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Political Ethnobiology

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ABSTRACT

Indigenous peoples and local communities continue to suffer various violations and ethnocide. Their knowledge systems and biodiversity management practices, which are fundamental, especially because they are structured in different paradigms of capitalist society, to overcoming the central crises of today, are under threat. Consolidating a political approach in Ethnobiology can contribute to the struggles and rights of Indigenous Peoples and Local Communities, by organizing and proposing a political sense and action to scientific practice. Therefore, we present (i) a brief history of the political approach in Ethnobiology, (ii) conceptual and theoretical contributions to an anti-oppressive Ethnobiology, (iii) a proposal for a conceptual and programmatic synthesis for Political Ethnobiology, and (iv) examples of investigations and concrete actions in the field of Political Ethnobiology.

Keywords: Applied Ethnobiology, Engaged Ethnobiology, or Ethnobiology of Action, Political Ecology

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SIGNIFICANCE STATEMENT

Our study addresses the interaction between ethnobiology and contemporary political dynamics, highlighting how traditional knowledge and biodiversity are influenced by sociopolitical dynamics. We present (i) a brief history of the political approach in Ethnobiology, (ii) conceptual and theoretical contributions to an anti-oppressive Ethnobiology, (iii) a proposal for a conceptual and programmatic synthesis for Political Ethnobiology, and (iv) examples of investigations and concrete actions in the field of Political Ethnobiology. We believe that this work makes a significant contribution to the field of ethnobiology by providing a critical analysis of the relationships between power, traditional knowledge, and biodiversity conservation.

INTRODUCTION

Ethnobiology, from its initial conceptualizations (see Powers 1874; Fewkes 1986; Harshberger 1896; Castetter 1944), has developed its approaches, propositions, concepts, theories, and methods (see Clément 1998; Hunn 2007; Ford 2011; Sobral and Albuquerque 2016; Rahman et al. 2019). However, we can find questions of ethnobiological interest already in the beginnings of anthropology, such as in the native classification systems described by Franz Boas. Throughout our history, we periodically reflect on this ever-evolving field (see Prance 1991; Balick 1996; Albuquerque 2009 a,b; Anderson 2011; Wyndham et al. 2011; Hurrell and Albuquerque 2012; Ladio 2017; Albuquerque et al. 2019c; Ludwig and El-Hani 2020; Soldati and Barros 2020; Vandebroek et al. 2020; Lepofsky et al. 2021; Albuquerque 2024; Albuquerque and Ferreira Júnior 2023; Nieves Delgado et al. 2023). Today, we believe that Ethnobiology has advanced to the point of solidifying a vast and well-established body of knowledge regarding, for example, the processes of construction, selection, incorporation, and evolution of local knowledge systems (Mithen 2006; Alencar et al. 2010; Lucena et al. 2012; Soldati et al. 2015; Ferreira Júnior and Albuquerque 2018; Caetano et al. 2020; Santoro et al. 2020), including in urban contexts (Ladio and Albuquerque 2014; Albuquerque et al. 2023), and their relationships with socioeconomic variables (Walters et al. 2008). We have also accumulated knowledge on resource use strategies, local perceptions, and their implications for environmental sustainability (Bender et al. 2013; Gavin et al. 2015; Silvano and Begossi 2016; Turner et al. 2022; González-Rivadeneira 2023), the domestication of landscapes and species (Clement et al. 2015; Clement et al. 2021), and the implications of climate change on human-environment relationships (Wolverton et al. 2014a; Ladio 2017; Magalhães et al. 2022; Lima et al. 2023). To the best of our understanding, Ethnobiology has been capable of reflecting upon and solidifying methodologies (Albuquerque and Medeiros 2012; Souza Araújo et al. 2012; Albuquerque et al. 2019a; Gaoue et al. 2021; Meireles et al. 2021; Chaves et al. 2019), approaches (Ross and Revilla-Minaya 2011; Baldauf 2019; Medeiros 2020; Ferreira Júnior et al. 2022; Schultz and Garbe 2023), establishing dialogues with other disciplines (Armstrong and Veteto 2015; Nagaoka and Wolverton 2016; Santoro et al. 2018; Moura et al. 2020), and consolidating its theories (Gaoue et al. 2017; Albuquerque et al. 2019b; Albuquerque et al. 2020). Indeed, all this accumulation allows Ethnobiology to enter an "age of application" (see Wolverton et al. 2014).

However, despite the described advancements, Indigenous Peoples and Local Communities[1], our primary interlocutors and research partners continue to face numerous threats to their territories (Armstrong and McAlvay 2019), which have intensified in recent decades due to the deepening of neoliberal and developmental policies, especially in peripheral countries of the world system. Mining, agribusiness with its monocultures, pesticides, and transgenic seeds, the lack of demarcation and regularization of traditional territories, large infrastructure projects such as dams, gas pipelines, and oil pipelines, land grabbing, and biopiracy are just a few examples. Some proposals considered "green," in line with the ecological modernization project, such as conservation units, payment for environmental services projects, carbon credits, and wind energy, can also threaten these territories. We often witness leaders being threatened and brutally murdered. Disconnected and oblivious to these violations, we see the emergence of new international initiatives, such as Digital Sequence Information (DSI) and new genetic manipulation technologies (Gene Drives and Synthetic Biology), which continue the pattern of violating these groups' rights, especially the right to consultation. Thus, more than a "biodiversity crisis," we are witnessing an old but renewed process of ethnocide (Dussel 1993; Heiskanen 2021). This concern becomes evident when the same demands are reproduced in the International Society of Ethnobiology political declarations, such as the Declaration of Belém, the Declaration of Cusco, and the Declaration of Belém + 30 Declaration, despite certain advancements (see Golan 2019).

We start from the assumption that traditional systems of knowledge and management of biodiversity are fundamental to global society. We also understand that threats to territories are facets of a capitalist system, which concentrates income based on the unlimited exploitation and commodification of human lives and nature (Porto Gonçalves 1989; Foster 2005). With these convictions, we agree with Armstrong and McAlvay (2019) that "the topic of an actively anti-oppressive ethnobiology that works to dismantle systems that marginalize the communities we work with

[1] Although the international literature uses the concept of "Local Communities," we believe there is always the risk of perpetuating an erasure of diversities, an attitude characteristic of colonialism. Behind the category of Local Communities lies a vast diversity of Afro-descendant communities, family farmers (peasants), fishers, and urban periphery communities that are reduced to a uniform mass. In Brazil, in particular, social movements use the category "traditional peoples and communities," primarily political and not merely identitarian. This term encompasses Indigenous Peoples, afro-descendant people, Romani people, artisanal fishers, and dozens of other identities built around the lifestyles of each social group. While Local Communities pertain to how modern science organizes its "objects" of investigation, the diversity of categories used by the communities themselves attests to the variety of societal projects for which they fight and die.

or live in has been relatively less explored." The objective of this text is to contribute to the consolidation of a "political approach to Ethnobiology," sometimes called Applied Ethnobiology (Fowler 2019), Engaged Ethnobiology (Golan et al. 2019), or Ethnobiology of Action (Albuquerque et al. 2019c; Armstrong and McAlvay 2019; Armstrong and Brown 2019; Caron-Beaudoin and Armstrong 2019). We chose and preferred to name this approach "Political Ethnobiology." In this text, we will present: a) a brief history of the political approach in Ethnobiology; b) conceptual and theoretical contributions to an anti-oppressive Ethnobiology; c) a proposal for a conceptual and programmatic synthesis for Political Ethnobiology; and d) examples of investigations and concrete actions in the field of Political Ethnobiology. We are naming this field as Political Ethnobiology, interested in consolidating a theoretical, conceptual, and methodological framework capable of updating, enhancing, and diversifying the concerns inaugurated by Darrell Posey (Posey 1990 a; b).

Brief historical contextualization of a political approach in Ethnobiology

Ethnobiology was a pioneer, in relation to other scientific fields, in reflecting the political role of researchers and other agents in relation to Indigenous Peoples and Local Communities (Posey 1990a,b; Golan et al. 2019). The Declaration of Belém (ISE 1988) is a significant historical milestone. It was conceived during the 1st International Congress of Ethnobiology (1988), a time of effervescent international discussions on traditional rights, access to biodiversity, access to traditional knowledge, and intellectual property, which resulted, for example, in the adoption of Convention 169 of the International Organization of Labor (1989), Convention on Biological Diversity (1992), in the creation of the World Trade Organization (1994), even though its conception was not restricted to the discussion of traditional knowledge, and in the adoption of the International Treaty on Plant Genetic Resources to Food and Agriculture, in 2001 (after 11 long years of debates). The Declaration of Belém explains the inevitability of researchers and other professionals to consider the "needs" of Indigenous Peoples and Local Communities and the recognition of these groups' critical role in conserving biodiversity. Assuming that indigenous cultures in the world were threatened, this declaration evokes the guarantee of, among other points: a) the right to consultation; b) human and identity rights; c) compensation for the use of traditional knowledge and biodiversity; and d) free access to information (ISE 1988). Even before the Convention on Biological Diversity came into force, the thesis that these groups need to be rewarded for using managed biodiversity and associated knowledge was defended (Golan et al. 2019).

Two years later, Darrell Posey, quite influential in articulating and publishing the Declaration of Belém, published two seminal articles (Posey 1990 a,b). Concerned with the "importance of traditional knowledge and its application to the development of socially equitable and ecologically sustainable options for the Planet," the threats of extinction of Indigenous Peoples and the broad economic use of traditional knowledge and genetic resources, considering colonialist relations between the north and global south, Posey (1990a) calls for "more than ever, the Intellectual Property Rights of native peoples must be protected and just compensation for knowledge guaranteed." Posey announces that indigenous peoples' essential resistance condition is the guarantee of land as a human right. Against the improper and predatory use of territories and traditional knowledge, considered a "neocolonial variation of exploitation of native peoples," Posey (1990a) presents five proposals to guarantee the right to intellectual property and fair compensation. The advancement of Posey's propositions was updated by Golan et al. (2019), who, in summary, believes there has been progress.

In 2008, during the 11th International Congress of Ethnobiology, the concerns of the International Society of Ethnobiology were updated, resulting in the Declaration of Cusco (ISE 2010). After 20 years of the Declaration of Belém, the document assumes that biocultural diversity was still strongly threatened. In this sense, the Declaration of Cusco highlights the importance of Indigenous Peoples and Local Communities, celebrates the adoption of the UN Declaration on the Rights of Indigenous Peoples, and defends participatory forms of knowledge production as a strategy that genuinely transforms realities. Unfortunately, after 30 years, the Declaration of Belém +30 (2018) (ISE 2018) still highlights that Indigenous Peoples and Local Communities continue to suffer countless processes of "genocide, ethnocide and constant expropriation of their territories and knowledge." Again, the ISE statement calls for "measures that guarantee Indigenous Peoples, traditional populations, and Local Communities the right to their territories, their management, and the self-determination of their ways of life" for the right to prior, free, and informed consultation.

Recently, we have been following many ethnobiological publications associated with the politics of traditional knowledge and its insertion in contexts of conflicts and environmental injustices (Blair 2019; Fowler 2019; Golan et al. 2019; Albuquerque et al. 2019c; Armstrong and McAlvay 2019; Armstrong and Brown 2019; Caron-Beaudoin and Armstrong 2019). From this perspective, several topics of interest were explored and served as a reflective basis, such as tra-

ditional knowledge, benefit sharing, intellectual property, free and informed prior consent (see Posey 1990 a, b; Golan et al. 2019), values, use and management of biodiversity (Caron-Beaudoin and Armstrong 2019; Reo 2019), protected areas and cooperative management (Fowler 2019), impacts of large projects (Blair 2019), rights of Indigenous Peoples and Local Communities (Soldati and Albuquerque 2016), effects of the covid 19 pandemic (Soldati and Barros 2020), access and management of territories (Fowler 2019), biomonitoring, human health and environmental health (Caron-Beaudoin and Armstrong 2019), environmental justice (Armstrong and Brown 2019), the sexist and colonial dimensions in the production of knowledge (Silva et al. 2019; McAlvay et al. 2021) and the relationship between Ethnobiology and other sciences (Nabhan et al. 2011; Wolverton et al. 2014).

When read together, the authors (Posey 1988 a, b; Nabhan et al. 2011; Armstrong and Veteto 2015; Wolverton et al. 2014; Albuquerque et al. 2019; Armstrong and Brown 2019c; Armstrong and McAlvay 2019; Blair 2019; Caron-Beaudoin and Armstrong 2019; Fowler 2019; Golan et al. 2019; Reo 2019; Silva et al. 2019; McAlvay et al. 2021; Soldati and Barros 2022; Albuquerque 2024; Albuquerque et al. 2024) share the understanding that: a) Indigenous Peoples and Local Communities are threatened, facing economic, political, and cultural pressures; b) the origin of these threats is the expanding colonial capitalist system, which deepens particularly in the relationship between the center and the periphery of the modern-colonial world-system, sometimes assuming different and new facets and forms within each country; c) the contact between these two systems, which are also distinct societal projects, creates "disruptive frontiers" or conflict situations; d) Ethnobiology, despite its colonial past, is an interdisciplinary field in constant evolution and promising in defending the rights of Indigenous Peoples and Local Communities; and e) the dialogue between Political Ecology and Ethnobiology can provide extremely fruitful theoretical and methodological contributions to both fields. Although not consensual in the cited literature, we would like to highlight some other assumptions that we consider essential: a) scientific practice is not neutral, being subject to the subjectivities and epistemological, ontological, and political assumptions that guide it; b) the subjectivity of a political approach does not invalidate the quality and objectivity in the production of scientific knowledge; c) a political perspective in Ethnobiology involves tense and difficult situations that do not allow for romanticization and simplification; and d) we are not engaging in political science only when we align with a community or cause, but when the political alignment manifests in the knowledge produced.

Based on these principles, we believe that, considering the cited literature, a political perspective in Ethnobiology presents the following objectives, which are not exclusive or ordered: the production of scientific and rigorous knowledge capable of documenting the complex traditional systems of knowledge, use, management, conservation, and improvement of biodiversity, translating them into scientific language; understanding and synthesizing the processes that threaten and violate traditional territories and, significantly, how they impact their ways of life; establishing a dialogue (bridge) between traditional knowledge and academic knowledge, reducing the power relationship perpetuated by the Eurocentric and capitalist social order; constantly reflecting on and advancing more ethical and methodological frameworks and practices in the relationships between researchers and local partners; and understanding the impacts of the oppressive processes structuring capitalist society, such as sexism, the colonial relationship between the Global North and South, as well as the power relationship between scientific and popular knowledge. Another essential objective of a political approach in Ethnobiology is the implementation of direct actions and advocacy, promoting dialogue and negotiation between Indigenous Peoples and Local Communities with external actors (universities, the State, companies, and NGOs), ensuring participation in the spaces for discussion, construction, and definition of international and national laws and policies, providing support for public policies that incorporate the ontological diversity of Indigenous Peoples and Local Communities, and engaging in direct actions such as blockades, protests, occupations of territories, or advocacy like producing legal documents, technical reports, and other materials. Finally, these objectives aim to guarantee and expand the rights of Indigenous Peoples and Local Communities and strengthen their struggles. This goal can be derived as working towards environmental and social justice (Wolverton et al. 2014; Fowler 2019; Caron-Beaudoin and Armstrong 2019), rectifying historical injustices (Fowler 2019), breaking free from the constraints of the oppressive capitalist system (Armstrong and McAlvay 2019), considering the complex relationships between cultures and natures. In this regard, we would like to highlight the perspective presented by Almada and Sanches (2024), where Political Ethnobiology should be thought of as a "heterogeneous and diverse set of research and approaches dedicated to tracing the relationships established by traditional ecological knowledge and the new uses and meanings conferred on them by Indigenous Peoples and Local Communities and in contexts of environmental conflicts and struggles for rights. Political Ethnobiology would not, therefore, have as its central themes the cognitive, utilitarian, or ecological aspects, but rather a certain sociology of TEK or [...] a politics of tradi-

tional ecological knowledge, or even more, a cosmopolitics of TEK. To what extent do the various dimensions of traditional knowledge – utilitarian, evolutionary, ecological, cognitive – participate in or are mobilized in the struggles of these peoples and communities to defend their territories and existences (loosely translated)."

Propositions for a theoretical and conceptual delimitation of Political Ethnobiology

After considering and in dialogue with the state of the art of a political approach in Ethnobiology, we propose theoretical and conceptual elements capable of circumscribing Political Ethnobiology. Although well-intentioned, research and actions can generate undesirable and, above all, adverse effects on Indigenous Peoples and Local Communities. In the words of Reo (2019), 'having good intentions is not enough (...) even in situations where the researcher desires and considers an honorable relationship with their research partners, good intentions do not guarantee respectful actions.' As mentioned earlier, an investigation is a political definition that must be defined collectively, deeply, and ethically. More than that, it must be imbued with an understanding of the processes that structure the threats to these groups. Thus, we will present a conceptual and theoretical exercise that, in summary, attempts to understand how threats to territories are structured.

To begin our conceptual reflection, we want to demarcate the theoretical key of modernity-coloniality. The power asymmetries between different knowledge regimes, and therefore the existence of 'subjugated knowledges' (Aparicio and Blaser 2015), have their roots in the founding moment of European invasion in the Americas. The 'invention of the other,' a political and symbolic operation to establish modernity, unfolds in the coloniality of being, power, nature, and knowledge (Aparício and Blaser 2015). It is not that before 1492 there were ontological conflicts between different peoples and cultures, but rather that the European project of modernity, a project of domination and control, in a way never seen before, claims universality. The other, indigenous, Afro-descendant, and all groups descending from them, are described by what they do not possess. They are devoid of state, language, spirit, culture, and any element necessary to enter the civilized realm of modernity. Therefore, they would have to submit to the salvific project of modernity-coloniality, transmuted from the cross and sword in the early decades of invasion to the current discourses of development of the neoliberal order. Thus, the concealment of the other, in Dussel's terms (1993), also implies the denial and subordination of their knowledge, labeled throughout history as local, indigenous, traditional, popular, and all other modern labels that sought to circumscribe them in historical and spatial contingencies, to the detriment of the universal character of modern science. The emergence of technical-scientific rationality, by allowing advances in productive capacity and the appropriation and transformation of nature, based on the exploitation of human labor over centuries of slave systems, creates the basis for the emergence of capitalism as a hegemonic political and economic system.

Beyond the field of ethnoscience, academic and political debate about traditional and popular knowledge has marked Latin American thought. Particularly since the 1950s, the emergence of "Liberation Theology" and popular education movements has deeply and diversely marked struggles against the coloniality of knowledge. Base Ecclesial Communities (Local unit of organization of Liberation Theology) in rural areas and urban peripheries, based on a liberating reading of the Bible accompanied by a denunciation of the role of the Church (past and present) in perpetuating structures of violence and oppression, reaffirmed the centrality of indigenous cosmologies, knowledge, and traditional ways of life for the construction of alternatives to five centuries of coloniality, ethnocide, and ecocide. In parallel, popular education movements, with theoretical protagonists such as Paulo Freire, Orlando Fals Borda, Carlos Rodrigues Brandão, and Carlos Nuñez Hurtado, built rich experiences in literacy, intercultural education, and curriculum production that broke with Eurocentrism. Popular education, understood as a heterogeneous set of practices and theories, has a common liberating horizon, necessarily implying the overcoming of asymmetries between modern science and the various knowledge regimes of Indigenous Peoples, Afro-descendants, peasants, and communities in urban peripheries. Thus, the construction of what we call Political Ethnobiology is conditioned by recognizing the deep and extensive roots that sustain social movements and popular education, for which traditional knowledge has always been central to their world and societal projects.

To advance in this exercise, we will analyze some characteristics of the dominant capitalist society that inevitably produce socio-environmental conflicts and threats experienced by Indigenous Peoples and Local Communities[2]. Thus, we consider that every human being needs to meet basic demands for their survival, such as eating, drinking, and sheltering, that is, satisfying the needs of 'material life' (Lafargue 2014; Marx 2010; Marx 2015a, b, c; Quintaneiro et al. 2017; Marx

[2]In his original texts, Marx (Marx 2010; Marx 2015a, b, c; 2016) uses the term "exploitation of man by man." However, we prefer to use the term "exploitation of human beings by human beings."

2016). The essence, therefore, of social relations is centralized in labor, in the action of men and women on the environment. To transform nature into goods that satisfy basic needs, tools, machines, land, and biodiversity are necessary, which, together, can be defined as 'modes of production.' In the historical development of capitalist society, some people have dominated and continue to dominate these modes of production, as opposed to a portion that has nothing but the possibility of selling their 'labor.' Capitalism, therefore, has produced different 'social classes' with conflicting interests. The owners of the modes of production seek to profit by expropriating the labor of others in a process known as 'surplus value.' In another way, those deprived of the modes of production create strategies to reduce the expropriation of the fruits of their labor. Thus, the first logic of reproducing capitalist society is the expropriation of humans by humans. The production also demands means of production,' that is, raw materials, such as land and biodiversity. The capitalist system demands a relentless expansion and diversification of the production process. Otherwise, it would collapse. From this, the second logic of reproducing the system is humans' continuous and unlimited exploitation of nature. The increase in productivity demands a territorial expansion on a large scale, resulting in negative externalities or waste from a production chain that, according to capitalist logic, must be primarily shared or diluted throughout society, thus increasing profit.

Associated with this production base, the historical development of capitalism has resulted in a set of values, logic, and institutions that 'protect' the production process so that the ingenious and concentrating mechanism does not stop working (Lafargue 2014; Marx 2010; Marx 2015a, b, c; Quintaneiro et al. 2017; Marx 2016). For example, laws and international agreements that transform public goods into private ones. The media implicitly or explicitly defends a social standard, preaching values that only work dignify man or that we are fulfilled only by buying goods. The State protects large companies and the market, establishing its economic policies. The police defend private property. These are "cultural" mechanisms that protect the capitalist productive logic.

In contrast, Indigenous People and Local Communities, in all their diversity, do not reproduce with the same logic as capitalist society, despite establishing different relationships with local and regional markets (Ploeg 2009; Brandão 2012). They produce their material and cultural realities primarily for self-consumption and based on "ecological capital," defined as non-commodified processes of co-production and exchange with ecosystems (see Ploeg 2009). In a limited territory, especially under disputes (described below), these people tend to expand their co-production by maximizing the use of local energy and material cycles, deriving complex management systems based on sophisticated knowledge and management practices. Therefore, they depart from capitalist logic by not commodifying natural resources and associated knowledge and by having a communal rather than individualizing reference. Thus, they do not fully contribute to capital (Brandão 2012), although there are exceptions that will be detailed below. From this ontological distinction arise all the disruptive processes between capitalist society and traditional peoples from which socio-environmental conflicts derive (Alier 2017), to which ethnobiologists must be sensitive.

We can differentiate four significant processes through which these distinct ontologies translate into concrete threats[3]. First, Indigenous Peoples and Local Communities have occupied or are currently occupying zones of capitalist expansion. The colonization of Latin America exemplifies the extermination of indigenous peoples in pursuit of minerals, natural resources, and land for commodity production. The quest for soybean production in agro-industrial models centralizes territorial disputes between large landowners and Indigenous Peoples in central Brazil. Illegal logging into Amazon is, unfortunately, standard. The Brazilian Federal Government introduced a bill in 2022 that legalizes mining in Indigenous Territories, exemplifying how the state apparatus is modified to ensure the perpetuation of capitalist production. Land grabbing in agribusiness expansion zones for beef production, the main driver of deforestation of native forests, represents the process of converting a public good into a private one. These examples represent a facet of natural resource depletion. However, the second process is associated with capitalism's ability and necessity to diversify its markets by creating "sustainable" strategies that still threaten Indigenous Peoples and Local Communities. Following legal regulations, traditional knowledge associated with biodiversity, the basis for "sociobiodiversity products" or the recent "bioeconomy," can become commodities, sometimes without consent and fair benefit-sharing. In the same country, large pharmaceutical companies with high annual profits from the commercialization of medicines based on traditional knowledge coexist with Indigenous Peoples and Local Communities who are criminalized for practicing their traditional medicine. The carbon credit market, designed to incentivize biodiversity conservation through payment for environmental services, such as the REDD+ (Reducing Emissions from Deforestation and Forest Degradation in Developing Countries) program, prevented the Mudurunku people from using

[3]For the exemplification of how these processes materialize in traditional territories, we chose to present Brazilian experiences, simply due to the authors' familiarity.

much of their territory. The third process is associated with places where different expressions of capitalism have not been established as the material basis for capital reproduction, mainly because it is not exciting or possible. In these spaces, biodiverse areas managed by traditional peoples suffer indirect consequences of the production process. For example, as a result of public policies conceived without the participation of traditional peoples associated with the environmental compensation process, these places become fully protected conservation units, expelling locals and depriving them of access to biodiversity. Interestingly, these units, such as national parks, are public goods but granted to private enterprises for economic exploitation. Finally, the production process leads to negative externalities, constituting the fourth threat process. In the northeast of the country, there is widespread contamination of heirloom seeds by transgenic genes. In 2015, Brazil's most significant environmental disaster occurred: a large mining tailings dam rupture. The toxic material devastated one of the region's main rivers, decimating local biodiversity and directly affecting the Krenak way of life (an Indigenous nation). In the northeast of the country, 85% of mothers in a maternity ward had their breast milk contaminated with glyphosate, possibly due to the widespread use of this substance in the region.

In all four scenarios described, Indigenous Peoples and Local Communities have undergone different processes of invisibilization and suppression and, thus, historically developed many strategies of struggle and resistance, such as popular organization and political advocacy. As a result, various legal instruments, national or international, consolidate rights for these actors (Soldati and Albuquerque 2016). For example, the International Labour Organization (ILO) Convention 169 grants the right to maintain territory and traditional ways of life and the right to prior, free, and informed consultation in all processes that affect them. The Convention on Biological Diversity (CBD) emphasizes the importance of traditional groups as generators and custodians of biological diversity. It encourages participation in public policies and fair benefit sharing, which are also addressed in the Nagoya Protocol. The United Nations Declaration on the Rights of Indigenous Peoples, the Declaration on the Rights of Peasants and Other People Working in Rural Areas, and the International Treaty on Plant Genetic Resources for Food and Agriculture are other examples. All these instruments lead to domestic laws in the countries involved, qualifying Indigenous Peoples and Local Communities as "rights holders."

In this scenario, researchers should understand Political Ethnobiology as a political and theoretical choice. The political choice arises from the understanding that science, like any social practice, is immersed in a class-divided society and, therefore, is not neutral. Neutrality does not refer to the method itself, such as the hypothetico-deductive method, with all its potential objectivity for producing new knowledge, but rather to what questions are asked and how the produced knowledge is socialized. For example, a geneticist using the most advanced methodological tools may initially choose to advance knowledge production in biotechnology (genetic engineering, synthetic biology, gene drivers), with this knowledge being socialized exclusively through sale when transformed into patents. For example, it is worth mentioning the social, economic, and environmental implications of implementing the Green Revolution. Alternatively, the geneticist may research traditional agricultural systems as a popular process of on-farm and continuous genetic improvement, and the knowledge produced as "social technologies," transforming local realities by building autonomy for the involved subjects.

For the consolidation of a theoretical scenario, considering that Political Ethnobiology is still a developing field, it is necessary to draw on theories and concepts developed by other sciences, such as Political Ecology itself, defined as "a field in which power relations are expressed to deconstruct the unsustainable rationality of modernity and to mobilize social actions in the globalized world for the construction of a sustainable future based on the potential of nature and cultural creativity, in emancipatory thought and in a political ethic to renew the meaning and sustainability of life" (Leff 2015). Environmental justice allows us to understand the domination of certain social groups over nature (Gelobter 1994) and that environmental risks and externalities of the capitalist system are thus unequally distributed in society (Cutter 1995). In this sense, Indigenous Peoples and Local Communities, due to their dependence on natural resources and the constant threat to their territories, have constructed their knowledge and discourse about the relationship between nature and culture (see Descola 2013), which can be consolidated in the concept of the "environmentalism of the poor" (Alier 2017). To break with this history of suppression, popular movements have built a participatory science through dialogue between these movements and science understood as progressive (Santos 2007). In this theoretical context, Political Ethnobiology flourishes, especially that developed in the global south (see Dados and Connell 2012), a region of extreme biocultural wealth and a long history of appropriation. In the proposed theoretical scenario, we recognize that science is a space of power and is immersed in class struggles, which implies that it cannot be neutral. In line with this vision, it is essential to introduce the perspective of Ecosocialism, which offers an incisive critique of capitalism as the root of the ecological crisis. The socio-environmental crisis

is intrinsic to the social metabolism of capitalism, and that only a radical transformation of socioeconomic relations can provide real solutions (Foster 2005; Lowy 2015).

Finally, we would like to consider that, although ethnobiology is a product of the so-called ethnosciences that emerged after the 1950s and, therefore, situated in the field in dialogue with anthropology, we believe it has been still little affected by the significant transformations that have occurred in this field in the last two decades. A significant part of ethnobiological research still proceeds from a representational perspective of nature, reinforcing dualities and dichotomies between culture and nature, even though its central concern is the traditional knowledge of Indigenous Peoples and Local Communities. The ontological turn that occurred in anthropology in the 1990s may have severe consequences for ethnobiological practice, as it questions the validity of concepts such as nature and culture. By taking Indigenous ontologies seriously, a revision of research programs in ethnobiology, marked by a universal idea of nature around which various cultures and their particular systems of knowledge and classification would orbit, becomes necessary. On the other hand, in recent years, the emergence of the so-called multispecies studies (Kirksey and Helmreich 2010; Miller 2019) provokes a new rupture, proposing an abandonment of the principle of human exceptionalism and advocating for a cultivation of attention to the unique forms of knowledge and world-making among humans and more-than-humans. By assuming the social as a process of composition among beings (humans, non-humans, or more-than-humans), ethnobiology should also be attentive to the more-than-human knowledge of nature, always relegated to the condition of resources, landscape, and backdrop of human stories.

Defining Political Ethnobiology, its research program, and action

Given the above and in dialogue with (Posey 1988; Nabhan et al. 2011; Armstrong and Veteto 2014; Wolverton et al. 2014; Albuquerque et al. 2019; Armstrong and Brown 2019; Armstrong and McAlvay 2019; Blair 2019; Caron-Beaudoin and Armstrong 2019; Fowler 2019; Golan et al. 2019; Reo 2019; Silva et al. 2019; McAlvay et al. 2021; Soldati and Barros 2022; Albuquerque 2024; Albuquerque et al. 2024; Almada and Sanches 2024), we propose that Political Ethnobiology is based on the following assumptions: traditional societies present differentiated regimes of knowledge, management, conservation, and biodiversity enhancement characterized by the collective logic of knowledge production and socialization, the inseparability between nature and culture, the right to life, and the non-financialization of biodiversity; these systems are also characterized by being based on "ecological capital," by harnessing cycles of matter and energy that do not disrupt ecosystem metabolism; therefore, they are ontologically sustainable systems, as life itself depends on the reproduction of natural goods; these systems are also essential not only for their bioprospecting potential but, above all, because they are founded on values and understandings capable of breaking the socio-environmental crisis we are experiencing; traditional systems have come into contact throughout history with other social systems characterized by the idea of modernization and development, whose main product is the capitalist system, characterized by the exploitation of humans by humans, nature by humans, and the global south by the global north; these forms of oppression assume new guises throughout history but do not break with their essence; in a capitalist society, scientific knowledge is one of the most important criteria for "truth"; thus, traditional and capitalist systems present different ontologies, and their contact zones result in socio-environmental crises that are, in essence, disputes over societal projects; this crisis is the result of the reproduction logics of the capitalist system, therefore, we cannot find a solution to the socio-environmental crisis within the same paradigms that produced it; there is no possibility of class reconciliation, metabolic reconciliation between capitalism and nature, therefore, there is no possibility of reconciling societal projects; thus, the same traditional societies that are threatened by the advance of capital over their territories are, in essence, the answer to breaking this oppressive system; in this context of dispute, traditional knowledge assumes another characteristic, forged in struggle and thus represents a liberating episteme; dialogue between academic and traditional knowledge is therefore a promising path, as it allows the construction of a more complex dialogical knowledge; however, this dialogue also relies on the need to contest academic power, capable of defining "truths" and thus structuring public policies and social logics; in this sense, it assumes that science, as a social practice, is not neutral; although there is a search for objectivity in its methods, the extremes of a scientific process, namely the elaboration of scientific questions and the socialization of knowledge produced, especially as technology, are imbued with values and social structures; scientific non-neutrality does not disqualify the quality of the knowledge produced; in this dialogue and power struggle, traditional peoples, organized in social movements, politically organize themselves, are more than partners but "rights-holders" and should be the political mentors of this process.

Aware of the political and theoretical options, we suspect that Political Ethnobiology can advance on two major, non-exclusive fronts. Firstly, we propose

building solid scientific knowledge through the most advanced and robust epistemic and methodological options, always associated with popular struggles and demands. Thus, we believe that research in Political Ethnobiology should, through dialogical and ethical bridges, document traditional biodiversity management systems and translate them into scientific language, with the primary objective of making these systems visible, reducing the power relationship between popular and scientific knowledge; understand and synthesize the structuring and superstructural processes that threaten territories; understand and synthesize the strategies of struggle conceived in these territories; and develop more ethical approaches and methods in the relationship between researchers and Indigenous Peoples and Local Communities. We emphasize that, in this process of scientific production, it is also essential to value the writings of traditional peoples, whether by academics or traditional leaders. At least in Brazil, we have noticed the beautiful effort of publishing books of this nature. These writings should permeate our texts and be included in our libraries. The second aspect suggests a solid political impact from the territories and, evidently, with the consent of traditional peoples. Ethnobiologists, using their expertise and, why not say, the political power of scientific knowledge, occupy spaces of negotiation, dispute, and definition of legal instruments and public policies. Thus, they can promote dialogue between Indigenous Peoples and Local Communities and external agents, such as the State, Research Institutions, and Non-Governmental Organizations. In this regard, we would like to emphasize that it is not the role of the researcher to "translate" the speech of a leader present in a meeting or gathering, which is characterized as a micro-violation, something close, but with its conditions, to an act of "mansplaining" (see Dular 2021). Researchers can and should, if requested, strengthen popular organization processes and free, prior, and informed consent consultations. In this sense, we highlight the fundamental role of translating threats, sometimes organized in documents, projects, laws, or propositions, into understandable language, favoring the "free" and "informed" dimension of the right to consultation. In these dialogue tables, the participation of researchers can support the construction of public policies that are more sensitive to territorial demands. In an interface between technical expertise and public policies, there is the possibility of producing technical documents that defend the rights and struggles of Indigenous Peoples and Local Communities, such as anthropological reports for the recognition of identities and territories. We do not dismiss the need and possibility for ethnobiologists to participate in political actions, such as blockades, protests, and occupations.

These objectives should reflect, more than a "class option", but a traditional societal project, therefore aligned with the interests, struggles, and demands of Indigenous Peoples and Local Communities. We emphasize that it is not the researchers who define or "capture" these interests, struggles, and demands but the rights-holders themselves. We, researchers, must be attentive and sensitive to this learning process. Otherwise, we will continue to perceive "well-intentioned" research that violates traditional people. In this sense, the research and action of Political Ethnobiology, in most cases, are not publishable, as they could expose traditional understandings, agreements, and strategies. We also emphasize that when Indigenous Peoples and Local Communities become protagonists of the process, the logic changes, including time. The time of these research and actions is the time of the territories and not of academia.

Considering the above, there is a concern before defining Political Ethnobiology, which is to highlight it from other theoretical fields, such as the Environmentalism of the Poor or Political Ecology. We agree with Nabham et al. (2011) in affirming that "the practice of ethnobiology can offer to political ecology and other less field-oriented disciplines something that they desperately need: a kind of direct and protracted contact with the diverse faces, voices, values, and behaviors still active on this planet, as well as with the equally diverse and quixotic other-than-human world." As one of the few scientific fields, Ethnobiology has stood out since its conception for seeking a dialogue, a bridge between different regimes of knowledge that, as we have seen, are also different societal projects. In this sense, Political Ethnobiology inevitably incorporates paradigms from the epistemes of traditional societies that we hope to have highlighted earlier. In our understanding, this characteristic allows Political Ethnobiology to stand out from other scientific fields, such as Political Ecology.

That said, we propose that Political Ethnobiology be a dialogical and liberating production with Indigenous Peoples and Local Communities of knowledge and practices for their struggles and rights, fostering counter-colonial perspectives and announcing alternative societal projects. Thus, Political Ethnobiology is essentially dialogical as it assumes that Indigenous Peoples and Local Communities are not objects but subjects of their histories and rights. More than that, it assumes that dialogues between academia, Indigenous Peoples, and Local Communities should promote people's awareness and emancipation through critical reflection on reality, questioning their assumptions, and seeking to understand the experiences and perspectives of others. It also demands the interdependence between "knowing and doing" because, as Davi Kopenawá teaches us, when our words (knowledge) diverge from our actions (practice), there is a danger of

deception. Political Ethnobiology is also attentive to the diversity of worlds and ontologies, in which traditional knowledge needs to be imagined in a rupture with human exceptionalism. By cultivating attention to more-than-human knowledge, Political Ethnobiology seeks to take Indigenous ontologies and forms of politics among all beings seriously. Political Ethnobiology is attentive to the forms of mobilization and appropriation of ethnoscientific practice by Indigenous Peoples and Local Communities, as they use the concept of "traditional knowledge" as an instrument of struggle for rights.

It is also fundamental to highlight the theoretical production and political mobilization of traditional peoples and communities around the meanings of their knowledge systems. Although the academic output of these groups has grown in recent years, since the early days of modernity-coloniality, the insurrections of "subjugated knowledges" have represented an obstacle to the project of domination and control over bodies, territories, and nature itself. In the Brazilian context, the work of Indigenous Peoples, afro descendants (quilombolas), traditional communities, and family farmers has stood out in academic production, provoking significant conceptual shifts in the fields of anthropology, environmental studies, and, albeit still incipiently, ethnobiology. Generally, these works highlight the ontological differences between traditional knowledge and scientific knowledge, as well as the possibilities of dialogue between them (Sacramento 2022; Mumbuca 2020; Bispo dos Santos 2023; Kopenawa & Albert 2019; Xacriabá 2018). One of the most prominent authors in this context is Antônio Bispo dos Santos, who recently passed away. For him, traditional knowledge can be understood as "organic knowledge," contrary to "synthetic knowledge," characteristic of modern science. According to Antônio Bispo dos Santos, organic knowledge is circular and operates for the world of "being." It is knowledge open to diversity that does not seek to dominate or control other knowledge. On the other hand, synthetic knowledge typical of colonialists is linear knowledge that cannot tolerate difference. It is knowledge for the world of "having," aimed at control and power over others and nature. In this new wave of insurrection of subjugated knowledge, the organic knowledge that Antônio Bispo speaks of is also conquering institutional spaces, as exemplified by various intercultural schools and universities throughout Latin America, and particularly by the creation of the Vice Ministry of Traditional Medicine and Interculturality by the current Bolivian government. Finally, we would like to consider that the development of Political Ethnobiology may be blocked by the reluctance of some of our fellow scientists, including ethnobiologists, who believe in a "neutral science", something that must be fully separated from politics. However, in this case, it is necessary to separate politics from partisanship.

Some examples of research and actions of Political Ethnobiology in Brazil

Considering the assumptions, objectives, and concepts presented, we will now provide some examples of Political Ethnobiology practice. Our examples are associated with our academic trajectory in Brazil. This option is solely due to our familiarity with the actions carried out, and in no way do we intend to overshadow other trajectories, which we fully respect.

Actions of Political Ethnobiology of the Brazilian Society of Ethnobiology and Ethnoecology

In 2014, at its tenth national congress, the Brazilian Society of Ethnobiology and Ethnoecology (SBEE) chose to re-approach social movements and their struggles. Thus, it began a process to approach the National Articulation of Agroecology (Articulação Nacional de Agroecologia), the largest network of social movements, entities, organizations, and popular networks in Brazil, with agendas directly linked to traditional territories and biodiversity. Specifically, SBEE integrated the Biodiversity Working Group, which brings together, among others, representatives of the Articulation of Indigenous Peoples of Brazil (Articulação dos Povos Indígenas do Brasil), which organizes the indigenous movement, the National Alliance of Peoples and Traditional Communities (Rede Nacional de Povos e Comunidades Tradicionais), which brings together movements of traditional peoples, and the Via Campesina, which represents Family Farming[4].

In this collective, we focus on structural issues of national public policies and legal frameworks that directly interfere with the ways of life of IPLCs. In 2014, we began a process of technical support in the construction of the national law on access to genetic heritage and associated traditional knowledge and benefit-sharing (Brazilian Law 13.123/ 2015), in line with the Convention on Biological Diversity and, to some extent, in dialogue with the early claims of Darrell Posey. The proposed law was highly aggressive towards the struggles and rights of Indigenous Peoples, Traditional Peoples and Communities, and Family Farmers, driven by the interests of the pharmaceutical, agricultural, and cosmetic industries. The

[4]In Brazil, the international concept of "Indigenous Peoples and Local Communities" is translated by domestic laws and social movements as "Indigenous Peoples, Traditional Peoples and Communities, and Family Farmers." Therefore, we will use the terms "Indigenous Peoples, Traditional Peoples and Communities, and Family Farmers" in this section of Brazilian examples.

law was approved in 2015 is less aggressive than the original proposal due to political advocacy. However, it violates various rights, such as prior informed consent and the right to benefit-sharing. Currently, some members of SBEE provide technical support to representatives of traditional peoples and communities on the National Genetic Resources Council, the highest deliberative body on the subject, providing arguments and conceiving normative proposals. We have contributed to a regulation that defines distinctive characteristics of spontaneous populations of plant and animal species introduced into the national territory, used in agricultural activities in Brazil. By defining such characteristics, it is possible to determine if an introduced species belongs to Brazilian genetic heritage, for which benefits from economic exploitation are shared. Creole seeds are improved and maintained by Indigenous Peoples, Traditional Peoples and Communities, and Family Farmers, and, in the vast majority of cases, even if they are introduced, they develop unique characteristics under these management systems. By including such genetic resources in this regulation, we expand benefit-sharing for these groups. Furthermore, national law states that access to traditional knowledge also occurs through secondary data, such as articles and books. When this article is written, we contribute to the regulation that defines this type of access, expanding the right to consultation for Indigenous Peoples, Traditional Peoples and Communities, and Family Farmers.

The actions and interventions of the Biodiversity Working Group highlight the pedagogical processes of popular education. The national law on access and benefit-sharing was approved without consultation, violating International Labour Organization Convention 169. Therefore, in addition to the existing threats in its text, there needs to be more awareness among Indigenous Peoples, Traditional Peoples and Communities, and Family Farmers. Thus, this working group organized and published a booklet that explains and politically analyzes the law on access and benefit-sharing, aimed at capacity-building processes and appropriation of a legal framework with solid implications for local realities. In addition to this booklet, in the years 2022 and 2023, we pedagogically coordinated two processes with other ethnobiologists that deserve attention. The first was the participatory construction of the "Political Pedagogical Project of Indigenous Peoples, Traditional Peoples and Communities, and Family Farmers of Brazil." Over four days, with the participation of more than 40 leaders from across the national territory, we defined the assumptions, principles, values, and methodologies that should underpin any dialogue between these groups and the State. The provisions in this document can be adapted for dialogue with companies and researchers. Second, based on this Political Pedagogical Project, we coordinated, along with other ethnobiologists, five major workshops on the national law on access and benefit-sharing, one in each region of Brazil. These workshops aimed to provide training on access and benefit-sharing, understand popular processes for safeguarding socio-biodiversity, identify situations of violation of rights related to traditional knowledge, and propose strategies to expand rights and struggles under the national law. Over 350 leaders from Indigenous Peoples, Traditional Peoples and Communities, and Family Farmers from across Brazil participated in this process. The proposals presented at each of the five workshops were recorded, reviewed, and agreed upon by more than 80 leaders of these peoples at a national workshop held in January 2024. The result was the production of the "Popular Dossier on access and safeguarding of genetic heritage and associated traditional knowledge and benefit-sharing," which presents more than 70 concrete actions to expand the struggles and rights of safeguarding traditional knowledge. This dossier proposes the construction of the "Popular Biodiversity Observatory" and the "Popular Pharmacopoeia of Brazil." This dossier was officially delivered into the hands of the Minister of State for Environment and Climate Change, Mrs. Marina Silva, and the Minister of State for Indigenous Peoples, Mrs. Sônia Guajajara, at a ceremony held in Brasília, attended by over 80 traditional leaders.

In the same vein of training and political advocacy, Brazil ratified the Nagoya Protocol in 2021; however, this document and its content were entirely unknown to Brazilian leaders. In this sense, training seminars were held to build a popular translation and understanding of this framework. Currently, the biodiversity-related social movements can provide a critical analysis of the Nagoya Protocol. In the same year, the National Chamber of Deputies presented a bill that would allow the President of the Republic to denounce International Labour Organization (ILO) Convention 169, thereby relieving the country of its obligations under this treaty, which is undoubtedly one of the most important for traditional peoples. Aware of this threat, various mobilizations and political interventions were carried out to block the advancement of this proposal, such as the production of letters and political advocacy with Federal Deputies and Senators.

The Biodiversity Working Group of the National Agroecology Articulation has historically published a letter from social movements and organized civil society regarding discussions at the Convention on Biological Diversity, notably before its parties' conventions. This document synthesizes popular understandings and is sent to the Ministry of Foreign Affairs to support national representation. In 2022, we provided technical support to the representatives of Indigenous

Peoples, Traditional Peoples and Communities, and Family Farmers of Brazil at the 15th Conference of the Parties to the CBD in Montreal. In addition to the Portuguese-English translation, essential for negotiations, we provided technical support in discussions on Digital Sequences Information and "bioeconomy" and the discussions resulting in the Global Biodiversity Framework. As a result of political advocacy at COP15, Brazilian leaders now, for the first time, officially participate in and monitor the discussions of the Working Group on Article 8(j) and the International Indigenous Forum on Biodiversity (IIFB). At the very moment this text is being written, we are organizing a workshop with the leaders of Brazilian Indigenous Peoples and Traditional Peoples and Communities, and Family Farmers on Digital Sequences Information, to understand the term, its political implications, and especially define a position on this issue, which will undoubtedly be one of the most important in the negotiations of COP16 in Colombia. One of the main aspects is ensuring benefit-sharing associated with Digital Sequences Information.

Partnerships with the "Apanhadoras de Flores Sempre Vivas" (Everglasting Flowers Gatherers)

Some conservation strategies in Brazil, especially national action plans and conservation units, are defined based on official lists of threatened species. Even though the criteria for establishing conservation status are based on scientific arguments, some culturally important species are classified as threatened because they are targeted for traditional extraction without any scientific study to support this argument. In this case, there is a clear need for robust ecological research to answer the real environmental impacts of collecting this natural resource. More than that, recognizing the right of access to biodiversity, such studies produce data so that, if the collection is not fully sustainable, an ideal situation can be envisioned where the rights to life, traditional ways, territory, and self-identification are reconciled with conservation without criminalization.

In Brazil, more than 90 of Traditional Peoples and Communities are affected by protected areas, such as the "Apanhadoras de Flores Sempre Vivas" (*Everglasting Flowers Gatherers*) in Minas Gerais. This group is characterized by a complex agricultural system, characterized by transhumance in implementing various agricultural strategies, native cattle raising, and the collection of "sempre vivas" (*everglasting flowers*). "Sempre vivas" are a group of flowers belonging to the families Eriocaulaceae, Xyridaceae, and Cyperaceae, which grow in rocky field areas. However, the traditional collection was prohibited in 2010 with the implementation of the Sempre Vivas National Park. One of the most important species for the "Apanhadoras de Sempre Vivas," *Comanthera elegans* (Bong.) LR Parra & Giul., is classified as threatened by the official list. One of the described vectors is the collection of its flowers. However, there are no scientific studies to support this argument. Thus, in 2017, the leaders of this group invited the first author of this article to conduct a population dynamics study. The results, which are in the process of being published, indicate, in summary, that traditional collection does not threaten populations; on the contrary, it stimulates their growth and is, therefore, sustainable. Based on population ecology and current modeling tools, this study translates into scientific language what the "Apanhadoras de Sempre Vivas" already knew: "without collection and without traditional management, there are no flowers." Assuming the power of science in defining public policies, this research indicates the decriminalization of collection and the removal of traditional management as a vector that threatens the species.

Other scientific studies have been conducted in the region and support the struggles and rights of the "Apanhadoras de Sempre Vivas." Recently, their traditional agricultural system was recognized as a Globally Important Agricultural Heritage System (GIAHS) by the Food and Agriculture Organization of the United Nations, the only one in Brazil at the time this text is being written. This recognition involved the presentation of an academic and interdisciplinary dossier, which, based on various scientific concepts and original data, suggested that the system is essential for the diversification, conservation, and maintenance of biodiversity and environmental services. Among the scientific concepts that supported the recognition, we can highlight "niche construction," "species domestication," and "landscape domestication." All of them is care to Ethnobiology. Associated with the recognition is a Dynamic Conservation Plan, signed by governmental institutions, which has been guaranteeing fundamental rights but has yet to be achieved.

Partnerships with "Carroceiros" (Cart Drivers)

Environmental racism, often resulting from the unequal effects of the ecological crisis on historically marginalized social groups, also operates through the agenda of liberal environmentalism. An emblematic case, which has been documented in various regions of Latin America, concerns legislative initiatives to criminalize the use of animal traction in cities. Groups associated with the animal liberation movement have allied with certain political parties, councilors, and candidates to propose municipal laws banning the use of animals, particularly horses, donkeys, and mules, for cart

traction. Using animal traction in carts constitutes the way of life for thousands of communities in urban peripheries throughout Latin America. Long before and since the early stages of the urbanization process, carts and animals have been part of the landscape and their management practices in these regions. Criminalizing animal traction attempts to impose an environmental agenda of Western and Eurocentric origin, again denying the ontological and cosmological diversity that characterizes rural and urban peripheral communities. In a particular case, in Belo Horizonte, the capital of Minas Gerais in southeastern Brazil, faced with a municipal initiative to criminalize animal traction, the cart drivers self-identified as a traditional community and, with the support of the second author of this text, anthropologists, and social movements, produced their consultation protocol (Almada & Oliveira 2021). According to this protocol, the cart driver community is composed not only of humans but also horses, mules, donkeys, chickens, goats, plants, and many other beings that inhabit the city's homes, yards, and streets. In this case, ethnobiological research has contributed to the description of cart driver cosmopolitics, supporting the community's struggle to defend its rights in a scenario of institutionalized environmental racism.

Ethnobiological research with the "carroceira community" in Belo Horizonte has contributed to highlighting the biocultural diversity of cities, particularly of communities living in urban peripheries. As a result of the conducted research, besides the publication of the Community Protocols, the "carroceiros" were recognized as subjects of rights by state institutions such as the Public Prosecutor's Office and the Public Defender's Office. Additionally, the "carroceira community" gained the right to representation on the State Commission for the Sustainable Development of Traditional Peoples and Communities of Minas Gerais. This vital state body addresses public policies for these social groups. As a result of the ethnobiological research and the mobilizations of the carroceira community of Belo Horizonte, carroceiros from other cities in Brazil have also begun their processes of self-recognition as a traditional community. The research conducted in partnership with the "carroceira community" highlights the role of Ethnobiology as an instrument for combating environmental racism, as it describes and translates the ontological conflicts between traditional communities, the state, and other social groups seeking to perpetuate the colonial project of power.

FINAL CONSIDERATIONS

In proposing a Political Ethnobiology, we intend to maintain the current period in the field's historiography, a task that other works have satisfactorily accomplished in recent years. Political Ethnobiology refers to elements and movements that have marked the relationships between traditional knowledge and modern science since their origins. Since the birth of modernity-coloniality, we understand that a politics of traditional knowledge has been established marked by subjugation and numerous insurrections. This is not to deny the relevance and urgency of ethnobiological perspectives interested in traditional knowledge's cognitive, evolutionary, and ecological aspects but to highlight the historical and political context in which these knowledge regimes develop. The deepening and acceleration of the global environmental crisis demand the construction of alternative pathways appropriate to the severity and urgency of this crisis. If there is something we can learn from traditional peoples and communities, it is how to survive the "end of the world" experiences they have been subjected to for the past 523 years. Under the title of Political Ethnobiology, we want to gather the diversity of concrete and future experiences promoted by different subjects and in different contexts that allow us to understand traditional knowledge as expressions of ways of composing the world, of weaving relationships between humans and more-than-humans, of practices of care and sociabilities capable of stopping the death machine of capital and re-establishing the foundations of communal and solitary life.

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DATA AVAILABILITY

All the information and documents mentioned in the text are available from the corresponding author upon reasonable request.

CONFLICT OF INTEREST

The authors have no conflicts of interest to declare.

CONTRIBUTION STATEMENT

Conceived of the presented idea: GTS, EDA.
Wrote the first draft of the manuscript: GTS, EDA.

Review and final write of the manuscript: GTS, EDA. Supervision: GTS, EDA.

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