

Revista de  
**Direito Econômico e  
Socioambiental**

ISSN 2179-8214

Licenciado sob uma Licença Creative Commons



# **REVISTA DE DIREITO ECONÔMICO E SOCIOAMBIENTAL**

vol. 12 | n. 1 | janeiro/abril 2021 | ISSN 2179-8214

Periodicidade quadrimestral | [www.pucpr.br/direitoeconomico](http://www.pucpr.br/direitoeconomico)

Curitiba | Programa de Pós-Graduação em Direito da PUCPR



## **Indigenous land demarcation, traditional knowledge, and biodiversity in Brazil**

### *Demarcação de terras indígenas, conhecimentos tradicionais e biodiversidade no Brasil*

**Douglas Oliveira Diniz Gonçalves\***

Universidade Tiradentes (Brasil)

douglas\_odg@hotmail.com

**Fran Espinoza\*\***

Universidade Tiradentes (Brasil)

espinoza.fran@gmail.com

**Dimas Pereira Duarte Júnior\*\*\***

Universidade Tiradentes (Brasil)

dimas.duartejr@gmail.com

Como citar este artigo/How to cite this article: GONÇALVES, Douglas Oliveira Diniz. ESPINOZA, Fran. DUARTE JÚNIOR, Dimas Pereira. Indigenous land demarcation, traditional knowledge, and biodiversity in Brazil. **Revista de Direito Econômico e Socioambiental**, Curitiba, v. 12, n. 1, p. 216-234, jan./abr. 2021. doi: 10.7213/rev.dir.econ.soc.v12i1.26725.

\*Mestre em Direitos Humanos pela Universidade Tiradentes (Aracaju - SE, Brasil). Graduado em Direito pela mesma universidade. Membro do Grupo de Pesquisa "Políticas públicas de proteção aos direitos humanos" e do grupo de cultura e extensão "Desenvolvimento e direitos dos povos indígenas" (FDUSP/DPI). E-mail: douglas\_odg@hotmail.com

\*\* Professor Titular do Mestrado em Direitos Humanos da Universidade Tiradentes (Aracaju - SE, Brasil). Doutor em Estudos Internacionais e Interculturais pela Universidade de Deusto (Bilbao, Espanha), reconhecido pela Universidade Federal do Ceará (Fortaleza - CE, Brasil). Pós-doutorado em políticas públicas na Universidade Federal do Paraná (Curitiba - PR, Brasil). Mestre em Estudos Internacionais de Paz, Conflito e Desenvolvimento pela Universidade Jaume I (Castellón de la Plana, Espanha). E-mail: espinoza.fran@gmail.com

\*\*\* Professor do Mestrado em Direitos Humanos da Universidade Tiradentes (Aracaju - SE, Brasil). Doutor em Ciências Sociais e Relações Internacionais pela Pontifícia Universidade Católica de São Paulo (São Paulo - SP, Brasil). Mestrado em Filosofia Política pela Universidade Federal de Goiás (Goiânia - GO, Brasil). Graduação em Direito pela Universidade Católica de Goiás (Goiânia - GO, Brasil). E-mail: dimas.duartejr@gmail.com

Recebido: 04/05/2020  
Received: 05/04/2020

Aprovado: 09/09/2020  
Approved: 09/09/2020

## Resumo

Desde o processo de colonização do Brasil, os povos indígenas e a natureza são explorados, destruídos e apropriados à serventia de um modelo econômico baseado na acumulação de produtos e recursos naturais. São essas realidades destruídas e sujeitos subalternizados que insurgem, diante da crise ambiental contemporânea, como fontes potenciais de práticas de proteção e de recuperação da natureza e da biodiversidade. Seguindo essa premissa, o objetivo do presente estudo é verificar o potencial da demarcação de Terras Indígenas para a proteção da biodiversidade no Brasil. Para tanto, sustenta-se a hipótese de que a efetivação do direito à terra dos povos indígenas pode propiciar tanto a conservação quanto a recuperação da biodiversidade. Nesse estudo, o método qualitativo foi aplicado assumindo uma abordagem interdisciplinar com ênfase no direito e na sociologia. Por fim, a partir de todo o arcabouço argumentativo exposto, alcança-se a conclusão de que o direito à terra, quando efetivado através da demarcação de Terras Indígenas, influi diretamente e indiretamente na conservação da biodiversidade.

**Palavras-chave:** biodiversidade; conhecimento tradicional; demarcação de terras indígenas; direito à terra; rede de sementes do Xingu.

## Abstract

*Since the colonization of Brazil, both indigenous peoples and the nature are exploited, destroyed and appropriated for the sake of an economic model based on the accumulation of natural resources and products. Now faced with an environmental crisis, these destroyed worlds and diminished peoples and its practices emerge as potential sources for the protection and recovery of nature and biodiversity. Following this premise, the objective of the present study is to verify the potential role of indigenous lands demarcation on the protection of biodiversity in Brazil. The hypothesis planted is that the realization of indigenous peoples' land right can provide both conservation and recovery of biodiversity. In this study, the qualitative method was applied by assuming an interdisciplinary approach, with emphasis on law and sociology. Thus, it is concluded that the land right, when actually granted through the demarcation of Indigenous Lands, influences the conservation of biodiversity both directly and indirectly.*

**Keywords:** *biodiversity; traditional knowledge; indigenous lands demarcation; land right; Xingu seeds network.*

## Contents

1. Introduction. 2. Colonized land, devastated nature. 3. Land demarcation and traditional knowledge. 4. Intertwined Biodiversity and Traditional Knowledge: the Xingu Seeds Network. 5. Final remarks. References.

---

## 1. Introduction

Since the colonization process in Brazil, indigenous peoples and nature have been exploited, destroyed, and appropriated for the use of an economic model based on the accumulation of products and natural resources. The suppression of territorial rights of peoples and the silencing of their traditional knowledge continue to be central in the western endeavor of subordination of other human beings.

These suppressed and subordinated realities emerge, in the contemporary environmental crisis, as potential practices for the protection and recovery of nature and biodiversity. Therefore, this research faces this problem through the study of the right to land as a comprehensive claim, whose effectiveness encompasses the protection of traditional knowledge as well as the promotion of biodiversity.

Within this context, the present study aims at verifying the potential of the demarcation of Indigenous Lands for the protection of biodiversity in Brazil. Thus, it endorses the hypothesis that the realization of the right to land of indigenous peoples may allow for both the conservation and the recovery of biodiversity.

The qualitative method was applied to the study assuming an interdisciplinary approach, using arguments of social science thinkers with an emphasis on law and sociology. Brazilian legislation related to the issues of demarcation of Indigenous Lands, traditional knowledge and biodiversity was taken into consideration. In addition, the decolonial perspective was assumed in the contextualization of the history of violations of the rights of indigenous peoples in Brazil, reason why indigenous thinkers and leaders were also mentioned in the composition of the argumentative framework of the research.

The work is structured as follows: first, the precariousness of indigenous peoples' rights and the depredation is described; then, the analysis of the right to land and its effectiveness through the process of demarcation of Indigenous Lands is put forward, also reaching its potential

of intertwining with the protection of biodiversity and traditional knowledge. Subsequently, traditional knowledge of indigenous peoples and their practices that promote the restoration of biodiversity are connected, in which part an example of a real initiative is presented: the Xingu Seeds Network.

After the analysis, the conclusion is that the right to land, implemented through the demarcation of Indigenous Lands, directly influences the conservation of biodiversity and, by protecting the traditional knowledge of indigenous peoples, provides practices for the recovery of biodiversity.

## 2. Colonized land, devastated nature

The invasion of the American continent, which began in 1492, marked the beginning of an imposed dynamic coming from Europe. The colonial era, in addition to representing the change to an economic model based on exploitation, resulted in a process of genocide of the original peoples, of expropriation of the lands that their ancestors inhabited and of destruction and precariousness of their traditional knowledge.

For this colonial machine to be put into operation, it was necessary to subsume the inferiority of the colonized peoples through a racial classification that completely distinguished them from the Europeans (GROSFUGUEL, 2016, p.167), transforming their lives into dispensable instruments for the execution of the project that was put into practice. In this way, indigenous peoples were understood as “non-persons”, making their lives disposable (SÁNCHEZ RUBIO, 2015, p.191) and their deaths useful for the process of expropriation of their lands.

With this necessary separation between colonists and colonized, an Other being was created, essentially distinguished from the western one, liable to being violated, killed, erased and defeated (DUSSEL, 1994, p.8), which is represented in the colony both in the image of the indigenous as well as in the image of nature. Both savage and jungle were then transformed into appropriable and destructible objects, as they were completely distinguished from the western human being.

The thought that imagines the human being as a subject detached from nature is the same thought that suppresses diversity and denies the plurality of forms of life and human existence (KRENAK, 2019, p.22-23),

reducing everyone to a standard and nature into a good for the use of this standardized subject. Based on this utilitarian conception of nature, as appropriable matter, the territories of indigenous peoples were expropriated, devastated, and exploited.

In the same way, traditional knowledge was erased and suppressed through epistemicide, a political-cultural process through which knowledge produced by subordinate social groups is destroyed, in order to maintain and deepen this subordination (SANTOS, 1998, p.208). Being understood as disqualified, inferior and primitive, these knowledges were systematically erased, as well as those that produced them, reduced to natural objects that could be appropriated and destructible. (SANTOS, 2004, p.25).

This Western colonial project, carried out by means of destruction and appropriation of bodies, lands, nature and knowledge, has repercussions until the present day for the emergence and maintenance of a large part of the problems faced by subaltern social groups in Latin America, such as indigenous peoples.

Under the imprint of genocide, it is estimated that 90% of the 47 million indigenous people who inhabited present-day Latin America in 1492 were exterminated in just 130 years (DENEVAN, 1992, p.28-29), as much by the diseases brought by the invaders, as by the violent incursions carried out against the natives.

In Brazil, the diversity of indigenous peoples is currently represented by about 252 peoples, speakers of 150 languages (INSTITUTO SOCIOAMBIENTAL, 2017, p.8), a much lower number compared to the plurality of peoples and languages that made up Pindorama<sup>1</sup> prior to the European invasion.

The mark of the expropriation of indigenous peoples' ancestral territories can be observed not only in the precariousness of these peoples' lives, but also in the strong repercussions of both the decrease in biodiversity and the destruction of traditional knowledge.

The logic of economic exploitation, which transforms nature into a natural resource, completely separating it from human beings and society, generate such problems (SANTOS, 2004, p.26). This is the root of the socio-environmental crisis today, the idea that nature is a kind of living machine at the disposal of our desires and needs (ABRAMOVAY, 2017, p.8), an

---

<sup>1</sup> Name given to the broad region of the Brazilian coast which, in Tupi-Guarani, means "land of palm trees".

appropriable good, which is at the service of a model based on destruction and scarcity.

Because of this logic, power groups focus efforts to attack the rights of indigenous peoples, as they know that without their inhabitants, nature is unprotected, exposed to looting and depredation. Thus, this system that objectifies the environment in favor of its exploitation also destroys indigenous life in its diversity, history, and ancestral customs. This endeavor against native peoples occurs because they are the true guardians of the land and nature (GENTILI, 2019, p.10), and are, therefore, understood by this exploratory and predatory system as true obstacles to economic development.

If, on the one hand, indigenous peoples find themselves between economic interests and the protection of nature, on the other hand, they emerge as socio-environmental actors of great importance in the fight against devastation and in favor of environmental conservation and safeguarding of biodiversity. Their contributions are essential for the elaboration of ideas and for putting into practice actions to face the socio-environmental crisis.

It is only through community thinking that the real confrontation of the problems generated by an individualistic society takes place. Thus, indigenous peoples, through the defense of their territories and the promotion of their alternative cosmovisions, directly influence the defense of nature and biodiversity (PLEYERS, 2018, p.148), restoring what Western modernity divided: the human being and nature (ABRAMOVAY, 2017, p.8).

The aim is to combat the process of denial of nature by human beings, a denial that is externalized in the effort to reduce it to a mere means of meeting human needs (MBEMBE, 2016, p.125), which is expressed through the reductive term “natural resource”.

It is necessary to overcome a “forgetfulness” that plagues the mind and thoughts of the West, which makes Westerners mistreat both indigenous peoples and nature (KOPENAWA, 2015, p.384), forgetting the simple fact that they are part of it.

Given the processes of genocide of native peoples, expropriation of the lands they inhabit, devastation of nature and destruction of traditional knowledge, the present study points to the potential of Indigenous Lands’ demarcation policy as a promoter, through the realization of indigenous peoples’ right to land, of conservation and restoration of biodiversity.

### 3. Land demarcation and traditional knowledge

The right to land is provided for in the Brazilian Constitution of 1988 as a collective right of indigenous peoples, on the lands traditionally occupied by them. The particularities of this right completely distance it from the ideas of possession and property coming from the West, being, therefore, regulated from a constitutional protection set in article 231 the Brazilian Constitution.

One of its key peculiarities comes from its naming as an original right, which means the dispensability of a formal recognition by the State for the right to land to be constituted. In that sense, the right to land cannot be annulled or questioned as to its existence for the simple lack of recognition by the State (OLIVEIRA, 1987, p.8). However, in order to give greater legal and social effectiveness to the right to land, the administrative procedure for the demarcation of indigenous lands is provided for in the Constitution and regulated via infra-constitutional legislation. The demarcation of lands is the procedural means through which the Union seeks to materialize the right to land of indigenous peoples.

Another specificity of this right lies in the fact that it is the central point for guaranteeing and enforcing other constitutional rights of indigenous peoples, since land, in addition to being a fundamental value for the physical and cultural survival of peoples, is also the core of the indigenous peoples' problems in Brazil, being reason for disputes (SILVA, 2018, p.873) and pressure from different economic sectors.

This position assumed by the right to land, where its priority guarantee becomes a condition for the realization of the other guarantees of indigenous peoples, qualifies it as an "umbrella" right, as it encompasses, after its accomplishment, the realization of various other rights. For indigenous peoples, land means much more than Western concepts of property or housing. The land is, among other issues, the expression of indigenous autonomy, their freedom of belief and worship, their culture, their customs, and their harmonious coexistence with nature.

This necessary implication between indigenous land and the protection of the environment reveals that both rights are viscerally intertwined, resulting in the recognition that the realization of one necessarily implies the social realization of the other (GONÇALVES; ESPINOZA; DORNELLES, 2020, p.315).



Assuming this link between indigenous peoples and nature as a key point, the study now turns (1) both to the assessment of the direct influence of the demarcation of indigenous lands in the protection of biodiversity (2) as well as to the thought of alternative ways for the revitalization of biodiversity based on the traditional knowledge of indigenous communities.

As diverse as the different indigenous cultures are, from the Andes to the Amazon, there are a large number of peoples whose basic expression of their daily lives is the maintenance of harmonious relationships with nature (ACOSTA, 2016, p.65). From these relationships, other values and practices emerge due to their ability to face Western relationships of exploration of nature, thus being a fertile field for the elaboration of new proposals for interaction with the natural environment.

From this point on, the study seeks to break with the concept of environment, coined by the West, which presupposes a separation between the human species and nature. In addition, this term notes a tendency to destroy the natural environment, as only a culture prone to depredating nature is able to coin a concept of nature separated from itself as the environment (SANTOS, 2018).

For other cultures, such as indigenous cultures, the elaboration of such a concept is unthinkable due to the simple fact that nature is so viscerally intertwined with their lives, their daily lives, their customs, their beliefs, and their knowledge that it does not makes sense to imagine it alone, in such an independent and particularized way as in a concept of environment.

Thus, from the Western need to understand and segment nature in the form of an “environment”, it is possible to infer the explanation of certain events or processes carried out by the West, such as devastation and degradation, as they are idealized scientific concepts capable of illuminating the reason behind certain dark actions (HIRA, 2016, p.177). Therefore, this term implies a sign in which the environment appears as an essential means to a specific end: economic development, which will be achieved through the use of nature as a resource.

On the other hand, the protection of the natural environment limited within Indigenous Lands is a direct consequence of the degree of effectiveness provided by the demarcation of lands. Thus, while demarcation is efficient in guaranteeing the right to land of indigenous peoples, its efficiency will necessarily spill over into the conservation of fauna, flora, rivers, lakes, and other natural elements.

Confirming this vocation of Indigenous Lands and their peoples for the protection of nature, the *Instituto de Pesquisa Ambiental da Amazônia* prepared a technical note on the recent increase in fires in the Amazon Forest, aiming at investigating the possible causes and characteristics of the spread of fires. In addition to pointing out the intentional setting of fire in this case, the note identifies the land categories affected by the flames. Through satellite images, it was observed that the areas least affected by the fire were precisely the Indigenous Lands, with only 6% of the outbreaks (INSTITUTO DE PESQUISA AMBIENTAL DA AMAZÔNIA, 2019, p.2), thus noting a direct effect for the conservation of the natural environment, which unfolds from the effectiveness consolidated by the demarcation of Indigenous Lands.

The question of land and traditional territory has been changing in its breadth and dimension as a right. It is no longer just the legal expression of a struggle for the distribution of land for the sociocultural maintenance of indigenous peoples, but it also starts to assume the aspect of a guarantor of biodiversity (SANTOS, 2012). Another dimension of the land, whose protection must be understood and always linked to the symbology and social practices contained in the territory itself (LLANOS-HERNÁNDEZ, 2010, p.208), which are built and maintained by indigenous peoples.

It is essential to observe that the guarantee of the right to land of indigenous peoples, implemented through the demarcation process, by providing the protection of indigenous communities and their rights as a whole, is also an instrument for the preservation of indigenous peoples' culture and traditional knowledge.

Traditional knowledge contains alternative visions of the world, typical of peoples marginalized by history, such as indigenous ones. And these other values and points of view reveal themselves as great opportunities for the construction of other types of societies, based on the primordial vector of harmonious coexistence between human beings and nature (ACOSTA, 2016, p.24-25). Thus, based on this knowledge, cosmovisions and traditional practices, indigenous peoples have the potential to provide new perspectives and actions adapted to today's world, in contrast to Western progress (PLEYERS, 2018, p.148-149), largely responsible for the idea of nature as a resource as well as its devastation.

It may seem strange to talk about the potential of ancient knowledge for the elaboration of new solutions, but this is precisely because the

colonizer's world has discarded indigenous ancestral knowledge, downgrading them to the category of ignorant, irrelevant, and backward (HIRA, 2016, p.186) and has reduced them to the category of manifestations of irrationality or mere superstitions (SANTOS, 2004, p.23).

This was due to the need for Western civilization to present itself as superior to the other peoples it conquered. Such superiority was justified mainly through the scientific and technological knowledge produced in the West (GROSFOGUEL, 2016, p.159) and which was in necessary opposition to traditional knowledge.

The difficulty in accepting knowledge other than scientific knowledge, such as that of indigenous peoples, is still due to contemporary science not properly recognizing the legacy and value of the past, understanding science as the product of a rupture with irrational traditions. Thus, the West and its particular form of knowledge production, science, intend to be evolved, while the other peoples that diverged from this path are categorized as primitive, stationary in time (SANTOS, 2006, p.91).

Contrary to what is believed with this Western view, indigenous peoples are neither backward nor pre-modern. The values and practices of the different indigenous cultures prove that these peoples have a great wealth of knowledge that, in addition to having faced colonial pressures aimed at their destruction, points to the construction of a different future with new proposals for humanity (ACOSTA, 2016, p.24).

With the emergence of global problems such as the depredation of nature and the decrease in biodiversity, it is no longer possible to understand as irrelevant or inferior knowledge that come from other perspectives (SANTOS, 2004, p.20). As such problems are a direct result of the Western worldview and way of production, traditional knowledge, because it is not inserted into Western thinking, stands out in the elaboration of new practices for the resolution of crises generated from the exploitation of nature as a resource.

On this potential of cultures, cosmovisions and knowledge of indigenous peoples, Ailton Krenak claims that the wisdom of the peoples are "ideas to postpone the end of the world" (KRENAK, 2019, p.27), as the sharing of this knowledge and histories represent, in addition to counter-hegemonic practices of struggle against the authoritarian monoculturalism of the West (SANTOS, 2004, p.21), possible solutions for the containment and reversal of global problems.

Within the Brazilian legal framework for regulating the traditional knowledge of indigenous peoples, the 1988 Federal Constitution lacks a norm that guarantees specific treatment for the protection of these forms of knowledge. In other Latin American countries, such as Ecuador, the ancestral knowledge of indigenous peoples receives special attention and guarantees in their constitutions.

Article 385 of the 2008 Constitution of the Republic of Ecuador provides that the National System of Science, Technology, Innovation and Ancestral Knowledge has as one of its purposes “to recover, strengthen and enhance ancestral knowledge” (EQUADOR, 2008). In the Brazilian Constitution of 1988, although there is no express mention, it is possible to infer the recognition of indigenous peoples’ traditional knowledge from the protection, conferred by article 215, § 1, to the manifestations of indigenous cultures, as well as article 231 which deals with the guarantee of the “customs” and “traditions” of indigenous peoples (BRASIL, 1988). However, there is a lack of particular instruments for the promotion and protection of this knowledge.

In the infraconstitutional scope, Law No. 13213 of 2015 defines traditional knowledge under an exclusively economic perspective and necessarily linked to an appropriable genetic heritage. It is also possible to question the applicability of the patent system as a mechanism for protecting traditional knowledge. However, it is clear that, through this instrument, as well as the mechanisms provided for by Law No. 13123/15, the ancestral knowledge of indigenous peoples must be transformed, being made compatible with Western scientific knowledge, so that, from an economic appropriation, they achieve protection as property.

In this flawed and precarious context of protection of traditional knowledge, the effectiveness of the right to land, provided by the policy of demarcation of Indigenous Lands, stands out as a viable way to promote the protection, preservation and strengthening of the knowledge of indigenous peoples through recognition of their autonomy, culture and customs.

#### **4. Intertwined Biodiversity and Traditional Knowledge: the Xingu Seeds Network**

The link established between the traditional knowledge of indigenous peoples and the protection of biodiversity, perceived for some time, and prescribed in international regulations, is currently assumed as a strategic

link in the process of recovering nature. For indigenous peoples, this perspective is obvious, since their cosmovision, practices, customs and knowledge are all exercised in full balance with the natural world that is, at the same time, intrinsic and inseparable.

Despite the violent onslaught of the European invaders in the destruction, beyond the bodies and cultures, of the systems of thought and reproduction of indigenous peoples' knowledge, much remained hidden and flourishing within communities that never surrendered in the fight against destruction of their worlds (HIRA, 2016, p.186). Such knowledge and practices, fruits of resistance to the colonial enterprise and constituted in balance with nature, demonstrate their potential because of their antagonistic position to the western values responsible for the environmental problems of the contemporary world (LATOUCHE, 2009, p.21).

In order to maintain and expand a balanced world with closed forests and healthy nature, where trees help form rain and produce clean air (KAWAIWETE, 2017, p.28) and in the face of the current scenario of marked socio-environmental crisis, the practices generated within the knowledge of indigenous communities emerge as instruments for transforming reality and restoring biodiversity.

Since before the European invasion, Brazilian indigenous peoples, in their visceral relationship with their natural habitat, and through their traditional knowledge, have constantly influenced the change in composition and structure of the Amazon rainforest. The high frequency of domesticated plants, fruit species and soils fertilized via human action strengthen the thesis that the Amazon was shaped and expanded by the peoples who inhabited it (LEVIS, 2007, p.925) and such actions persist in indigenous conservation practices and restoration of the natural environment.

Thus, assuming the potential of practices and knowledge of indigenous peoples for the protection and restoration of biodiversity, the Convention on Biological Diversity of 1992, approved by the Brazilian legal system, provides, in article 8, "j", the obligation assumed by the Brazilian State to:

[...] respect, preserve and maintain the knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological

diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices [...] (UNITED NATIONS, 1992).

This document represents an international milestone as it deals with the explicit recognition, for the first time, of the fundamental role of the knowledge of traditional communities and indigenous peoples for the conservation of biodiversity (BENSUSAN, 2017, p.86). Likewise, it emphasizes the potential of this knowledge in the generation of practices capable of promoting an active movement to restore depredated nature.

In addition to the characteristics already mentioned, which confirm the aptitude of traditional indigenous knowledge for the maintenance and recovery of the diversity of living beings, it is essential to consider that Brazil holds the largest reserve of biodiversity on the planet, concentrated mainly in the Amazon biome that shelters half of all plant species in the world (GENTILI, 2019, p.10), indicative of the global relevance of protecting its biological wealth.

In this scenario of vast genetic heritage, whose concentration is mostly in the South of the world, indigenous peoples play a role of singular importance. Extrapolating the mere conservation of the biological diversity of species, these traditional peoples have knowledge and develop practices responsible for many of the foods and medicines produced and consumed in the world (SANTOS, 2005, p.28), in addition to being responsible for participating in projects to recover deforested environments.

Based on the interconnections between traditional knowledge and biodiversity conservation, the present study turns to the brief analysis of a project put into practice in the Xingu River region, whose purpose is the reforestation of part of the Amazon region. By making use of the biodiversity preserved within the Indigenous Lands, as well as the indigenous populations and their traditional knowledge, this initiative stands out as an example for the present study.

The Xingu Seeds Network is an example of the articulation between traditional knowledge of indigenous peoples and practices for the conservation of biodiversity. This project takes advantage of the Indigenous Lands demarcated in the region of the Xingu River valley as a reservoir of plant species diversity, since the variety of seeds found in these original forest lands is superior to that of recovering forests. Thus, the network

coordinates and trains seed collectors that will be used for the reforestation of depredated regions.

In this context, the indigenous peoples represent both the generators of knowledge put into practice in the collection and identification of species, as well as the main seed collectors of the project. About 40% of the Xingu Seeds Network collectors belong to one of four different peoples: Ikpeng, Kawaiwete, Waurá and Yudjá (URZEDO; SILVA; JUNQUEIRA; ARAÚJO, 2017, p.183).

With a total of 6.2 million hectares deforested in recent years (URZEDO; SILVA; JUNQUEIRA; SOUZA, 2017, p.159), the Xingu River basin region is in a situation of serious environmental depredation. Illegal logging and the opening of pastures for cattle ranching seriously influence this process of chopping trees, putting both the existence of local indigenous peoples and the Xingu biodiversity reserve at risk.

As a reaction to this reality, in ten years of existence, the seeds network was responsible for the recovery of more than 5 thousand hectares of degraded areas in the Xingu basin (HARARI, 2017). As great as the challenge of containing deforestation and reforesting depredated areas may be, the practices developed in this project represent a framework for reconciling the promotion of traditional knowledge, the improvement of the quality of life of the region's inhabitants, the conservation of biodiversity and the strengthening of cooperation ties between peasants and indigenous peoples (URZEDO; SILVA; JUNQUEIRA; SOUZA, 2017, p.157) and socioeconomic inclusion (HARARI, 2017).

In this way, the Xingu Seeds Network serves as a practical example of a project articulated for the protection of the biodiversity inherent in the demarcated Indigenous Lands along with the use of traditional knowledge of indigenous peoples.

It is therefore demonstrated that, from the perspective of the right to land effectiveness, biodiversity is doubly protected, either directly, in the protection conferred by the process of demarcation of Indigenous Lands, or indirectly, through the promotion of traditional knowledge which, in turn, is a source of knowledge and practices for the conservation of nature.

## 5. Final remarks

Through this study, the hypothesis that the realization of the right to land of indigenous peoples can provide both the conservation and the recovery of biodiversity was confirmed. This finding is due to two effects perceived from the administrative procedure for the demarcation of Indigenous Lands.

Directly, giving effect to the land rights of indigenous peoples is intrinsically a measure of environmental repercussion, as it encompasses the preservation of the natural environment necessary for the physical and cultural reproduction of these peoples. This effect stems from the harmonious and balanced relationship assumed by indigenous peoples with nature, as they understand themselves as an inseparable part of the environment in which they inhabit. Thus, the ratification of Indigenous Lands objectively results in the protection of nature limited to the demarcated area, generating a true reserve of biodiversity.

On the other hand, the right to land, when implemented, also has repercussions on the promotion and maintenance of the traditional knowledge of indigenous peoples who, by representing a vast and plural source of knowledge and practices aimed at the conservation and recovery of nature, are identified as potential solutions to face the contemporary environmental crisis.

In this way, the demarcation of Indigenous Lands, as the main policy for the realization of the right to land of indigenous peoples, demonstrates its dual capacity in generating direct and indirect effects of protection and recovery of biodiversity through the culture and traditional knowledge of indigenous peoples.

## References

ABRAMOVAY, Ricardo. Prefácio. *In: VILLAS-BÔAS, André et al. Xingu: histórias dos produtos da floresta.* São Paulo: Instituto Socioambiental, 2017.

ACOSTA, Alberto. **O bem viver: uma oportunidade para imaginar outros mundos.** São Paulo: Elefante, 2016.

BENSUSAN, Nurit. O marco legal e a erosão dos direitos. *In: Instituto Socioambiental - ISA. Povos indígenas no Brasil 2011/2016.* São Paulo: Instituto Socioambiental, 2017. p.86-88.



BRASIL. **Constituição da República Federativa do Brasil**. Promulgada em 5 de outubro de 1988.

DENEVAN, William Maxfield. **The Native Population of the Americas in 1492**. 2.ed. Madison: University of Wisconsin, 1992.

DUSSEL, Enrique. **1492: el encubrimiento del otro: hacia el origen del mito de la modernidad**. La Paz: CLACSO, 1994.

EQUADOR. **Constitución de la República del Ecuador**. Promulgada em 20 de outubro de 2008.

GENTILI, Pablo. **Amazonas: vidas en peligro**. Pueblos indígenas de Brasil. Buenos Aires: CLACSO, 2019.

GONÇALVES, Douglas Oliveira Diniz. ESPINOZA, Fran. DORNELLES, Carla Jeane Helfemsteller Coelho. Povos indígenas e meio ambiente: o conflito aparente de direitos no caso povos Kaliña e Lokono versus Suriname. **Revista Direitos Culturais**, Santo Ângelo, v. 15, n. 36, mai/ago, 2020. p. 307-327.

GROSGUÉL, Ramón. Caos sistémico, crisis civilizatoria y proyectos descoloniales. **Tabula Rasa**. Bogotá, n. 25, p.153-174, julio-diciembre, 2016.

HARARI, Isabel. Rede de Sementes do Xingu completa dez anos de história. **Instituto Socioambiental**. 10 jul. 2017. Disponível em: < <https://www.socioambiental.org/pt-br/noticias-socioambientais/rede-de-sementes-do-ningu-completa-dez-anos-de-historia> > Acesso em: 5 nov. 2019.

HIRA, Sandew. El largo recorrido de decolonizar la mente en Latinoamérica. **Tabula Rasa**. Bogotá, n. 25, p.175-194, julio-diciembre, 2016.

INSTITUTO DE PESQUISA AMBIENTAL DA AMAZÔNIA. **Amazônia em chamas: onde está o fogo**. Nota técnica do Instituto de Pesquisa Ambiental da Amazônia (IPAM). Brasília, Set. 2019.

INSTITUTO SOCIOAMBIENTAL. **Povos indígenas no Brasil 2011/2016**. São Paulo: Instituto Socioambiental, 2017.

KAWAIWETE, Wisio. “Antes do contato a terra era tão aberta...” *In*: Instituto Socioambiental - ISA. **Povos indígenas no Brasil 2011/2016**. São Paulo: Instituto Socioambiental, 2017. p.26-29.

KOPENAWA, Davi. ALBERT, Bruce. **A queda do céu: palavras de um xamã yanomami**. São Paulo: Companhia das letras, 2015.

KRENAK, Ailton. **Ideias para adiar o fim do mundo**. São Paulo: Companhia das letras, 2019.

LATOUCHE, Serge. **Sobrevivir al desarrollo**. De la descolonización del imaginario económico a la construcción de una sociedad alternativa. 2 ed. Barcelona: Icaria, 2009.

LEVIS, Carolina *et al.* Persistent effects of pre-Columbian plant domestication on Amazonian forest composition. **Science**, n.355, p.925-931, mar. 2007.

LLANOS-HERNÁNDEZ, Luis. **El concepto del territorio y la investigación en las Ciencias Sociales**. Chapingo: Agricultura, Sociedad y Desarrollo, v.7, n.3, 2010. p.207-220.

MBEMBE, Achille. Necropolítica. **Arte & Ensaios**: Rio de Janeiro, n.32, p.122-151. 2016.

NAÇÕES UNIDAS. **Convenção sobre Diversidade Biológica**. Assinado em 5 de junho de 1992.

OLIVEIRA, João Pacheco de. **Terras indígenas: uma avaliação preliminar de seu reconhecimento oficial e de outras destinações sobrepostas**. *In*: Terras Indígenas do Brasil. Rio de Janeiro: Museu Nacional, 1987.

PLEYERS, Geoffrey. **Movimientos sociales en el siglo XXI: perspectivas y herramientas analíticas**. Buenos Aires: CLACSO, 2018.

SÁNCHEZ RUBIO, David. Derechos humanos, no colonialidad y otras luchas por la dignidad: una mirada parcial y situada. **Campo Jurídico**, vol. 3, n. 1, 2015, p.181-213.

SANTOS, Boaventura de Sousa. Boaventura: os conceitos que nos faltam. Direitos Humanos, Democracia, Paz e Progresso terão se transformado em biombos para ocultar um mundo desigual, violento e alienado? Mas como superá-los? **Outras palavras**, São Paulo, 05 ago. 2018. Disponível em: < <https://outraspalavras.net/sem-categoria/boaventura-os-conceitos-que-nos-faltam/> > Acesso em: 11 nov. 2019.

SANTOS, Boaventura de Sousa. **Democratizar el territorio, democratizar el espacio**. [Entrevista concedida a] Susana Caló. Centro de Estudios Sociales, Coimbra, 2012. Disponível em: <<http://contested-cities.net/CCmadrid/democratizar-el-territorio-democratizar-el-espacio-boaventura-de-sousa-santos/>> Acesso em: 08 jul. 2019.

SANTOS, Boaventura de Sousa. Desigualdad, exclusión y globalización: hacia la construcción multicultural de la igualdad y la diferencia. **Revista de Interculturalidad**. Santiago, Universidad de Chile, n. 1, 2005. p.9-44.

SANTOS, Boaventura de Sousa. **La Globalización del Derecho: los Nuevos Caminos de la Regulación y la Emancipación**. Bogotá: IISA, Universidad Nacional de Colombia, 1998.

SANTOS, Boaventura de Sousa. MENESES, Maria Paula G. NUNES, João Arriscado. Para ampliar o cânone da ciência: a diversidade epistemológica do mundo. In: SANTOS, Boaventura de Sousa. **Semear outras soluções**. Os caminhos da biodiversidade e dos conhecimentos rivais. Porto: Edições Afrontamento, 2004. p. 19-101.

SANTOS, Laymert Garcia dos. Saber Tradicional x Saber Científico. In: INSTITUTO SOCIOAMBIENTAL. **Povos indígenas no Brasil 2001/2005**. São Paulo: Instituto Socioambiental, 2006. p.89-91.

SILVA, José Afonso da. **Curso de direito constitucional positivo**. 41 ed. São Paulo: Malheiros, 2018.

URZEDO, Danilo Ignacio de. SILVA, Dannyel Sá Pereira da. JUNQUEIRA, Rodrigo Gravina Prates. SOUZA, Bruna Dayanna Ferreira de. Sementes de resistência e frutos de transformação. In: VILLAS-BÔAS, André *et al.* (orgs.) **Xingu**. histórias dos produtos da floresta. São Paulo: Instituto Socioambiental, 2017. p.155-172.

URZEDO, Danilo Ignacio de. SILVA, Dannyel Sá Pereira da. JUNQUEIRA, Rodrigo Gravina Prates. ARAÚJO, Claudia Alves de. Diversidade social e integração. *In: VILLAS-BÔAS, André et al. (orgs.) Xingu. histórias dos produtos da floresta.* São Paulo: Instituto Socioambiental, 2017. p.173-208.