






Beyond participation: How to achieve the recognition of local communities' value-systems in conservation? Some insights from Mexico

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Abstract

1. In this article, we explore why conservation schemes that have positive outcomes through the participation of local communities cannot necessarily be deemed as just. We observe that recognition (understood as inclusion and respect) of local communities' value-systems, a key factor towards environmental justice, is not often achieved in conservation governance.
2. We build our argument on the authors' extensive research on four Mexican forest areas and contrast our insights with the literature on environmental justice and conservation. All four cases are characterised by positive conservation outcomes as well as the inclusion of local communities in conservation governance, and as such are typically considered best-practice conservation initiatives in Mexico. Yet, in all cases, our engagement with local community members leads us to believe that their value-systems fail to be recognised in conservation governance.
3. Three main factors appear to hinder recognition: (a) the dominant knowledge-system underpinning conservation action prevails in legal frameworks; (b) financial resources heavily determine power relations in decision-making, and (c) a lack of sensitiveness to local cultural norms affects local stakeholders' capacity to communicate with external actors that design and implement conservation action.
4. We conclude that achieving meaningful recognition of local communities' value-systems requires: (a) developing awareness of the structural political and economic factors impacting on decision-making in conservation, and (b) an epistemological

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transformation, permeating conservation governance, in which local communities' value-systems are considered one of various legitimate knowledge-systems.

KEYWORDS

conservation, environmental justice, epistemology, forests, governance, power, values of nature

1 | INTRODUCTION

Global conservation goals can only be achieved through the involvement of local communities (Berkes, 2004; Brondizio & Le Tourneau, 2016; Brown, 2003): inclusive decision-making can help harness local knowledge-systems and foster worldviews associated with ethics of responsibility and care for nature, two leverage points with disproportionately large effects towards more sustainable futures (Chan et al., 2019; Díaz et al., 2019). Indigenous people, for instance, protect at least 25% of the global land surface as a result of their diverse stewardship practices (Garnett et al., 2018; Lyver et al., 2019). Meaningful participation of local communities in decision-making can enable the development of environmental management strategies that are adapted to the local context and culture, and that addresses intertwined socio-ecological goals (Chan et al., 2019; Díaz et al., 2019). The imposition of globally dominant conservation discourses to locally specific contexts can thus be detrimental to the protection of nature (Allen, 2018). Many scholars have called for the participation of local communities in the design and implementation of conservation programmes, not only to enhance conservation effectiveness (Apgar et al., 2009; Tengö et al., 2014), but also to respect local communities' rights, interests and perspectives (Adams & Hutton, 2007; Kothari et al., 2013) and to create fair decision-making spaces (Martin et al., 2015; Schreckenberget al., 2016). Notwithstanding, in many cases conservation initiatives (including those with a participatory component) still tend to impose external worldviews and narratives about conservation on local communities (Durand et al., 2014; Myers et al., 2018), which local communities themselves perceive as a form of injustice (Lecuyer et al., 2018).

In this article, we explore the factors that hinder the recognition of the value-systems of local communities that are involved in conservation initiatives. We build our argument from the experiences of five co-authors conducting research on different aspects of conservation¹ governance in four forest areas of Mexico. Some of this research is published elsewhere (see: Flores-Díaz et al., 2018; García-Frapolli et al., 2013; Gerritsen, 2002; Sierra-Huelsz et al., 2017). The information therein has entailed reviews of secondary sources, including policy documents and archives, interviews with diverse local and external actors as well as participant observations during multiple years in the four sites. While our engagement in these cases initially emerged from a concern for conservation and sustainable management of forest resources, we grew aware that conservation action can create or entrench injustices. We decided to collaboratively write this perspective to reflect on issues of injustices as we

experienced them in our four places of research. Our perspective has been developed through iterative self-reflection and sharing of key case-specific insights towards building a common coherent view, but not necessarily through a formal analytical method. We have taken into consideration the wealth of qualitative and quantitative information gathered over time in the four cases and we have contrasted the insights from the field with the literature on conservation and justice. Our direct experiences in the four cases has allowed us to collectively reflect on the participatory processes within the different conservation governance approaches, and relate this to the observed positive impacts on conservation outcomes. While participation has had a positive impact on conservation outcomes, our engagement through multiple conversations with community members in the four sites and first hand observations of conservation governance processes over the years, leads us to believe that the participatory processes fall short from a genuine recognition of local communities' value-systems. We thus posit that the conservation schemes that have positive outcomes through the participation of local communities cannot be necessarily viewed as just, from a recognition angle. In this perspective, we explore why we think participatory processes in conservation governance in Mexico may grossly fail to recognise local communities' value-systems, and the implications this has for achieving environmental justice² in conservation.

2 | RECOGNITION AND ENVIRONMENTAL JUSTICE IN THE CONSERVATION LITERATURE

2.1 | The recognition dimension of environmental justice

Conservation is a socio-political act (Büscher & Fletcher, 2019; Vucetich et al., 2018). In order to design and implement conservation programmes, certain visions of nature and its importance for society are imposed over others, often affecting local livelihoods (Suiseeya, 2017). The globally dominant conservation approach is generally shaped by Western views about nature, where conservation tends to be seen as achievable by restricting and even prohibiting human activities in what are perceived to be 'pristine' landscapes (Shafer, 2015). This rationale often leads conservation actors to promote the spatial segregation of biodiversity conservation from other activities (Phalan et al., 2011), which generally results in the displacement of communities from their territories

(Hawken & Granoff, 2010) and the breakdown of local and traditional institutions (Ostrom, 1999). In fact, limiting human activities in conservation areas can profoundly affect traditional management systems combining conservation, agriculture and forestry on the same land, despite evidence showing that such traditional systems can and have contributed to biodiversity conservation over many generations (Perfecto & Vandermeer, 2010; Porter-Bolland et al., 2012).

The imposition of globally defined conservation practices and their impact on self-determination rights has prompted calls for justice centred around the concept of recognition, referring to the acknowledgement of the legitimacy of social groups' culture and identities, and their respect in decision-making processes (Fraser, 2018; Martin et al., 2016; Whyte, 2011). In this vein, recognition implies both the respect for cultural diversity, collective decision-making institutions, and the rights of local communities to practice such cultural diversity, that is, to act in accordance with their values in environmental management (Schreckenberget al., 2016).³

2.2 | The recognition of local communities' value-systems

An important object of recognition is local communities' value-systems. Value-systems are here understood as 'sets of values according to which people, societies and organisations regulate their behaviour' (Pascual et al., 2017). Of particular importance in the conservation realm are environmental values, defined as 'beliefs about the significance, importance, and well-being of the natural environment, and how the natural world should be viewed and treated' (Reser & Bentrupperbäumer, 2005, p. 141).

Value-systems are composed of worldviews, knowledge-systems and related practices inherent to social groups (and their culture), which in turn determine human–nature relations (Barrera-Bassols & Toledo, 2005; Merçon et al., 2019). Take, for instance, the traditional agrarian system of the *milpa*, the swidden (slash-and-burn) corn-based polyculture that has been central to Mayan livelihoods for centuries (Levy-Tacher & Hernández-Xolocotzi, 1992). The practice of the *milpa* is guided by a locally developed knowledge-system, based on direct experience in the land, and shaped by the Mayan worldview or cosmology. Mayans consider themselves to be part of nature (which is itself a spiritual entity): the Mayan word for 'soil' encompasses the land, vegetation, animals and humans that inhabit it, and the deities representing the land. Such vision of the land translates into integrated management practices, as soil health becomes inseparable from the health of the living entities inhabiting the land, including humans (Barrera-Bassols & Toledo, 2005). As this example shows, the three components of value-systems are interrelated: experiential knowledge is embedded in worldviews and is reflected in locally specific human practices (Berkes et al., 2000). Knowledge, worldviews and practices have also been identified as central objects of recognition by environmental activists (Schlosberg, 2004).

Relational values (environmental values that denote a relation between humans and nature; Chan et al., 2018) are at the core of local communities' value-systems. As the Mayan example shows, worldviews are embedded in land management practices and are reflected in an embodied knowledge of nature. In contrast, the globally dominant discourses about nature and conservation have favoured western interpretation of intrinsic and instrumental values of nature.⁴ Relational values, as interpreted by local communities, can enable harmonious human–nature relations, including relations of care and stewardship (Klain et al., 2017). Thus, emphasising the recognition of relational values that compose local communities' value-systems can contribute to environmental justice (Himes & Muraca, 2018), and foster sustainability pathways (Datta, 2015; Jax et al., 2018; Timoti et al., 2017).

2.3 | Recognition and procedural justice

Recognition is a crucial yet under-researched dimension of environmental justice literature, which tends to be conflated with procedural justice (Martin et al., 2016). This obscures the importance of recognition and the barriers to achieve it. Local communities' ability to relate to nature in a way that is congruent with their value-systems depends on their recognition in collective decision-making. At the local level, conservation decisions are affected by a range of interacting factors including power relations (Durand, 2019; Pinkerton, 2019) and cultural norms (Peterson et al., 2010; Roncoli et al., 2011; Teitelbaum et al., 2019). Decision-making processes about conservation are also embedded in a given symbolic context (Taddei, 2011) and epistemology (Vermeulen, 2019). Finally, other structural factors including laws and policies embedded in national history also affect conservation action (Cariás Vega, 2019).

Blind to this complexity, the conservation literature has tended to analytically subsume recognition under the umbrella of 'procedural justice', which refers to 'inclusion, representation and participation in decision-making' (McDermott et al., 2013, p. 419). The assumption that recognition necessarily results from adequate decision-making procedures is problematic for three reasons. First, most studies about conservation and procedural justice focus on the implementation stage of conservation programmes (Friedman, 2018). This can obscure the absence of prior consultation with local stakeholders about the pertinence of the programme's core assumptions or its existence. For instance, the Reducing Emissions from Deforestation and Forest Degradation (REDD+) programmes tend to promote participation in its operationalisation stage, but fail to provide space for the discussion of the value-system underpinning the programme itself and its implications for people and nature (Martin, 2017; Myers et al., 2018). Achieving the recognition of value-systems thus requires looking beyond participation during the implementation of conservation programmes, tackling the entire process of decision-making instead (Massarella et al., 2020).

Second, the choice of methodological tools used to monitor conservation action (e.g. indicators of reforestation) remains outside the scope of participation.⁵ Although such tools are at times portrayed

as objective due to their scientific backing, scientists recognise particular worldviews, ethical principles and assumptions are necessarily embedded within methodological tools (Kolinjivadi et al., 2017; Sikor et al., 2014). Thus, it is important that research on recognition addresses the values embedded in the knowledge production process that underlies conservation action.

Third, decision-making does not result from a linear application of a set of written rules—it is necessarily shaped by power relations between stakeholders (Ishihara et al., 2017). Powerful actors can impose their values through varied strategies (such as lobbying for influence, corruption or the use of violence; Ávila-García & Sánchez, 2012). Thus, exploring recognition requires going beyond the design of participatory schemes to understand how power affects decision-making processes.⁶

3 | INSIGHTS FROM CONSERVATION INITIATIVES OF FOUR MEXICAN FORESTS

Mexico boasts a high bio-cultural diversity (Loh & Harmon, 2005) and is a pioneer in community forestry schemes (Bray et al., 2003). Across social actors, disciplines, and ideological divides, there is consensus in Mexico that conservation depends on collaboration with local communities (Durand, 2017). Most of the country's protected areas combine conservation with sustainable use of natural resources (Pfaff et al., 2017). Still, much remains to be done to recognise the diverse value-systems of local communities (Gall, 2013), as cases of social conflicts related to conservation programmes suggest (Brenner, 2010; Legorreta-Díaz et al., 2014).

We analyse four cases of conservation that are seen as cases of best-practice in Mexico, both in terms of the inclusion of local communities via co-management and participatory mechanisms, and of positive conservation outcomes (see Table 1). The cases represent different socio-ecological contexts: Indigenous people are present in all cases, but it is not the primary identity of all local communities as a result of historical acculturation processes.

We reflect on the following question across each case: To what extent are local communities' value-systems recognised in conservation governance, and what factors hinder recognition? Results are presented below and summarised in Table 2.

We define local community as a social group bound by its spatiality and a shared culture, which does not preclude the coexistence of diverse interests within it (Agrawal & Gibson, 1999). This is a helpful concept to describe, in the context of the four cases, the owners and inhabitants of the land that is the object of conservation initiatives, who still share a value-system bound by a common culture, despite their relations with a broader social field which in time changes the dynamics of the community (Ojha et al., 2016). We are conscious that a limitation of this approach is the focus on the shared values among the community; this is a helpful approach to explore concerns of justice, but a necessary simplification of complex social phenomena (Li, 2002).

3.1 | The Community Water Monitoring Network (MBBR)

The Network was founded to address both local concerns for water quality and regional concerns over reforestation for conservation; diverse actors participate in it. National governmental environmental agencies participate and benefit from robust documentation of biodiversity habitat quality monitoring, which helps determining the local impacts of its environmental management strategies (such as ecotourism). An academic entity provides continuity and support to the systematising and analysing of the collected data. The Mexican Fund for the Nature Conservation has financed the Network's launch and the reserve's conservation activities, including PES schemes. Local communities are engaged in managing the network and in water quality monitoring activities. Civil society organisations are members of the Network and put forward different objectives, from social justice to conservation. Smaller organisations with a long-standing involvement with local communities foster conservation through working with communities and their value-systems. Local communities view water bodies as sacred entities, and use them for cultural and religious practices (for instance, a ritual involves washing the Virgin Mary's dress in a local spring); they are also interested in developing livelihoods (particularly for women) relating their culture to conservation activities (for instance, craftsmanship inspired by local ecosystems), thus seeking to reduce the pressure on the forest from tourism. For these groups, the cultural and spiritual role of water is critical in making decisions around conservation. Other organisations, on the other hand, focus on environmental goals (such as reforestation) as their primary objective, and promote the use of technical environmental studies to document the Network's performance, emphasising the intrinsic value of water and its instrumental role in reaching conservation objectives through a Payment for Ecosystem services (PES) program.

Decision-making within the Network has been shaped by the power imbalance amongst its members, reflected in their participation in the Network activities and meetings. Governmental agencies, for instance, benefit from secure funding, strong technical and human resources, and play a role in many regional and national political fora. Their opinions are heavily weighted in the decision-making process of the Network, perhaps because they facilitate civil society organisations' work (providing financial and political resources) and determine territorial delimitation, which is crucial for social actors' inclusion into a range of programmes. The potential to benefit from the political capital that results from being in good terms with a governmental agency can explain why civil society organisations push for decisions that may not be consulted with local communities, and thus fail to integrate communities' value-systems. On the contrary, they may refrain from speaking their mind during meetings in order to preserve a good relationship with actors who can facilitate access to funding.

The financial resources of each member of the Network also affects their power to influence local governance. As member organisations compete for external funding to develop activities within the

TABLE 1 Key characteristics of cases

Cases	Community Water Monitoring Network, Monarch Butterfly Biosphere Reserve (MBBR)	Sierra de Manantlán Biosphere Reserve (SMBR)	Forest <i>ejidos</i> , Zona Maya	Village of Tesoco Nuevo
Case location	Michoacán (central Mexico)	Jalisco and Colima (Western Mexico)	Quintana Roo (south-eastern Mexico)	Yucatán (south-eastern Mexico)
Approximate size (hectares)	56,259	140,000	400,000	3,107
Type of conservation initiative	Biosphere reserve, UNESCO World Heritage Site since 2008. Community Water Monitoring Network since 2011	Biosphere reserve since 1987, recognised by UNESCO in 1988	Local communities (organised in <i>ejidos</i> ^a) with community forestry since 1983–1986	<i>Ejidors</i> enrolled in a Payment for Ecosystem services (PES) scheme since 2008 and in monitoring of priority species (e.g. cougar and the jaguar) with an NGO and an adjacent private protected area
Type of participatory processes	Co-construction of a conservation initiative involving local communities and external actors in a horizontal governance structure	Participation of local communities in the design and implementation of conservation programmes through deliberative platforms	Local communities have control of conservation activities in their territories, within the constraints of the legal and regulatory framework	Consultation of local communities in the implementation of an international conservation initiative
Participatory mechanisms	The Network was founded collaboratively by local communities' representatives, national and foreign civil society organisations, federal government representatives and scientists. The Network is characterised by a horizontal structure: the mission and vision of the Network were produced collaboratively. The coordination is assumed by each member in turn (del Río Pesado et al., 2018)	Participation in the management of the reserve is through deliberative platforms at state and community levels (INE, 2000) that collaboratively make decisions for the reserve. Two advisory boards (one for Colima, one for Jalisco) are composed of community and regional leaders, as well as regional, state and federal governmental institutions. Community institutions also play a role in strengthening participatory processes: the directive board of every peasant community identifies the priorities of landholding peasants and acts as an intermediary with the regional advisory boards	<i>Ejidors</i> have full control of forest management and harvest (due to the 1986 Forest Law). Communities participate in forest inventories, fire management and harvest of timber and non-timber forest products; they define their Permanent Forest Areas. Some communities are represented by producer organisations (e.g. Organización de Ejidos Productores Forestales de la Zona Maya) which are sometimes invited to consultation fora organised by the federal and state government mostly related with forest management	The <i>ejido</i> assemblies coexist with the PES scheme's participatory processes, which mainly entail consultation of local communities on the implementation phases of the conservation initiatives. The conservation model is designed by the conservation organisations. The main participants in PES are those with agrarian rights, although there are young people who have joined the conservation projects
Conservation outcomes	The Network forms part of a PES scheme that has protected up to 700 ha of forest, habitat of the monarch butterfly (Honey-Rosés et al., 2011)	As a result of sustained citizen participation, water quality has improved and land use change has slowed down in the area (Graf-Montero et al. 2006; Santana et al., 2010)	Community forestry has maintained an 80% forest cover in the region (Ellis et al., 2015)	Almost 60% of the territory is old-growth forest vegetation, in a good state of conservation (González-Cruz et al., 2015)

Source: Own elaboration.

^aCommunities of semi-collective land ownership established after the 1910–1917 revolution.

Network, the organisations with more resources (in terms of financial and technical resources, and political capital) are those that systematically attract funding. These have the power to determine what

activities take place within the Network and to lead such activities, making use of the strengths and capacities of all Networks' members. Those who lack such funding see their role being diminished, which

TABLE 2 Summary of key results by case

Case	Community Water Monitoring Network, MBBR	SMBR	Zona Maya	Tesoco Nuevo
Value-systems present in the case	Local community's value-system, emphasising cultural and spiritual value of water coexists with the globally dominant value-system emphasising the intrinsic value of biodiversity and instrumental value of water	Local community's value-system based on experiential learning and dynamic socio-ecological trajectories coexists with scientific value-system promoting intrinsic and option values of biodiversity	Local community's value-system, reflected in the practice of the <i>milpa</i> (combination of productive and social activities), coexists with institutional value-system emphasising sustainable development	Local community's value-system, reflected in the practice of the <i>milpa</i> and caring for the forest, coexists with globalised visions of conservation
Recognition of value-systems	Local communities' value-system is subsumed by the priorities of external actors. Instrumental and intrinsic values are favoured over relational ones	Local communities' values and experiential knowledge are not taken into account in governmental decision-making	Practices of the traditional <i>milpa</i> (e.g. long fallow cycles) is rendered illegal and gradually replaced by an instrumental relation to the forest	The practice of the <i>milpa</i> is prohibited through spatial segregation in the name of conservation
Barriers to recognition	Unequal distribution of financial and technical resources	Epistemology embedded in the planning system	Legal framework	Financial incentives and lack of sensitiveness to cultural norms

limits their capacity to influence the Network's overall objective or vision—this is even the case for the organisation currently coordinating the Network, which fails to participate in all activities due to a lack of own funds. For instance, the Network is supporting the creation of a Management Plan for a local water basin, an effort which is led by the bigger member organisation. This bigger organisation has staff dedicated to seeking funds and receives the support of regional and international organisations. It has used these resources to organise participatory workshops. Thus, it takes on a leading role, while other members of the Network become one among many actors in such participatory exercises. The values they hold which happen to differ from those of that bigger organisation (such as the cultural value of water, or supporting women groups in developing livelihoods activities), tend not to be reflected in decision-making which focuses exclusively on the environmental performance of the Network.

3.2 | Sierra de Manantlán Biosphere Reserve (SMBR)

Both the worldviews held by farmers and professional managers of the reserve shape the management of the SMBR (Gerritsen, 2002; Gerritsen et al., 2017). Both groups also appreciate the value of biodiversity and the need to combine biodiversity conservation actions with livelihood improvements (Gerritsen & Wiersum, 2005); however, the means to reach these goals are shaped by distinct value-systems and consequent natural resource management practices. Farmers value nature insofar as it addresses their needs and aspirations, that is, the reproduction of their livelihoods as embedded in their biocultural memory. They foster biodiversity by strategically combining different farming elements in the landscape (home gardens, agricultural fields,

pasture lands and forests), resulting in natural resource diversity. The specific composition of this diversity depends on farmers' goals and the possibilities to mobilise certain material and financial resources. They also depend on site-specific ecological characteristics, as these determine the viability of different agricultural and cattle-raising practices over time and space. Due to the temporal variations in farming practices, as well as the underlying farmer strategies shaped by a given socio-economic context, resource diversity is not static; on the contrary, it is the outcome of a dynamic socio-ecological process. Thus, farmer knowledge and practices are based on constantly ongoing empirical experimentations, forming the basis of their relational values.

On the contrary, professional managers make management decisions according to the present and future values of biodiversity (intrinsic and option values). Their perspective is dominated by a vision of dichotomy between wild and anthropogenic landscapes: People and nature are conceptualised as separate from one another. As a result, reserve managers establish land use zoning separating conservation and development activities, thereby limiting agriculture to specific zones and prohibiting farmers' access to the strict conservation zones. Scientific studies are the main source of data used to define the different zones (core, buffer and influence) of the SMBR (Gerritsen, 2010).

Laws, policies as well as formal decision-making processes (whether designing the management plans, or the assemblies of the local advisory boards) are embedded in a conventional scientific paradigm reflected in the Mexican environmental law (Diario Oficial de la Federación (DOF), 1988), which favours evidence-based decision-making and the primacy of scientific over lay knowledge. The conventional scientific paradigm limits participation, as it fails to recognise the informal rules and practices developed by farmers. One example is that of land use and zoning. Despite the

implementation of multi-level discussion platforms to stimulate the participation of farmers residing in the conservation areas, collaborative conservation actions are determined and limited by environmental laws and regulations, and the scientific paradigm that underlies them. Lay knowledge is acknowledged but is subdued by scientific knowledge: the zoning regulations of the reserve are based on the biodiversity identified through scientific research on the mountain range, and not related to the natural resource diversity known, valued and managed by farmers. Scientific knowledge is translated and adapted to specific local contexts by conservation professionals through participatory workshops and environmental educational campaigns.

The conventional scientific paradigm dismisses the experiential knowledge of farmers: for example, forest exploitation of any type requires management plans elaborated by certified foresters, which delegitimises local knowledge with regard to forestry. The room for manoeuvre for conservation and development actions is set by the conventional scientific paradigm, from which rules and regulations, as well as specific conservation actions are derived. Farmers' participation in biodiversity conservation in those areas where farming and biodiversity is coproduced through manifold socio-ecological interactions is threatened, thus undermining conservation in those cases where biodiversity is a result of the farmer-nature interactions. Such is the case of the *milpilla* (*Zea diploperennis*), an ancestor of modern maize, which is disappearing from one of the core zones, as it requires burning and cattle raising practice for reproduction (Parera et al., 2001).

3.3 | Zona Maya

In the Zona Maya, community forestry is practiced alongside the *milpa*, characterised by cyclical agriculture alternating felling forest, agricultural crops cultivation (2–3 years), and a longer period of forest regeneration. Yet, some aspects of this traditional *milpa* management have gradually been hindered by the forestry regulation.

Community forestry started in 1986 with the Forestry Pilot Plan (PPF) requiring each *ejido's* assembly to demarcate two areas: one for agriculture and another as Permanent Forest Area (off-limits for agricultural use) in an attempt to halt deforestation (Ellis et al., 2015). Such zoning was largely accepted at the time, as most communities still had enough land for agriculture (Hajjar et al., 2013). Communities commercially managed their forests for timber and non-timber forest products, practiced swidden agriculture in agricultural zones and relied on secondary forests for subsistence activities. For decades markets only demanded products from mature forests. Change began in the 1990s when market demand increased for small-diameter trees (partially harvested from secondary forests) to be used as tourism building materials, horticultural stakes and charcoal for restaurants (Sierra-Huelsz et al., 2017).

The federal Forest Law (2003) and Code (2005) legally defined secondary forests for the first time, which had implications for what areas can be used as *milpas* under the PPF. This definition, based

on forest structure, is problematic for regional conditions given that any vegetation older than 4 years old is legally equivalent with old-growth forest (Román-Dañobeytia et al., 2014). Considering farmers allow forest to regrow in a fallow period of at least 5 and up to 40 years (Dalle & de Blois, 2006), most swidden agriculture and commercial harvest of forest products is illegal unless a proper management plan is prepared, even when the secondary forest is slashed and burned for the next *milpa*. This has often pushed local farmers into illegality for selling forests products from a system combining forestry and agricultural activities (Sierra-Huelsz et al., 2017).

The difficulty for local communities in the Zona Maya to act in accordance with traditional Mayan farming practices can be explained by the weight of the federal legal framework in the governance of community forestry. In particular, the underlying discourse (entrenched in Western perspectives) and the lack of context-awareness of those regulations appear as two key explanatory factors as to the lack of recognition of local practices and value-systems.

First, regulations are entrenched in Western normative conceptions of nature and culture as separate.⁷ Swidden agriculture is still stigmatised by the government as a driver of tropical deforestation, as in the most recent Forest Law (DOF, 2018), despite evidence of its contributions to biodiversity conservation (Padoch & Pinedo-Vasquez, 2010). The PPF reproduces dichotomies (such as the spatial segregation of conservation and agricultural activities) promoted by the land-sparing paradigm (Phalan et al., 2011). The influence of such global dominant discourse on Mexican law may be explained by the increasing primacy of evidence-based policy-making relying on globally applicable scientific knowledge (the PPF implemented what was presented in scientific work at the time as the state-of-the-art approach to conservation). Second, the geographic scale of governance hinders context-based approaches to environmental management, given many forestry policies are federal and evenly applied across the country with very limited territorial specificity and a narrow focus (Carton de Grammont, 2012). Laws and regulations devised at the federal level in a country as bio-culturally diverse as Mexico, often either lack an understanding of local contexts or fail to integrate local knowledge and practices. Thus, the current legal framework governing the Zona Maya community forestry fails to recognise the cultural importance of the *milpa*, limiting benefits from the forest-agriculture interface, and ignoring the compatibility of traditional management with biodiversity conservation and sustainable timber management.

3.4 | Tesoco Nuevo

Tesoco Nuevo is a village formed by 40 households which are members of two *ejidos* (Tesoco Nuevo and Santa María Pixoy). Tesoco Nuevo shares some characteristics with the Zona Maya case, including the prevalence of diversified land uses encompassing *milpas*, homegardens, old-growth and secondary forests. Secondary and old-growth forests concentrate subsistence and productive activities: collection of firewood and timber, thatching palm, apiculture, hunting and reforestation. The logic of ecosystem management implemented by the

local community is based on enhancing diversity: instead of maximising yields per hectare, the multiple-use strategy maintains diversity through the utilisation of many land-use units available for production. The value-system behind this diversified management strategy has historically clashed with productive and conservation specialisation programmes developed by international and national agencies.

Since 2008, the *ejido* of Santa María Pixoy has enrolled almost all its territory in a Payment for Ecosystem Services (PES) programme. Following the programme's regulation, extractive activities have been prohibited in the old-growth forests, the only authorised (and remunerated) activities being the monitoring of flagship species (such as the jaguar). Before the implementation of this programme, the old-growth forest was already dedicated to conservation; however, the community combined conservation with subsistence hunting, extraction of palm thatch and timber for local housing.

The PES programme is voluntary. Landowners enrol and can freely choose how to spend the funds received after meeting land management goals (Sims & Alix-Garcia, 2017). However, the decision to enrol is usually promoted by external agents. In this case, the decision of enrolling in a PES programme resulted from conservation efforts undertaken by the *ejido* with the environmental organisation Pronatura-Península de Yucatán (PPY). This organisation proposed to the community the development of a project for the long-term monitoring of jaguar in the conserved zones of the *ejido*. Some members of the *ejido* received training in the use of cameras and data collection in the field; they began playing a crucial role as promoters of the dominant conservation approach in their community.

Enrolling into the PES programme was a logical consequence of the conservation model proposed by PPY, endorsed by the community members working directly with PPY. Although not all members were in full agreement with the PES conservation model which prohibits their diversified management system, receiving an annual monetary compensation played an important role in accepting the proposal. Conserving through PES did not mean the community members were completely in agreement with what the scheme fosters. For example, the most enthusiastic individual, working with PPY directly, commented he did not understand why all governmental conservation programmes were still targeting the forest and not the people, if it was the people who were conserving the forest.

The approach to conservation in PES is based on the logic of spatial segregation of conservation and agricultural activities, which contrasts with traditional Mayan practices. Communities obtaining funds for conservation must comply with the terms established by programmes designed by the government, conservation NGOs, or international organisations. These terms invariably require the designation of areas where extractive and productive activities are limited or banned. In this sense, existing instruments only benefit communities that decide to adopt the conventional conservation paradigm. Those communities that incorporate the mainstream conservation model receive subsidies, while those critical of the model are excluded. The same goes for individuals inside communities. Those who work closely with NGOs are empowered through receiving funding and visibility in local and international fora, granting them more power within their community.

Although there has been an interest (from governmental and non-governmental organisations alike) in incorporating local people's visions through participatory exercises, such exercises, in practice, leave no room for major changes. In the case of PES in Tesoco Nuevo, the prohibition of activities in the conservation areas is outside the scope of the discussion held through participatory exercises, which focus instead on details of the implementation. In addition, the format of these exercises tends to ignore the local cultural contexts, which hinders the expression of different opinions and values by local actors. For instance, these meetings are held in Spanish, a language not spoken fluently by all community members. Thus, both the format and the content of the participatory exercises are unable to integrate the value-system of local people.

4 | FACTORS AFFECTING RECOGNITION OF VALUE-SYSTEMS IN CONSERVATION GOVERNANCE

We observe that in the four cases, local communities' value-systems fail to be recognised in collective decision-making, which affects local practices related to conservation. In the MBBR, the debates within participatory fora are of a technical nature, oriented towards quantitative measures of water quality. This hinders local communities to discuss the spiritual importance of water and its relation to the local worldview. In the SMBR, the promoted practices of environmental management are determined by the conventional scientific paradigm and fail to integrate farmer knowledge and practices. In the Zona Maya and Tesoco Nuevo, communities' traditional practices associated with the *milpa*, such as long fallow cycles and the spatial and temporal combination of different productive (and cultural) activities, are prohibited in the name of conservation and sustainable management. Relational values are for the most part absent and obscured in conservation plans. In all cases, globally dominant visions of conservation practice favouring intrinsic and instrumental values of nature over relational values appear to impede the recognition of local communities' worldviews, knowledge and practices. This finding reflects the broader literature from Mexico (e.g. Durand et al., 2014; Lecuyer et al., 2018) and elsewhere (Dawson et al., 2018), and suggests that the recognition of local communities' value-systems is still not universally achieved, even in conservation initiatives which uphold good practices of inclusive governance.

The question that follows thus is, what factors hinder the recognition of local communities' value-systems? Although the specific configuration of environmental governance is distinct in each case, we identify three recurrent factors across the presented cases, which also echo some key insights from the environmental justice and conservation literature: (a) legal frameworks play a crucial role in legitimising the dominant knowledge-system underpinning conservation action; (b) financial resources are a key mediating factor determining power relations in decision-making processes (and therefore whose worldview shapes collective conservation practice) and (c) a lack of sensitiveness to local cultural norms affects local

stakeholders' capacity to communicate and share both their worldviews and knowledge-systems with other actors that design and implement conservation action.

4.1 | Legal and regulatory frameworks are shaped by the conventional scientific paradigm

The cases of SMBR and the Zona Maya illustrate how environmental laws and regulations impose the conventional scientific paradigm (characterised by the primacy of scientific over lay knowledge, and the separation of nature and people) and its value-system on conservation efforts. In the SMBR, the conventional scientific paradigm appears to underlie the overall governance of the reserve. Local communities are invited to participate in decision-making processes through local assemblies, yet ultimately, their traditional socio-ecological knowledge is subdued by scientific expertise in the design and implementation of conservation programmes. In the Zona Maya, local practices are affected by the weight of federal regulations, which reflect the global scientific expertise on conservation but fail, in this case, to fully consider traditional practices.

These cases show us how epistemological considerations (for instance, what sources of knowledge are considered robust and legitimate) are of foremost importance in explaining the primacy of a given value-system. The prevalence of a conventional scientific paradigm within environmental laws and policies, particularly insofar as it favours globally applicable knowledge, hinders the recognition of local communities' values based on traditional knowledge and experimentation. In Mexico, this results in the partial exclusion of traditional ecological knowledge from forest management and environmental management more broadly (Sierra-Huelsz et al., 2020).

Addressing the recognition of diverse value-systems in conservation requires exploring the epistemological perspective underpinning such efforts (Coolsaet, 2016; Vermeylen, 2019). Sikor et al. (2014) and Kolinjivadi et al. (2017) have demonstrated value-systems are embedded in conservation programmes and instruments. We add to their argument that conservation schemes do not operate in a vacuum; they are shaped by the broader legal context: Environmental laws and regulations institutionalise value-systems that become embedded in conservation practice. This leads us to believe that promoting environmental justice in conservation requires tackling all stage of the governance process, including the institutionalisation of values in environmental law.

Environmental laws and conservation policies can be changed to better recognise diverse knowledge and value-systems, but legacies of previous interventions and regulations can still be expected. Pre-existing social and material practices often persist (Arts et al., 2014), influencing current socio-ecological trajectories and sometimes impeding change: In Mexico, for instance, contemporary community forestry has been shaped by long-standing policies about forest concessions (Cariás Vega, 2019). We see the effects of such legacies in the case of the Zona Maya, where technical knowledge still plays an

essential role overshadowing traditional knowledge in community forestry, and where the relations to the forest, still largely characterised by the *milpa* system, appears to be increasingly shaped by instrumental values.

4.2 | Skewed distribution of financial resources enhance power asymmetries in decision-making

Powerful actors can impose their value-systems by setting the agenda and shaping collective decision-making processes (Berbés-Blázquez et al., 2016; Ishihara et al., 2017; Martin, 2017). We see the cases of MBBR and of Tesoco Nuevo as illustrative of the role of financial resources in affecting the balance of power in collective decision-making. In the MBBR, there are participatory processes in place—yet, who shapes them and imposes their views are those with better access to financial and human resources. In Tesoco Nuevo, the perspective of receiving payment acts as an incentive for local communities to participate in conservation projects designed by external actors; this transforms their practices which gradually become contradictory to their values. The case of Tesoco Nuevo therefore poses the crucial question of consent: Is there an injustice if local communities consent to act in ways that do not fit with their own value-systems? And, more broadly: Can consent be freely given in a context where the subjects do not feel like they have any alternative? Álvarez and Coolsaet (2020) suggest the reproduction of environmental injustices may happen with the victims' consent—this rings true in the context of economic incentives for conservation activities. The case of Tesoco Nuevo thus opens a reflection as to the role payments play in imposing external value-systems on local communities with their apparent consent. This suggests novel methodological challenges for environmental justice research, related to exploring consent and uncovering impositions of value-systems through financial incentives; which will require the renewed involvement of disciplines such as psychology in research on environmental justice.

4.3 | Cultural norms affect collective decision-making

In Tesoco Nuevo, we have observed that local communities' participation in collective decision-making is restricted to the participatory exercises organised by the national and foreign organisations fostering the conservation schemes in the area. Such exercises appear to ignore the local communication culture (including ways of relating to other people, gender relations, and the language spoken) and concerns (as the exercises focus solely on the implementation phase of conservation initiatives). This hinders participants' ability to efficiently speak their mind, despite them being present during participatory exercises, and having local actors hired to act as intermediaries between the international organisations and the local community. Language and social norms

play a role in determining the outcomes of collective decision-making processes (Peterson et al., 2010; Roncoli et al., 2011). The insensitiveness to cultural norms appears to be inseparable from the country's history of racism in the creation of the modern state (Saldivar, 2018)—perspective we have not explored in-depth in this work. Future research is needed to analyse the legacy of the political history of Mexico (and elsewhere) and how it shapes the governance of contemporary conservation efforts.

5 | CONCLUSION

The acknowledgement of the role of local communities in conservation has led to their increased involvement in conservation initiatives (often based on processes designed by external actors) and to harnessing local communities' relational values to foster desired conservation outcomes. Yet, despite progress in achieving inclusive participation processes with local actors in conservation, and an increased concern for environmental justice within the conservation community, our collective insights based on four cases of conservation in Mexico suggest that local actors' value-systems still fail to be recognised in conservation practice. This observation of the shortcomings of conservation practice to achieve environmental justice is not new. Over 15 years ago, Brown (2003) already called for a fundamental change in conservation practice by moving towards just conservation—she identified a better understanding of people's values and knowledge-systems and their integration in decision-making as crucial steps towards this overarching goal. Brown's claims resonate with our cases of contemporary conservation practice in Mexico. Our field research and experience of these cases leads us to conclude that injustices in the conservation realm may persist even in cases which represent conservation best-practice, both in terms of inclusive governance and conservation outcomes.

We contend that achieving environmental justice in conservation requires profound changes to conservation practice that must go beyond efforts to enhance participation of local actors, as meaningful recognition is not a necessary consequence of participatory processes in conservation (Martin et al., 2016). Our insights suggest that recognition of local communities' value-systems requires acknowledging and respecting local communities' worldviews, interests and knowledge-systems. Our perspective points towards structural barriers for genuine recognition, such as the legal framework and power asymmetries across actors, which pertain to the broad political and economic structures within which conservation practice operates. We argue that achieving environmental justice in conservation requires not turning a blind eye to the broader political, historical and epistemic structures within which this practice is embedded.

Two avenues may bring forward the required profound changes in conservation practice. The first one is an epistemological transformation in which experiential knowledge is considered on equal grounds with scientific knowledge (as proposed by Elgert, 2010). To this end, we think that the ideal of 'evidence-based policy'

informed by a neutral scientific process ought to be replaced by a deliberative process where politics are tackled explicitly (Büscher & Fletcher, 2019), and where local communities' relationships with nature are seen as the basis of the legitimacy of their knowledge-system. Achieving the legitimacy of local knowledge is a necessary step towards recognising local communities' value-systems, and therefore the inclusion of their worldviews and practices into conservation efforts.

The second condition to co-construct conservation initiatives which consider local communities' aspirations is to develop awareness of the role of the socio-cultural context (including power configurations) in participatory mechanisms. Asymmetric power relations can be addressed head on, for instance by learning from experience in collaborative planning, which has developed approaches for developing empathy and respect as a basis for envisioning shared solutions among groups with power differentials through dialogue (Innes & Booher, 2010). Other experiences on which to draw on may involve those connected to the idea of 'knowledges dialogues' in transdisciplinary action (de Oliveira Cunha & Floriani, 2019; Delgado & Rist, 2016). Recognising and giving space for the expression of relational values should also be at the core of these discussions, as they hold the potential for conservation pathways which are respectful of cultural diversity and further human well-being.

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CONFLICT OF INTEREST

Unai Pascual and Patricia Balvanera are Associate Editors for People and Nature, but were not involved in the peer review and decision-making process.

AUTHORS' CONTRIBUTIONS

L.G., U.P. and P.B. conceived the conceptual design for this research; L.G., P.B. and P.R.W.G. designed the analytical framework and reviewed the literature; A.C.F.-D., E.G.-S., E.G.-F., J.A.S.-H. and P.R.W.G. wrote the empirical section; L.G. led the drafting of the manuscript to which all participated. All authors contributed critically to the drafts and gave final approval for publication.

DATA AVAILABILITY STATEMENT

This article reflects on data collected during previous research activities, published elsewhere. The data this article are based on cannot be made publicly available due to the needs to preserve anonymity.

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ENDNOTES

- ¹ In this article, conservation is broadly understood as a movement encouraging societies to govern their relationship to the natural world, following Jepson (2017).
- ² Environmental justice is concerned with the fair distribution of environmental benefits and burdens, inclusive participation in decision-making and the recognition of cultural diversity (Martin 2017)—the latter being the core concern of this paper.
- ³ In this article, we are not interested in legal recognition, wary of its critiques (Coulthard, 2007; Fisher, 2019) but in recognition in practice, or intersubjective recognition, described by Fraser as a 'quality of moral-ethical relations in society' (Fraser, 2018, p. 2).
- ⁴ Intrinsic value refers to inherent value, independent of human experience or valuation. Instrumental value is that attributed to something as a means to achieve a particular end (Pascual et al., 2017).
- ⁵ For a discussion of the involvement of local communities in monitoring processes, (see Wells et al., 2017).
- ⁶ The limited role of participatory processes to achieve justice in decision-making resonates beyond the conservation realm: development scholars (Cooke & Kothari, 2001; Gaventa & Cornwall, 2006), planners (Brownill & Inch, 2019) and anthropologists (Boccarra & Bolados, 2008) have documented for the past two decades how participation, far from enhancing democratic decision-making, reproduces instead existing power inequalities.
- ⁷ This occurs despite the promotion of indigenous and traditional knowledge as a principle in the 1997 forest law (DOF, 2018), that has been expanded in later laws (Sierra-Huelsz et al., 2020).

REFERENCES

- Adams, W., & Hutton, J. (2007). People, parks and poverty: Political ecology and biodiversity conservation. *Conservation and Society*, 5(2), 147–183.
- Agrawal, A., & Gibson, C. C. (1999). Enchantment and disenchantment: The role of community in natural resource conservation. *World Development*, 27(4), 629–649. [https://doi.org/10.1016/S0305-750X\(98\)00161-2](https://doi.org/10.1016/S0305-750X(98)00161-2)
- Allen, K. (2018). Why exchange values are not environmental values: Explaining the problem with neoliberal conservation. *Conservation and Society*, 16(3), 243–256. https://doi.org/10.4103/cs.cs_17_68
- Álvarez, L., & Coolsaet, B. (2020). Decolonizing environmental justice studies: A latin american perspective. *Capitalism, Nature, Socialism*, 31(2), 50–69. <https://doi.org/10.1080/10455752.2018.1558272>
- Apar, J. M., Argumedo, A., & Allen, W. (2009). Building transdisciplinarity for managing complexity: Lessons from indigenous practice. *International Journal of Interdisciplinary Social Sciences*, 4(5), 255–270. <https://doi.org/10.18848/1833-1882/CGP/v04i05/52925>
- Arts, B., Behagel, J., Turnhout, E., de Koning, J., & van Bommel, S. (2014). A practice based approach to forest governance. *Forest Policy and Economics*, 49, 4–11. <https://doi.org/10.1016/j.forpol.2014.04.001>
- Ávila-García, P., & Sánchez, E. L. (2012). The environmentalism of the rich and the privatization of nature: High-end tourism on the Mexican Coast. *Latin American Perspectives*, 39(6), 51–67. <https://doi.org/10.1177/0094582X12459329>
- Barrera-Bassols, N., & Toledo, V. (2005). Ethnoecology of the Yucatec Maya: Symbolism, knowledge and management of natural resources. *Journal of Latin American Geography*, 4(1), 9–41. <https://doi.org/10.1353/lag.2005.0021>
- Berbés-Blázquez, M., González, J., & Pascual, U. (2016). Towards an ecosystem services approach that addresses social power relations. *Current Opinion in Environmental Sustainability*, 19, 134–143. <https://doi.org/10.1016/j.cosust.2016.02.003>
- Berkes, F. (2004). Rethinking community-based conservation. *Conservation Biology*, 18(3), 621–630. <https://doi.org/10.1111/j.1523-1739.2004.00077.x>
- Berkes, F., Colding, J., & Folke, C. (2000). Rediscovery of traditional ecological knowledge as adaptive management. *Ecological Applications*, 10(5), 1251–1262.
- Boccarra, G., & Bolados, P. (2008). ¿Dominar a Través De La Participación? El Neoindigenismo En El Chile De La Posdictadura. *Memoria Americana*, 16(2), 167–196.
- Bray, D. B., Merino-Perez, L., Negreiros-Castillo, P., Segura-Warnholtz, G., Torres-Rojo, J. M., & Vester, H. F. M. (2003). Mexico's community-managed forests as a global model for sustainable landscapes. *Conservation Biology*, 17(3), 672–677. <https://doi.org/10.1046/j.1523-1739.2003.01639.x>
- Brenner, L. (2010). Gobernanza ambiental, actores sociales y conflictos en las áreas naturales protegidas Mexicanas. *Revista Mexicana de Sociología*, 2(5), 283–310.
- Brondizio, E. S., & Tourneau, F. M. L. (2016). Environmental governance for all. *Science*, 352(6291), 1272–1273. <https://doi.org/10.1126/science.aaf5122>
- Brown, K. (2003). Three challenges for a real people-centred conservation. *Global Ecology and Biogeography*, 12(2), 89–92. <https://doi.org/10.1046/j.1466-822X.2003.00327.x>
- Brownill, S., & Inch, A. (2019). Framing people and planning: 50 years of debate. *Built Environment*, 45(1), 7–25. <https://doi.org/10.2148/benv.45.1.7>
- Büscher, B., & Fletcher, R. (2019). Towards convivial conservation. *Conservation and Society*, 17(3), 283–296. https://doi.org/10.4103/cs.cs_19_75
- Carías Vega, D. (2019). Community-based forestry and community forestry enterprises in Quintana Roo, Mexico and Petén, Guatemala: How have policies, history, and culture shaped their trajectories? *Journal of Sustainable Forestry*, 38(7), 651–669.
- Carton de Grammont, P. (2012). *La Dimensión Geográfica de Las Políticas Públicas Ambientales Para La Conservación de La Biodiversidad En México*. PhD Dissertation, Geography. UNAM.
- Chan, K. M. A., Agard, J., Liu, J., de Aguiar, A. P., Armenteras, D., Boedhihartono, A. K., Cheung, W. L., Hashimoto, S., Pedraza, G. C., Hickler, T., & Jetzkowitz, J. (2019). Chapter 5. Pathways towards a Sustainable Future. In *The IPBES Global Assessment on Biodiversity and Ecosystem Services*. Secretariat of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.
- Chan, K. M. A., Gould, R. K., & Pascual, U. (2018). Editorial overview: Relational values: What are they, and what's the fuss about? *Current Opinion in Environmental Sustainability*, 35, A1–7.
- Cooke, B., & Kothari, U. (2001). *Participation: The new tyranny?*. Zed Books.
- Coolsaet, B. (2016). Towards an agroecology of knowledges: Recognition, cognitive justice and farmers' autonomy in France. *Journal of Rural Studies*, 47, 165–171. <https://doi.org/10.1016/j.jrurstud.2016.07.012>

- Coulthard, G. S. (2007). Subjects of empire: Indigenous peoples and the 'Politics of Recognition' in Canada. *Contemporary Political Theory*, 6(4), 437–460. <https://doi.org/10.1057/palgrave.cpt.9300307>
- Dalle, S. P., & de Blois, S. (2006). Shorter fallow cycles affect the availability of noncrop plant resources in a shifting cultivation system. *Ecology and Society*, 11(2). <https://doi.org/10.5751/ES-01707-110202>
- Datta, R. (2015). A relational theoretical framework and meanings of land, nature, and sustainability for research with indigenous communities. *Local Environment*, 20(1), 102–113. <https://doi.org/10.1080/13549839.2013.818957>
- Dawson, N., Martin, A., & Danielsen, F. (2018). Assessing equity in protected area governance: Approaches to promote just and effective conservation. *Conservation Letters*, 11(2), 1–8. <https://doi.org/10.1111/conl.12388>
- de Oliveira Cunha, L. H., & Floriani, D. (2019). Diálogos de Saberes Socioambientais: Desafios Para Eipstemologias Do Sul. *Desenvolvimento E Meio Ambiente*, 50, 1–3.
- del Río Pesado, M. G., Espinoza Bernal, A., Flores-Díaz, A. C., García García, J., García Serrano, E., Gutiérrez Núñez, A., Lemus Ramírez, K. I., López Martínez, F., Lugo-Olguín, S. D., Martínez Me, F., Juan, G. G., & Hernández Zubieta, R. R. (2018). La Red de Monitoreo Comunitario Del Agua de La Reserva de La Biosfera Mariposa Monarca. In J. Merçon, B. Ayala-Orozco, & J. Rosell (Eds.), *Experiencias de Colaboración Transdisciplinaria Para La Sustentabilidad*. Coplt-arXives.
- Delgado, F., & Rist, S. (2016). *Ciencias, Diálogo de Saberes y Transdiscipliniedad*. Plural Editores.
- Diario Oficial de la Federación (DOF). (1988). *Ley General Del Equilibrio Ecológico y La Protección Al Ambiente*. Retrieved from <http://www.diputados.gob.mx/LeyesBiblio/ref/cpeum.htm>
- Díaz, S., Settele, J., Brondizio, E. S., Ngo, H. T., Agard, J., Arneeth, A., Balvanera, P., Brauman, K. A., Butchart, S. H., Chan, K. M., & Garibaldi, L. A. (2019). Pervasive human-driven decline of life on earth points to the need for transformative change. *Science*, 366(6471), 1–10.
- DOF. (2018). *Ley General de Desarrollo Forestal Sustentable* (pp. 5–51). Secretaría de Medio Ambiente, Recursos Naturales y Pesca.
- Durand, L. (2017). *Naturalezas Desiguales. Discursos Sobre La Conservación de La Biodiversidad En México*. UNAM.
- Durand, L. (2019). Power, identity and biodiversity conservation in the Montes Azules biosphere reserve. *Political Ecology*, 26(1), 19–37.
- Durand, L., Figueroa, F., & Trench, T. (2014). Inclusion and exclusion in participation strategies in the Montes Azules Biosphere Reserve, Chiapas, Mexico. *Conservation and Society*, 12(2), 175–189. <https://doi.org/10.4103/0972-4923.138420>
- Elgert, L. (2010). Politicizing sustainable development: The co-production of globalized evidence-based policy. *Critical Policy Studies*, 3(3–4), 375–390. <https://doi.org/10.1080/19460171003619782>
- Ellis, E., Kainer, K., Sierra-Huelsz, J., Negreros-Castillo, P., Rodriguez-Ward, D., & DiGiano, M. (2015). Endurance and adaptation of community forest management in Quintana Roo, Mexico. *Forests*, 6(11), 4295–4327. <https://doi.org/10.3390/f6114295>
- Fisher, M. R. (2019). *Beyond recognition: Indigenous land rights and changing landscapes in Indonesia*. The University of Hawai'i at Mānoa.
- Flores-Díaz, A., Quevedo Chacón, A., Páez Bistrain, R., Ramírez, M., & Larrazábal, A. (2018). Community-based monitoring in response to local concerns: Creating usable knowledge for water management in Rural Land. *Water (Switzerland)*, 10(5), 1–15. <https://doi.org/10.3390/w10050542>
- Fraser, J. A. (2018). *Amazonian struggles for recognition* (pp. 1–15). Transactions of the Institute of British Geographers. (April).
- Friedman, R. S., Law, E. A., Bennett, N. J., Ives, C. D., Thorn, J. P. R., & Wilson, K. A. (2018). How just and just how? A systematic review of social equity in conservation research. *Environmental Research Letters*, 13. <https://doi.org/10.1088/1748-9326/aabced>
- Gall, O. (2013). Mexican long-living mestizophilia versus a democracy open to diversity. *Latin American and Caribbean Ethnic Studies*, 8(3), 280–303.
- García-Frapolli, E., García-Contreras, R., Balderas, U. J., González-Cruz, G., Astorga-De Ita, D., Cohen-Salgado, D., & Vega, E. (2013). Fostering traditional yucatec maya management of natural resources through microcredits: A community case study. *Society & Natural Resources: An International Journal*, 26(11), 1351–1364. <https://doi.org/10.1080/08941920.2013.791902>
- Garnett, S. T., Burgess, N. D., Fa, J. E., Fernández-Llamazares, Á., Molnár, Z., Robinson, C. J., Watson, J. E. M., Zander, K. K., Austin, B., Brondizio, E. S., Collier, N. F., Duncan, T., Ellis, E., Geyle, H., Jackson, M. V., Jonas, H., Malmer, P., McGowan, B., Sivongxay, A., & Leiper, I. (2018). A spatial overview of the global importance of indigenous lands for conservation. *Nature Sustainability*, 1(7), 369–374. <https://doi.org/10.1038/s41893-018-0100-6>
- Gaventa, J., & Cornwall, A. (2006). Challenging the boundaries of the possible: Participation, knowledge and power. *IDS Bulletin*, 37(6), 122–128. <https://doi.org/10.1111/j.1759-5436.2006.tb00329.x>
- Gerritsen, P. R. W. (2002). *Diversity at stake. A farmers' perspective on biodiversity and conservation in Western Mexico*. Wageningen University, Wageningen Studies on Heterogeneity and Relocalisation 4.
- Gerritsen, P. R. W. (2010). *Perspectivas campesinas sobre el manejo de los recursos naturales*. Mundi-Prensa México.
- Gerritsen, P. R. W., Rist, S., Morales, J., & Tapia, N. (2017). *Multifuncionalidad, Sustentabilidad y Buen Vivir: Miradas Desde Bolivia y México*. Universidad de Guadalajara, Colección Manantlán.
- Gerritsen, P. R. W., & Wiersum, F. (2005). Farmer and conventional perspectives on conservation in Western Mexico. *Mountain Research and Development*, 25(1), 30–36.
- González-Cruz, G., García-Frapolli, E., Casas, A., & Dupuy, J. M. (2015). Responding to disturbances: lessons from a Mayan social-ecological system. *International Journal of the Commons*, 9(2), 831–850.
- Hajjar, R., Kozak, R., El-Lakany, H., & Innes, J. (2013). Community forests for forest communities: Integrating community-defined goals and practices in the design of forestry initiatives. *Land Use Policy*, 34, 158–167. <https://doi.org/10.1016/j.landusepol.2013.03.002>
- Hawken, I. F., & Granoff, I. M. E. (2010). Reimagining park ideals: Toward effective human-inhabited protected areas. *Journal of Sustainable Forestry*, 29(2), 122–134. <https://doi.org/10.1080/10549810903543808>
- Himes, A., & Muraca, B. (2018). Relational values: The key to pluralistic valuation of ecosystem services. *Current Opinion in Environmental Sustainability*, 35, 1–7. <https://doi.org/10.1016/j.cosust.2018.09.005>
- Honey-Rosés, J., Baylis, K., & Ramírez, M. (2011). A spatially explicit estimate of avoided forest loss. *Conservation Biology*, 25(5), 1032–1043. <https://doi.org/10.1111/j.1523-1739.2011.01729.x>
- INE. (2000). *Programa de Manejo de La Reserva de La Biosfera Sierra de Manantlán, México*.
- Innes, J., & Booyer, D. (2010). *Planning with complexity – An introduction to collaborative rationality for public policy*. Routledge.
- Ishihara, H., Pascual, U., & Hodge, I. (2017). Dancing with storks: The role of power relations in payments for ecosystem services. *Ecological Economics*, 139, 45–54. <https://doi.org/10.1016/j.ecolecon.2017.04.007>
- Jax, K., Calestani, M., Chan, K. M. A., Eser, U., Keune, H., Muraca, B., O'Brien, L., Potthast, T., Voget-Kleschin, L., & Wittmer, H. (2018). Caring for nature matters: A relational approach for understanding nature's contributions to human well-being. *Current Opinion in Environmental Sustainability*, 35, 22–29. <https://doi.org/10.1016/j.cosust.2018.10.009>
- Jepson, P. (2017). Nature conservation. *International Encyclopedia of Geography: People, the Earth, Environment and Technology*, 1–22.
- Klain, S. C., Olmsted, P., Chan, K. M. A., & Satterfield, T. (2017). Relational values resonate broadly and differently than intrinsic or instrumental

- values, or the new ecological paradigm. *PLoS ONE*, 12(8), 1–21. <https://doi.org/10.1371/journal.pone.0183962>
- Kolinjavadi, V., Van Hecken, G., Rodríguez de Francisco, J. C., Pelenc, J., & Kosoy, N. (2017). As a lock to a key? Why science is more than just an instrument to pay for nature's services. *Current Opinion in Environmental Sustainability*, 26–27, 1–6. <https://doi.org/10.1016/j.cosust.2016.12.004>
- Kothari, A., Camill, P., & Brown, J. (2013). Conservation as if people also mattered: Policy and practice of community-based conservation. *Conservation and Society*, 11(1), 1–15. <https://doi.org/10.4103/0972-4923.110937>
- Lecuyer, L., White, R. M., Schmook, B., Lemay, V., & Calmé, S. (2018). The construction of feelings of justice in environmental management: An empirical study of multiple biodiversity conflicts in Calakmul, Mexico. *Journal of Environmental Management*, 213, 363–373. <https://doi.org/10.1016/j.jenvman.2018.02.050>
- Legorreta-Díaz, M., Márquez-Rosano, C., & Trench, T. (2014). *Paradojas de Las Tierras Protegidas: Democracia y Política Ambiental En Reservas de Biosfera En Chiapas*. Universidad Nacional Autónoma de México, Colección Alternativas.
- Levy-Tacher, S., & Hernández-Xolocotzi, E. (1992). La Sucesión Secundaria y Su Manejo En El Sistema Roza-Tumba-Quema. In D. Zizumbo-Villareal, C. H. Rasmussen, L. M. Arias-Reyes, & S. Terán-Contreras (Eds.), *La Modernización de La Milpa En Yucatán: Utopía o Realidad*. Centro de Investigación Científica de Yucatán.
- Li, T. M. (2002). Engaging simplifications: Community-based resource management, market processes and state agendas in Upland Southeast Asia. *World Development*, 30(2), 265–283. [https://doi.org/10.1016/S0305-750X\(01\)00103-6](https://doi.org/10.1016/S0305-750X(01)00103-6)
- Loh, J., & Harmon, D. (2005). A global index biocultural diversity. *Ecological Indicators*, 5, 231–241.
- Lyver, P. O. B., Ruru, J., Scott, N., Tylianakis, J. M., Arnold, J., Malinen, S. K., Bataille, C. Y., Herse, M. R., Jones, C. J., Gormley, A. M., Peltzer, D. A., Taura, Y., Timoti, P., Stone, C., Wilcox, M., & Moller, H. (2019). Building biocultural approaches into Aotearoa-New Zealand's conservation future. *Journal of the Royal Society of New Zealand*, 49(3), 394–411. <https://doi.org/10.1080/03036758.2018.1539405>
- Martin, A. (2017). *Just conservation – Biodiversity, wellbeing and sustainability*. Routledge.
- Martin, A., Coolsaet, B., Corbera, E., Dawson, N. M., Fraser, J. A., Lehmann, I., & Rodriguez, I. (2016). Justice and conservation: The need to incorporate recognition. *Biological Conservation*, 197, 254–261. <https://doi.org/10.1016/j.biocon.2016.03.021>
- Martin, A., Gross-Camp, N., & Akol, A. (2015). Towards an explicit justice framing of the social impacts of conservation. *Conservation and Society*, 13(2), 166. <https://doi.org/10.4103/0972-4923.164200>
- Massarella, K., Sallu, S. M., & Ensor, J. E. (2020). Reproducing injustice: Why recognition matters in conservation project evaluation. *Global Environmental Change*, 65(September), 102181. <https://doi.org/10.1016/j.gloenvcha.2020.102181>
- McDermott, M., Mahanty, S., & Schreckenberger, K. (2013). Examining equity: A multidimensional framework for assessing equity in payments for ecosystem services. *Environmental Science and Policy*, 33, 416–427. <https://doi.org/10.1016/j.envsci.2012.10.006>
- Merçon, J., Vetter, S., Tengö, M., Cocks, M., Balvanera, P., Rosell, J. A., & Ayala-Orozco, B. (2019). From local landscapes to international policy: Contributions of the biocultural paradigm to global sustainability. *Global Sustainability*, 2. <https://doi.org/10.1017/sus.2019.4>
- Montero, S. G., Castellón, E. S., Rivera, L. M. M., Ruvalcaba, S. G., & Llamas, J. J. (2006). Collaborative governance for sustainable water resources management: The experience of the inter-municipal initiative for the integrated management of the Ayuquila River Basin, Mexico. *Environment and Urbanization*, 18(2), 297–313. <https://doi.org/10.1177/0956247806069602>
- Myers, R., Larson, A. M., Ravikumar, A., Kowler, L. F., Yang, A., & Trench, T. (2018). Messiness of forest governance: How technical approaches suppress politics in REDD+ and conservation projects. *Global Environmental Change*, 50(June, 2017), 314–324. <https://doi.org/10.1016/j.gloenvcha.2018.02.015>
- Ojha, H. R., Ford, R., Keenan, R. J., Race, D., Carias Vega, D., Baral, H., & Sapkota, P. (2016). Delocalizing communities: Changing forms of community engagement in natural resources governance. *World Development*, 87(July), 274–290. <https://doi.org/10.1016/j.worlddev.2016.06.017>
- Ostrom, E. (1999). Coping with tragedies of the commons. *Annual Review of Political Science*, 2(1), 493–535. <https://doi.org/10.1146/annurev.polisci.2.1.493>
- Padoch, C., & Pinedo-Vasquez, M. (2010). Saving slash-and-burn to save biodiversity. *Biotropica*, 42(5), 550–552. <https://doi.org/10.1111/j.1744-7429.2010.00681.x>
- Parera, M., Bustos, H., & Gerritsen, P. R. W. (2001). Hacia una conservación basada en la gente: La sierra de manantlán. *Ecología Política*, 21, 43–49.
- Pascual, U., Balvanera, P., Díaz, S., Pataki, G., Roth, E., Stenseke, M., Watson, R. T., Başak Dessane, E., Islar, M., Kelemen, E., Maris, V., Quaa, S., Subramanian, S. M., Wittmer, H., Adlan, A., Ahn, S. E., Al-Hafedh, Y. S., Amankwah, E., Asah, S. T., ... Yagi, N. (2017). Valuing nature's contributions to people: The IPBES approach. *Current Opinion in Environmental Sustainability*, 26–27, 7–16. <https://doi.org/10.1016/j.cosust.2016.12.006>
- Perfecto, I., & Vandermeer, J. (2010). The agroecological Matrix as alternative to the land-sparing/agriculture intensification model. *Proceedings of the National Academy of Sciences of the United States of America*, 107(13), 5786–5791. <https://doi.org/10.1073/pnas.0905455107>
- Peterson, N. D., Broad, K., Orlove, B., Roncoli, C., Taddei, R., & Velez, M.-A. (2010). Participatory processes and climate forecast use: Socio-cultural context, discussion, and consensus. *Climate and Development*, 2(1), 14–29. <https://doi.org/10.3763/cdev.2010.0033>
- Pfaff, A., Santiago-Ávila, F., & Joppa, L. (2017). Evolving protected-area impacts in Mexico: Political shifts as suggested by impact evaluations. *Forests*, 8(1), 1–14.
- Phalan, B., Onial, M., Balmford, A., & Green, R. (2011). Reconciling food production and biodiversity conservation: Land sharing and land sparing compared. *Science*, 333(6047), 1289–1291. <https://doi.org/10.1126/science.1208742>
- Pinkerton, E. (2019). Benefits of collaboration between indigenous and non-indigenous communities through community forests in British Columbia1. *Canadian Journal of Forest Research*, 49(4), 387–394. <https://doi.org/10.1139/cjfr-2018-0154>
- Porter-Bolland, L., Ellis, E. A., Guariguata, M. R., Ruiz-Mallén, I., Negrete-Yankelevich, S., & Reyes-García, V. (2012). Community managed forests and forest protected areas: An assessment of their conservation effectiveness across the tropics. *Forest Ecology and Management*, 268, 6–17. <https://doi.org/10.1016/j.foreco.2011.05.034>
- Reser, J. P., & Bentrupperbäumer, J. M. (2005). What and where are environmental values? Assessing the impacts of current diversity of use of 'Environmental' and 'World Heritage' values. *Journal of Environmental Psychology*, 25(2), 125–146. <https://doi.org/10.1016/j.jenvp.2005.03.002>
- Román-Dañobeytia, F. J., Levy-Tacher, S. I., Macario-Mendoza, P., & Zúñiga-Morales, J. (2014). Redefining secondary forests in the Mexican forest code: Implications for management, restoration, and conservation. *Forests*, 5(5), 978–991. <https://doi.org/10.3390/f5050978>
- Roncoli, C., Orlove, B. S., Kabugo, M. R., & Waiswa, M. M. (2011). Cultural styles of participation in farmers' discussions of seasonal climate forecasts in Uganda. *Agriculture and Human Values*, 28(1), 123–138. <https://doi.org/10.1007/s10460-010-9257-y>

- Saldívar, E. (2018). Uses and abuses of culture: Mestizaje in the era of multiculturalism. *Cultural Studies*, 32(3), 438–459. <https://doi.org/10.1080/09502386.2017.1420092>
- Santana, E., Jardel-Peláez, E. J., & Graf, S. (2010). Reserva de La Biosfera Sierra de Manantlán. In J. Carabias, J. Sarukhán, J. de la Maza, & C. Galindo (Eds.), *Patrimonio Natural de México - Cien Casos de Éxito* (pp. 28–29). CONABIO.
- Schlosberg, D. (2004). Reconceiving environmental justice: Global movements and political theories. *Environmental Politics*, 13(3), 517–540. <https://doi.org/10.1080/0964401042000229025>
- Schreckenberg, K., Franks, P., Martin, A., & Lang, B. (2016). Unpacking equity for protected area conservation. *Parks*, 22(2), 11–28. <https://doi.org/10.2305/IUCN.CH.2016.PARKS-22-2KS.en>
- Shafer, C. (2015). Cautionary thoughts on IUCN protected area management categories V–VI. *Global Ecology and Conservation*, 3, 331–348. <https://doi.org/10.1016/j.gecco.2014.12.007>
- Sierra-Huelsz, J. A., Gerez Fernández, P., López Binnqüist, C., Guibrunet, L., & Ellis, E. A. (2020). Traditional ecological knowledge in community forest management: Evolution and limitations in Mexican forest law, policy and practice. *Forests*, 11(403), 403. <https://doi.org/10.3390/f11040403>
- Sierra-Huelsz, J. A., Kainer, K. A., Keys, E., & Colli-Balam, S. S. (2017). Three stories under the same hut: Market preferences and forest governance drive the evolution of tourism construction materials. *Forest Policy and Economics*, 78(February), 151–161. <https://doi.org/10.1016/j.forpol.2017.01.022>
- Sikor, T., Martin, A., Fisher, J., & He, J. (2014). Toward an empirical analysis of justice in ecosystem governance. *Conservation Letters*, 7(6), 524–532. <https://doi.org/10.1111/conl.12142>
- Sims, K. R. E., & Alix-Garcia, J. M. (2017). Parks versus PES: Evaluating direct and incentive-based land conservation in Mexico. *Journal of Environmental Economics and Management*, 86, 8–28. <https://doi.org/10.1016/j.jeem.2016.11.010>
- Suiseeya, K. (2017). Contesting justice in global forest governance: The promises and pitfalls of REDD+. *Conservation and Society*, 15(2), 189–200. https://doi.org/10.4103/cs.cs_15_104
- Taddei, R. (2011). Watered-down democratization: Modernization versus social participation in water management in Northeast Brazil. *Agriculture and Human Values*, 28(1), 109–121. <https://doi.org/10.1007/s10460-010-9259-9>
- Teitelbaum, S., Wyatt, S., & Bullock, R. (2019). Indigenous peoples and collaborative forest governance in Northern Forests: Examining changes in policies, institutions, and communities. *Canadian Journal of Forest Research*, 49(4), v–vii. <https://doi.org/10.1139/cjfr-2019-0036>
- Tengö, M., Brondizio, E. S., Elmqvist, T., Malmer, P., & Spierenburg, M. (2014). Connecting diverse knowledge systems for enhanced ecosystem governance: The multiple evidence base approach. *Ambio*, 43(5), 579–591. <https://doi.org/10.1007/s13280-014-0501-3>
- Timoti, P., Lyver, P. O' B., Matamua, R., Jones, C. J., & Tahī, B. L. (2017). A representation of a Tuawhenua worldview guides environmental conservation. *Ecology and Society*, 22(4). <https://doi.org/10.5751/ES-09768-220420>
- Vermeulen, S. (2019). Special issue: Environmental justice and epistemic violence. *Local Environment*, 24(2), 89–93. <https://doi.org/10.1080/13549839.2018.1561658>
- Vucetich, J. A., Burnham, D., Macdonald, E. A., Bruskotter, J. T., Marchini, S., Zimmermann, A., & Macdonald, D. W. (2018). Just conservation: What is it and should we pursue it? *Biological Conservation*, 221(December, 2017), 23. <https://doi.org/10.1016/j.biocon.2018.02.022>
- Wells, G., Fisher, J. A., Porras, I., Staddon, S., & Ryan, C. (2017). Rethinking monitoring in smallholder carbon payments for ecosystem service schemes: Devolve monitoring, understand accuracy and identify co-benefits. *Ecological Economics*, 139, 115–127. <https://doi.org/10.1016/j.ecolecon.2017.04.012>
- Whyte, K. P. (2011). The recognition dimensions of environmental justice in Indian country. *Environmental Justice*, 4(4), 199–205. <https://doi.org/10.1089/env.2011.0036>

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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