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Wetland spirits and indigenous knowledge: Implications for the conservation of wetlands in the Peruvian Amazon

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ABSTRACT

Globally, the importance of indigenous and local knowledge systems for science, policy, environmental conservation and the cultural heritage of indigenous peoples is increasingly being recognised. The Amazon region in particular is home to many indigenous peoples who have conserved their cultural traditions and knowledge, despite growing threats to the environment and traditional lifestyles and cultures. Based on insights from ethnographic research in three indigenous communities, here we present a case study on the indigenous knowledge of the Urarina people of the Chambira Basin in the Peruvian Amazon and its implications for conservation. We describe, for the first time, a series of anthropomorphic and territorial “wetland spirits”, who are associated with particular wetland ecosystems and range in character from the benign to outright aggressive. Their presence may indirectly benefit conservation of wetlands, as humans fear or respect these wetland spirits and adapt their behaviour accordingly. While benign spirits may be seen as positive models to follow, aggressive spirits may deter unsustainable harvesting of resources through fear of disease or death. However, their cultural status is not adequately captured by such rational-scientific explanations. Wetland spirits are important characters within the indigenous cosmos of humans and non-humans, which is built on a relational, rather than extractive model of connecting humans and nature. We discuss our findings in the context of wider conceptual debates on recognising relational ontologies in environmental policy and conservation, the paradigm of bio-cultural conservation, as well as their implications for land titling, and incorporating indigenous perspectives in local education.

1. Introduction

Many traditional and indigenous knowledge systems around the world are closely linked with ideals of stewardship of nature, expressed, for example, in the idea that natural sites can be sacred and thus deserve to be respected and protected on that basis (Byers et al., 2001; Oberkircher et al., 2011; Verschuuren, 2010; Wadley and Colfer, 2004). Most cultures have also developed ethical principles that govern how humans should appropriately relate with the natural environment (Berghöfer et al., 2008; Bieling et al., 2020; Chan et al., 2016). This has been recognised, not least by the Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES), which calls for greater consideration of “symbolic relationships with natural entities [that] reflect elements of

cultural identity, social cohesion, social responsibility and moral responsibility towards nature” (Pascual et al., 2017: 12).

When traditional or indigenous knowledge is lost, ecological degradation often ensues, as ethical principles and sustainable resource use might be replaced with a focus on the short-term economic benefits of natural resource exploitation (Loh and Harmon, 2014). As the importance of certain species for producing traditional goods is forgotten, they may no longer be protected by local people, putting biodiversity and cultural traditions simultaneously at risk (Brosi et al., 2007). This has made the documentation of such knowledge a task that is of value not only for cultural and anthropological purposes, but which may also offer avenues towards sustainable development (Merçon et al., 2019; Throsby and Petetskaya, 2016). Indigenous and local knowledge may also serve

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as inspiration for conventional science. It is often perceived as locally superior, drawing on the collective experience of many generations, for example, where traditional fishers have a better understanding of the abundance or migratory patterns of certain fish species than scientists (Berg Hedeholm et al., 2016; Jauharee et al., 2021) or local knowledge about the location of plants and fruits may help ecologists to identify the ecological range of species (Fandohan et al., 2011). That said, the potential to integrate indigenous knowledge into environmental policy and management is frequently missed (Hanspach et al., 2020) and it is also necessary to acknowledge that there is disagreement in the literature about whether indigenous and local knowledge is an accurate representation of ecological data, and/or always translates into more sustainable management and conservation (see e.g. Baisre, 2010; McClenachan et al., 2010). Considering the speed and severity of environmental degradation at present, there is an ever greater need to understand the implications of indigenous knowledge for environmental conservation and policy.

Many tropical ecosystems in general, and Amazonian forests and wetlands in particular, are not pristine areas. In fact, archaeological evidence has shown that these ecosystems have been inhabited and managed by humans for thousands of years; human culture and natural ecosystems have thus co-evolved. An early study estimated that around 12% of the Amazon forest is of anthropogenic origin (Balée, 1989). Further studies have since reported evidence which suggests that indigenous peoples have been managing, rather than “taming” ecosystems in the Amazon, with comparatively lesser impacts on biodiversity (e.g. Heckenberger et al., 2007; Woods and McCann, 1999). That said, the relationship has been dynamic, and although indigenous peoples have been largely successful at maintaining forest cover, different regions within the Amazon may have seen stronger or weaker effects on soils and/or the abundance of useful plant species (Clement et al., 2015; Kelly et al., 2018; Montoya et al., 2020). Indigenous knowledge from this world region may thus potentially provide some insights for more sustainable land management practices and conservation, while such evidence also questions the simplistic idea of keeping ecosystems in a “natural state”. Yet, most previous work on indigenous land management practices and synergies with conservation has focused on dryland forest ecosystems, rather than wetlands, which are in turn characterised by strong inundation patterns, as well as plant and animal species adapted to these (Schulz et al., 2019a; a few case studies on indigenous knowledge on wetlands from other continents do exist, see, e.g., Islam and Atkins, 2007; Pyke et al., 2021).

In this article, we explore the implications of indigenous knowledge of spirits, a common element within the Amazonian cosmovision (Fernández-Llamazares and Virtanen, 2020), for the conservation of wetland ecosystems in the Peruvian Amazon. Specifically, we document for the first time a series of territorial “wetland spirits” known by the Urarina indigenous nation, which, to some extent, correspond with their culturally specific ecosystems (cf. Schulz et al., 2019a).¹ As we show below, these anthropomorphic spirits contribute to environmental stewardship, despite, or perhaps, because of their often subversive behaviour, ranging from harmless tricks to aggressive predation of humans. In this way, our research responds to contemporary calls for greater ethnographic detail in studies of the culturally specific relations between humans and nature (Norton and Sanbeg, 2021), while also clarifying that such relations are shaped not only by ethical principles for “good” or appropriate behaviour, but may be influenced by much more complex patterns that include fear of anthropomorphic non-human entities inhabiting the environment.

Another rationale for this paper is the current scientific and policy

interest in the conservation of South America’s largest peatland complex (Draper et al., 2014; Lähteenoja et al., 2009; López Gonzales et al., 2020; Roucoux et al., 2017), which is partially located in the geographical area traditionally inhabited by the Urarina. Scientists have identified the importance of these ecosystems for the global climate system, and, informed by the experience in other world regions, where peatlands and wetlands have been degraded or destroyed by anthropogenic fires and climate change (Abolo et al., 2021; Fazolo Marques et al., 2021; Lupascu et al., 2020; Salimi et al., 2021), have called for their conservation, often via carbon-based mechanisms, such as REDD+ (Draper et al., 2014; Roucoux et al., 2017). While peatlands in other parts of the world have been mapped and studied in great detail (see e.g. Kremenetski et al., 2003; Tanneberger et al., 2017; Xu et al., 2018), research on Amazonian peatlands has emerged only relatively recently (Lähteenoja et al., 2009), and very little is known about their socio-cultural importance (but see: Martín Brañas et al., 2019; Schulz et al., 2019a, 2019b).

The documentation of indigenous knowledge from these wetland areas is thus useful to help scientists and policy-makers concerned about wetland conservation from a global climate perspective, and who may wish to identify synergies for conservation with the knowledge of the people who interact with these ecosystems on a daily basis (e.g. López Gonzales et al., 2020). This is an aspect that the anthropological literature on the Urarina has thus far not focused on (see e.g. Dean, 2009; Walker, 2013). While there is a global literature on spiritual elements of indigenous knowledge and their linkages with environmental conservation more generally (Hartberg et al., 2016), this paper explores similar questions for the specific geographical context of the Urarina territories in the Peruvian Amazon. In doing so, this study also responds to contemporary calls for pluralistic perspectives on conservation, which may contribute to more social justice and effectiveness (Pascual et al., 2021).

2. Indigenous and local knowledge in global policy and anthropological theory

Spiritual indigenous knowledge about the environment is part of a wider collection of knowledge(s), often referred to by the terms “traditional ecological knowledge” (TEK), “traditional indigenous knowledge” (TIK; where specific to indigenous peoples) or, collectively, “indigenous and local knowledge” (ILK). In this article, we refer to indigenous and local knowledge as knowledge, beliefs, traditions, practices, institutions, and worldviews that have been developed and maintained by local (indigenous and rural) communities, through the interaction with their biophysical environment (see e.g. Hamlin, 2013; Houde, 2007). Such knowledge systems have been studied not only by anthropologists and ethnobiologists, but also in the context of social-ecological systems and resilience theories. Such research has shown that it can be mobilised in efforts to protect biodiversity and ecosystem services (Fraser et al., 2006), and this way also contribute to human wellbeing. Although the terms TEK and TIK stress the historical origin of these knowledge systems, they are dynamic, and continuously undergo processes of adaptation and refinement.

TEK and TIK have won official recognition through various international conventions and events, for example, the 1992 Earth Summit held in Rio de Janeiro, where the need for local knowledge and perspectives to address place-specific environment and development challenges was highlighted (Mauro and Hardison, 2000). Likewise, the UN Declaration on the Rights of Indigenous Peoples (UNDRIP) and the Convention on Biological Diversity (CBD) have encouraged governments to recognise and protect TEK and TIK for environmental management, conservation and sustainable use of natural resources (UNDRIP 2007, art. 31; CBD 1992, art. 8). Further global initiatives, such as the Millennium Ecosystem Assessment (2005), The Economics of Ecosystems and Biodiversity (TEEB), and, more recently, the Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES) have also highlighted its importance, with IPBES giving special attention to

¹ We here refer to them as “wetland spirits” in recognition of the ecosystems in which the Urarina locate them, but the Urarina know other types of spirits that inhabit other places, and “wetland spirit” is not (yet) an established term in the academic literature.

culturally specific relational values that connect humans with their natural environment (Pascual et al., 2017).

The increased interest for TEK and TIK is not evenly distributed among all of its components. The “sixth face of TEK” (Houde, 2007), i.e., a culturally specific cosmology, serves as a foundation for all other elements of TEK, yet is often overlooked in contemporary discussions. It allows not only to understand the connections between the diverse elements within an ecological system, but also the principles that guide the relationships between humans and non-humans, establishing the functions assigned to both.

Recent theoretical contributions made within anthropology, particularly those that emerged out of ethnographic research conducted in the Amazonian region, have sought to clarify the complex links that connect Amazonian indigenous peoples with their environment, their territory, and different ecosystems. On the one hand, the notion of animism has been redefined (Descola, 1992) as an ontology in which animals and other entities, besides humans, are considered to be subjects that are characterised by intentionality, affect, and social relations, that is, they are considered to be persons. On the other hand, the notion of “perspectivism” has been developed (Stolze Lima, 2005; Viveiros de Castro, 2004), that is, an indigenous worldview which considers that all species, including humans, perceive reality in the same way, but from different relative viewpoints.

Many of the most relevant contributions that emerged from these two early theoretical perspectives have covered the topic of the perceptive subject, its sensations, and affects (Surrallés, 2003; Taylor, 2000). Others have focused on the processes of constructing human and non-human bodies and persons (Santos-Granero, 2012) or have studied indigenous discourses on the cosmos and the entities that inhabit it, revealing the implications of a specific perceptive perspective (Descola, 1986; Stolze Lima, 1996). A number of innovative studies have emerged from this line of thinking, which have emphasised the urgent need for research on the connections between tropical Amazonian forests and the people that inhabit these ecosystems, including the sociocultural universe that they share with their forest environment (e.g. Kohn, 2013; Rival, 2016).

3. Materials and methods

3.1. Methodology

This article reports on findings from ethnographic research conducted in three Urarina communities of the Peruvian Amazon (Santa Rosa de Airico, Nueva Unión, and Nuevo Perú) between 2016 and 2019 (see Fig. 1). A variety of methods and techniques were used, including participant observation, photography, the writing of a field diary with dense descriptions of each day spent in the field, informal interviews conducted in everyday settings, and more than 20 in-depth interviews with adult members of the population (30 years or above), which were conducted in Spanish and Urarina, the latter with the help of interpreters from the same community.² One Urarina informant also illustrated spirits in a series of drawings, which we present and analyse further below. While the ethnographic research covered a diversity of topics that go well beyond spiritual and ecological aspects, here we report only on this particular element.

3.2. The Urarina, livelihoods, and natural resources

The Urarina are a small indigenous nation with about 3000 members, whose communities are mainly located in the Chambira River Basin in the Northern Peruvian Amazon. This part of the Amazon is

² Due to the ethnographic research approach, it is not possible to give a precise number, as some informal interviews could be classed as in-depth interviews and vice versa.

dominated by palm swamps, seasonally flooded forest, wetlands, and nutrient-poor blackwater ecosystems, with little perennially dry land. Urarina society is traditionally strongly patriarchal. Male community members interviewed for this research were mainly engaged in traditional activities such as hunting (e.g. tapirs, various bird and monkey species), fishing, and subsistence agriculture (e.g. manioc, plantains, sweetcorn). Female interviewees were in charge of childcare, subsistence agriculture, collecting firewood, washing clothes, and making traditional textiles using *aguaje* (a palm tree, *Mauritia flexuosa*) fibre. Traditional subsistence livelihoods are changing, most profoundly by the arrival of oil companies, which hire men as workers (see section 3.3), though the monetary economy still represents a minor part in sustaining livelihoods. Some palm products (e.g. *aguaje* fruit) are sold to travelling traders, though on a very small scale.

3.3. Political, economic, and social change in Urarina society

In the last few decades, there have been profound social and economic changes affecting Urarina society. Traditionally, the Urarina were only marginally integrated in wider economic systems within the Amazon and Peru. However, due to increased interactions with outside actors, facilitated through the arrival of extractive industries, such as the Peruvian oil company Pluspetrol, many Urarina communities have developed a desire to integrate more closely with the Peruvian state and economy (Fabiano, 2021). This has required a restructuring of their governance systems and institutions. For example, many (but not all) Urarina communities now have clearly delimited territorial boundaries, and have set up hierarchical internal governance structures. This in turn requires defining who may count as a resident of a community, rendering “communities” as homogenous and stable entities, which are uniform inside and have well-defined external boundaries. It also contrasts with traditional patterns in which communities frequently shifted location. Some Urarina communities are now also organised in an indigenous federation, though among Amazonian indigenous peoples, they were among the last to adopt such novel forms of governance, incentivised by the Peruvian state, and many communities remain without formal representation or recognition (cf. Schulz et al., 2019b).

The introduction of communities as a formal institution has also made it necessary to introduce a spatial logic, which defines ownership and the zoning of areas at the local level, for example for agriculture, timber extraction or other uses. While this has brought some benefits to local people (e.g. to prevent illegal timber extraction), it has also forced an individualised logic onto the Urarina, which was not part of their traditional culture (see section 3.4 for details). Not all Urarina communities have adopted these novel logics at the same speed, with more resistance in some places than in others. This is often related to the frequency and intensity of contact with non-indigenous society. All communities visited for this research have comparatively higher levels of contact with non-indigenous Peruvians, in the context of extractive processes, the sale of *aguaje* palm fruit, state-led social support programmes, and, in Nueva Unión and Nuevo Perú, the maintenance of an oil pipeline which passes by their community (Fabiano, 2021). Nevertheless, social change is, for the most part, a slow process among all Urarina communities.

3.4. The Urarina and their relationship with the wetlands of the Peruvian Amazon

Despite the considerable social changes outlined above, the Urarina still maintain a strong relationship with the wetland ecosystems that surround their communities. This is evidenced by the ample knowledge of animal and plant species that they hold, but also in the ways that they interpret and interact with these ecosystems. The Urarina have developed their own terminology to describe wetland ecosystems, which in many ways is just as complex as that developed by Western scientists, but which also incorporates cultural elements that go beyond their

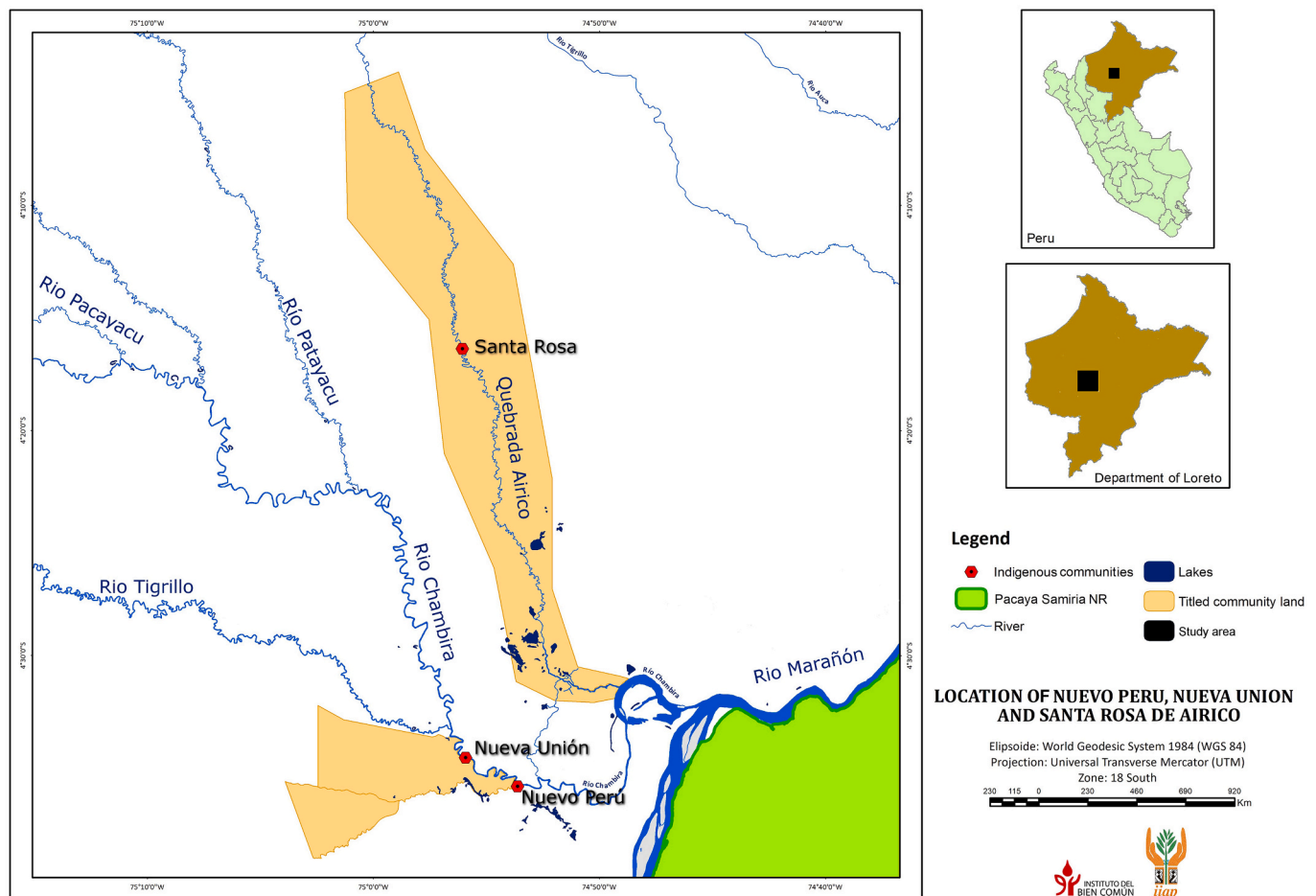


Fig. 1. Map of fieldwork locations of the Urarina communities; Source: Instituto del Bien Común (IBC) and Instituto de Investigaciones de la Amazonía Peruana (IIAP).

importance as sources of natural resources (Schulz et al., 2019a).

None of our Urarina interviewees would consider themselves the owner of the land that they occupy, the fields that they cultivate, or the wetlands they visit for hunting and other purposes, since the concept of land ownership was only introduced following the arrival of non-indigenous peoples and has since been consolidated by the Peruvian state's land titling system. That said, land use and wetland use are controlled by social norms, which relate to an ethics of care that connects different community members with their environment (besides the role of spiritual knowledge, which we describe below). For example, it is considered inappropriate to collect the fruits of a tree, if it had been planted by someone else, without asking for permission from that person. In the same way, one cannot harvest anything from someone else's fields, even if they may appear to have been abandoned, without previously having obtained consent from the person who used to cultivate it. These rules of use apply despite the absence of formal land ownership, and any areas can be cultivated or used by other families subsequently.

These restrictions do not include game animals or fish, which are often found in wetlands, and where other rules exist for sharing and circulation. Fishing and hunting can be carried out without limitations, but no fisher or hunter has exclusive rights over hunting or fishing areas within the communal territories. The same applies to the felling of large trees.

Similar to many other Amazonian peoples, the Urarina do not designate particular places within their territory as sacred spaces, a practice that is common among indigenous peoples in many other world regions, where such spaces implicitly double as environmental conservation areas (e.g. Byers et al., 2001; Wadley and Colfer, 2004). Instead,

the Urarina perceive the different ecosystems as part of a whole that needs to be managed and conserved, so a relational ontology rather than ideas of "sacredness" or taboo areas serves as the guiding principle for relating with the natural environment. This suggests that prior to the arrival of the current extractive models of resource use, the Urarina had already developed ethical principles about what constitutes appropriate relations with both human and more-than-human persons (further detail below).

4. Urarina spirits and their territories

Similar to other indigenous societies, the Urarina knowledge system includes the belief that in every ecosystem there are spirits, also known as "owners", "mothers" or *neba* (see Walker, 2013: 170–171; Dean, 2009: 248–249). Their function is to provide protection and to ensure that its non-human inhabitants prosper, which is the case, for example, with the *kiiraanaa* (i.e. the chief) of the large mammals, such as tapirs or peccaries. However, the control that these entities exercise over their ecosystems occurs indirectly via the activation of related social norms of humans, which govern the use of small agricultural plots³ and other productive activities that take place in each ecosystem (cf. Costa, 2010; Fausto, 2008).

The categories of "owner", "mother" or "master" are widespread in the region and well-documented by Amazonian anthropologists (e.g. Bonilla, 2005; Brightman et al., 2016; Cesarino, 2010; Costa, 2017;

³ *Chacras*, in local Spanish.

Karadimas, 2005; Kohn, 2007). An in-depth examination of theoretical debates on these categories would exceed the scope of the present paper, which presents novel ethnographic material, but does not aim to offer a critique of anthropological theory. Nevertheless, with regards to the Urarina specifically, it is worth mentioning the research of Walker (2012a, 2012b), whose work has highlighted the relevance of broader themes such as indigenous conceptions of debt peonage and trade or the asymmetrical relationship with white people, to control the predatory potential of the latter (see also, Bonilla, 2013; Costa and Fausto, 2010; Fausto, 2008, 2013). Moreover, as Fausto (2008) has pointed out, indigenous categories that are usually translated as “owner” or “master” should be analysed as a relational schema, a form of “meta-filiation”, which encompasses key elements for understanding Amazonian cosmopolitics, alongside “meta-affinity”. With regards to the variations of “owners” among Amerindian peoples, Fausto (2008) states that ownership relations function as a cosmological operator, in the sense of symmetric affinity as defined by Viveiros de Castro (2002). In the same way that potential affinity can be called “meta-affinity”, relations of domination would be a type of meta-filiation, that is, a cosmopolitical and interspecific filiation in which “adoption rather than the vertical transmission of substances, is the crucial element” (Fausto, 2008: 347). Thus, in general, ownership relations do not represent possible alliances, but a bond of filiation, or, more specifically, adoption.

According to Fausto (1999: 939), adoption, and more generally, the practices of familiarisation, should be conceived as “the transformation of a relationship of predation (real or virtual) into control and protection, modeled as the passage from affinity to consanguinity.” In the Amazonian context, this model has important implications, since it suggests that appropriation of an alien subjectivity is not possible without familiarisation, and that without familiarisation, predation is not possible (Fausto, 1999). This becomes evident in a range of practices (hunting, shamanism, warfare, and rituals). In this sense, predation and familiarisation are mutually dependent of the process of production of persons. As Fausto (2008: 332) explains, the “prototypical relation of mastery-ownership is, then, adoptive filiation that is, a relation that is not given, but constituted, frequently, through the dynamic [...] called familiarizing predation.” (see also Fausto, 2002). According to Fausto (1999: 937; 945), this process allows “producing persons by means of the destruction of persons” and it expresses itself in the ways in which Amazonian societies perceive their relationship with external entities through a combination of the two modes of relationship: on the one hand, predation, when the Other is captured as a means for acquiring subjectivity; on the other hand, familiarisation, through which a relationship of symbolic control over the Other is established.

Non-human entities are of a hybrid and metamorphic character, allowing them to change into the shapes of humans or animals as they see fit. Their behaviour may also sometimes pose a risk to humans (see below). Different ecosystems thus have a number of specific characteristics that are related with specific physical and geographical features, but also with the relationship that the Urarina establish with the spirits that live in it. In the following, we introduce a number of Urarina spirits and their preferred territories. While the Urarina know a very large number of spirits, here we focus on the subset that is linked with specific territories, which might have implications for the conservation of wetlands and other ecosystems (see section 5). We have summarised their characteristics in Table 1 below, but detailed information is given in each of the subsections. We also rely on drawings of these spirits (see Figs. 2 to 6) to support our interpretation of their profile and roles in the Urarina cosmology. Although drawing is not traditionally part of Urarina culture (drawing has become more widespread due to the introduction of state schools in Urarina communities), these drawings help to identify specific details of the various spirits that may not have been covered in interviews.

4.1. The *baainu*: spirit of the peatland ecosystems

The ecosystems known by the Urarina as *jiiri* and *alaka* are the home of a type of spirit (*neba*, i.e. “owner” or “mother”) called *baainu*. The *jiiri* is a permanently wet ecosystem of variable appearance where one may find pole forests, that is, areas with short and thin-stemmed trees (*varillales* in Spanish), as well as palm trees of the species *M. flexuosa* or *Mauritiella armata*. The *alaka* can be understood as a palm swamp forest, that is, a permanently to seasonally wet ecosystem dominated by *M. flexuosa* palm trees and tall timber trees, such as *Virola* sp. and *Iryanthera* sp. (Schulz et al., 2019a). It seems likely that the *alaka* is the result of a successive transformation of the *jiiri* over time (cf. Kelly et al., 2017). The boundaries between the two ecosystems are thus fuzzy, which may explain why the *baainu* can be found in both.

Due to the *baainu*'s human appearance (see Figs. 2 and 3) and peculiar character, our Urarina informants recognise certain traits in it that are similar to their own. For example, the *baainu* carries out productive and maintenance activities analogous to humans, and the *baainu* constitute a collective in their own right (see Fig. 3). The *baainu* live in villages with buildings that are similar to human settlements: palm tree trunks (of *M. flexuosa*) are used as pillars to sustain houses in which numerous *baainu* families live and carry out their activities. Despite being so close to the human world, many people describe their chance encounters with these non-human entities as frightening, which frequently occur especially among hunters who venture into a *jiiri* alone.

According to our interviewees, the *baainu* has the capacity to make a careless hunter lose his way by inducing in him a state of oblivion in which he loses his intention to leave the *jiiri*. This way, the hunter remains under the control of the *baainu* for several days, who will take charge of “taming” the human as one might do with a wild animal, so that it gets used to its new circumstances and can legitimately be integrated into its new non-human family. Despite having temporarily lost the ability to realise any action and their free will, the captured human still represents a danger to the *baainu*. This might explain why, at the beginning, the *baainu* pick a separate space to keep the human, away from their settlements. Often, this could be the space in between the buttress roots of a big tree, where he may remain for several days in complete isolation, while being fed with special food and under constant surveillance.

This process of isolation is so effective that, after a few days under the care of the *baainu*, a process of transformation and familiarisation begins, which causes the hunter to become invisible to the eyes of other humans. Only a timely intervention may allow him to be rescued: one of the most effective ways to do so is the application of leaves of *ishanga* (*Laportea aestuans*, a nettle) on the entire body. The leaves will need to be prepared while singing a therapeutic song, which in this way can be inoculated into the body of the hunter to “wake him up” of his state of torpor and return him to the human world.

Nevertheless, tales of humans that voluntarily choose to live with the *baainu* also exist, a decision that implies giving up their humanness and that will eventually lead to them transforming into one of these entities.⁴ Despite the ambiguity that characterises the relationship between humans and the *baainu*, unlike other spirits that inhabit the forests, the *baainu* do not prey on humans nor do they carry out lethal attacks, which reduces the possibility that an encounter with them may have a disastrous ending.

Despite the difficulties that the presence of the *baainu* may cause to humans entering *jiiri* and *alaka* (peatland) ecosystems, they also have a beneficial impact with regards to making these ecosystems fertile and the source of key resources for the surrounding Urarina communities. This function is visualised in Fig. 2, which shows two comparative

⁴ For an example, see the Urarina tale of “The woman who became a *baainu*” which we have translated from Urarina into English (see appendix 1). It describes one of the first human encounters with the *baainu* in ancient times.

Table 1
Territorial wetland spirits known by the Urarina.

	<i>Neba</i> (mothers, owners)		<i>Ijnjaeene</i> (<i>nijnjaeene</i>) (evil spirits)	
	<i>Baainu</i>	<i>Jiiri kurii</i>	<i>Enia</i>	<i>Ruasara</i>
Typical territory	<i>Jiiri</i> and <i>alaka</i> peatland ecosystems	<i>Jiiri</i> and <i>alaka</i> peatlandecosystems	<i>Niinakaatan</i> (forests without human presence) and <i>ajainaa</i> (short forests near human settlements)	<i>Leuaku</i> ecosystem (seasonally flooded forest)
Mode of survival	Same activities as humans (agriculture, hunting, fishing, etc.)	Same activities as humans (agriculture, hunting, fishing, etc.)	Hunting of human prey (human spirits)	Hunting of human prey (they feed on human flesh)
Relationship with humans	Collaboration/ rivalry; may transform humans into <i>baainu</i> , then integrate them peacefully into <i>baainu</i> society (which is very similar to human society)	Collaboration/ rivalry; creator of game species and agriculture; tricks humans, but also brings useful knowledge to humans (such as how to build a canoe) as a messenger from the <i>Creator</i> and the <i>arara</i> cloud people	Aggression/ predation; may bring disease and respond aggressively to human transgressions	Aggression/ predation; human hunters try to outwit/prank the <i>ruasara</i> ; may respond aggressively to human transgressions
Appearance and physical characteristics	Anthropomorphic	Anthropomorphic	Anthropomorphic	Anthropomorphic, but monstrous, with an inverted human body, where the head sits between the legs and the bottom on the shoulders
Other characteristics	Very territorial; <i>baainu</i> live close to human settlements	Very territorial; <i>jiiri kurii</i> live close to human settlements or, in mythological times, with humans	Very territorial and vengeful; <i>enia</i> live in trees which may be in isolated places or close to human settlements	Very territorial and vengeful; <i>ruasara</i> live away from human settlements
Known to whom?	Everyone, the <i>baainu</i> is "an everyday spirit"	Urarina elders and/or shamans with specific knowledge of mythological times	Everyone	Everyone, though knowledge about the <i>ruasara</i> is fading among younger generations; hunters may hear <i>ruasara</i> screaming, but cannot see them



Fig. 2. Two *baainu* spirits in an area with *Mauritia flexuosa* palm trees. Where the *baainu* are present (to the left), there is an abundance of palm fruit and branches/leaves; where they are absent (to the right), the palm trees are dead, with dried out or absent leaves and without fruit. Drawn by Esteban Arahuata Ahuite (Community of Nueva Unión, Chambira River Basin, 2017).

scenarios, clearly demonstrating the ecological importance of the *baainu*. One reason may be that fear of the *baainu* may deter overuse of these resources. The relationship with humans is thus one of collaboration and rivalry at once. Where the number of hunters increases, there is a higher likelihood of human-*baainu* encounters, which then indirectly regulate resource use in these ecosystems through the kidnapping and transformation of some hunters, which is beneficial for remaining hunters.

4.2. The *jiiri kurii*: messenger of the creator and the *arara* cloud people

Although the *baainu* takes a prominent space in Urarina mythology, their territories host other entities, who are associated with specific ecosystems. The *baainu* share their territory with a character that is known in mythical tales under the name of *jiiri kurii*. The *jiiri kurii* is a *neba* that acts in ways that are very similar to the figure of a trickster, known in numerous indigenous traditions, who enjoy making jokes or

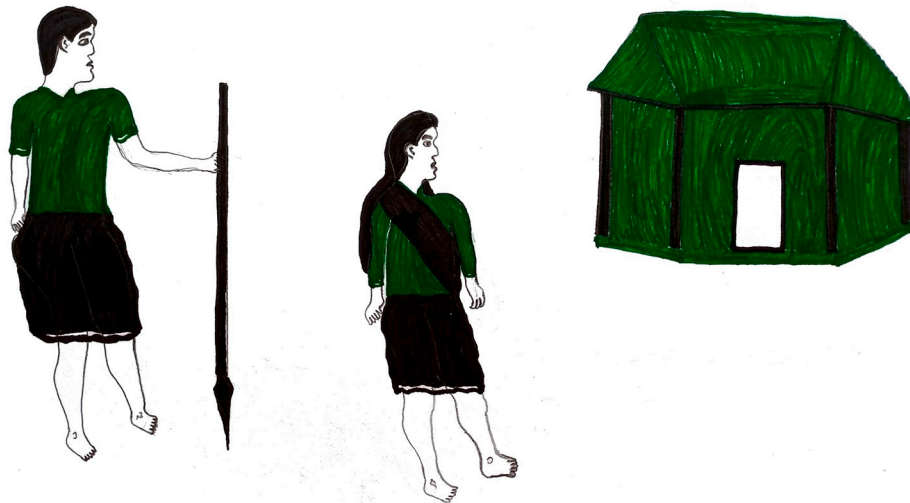


Fig. 3. A *baainu* couple. Like humans, the *baainu* live in communities and dedicate themselves to hunting, fishing, and agriculture. Drawn by Esteban Arahuata Ahuite (Community of Nueva Unión, Chambira River Basin, 2020).

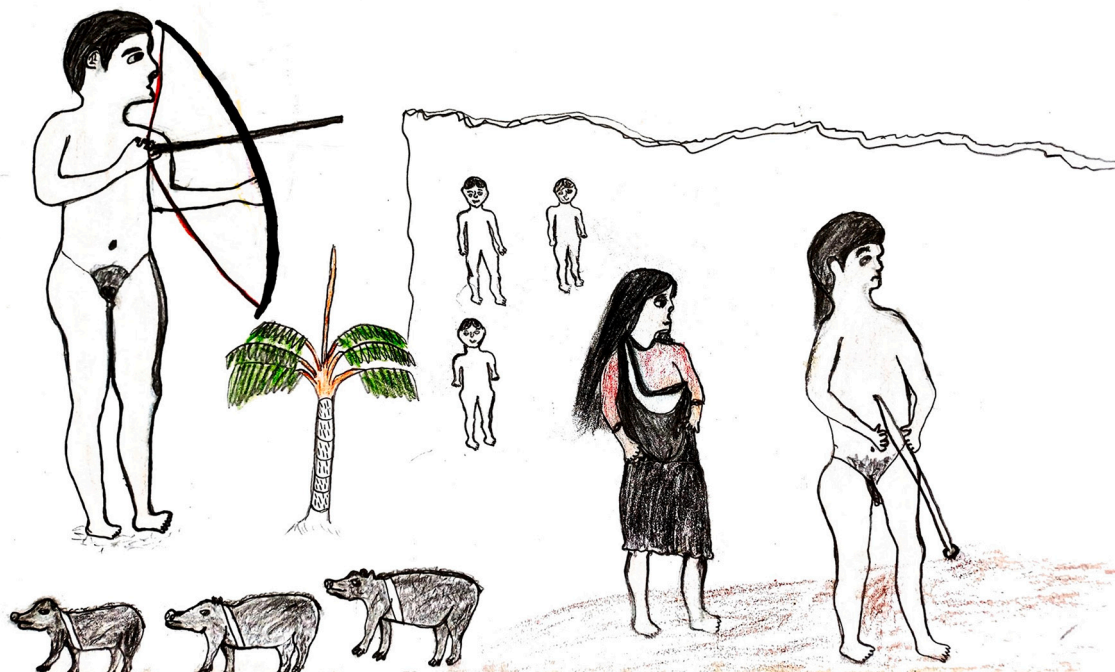


Fig. 4. In this drawing, the *jiiiri kurii* is shown as a naked man armed with bow and arrow (to the left), creating the white-lipped peccary, an important game species for the Urarina. Tricking a group of humans (centre), half of these are transformed into peccaries (bottom left), while the other half continue as humans (bottom right). Drawn by Esteban Arahuata Ahuite (Community of Nueva Unión, Chambira River Basin, 2020).

scamming humans in a playful way, sometimes as punishment for not adhering to social norms (e.g. the Yagua or the Baniwa; Chaumeil, 2004; Hill, 2009). However, the *jiiiri kurii* is only known among elders and/or shamans, mentioned in mythical tales and/or during therapeutic practices. Knowledge of the *jiiiri kurii* thus confers a certain social status.

Among the Urarina they often play the role of a messenger of the Creator and the *arara* people, that is, the inhabitants of a world above the clouds. The *jiiiri kurii* is of utmost significance in Urarina mythology and despite their trickster ways, can be thought of as having a benign

character. They differentiated humans into women and men (by shaping women's genitals), helped humans to master fire, this way making them prosper. They also created the very first animals that were hunted by the ancestors of the Urarina, such as the white-lipped peccary (*huangana*, *Tayassu pecari*, see Fig. 4). Furthermore, the *jiiiri kurii* is associated with the dissemination of knowledge that is vital for the survival of humanity. For example, they helped establish the very first agricultural plots, taught humans how to hunt and passed on the technical knowledge to manufacture canoes and other devices. Much of this knowledge is about



Fig. 5. The *ninajiaeene* spirits are a type of *ijniaene* that have anthropomorphic characteristics and live in densely vegetated areas of the forest, preferably in zones that are far from human settlements. Drawn by Esteban Arahuata Ahuite (Community of Nueva Unión, Chambira River Basin, 2018).

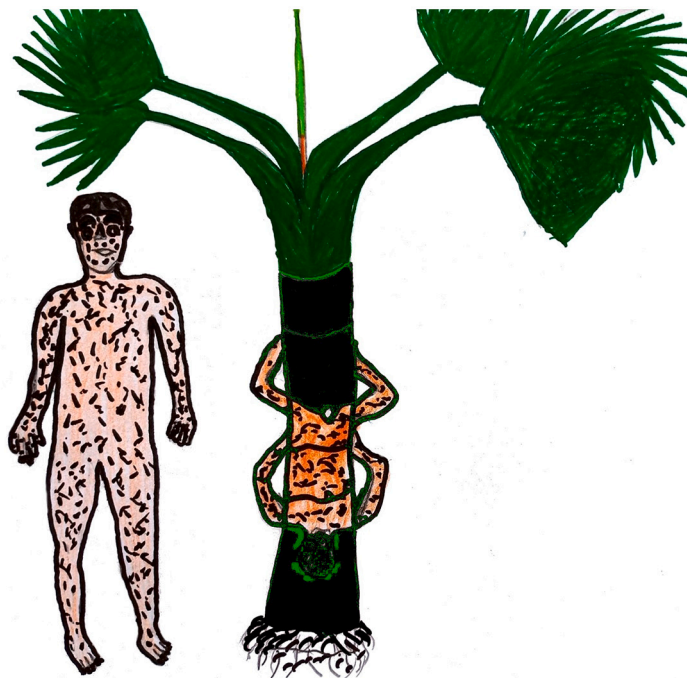


Fig. 6. A pair of *ruasara*. The *ruasara* to the left has a human-like body, but would not be able to look up. The *ruasara* to the right is climbing up a palm tree, with the head shown at the bottom and the anus represented by a white circle on top (accounts of the anatomy of the *ruasara* differ among respondents). Drawn by Esteban Arahuata Ahuite (Community of Nueva Unión, Chambira River Basin, 2020).

the environment. The fact that this environmental knowledge is linked with a powerful yet elusive character such as the *jiiri kurii* strengthens its social importance. Although not many Urarina may be familiar with the *jiiri kurii*, those who do, may be inspired to maintain a strong respect for their environment.

4.3. The *ninajiaeene* (*eniia*): evil spirits of the forests

Not all non-human inhabitants of these spaces are generous or tolerant with their human neighbours. The Urarina use the synonymous terms *ijniaene* or *nijniaene* to identify a category of non-human entities

(see Table 1),⁵ whose primary characteristic is that they have the skills to pursue and carry out deadly attacks on humans, using invisible spears or kidnapping the human spirit (*kurii*) of the victim.⁶ Although there are many types of *ijniaene*, some of which may inhabit spaces as distinct as oil pipelines (Fabiano, 2021), here we only consider one type of *ijniaene*, the *ninajiaeene* (see Fig. 5). The *ninajiaeene* live in forests known as *ninakataan*, which are characterised by the absence of agricultural plots or signs of human presence. Unlike the *neba* (that is, e.g., the *baainu* or *jiiri kurii*), the *ninajiaeene* are feared due to their aggressiveness, which indicates that they belong to the group of *ijniaene*. Although both *neba* and *ijniaene* may pose risks to humans (see section 4.1), the attacks of the latter group are characterised by an aggressive style when their territory is “violated”, and a disposition towards predatory behaviours.

Perhaps the most feared type of *ninajiaeene* are the spirits associated with tree species, the *eniia*. This type of *ninajiaeene* can live in the depths of the forest (*niinaana*), but also at close distance to human settlements, in areas known as *ajainaa*, that is, forested areas with short trees that surround inhabited areas. Each *eniia* chooses to reside in a specific tree and keeps this connection until the tree is felled or dies. The *eniia* are feared for their vengefulness and extreme aggressiveness, which is often triggered by human activities. They may attack humans with lethal darts which may cause disease and, in the worst case, may capture the spirit of the sick person, ultimately leading to their death. The use of blowpipe and darts, also used by human hunters, is another element that demonstrates the predatory nature of the *eniia*.

When hunting or farming, people may often, intentionally or unintentionally, injure the roots or the trunk of a tree, or it might be felled for the value of its wood (*fiia*). The presence of these spirits requires constant caution and, to many of the Urarina respondents interviewed for this research, represents a concrete barrier to the massive extraction of forest products that require felling of a large number of trees (*fiiajia*)⁷ or opening up of new paths (*berujaa*), activities which will trigger an aggressive response by the *eniia* (Fabiano, 2021). Fear of the *eniia* thus directly contributes to more sustainable resource use in forested areas.

4.4. The *ruasara*: monstrous hunting spirits of the seasonally flooded forest

The *ruasara* are one specific type of *ninajiaeene* who can normally be found in the *leuaku* ecosystem, locally also known by its (non-Urarina) name of *tahuampa*, that is seasonally flooded forest. The *leuaku* ecosystem is dominated by tree species such as *Ficus* sp., *Coussapoa* sp. (*renaco*, in local Spanish), as well as *Calophyllum brasiliense* (*lagarto caspi*, in local Spanish) (Schulz et al., 2019a). The *ruasara* are considered to be very dangerous, too. They are extremely territorial and very protective or ungenerous with regards to the animals and plants that can be found within their usual territories. Like big cats, the *ruasara* eat raw meat and they may surprise careless hunters with a sophisticated hunting technique for which they adopt the body and language of a human person. Unlike most *ijniaene*, which are generally invisible, the *ruasara* have a peculiar characteristic: their human anatomy is exaggerated and

⁵ Usage of the term *nijniaene* is less common than *ijniaene*. *Nijniaene* is mainly used by Urarina elders in the context of shamanism. The Urarina plural form of *ijniaene* is *ijiaenekürü* or *ijiaeneeürü*, but for simplicity, we use *ijniaene* throughout this paper.

⁶ For the Urarina, humans possess both a *kurii* (spirit) and a *sijüüia* (soul). The *kurii* is associated with the living person and transforms into an *aansai*, or spirit of a dead person, after death. For more details, see Martín Brañas et al. (2019) and Fabiano (2017).

⁷ While *fiia* means cutting trees in general, *fiiajia* means cutting large numbers of trees in the Urarina language.

morphologically inverted, that is, they have an enormous head that is positioned at the lower part of their body, between the waist and thighs, whereas their bottom is placed above their shoulders, exposing an outsized anus (see Fig. 6).

In contrast to the *baainu*, the *ruasara* do not live in villages and they dedicate themselves exclusively to hunting, the sole activity that allows them to satisfy their constant need for food. Nevertheless, despite their aggressiveness towards humans, the extraordinary physical force employed by them in their attacks, and their formidable hunting skills, the *ruasara* that are described in oral Urarina narratives are also common victims of pranks and acts of deception employed by Urarina hunters. The hunters may escape by exploiting the unsuspecting nature of the *ruasara* and their limited capacities, by introducing sharp objects into their anuses from high above in the trees, leaving them bleeding heavily.

In other accounts, the human appearance of the *ruasara* is emphasised. However, even where they appear not to look different than their prey (see the *ruasara* to the left in Fig. 6), these descriptions suggest that there are still important differences with regards to their bodies. This becomes evident when they pursue their victims. As told by interviewees, it is the shape of the head, and not the peculiar anatomy of the body described above that makes it impossible for the *ruasara* to take an upright position during hunting. It is for this reason that it is very common to see them standing on their head every time they need to observe what is hiding in the treetops or when they need to see something at an elevated altitude, outside their field of vision. As is easy to imagine, this weakness represents a valuable advantage to humans fleeing from the *ruasara*, since they can hide on top of tall (palm) trees, this way escaping. (see Fig. 6). Similar to the *eniia*, the *ruasara* thus contributes to fear of the seasonally flooded areas that it inhabits, and this way, may indirectly contribute to more sustainable resource use.

5. Indigenous knowledge on wetland spirits and its implications for the conservation of wetland ecosystems

5.1. A relational model for wetland conservation

The indigenous spirits we have described above should not be understood as entities whose behaviour is governed by their own autonomous system of laws, independent of the ecosystems that they inhabit. Instead, the spirits *are* the very same ecosystems where they live, they cannot be understood as separate entities. This aspect is typical for the indigenous Amazonian cosmivision, which attributes a conscious status to the surrounding natural environment. This, in turn, influences how people relate with these ecosystems and how they use the natural resources they provide. The *baainu*, with its ambivalent status as a strongly anthropomorphic figure with a normal “human” lifestyle that is nevertheless dangerous to those who get lost, might be the most obvious example for this. The *baainu*'s importance for wetland conservation is very dramatically captured in the drawings in Fig. 2 – without the *baainu*, the entire ecosystem dies. Although we cannot “measure” an ecological impact of the *baainu* and this may also differ across communities or the level of knowledge about them that individuals hold, the *baainu* tells a powerful story about how humans relate with their environment.

Although it would be a mistake to think that such spirits were “created” to help manage the natural environment, having respect for the *neba* spirits and fearing the *ijniaene* does encourage more sustainable resource use. The anthropomorphic appearance of these spirits further enhances their status, reminding humans that the sometimes inaccessible ecosystems surrounding them are someone's home, and that the forests and wetlands are not just amalgamations of resources to be exploited. The relationship between wetlands and people is on an equal footing, characterised by dialogue and exchange, rather than one-sided exploitation.

Nevertheless, there is also a risk that traditional indigenous

knowledge is conserved, but emptied of its spiritual meaning. An example is the *chullachaqui* (also known as *yashingo* or *shapshico*) of the Peruvian Amazon, a shapeshifting character known by other indigenous and mestizo communities (Kamppinen, 2010; Taïpe Campos, 2017). The *chullachaqui* used to fulfil a similar function to the spirits described in this paper, but Amazonian people no longer engage in dialogue with this character, which suggests that a relationship of reciprocity with the environments surrounding them has been lost, with negative implications for environmental conservation as well.⁸

In the case of the Urarina, knowledge of spirits is still comparatively strongly rooted, including among younger adults interviewed for this study (e.g. between the ages of 30 and 40); the fact that certain spirits are known only to shamans/elders (see Table 1) represents their distinct status in the Urarina cosmovision, not a loss of intergenerational transmission. However, while previous research in the region has shown that aspirations for technological modernisation, integration with Peru's national society, and a consumerist lifestyle are more pronounced in comparable non-indigenous/mestizo communities (Schulz et al., 2019b), there is no doubt that the Urarina value certain consumer products, too, and that the social fabric of their communities will change following increased interactions with non-indigenous actors. One example is their increasing reliance on formal employment opportunities and monetary income from oil companies operating in the Amazon (Fabiano, 2021).

Although accounts may differ between respondents and there are local and regional variations in the Amazonian cosmovision (within and between indigenous peoples), understanding this particular aspect of it, is of supreme importance for questioning the application of non-indigenous models of environmental conservation in this geographical area (which often have Western intellectual roots). Such models still conceive of the territory as the material base for the reproduction of human communities and their practices (Muradian and Gómez-Baggethun, 2021). In contrast with this dualistic paradigm, which often implies an antagonistic relationship between nature and culture, indigenous ontologies, which are expressed in practices and discourse, point towards a relational model.

Environmental management models and policies such as Payments for Ecosystem Services (PES) or Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD+), which are based on the identification and measurement of individual ecosystem services, such as carbon sequestration, as well as the allocation of exclusive land ownership rights, do not combine well with a relational model, and their adoption would reinforce friction between Western science-led thinking and indigenous ontologies. They offer little space for nonhuman spirits, not least, since they focus on tangible material benefits only, and exclude intangible and culturally specific entities, such as spirits; their impacts in Urarina territories could thus potentially go well beyond what has been described as “motivation crowding-out”, that is, the replacement of ethical norms by financial incentives for environmental conservation (Chervier et al., 2019). That said, there is growing awareness for these shortcomings and the need to incorporate indigenous perspectives, as is evident by the attempt to include indigenous voices in international platforms such as IPBES, which emphasise the diversity of ways of knowing and a pluralistic approach (Pascual et al., 2017).

In a relational model, the biophysical, human, and supernatural worlds are not considered to be separate entities; instead there are links of continuity between them (Escobar, 2015). This is also similar to the theoretical proposal, inspired by indigenous epistemologies, of a “complex we”, in which humans and non-humans, despite divergent appearances and practices, are part of the same whole, within a

framework of strong relationality (de la Cadena, 2019). The theoretical tradition known as “perspectivism” in anthropology likewise has emphasised the urgent need to consider the connections between tropical Amazonian forests and the people that inhabit these ecosystems, including the sociocultural universe that they share with their forest environment (e.g. Kohn, 2013; Rival, 2016). Documenting these worldviews, as we have done in this study, can be seen as the first step towards making conservation interventions more effective or avoiding conservation interventions that are bound to fail. Previous conservation research from the Peruvian Amazon has shown that projects that impose external logics or rationales onto local people may often fail (among other reasons), suggesting a need to build more strongly on intrinsic motivations and locally held knowledge (Chambers et al., 2020; Kilbane Gockel and Gray, 2009).

Finally, it has also been argued that the framing of natural resources and benefits (which are also problematic terms) as “ecosystem services” or the more recent “nature’s contributions to people” are symptoms of a problematic relationship between humans and nature, which are based on utilitarian thinking, and de-emphasise humans’ duty of care (Muradian and Gómez-Baggethun, 2021). That said, the notion of care (for the environment) is not an entirely unproblematic term either, as previous research on peatlands (in Scotland) has shown that there are varying and sometimes contrasting understandings of what caring for the environment might mean (Byg et al., 2020).

5.2. Indigenous knowledge, conservation, and indigenous land titling

The centrality of the relational model for indigenous ontologies has also been recognised by lawyers, as described in a case study by Surrallés (2017). To qualify for rights to territorial autonomy under the 2007 United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), legal experts used spiritual knowledge of nonhuman entities as a central indicator to confer indigenous status to peoples of the Northern Peruvian Amazon, alongside other indicators such as historical presence in a certain territory as evidenced by settlement patterns, the self-organisation of local groups or kinship systems. Knowledge of mythical ancestors and spirits that inhabit rivers, mountains, and animals served to distinguish indigenous peoples from non-indigenous settlers competing for the same land. Despite differences in how lawyers and indigenous peoples define “spirituality”, Surrallés (2017) concludes that UNDRIP has led to the extension of human rights protecting nonhuman entities, which would have been unthinkable not long ago. Although there can be no doubt about the indigenous status of the Urarina, our case study helps to document the specificities of their spiritual knowledge of nonhuman entities, an aspect that has remained understudied thus far (Fabiano, 2021).

While the case of the UNDRIP documents how a recognition of indigenous knowledge systems can be of tangible value to indigenous peoples in their struggle for rights to their territory, the relationship between legal norms and indigenous knowledge tends to be characterised by friction and misunderstandings. However, using indigenous knowledge as a criterion for awarding certain rights can also be problematic, since knowledge is dynamic and embedded in everyday practices, meaning that it can be difficult to grasp in a legal context (Ingold and Kurttila, 2000).

Many laws governing indigenous territories increase the vulnerability of their specific knowledge systems, and thus also of the natural ecosystems of these areas. The most obvious example for this relates to Peru's land titling system for indigenous territories, which, despite giving formal recognition to land claims, has led to strong fragmentation of indigenous territories. On the one hand, formally recognised land covers only a fraction of the traditional territories occupied by indigenous peoples. On the other hand, authorities are slow to recognise changes to settlement patterns, which is a particular problem for the Urarina, who regularly relocate their communities every few decades (Schulz et al., 2019b).

⁸ With “environmental conservation”, we do not refer to specific externally imposed conservation interventions, but rather, the continued existence or ecological integrity of the wetland ecosystems of the region.

The fragmentation of indigenous territories within the formal land titling system is not only problematic in terms of the recognition of indigenous rights and social justice concerns. It also represents a missed opportunity for environmental conservation from the perspective of non-indigenous society, considering that indigenous peoples have vastly outperformed even protected area managers at reducing deforestation, with the FAO finding that between 2006 and 2011, deforestation reduction rates in indigenous territories of the Peruvian Amazon were twice as high as those in protected areas with similar ecological conditions and accessibility (FAO; FILAC, 2021). Formally awarding land rights to indigenous peoples would thus be an inexpensive measure, particularly, if contrasted with alternative approaches such as REDD+ which require perpetual payments to landowners.

To avoid the issues with fragmentation that often occur when land rights are formally awarded by the Peruvian State, some indigenous peoples in the Peruvian Amazon have favoured an “Indigenous Integrated Territory Approach”, which would see land rights granted in bulk to indigenous peoples covering the entirety of the lands they have historically occupied, rather than introducing individual land titles or protected areas. This approach might support their holistic cosmology, which captures the material and symbolic relationships of indigenous peoples with their land (Burneo Mendoza, 2018). It would be a suitable approach to maintain the continued existence of Urarina spirits, facilitating a holistic socio-ecological perspective. However, some voices in Peruvian national society have favoured a uniform protection of indigenous “sacred spaces”, overlooking the fact that such spaces are known to only a minority of indigenous peoples in the Amazon, which would cause further fragmentation and penalise the Urarina and others who do not have them.

5.3. Biocultural diversity and conservation

Our research on a particular aspect of the socio-ecological reality of contemporary Urarina communities also matters in the context of current thinking on the biocultural paradigm (Merçon et al., 2019), for which we provide novel empirical evidence. As shown in Section 4, particular spirits inhabit particular ecosystems, demonstrating a clear link between culturally specific knowledge and the ecology of the area. Put simply, this paradigm suggests that there is a strong interdependence between biological and cultural diversity; a biocultural lens may help to understand the relationship between humans and nature; it underpins calls to safeguard biological and cultural diversity as well as the recognition of indigenous rights; and it may influence biodiversity (and environmental) policy-making from local to global scales (Merçon et al., 2019).

Yet, this biocultural diversity is under threat in the surveyed indigenous communities. The growing integration of indigenous society into Peru’s national society has exposed these communities to external forces, such as state-led social support programmes or community development programmes that change their practices and social fabric. This is in line with global trends, which have pointed to “cultural hybridisation” and the loss of practices, beliefs, and knowledge in the context of state territorialisation and nation building (Pretty et al., 2009). This extends to knowledge on plants and ecosystems, which is slowly but steadily lost among Amazonian societies, particularly in communities that face more extended contact with non-indigenous society (Reyes-García et al., 2013).

Nevertheless, the cultural and spiritual elements that are part of indigenous knowledge are rarely included in contemporary debates. This may limit the benefits of (well-intentioned) future social programmes, which often ignore the locally specific expectations and realities of targeted communities. To successfully improve the quality of life in all aspects, such programmes will need to consider the opportunities and cultural specificities of indigenous communities in planning. In the case of the Urarina this also means understanding how traditional resource management practices have been fused with extractive patterns

imposed by their non-indigenous *patrones*.⁹ In the Latin American context, the Western model of exploitation is responsible for much environmental destruction over the course of the past few centuries, including tropical wetland areas (Ioris, 2012), and it has been argued that addressing environmental crises thus requires a stronger reliance on non-Western ways of understanding human-nature relationships (Muradian and Gómez-Baggethun, 2021).

Globally, the increasing commodification of natural resources or the exploitation of novel resources (timber, energy, industrial agricultural products) are among the most common threats to biodiversity and cultural diversity alike (Pretty et al., 2009). Sometimes, these threats have devastating impacts on indigenous peoples, where “development” is equated with the extermination of indigenous culture, an attitude that is still prevalent in certain areas of South America (Ioris, 2020). This stands in contrast with the finding, as noted above, that indigenous peoples have been the most successful land stewards in the region, with the FAO documenting that indigenous lands are least affected by deforestation, for example (FAO; FILAC, 2021). This may in part be related to the distinct cultural status that forests (and also wetland ecosystems) occupy in indigenous societies, including Urarina society, as described in our case study. Their exclusion from the most relevant environmental policy and governance forums in Peru thus represents a paradox; the actors with the greatest expertise in sustainability are the least able to influence decision-making in Amazonian territories.

Despite progress with incorporating and representing indigenous voices at the international level through forums such as IPBES (Pascual et al., 2017), a need remains for hearing indigenous voices at the national level in Peru. With our study, we hope to raise awareness about the existence of alternative, indigenous knowledge systems, though in the longer term, it will be preferable that these conversations are led by the Urarina themselves. This will also ensure that the dynamic nature of indigenous knowledge is taken account of (cf. Ingold and Kurttila, 2000), and indigenous representatives can “update” it, reflecting potential social changes in Urarina society. Despite our documentation of a certain aspect of Urarina knowledge and culture, it seems plausible that knowledge of spirits will be changed and adapted over time, in line with novel socio-ecological realities, and members of the indigenous communities themselves will be best placed to communicate their perspective of their culturally specific knowledge.

5.4. Indigenous knowledge in education

Threats to Urarina culture and knowledge could be countered by investing in the indigenous education system (cf. Hamlin, 2013). Although most Urarina communities are served by Urarina-speaking primary school teachers, the basic curriculum does not include indigenous ecological knowledge or the values and behavioural norms that have traditionally governed their relationship with the ecosystems that surround them. Although little is known about the impacts of the formal education system on Urarina society thus far, based on evidence from other contexts (Koehler, 2017), it seems plausible that it could profoundly change these relationships, and may make younger generations more vulnerable to adopting unsustainable activities. Furthermore, the activities of oil companies (Fabiano, 2021) or state-led social interventions may also lead to a weakening of indigenous knowledge transmission to younger generations, as their learning priorities may change according to the logics of such external actors.

Some of the spirits we have described in this paper, for example the *jiiri kurii*, are only known to shamans and specialists among the Urarina, so they are at greater risk of being lost, if this knowledge is not passed

⁹ The term *patrón* is generally used to identify non-indigenous people who exploited indigenous workers for extractive and agricultural activities, a practice that continued to be prevalent in the Chimbira region until the 1990s (see Fabiano, 2018, 2021).

down to younger generations. Making use of the cultural and ecological knowledge of Urarina elders in the formal education system might be a suitable approach to safeguard the biocultural heritage of the Urarina. With regards to the spirits that inhabit wetlands and forests, their cultural significance could best be taught in the field, a teaching technique that is not yet part of the curriculum in Urarina schools.

6. Conclusions

In this paper, we have presented novel empirical evidence on the cultural and spiritual importance that wetland ecosystems have to indigenous people of the Peruvian Amazon. Specifically, we present for the first time a typology of nonhuman “wetland spirits” inhabiting wetland ecosystems known by the Urarina, which signify a relationship of reciprocity between humans and nature that is fundamentally different than the dominant utilitarian perspective implicit in non-indigenous approaches for environmental management and conservation. Unlike in many other indigenous cultures, these anthropomorphic spirits are not revered as sacred, but convey a range of subversive and humorous characters, from the benign but mischievous *jiiri kurii* to the bizarre and aggressive *ruasara*, who is said to be frequently pranked by Urarina hunters.

The relationship of humans with these nonhumans contributes to more sustainable patterns of relating with the natural environment, since they are signifiers of a holistic and relational cosmivision (cf. Fernández-Llamazares and Virtanen, 2020), in which wetland ecosystems are not separate spaces to be exploited for their natural resources. Our findings suggest that awarding greater autonomy and land rights to indigenous peoples may also be beneficial for environmental conservation in the Peruvian Amazon, where they maintain spiritual knowledge of ecosystems and their indigenous identities are strong, which may limit the influence of purely economic interests in their territories (though oil companies may seek to undermine this, see, e.g., Okamoto and Leifsen, 2012). This would also be in line with current thinking on the biocultural paradigm, which suggests that biodiversity conservation and the conservation of indigenous cultures can have many synergies, and may help safeguard indigenous rights. It would also combine well with frequent calls to incorporate indigenous knowledge into environmental policy, for example by IPBES (Paulsch, 2016), contrasting with other environmental conservation policies that are commonly debated for use in the Amazonian region, such as PES schemes or REDD+, which do not combine well with indigenous ontologies. This is all the more important in the face of growing socio-economic pressures, such as the operation of oil companies in Urarina territories, which may accelerate cultural hybridisation with Peruvian non-indigenous society.

To conclude, it should be noted, as recently highlighted by High and Oakley (2020), and informed by the earlier work of Conklin and Graham (1995), that it is necessary to pay special attention to local perspectives on practices and ideas when it comes to understanding indigenous livelihoods, resource use, and potential environmental conservation interventions. When exploring these emerging interfaces between environmental conservation and indigenous ontologies from an ethnographic point of view, it is necessary to not only overcome the notion of the ecologically noble indigenous (Ulloa, 2001, 2004), but also, to acknowledge the need for indigenous peoples to provide their own perspectives on environmental conservation policies and their implications for cultural integrity and development. Sometimes, external logics of conservation may conflict with indigenous ontologies, despite the rhetoric of “natural alliances” between environmental conservationists and indigenous peoples; sometimes, indigenous actors successfully negotiate a “middle ground”, maintaining indigenous ontologies while engaging with global conservationist agendas (High and Oakley, 2020). For the specific case of Amazonian wetland territories inhabited by the Urarina, this paper contributes ethnographic insights into indigenous ontologies, but does not offer a judgement regarding how likely it is that a productive middle ground will, in practice, be found that would be

beneficial for both.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. The woman who became a *baainu*

In ancient times, there was a young woman, whose husband did not love her. One day, she went to harvest *aguaje* palm tree (*Mauritia flexuosa*) shoots with the other women.¹⁰ When they arrived at a place with *aguaje* palm trees, the young woman did not want to stay near the other women. She grabbed one of the *aguaje* seeds and threw it against the trunk. Then she said:

“Hide me, *baainu*! I am ready to get lost because my husband does not love me.”

So it happened several times that she threw the seeds against the trunk. The other women heard some sounds from afar, but did not realise that she had disappeared. Without noticing that she was no longer with them, the other women returned home. But one of them did notice and said to the others:

“I heard her talking, she said: ‘Hide me, *baainu*, I am ready to get lost.’”

So they began to look for footprints where she had walked. When they found the footprints, they followed them, until they found her skirt lying on the ground. They kept following the path and further on, they discovered scales, and from then onwards no more footprints were to be seen. The women returned home and told everyone else what they had seen.

Her husband wept and begged an *ayahuasquero*¹¹ to do something, so that the *baainu* would return his wife. The *ayahuasquero* said:

“Right here, I saw two of them, they passed by nearby, taking your wife with them.”

When the other people began to prepare their mosquito nets for the night, the *ayahuasquero* stayed up waiting to see whether the *baainu* might pass by again with the woman. While he was waiting, they came

¹⁰ Traditionally, Urarina have practiced the art of weaving clothes with *aguaje* palm tree fibre, see Martín Brañas et al. (2019).

¹¹ The term *ayahuasquero* is used in local Spanish to refer to a person who is familiar with specialist rituals that involve the preparation and provision of potions on the basis of the plants *ayahuasca* (*Banisteriopsis caapi*) and *chacrana* (*Psychotria viridis*). Occasionally, it is employed as a synonym of shaman. Drinking of potions causes hallucinogenic visions that give the *ayahuasquero* access to information not available through conventional means.

and he immediately grabbed the woman. Afterwards, he told her husband:

“She is here, I have her. Come and see.”

The husband got up and came running towards the place where the *ayahuasquero* was waiting, who, after reuniting him with his wife, said:

“It won’t be easy for her to stay with you, so you will have to look after her all night. If you are not careful, she will go back to the *baainu*.”

The husband looked after her and tied his waist to her with a rope, but when he closed his eyes for a moment, the woman had disappeared again. Again, the man called the *ayahuasquero* and begged him to help. The *ayahuasquero* told him:

“Did I not tell you not to sleep?”

Again the *ayahuasquero* waited until the *baainu* would pass by where he was. He managed to catch the woman a second time and return her to her husband. This time, her husband tied even his hair and feet to her and looked after her.

Nevertheless, he closed his eyes again and the woman disappeared. She could not return to him, because the *baainu* had already transformed her into a *baainu*. One more time the husband asked for the help of the *ayahuasquero*. The *ayahuasquero* waited again for her, but this time, the woman talked to him and said:

“This has happened, because my husband did not love me. Now the *baainu* have already transformed me into one of them. I no longer have human blood in me, I have *baainu* blood, which means I will never return.”

The woman went away and the *baainu* took her with them.

The *ayahuasquero* explained to the husband what the woman had told him:

“Your wife cannot return to you because you did not love her. The *baainu* have already transformed her into one of them, her blood is no longer that of a human being, it is of a *baainu*. She does not belong to you anymore.”

This is how a woman became a *baainu*.

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