territorial and environmental planning of two conservation units:  
30 the Amazon Forest Reserve and the Cordillera de los Picachos National Natural Park.  
31

32 The most outstanding elements of the negotiations had to do with stopping deforestation,  
33 eradicating illicit crops, lifting the Forest Reserve (1984) and agreeing on a new boundary  
34 for the National Park (1998) that would exclude most of the peasant families, relocate some  
35 others and pay for the most remote lands. All these elements were agreed upon in years of  
36 negotiations with national and subnational government environmental other agencies, , and  
37 were expressed in a new territorial management unit: the Peasant Reserve Zone (ZRC) for  
38 the Pato river basin and the Balsillas valley (1997).  
39

40 Colombian legislation started including Peasant Reserve Zones in 1994, as a response to the  
41 mobilization of peasant communities that demanded territorial recognition, through the  
42 promotion of their culture and economy, limitations to small- and large holdings, and

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1 public investments. The first, pilot, Peasant Reserve Zone was developed in the region of  
2 Pato Balsillas, in Cabrera and Guaviare. It is the result of- and requires agreements between  
3 environment and agriculture government agencies, and the peasantry, generally in  
4 agricultural frontier areas with relatively low levels of agricultural development and with  
5 conservation units. Peasant Reserve Zones aim to ensure sustainability of both peasant life  
6 and ecosystems, and their main management instrument is the Sustainable Development  
7 Plan (PDS).

8

9 To date, Peasant Reserve Zone (ZRC) for the Pato river basin and the Balsillas valley has  
10 managed to maintain the Cordillera de los Picachos National Park without human  
11 intervention in the area adjacent to it, reduce internal deforestation to less than 1% of its  
12 territory per year, and find a productive system that allows peasant life to flourish.

13

14 At the end of 2020, the boundaries of the CRZ were updated as a result of the high levels of  
15 ecosystem preservation (more than 60% of the ZRC), and 2,730 ha of forest cover were  
16 converted into the first Regional Natural Park of the Colombian Amazon (Miraflores and  
17 Picachos). At the same time, the Ministry of Environment and Sustainable Development  
18 adjusted the limits of the Amazon Forest Reserve, allocating to the ZRC lands that had been  
19 taken away in 1984 from the settlers to the ZRC. Also, foundations were laid to manage the  
20 expansion of the ZRC towards the Bajo Pato sub-region, after consultation with the  
21 neighboring Nasa Indigenous Community of the Altamira Resguardo.

22

23

### **Chiribiquete: World Natural and Cultural Heritage Site**

25 **Summary author: Carlos Rodríguez**

26 **Country: Colombia**

27 **(Original in Spanish, translated to English)**

28 **514 words**

29

30 The Serranía de Chiribiquete National Natural Park, located in the southwestern end of the  
31 Guyanese shield in the Colombian Amazon, is one of the largest protected areas in the  
32 country, with 4,268,095 hectares. In 2018 it was listed as a mixed Cultural and Natural  
33 Heritage of Humanity by UNESCO. This area of special interest in addition to having a  
34 high biodiversity has the presence of more than 70,000 pictographs, which give it an  
35 exceptional value in terms of the history of settlement and occupation of the Amazon.

36

37 This exceptional area has been studied by researchers for nearly three decades (Castaño-  
38 Uribe, 2019), including geology, geomorphology, soils, water, vegetation and fauna  
39 together with the archaeological study of the pictographs, which has led to the publication  
40 of several articles in indexed journals and magnificent and carefully edited books. The  
41 publications on Chiribiquete especially gather the vision of science, but one of the volumes  
42 of the Revista Colombia Amazónica includes the contribution of a traditional expert,  
43 Uldarico Matapí, who wrote the article "Echoes of Silence", which shows from the very

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1 title the magic and poetry of the place for the indigenous communities (Matapí Yucuna,  
2 2017).

3  
4 This is the reason why for several years Uldarico Matapí, supported by Tropenbos  
5 Colombia through his own research grant, has been documenting his vision of Chiribiquete  
6 as an area of great importance for shamanism, since the different phases of the origin of the  
7 world and its management rules were presented there through thousands of pictographs. In  
8 this sense, it is impressive how this shaman of the Upichía group makes mental tours of the  
9 area to describe or tell its history, including the different phases of creation of the world  
10 and his approach to geology to explain how the mountains, rivers and wonderful  
11 geographical features such as the huge round holes where "the echoes of silence" were  
12 formed. In the same way, he has been compiling the shamanic meaning and the explanation  
13 or interpretation of the pictographs in which he finds the sequences of origin myths, songs  
14 and rituals that order the world.

15  
16 As a shamanic space there is the origin of the rules of territorial management, it is told how  
17 animals were dispersed to occupy their own territories, also how plants and waters were  
18 distributed and most importantly, how shamanic knowledge was distributed as a reference  
19 to maintain the order of the jungle. In this sense, Uldarico contributes elements for  
20 governance from the traditional vision, since the area is formalized as a National Park, but  
21 its management should include the indigenous communities that as a whole have  
22 Chiribiquete as their ancestral site of shamanic importance.

23  
24 Uldarico's compilation contributes to the dialogue of knowledge, to know first hand the  
25 traditional visions and not only the scientific research, and in this sense, knowing and  
26 recognizing the importance of indigenous knowledge contributes to a better management of  
27 the area and highlights its role as a cultural heritage, locally managed. This type of  
28 contribution from traditional knowledge will have an impact on new management and  
29 governance schemes for protected areas, hence the importance of supporting compilations  
30 and contributions from traditional knowledge.  
31

32 Castaño Uribe, Carlos, Parques Nacionales Naturales de Colombia, and Instituto  
33 Colombiano de Antropología e Historia. 2019. *Chiribiquete: La Maloka Cósmica de los*  
34 *Hombres Jaguar*. 1st ed. Bogotá, Colombia: Villegas Editores.  
35 [https://issuu.com/chiribiquete/docs/fragmento\\_libro\\_gran\\_formato](https://issuu.com/chiribiquete/docs/fragmento_libro_gran_formato).

36 Matapí Yucuna, Uldarico. 2017. "Mejeimi Meje: Ecos del Silencio Chiribiquete:  
37 Patrimonio Vivo del Conocimiento Upichía Asociado al Cuidado de la Diversidad." *Revista*  
38 *Colombia Amazónica* 2017 (10): 294.  
39 <https://sinchi.org.co/files/publicaciones/revista/pdf/10/4%20mejeimi%20meje%20ecos%20del%20silencio%20chiribiquete%20patrimonio%20vivo%20del%20conocimiento%20upichia%20asociado%20al%20cuidado%20de%20la%20diversidad.pdf>.

42 **Kukama Indigenous Peoples' underwater world, Peru**  
43 Summary by Leonardo Tello and Natalia Piland  
44 Country: Peru

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1   **(Original in Spanish, translated to English)**

2   **1189 words**

3   [https://www.arcgis.com/apps/Cascade/index.html?appid=2f9a6e6de49f4556b110dc005bc9  
4   cb2b](https://www.arcgis.com/apps/Cascade/index.html?appid=2f9a6e6de49f4556b110dc005bc9cb2b)

5

6   In the Lower Marañón River, Loreto, Peru, the Kukama Kukamiria Indigenous people  
7   collectively constructed a map that tells the story of these communities, a process that  
8   proved to be a powerful tool for reflection if humbly applied. In the face of external  
9   processes that threaten the lives of the people, such as logging concessions, oil exploitation,  
10   headwater mining, and over-extraction of fish, palm trees and other things, the map  
11   communicates the relationships that are present in the day-to-day life of the communities  
12   and in the living dynamics of the river. The river is not a physical entity, but rather part of  
13   family and memory. This initiative was full of hope, struggle and strength in defense of the  
14   rivers, of life, of the people.

15

16   Among the relationships that the map reveals are the stories of the *pela-cara*, the ghost  
17   ships, and the submerged cities. These stories happen with the river.

18

19   The *pela-cara* is a super character with lights, guns, and airplanes. He is very fast and  
20   appears chasing fishermen and boat drivers. He is a being that cannot be seen from the  
21   forest. This story appears strongly when mining and oil companies invade or enter the  
22   territory without respecting the space of the native peoples. Thus, the frequency of these  
23   stories reproduces the relationships between communities and external agents, reminding us  
24   of a history of aggression and violence. By making visible the *pela-cara* story and its  
25   increased presence today, the ability to identify in which places this is happening becomes  
26   more evident.

27

28   The river also carries the memory of the rubber boom. People see ghost ships in places that  
29   turn out to be the same places where rubber was shipped during the rubber-boom period, as  
30   well as rosewood (*Tipuana tipu*), and other materials exploited at that time. When we see  
31   ghost ships, the sighting can also be felt, we can feel the pain of the people through time.  
32   Thus we also remember not only the violence before, but also the current violence, because  
33   it is the same violence with which the national governments and businessmen acted in the  
34   past, with which they act today. They are the same promises of change, and the same lies.  
35   With the map we can show the many things that we have against us in this trajectory of the  
36   history of the Amazon and the Kukama Indigenous People.

37

38   The river, besides the place where we see the *pela-cara* and the ghost ships, is also the  
39   space where we move, fish and drink, among other things. But when a person falls into the  
40   river and we do not find his or her body, it is because this person now lives inside the river.  
41   Thus, the river is no longer just space, but also enters into a relationship with people--the  
42   river gives life to everything, and it also has the life of our relatives in submerged cities.

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1 These cities are the same as the ones we have outside the river but inside the river. The  
2 river also becomes a vehicle of communication with our relatives, and our relationship with  
3 the river is also affective and spiritual.

4

5 Through these ways of knowing the river, one can understand that the river is alive. In the  
6 same way, it is understood that there are various groups of "people" ("gente"), not only  
7 humans, but also fish, birds, plants and other living beings. This way of looking at the  
8 world makes possible a harmonious relationship that is not possible when power corrupts or  
9 makes people consider themselves superior to other people or believe that we can change  
10 our surroundings without respecting the relationships we have with these other people. The  
11 ignorance of outsiders who do not know that the *cochas* (lagoons) have mothers, that there  
12 are relationships with animals and that spirits exist, means that they can enter these lands,  
13 destroying everything and taking the people with them.

14

15 This map was constructed within the project, "The Soul of the Marañon River: Submerged  
16 Stories of the Kukama People." This project of more than five years carried out by our team  
17 at Radio Ucamara, an indigenous media outlet, which collects the individual and collective  
18 stories and histories of hundreds of generations. Through an interactive map, visitors can  
19 dive into the depths of the river to learn about what cannot be seen with the naked eye: the  
20 memory and worldview of an entire culture. Through meetings and workshops with  
21 community leaders, religious animators and other members of the Kukama people, the team  
22 gathered all the information needed to map the significant places. Between September 2016  
23 and October 2017, and with the support of civil society organizations such as Wildlife  
24 Conservation Society (WCS) Peru, four additional field trips were completed to  
25 georeference the elements identified in the maps, which were published within a StoryMap  
26 in 2020 (Radio Ucamara, 2020).

27

28 The information compiled in this map and the location of each element of the cosmovision  
29 of the Kukama People not only shows us the importance that rivers have for an entire  
30 culture, but also the great social impact that the construction of poorly planned  
31 infrastructure brings, since not only would be changing the space where they live, but also  
32 could be destroying a part of their memory. And that has no return.

33

34 In this way, the map is also a step to be able to reach other people suffering similar things  
35 to the Kukama People. This process of mapping together our cosmovision and its political  
36 and cultural context can be done in other areas of the Amazon. In collaboration with  
37 CONFENIAE, an indigenous federation in the Ecuadorian Amazon, Radio Ucamara is in  
38 the process of forming a network that gives Indigenous peoples the possibility of building  
39 policies and communications throughout the Amazon. Particularly in times of pandemic, it  
40 is more important to have this kind of alliance with courage. We believe that this  
41 experience is a way to generate a new way of thinking about the political relationship, and  
42 the relationship of power in both ways. In my 20 years as a social communicator, I have  
43 seen that large networks generate a lot of porosity and fall if they do not have the most local

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1 experiences. With a map like this, we can generate local experiences that inspire a much  
2 larger movement. In addition to the map, we are working on films, animations, video clips,  
3 and recovering self-participating identities. Radio Ucamara is categorized as a cultural  
4 radio, but we are creating a movement that will sustain itself over time, just as the feminist  
5 movement is getting stronger.  
6

7 The map is not just a map. It is full of lived, painful and violent histories, and we could  
8 have a struggle as confrontational as that of the unions and other movements, but we don't  
9 want to lose any more lives. Our struggle is at the creative level. We must be able to do  
10 beautiful things, and this map is just one step in this struggle that moves people through  
11 affection, rethinking, and collaboration and synergy. No one can resist a nice thing, and the  
12 map is just one of the nice things in this movement of indigenous knowledge.  
13

14 References:

15

16 Radio Ucamara. 2020. "Parana Marañún tsawa: El alma del Río Marañón. A Story Map."  
17 Story Map. 2020.  
18 <https://www.arcgis.com/apps/Cascade/index.html?appid=2f9a6e6de49f4556b110dc005bc9cb2b>.  
19  
20

21 **The territory of the yurupari jaguars**  
22 **Summary Author: Carlos Rodríguez**  
23 **Country: Colombia**  
24 **(Original in Spanish, translated to English)**  
25 **455 words**  
26

27 This publication (ACAIPI, 2015) gathers the contributions of dozens of traditional  
28 knowledgeable people of the Barasana, Eduria, Itana, Macuna and Tatuyo peoples of the  
29 Pirá Paraná River in the Colombian Amazon, also known as the Territory of the Jaguars of  
30 Yuruparí. Through a long process of cultural strengthening these Indigenous peoples  
31 captured their knowledge in written form, as a form of transmission to young generations  
32 and to the western or "white" world. In this way they would better understand their visions  
33 of territorial management and their vision of the world.  
34

35 UNESCO recognized the traditional knowledge about the jaguars of the Yurupari as  
36 an Intangible Cultural Heritage of Humanity. This recognition entails the implementation  
37 of special measures for its protection and dissemination in governmental, academic and  
38 cultural spheres. In this sense, the book makes visible the wealth of Indigenous knowledge  
39 about care of the territory in one of the best preserved areas of the Amazon.  
40

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1 This book was generated from a dynamic of interaction between ACAIPI, the association of  
2 captains and traditional Indigenous authorities of the Pirá Paraná River and the Gaia  
3 Amazonas Foundation, through the collaboration between Gaia researchers and several  
4 groups of Indigenous youth, who also learned skills to use technology for listening,  
5 learning and transcribing the narratives of Indigenous knowledge. In this way, they  
6 recorded, translated and transcribed oral histories into Spanish and made dozens of  
7 drawings and maps to accompany the narratives. This process was nurtured by  
8 professionals in natural and social sciences from the Gaia Foundation through an  
9 intercultural knowledge dialogue. Researchers and Indigenous groups designed a joint  
10 strategy to create research groups, one per Indigenous group, *maloca* and community. The  
11 research groups defined priority research topics and selected the texts that would later be  
12 included in the publication.  
13

14 The final selection of texts by local Indigenous experts does not correspond to a linear  
15 discourse, but rather to the integral vision that Indigenous peoples possess. However, but  
16 for the purposes of publication, these texts were grouped into chapters by theme: Narrations  
17 or words of origin, origin of the prayers, the emergence of the people, the territory as a  
18 great *maloca*, the sacred places of power, and the ecological calendar. Each chapter  
19 includes contributions from different Indigenous experts as authors and highlight their  
20 personal stamp in terms of the different ways in which each person tells a story.  
21

22 Through these now written text, indigenous youth have valuable reference material for their  
23 own educational projects, while for Western society this publication is a first-hand  
24 reference on indigenous visions of the territory and the care of nature, and offers great  
25 lessons of environmental ethics that enable these Indigenous peoples to secure over  
26 thousands of years one of the best preserved forest areas in the entire Amazon.  
27

28 The impact of this publication also reaches the political sphere: it strengthened the case for  
29 self-governments and autonomy of Indigenous peoples in the Colombian Amazon and may  
30 inform the design and implementation of public policies that respond to the cultural  
31 diversity of the nation. Indigenous and non-indigenous researchers made important efforts  
32 to show the Indigenous world vision to subnational and national government authorities,  
33 and to include this knowledge and practices in the concept of sustainability. The President  
34 of Colombia, Juan Manuel Santos, wrote himself the prologue of this book and highlighted  
35 the agreements recently signed with Brasil to safeguard the immaterial patrimony of  
36 Indigenous peoples of the northwestern Amazon Basin.  
37

38 References:  
39 *Hee Yaia Godo ~Bakari - El Territorio de los Jaguares de Yuruparí. Conocimiento*  
40 *Tradicional de las Etnias del Río Pirá Paraná para el Cuidado del Medio Ambiente.* 2014.  
41 1st ed. Vaupés, Colombia: Asociaciones de Capitanes y Autoridades Tradicionales  
42 Indígenas del Río Pirá Paraná (ACAIPI) & Fundación Gaia Amazonas.

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1 [https://www.gaiaamazonas.org/uploads/uploads/books/pdf/El\\_Territorio\\_de\\_los\\_Jaguares](https://www.gaiaamazonas.org/uploads/uploads/books/pdf/El_Territorio_de_los_Jaguares)  
2 de\_Yurupar%C3%AD\_Gaia\_Amazonas\_ACAIPI\_2012.pdf.  
3

4 **Piraiba local knowledge: The fishermen's knowledge**

5 **Summary Author:** Carlos Rodríguez

6 **Country:** Colombia

7 **(Original in Spanish, translated to English)**

8 **1164 words**

9 Scientific research on giant catfish in the Colombian Amazon dates back to the end of the  
10` s with studies implemented by the Araracuara Corporation, a private institution that  
11 began to conduct research about fisheries of giant catfish species in the middle Caquetá  
12 River (Japurá in Brazil), including dorado (*Brachyplatystoma rousseauxii*), lechero or  
13 piraiba (*Brachyplatystoma capapretum*), pejenegro (*Zungaro zungaro*), guacamayo  
14 (*Phractocephalus hemiolopterus*) and pintadillo (*Pseudoplatystoma sp*). Early research  
15 focused on the definition of biological parameters for fisheries such as catch sizes and  
16 sexual maturity sizes, to inform fisheries regulations through establishing minimum catch  
17 sizes. These early studies resulted in published articles that provided guidelines for future  
18 research. Also, on behalf of the fishing authorities of that time, surveys were conducted in  
19 the lower Caquetá River, very close to the border with Brazil, and some fisheries  
20 regulations were established, including long periods of closure and limitations to the use of  
21 fishing nets - the predominantly used gear in the area.

22

23 In 1982, Carlos Rodríguez started a ten-year study on commercial fishing of giant catfish  
24 species, using information generated locally by fish traders (through their cold room  
25 inventories). This study was published under the title “Bagres, Malleros y Cuerderos en el  
26 Bajo Río Caquetá” (Rodríguez, 1992) and presented a first ever integrated analysis of  
27 historical, social, economic and biological aspects of fisheries in an area of about 400 km  
28 between the Cahuinarí River and the Brazilian border. Through participatory research  
29 methodologies, both fishermen and traders refined and improved data collection methods to  
30 record information on catch parameters, fishing gear, catch areas and fishing effort.

31

32 Research on giant catfish species continued over time with undergraduate theses and  
33 doctoral research and investigations by civil society organizations and research institutes  
34 such as Instituto SINCHI on biological, reproductive and fishing aspects, contributing to a  
35 better understanding of catfish species (Agudelo Córdoba et al., 2000). A topic that always  
36 caught the attention of researchers was the feeding relationships of catfishes and many  
37 scholars tried to study this subject but found enormous limitations. Biological sciences  
38 approach this subject from the perspective of studying stomach contents, but researchers  
39 found empty stomachs in more than 95% of sampled catfish individuals, making it  
40 impossible to deepen in the trophic relationships and diet of giant catfishes. In view of this  
41 situation, researchers proposed to study stomachs of all captured specimens by fish traders,  
42 but they found that many fish arrived to the cold chambers already eviscerated and that the

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1 researchers' task of reviewing, storing and analysis of stomachs would interfere with the  
2 fish traders' tasks of preparing the fish before storing them in cold rooms for sale (e.g.,  
3 evisceration, gutting, de-salting and cutting the head). Analyzing stomachs of fish caught  
4 by fish traders became, if not impossible, extremely complex, demanding and costly.  
5

6 Faced with the aforementioned limitations, more than two decades ago Tropenbos began a  
7 participatory research process with Indigenous communities and local people aimed at  
8 supporting the exhaustive documentation of Indigenous and local knowledge about the  
9 Amazon forest, including plants, terrestrial and aquatic fauna, soils, geology, as well as  
10 social and cultural aspects of Indigenous and local visions of the forest and its resources. As  
11 part of this, and through grants for local research, researchers supported Luis Angel  
12 Trujillo, a second generation settler, to compile his own knowledge about catfishes and  
13 their ecological relationships. They awarded these grants to Luis Angel Trujillo because on  
14 many occasions he brought out his enormous capacity to tell and share his knowledge with  
15 the biologists who were working in the middle and lower Caquetá River region, between  
16 Araracuara and La Pedrera, on the border with Brazil.  
17

18 As all local people, Luis Angel learned the art of fishing as a child and logically began to  
19 also master the world of water and fish, especially giant catfish species. At the time, fishing  
20 was almost the only source of cash income in the region, and many young people entered  
21 this trade. Over time, fishermen learn in great detail the behavior of the river, its  
22 hydrological periods, its hydrography, the strength of its currents, and its geographic  
23 accidents, such as rapids (*correntadas*), watering places (*regadales*), beaches, shallows,  
24 backwaters, etc. Fishermen also learn about giant catfish seasonal behavior and their  
25 diurnal and nocturnal cycles, and with practice over time and permanent advice by most  
26 experienced fishermen, they learn in great detail about baits, techniques of capture and the  
27 most successful places of capture. Fishermen are the first ones to check the stomach  
28 contents of giant catfishes in order to learn which fish-prey were they consuming at the  
29 moment of capture and then look for these species as bait. Over a lifetime, angler fishermen  
30 accumulate an enormous amount of information about prey-predator relationships and fish  
31 behavior.  
32

33 Throughout his life, Luis Angel Trujillo accumulated expert fishing knowledge that enabled  
34 him to effectively gather information about the feeding relationships of each of the giant  
35 catfish species. Accompanied by scientific methods and with a simple spreadsheet, he  
36 recorded his knowledge about the diets of each of the species and generated extensive lists  
37 of prey. Then he consulted with fellow fishermen to expand these lists. The expanded prey  
38 lists were then used as the base to organize additional information in new columns, such as  
39 classification of species as bait or natural prey, the hydrological period in which the  
40 relationship occurs, and notes on whether the predation occurs on the Caquetá River or in  
41 its tributaries –giving information on up to where giant catfish can swim upstream.  
42

## **Chapter 33**

1 The resulting list of prey for the piraiba reached 93 species, while scientific research had  
2 only been able to identify 17 prey species, i.e. local knowledge exceeded scientific  
3 knowledge five times over. The list of species compiled by Luis Angel Trujillo was later  
4 complemented with the stories he narrated about the methods of capture, the moment in the  
5 river's hydrological cycle and the behavior of each prey, together with other fish stories he  
6 learned from the time shared with Indigenous peoples. This magnificent material, compiled  
7 over 20 years, was then edited for publication in collaboration with Confucio Hernández  
8 Makuritofe, an Indigenous Uitoto expert in the art of illustration. Under the direction of  
9 Luis Angel Trujillo and his family, Confucio Hernández drew, one by one, the ecological  
10 relationships present in the world of water with impressive mastery and detail.  
11

12 The result of this collaborative local research was published in the book entitled *Piraiba:*  
13 *Ecología Ilustrada del Gran Bagre del Amazonas* (Trujillo, Rodríguez and Hernández,  
14 2018). It is the product of an extensive knowledge dialogue between local knowledge and  
15 academic knowledge in the fields of biology, systematic taxonomy and ecology,  
16 complemented with ecological illustration. That same year, the book obtained the  
17 Alejandro Angel Escobar National Research Prize, the most important research prize in  
18 Colombia. For the first time in Colombian history, local knowledge was recognized in a  
19 traditionally prize dominated by academic scientific research. The impact of this  
20 collaborative work has also permeated public institutions, and environmental government  
21 agencies are beginning to recognize the importance of including local knowledge and  
22 community monitoring in the management of fisheries in Colombia.  
23

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36  
37  
38

39 **Biodiversity as a form of sexual education**  
40 **Summary Author: Oscar Romualdo Román-Jitdutjaño (anciano nipodimaki), Juan**  
41 **Alvaro Echeverri (Universidad Nacional de Colombia)**

## **Chapter 33**

1   **(Original in Spanish, translated to English)**

2   **773 words**

3   This text is signed by a Murui nipode elder, Oscar Román-Jitdutjaño 'Enokakuidoo', and  
4   an anthropologist, Juan Alvaro Echeverri, who since 1995 we initiated a process of  
5   dialogue, research and work on salt. The word Murui iaizai 'salt' refers to alkaline salts of  
6   vegetable origin, which are used by the Murui and other neighboring groups as a mixture  
7   for tobacco paste (yera 'ambil'). But, in a symbolic and spiritual sense, the concept of iaizai-  
8   sal refers to the fertilizing potency present in all living beings and is the basis of the  
9   principles of formation of human beings and the management of their relationships.  
10   (Román-Jitdutjaño et al. 2020).

11

12   This was an intercultural work, meaning by this, not so much the combination of different  
13   approaches - indigenous and scientific - on the same object (salt), but rather the recognition  
14   of the same (human) condition through the construction of different objects: an object of  
15   the positive sciences, salt, and the object of indigenous knowledge: the human body. An  
16   intercultural project is above all the construction of a social relationship between people  
17   with different capacities and knowledge, where an exchange of substances and services is  
18   established to achieve some common goal. This relationship is precisely the object of  
19   indigenous knowledge: those substances and services - food, tobacco, money, tools - are the  
20   salt of the matter. This relationship is comparable to the sexual relationship between a  
21   couple, where the exchange of substances leads to fertility, the main focus of this  
22   knowledge.

23

24   From the perspective of science, the subject of our common research is the salt, from the  
25   indigenous perspective what matters is the salt of the matter: the project, seen as a human  
26   relationship. What interests us is the latter. We want to show how the study of the human  
27   condition is carried out through a reading of the plant species used to extract plant salts,  
28   which are conceived as coming from the body of the Creator and as an image of the human  
29   body.

30

31   The plant species conspicuously show bodily processes that are hidden from perception.  
32   This reading of natural entities is intended to guide moral behavior and to develop a  
33   healthy, sociable and fertile human body. Unlike the knowledge of objective and empirical  
34   sciences, indigenous knowledge of biodiversity can be conceived as sexual education,  
35   understood as "knowledge of the body" (abina onode), that is, the control and management  
36   of bodily humors, affections and capacities, in order to achieve fertility.

37

38   We said above that our concept of "interculturality" goes beyond the combination of  
39   different approaches (indigenous and scientific) on the same object. In the western vision,  
40   plant salt (and its different associations) is an object and its different interpretations a  
41   matter of cultural difference. From indigenous knowledge, on the other hand, the fact that  
42   each culture is apparently talking about a different object (or objects) is irrelevant, insofar  
43   as the objects share a common condition: humanity. Indigenous knowledge about plants is a

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1 device for understanding the dangers and risks ("salt-diseases") of the relationship involved  
2 in any political or scientific engagement, i.e., sexual education.

3

4 There is much to learn from indigenous and local communities that directly depend on,  
5 spiritually value, and fight for their biodiverse ecosystems. These peoples not only value  
6 biodiversity for its utility, but also and primarily because these natural entities, objects and  
7 species are their very body.

8

9 In 1995, at the very beginning of our study of the salts, Enokakuiodo wrote a text in the  
10 Murui language, entitled Nabairiya, which we can translate as "Agreement", in which he  
11 made explicit the objective of our common effort. We translate some lines from it, which  
12 may give us an idea of the salt of the matter, to conclude (Román-Jitdutjaño et al. 2020,  
13 1339):

fitoi raidora jenoyena	Seeking fruitfulness in a dangerous frontier,
yizidino dujuna jenua	seeking the formation of life,
kaie daanori onoiyena feeiredino taijie	to know together what is ours, is a difficult job.
jaikina mairie jiae jibibiridino	A direct power to other mambeaderos.
menade nii iairoji jiai naiai	Two oceans, two peoples,
daaje Moniya nagima Kamani nagima	Europe and America.
fakadoga uai kominidikai uai	Each speaks with its own voice,
kiona onoga komini iyano nagima	each one lives according to its origin.
jirui uai nibaide onoñenia ii a yote jiruiñede	Sexuality however is the same; it is dangerous, one must know.
yoneraingo nii yoneraima daiitadima onoiga	The sex education teacher [biodiversity] is the one who knows, for she has already experienced everything.

14

15 References

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2 Investigaciones Imani. <https://repositorio.unal.edu.co/handle/unal/77785>.

3

4 **Training Indigenous Environmental Agents in the Southern Brazilian Amazon**

5 **Summary Author: Ney José Brito Maciel (PPI/IEB)**

6 **Country: Brazil**

7 **(Original in Portuguese translated to English)**

8 **489 words**

9

10 The Continous Training Program for Indigenous Environmental Agents in the South of  
11 Amazonas is the result of a consolidated partnership between the Indigenous Peoples  
12 Program (PPI) of the Institute of Education of Brazil (IEB) and the Parintintin, Jiahui,  
13 Tenharim and Apurinã Indigenous Peoples, with their respective representative  
14 organizations. In 2020, 73 Indigenous Environmental Agents (AAIs) participated in this  
15 training program, which seeks to reflect on concepts, practices, techniques and technologies  
16 to support sustainable development and environmental security. Ultimately, the training  
17 program aims to increase Indigenous participants technical and political capabilities in  
18 facing a range of socio-environmental challenges that affect their territories.

19

20 The courses provide complementary spaces for dialogue and debate between diverse  
21 indigenous and non-indigenous concepts and practices, with the premise of developing a  
22 more equitable and balanced dialogue between indigenous and non-indigenous knowledge,  
23 particularly mainstream scientific knowledge. Courses aim to build a productive  
24 collaborative relationship between communities that have distinct worldviews, and yet  
25 share the same planet. The result is new ideas, new commitments, and new co-produced  
26 intercultural practices.

27

28 An essential part of this continuing education program is to carry out activities 'on the  
29 ground' in the villages where the Indigenous environmental agents live. These activities  
30 include natural resource management and conservation; political articulation with their  
31 communities; surveillance and inspection actions; research, mapping; and production of  
32 GIS maps, surveys, diagnoses, and inventories of natural resources and/or agro-forestry, as  
33 well as other interventions based on the opinions and demands gathered directly from the  
34 residents.

35

36 The training, followed by indigenous environmental agents' constant activities in their  
37 villages and also in political spaces, is part of a broader process that involves many other  
38 indigenous peoples in Brazil, and is recognized as one of the most important components in  
39 the field of Brazilian environmental indigenism. This recognition stems from the very  
40 effectiveness and practical results that they demonstrate in the effective environmental and  
41 territorial management of their territories. In this sense, AAI are considered central social

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1 actors in the effort to place the indigenous peoples on another level, where they are no  
2 longer attributed the role of victims or obstacles to national development, but rather as  
3 collectivities whose actions are essential for the environmental protection of the Brazilian  
4 biomes and for an authentic sustainable development.  
5

6 The financial support for this continuing education comes from various sources over time,  
7 almost always from various international cooperation projects. Specifically, to support the  
8 training of the 73 AAI mentioned here, resources are being provided by USAID, which  
9 supports the 'Our Land Project: Support for Territorial Management in southern Amazonas';  
10 and resources from the Amazon Fund, which supports the 'Sulam Indigenous Project:  
11 Indigenous Territorial Management in southern Amazonas'. Both are aimed at improving  
12 and enhancing the environmental and territorial management of the indigenous lands of the  
13 above mentioned peoples.

14 To learn more about these and other partnership projects between the PPI/IEB and the  
15 indigenous peoples of southern Amazonas, go to [https://iieb.org.br/projetos-e-](https://iieb.org.br/projetos-e-programas/povos-indigenas-2/)  
16 [programas/povos-indigenas-2/](https://iieb.org.br/projetos-e-programas/povos-indigenas-2/) or visit our Youtube channel  
17 <https://www.youtube.com/c/canaldoieb/videos>.

18  
19 **Citizen science as a tool for fisheries monitoring using the Ictio App in the Madeira  
20 River Basin**

21 **Summary Author: Carolina R C Doria**

22 **Country: Brazil**

23 **(Original in Portuguese, translated to English)**

24 **582 words**

25

26 Continental fisheries are less regulated in developing countries than in other regions of the  
27 world, as fishing statistics on fish landings are underrepresented or non-existent. The lack  
28 of robust data in Brazilian fisheries is recognized as a threat to the management and  
29 conservation of stocks. A large and diverse population of small-scale fishermen undertakes  
30 fishing activities in freshwater ecosystems, often in remote, undefined places. Catches are  
31 seasonal while species composition is highly variable. Most catches do not enter a formal  
32 market system, but go directly to domestic consumption. These factors make it even more  
33 difficult to monitor fisheries and assess stocks.

34 This situation is even more aggravated in the state of Rondônia by the fact that the only  
35 ones implementing fisheries monitoring in the region are the hydroelectric dam  
36 construction and operation companies. Thus, access to collected data is difficult for  
37 governmental fisheries managers, and essentially impossible for fishermen. As a result,  
38 these actors cannot participate in fisheries assessments and organizing fisheries in the  
39 region becomes very difficult.

40 Between July and December 2018, the ECOPORÉ non-governmental organization and the  
41 Ichthyology and Fisheries Laboratory of the Federal University of Rondônia tested the Ictio  
42 application as a tool to solve gaps in small-scale fisheries monitoring. This was part of an

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1 Amazon-wide collaborative project that supported training of a technician and a local  
2 intern, and the exchange of experiences with other projects across the basin.

3 The project encouraged the participation of fishermen in data collection and interpretation  
4 to answer their own questions about fishing. Fishermen were invited through community  
5 meetings and also at fish landing sites. Project team members and participating fishermen  
6 communicated via community meetings and Whatsapp groups and discussed the situation  
7 of exploited fishing resources; the impacts of hydroelectric dams on fish, particularly on  
8 migratory fish; and other topics of interest to fishermen.

9 Field testing results demonstrated that it is possible to use smartphones to collect data on  
10 small-scale fishing landings. With support of citizen science protocols and the Ictio App  
11 installed in smartphones, fishermen collected data on small-scale fishing landings. At the  
12 same time, community members were empowered to monitor and co-manage fisheries,  
13 uniting formal and traditional governance. This is particularly important in the Madeira  
14 Basin, given the recent implementation of two hydroelectric plants in the system, and the  
15 numerous problems caused by fishermen lack of access to fisheries data collected by  
16 hydroelectric companies, inhibiting in turn their participation in decision making.

17 Considering good access of fishermen to the internet network is secured in their  
18 smartphones, the Ictio App can be a powerful tool, allowing greater ownership when  
19 participating in data collection and also the creation of a support network between users.

20 The network created between the technical team and the fishermen, makes it possible to  
21 continue the project, by encouraging fishermen to keep daily records. In addition, the  
22 Citizen Science for the Amazon Network that emerged in this process seeks to replicate this  
23 process throughout the entire Amazon basin. To this end, next steps will involve  
24 disseminating the results obtained so far and raising awareness about the Ictio App and the  
25 Network among as many fishermen as possible. We expect that the number of (sporting and  
26 professional) fishermen that use the application will increase in the coming years and that  
27 the information generated will be used to increase understanding of fisheries stocks so that  
28 fishermen can propose management and mitigation measures to address impacts of the  
29 hydroelectric dams and overfishing on fisheries in the Madeira Basin. For more information  
30 see <https://ecopore.org.br/novo/o-que-os-cientistas-cidadaos-estao-registrando-no-ictio-neste-2020/>

32

### **The Citizen Science for the Amazon Network: and Amazon-wide collaboration to understand large-scale fish migrations**

**Summary autor: Mariana Varese**

**Country: Bolivia, Brazil, Colombia, Ecuador, Peru**

**(Original in English)**

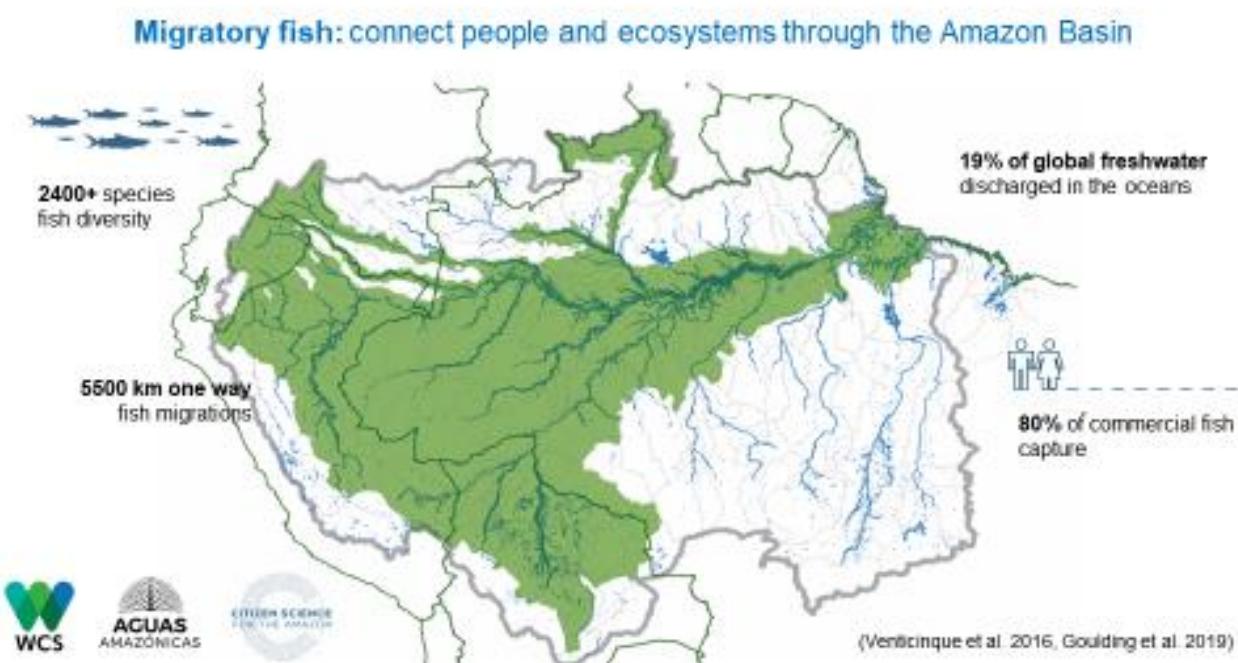
**1014 Words**

40 The Citizen Science for the Amazon Network is a knowledge network that seeks to create  
41 and share knowledge in an accessible, trustworthy and timely way, with the ultimate goal of

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1 informing management and policy decisions at scale in the Amazon Basin. As of April  
2 2021, the network included over 25 partners of different backgrounds from 7 different  
3 countries, all working on Amazon freshwater systems from their own perspective and  
4 interests. Partners have their own area of influence and lead collaborations with over 70  
5 citizen scientist groups; thus, the Citizen Science for the Amazon Network is in fact a  
6 regional network of local networks.  
7

8 The Citizen Science for the Amazon Network focuses on Amazon freshwater systems and  
9 started with migratory fish because fish are sentinels of the basin's connectivity, are critical  
10 for rural and urban people livelihoods, and connect people with the ecosystem (see Figure  
11 1).  
12



13  
14 *Figure 1. Green area represents the areas important for continental and large-scale*  
15 *migratory fish life cycles (Venticinque et al. 2016, Goulding et al. 2019).*  
16

17 In the Amazon's extremely diverse and complex context, network partners created a  
18 common thread to connect them all without forcing standardization or protocols that may  
19 become a straightjacket for participating organizations and IPLC. First, through a  
20 collaborative process that started in 2017 and continues today, partners jointly defined a  
21 common question at the large scale that is general enough to gather multiple stakeholders  
22 around it, but is simple enough that enables weaving other questions at smaller scales. The  
23 common framing question is: *Where and when do fish migrate in the Amazon Basin and*  
24 *what environmental factors influence these migrations?*  
25

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1 The Network also builds from the knowledge, capacities and experience of partners and  
2 others. Partners design, test, adapt innovative solutions catered to the Amazon context,  
3 constantly learning in this process. Over time, partners have agreed on guiding principles,  
4 variables, protocols, free prior informed consent, terms of use, credit, and protection of  
5 privacy guidelines. These are regularly reviewed, assessed and adjusted with an adaptive  
6 management approach.

7

8 As of April 2020, network partners reached important progress in terms of generating and  
9 sharing data on observations of the most important migratory and food fishes in the  
10 Amazon, through Ictio.org, a shared database and app developed by the Cornell Lab of  
11 Ornithology in collaboration with Wildlife Conservation Society and network partners  
12 (Figure 2).

13

### Organizações



### Individuos

Vanessa Eyang

Sebastian Heilpern

Natalia Piland

Karen Castillo

Guido Herrera

14

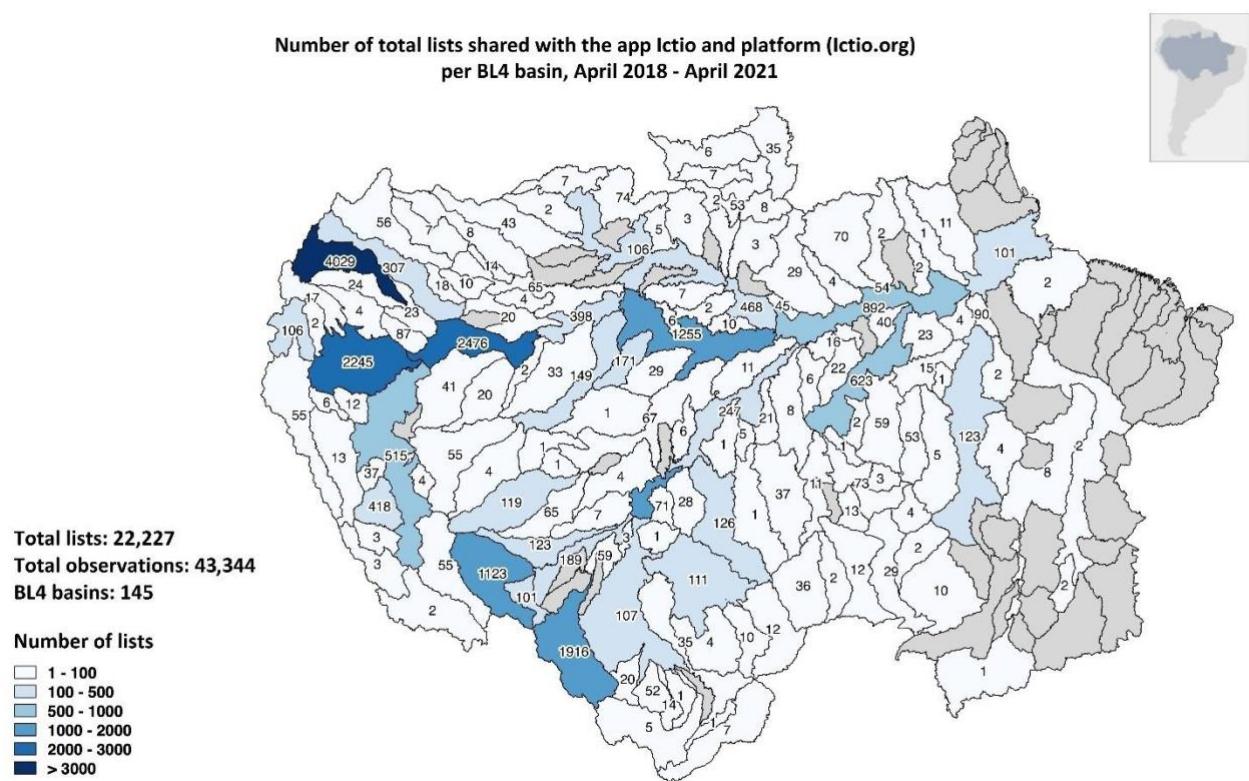
15 *Figure 2. As of April 2020, partners of the Citizen Science for the Amazon Network include*  
16 *universities, research institutes, non-governmental organizations and grassroots*  
17 *organizations and individuals from 7 different countries, including Bolivia, Brazil,*  
18 *Colombia, Ecuador, France, Perú and the United States of America.*

19

20 As of April 2021, the data base includes over 40,000 fish observations in 73% of the total  
21 198 Amazon Level 4 subbasins (as per Venticinque et al. 2016) (Figure 3). A lot more data  
22 is needed, and both Ictio and the Network are prepared to foster such large-scale, multi-  
23 stakeholder, multi-scale collaboration. To address challenges associated with the high-level  
24 of diversity and complexity of fisheries in the Amazon Basin, Ictio embraces diverse  
25 sources of data on fish observations (from uploading data to the app to registering records  
26 on notebooks to government- or researcher-based monitoring frameworks), and partners  
27 follow careful procedures to ensure proposed activities are presented, consulted and/or co-

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1 designed, and implemented with participating citizens, IPLC, and organizations in a  
2 collaborative way, where objectives and decisions about access and use of the generated  
3 information are transparently and horizontally agreed upon.  
4



5  
6 *Figure 3. Between April 2018 and April 2021, a total of 22,227 lists (observation events)*  
7 *were uploaded to the Ictio shared database, through the Ictio App and/or the online*  
8 *platform (ictio.org). These lists represent a total of 43,344 observations of 109 fish taxa*  
9 *(including 12 giant migratory catfish species), across 145 BL4 sub-basins of the Amazon*  
10 *that represent 73% of the total of the 198 BL4 level sub-basins (as per basin classification*  
11 *by Venticinque et al. 2016).*

12

13 Data is then made open to the public and shared through a three-tiered system that seeks to  
14 protect the privacy and rights of participating citizens and their communities or  
15 organizations (especially IPLC), while following the principles of open science and open  
16 access (see OCDKN 2015). Individual citizen scientists or ‘users’ (depending on the area,  
17 it may be a person, or a community, or a fishers association) have complete access to the  
18 full data set they generate. Then, Network partners have access to a data set that does not  
19 include personal identifiers but includes precise location names or coordinates. This is  
20 important for partners to address locally relevant questions (e.g., at the level of a watershed  
21 or river tract). Finally, the Ictio fish data is available to the public via the Ictio.org website,  
22 but this dataset does not include personal identifiers like names and contact information,  
23 nor precise location names or coordinates. Instead, this dataset only includes the Basin

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1 Level 4 watershed for location (between 10,000 and 100,000 km<sup>2</sup> as per Venticinque et al.  
2 2016). This system enables citizens, IPLC organizations, managers and researchers to use  
3 the data for multiple purposes at different scales –from recording individual fishing/selling  
4 statistics, to informing community-based fisheries management plans, to understanding  
5 impacts of infrastructure projects such as dams on fish migrations, to learning about  
6 continental-level giant catfish migratory patterns.

7

8 The Citizen Science for the Amazon Network and its quest to increase our collective  
9 understanding of Amazon freshwater systems connectivity and integrity, still face  
10 important challenges ahead, but a strong foundation of transparency, collaboration,  
11 adaptive management and innovation has been laid out (see also World Bank, 2021, p.  
12 297). In the coming years, Network partners will focus on increasing the fish database,  
13 connecting it with other similar or complementary efforts, and gathering best practices and  
14 lessons to continue fostering public participation in knowledge generation and sharing to  
15 inform decisions and policies across the Amazon. All this, while managing potential  
16 tensions associated to the Network’s commitment to scale (this is what brings partners  
17 together), while embracing diversity of sources of knowledge (especially ILK), and respect  
18 and enforcement of IPLC fundamental rights. For instance, reaching basin-wide scale  
19 requires some level of homogenization, while community-based monitoring or science  
20 generally involves multiple forms of knowledge, associated with specific environmental,  
21 social and cultural contexts. This diversity makes it difficult to agree on common criteria,  
22 parameters, thresholds required for aggregation. Also, it sometimes forces us to negotiate  
23 among conflicting views of the world. Also, authorship, intellectual property rights and  
24 appropriate credit given to non-mainstream scientists continues to be an unresolved  
25 challenge, although important progress has been made in recent years.

26

27 As network partners deal with these tensions and address these challenges, a fundamental  
28 guideline is to follow the precautionary principle and that local partners take the lead on  
29 identifying together with citizen scientists (e.g., fishermen associations, indigenous  
30 communities, or students) what local questions to answer, how to analyze and use the data,  
31 if and how to share information, what decisions to inform and what audiences to target.

32

33 The rapidly evolving fields of citizen science, open science, and open access offer globally  
34 important lessons and best practices that can contribute to sustainable pathways for the  
35 Amazon, in a way that places its peoples at the center of conversations. The Citizen Science  
36 for the Amazon Network provides a model of Pan-Amazon network that connects diverse  
37 and distributed communities that generate and share knowledge and co-create solutions  
38 through a decentralized, transparent and innovative governance model.

39

40 For more information visit <https://www.amazoniacienciaciudadana.org/english/> .  
41

42 References:

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1

2 World Bank (Washington, District of Columbia), ed. 2021. *World Development Report*  
3 2021: Data for Better Lives. World Development Report. Washington: World Bank.  
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5

6

### 7 Collaborative Knowledge Production and Coalition Building for Conservation Action 8 through Rapid Biological and Social Inventories

9 Summary by Chris Jarrett and Diana Alvira Reyes

10 Country: Peru and Colombia  
11 (Original in English)

12 787 words

13

14 Since 1999, the Field Museum has led 31 rapid biological and social inventories in areas of  
15 high biodiversity and uniqueness, and 24 of these have been conducted in Amazonia: 14 in  
16 Peru, 3 in Bolivia, 3 in Ecuador, 2 in Colombia, and two binational (Ecuador-Peru, Peru-  
17 Colombia). Rapid inventories leverage the Field Museum's scientific expertise and  
18 collections of over 40 million specimens to collaboratively produce knowledge that  
19 supports conservation action. Our vision of conservation is one in which environmental  
20 health is intimately linked with local peoples' wellbeing, so we design inventories to bring  
21 together diverse groups and with the shared goal of sustained stewardship of these unique  
22 and important landscapes.

23



PROTEGIDO/PROTECTED	HECTÁREAS	ACRES
C1 Bolivia Tahuamayo	1,427,400	3,522,109
C2 Perú Cordillera Azul	1,353,190	3,343,732
C3 Ecuador Cotón-Beníape	95,451	137,209
C4 Bolivia Bruto Rácu	74,054	182,391
C5 Perú Tambopata-Tahuayo	322,379	796,298
C6 Perú Amazonas-Ayapaca	433,099	1,070,211
C7 Perú Magdalena	216,000	535,748
C8 Perú Matuts	420,635	1,059,413
C9 Perú Sierra del Divisor	1,479,311	3,652,306
C10 Perú Nariño-Putaya-Chambira	955,001	2,354,516
C11 Perú Géorg-Saxipe	209,629	503,177
C12 Perú Huanalli	141,234	348,998
C13 Perú Aro Pal	247,868	612,544
C14 Ecuador Territorio ancestral Cotan	30,700	75,861
C15 Ecuador Colonia-Chingal	89,272	220,596
C16 Perú Mayuna-Kichwa	391,040	996,280
C17 Perú Yaguas	869,927	2,147,118
Total Protegido/Protected	8,706,818	21,544,713

FORTALECIDO/REINFORCED	HECTÁREAS	ACRES
O1 Chiles Yanmar	405,549	1,002,133
O2 Cuba Zapata	432,000	1,067,490
O3 Cuba Cubitas	35,810	88,480
O4 Cuba Pico Mogote	14,900	36,819
O5 Cuba Siboney-Jatik	2,075	5,127
O6 Cuba Bahoruco	24,100	59,552
O7 Cuba Humoldt	70,680	174,854
O8 Ecuador Coopobo	603,380	1,490,984
O9 Perú Kampanis (Santiago Consalva)	399,449	984,590
Total Fortalecido/Reinforced	1,986,943	4,909,842

PROYECTO/PROPOSED	HECTÁREAS	ACRES
P5 Belice Mache de Dén	51,112	126,303
P6 Belice Federico Román	202,342	499,996
P7 Perú Yaneti	77,702	1,041,250
P8 Ecuador Donoso	9,469	23,390
P9 Perú Bajo Putumayo	347,699	856,183
P10 Perú Eri-Campoy-Aigajote	900,172	2,234,378
P11 Perú Condesa Escalera-Loretó	130,925	325,523
P12 Perú Tapiche-Blanco	306,485	762,229
P13 Perú Medio Putumayo-Aigajote	416,800	1,029,441
P14 Ecuador Litoral, Capricho, Cerritos	54,000	133,434
P15 Colombia Bajo Cauca-Cauca	779,857	1,927,049
Total Propuesto/Proposed	3,977,640	8,950,199

	HECTÁREAS	ACRES
Total Protegido/Protected	8,706,818	21,544,713
Total Fortalecido/Reinforced	1,986,943	4,909,842
Total Propuesto/Proposed	3,977,640	8,950,199
TOTAL HECTÁREAS/ACRES	14,671,418	35,404,754



24

25 Locations of rapid inventories conducted in Amazonia

26

## **Chapter 33**

1 While the whole inventory process typically lasts a year or more, the main fieldwork  
2 portion is completed within a few short weeks. A multidisciplinary team of local, national,  
3 and international experts--biologists, social scientists, and representatives from civil society  
4 and government--works with local people to learn as much as possible about a landscape  
5 and what is needed to protect it. For the biological portion of the inventory, the team  
6 surveys plants, fishes, amphibians, reptiles, birds, and mammals—organisms that indicate  
7 habitat type and condition and that can be surveyed quickly and accurately. They identify  
8 species, natural resources, and landscape features with high conservation value (at global,  
9 national, or local scales), assess their status, and document threats to these natural assets.  
10 For the social portion of the inventory, the team uses a variety of social science methods--  
11 participant observation, interviews, focus groups, participatory mapping, and others--to  
12 quickly identify the assets and aspirations of local people, as well as the challenges they  
13 face. Such knowledge informs recommendations for conservation action to ensure that they  
14 align with local peoples' strengths and visions for their quality of life.

15 As soon as fieldwork is complete, the team presents preliminary findings to local people  
16 and in-country decision-makers. Then, practical recommendations for long-term  
17 conservation are developed, which often include establishing a new protected area and  
18 strengthening environmental governance in the region by mitigating threats and supporting  
19 sustainable natural resource use. In the months and years following the inventory, we share  
20 the recommendations, reports, and other inventory products with decision-makers, who in  
21 turn take action. We also produce a written report that we return to local people and make  
22 available in digital form for free online (<http://fm2.fieldmuseum.org/rbi/results.asp>).

23 Rapid inventories are participatory knowledge production processes. During fieldwork, in-  
24 country and international scientists collaborate with local people to understand the  
25 environments surveyed through a synthesis of scientific and local knowledge. The process  
26 makes visible the intimate understanding local populations have of the landscapes they call  
27 home and the ways in which their long-term stewardship has conserved these places over  
28 time. At the same time, it provides local people access to scientific knowledge that allows  
29 them to better manage their resources and protect their territories from threats such as  
30 deforestation and contamination from mineral extraction, which are typically driven by  
31 outsiders.

32 Rapid inventories are also structured to create diverse coalitions that drive conservation  
33 action. Since the first rapid inventory we have worked with thousands of people, hundreds  
34 of local communities, dozens of in-country organizations, and more than 20 different  
35 Indigenous peoples. We deliberately build a consensus vision for conservation across a  
36 wide cross-section of stakeholders, while acknowledging and respecting the differences  
37 among the actors involved. The vision explicitly puts local people at the forefront to ensure  
38 that conservation actions are just, equitable, and sustainable. The rapid inventory process  
39 has allowed local people to gain greater recognition for and formalize their sustainable  
40 management practices. It has also helped in-country government agencies to better  
41 understand the sociocultural, political, and biological contexts in the areas they are tasked  
42 with protecting. This consensus-based approach ensures that the vision is seen as broadly  
43 legitimate and thus attractive to decision-makers. It also ensures more effective protection  
44 by incorporating the knowledge and needs of local people into conservation.

## **Chapter 33**

1 Finally, rapid inventories have laid the groundwork for new participatory knowledge  
2 construction and data management tools. For instance, after inventories are complete, we  
3 develop field guides based on the observations and collections during fieldwork, and these  
4 guides are subsequently made available to in-country researchers and local communities for  
5 educational and research purposes (See Field Guides here:  
6 <https://fieldguides.fieldmuseum.org/>). We have also more recently partnered with Yale  
7 University’s Map of Life project (<https://mol.org/>) to develop the “Biodiversity  
8 Dashboards” (<https://mol.org/places/>), an online tool for easily accessing biodiversity data.  
9 The Biodiversity Dashboards provide regularly updated species lists by country, territorial  
10 designation (province, region, or department), protected area, watershed, or Indigenous  
11 territory. This information is currently available for Colombia, Ecuador, and Peru, and we  
12 hope to expand to other countries and regions in the future.

13