Chapter 10 In Brief

Critical interconnections between the cultural and biological diversity of Amazonian peoples and ecosystems

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THE AMAZON WE WANT
Science Panel for the Amazon

Critical interconnections between the cultural and biological diversity of Amazonian peoples and ecosystems

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Key Messages

1) Indigenous peoples and local communities (IPLCs) play a critical role in the sustainable use and conservation of Amazonian biodiversity and ecosystems. Recognizing IPLCs' rights to their territories and resources is fundamental for the maintenance of biodiversity, as well as food security and sovereignty across the Amazon (see Chapter 16).
2) Sophisticated environmental knowledge systems held by IPLCs are relevant for informing and guiding scientific research, development projects, conservation and environmental policies, and bioeconomy initiatives.
3) IPLCs across the Amazon hold diverse worldviews, values, institutions, and governance systems that are crucial to the conservation of biocultural diversity and sustainability.
4) Non-Indigenous Amazonian local communities, including Afro-descendant communities (see Chapter 13) and extractivists of mixed descent (*mestizos, caboclos, ribeirinhos, ribereños*) have been historically dispossessed and often overlooked in scientific research, the recognition of rights, and in social and environmental policies.
5) Many Indigenous Amazonian languages are critically endangered by some of the same forces that threaten biodiversity. Just as these languages, cultures, and worldviews are in danger of extinction, so are the associated knowledge systems that are linked to and sustain Amazonian biodiversity (see Chapter 12).
6) Women have played an important role in Amazonian conservation and development, including the maintenance of Amazonian agrobiodiversity, as well as food security and sovereignty among Indigenous peoples, Afro-descendant populations, and other local communities.

Recommendations

7) Recognize the land, territorial, and socio-cultural rights of Indigenous peoples, Afro-descendant communities, and other local communities, in connection to policies that value and support ecosystem-based livelihoods, including economic incentives and credit for non-timber forest products.
8) Support the documentation and preservation of Amazonian Indigenous languages and associated knowledge systems as living manifestations of endangered biocultural diversity.
9) Develop policies for raising public awareness about Amazonian languages, including concrete actions for linguistic revitalization and conservation, integrated with biodiversity conservation policies.
10) Promote applied research on agrobiodiversity connected to food security and sovereignty across Amazonian IPLCs, respecting associated biocultural relationships and intellectual property rights.
11) Recognize and support women's leadership and role in agrobiodiversity conservation, and more broadly in resource management in the Amazon.

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12) Support ecosystem-based livelihoods in the Amazon, through economic incentives, policies, and regulations.

13) Protect the territories of Indigenous peoples in voluntary isolation.

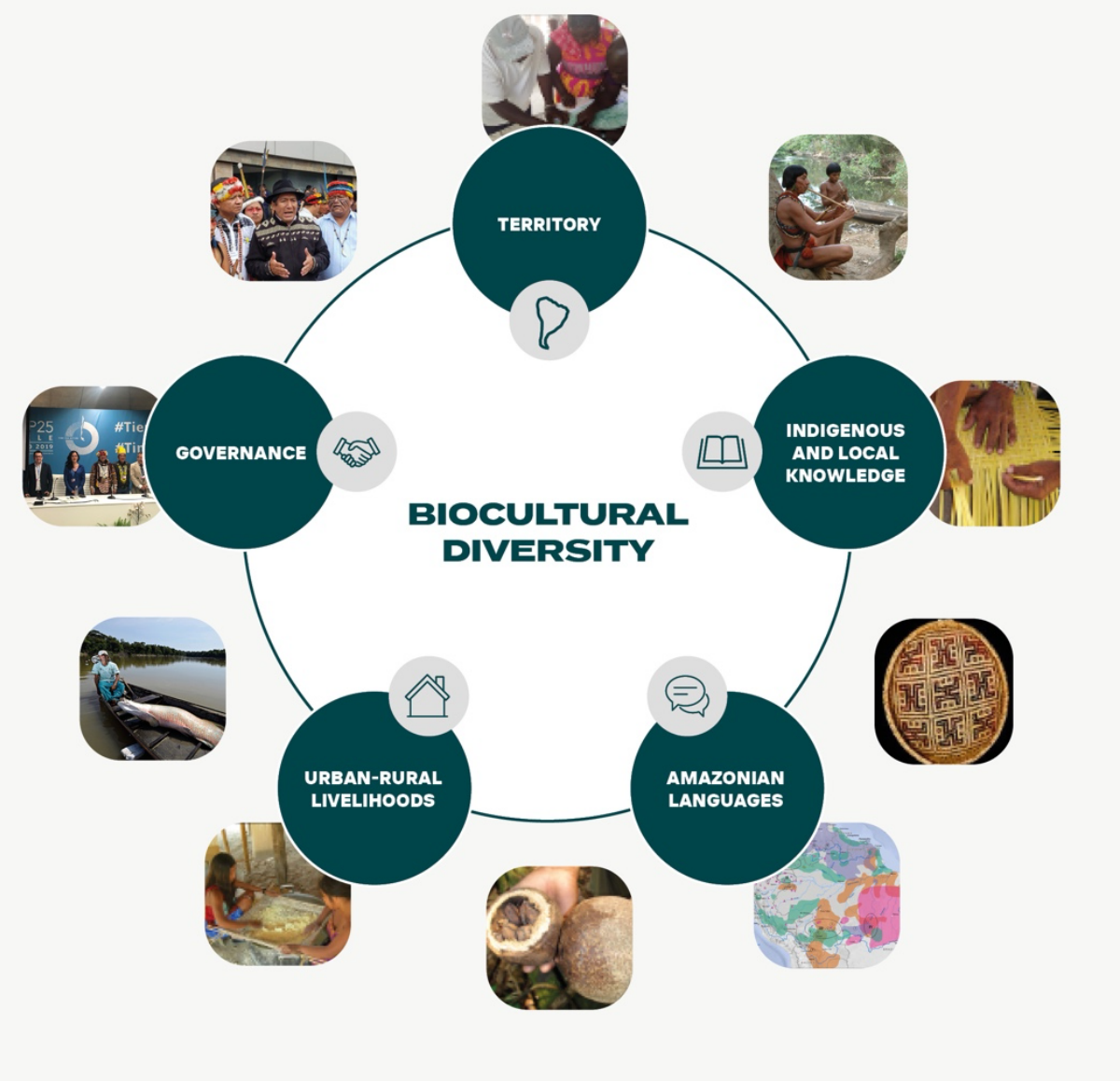

Figure 10.1 This figure represents a roadmap for the different subsections included in this chapter and highlights the interconnection between biocultural diversity elements: territory, governance, languages, knowledge, and livelihoods. The concept of biocultural diversity considers the diversity of life in its human-environmental dimensions, including biological, sociocultural, and linguistic diversity. Biodiversity, cultural diversity, and linguistic diversity are interconnected and have co-evolved as social-ecological systems (Maffi 2001). These connections are present in our daily lives, in urban and rural spaces and their interlinkages, from what we eat to our livelihood styles, including our understanding and relationships with one another and with the environment around us. In this chapter, we focus more specifically on Indigenous peoples and local communities across Amazonian countries, but these critical biocultural connections are manifested among all Amazonian residents.

Abstract This chapter explores the Amazon's biocultural diversity, focusing on IPLCs' worldviews, knowledge systems, livelihood strategies, and governance regimes (Figure 10.1). It synthesizes the main social and political processes that have led to the formal recognition of IPLCs' lands and/or territories across the Amazon. The chapter highlights IPLCs' critical role in using, shaping, conserving, and restoring Amazonian ecosystems and biodiversity, despite ongoing historic processes including violence, displacement, and conflicts between conservation and development agendas.

The Science Panel for the Amazon has adapted the United Nations definition of "Indigenous Peoples and Local Communities" (IPLCs) to reflect the diversity of Amazonian peoples, including those who self-identify as Indigenous, belonging to specific nations or ethnic groups; Afro-descendant communities; *caboclo or mestizo*; river dwellers (*ribeirinhos,* r*ibereños*); forest extractivist communities, *inter-alia* rubber tappers, açaí collectors, and palm nut gatherers; and other human populations who have their identities and livelihoods closely connected to the Amazon's ecosystems and biodiversity.

Colonization and territorial delimitation of the Amazon Complex pre-colonial political formations and artistic traditions found in the archeological record were all but exterminated in the first hundred years of European colonization[1] (see Chapter 8). Thus, observations made by missionaries, explorers, and researchers of Indigenous peoples do not reflect the "pre-contact" status of Amazonian political and social life[2]. Instead, the social formations and ecological adaptations of historical Indigenous peoples as well as contemporary IPLC's must be understood through the lens of post-conquest genocide[3]. Across the Amazon and throughout history, IPLCs have played an important role in the design of constitutions and policies that have recognized, to a greater or lesser extent, their sociocultural and territorial rights (Figure 10.2[4]).

Implications of cosmologies, worldviews, and knowledge systems for natural resource management Among Amazonian Indigenous peoples and local communities, socio-cultural, political, and economic organization is mediated by the specific ways through which people view and interact with the world and, more broadly, the cosmos. These cosmologies and worldviews are differentiated within and across cultural groups, and have a strong influence on people's perceptions and interactions with ecosystems and biodiversity[5–7].

In contrast to European colonial societies, Amazonian Indigenous peoples do not view the forests that surround them as separate, "natural" realms full of objectified resources to be dominated and exploited by humans. Instead, they look on the diverse animals, plants, and other entities as sentient beings with their own social lives and subjective points of view[8,9]. Just as Indigenous peoples' concepts about human-animal relationships challenge Western concepts about taxonomy and ontology, they also defy capitalistic notions about resource extraction and management.

Languages and biocultural conservation Language loss has severe consequences for the social and cultural fabric of Indigenous communities, for academic research, and for humanity as a whole. Each language represents an irreplaceable, immaterial cultural heritage of specialized knowledge, art, and ways to conceptualize and understand the world, that are preserved in — and transmitted by — its linguistic categories and structures[10–17] (see also Chapter 12).

Current language extinction, due to shifts triggered globally by urbanization, migration, and other factors, is related to environmental destruction and habitat loss in the Amazon. As recent satellite images show, the parts of the Amazon where Indigenous peoples live, and where their languages survive, tend to be the same parts that are still green[18]. Although national and international policies have approached cultural, linguistic, and biological diversity separately, these "diversities" have co-evolved and shaped the world as we know it. Therefore, the integration of ILK in environmental policy, including biodiversity assessments and management, is crucial.

Biocultural diversity, lands, and livelihoods The concepts of biocultural landscapes and heritage recognize the reciprocal relationships between IPLCs and forests, rivers, and other Amazonian ecosystems from time immemorial until the present. ÏPLCs engage in livelihoods that are finely tuned to diverse ecosystems as well as seasonal fluctuation in resources; e.g., people living in the flooded *varzea*

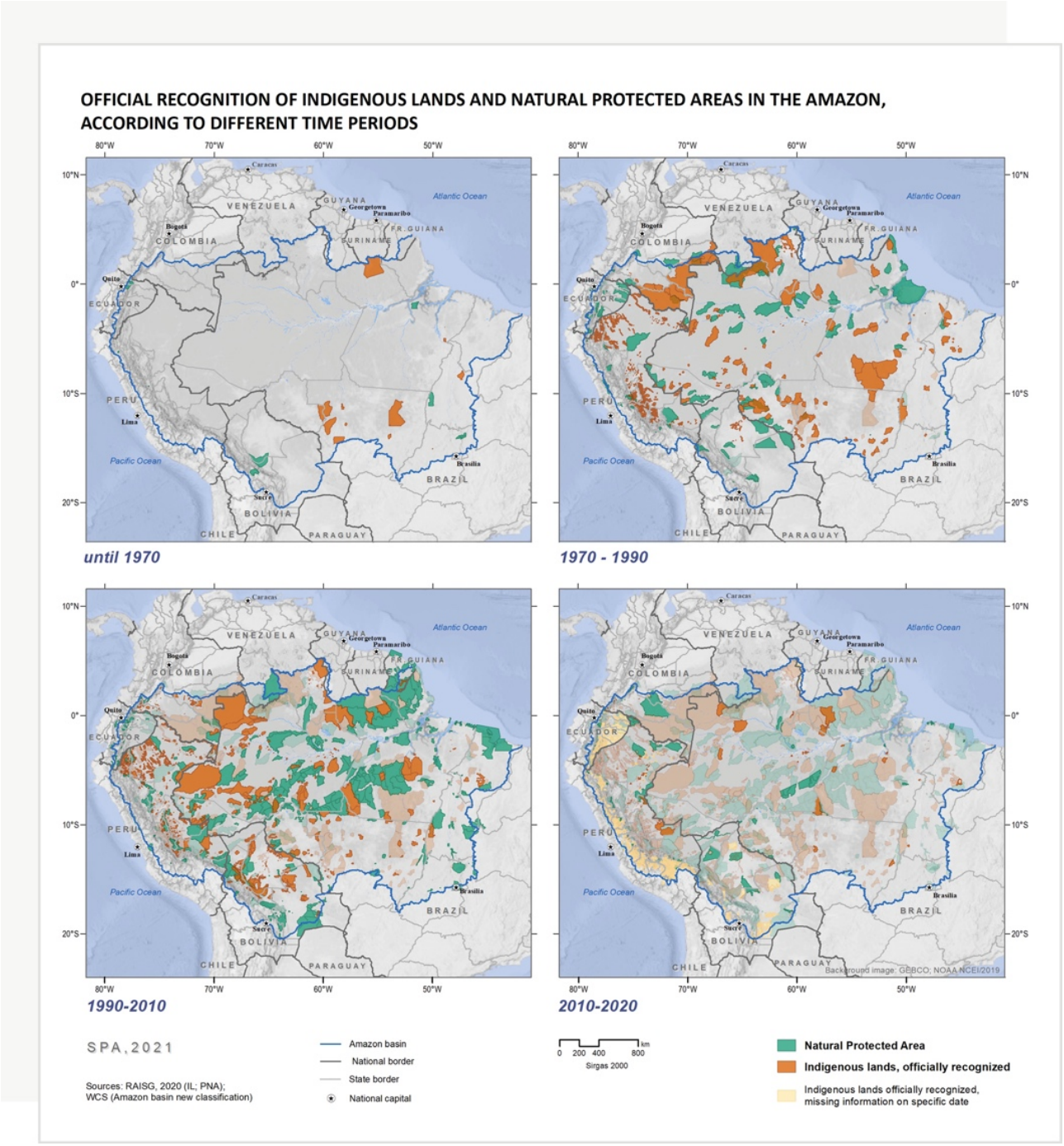

Figure 10.2 Maps showing the evolution of recognition of Indigenous territories (ITs) and protected areas (PAs) in the Amazon in different time periods. The map is limited to the Amazon drainage basin and does not include surrounding or adjacent lowlands like the Orinoco basin. Some specific country information may be missing.

forests along the main channel of the Amazon and its larger tributaries[19]. Referred to variably as *caboclos*, *mestizos*, peasants, or riverine communities, these populations have participated intensely in regional, national, and global markets through the

extraction, processing, and commercialization of forest resources[20].

Traditional agricultural systems in the Amazon[21] include a multiplicity of cultivated and managed plants and involve complex strategies of landscape management and integration with other livelihood activities, including hunting, fishing, and extractivism[22–26]. The Amazon is a center of genetic diversity for diverse crops including cassava, peanuts, maize, sweet potato, yam, chili peppers, pineapple, and cacao (Figure 10.3[27,28]). Women often play an important role in food security and sovereignty through their cultivation, exchange, management, and conservation of crop varieties[21,29].

Conservation of freshwater fisheries is critical for sustaining Amazonian economies, cultures, and livelihoods. With vanishing fish diversity and increasing river impoundment and degradation, associated ILK and specific fishing techniques are also being lost at a fast pace[30]. Fish species know no geopolitical frontiers, making it a difficult resource to manage. Available research suggests an important role for IPLCs in contributing to the scientific understanding of the diversity, ecology, and management of fish and other aquatic resources[30–32].

Hunting is an important livelihood strategy among Amazonian IPLCs, but since productivity is generally lower for tropical forests than open habitats, overhunting is considered a major threat to biodiversity in the Amazon[33]. Excessive hunting can have significant, wide-reaching ecosystem impacts by disrupting seed dispersion, predation, and herbivory[34,35]. Moreover, deforestation, habitat fragmentation, and agricultural expansion exacerbate such impacts as forest fragments are “emptied” of key species[36–38].

Natural resource extraction plays an important role in the livelihoods of IPCLs, and hundreds of species are used in the Amazon. Among them, the Brazil nut (*Bertholletia excelsa*) is one of the most important non-timber forest products[39], providing seasonal economic income and employment to tens of thousands of smallholders, and exports to local, national, and international markets[40–43]. Archeological data document the consumption of Brazil nuts as early as 11,000 years ago[44], and a preponderance of genetic,

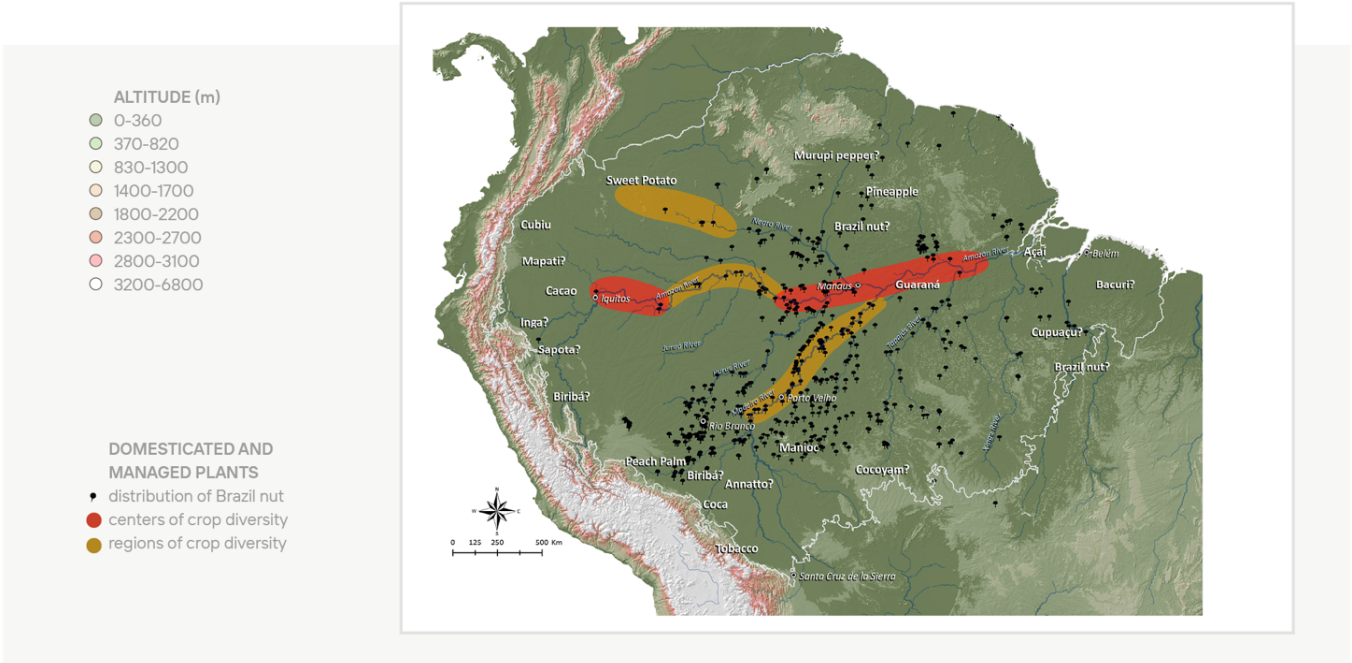

Figure 10.3 Plant and crop management and domestication in the Amazon. The names of species identify known or potential origins of domestication of 20 native Amazonian crop species. The centers and regions of crop genetic diversity include significant or moderate concentrations of crop genetic resources. Source: Clement et al. (2015)[56].

ecological, and ethnobotanical evidence suggests that the current basin-wide range of the Brazil nut has been significantly affected by human management practices[45,46].

Governance, rights, and policy-making The livelihood strategies and relationships between Amazonian IPLCs, biodiversity, and the landscape involves a multiplicity of forms of governance. This multiplicity is based on a diversity of socio-cosmological systems and livelihood regimes, and is expressed through various arrangements of communal institutions and collaborative relations, articulated or not with modes of state and private governance.

A common feature of Amazonian IPLCs' socio-environmental governance systems is that they are organized in different regimes of communal governance of biodiversity, historically established in different forms of territorial use, and based on socio-political arrangements and diverse ecological knowledge regimes in their relations with animals, plants, fungi, minerals, and spirits [47–55].

The complexity and scale of environmental problems promote various types of collective and collaborative governance strategies between actors, given the impossibility of addressing them on their own. Effectiveness in collaboration, therefore, is an important part of the research and policymaking agenda, and can contribute to the design of more equitable and sustainable long-term collaborative initiatives between governments, civil society, and IPLCs to achieve common goals, as well as implement forest-based economies and nature-inspired solutions for the region.

Conclusions Recognizing the multiple interconnections between sociocultural and biological diversity in the Amazon is essential to the sustainability and environmental justice of the whole basin. Biocultural diversity in the region is manifested in IPLCs languages, worldviews, livelihoods, and deep historical entanglements with Amazonian plants, animals, and ecosystems. Diversity, in all its forms, must be understood as a value to be cherished, nourished, promoted, and protected. Biocultural diversity in the Amazon and elsewhere provides the entire globe with knowledge, resources, alternatives, and innovations for addressing uncertainty as we navigate compounding social, political, environmental, and health crises, and approach the social-ecological tipping points of the Earth's systems. The Amazon is a living biocultural system that cannot survive without the valorization, empowerment, and participation of the diverse societies that have inhabited its rivers, forests, savannas, and estuaries since time immemorial.

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